DATA BOOK

FIRST EDITION

Solitron
DEVICES, INC.

DATA BOOK

FIRST EDITION

Solitron
DEVICES, INC.

SEMICONDUCTOR GROUP

Data Book

Power Transistors
Power Hybrids
Planar & Schottky Diodes

1177 Blue Heron Boulevard, Riviera Beach, Florida 33404
Tel.: (305) 848-4311 • TWX: (510) 952-7610

FIRST EDITION

FOREWARD

This data book has been compiled from Solitron's detail specification sheets in order to replace the loose leaf collection known to most of our customers for many years as Solitron's "Blue Binder." We look upon this first edition as an "interim" edition--quite useful and a distinct improvement over the "Blue Binder" in content, however less than perfect in form.

The first edition lacks page numbers and an index which would permit quick location of part numbers in the book. To overcome this deficiency to some extent, we have divided the book into sections by part number prefixes. e.g., Section I covers all SDT... part number designations; Section II contains all 2N... part number designations, etc. The various sections are separated by colored pages. Within each section the part numbers are compiled in ascending numerical sequence.

It must be remarked that all addresses, telephone or telex numbers of sales offices, representatives, etc. that appear on the data pages are not necessarily correct. For Solitron's address, the cover page of this book should be consulted.

It is hoped that this first data book from Solitron will prove its usefulness with designers and purchasing agents alike, and it is our endeavor to present a second edition shortly which will no longer reflect the obvious shortcomings mentioned above. Any comments and suggestions to help us reach our goals are welcome.

Mike Giraud, Jr. Norbert Fuhrmann

Riviera Beach, Florida
October, 1977

CUSTOMER SERVICE

Our customer service is designed to deal quickly and efficiently with your inquiries.

To contact us by telephone, call:

	(800) 327-8462	Toll free WATS (except from Florida)
	(305) 848-4311	
By TWX:	(510) 952-7610	
By Telex:	51-3435	

When requesting delivery information, ask for Telephone Extensions 200 or 202.

INTERNATIONAL SERVICE

Customers outside the United States and Canada are requested to contact Solidev International Sales Corporation, a subsidiary of Solitron Devices, Inc.

Address:	1177 Blue Heron Boulevard, Riviera Beach, Florida 33404, U.S.A.
Telephone:	(305) 848-4311, Extensions 216 and 217
TWX:	(510) 952-7610
Telex:	51-3435

I N D E X

SECTION 1

NPN POWER TRANSISTORS

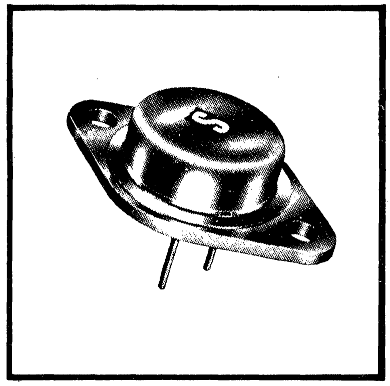
SDT and SP Devices

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

SDT-401
SDT-402

NPN HIGH VOLTAGE SILICON POWER TRANSISTORS

The Solitron SDT-401 and SDT-402 transistors are designed for use in television deflection circuits. The vertical deflection transistor (SDT-401) exhibits good beta linearity, high V_{CEO} and V_{CE}(sus). The horizontal deflection transistor (SDT-402) features a 700 Volt V_{CEX}, fast switching time and high reliability under horizontal sweep fault conditions.



Mechanical dimensions conform to the JEDEC TO-3 outline.

ABSOLUTE MAXIMUM RATINGS:

BV_{CEX} V	BV_{CEO} V	BV_{EBO} V	I_C A	I_B A	
	400	5	2.0	1.0	SDT-401
700	400	5	3.5	2.0	SDT-402

T_{STG} −65°C to +200°C

T_J −65°C to +200°C

Lead Temperature 1/16″ ± 1/32″ from case for 10 seconds = 300°C

THERMAL CHARACTERISTICS:

$\theta_{J\text{-}C}$	MAX.		
	1.0	°C/W	SDT-401
	0.75	°C/W	SDT-402

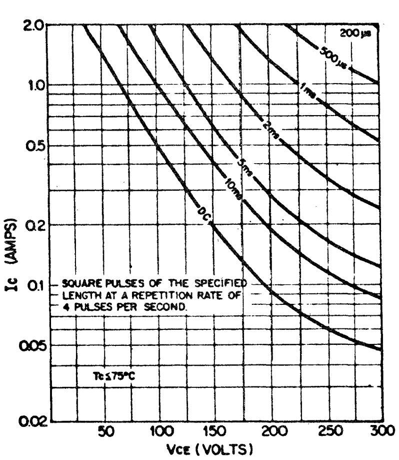
ELECTRICAL CHARACTERISTICS: $T_c = 25^oC$ unless otherwise specified.

PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	TYPE
I_{EBO}		5.0	mA	$V_{EB} = 5$ V	SDT-401, SDT-402
I_{CEO}		0.5	mA	$V_{CE} = 400$ V, $I_B = 0$	SDT-401, SDT-402
I_{CEX}		2.5	mA	$V_{CE} = 700$ V, $V_{EB} = 1.5$ V	SDT-402
V_{CE}(sat)*		0.8	V	$I_c = 0.5$ A, $I_B = 0.05$ A	SDT-401
		2.0	V	$I_c = 3.0$ A, $I_B = 0.6$ A	SDT-402
V_{BE}(sat)*		1.5	V	$I_c = 0.5$ A, $I_B = 0.05$ A	SDT-401
		1.5	V	$I_c = 3.0$ A, $I_B = 0.6$ A	SDT-402
h_{FE}*	20	100		$I_c = 0.5$ A, $V_{CE} = 5$ V	SDT-401
V_{CEO}(sus)*	300		V	$I_c = 100$ mA, $I_B = 0$	SDT-401
	325		V	$I_c = 100$ mA, $I_B = 0$	SDT-402
t_f		1.9	μs	$I_c = 3.0$ A, $V_{cc} = 36$ V, $R_L = 12\,\Omega$	SDT-402

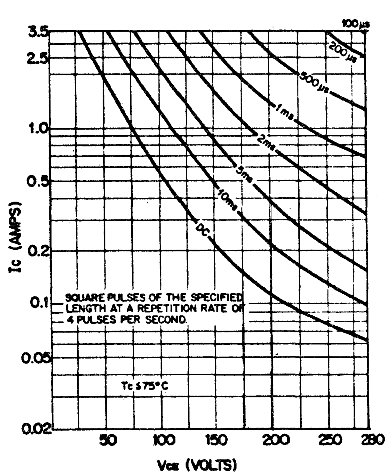
*Pulse width ≦ 300 μs, Duty Cycle ≦ 2%

SAFE OPERATING AREA CURVES:

SDT-401



SDT-402



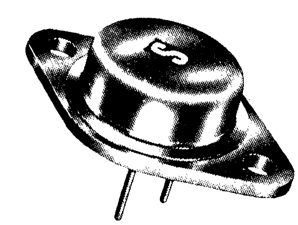
Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

SDT-410 SDT-423 SDT-411 SDT-424 SDT-413 SDT-425 SDT-430 SDT-431

NPN HIGH VOLTAGE SILICON POWER TRANSISTORS

These Solitron transistors are designed for use in applications requiring high voltages at various current ratings, from 2.0 amps. to 5.0 amps.

Mechanical dimensions conform to the JEDEC TO-3 outline.



ABSOLUTE MAXIMUM RATINGS:

BV_{CBO} V	BV_{CEO} V	BV_{EBO} V	I_C A	I_B A	P_T W	
200	200	5	3.5	2.0	80	SDT-410
300	300	5	3.5	2.0	100	SDT-411
400	400	5	2.0	1.0	75	SDT-413
400	400	5	3.5	2.0	100	SDT-423
700	500	5	3.5	2.0	100	SDT-424, SDT-425
400	400	5	5.0	2.0	125	SDT-430
400	400	5	5.0	2.0	125	SDT-431

T_{STG} $-65^{o}C$ to $+200^{o}C$
T_J $-65^{o}C$ to $+200^{o}C$
Lead Temperature 1/16″ ± 1/32″ from case for 10 seconds = $300^{o}C$

Typical Switching Times: All Devices
t_r 0.25 μs t_s 0.60 μs t_f 0.15 μs

f_T	TYP.	
ALL	4	MHz
SDT-413	6	MHz

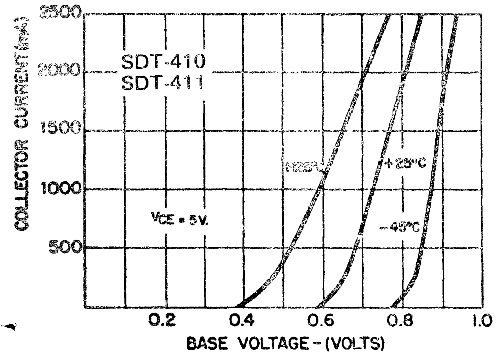
θ_{J-C}	MAX.	
ALL	0.75	$^{o}C/W$
SDT-413	1.0	$^{o}C/W$

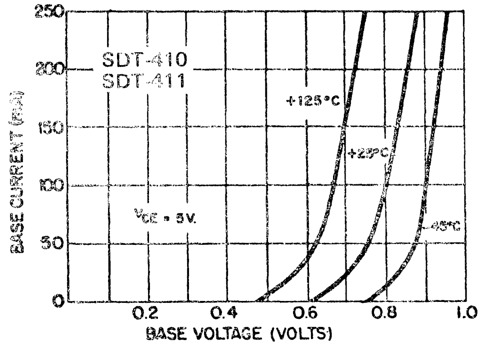
ELECTRICAL CHARACTERISTICS: $T_c = 25^oC$ unless otherwise specified

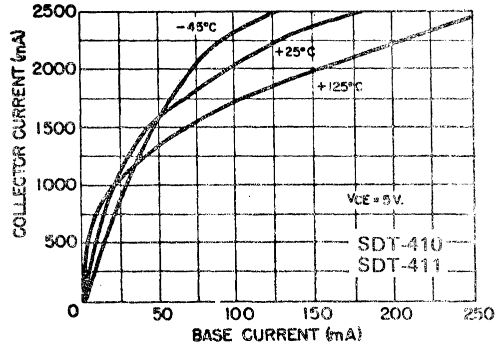
PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	TYPE
I_{EBO}		5.0	mA	$V_{EB} = 5$ V	SDT-410, SDT-411 SDT-413, SDT-423
		5.0	mA	$V_{EB} = 6$ V	SDT-424, SDT-425
		20	mA	$V_{EB} = 5$ V	SDT-430
		2.0	mA	$V_{EB} = 5$ V	SDT-431
I_{CEX}		0.5	mA	$V_{CE} = 200V$, $V_{EB} = 1.5V$, $T_c = 125^oC$	SDT-410
		0.5	mA	$V_{CE} = 300V$, $V_{EB} = 1.5V$, $T_c = 125^oC$	SDT-411
		0.5	mA	$V_{CE} = 400V$, $V_{EB} = 1.5V$, $T_c = 125^oC$	SDT-413, SDT-423
		0.5	mA	$V_{CE} = 700V$, $V_{EB} = 1.5V$, $T_c = 125^oC$	SDT-424, SDT-425
		5.0	mA	$V_{CE} = 400V$, $V_{EB} = 1.5V$, $T_c = 125^oC$	SDT-430, SDT-431
I_{CEO}		0.25	mA	$V_{CE} = 200V$, $I_B = 0$	SDT-410
		0.25	mA	$V_{CE} = 300V$, $I_B = 0$	SDT-411
		0.25	mA	$V_{CE} = 400V$, $I_B = 0$	SDT-413, SDT-423
		0.25	mA	$V_{CE} = 500V$, $I_B = 0$	SDT-424, SDT-425
		2.5	mA	$V_{CE} = 400V$, $I_B = 0$	SDT-430, SDT-431
h_{FE}*	30	30		$I_c = 1.0A$, $V_{CE} = 5V$	SDT-410, SDT-411 SDT-423, SDT-424 SDT-425
	15			$I_c = 1.0A$, $V_{CE} = 5$ V	SDT-413
	20	80		$I_c = 0.5A$, $V_{CE} = 5$ V	SDT-413
	10			$I_c = 2.5A$, $V_{CE} = 5$ V	SDT-410, SDT-411, SDT-423 SDT-424, SDT-425
	15	45		$I_c = 2.5A$, $V_{CE} = 5$ V	SDT-430, SDT-431
	10			$I_c = 3.5A$, $V_{CE} = 5$ V	SDT-430, SDT-431
V_{CE} (sat)*		0.8	V	$I_c = 0.5A$, $I_B = 0.05A$	SDT-413
		0.8	V	$I_c = 1.0A$, $I_B = 0.1A$	SDT-410, SDT-411, SDT-423 SDT-424, SDT-425
		0.9	V	$I_c = 2.5A$, $I_B = 0.5A$	SDT-420
		o.7	V	$I_c = 2.5A$, $I_B = 0.5A$	SDT-431
V_{BE} (sat)*		1.5	V	$I_c = 0.5A$, $I_B = 0.05A$	SDT-413
		1.5	V	$I_c = 1.0A$, $I_B = 0.1A$	SDT-410, SDT-411, SDT-423 SDT-424, SDT-425
		1.5	V	$I_c = 2.5A$, $I_B = 0.5A$	SDT-430, SDT-431
V_{CEO} (sus)*				$I_c = 100mA$, $I_B = 0$	
	200		V		SDT-410
	300		V	NOTE:	SDT-411
	325		V	Inductive Method	SDT-413, SDT-423
	350		V	May be used	SDT-424
	400		V		SDT-425
	300		V		SDT-430
	325		V		SDT-431

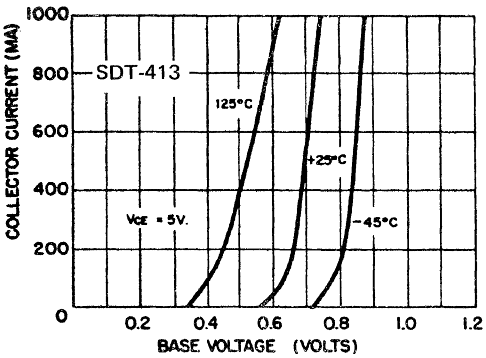
*Pulse width ≤ 300 μs, Duty Cycle ≤ 2%

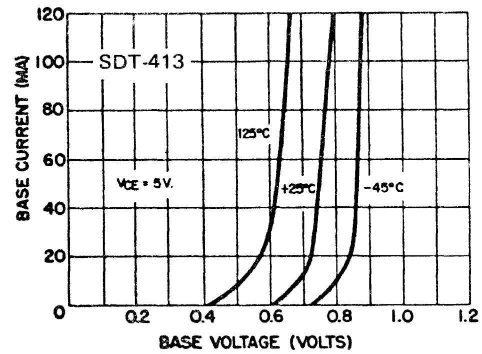
I_C vs. V_{BE}	I_B vs. V_{BE}	I_C vs. I_B

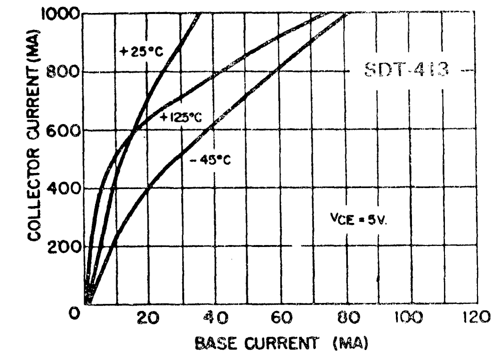


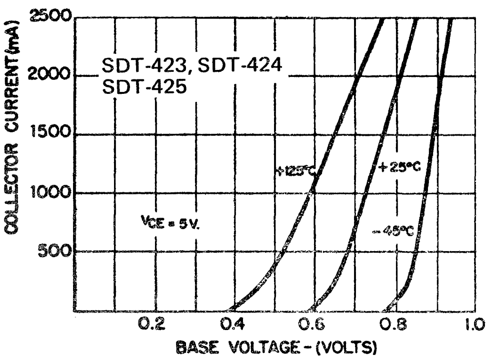


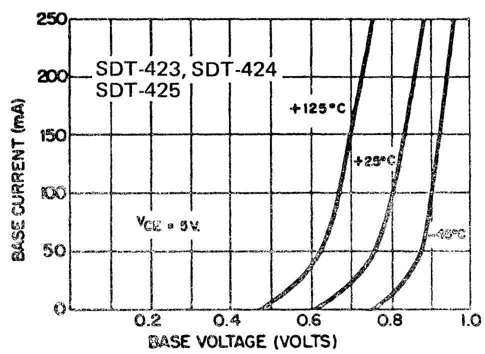


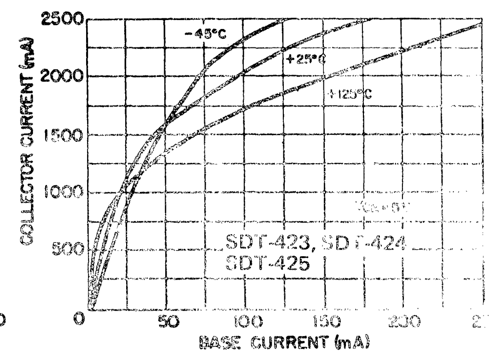


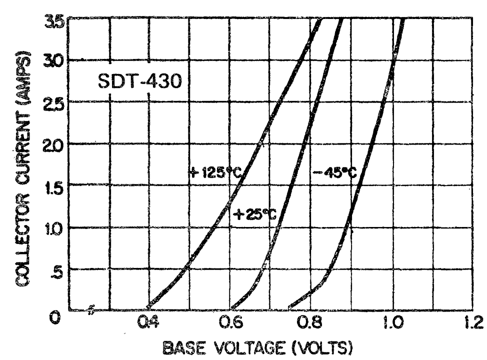


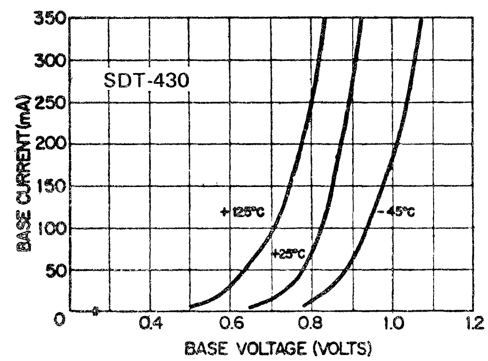


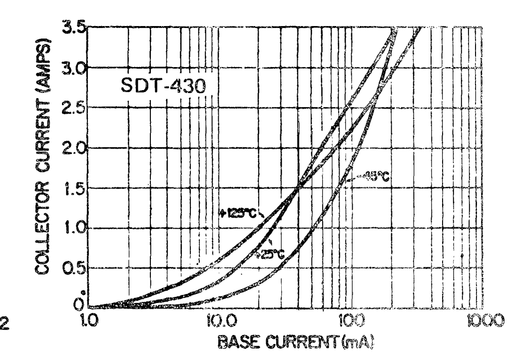


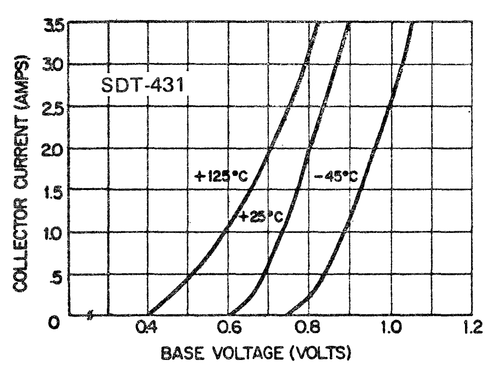


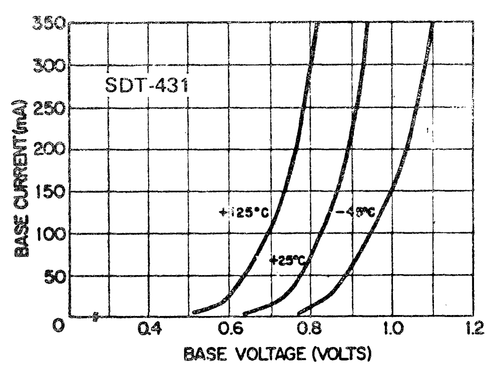


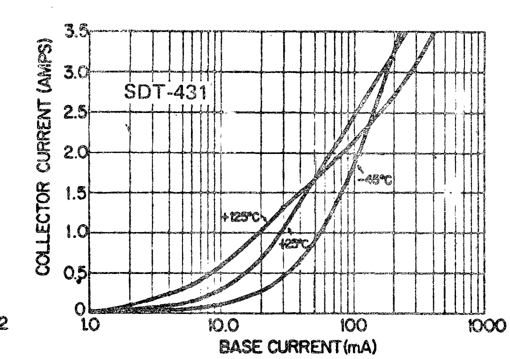




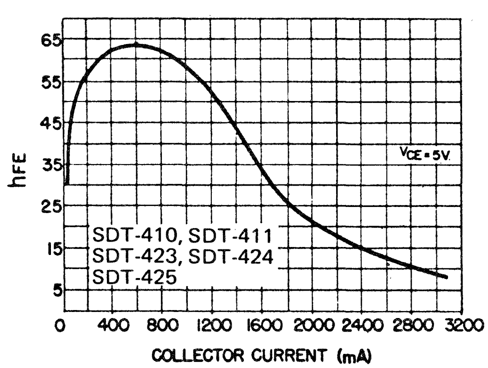


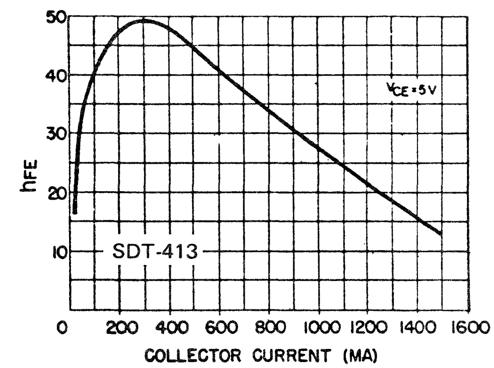


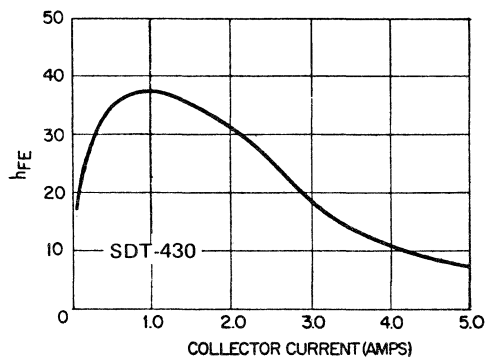


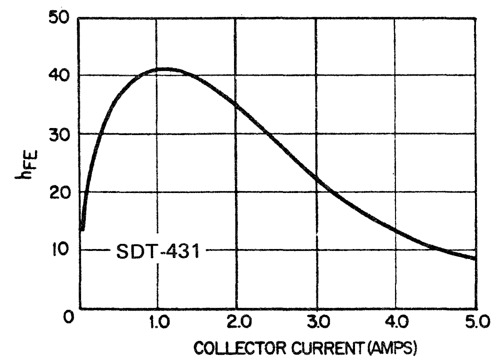


h_{FE} vs. I_C

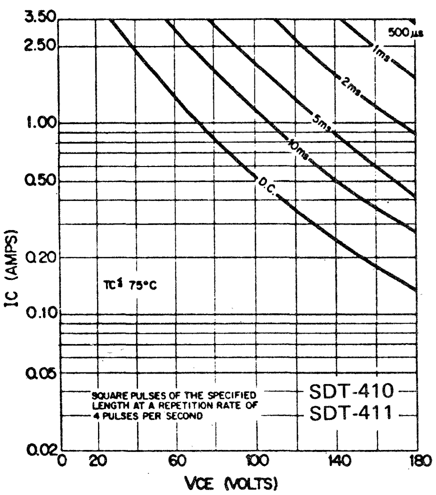


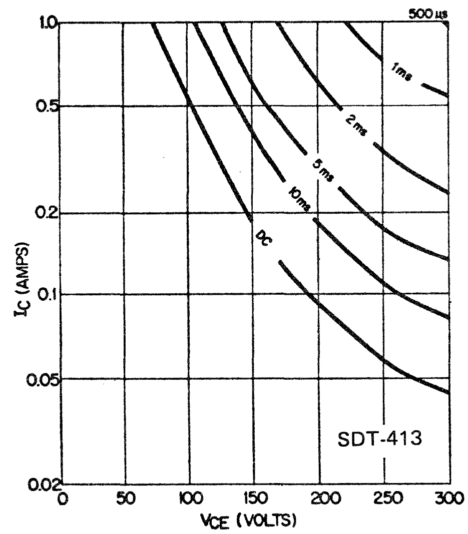


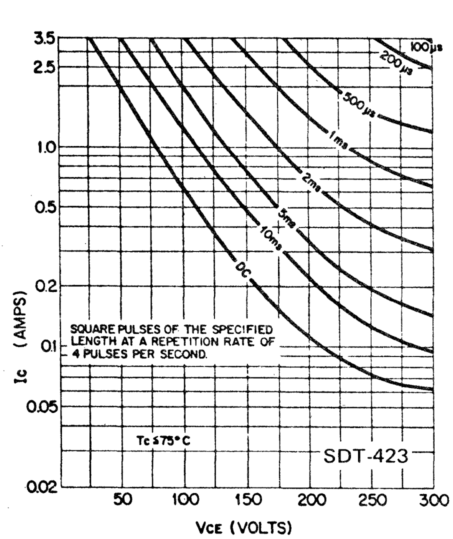


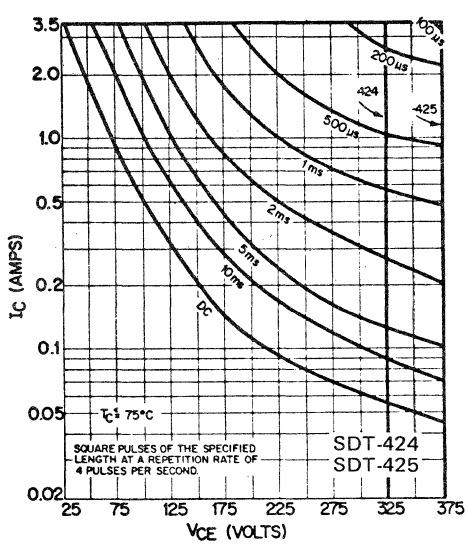


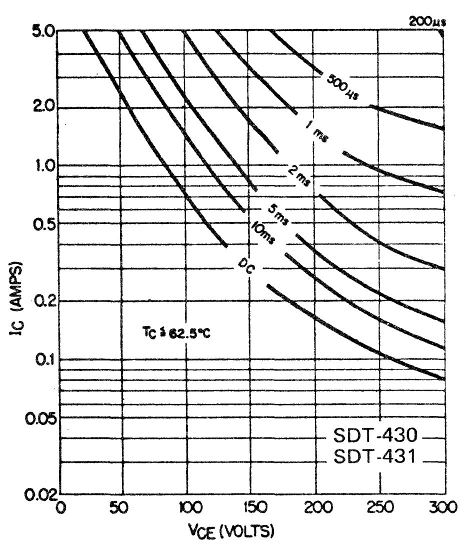
SAFE OPERATING CHARACTERISTICS











10 AMP SILICON HIGH VOLTAGE NPN POWER TRANSISTORS

SDT 1050 thru SDT 1064
SDT 1150 thru SDT 1164
2N 5466 thru 2N 5469

S P E C I F I C A T I O N S

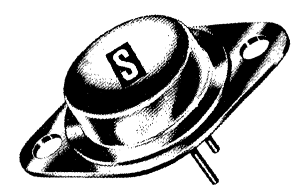
DESIGNED-IN ADVANTAGES

Voltages available up to 700V in 2 different packages.

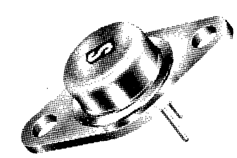
Packages are TO-3 and TO-66 and are characterized at 3 current levels: 1.0A, 2.0A, and 3.0A.

The TO-3, identified as the SDT1050-1064 family, is rated at 100 Watts of power capability @ 75°C Case temperature; and the TO-66, identified as the SDT1150-1164 family, is capable of 50 Watts power dissipation @ 75°C case temperature.

These high reliability devices, priced low, have many applications including Vertical and Horizontal T.V. circuits, Audio Amplifiers, Inverters, Converters and Relay Drivers.



TO-3



TO-66

SPECIFICATION	2N5467 (TO-3) 2N5469 (TO-66)	2N5466(TO-3) 2N5468 (TO-66)
V_{CEX}	700 V Min.	500 V Min.
V_{CEO}(sus)	400 V Min.	400 V Min.
h_{FE}	15-60 @ 3A	15-60 @ 3A
V_{CE}(sat)	0.5V @ 3A	0.5V @ 3A

ABSOLUTE MAXIMUM RATINGS

SDT Number			Symbol:	BV_{CEX}	BV_{CEO} (SUS)	BV_{EBO}	I_C (MAX)	I_B (MAX)	P_T 75°C CASE	THERMAL RES.		
			Unit:	V	V	V	A	A	W	°C/W		
1050	1055	1060		250	200	8	10	3	100	1.25	Operating Junction Temp. 200°C	Storage Temperature −65°C to +200°C
1051	1056	1061		400	325	8	10	3	100	1.25		
1052	1057	1062		500	400	8	10	3	100	1.25		
1053	1058	1063		600	400	8	10	3	100	1.25		
1054	1059	1064		700	400	8	10	3	100	1.25		
1150	1155	1160		250	200	8	10	3	50	2.5		
1151	1156	1161		400	325	8	10	3	50	2.5		
1152	1157	1162		500	400	8	10	3	50	2.5		
1153	1158	1163		600	400	8	10	3	50	2.5		
1154	1159	1164		700	400	8	10	3	50	2.5		

Solitron DEVICES, INC. TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLORIDA 33404 · TELEPHONE (305) 848-4311 · TWX: (510) 952-7610

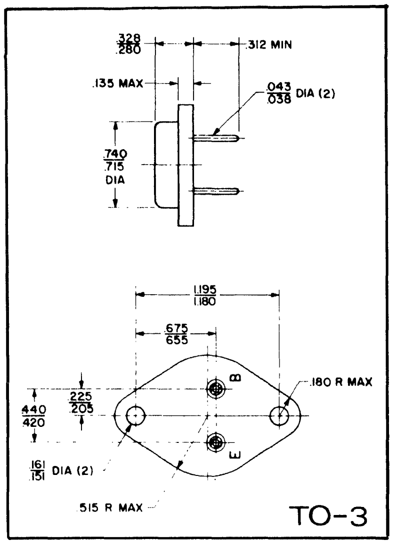
ELECTRICAL CHARACTERISTICS = @ 25^{o}C ambient

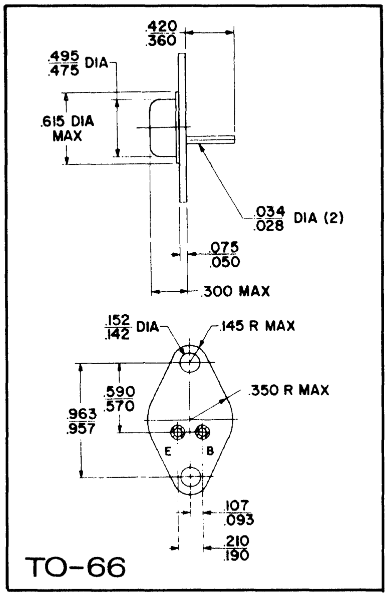
SYMBOL	MIN.	MAX.	UNIT	CONDITIONS	TYPE
$V_{(BR)CEX}$	250		V	I_c=1.0mA, V_{EB}= 1.5V	1050, 1055, 1060 1150, 1155, 1160
	400				1051, 1056, 1061 1151, 1156, 1161
	500				1052, 1057, 1062 1152, 1157, 1162
	600				1053, 1058, 1063 1153, 1158, 1163
	700				1054, 1059, 1064 1154, 1159, 1164
V_{CEO}(sus)	200		V	I_c=100mA*, I_B=0	1050, 1055, 1060 1150, 1155, 1160
	325				1051, 1056, 1061 1151, 1156, 1161
	400				1052, 1053, 1054, 1057, 1058, 1059, 1062, 1063, 1064 1152, 1153, 1154, 1157, 1158, 1159, 1162, 1163, 1164
$V_{(BR)EBO}$	8.0		V	I_E=5mA, I_c=0	All Types
I_{CEO}		5.0	mA	V_{CE}=100V, I_B=0	1050, 1051, 1052, 1053, 1054 1150, 1151, 1152, 1153, 1154
		1.0		V_{CE}=150V, I_B=0	1055, 1056, 1057, 1058, 1059, 1060, 1061, 1062, 1063, 1064 1155, 1156, 1157, 1158, 1159, 1160, 1161, 1162, 1163, 1164
h_{FE}	15			I_c=1.0A*, V_{CE}=5.0V	1050, 1051, 1052, 1053, 1054 1150, 1151, 1152, 1153, 1154
	10	50		I_c=2.0A*, V_{CE}=5.0V	1055, 1056, 1057, 1058, 1059 1155, 1156, 1157, 1158, 1159
	10			I_c=3.0A*, V_{CE}=5.0V	1060, 1061, 1062, 1063, 1064 1160, 1161, 1162, 1163, 1164
V_{CE}(sat)		0.5	V	I_c=1.0A*, I_B=0.1A	1050, 1051, 1052, 1053, 1054 1150, 1151, 1152, 1153, 1154
		0.5		I_c=2.0A*, I_B=0.4A	1055, 1056, 1057, 1058, 1059 1155, 1156, 1157, 1158, 1159
		0.5		I_c=3.0A*, I_B=0.6A	1060, 1061, 1062, 1063, 1064 1160, 1161, 1162, 1163, 1164
V_{BE}(sat)		1.0	V	I_c=1.0A*, I_B=0.1A	1050, 1051, 1052, 1053, 1054 1150, 1151, 1152, 1153, 1154
		1.5		I_c=2.0A*, I_B=0.4A	1055, 1056, 1057, 1058, 1059 1155, 1156, 1157, 1158, 1159
		1.5		I_c=3.0A*, I_B=0.6A	1060, 1061, 1062, 1063, 1064 1160, 1161, 1162, 1163, 1164
f_t	5.0 Typical		MHz		All Types

*Pulse measurement, PW $\leq$ 330 μs, $\leq$ 2% duty cycle

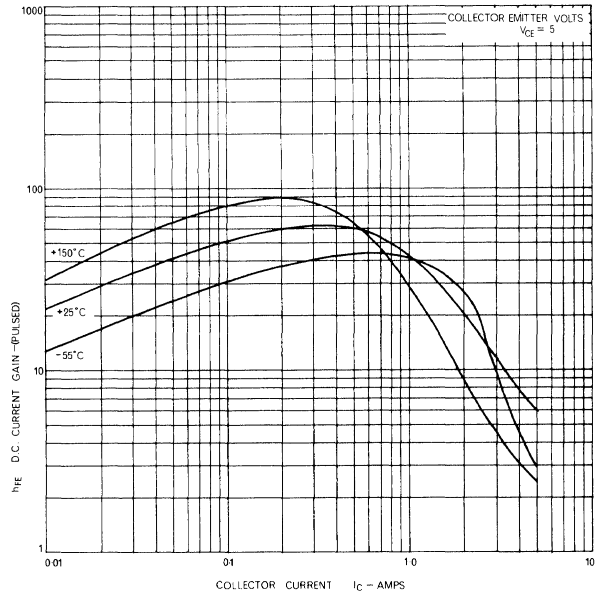
OUTLINE DIMENSIONS

NOTES:
1. Collector is electrically common to case.
2. All dimensions in inches.

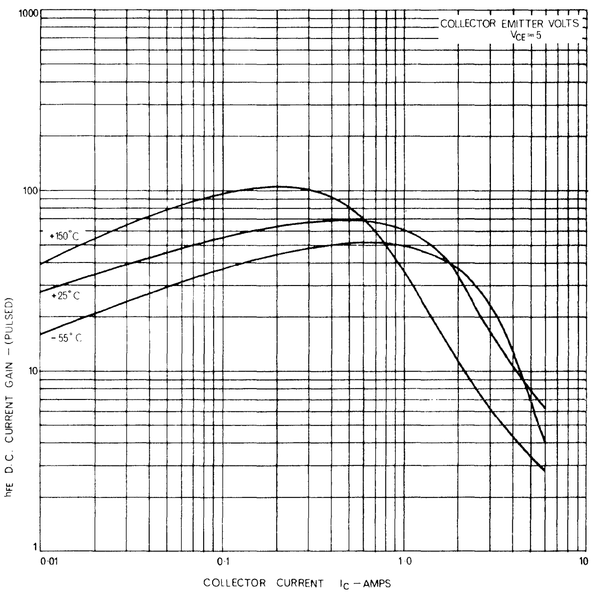




D.C. CURRENT GAIN vs COLLECTOR CURRENT SDT 1050, 1150 SERIES

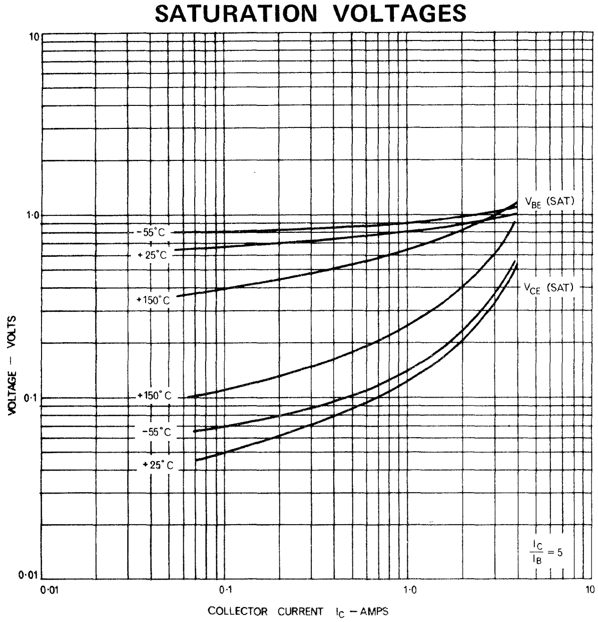


D.C. CURRENT GAIN vs COLLECTOR CURRENT SDT 1055, 1155 SERIES

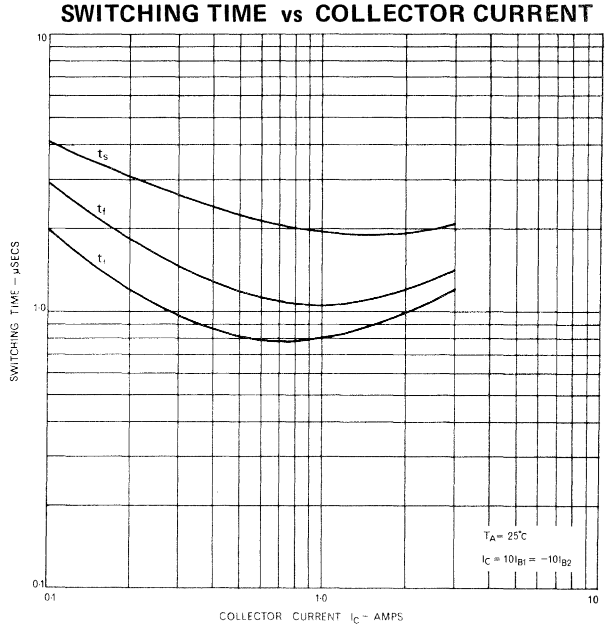


D.C. CURRENT GAIN vs COLLECTOR CURRENT SDT 1060, 1160 SERIES

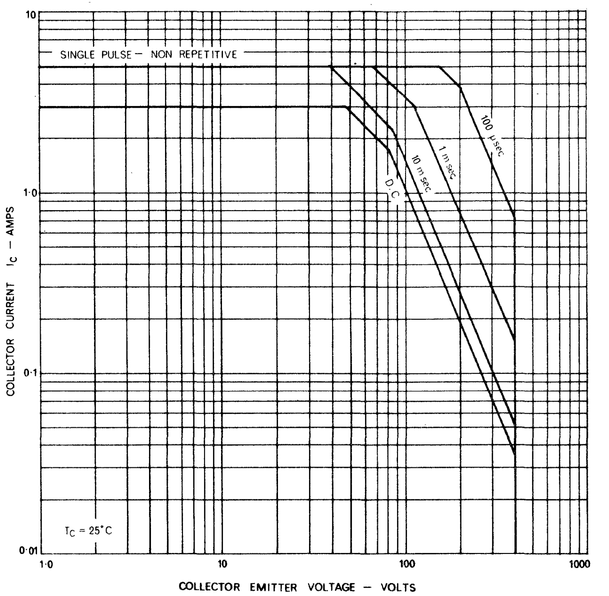
SATURATION VOLTAGES



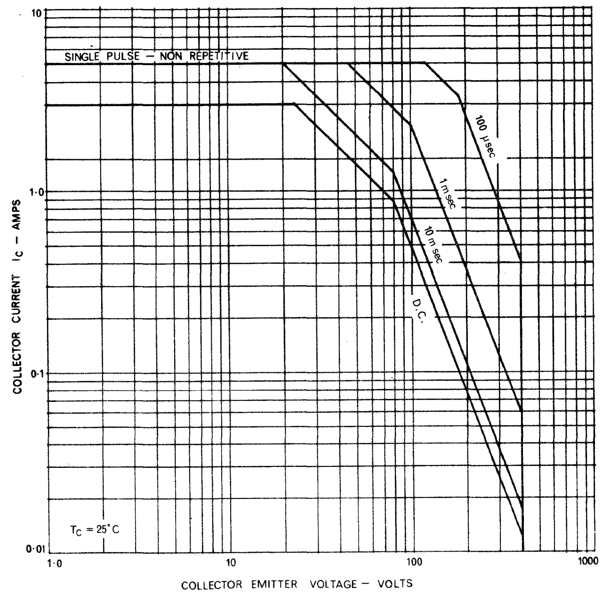
SWITCHING TIME vs COLLECTOR CURRENT



MAXIMUM OPERATING AREAS – TO-3



MAXIMUM OPERATING AREAS – TO-66



SOLITRON FACILITIES

TAPPAN, N. Y.
256 Oak Tree Road
914 / 359-5050

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311

Hi Rel Power Transistors
Si. & Ge. Power Transistors
PNP-NPN Industrial Transistors

PORT SALERNO, FLA.
Cove Road
305 / 833-6528

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

SAN DIEGO, CALIF.
8808 Balboa Avenue
714 / 278-8780

FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

JUPITER, FLA.
1440 W. Indiantown Rd.
305 / 746-8311

Microwave Stripline
Microwave Semiconductors
RF Transistors
Microwave Integrated Circuits

SOLITRON REGIONAL OFFICES

NORTHEAST
52 Pickering Street
Needham, Massachusetts 92192
Telephone (617) 444-1152, TWX (710) 325-7514

WESTERN
20944 Sherman Way, Suite 112
Canoga Park, California 91303
Telephone (213) 833-3822, TWX (910) 494-1238

SOUTHWEST
10511 Church Road, Suite No. 1
Dallas, Texas
Telephone (214) 363-7921

MIDWEST
Suite 218, O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone (312) 842-8127, TWX (910) 233-2634

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone (305) 848-4311, TWX (510) 952-7610

EUROPE
Solidev Ltd.
Sevenoaks, Kent, England
Telephone (Sevenoaks) 57541/2/3
Cable – Solitron Svoaks, Telex. # 95378

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

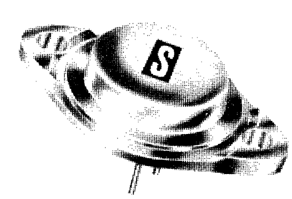
TO-3:
SDT 1611 thru 1618
SDT 1621 thru 1628
SDT 1631 thru 1638
TO-66:
SDT 1641 thru 1648
SDT 1651 thru 1658
SDT 1661 thru 1668

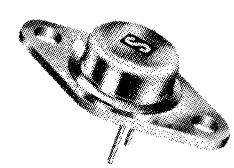
10 AMP Peak

SILICON NPN POWER TRANSISTORS

FEATURES:

- Multiple Diffused Planar process for excellent reliability.
- Exceptional fast-switching characteristics, with very low turn-off time.
- Low f_T to eliminate unwanted oscillations.
- Safe Operating ARea (SOAR) specified for forward-biased and reverse-biased operation.


TO-3


TO-66

ABSOLUTE MAXIMUM RATINGS

	SDT1611	SDT1612	SDT1613	SDT1614	SDT1615	SDT1616	SDT1617	SDT1618
	SDT1621	SDT1622	SDT1623	SDT1624	SDT1625	SDT1626	SDT1627	SDT1628
	SDT1631	SDT1632	SDT1633	SDT1634	SDT1635	SDT1636	SDT1637	SDT1638
	SDT1641	SDT1642	SDT1643	SDT1644	SDT1645	SDT1646	SDT1647	SDT1648
	SDT1651	SDT1652	SDT1653	SDT1654	SDT1655	SDT1656	SDT1657	SDT1658
	SDT1661	SDT1662	SDT1663	SDT1664	SDT1665	SDT1666	SDT1667	SDT1668
Collector-Base Voltage	60V	80V	100V	125V	150V	175V	200V	225V
Collector-Emitter Voltage	40V	60V	80V	100V	125V	150V	175V	200V
Emitter-Base Voltage	20V	20V	20V	20V	20V	20V	20V	20V
Continuous Collector Current ...	5A	5A	5A	5A	5A	5A	5A	5A
Peak Collector Current	10A	10A	10A	10A	10A	10A	10A	10A
Continuous Base Current	1A	1A	1A	1A	1A	1A	1A	1A
Peak Base Current	2A	2A	2A	2A	2A	2A	2A	2A
Storage Temperature	−65°C to +200°C							
Operating Junction Temperature .	−65°C to +200°C							
Power Dissipation (25°C Case) .	105W (TO-3)				52.5W (TO-66)			
Power Dissipation (100°C Case) .	60W (TO-3)				30 W (TO-66)			

Thermal Resistance:........... Θ_{jc}= 1.67°C/W max. (TO-3), 3.33°C/W max (TO-66)

Thermal Time Constant of chip: 8.0 msec typical

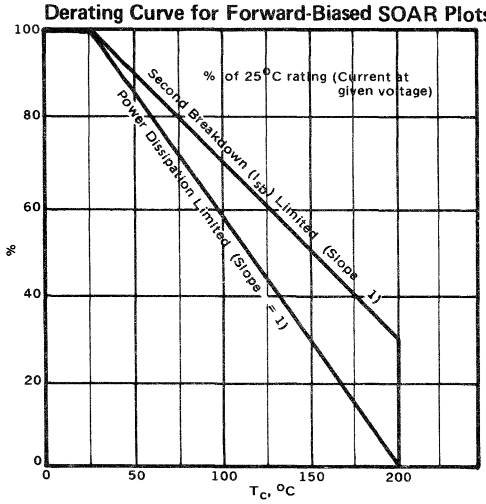
Lead Temperature 1/16″ from case for 10 sec max: 250°C

ELECTRICAL CHARACTERISTICS: T_c = 25°C unless otherwise specified

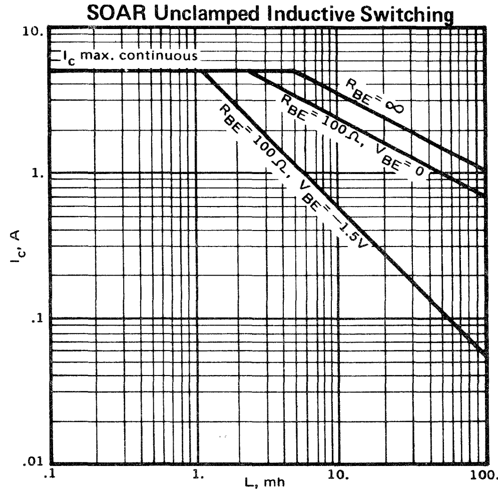
PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	TYPES
I_{CBO}		10	μA	V_{CB} = rated maximum	All
I_{CBO}		1	mA	V_{CB} = rated maximum, T_c=150°C	All
I_{CEO}		1	mA	V_{CE} = rated maximum	All
I_{EBO}		100	μA	V_{EB} = 20 V	All
V_{CEO}(sus)	40		V	I_c= 100mA	SDT1611,1621,1631,1641,1651,1661
V_{CEO}(sus)	60		V	I_c= 100mA	SDT1612,1622,1632,1642,1652,1662
V_{CEO}(sus)	80		V	I_c= 100mA	SDT1613,1623,1633,1643,1653,1663
V_{CEO}(sus)	100		V	I_c= 100mA	SDT1614,1624,1634,1644,1654,1664
V_{CEO}(sus)	125		V	I_c= 100mA	SDT1615,1625,1635,1645,1655,1665
V_{CEO}(sus)	150		V	I_c= 100mA	SDT1616,1626,1636,1646,1656,1666
V_{CEO}(sus)	175		V	I_c= 100mA	SDT1617,1627,1637,1647,1657,1667
V_{CEO}(sus)	200		V	I_c= 100mA	SDT1618,1628,1638,1648,1658,1668
h_{FE}*	20	60	–	I_c= 1.0A, V_{CE}= 5.0V	SDT1611–1618, 1641–1648
h_{FE}*	40	120	–	I_c= 1.0A, V_{CE}= 5.0V	SDT1621–1628, 1651–1658
h_{FE}*	80	–	–	I_c= 1.0A, V_{CE}= 5.0V	SDT1631–1638, 1661–1668
h_{FE}*	5	–	–	I_c= 5.0A, V_{CE}= 5.0V	SDT1611–1618, 1641–1648
h_{FE}*	10	–	–	I_c= 5.0A, V_{CE}= 5.0V	SDT1621–1628, 1651–1658
h_{FE}*	15	–	–	I_c= 5.0A, V_{CE}= 5.0V	SDT1631–1638, 1661–1668
V_{BE}(sat)*		1.5	V	I_c= 1.0A, I_B= 0.1A	All
V_{CE}(sat)*		0.5	V	I_c= 1.0A, I_B= 0.1A	All
h_{fe}	2.5	–	–	I_c= 1.0A, V_{CE}= 10V, f= 1.0MHz	All
C_{ibo}		500	pf	V_{EB}= 1.0V	All
C_{obo}		200	pf	V_{CB}= 10V	All

*Pulse width ≤ 300 μs, Duty Cycle ≤ 2%

Derating Curve for Forward-Biased SOAR Plots



SOAR Unclamped Inductive Switching



REPETITIVE PULSE OPERATION

The preceding curve gives safe operating areas for d.c. and single, non-repetitive pulse operation. For operation with repetitive pulses of fixed width and duty cycle, one may obtain the safe operating area by taking the safe area for a single pulse of the given width and derating it according to the effective case temperature by using the temperature derating curves. The effective case temperature may be found as follows:

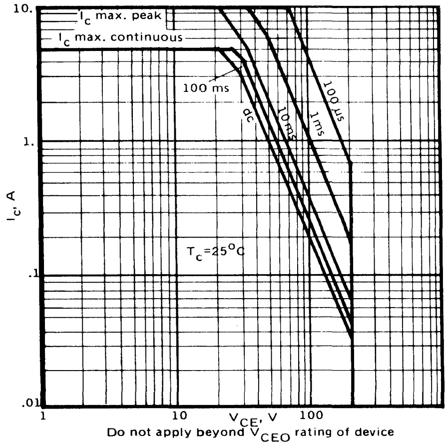
$$T_{c(eff)} = T_{ambient} + \Theta_{JA} \cdot V_{pulse} \cdot I_{pulse} \cdot d$$

or

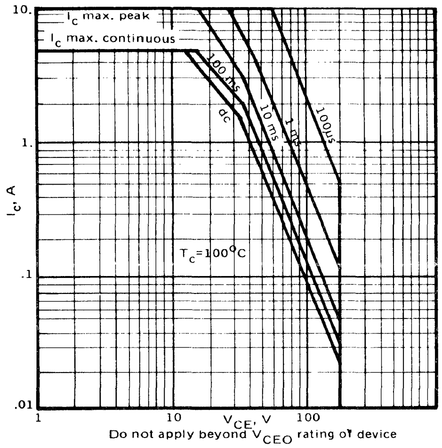
$$T_{c(eff)} = T_{case} + \Theta_{JC} \cdot V_{pulse} \cdot I_{pulse} \cdot d$$

where V_{pulse} = average voltage of pulse
I_{pulse} = average current of pulse
d = duty cycle

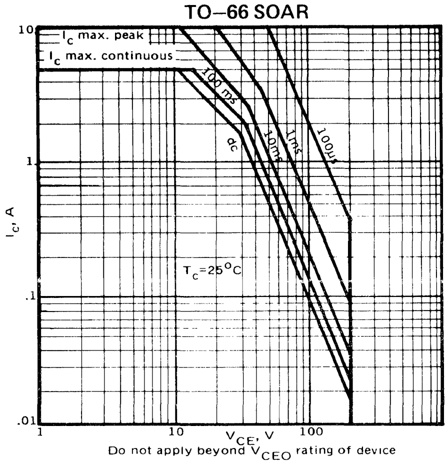
TO–3 SOAR



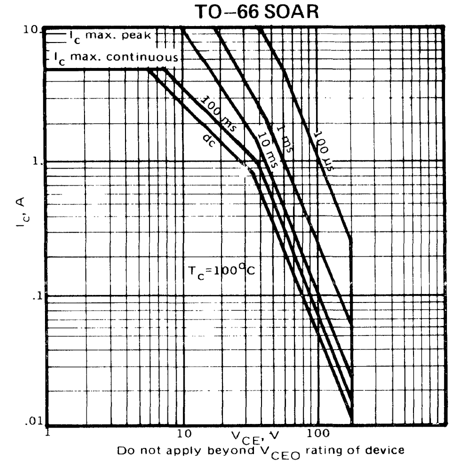
TO–3 SOAR



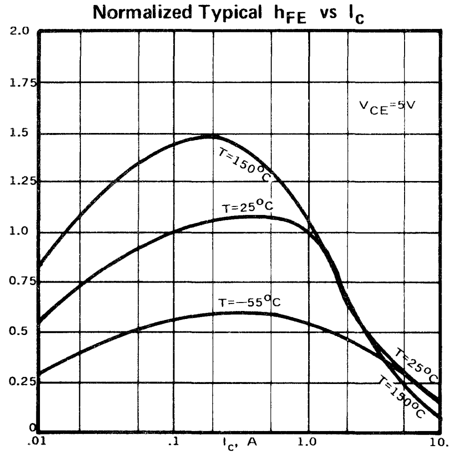
TO–66 SOAR



TO–66 SOAR

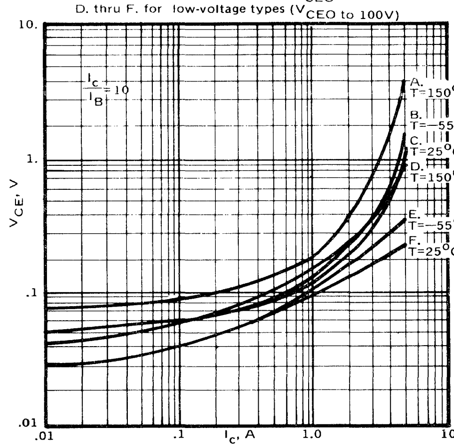


Normalized Typical h_{FE} vs I_C

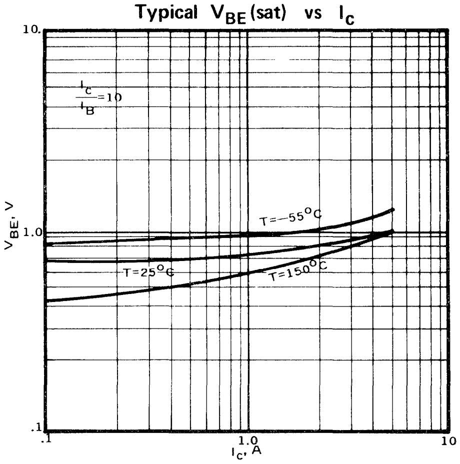


Typical V_{CE}(sat) vs I_C

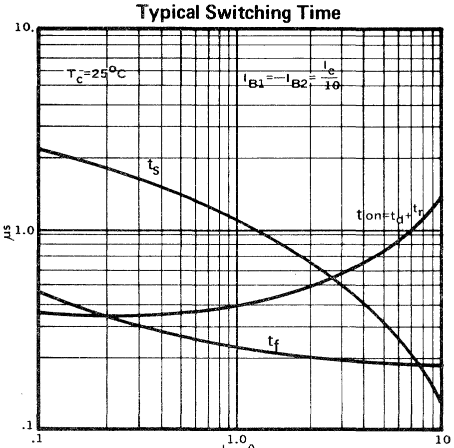
A. thru C. for high-voltage types (V_{CEO}=120V)
D. thru F. for low-voltage types (V_{CEO} to 100V)



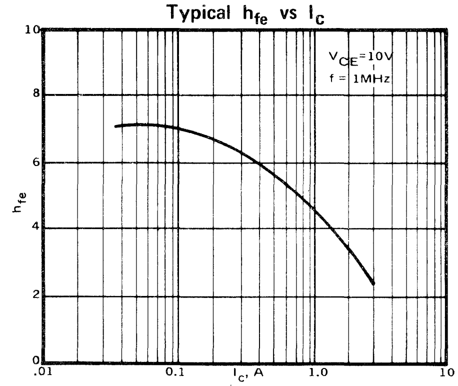
Typical V_{BE}(sat) vs I_C



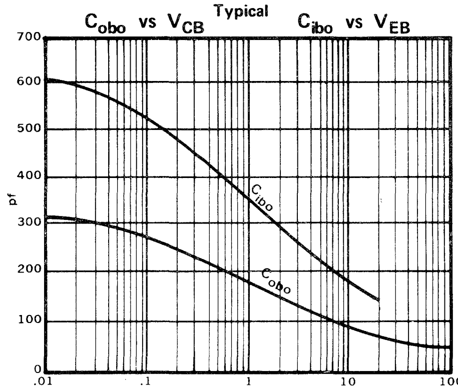
Typical Switching Time

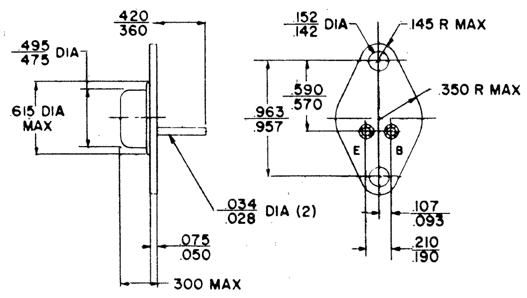


Typical h_{fe} vs I_C

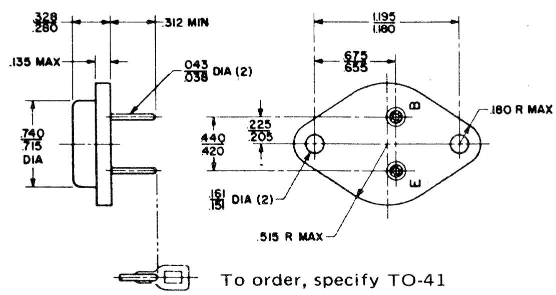


C_{obo} vs V_{CB} Typical C_{ibo} vs V_{EB}





TO–66
OUTLINE DRAWING



TO–3
OUTLINE DRAWING

SOLITRON FACILITIES

TAPPAN, N. Y.
256 Oak Tree Road
914 / 359-5050
TWX 710 / 576-2654

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311
TWX 510 / 952-7610

Hi Rel Power Transistors
Si. & Ge. Power Transistors
PNP-NPN Industrial Transistors
Power Hybrids

PORT SALERNO, FLA.
Cove Road
305 / 833-6528
TWX 510 / 953-7500

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

SAN DIEGO, CALIF.
8808 Balboa Avenue
714 / 278-8780
TWX 910 / 335-1221

FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

JUPITER, FLA.
1440 W. Indiantown Rd.
305 / 746-8311
TWX 510 / 952-7610

Microwave Stripline
Microwave Semiconductors
RF Transistors
Microwave Integrated Circuits

SOLITRON REGIONAL OFFICES

NORTHEAST
52 Pickering Street
Needham, Massachusetts 92192
Telephone (617) 444-1152, TWX (710) 325-7514

WESTERN
20944 Sherman Way, Suite 112
Canoga Park, California 91303
Telephone (213) 833-3822, TWX (910) 494-1238

SOUTHWEST
10511 Church Road, Suite No. 1
Dallas, Texas
Telephone (214)314-1180, TWX (910)861-1180

MIDWEST
Suite 218, O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone (312) 842-8127, TWX (910) 233-2634

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone (305) 848-4311, TWX (510) 952-7610

EUROPE
Solidev Ltd.
Sevenoaks, Kent, England
Telephone (Sevenoaks) 57541/2/3
Cable – Solitron Svoaks, Telex. # 95378

When you think of semiconductors ... think Solitron!

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

TO–111	TO–5
SDT3401	SDT3421
SDT3402	SDT3422
SDT3403	SDT3423
SDT3404	SDT3424

5 AMP

NPN POWER TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	SDT3401	SDT3402	SDT3421	SDT3422
BV_{CEX}	40 V	60 V	40 V	60 V
BV_{CEO}	40 V	60 V	40 V	60 V
BV_{EBO}	6 V	6 V	6 V	6 V
I_c(Max.)	5 A	5 A	5 A	5 A
I_B(Max.)	2 A	2 A	2 A	2 A
P_T(100°C Case)	30 W	30 W	5 W	5 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

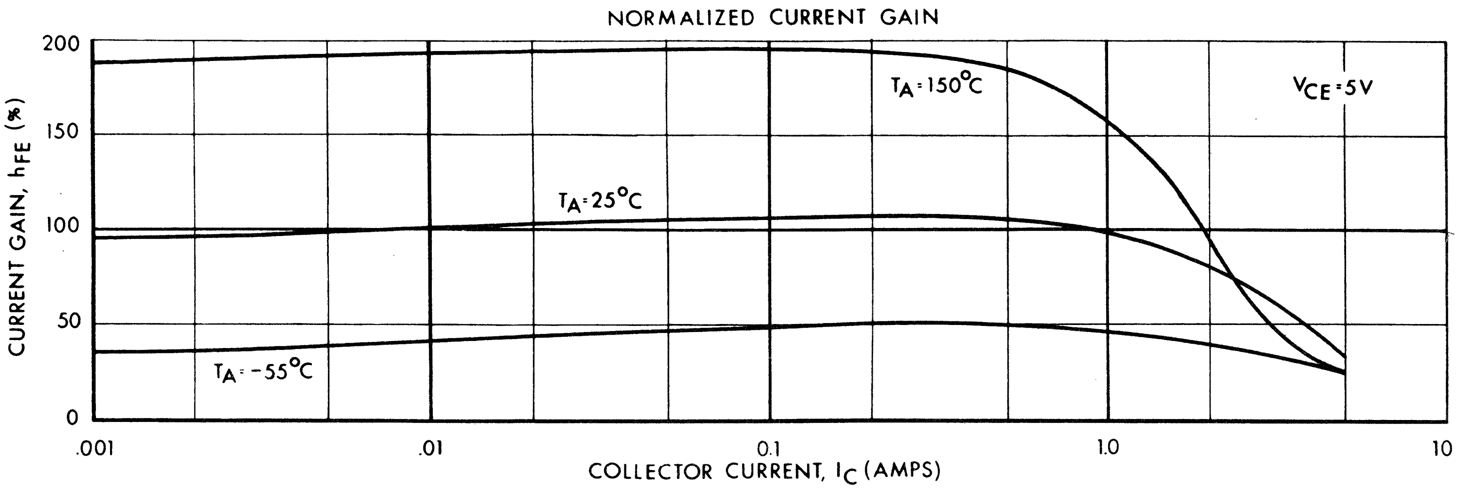
Static

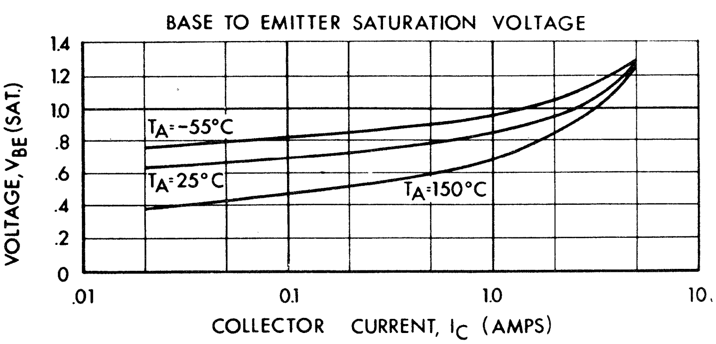
SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
V_{CEO}(sus)	I_c = 100 mA, I_B = 0	40	–	Volts	SDT3401, SDT3421
	I_c = 100 mA, I_B = 0	60	–	Volts	SDT3402, SDT3422
BV_{EBO}	I_E = 1.0 mA, I_c = 0	6.0	–	Volts	All
I_{CEX}	V_{CE} = Rated V_{CEX}, V_{BE} = –1.5V	–	10	μA	All
	V_{CE} = Rated V_{CEX}, V_{BE} = –1.5V, T_A = 150°C	–	500	μA	All
I_{EBO}	V_{EB} = 4.0 V, I_c = 0	–	1.0	μA	All
h_{FE}	I_c = 2.0 A, V_{CE} = 5.0 V	40	120	–	All
V_{CE}(sat)	I_c = 2.0 A, I_B = 0.2 A	–	0.75	Volts	All
V_{BE}(sat)	I_c = 2.0 A, I_B = 0.2 A	–	1.50	Volts	All

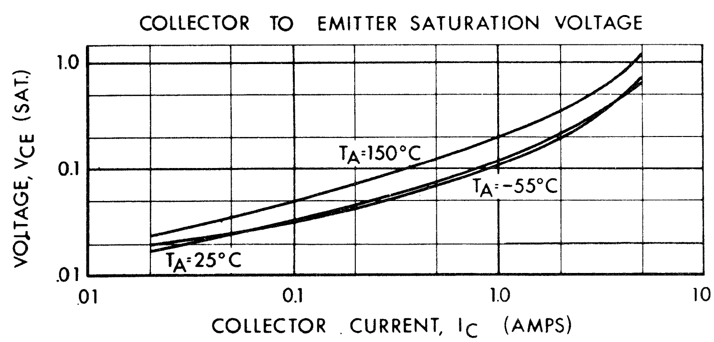
Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
C_{OBO}	V_{CB} = 10 V, f = 1 MHz	–	200	pf	All
f_t	V_{CE} = 10 V, I_c = 1.0 A	40	–	MHz	All
t_r	I_c = 2.0A, I_{B_1} = I_{B_2} = 0.2A	–	500	nsec	All
t_s	I_c = 2.0A, I_{B_1} = I_{B_2} = 0.2A	–	1000	nsec	All
t_f	I_c = 2.0A, I_{B_1} = I_{B_2} = 0.2A	–	300	nsec	All

CHARACTERISTIC CURVES (ALL TYPES)







ELECTRICALLY IDENTICAL TRANSISTORS

PNP	NPN	PNP	NPN
SDT3301	SDT3401	SDT3321	SDT3421
SDT3302	SDT3402	SDT3322	SDT3422
SDT3303	SDT3403	SDT3323	SDT3423
SDT3304	SDT3404	SDT3324	SDT3424

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3403	SDT3404	SDT3423	SDT3424
BV_{CEX}	80 V	100 V	80 V	100 V
BV_{CEO}	80 V	100 V	80 V	100 V
BV_{EBO}	6 V	6 V	6 V	6 V
I_c(Max.)	5 A	5 A	2 A	2 A
I_B(Max.)	2 A	2 A	2 A	2 A
P_T (100°C Case)	30 W	30 W	5 W	5 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

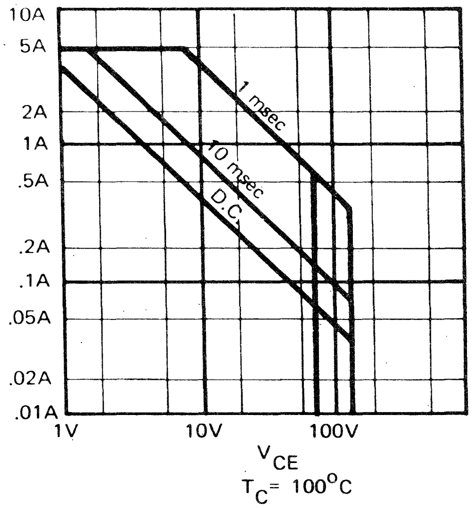
ELECTRICAL CHARACTERISTICS (25°C Ambient)

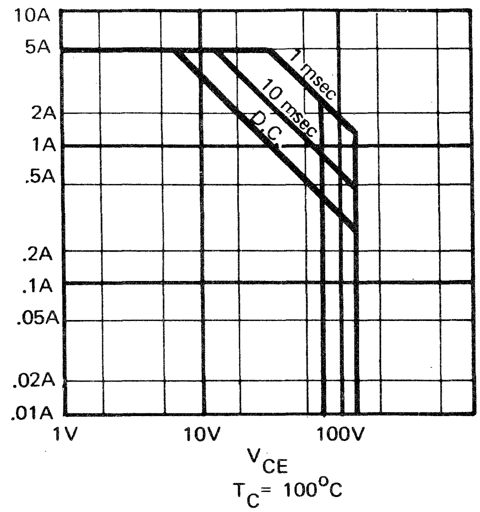
Static

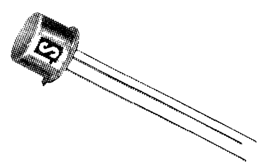
SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
V_{CEO}(sus)	$I_c = 100$ mA, $I_B = 0$	80	–	Volts	SDT3403, SDT3423
	$I_c = 100$ mA, $I_B = 0$	100	–	Volts	SDT3404, SDT3424
BV_{EBO}(sus)	$I_E = 1.0$ mA, $I_c = 0$	6	–	Volts	All
I_{CEX}	V_{CE} = Rated V_{CEX}, $V_{BE} = -1.5$V	–	10	μA	All
	V_{CE} = Rated V_{CEX}, $V_{BE} = -1.5$V, $T_A = 150°C$	–	500	μA	All
I_{EBO}	$V_{EB} = 4.0$ V, $I_c = 0$	–	1.0	μA	All
h_{FE}	$V_{CE} = 5.0$ V, $I_c = 2.0$ A	40	120	–	All
V_{CE}(sat)	$I_c = 2.0$ A, $I_B = 0.2$ A	–	0.75	Volts	All
V_{BE}(sat)	$I_c = 2.0$ A, $I_B = 0.2$ A	–	1.50	Volts	All

Dynamic

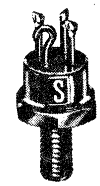
SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
C_{OBO}	$V_{CB} = 10$ V, f = 1 MHz	–	200	pf	All
f_t	$V_{CE} = 10$ V, $I_c = 1.0$ A	40	–	MHz	All
t_r	$I_c = 2.0$ A, $I_{B_1} = I_{B_2} = 0.2$ A	–	500	nsec	All
t_s	$I_c = 2.0$ A, $I_{B_1} = I_{B_2} = 0.2$ A	–	1000	nsec	All
t_f	$I_c = 2.0$ A, $I_{B_1} = I_{B_2} = 0.2$ A	–	300	nsec	All







TO–5



TO–111

SOLITRON FACILITIES

TAPPAN, N. Y.
256 Oak Tree Road
914 / 359-5050

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311

PORT SALERNO, FLA.
Cove Road
305 / 287-5000

SAN DIEGO, CALIF.
8808 Balboa Avenue
714 / 278-8780

JUPITER, FLA.
1440 W. Indiantown Rd.
305 / 746-8311

When you think of semiconductors ... think Solitron!

5 AMP SILICON PLANAR NPN POWER TRANSISTORS

SDT4451 SDT4453 SDT4455

S P E C I F I C A T I O N S

DESIGNED-IN ADVANTAGES

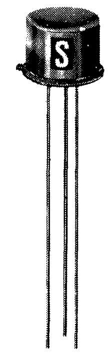
Greater Gain Linearity – planar fabrication techniques result in unusually constant gain over a wide current range. Gain is essentially flat from below 50 milliamps to over 1 amperes.

Low Saturation Voltage $V_{CE(SAT)}$ is less than 0.5V at I_C= 1A for lower losses in the saturated mode.

Minimum Long-Term Drift – planar construction eliminates surface contamination, ensuring consistent performance for the life of the device.

Fast Switching – shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents

High Frequency Response - a minimum gain cutoff frequency of 20 MHz makes these transistors desirable for high power, high frequency switching and amplifier applications.



TO-5 Actual Size

ABSOLUTE MAXIMUM RATINGS

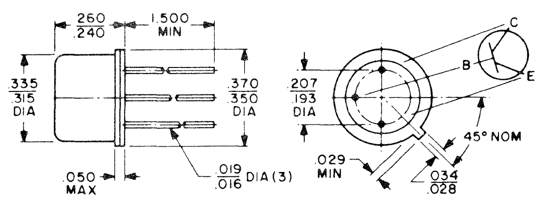
Collector-to-Base Voltage	80 Vdc max.
Collector-to-Emitter Voltage	40 Vdc max.
Emitter-to-Base Voltage	8 Vdc max.
Collector Current	5 Adc max.
Thermal Resistance, Junction to Case	25°C/W
Total Dissipation at: 100°C Case Temperature	4 W max.
Junction Temperature; Operating	+200°C max.
Storage Temperature	−65°C to +200°C

Solitron DEVICES, INC. /TRANSISTOR DIVISION

ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise noted.

Symbol	Min.	Max.	Unit	Conditions
h_{FE} (1)				$I_C = 1A$, $V_{CE} = 5V$
	20	60		SDT4451
	40	120		SDT4453
	100	—		SDT4455
$V_{BE}(sat)$ (1)(2)		2.0	Vdc	$I_C = 1A$, $I_B = 0.1A$
$V_{CE}(sat)$ (1)(2)		0.5	Vdc	$I_C = 1A$, $I_B = 0.1A$
$V_{(BR)CBO}$	80		Vdc	$I_{CBO} = 10\mu A$, $I_E = 0$
$V_{(BR)CEO}$	40		Vdc	$I_{CEO} = 10mA$, $I_B = 0$
$V_{(BR)EBO}$	8		Vdc	$I_{EBO} = 10\mu A$, $I_C = 0$
I_{CBO}		1.0 100	μAdc μAdc	$V_{CB} = 60V$, $I_E = 0$ $V_{CB} = 60V$, $I_E = 0$, $T = 150°C$
$\|h_{fe}\|$ (High Frequency Small Signal)	2.0			$V_{CE} = 10V$, $I_C = 0.2A$, $f = 10$ MHz
C_{obo}		150	pF	$I_E = 0$, $V_{CB} = 10V$, $f = 1$ MHz

OUTLINE DIMENSIONS (3) (4)



TO-5

NOTES:

1. Pulse measurement conditions: length ≤ 330 μsec; duty cycle ≤ 2%.
2. Measured within ¼" of case.
3. Collector is electrically common to case.
4. All dimensions in inches.

TYPICAL CHARACTERISTICS: The curves of the typical characteristics for these devices are very similar to those of the 2N2657 and 2N2658, including "Safe Operating Area."

For additional technical information, prices and quotations contact your local sales representative or

Solitron DEVICES, INC./TRANSISTOR DIVISION

1177 BLUE HERON BLVD. / RIVIERA BEACH, FLORIDA / (305) 848-4311 / TWX: (510) 952-6676

Leader in Germanium and Silicon Power Transistors, Cryogenic Thermometers, High Voltage Rectifiers, Hot Carrier Diodes, Temperature Compensated Zeners, Voltage Variable Capacitors, Random/White Noise Components, Microelectronic Circuits, and High-Pac Interconnection Systems.

5 AMP SILICON PLANAR NPN POWER TRANSISTORS

SDT4452 SDT4454 SDT4456

S P E C I F I C A T I O N S

DESIGNED-IN ADVANTAGES

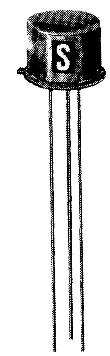
Greater Gain Linearity — planar fabrication techniques result in unusually constant gain over a wide current range. Gain is essentially flat from below 50 milliamps to over 1 amperes.

Low Saturation Voltage — V_{CE} (SAT) is less than 0.5V at I_C= 1A for lower losses in the saturated mode.

Minimum Long-Term Drift — planar construction eliminates surface contamination, ensuring consistent performance for the life of the device.

Fast Switching — shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents.

High Frequency Response — a minimum gain cutoff frequency of 20 MHz makes these transistors desirable for high power, high frequency switching and amplifier applications.



TO-5 Actual Size

ABSOLUTE MAXIMUM RATINGS

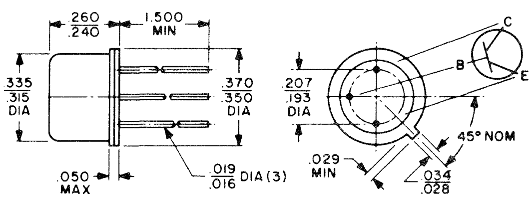
Collector-to-Base Voltage	100 Vdc max.
Collector-to-Emitter Voltage	80 Vdc max.
Emitter-to-Base Voltage	8 Vdc max.
Collector Current	5 Adc max.
Thermal Resistance; Junction to Case	25°C/W
Total Dissipation at: 100°C Case Temperature	4 W max.
Junction Temperature; Operating	+200°C max.
Storage Temperature	−65°C to +200°C

Solitron DEVICES, INC. /TRANSISTOR DIVISION

ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise noted.

Symbol	Min.	Max.	Unit	Conditions
h_{FE} (1)	20 40 100	60 120 —		$I_C = 1A$, $V_{CE} = 5V$ SDT4452 SDT4454 SDT4456
$V_{BE}(sat)$ (1)(2)		2.0	Vdc	$I_C = 1A$, $I_B = 0.1A$
$V_{CE}(sat)$ (1)(2)		0.5	Vdc	$I_C = 1A$, $I_B = 0.1A$
$V_{(BR)CBO}$	100		Vdc	$I_{CBO} = 10\mu A$, $I_E = 0$
$V_{(BR)CEO}$	80		Vdc	$I_{CEO} = 10mA$, $I_B = 0$
$V_{(BR)EBO}$	8		Vdc	$I_{EBO} = 10\mu A$, $I_C = 0$
I_{CBO}		1.0 100	μAdc μAdc	$V_{CB} = 60V$, $I_E = 0$ $V_{CB} = 60V$, $I_E = 0$, $T = 150°C$
$\lvert h_{fe} \rvert$ (High Frequency Small Signal)	2.0			$V_{CE} = 10V$, $I_C = 0.2A$, $f = 10$ MHz
C_{obo}		150	pF	$I_E = 0$, $V_{CB} = 10V$, $f = 1$ MHz

OUTLINE DIMENSIONS (3) (4)



TO-5

NOTES:

1. Pulse measurement conditions: length $\leq$ 330 μsec; duty cycle $\leq$ 2%.
2. Measured within 1/4" of case.
3. Collector is electrically common to case.
4. All dimensions in inches.

TYPICAL CHARACTERISTICS: The curves of the typical characteristics for these devices are very similar to those of the 2N2657 and 2N2658, including "Safe Operating Area."

5 AMP SILICON PLANAR NPN POWER TRANSISTORS

SDT4483

S P E C I F I C A T I O N S

DESIGNED-IN ADVANTAGES

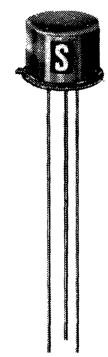
Greater Gain Linearity — planar fabrication techniques result in unusually constant gain over a wide current range. Gain is essentially flat from below 50 milliamps to over 1 amperes.

Low Saturation Voltage —V_{CE} (SAT) is less than 0.5V at $I_C = 1A$ for lower losses in the saturated mode.

Minimum Long-Term Drift — planar construction eliminates surface contamination, ensuring consistent performance for the life of the device.

Fast Switching — shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents.

High Frequency Response — a minimum gain cutoff frequency of 20 MHz makes these transistors desirable for high power, high frequency switching and amplifier applications.



TO-5 Actual Size

ABSOLUTE MAXIMUM RATINGS

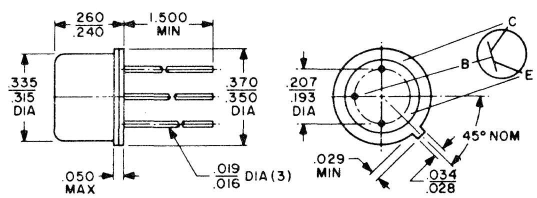
Collector-to-Base Voltage	60 Vdc max.
Collector-to-Emitter Voltage	40 Vdc max.
Emitter-to-Base Voltage	5 Vdc max.
Collector Current	5 Adc max.
Thermal Resistance; Junction to Case	25°C/W
Total Dissipation at: 100°C Case Temperature	4 W max.
Junction Temperature; Operating	+200°C max.
Storage Temperature	−65°C to +200°C

Solitron DEVICES, INC. /TRANSISTOR DIVISION

ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise noted.

Symbol	Min.	Max.	Unit	Conditions
h_{FE} (1)	20	60		$I_C = 1A$, $V_{CE} = 5V$
$V_{BE}(sat)$ (1)(2)		2.0	Vdc	$I_C = 1A$, $I_B = 0.1A$
$V_{CE}(sat)$ (1)(2)		0.5	Vdc	$I_C = 1A$, $I_B = 0.1A$
$V_{(BR)CBO}$	60		Vdc	$I_{CBO} = 10\mu A$, $I_E = 0$
$V_{(BR)CEO}$	40		Vdc	$I_{CEO} = 10mA$, $I_B = 0$
$V_{(BR)EBO}$	5		Vdc	$I_{EBO} = 10\mu A$, $I_C = 0$
I_{CBO}		1.0 100	μAdc μAdc	$V_{CB} = 60V$, $I_E = 0$ $V_{CB} = 60V$, $I_E = 0$, $T = 150°C$
$\lvert h_{fe} \rvert$ (High Frequency Small Signal)	2.0			$V_{CE} = 10V$, $I_C = 0.2A$, $f = 10$ MHz
C_{obo}		150	pF	$I_E = 0$, $V_{CB} = 10V$, $f = 1$ MHz

OUTLINE DIMENSIONS (3) (4)



TO-5

NOTES:

1. Pulse measurement conditions: length $\leq$ 330 μsec; duty cycle $\leq$ 2%.
2. Measured within ¼" of case.
3. Collector is electrically common to case.
4. All dimensions in inches.

TYPICAL CHARACTERISTICS: The curves of the typical characteristics for these devices are very similar to those of the 2N2657 and 2N2658, including "Safe Operating Area."

For additional technical information, prices and quotations contact your local sales representative or

Solitron DEVICES, INC./TRANSISTOR DIVISION

1177 BLUE HERON BLVD. / RIVIERA BEACH, FLORIDA / (305) 848-4311 / TWX: (510) 952-6676

TO–66	TO–5
SDT4901	SDT4921
SDT4902	SDT4922
SDT4903	SDT4923
SDT4904	SDT4924
SDT4905	SDT4925

5 AMP
NPN HI-VOLTAGE TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	SDT4901	SDT4902	SDT4921	SDT4922
BV_{CBO}	225 V	250 V	225 V	250 V
BV_{CEO}	200 V	225 V	200 V	225 V
BV_{EBO}	8 V	8 V	8 V	8 V
I_c(Max.)	5 A	5 A	5 A	5 A
I_B(Max.)	2 A	2 A	2 A	2 A
P_T(100°C Case)	20 W	20 W	4 W	4 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
BV_{CBO}	$I_C = 10\ \mu A$, $I_E = 0$	225	–	–	Volts	SDT4901, SDT4921
	$I_C = 10\ \mu A$, $I_E = 0$	250	–	–	Volts	SDT4902, SDT4922
BV_{EBO}	$I_E = 10\ \mu A$, $I_C = 0$	8.0	–	–	Volts	All
V_{CEO}(sus)	$I_C = 10$ mA, $I_B = 0$	200	–	–	Volts	SDT4901, SDT4921
	$I_C = 10$ mA, $I_B = 0$	225	–	–	Volts	SDT4902, SDT4922
I_{CBO}	$V_{CB} = 100$ V, $I_E = 0$	–	–	1.0	μA	All
h_{FE}	$V_{CE} = 5.0$ V, $I_C = 1.0$ A	20	–	60	–	All
V_{BE}(sat)	$I_C = 1.0$ A, $I_B = 100$ mA	–	–	1.2	Volts	All
V_{CE}(sat)	$I_C = 1.0$ A, $I_B = 100$ mA	–	–	0.4	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
C_{OB}	$V_{CB} = 10$ V, f= 1 MHz	–	–	100	pF	All
f_T	$V_{CE} = 5.0$ V, $I_C = 0.2$ A	–	40	–	MHz	All
t_d	(See Figure No. 1)	–	20	–	nsec	All
t_r	(See Figure No. 1)	–	50	–	nsec	All
t_s	(See Figure No. 1)	–	225	–	nsec	All
t_f	(See Figure No. 1)	–	200	–	nsec	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT4903 SDT4923	SDT4904 SDT4924	SDT4905 SDT4925
BV_{CBO}	275 V	300 V	325 V
BV_{CEO}	250 V	275 V	300 V
BV_{EBO}	8 V	8 V	8 V
I_C(Max.)	5 A	5 A	5 A
I_B(Max.)	2 A	2 A	2 A
P_T(100°C Case) TO-66	.20 W	20 W	20 W
P_T(100°C Case) TO-5	4 W	4 W	4 W
Operating Junction Temperature		+200°C	
Storage Temperature Range		–65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

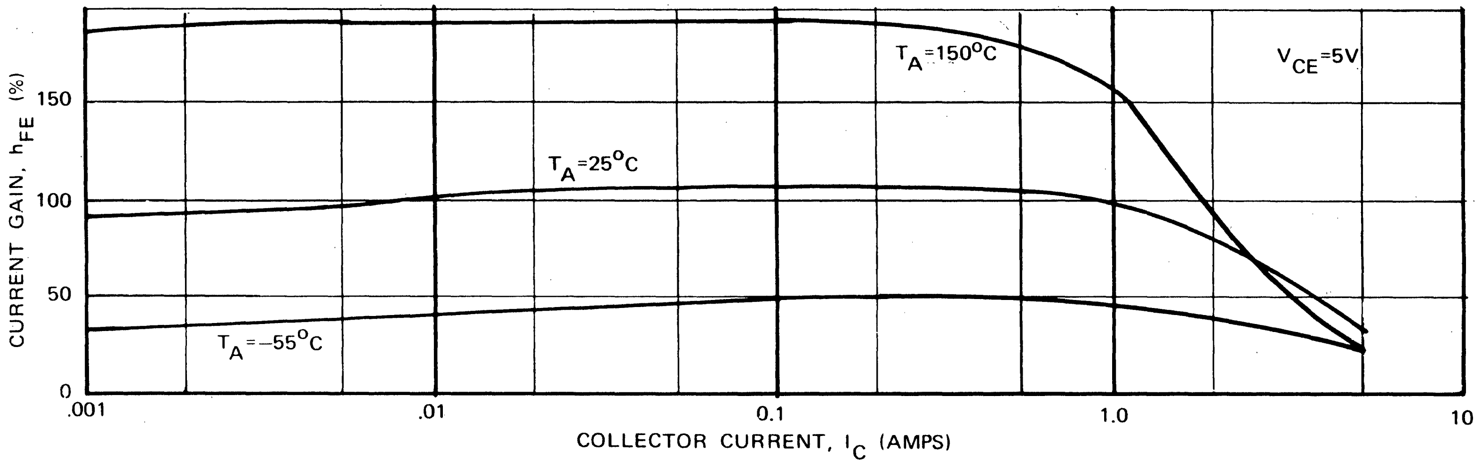
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
BV_{CBO}	$I_C = 10\ \mu A,\ I_E = 0$	275	–	–	Volts	SDT4903, SDT4923
	$I_C = 10\ \mu A,\ I_E = 0$	300	–	–	Volts	SDT4904, SDT4924
	$I_C = 10\ \mu A,\ I_E = 0$	325	–	–	Volts	SDT4905, SDT4925
BV_{EBO}	$I_E = 10\ \mu A,\ I_C = 0$	8.0	–	–	Volts	All
V_{CEO}(sus)	$I_C = 10$ mA, $I_B = 0$	250	–	–	Volts	SDT4903, SDT4923
	$I_C = 10$ mA, $I_B = 0$	275	–	–	Volts	SDT4904, SDT4924
	$I_C = 10$ mA, $I_B = 0$	300	–	–	Volts	SDT4905, SDT4925
I_{CBO}	$V_{CB} = 100$ V, $I_E = 0$	–	–	1.0	μA	All
h_{FE}	$V_{CE} = 5.0$ V, $I_C = 1.0$ A	20	–	60	–	All
V_{BE}(sat)	$I_C = 1.0$ A, $I_B = 100$ mA	–	–	1.2	Volts	All
V_{CE}(sat)	$I_C = 1.0$ A, $I_B = 100$ mA	–	–	0.4	Volts	All

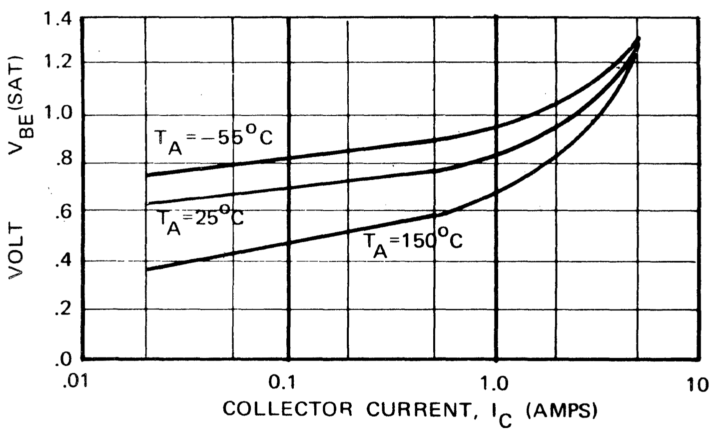
Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
C_{OB}	$V_{CB} = 10$ V, f= 1 MHz	–	–	100	p_F	All
f_T	$V_{CE} = 5.0$ V, $I_C = 0.2$ A	–	40	–	MHz	All
t_d	(See Figure No. 1)	–	20	–	nsec	All
t_r	(See Figure No 1)	–	50	–	nsec	All
t_s	(See Figure No. 1)	–	225	–	nsec	All
t_f	(See Figure No. 1)	–	200	–	nsec	All

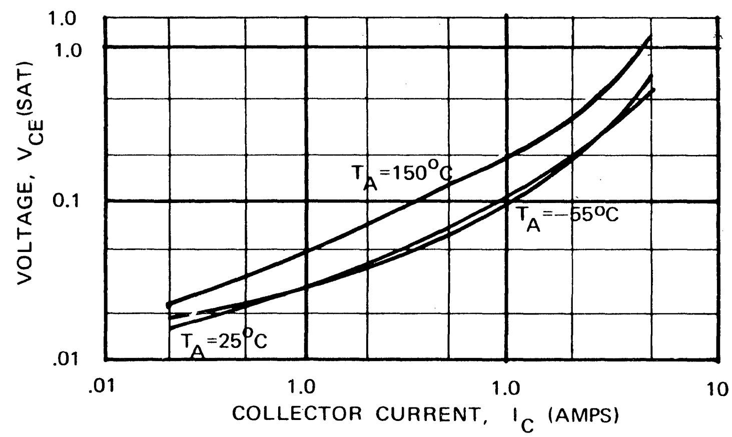
CHARACTERISTIC CURVES (ALL TYPES)



h_{FE} vs I_C

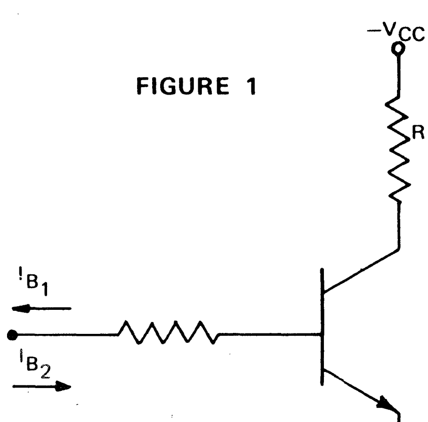


V_{BE}(sat) vs I_C

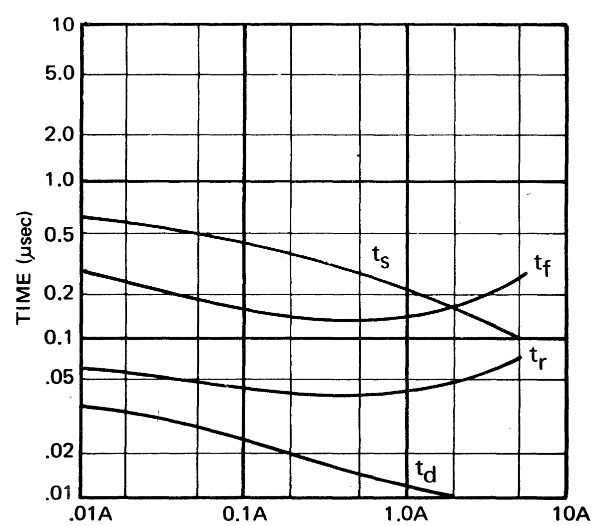


V_{CE}(sat) vs I_C

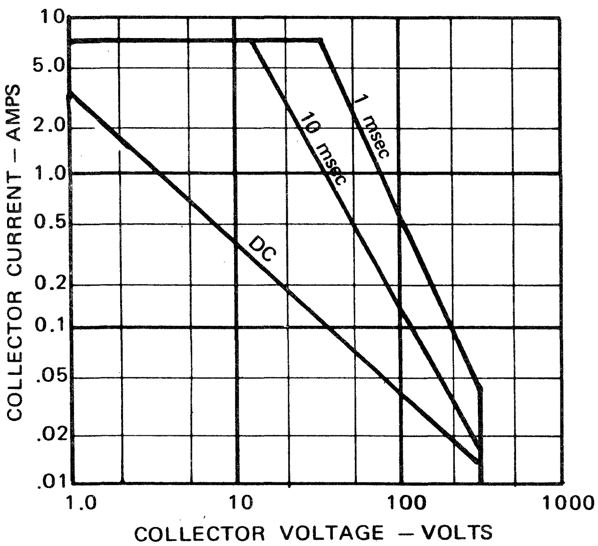
FIGURE 1

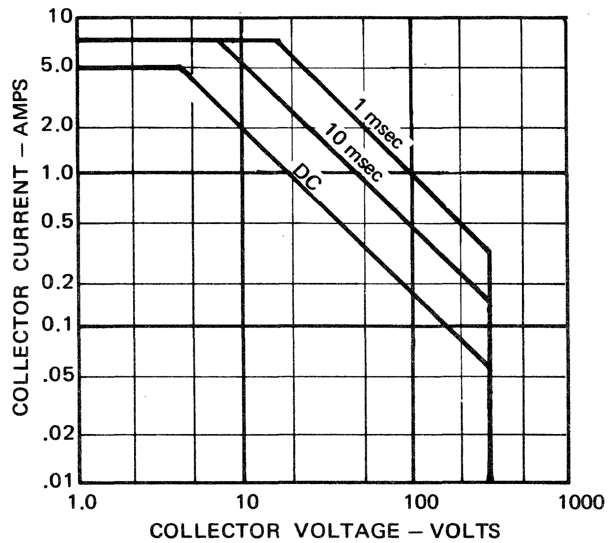


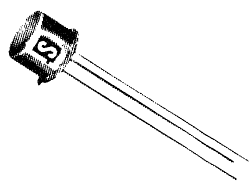
V_{CC}= 10 V, I_c= 1.0 A, I_{B1}=I_{B2}= 0.1 A
R_L = 10 Ω



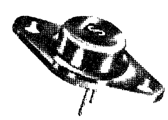
SWITCHING TIME vs I_c — AMPS


10
5.0
2.0
1.0
0.5
0.2
0.1
.05
.02
.01
1.0
10
100
1000
COLLECTOR CURRENT – AMPS
COLLECTOR VOLTAGE – VOLTS
1 msec
10 msec
DC


10
5.0
2.0
1.0
0.5
0.2
0.1
.05
.02
.01
1.0
10
100
1000
COLLECTOR CURRENT – AMPS
COLLECTOR VOLTAGE – VOLTS
1 msec
10 msec
DC



TO–5



TO–66

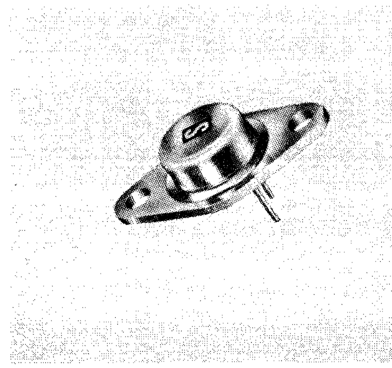
SDT 5901
SDT 5902
SDT 5903

NPN SILICON POWER TRANSISTORS

2 AMPERES – FAST SWITCHING

FEATURES:
HIGH RELIABILITY, MEDIUM POWER, PLANAR CONSTRUCTION

APPLICATIONS:
HIGH SPEED SWITCHING AND LINEAR AMPLIFIER APPLICATIONS



TO-66

ABSOLUTE MAXIMUM RATINGS
@ 25° C (unless otherwise noted)

		SDT 5901	SDT 5902	SDT 5903
V_{CBO}	COLLECTOR-BASE VOLTAGE	60 V	80 V	100 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	40 V	60 V	80 V
V_{EBO}	EMITTER-BASE VOLTAGE	8 V	8 V	8 V
I_C	CONTINUOUS COLLECTOR CURRENT	2 A	2 A	2 A
I_C (PK)	PEAK COLLECTOR CURRENT	5 A	5 A	5 A
I_B	CONTINUOUS BASE CURRENT	1 A	1 A	1 A
I_B (PK)	PEAK BASE CURRENT	2 A	2 A	2 A
T_J	OPERATING JUNCTION TEMPERATURE		-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE		-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	5°C/W	5°C/W	5°C/W
P_D	POWER DISSIPATION (25°C)	35 W	35 W	35 W

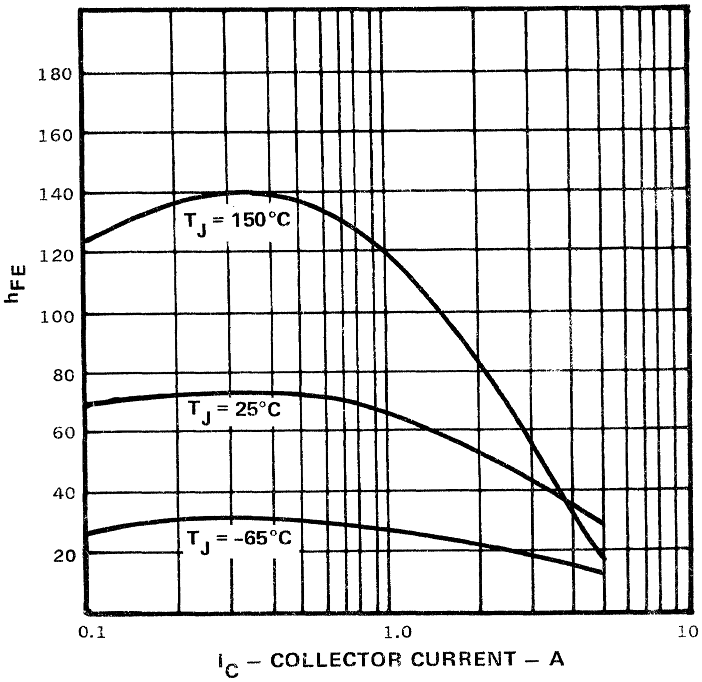
ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 10 mA)*	$V_{CEO(sus)}$			
SDT 5901		40		V
SDT 5902		60		V
SDT 5903		80		V
*PULSED (INDUCTIVE SWEEP 60 Hz)				
COLLECTOR-BASE BREAKDOWN VOLTAGE (I_C = 10μA)	V_{CBO}			
SDT 5901		60		V
SDT 5902		80		V
SDT 5903		100		V
EMITTER-BASE VOLTAGE (I_E = 10μA)	V_{EBO}	8		V
COLLECTOR-CUTOFF CURRENT	I_{CBO}			
SDT 5901 V_{CB} = 30 V			0.1	μA
SDT 5902 V_{CB} = 30 V			0.1	μA
SDT 5903 V_{CB} = 60 V			0.1	μA
COLLECTOR-CUTOFF CURRENT T_C = 150°C	I_{CBO}			
SDT 5901 V_{CB} = 30 V			10	μA
SDT 5902 V_{CB} = 30 V			10	μA
SDT 5903 V_{CB} = 60 V			10	μA
DC CURRENT GAIN	h_{FE}			
(I_C = 0.5 A V_{CE} = 5 V)**		50	150	
(I_C = 2.0 A V_{CE} = 5 V)**		10		
COLLECTOR-EMITTER SATURATION VOLTAGE	$V_{CE(sat)}$			
(I_C = 0.5 A I_B = 0.05 A)**			0.35	V
(I_C = 2.0 A I_B = 0.2 A)**			0.8	V
BASE EMITTER SATURATION VOLTAGE	$V_{BE(sat)}$			
(I_C = 0.5 A I_B = 0.05 A)**			1.2	V
(I_C = 2.0 A I_B = 0.2 A)**			1.4	V
TRANSITION FREQUENCY (I_C = 0.1 A V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	50		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		50	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1)				
TURN-ON TIME	t_{on}		150	ns
STORAGE TIME	t_s		700	ns
FALL TIME	t_f		170	ns
V_{CC} = 40 V, I_C = 2.0 A, I_{B1} = I_{B2} = 0.2 A, t_p = 10μs				
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1 sec NON REPETITIVE, V_{CE} = 20 V)	$I_{s/b}$	1.5		A

**PULSED—300 μs—2%

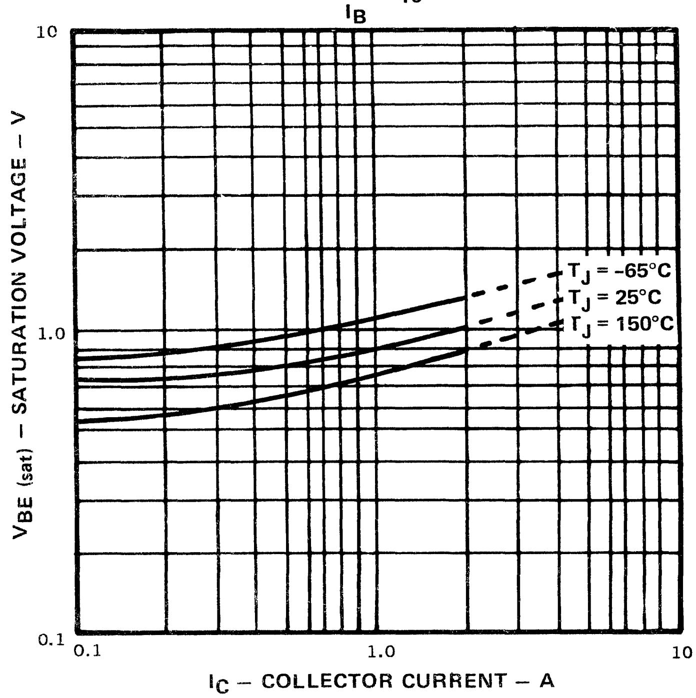
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO

$V_{CE} = 5\ V$



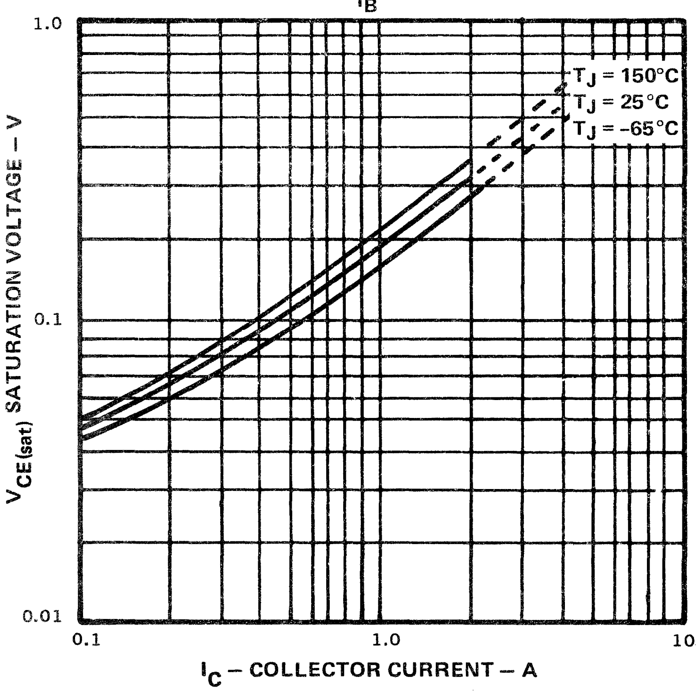
TYPICAL BASE EMITTER SATURATION VOLTAGE

$\frac{I_C}{I_B} = 10$



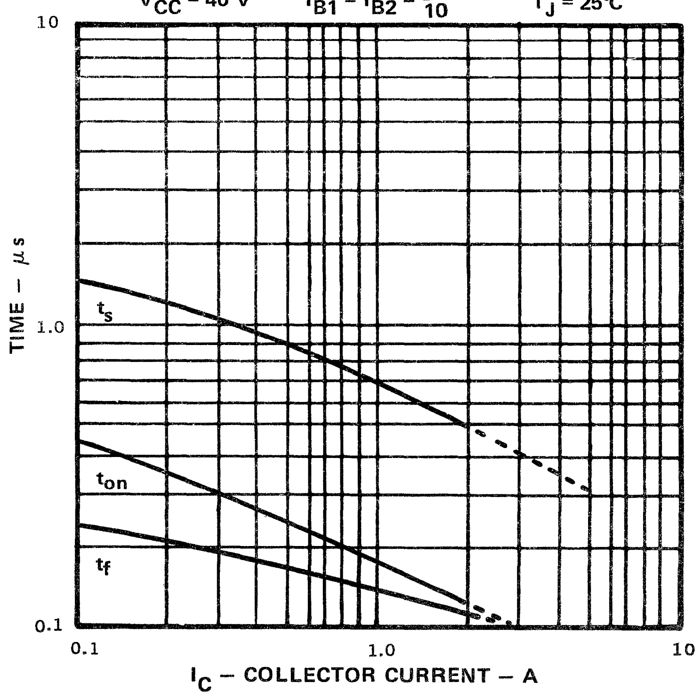
TYPICAL COLLECTOR–EMITTER SATURATION VOLTAGE

$\frac{I_C}{I_B} = 10$



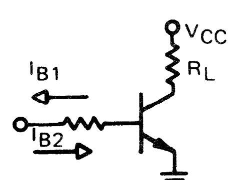
TYPICAL SWITCHING TIME

$V_{CC} = 40\ V$ $I_{B1} = I_{B2} = \frac{I_C}{10}$ $T_J = 25°C$

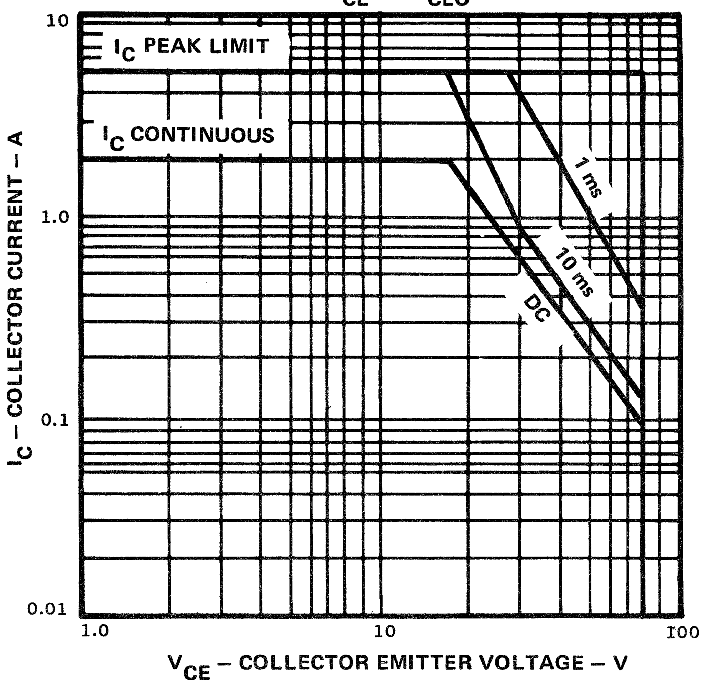


TYPICAL RESISTIVE SWITCHING CKT.

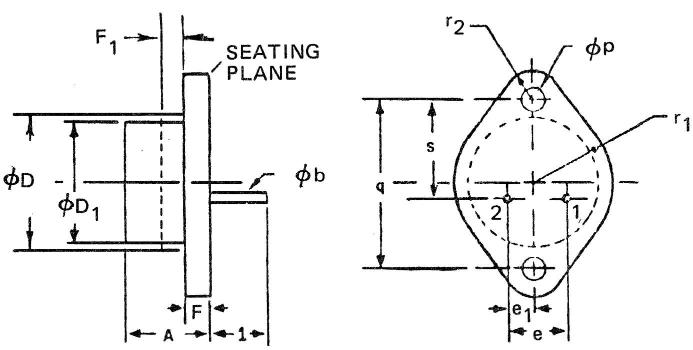
FIG. 1



MAXIMUM OPERATING CONDITIONS
$T_C = 25°C$
DERATE V_{CE} TO V_{CEO} MAX.



OUTLINE DRAWING FOR TO-66



NOTES:

1. THE OUTLINE CONTOUR IS OPTIONAL WITHIN ZONE DEFINED BY ϕD and F_1.
2. DIMENSION DOES NOT INCLUDE SEALING FLANGES.
3. CONTROLLING DIMENSIONS: INCH

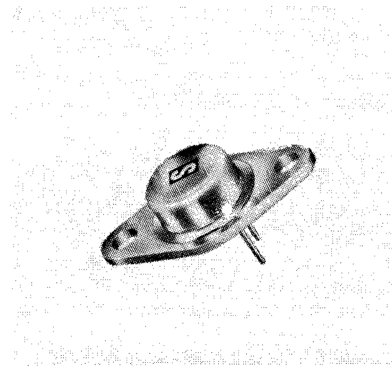
SYMBOL	MILLIMETERS			INCHES		
	AA		NOTE	AA		NOTE
	MIN.	MAX.		MIN.	MAX.	
A	6.35	8.64		0.250	0.340	
ϕb	0.711	0.863		0.028	0.034	
ϕD		15.75			0.620	
ϕD_1	11.94	12.70		0.470	0.500	
e	4.83	5.33		0.190	0.210	
e_1	2.36	2.72		0.093	0.107	
F	1.27	1.91	2	0.050	0.075	2
F_1		1.27	1		0.050	1
1	9.14			0.360		
ϕp	3.61	3.86		0.142	0.152	
q	24.33	24.43		0.958	0.962	
r_1		8.89			0.350	
r_2		3.68			0.145	
s	14.48	14.99		0.570	0.590	
NOTE	3			3		

NPN SILICON POWER TRANSISTORS

2 AMPERES – FAST SWITCHING

FEATURES:
HIGH RELIABILITY, MEDIUM POWER, PLANAR CONSTRUCTION

APPLICATIONS:
HIGH SPEED SWITCHING AND LINEAR AMPLIFIER APPLICATIONS



TO-66

ABSOLUTE MAXIMUM RATINGS
@ 25° C (unless otherwise noted)

		SDT 5904	SDT 5905
V_{CBO}	COLLECTOR-BASE VOLTAGE	140 V	180 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	100 V	120 V
V_{EBO}	EMITTER-BASE VOLTAGE	8 V	8 V
I_C	CONTINUOUS COLLECTOR CURRENT	2 A	2 A
I_C (PK)	PEAK COLLECTOR CURRENT	5 A	5 A
I_B	CONTINUOUS BASE CURRENT	1 A	1 A
I_B (PK)	PEAK BASE CURRENT	2 A	2 A
T_J	OPERATING JUNCTION TEMPERATURE	-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	5°C/W	5°C/W
P_D	POWER DISSIPATION (25°C)	35 W	35 W

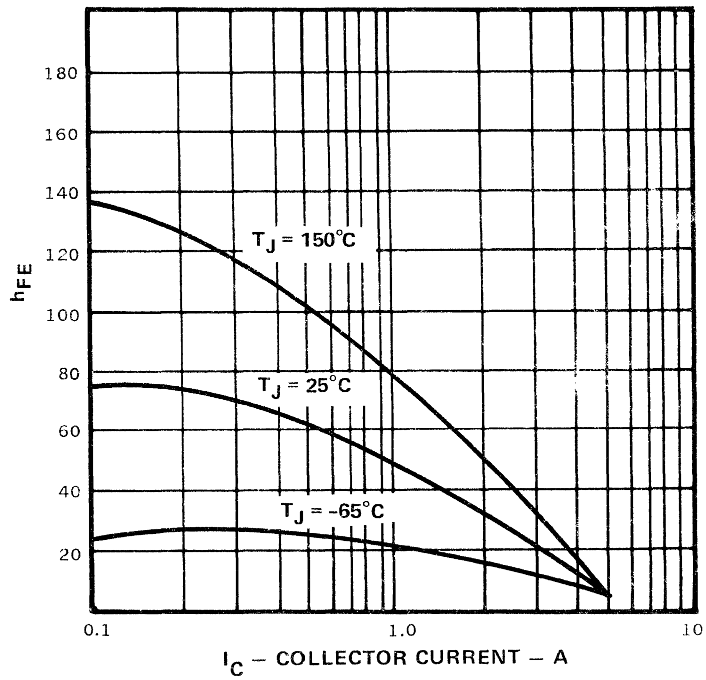
ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 10 mA)* SDT 5904 SDT 5905 *PULSED (INDUCTIVE SWEEP 60 Hz)	$V_{CEO(sus)}$	 100 120		 V V
COLLECTOR-BASE BREAKDOWN VOLTAGE (I_C = 10μA) SDT 5904 SDT 5905	V_{CBO}	 140 180		 V V
EMITTER-BASE VOLTAGE (I_E = 10μA)	V_{EBO}	8		V
COLLECTOR-CUTOFF CURRENT SDT 5904 V_{CB} = 60 V SDT 5905 V_{CB} = 60 V	I_{CBO}		 0.1 0.1	 μA μA
COLLECTOR-CUTOFF CURRENT T_C = 150°C SDT 5904 V_{CB} = 60 V SDT 5905 V_{CB} = 60 V	I_{CBO}		 10 10	 μA μA
DC CURRENT GAIN (I_C = 0.5 A V_{CE} = 5 V)** (I_C = 2.0 A V_{CE} = 5 V)**	h_{FE}	 50 10	 150	
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 0.5 A I_B = 0.05 A)** (I_C = 2.0 A I_B = 0.2 A)**	$V_{CE(sat)}$		 0.35 0.8	 V V
BASE EMITTER SATURATION VOLTAGE (I_C = 0.5 A I_B = 0.05 A)** (I_C = 2.0 A I_B = 0.2 A)**	$V_{BE(sat)}$		 1.2 1.4	 V V
TRANSITION FREQUENCY (I_C = 0.1 A V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	 50		 MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		 50	 pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME V_{CC} = 40 V, I_C = 2.0 A, I_{B1} = I_{B2} = 0.2 A, t_p = 10μs	 t_{on} t_s t_f		 150 700 170	 ns ns ns
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1 sec NON REPETITIVE, V_{CE} = 30 V)	$I_{s/b}$	1.0		A

**PULSED—300 μs—2%

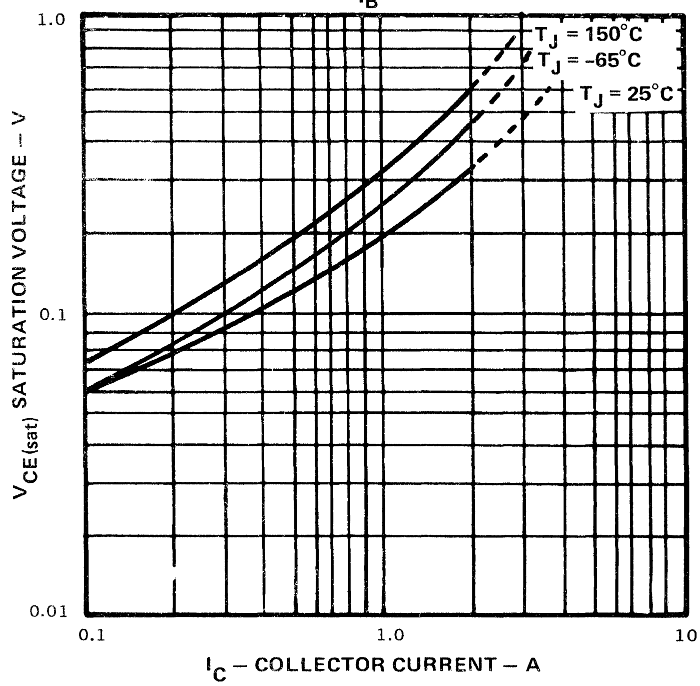
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO

$V_{CE} = 5\ V$



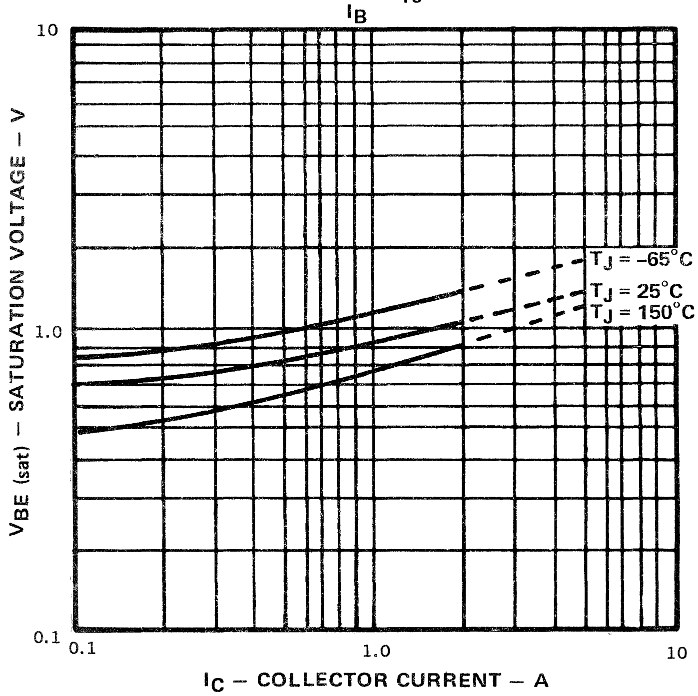
TYPICAL COLLECTOR–EMITTER SATURATION VOLTAGE

$\frac{I_C}{I_B} = 10$



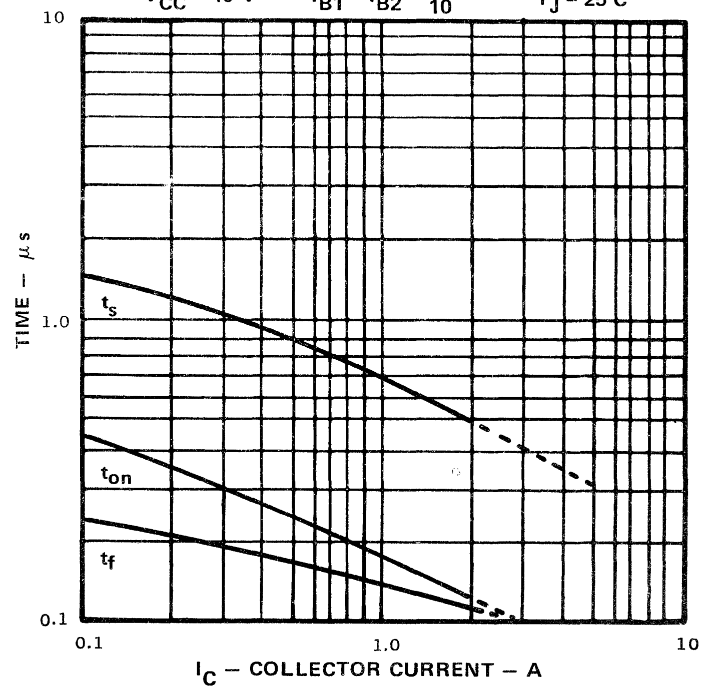
TYPICAL BASE EMITTER SATURATION VOLTAGE

$\frac{I_C}{I_B} = 10$



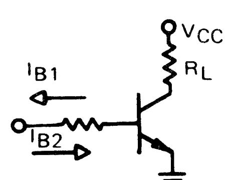
TYPICAL SWITCHING TIME

$V_{CC} = 40\ V$ $\quad I_{B1} = I_{B2} = \frac{I_C}{10}$ $\quad T_J = 25°C$



TYPICAL RESISTIVE SWITCHING CKT.

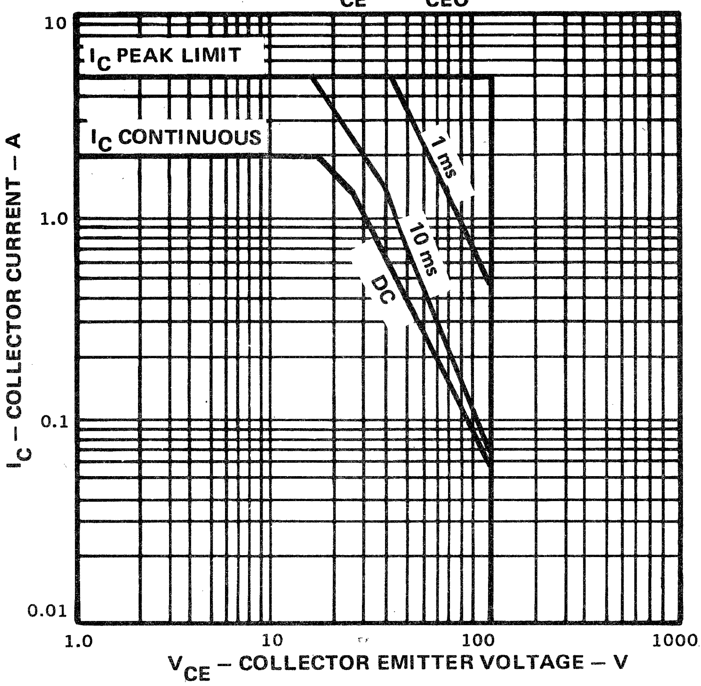
FIG. 1



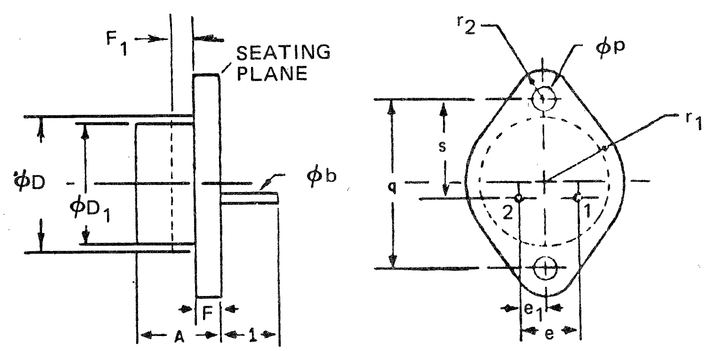
MAXIMUM OPERATING CONDITIONS

$T_C = 25°C$

DERATE V_{CE} TO V_{CEO} MAX.



OUTLINE DRAWING FOR TO-66



NOTES:

1. THE OUTLINE CONTOUR IS OPTIONAL WITHIN ZONE DEFINED BY ϕD and F_1.
2. DIMENSION DOES NOT INCLUDE SEALING FLANGES.
3. CONTROLLING DIMENSIONS: INCH

SYMBOL	MILLIMETERS AA MIN.	MILLIMETERS AA MAX.	NOTE	INCHES AA MIN.	INCHES AA MAX.	NOTE
A	6.35	8.64		0.250	0.340	
ϕb	0.711	0.863		0.028	0.034	
ϕD		15.75			0.620	
ϕD_1	11.94	12.70		0.470	0.500	
e	4.83	5.33		0.190	0.210	
e_1	2.36	2.72		0.093	0.107	
F	1.27	1.91	2	0.050	0.075	2
F_1		1.27	1		0.050	1
l	9.14			0.360		
ϕp	3.61	3.86		0.142	0.152	
q	24.33	24.43		0.958	0.962	
r_1		8.89			0.350	
r_2		3.68			0.145	
s	14.48	14.99		0.570	0.590	
NOTE	3			3		

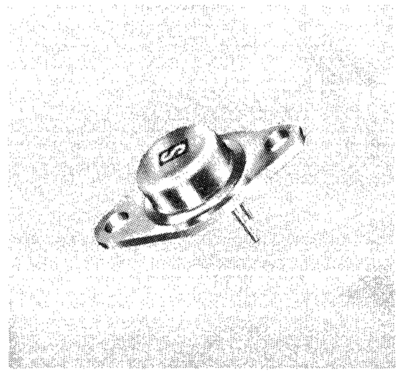
SDT 5906
SDT 5907
SDT 5908

NPN SILICON POWER TRANSISTORS

2 AMPERES – FAST SWITCHING

FEATURES:
HIGH RELIABILITY, MEDIUM POWER, PLANAR CONSTRUCTION

APPLICATIONS:
HIGH SPEED SWITCHING AND LINEAR AMPLIFIER APPLICATIONS



TO-66

ABSOLUTE MAXIMUM RATINGS
@ 25° C (unless otherwise noted)

		SDT 5906	SDT 5907	SDT 5908
V_{CBO}	COLLECTOR-BASE VOLTAGE	60 V	80 V	100 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	40 V	60 V	80 V
V_{EBO}	EMITTER-BASE VOLTAGE	8 V	8 V	8 V
I_C	CONTINUOUS COLLECTOR CURRENT	2 A	2 A	2 A
I_C (PK)	PEAK COLLECTOR CURRENT	5 A	5 A	5 A
I_B	CONTINUOUS BASE CURRENT	1 A	1 A	1 A
I_B (PK)	PEAK BASE CURRENT	2 A	2 A	2 A
T_J	OPERATING JUNCTION TEMPERATURE		-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE		-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	5°C/W	5°C/W	5°C/W
P_D	POWER DISSIPATION (25°C)	35 W	35 W	35 W

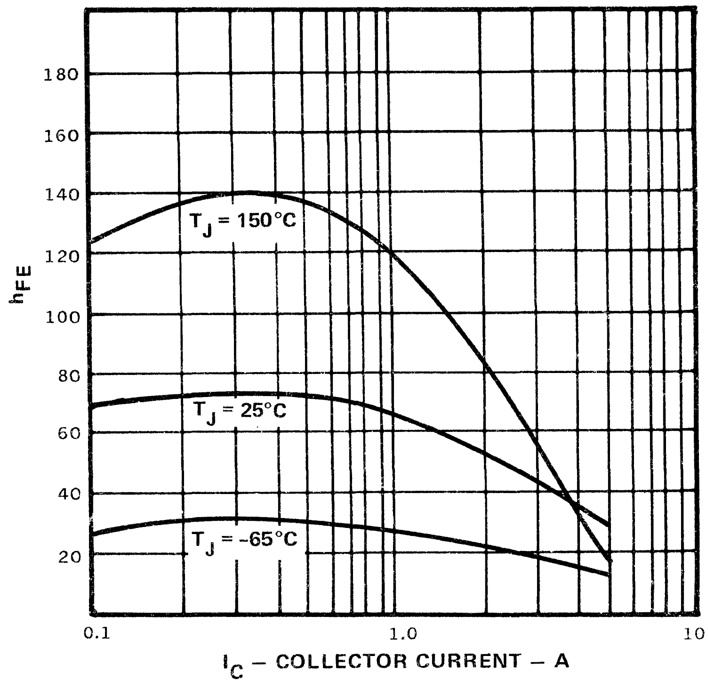
REV. 7-77-91

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

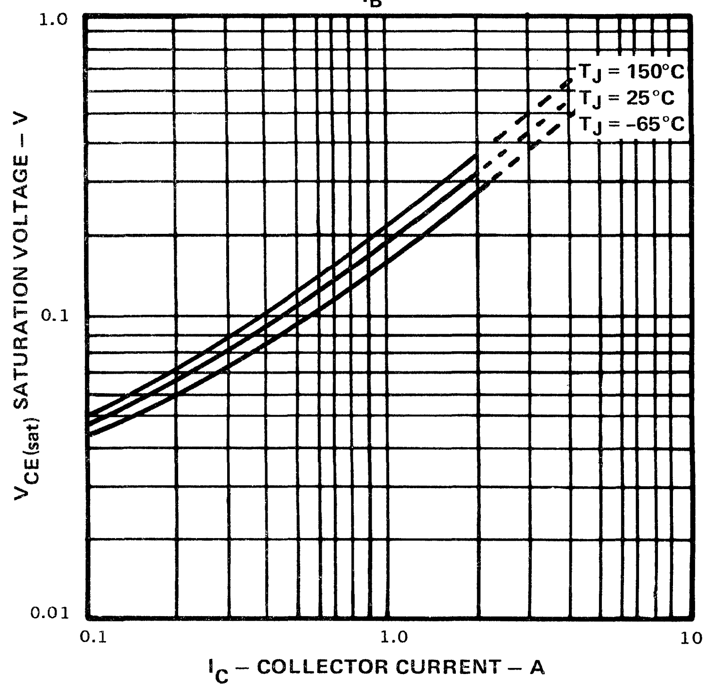
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 10 mA)* SDT 5906 SDT 5907 SDT 5908 *PULSED (INDUCTIVE SWEEP 60 Hz)	$V_{CEO(sus)}$	 40 60 80		 V V V
COLLECTOR-BASE BREAKDOWN VOLTAGE (I_C = 10μA) SDT 5906 SDT 5907 SDT 5908	V_{CBO}	 60 80 100		 V V V
EMITTER-BASE VOLTAGE (I_E = 10μA)	V_{EBO}	8		V
COLLECTOR-CUTOFF CURRENT SDT 5906 V_{CB} = 30 V SDT 5907 V_{CB} = 30 V SDT 5908 V_{CB} = 60 V	I_{CBO}		 0.1 0.1 0.1	 μA μA μA
COLLECTOR-CUTOFF CURRENT T_C = 150°C SDT 5906 V_{CB} = 30 V SDT 5907 V_{CB} = 30 V SDT 5908 V_{CB} = 60 V	I_{CBO}		 10 10 10	 μA μA μA
DC CURRENT GAIN (I_C = 0.5 A V_{CE} = 5 V)**	h_{FE}	30		
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 0.5 A I_B = 0.05 A)**	$V_{CE(sat)}$		0.35	V V
BASE EMITTER SATURATION VOLTAGE (I_C = 0.5 A I_B = 0.05 A)**	$V_{BE(sat)}$		1.2	V V
TRANSITION FREQUENCY (I_C = 0.1 A V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	50		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		50	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME V_{CC} = 40 V, I_C = 1.0 A, I_{B1} = I_{B2} = 0.1 A, t_p = 10μs	 t_{on} t_s t_f		 250 1000 200	 ns ns ns
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1 sec NON REPETITIVE, V_{CE} = 20 V)	$I_{s/b}$	1.5		A

**PULSED—300 μs—2%

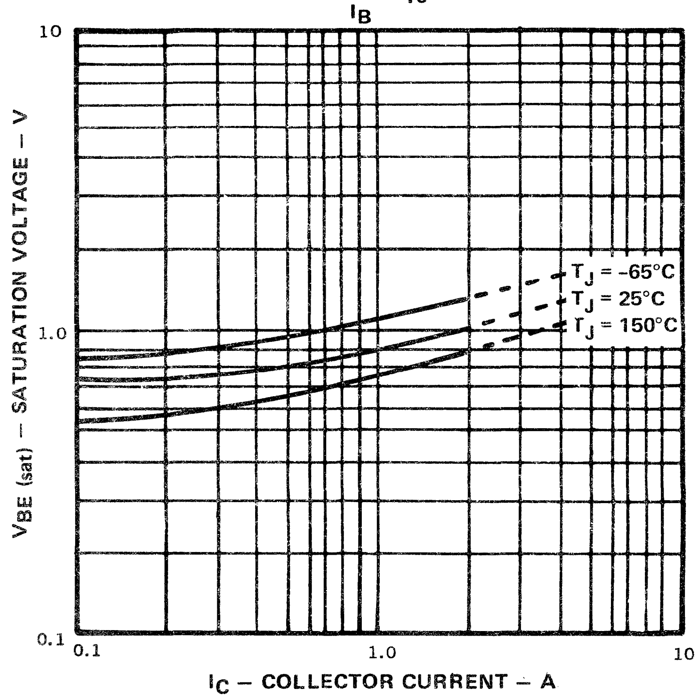
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5$ V



TYPICAL COLLECTOR–EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

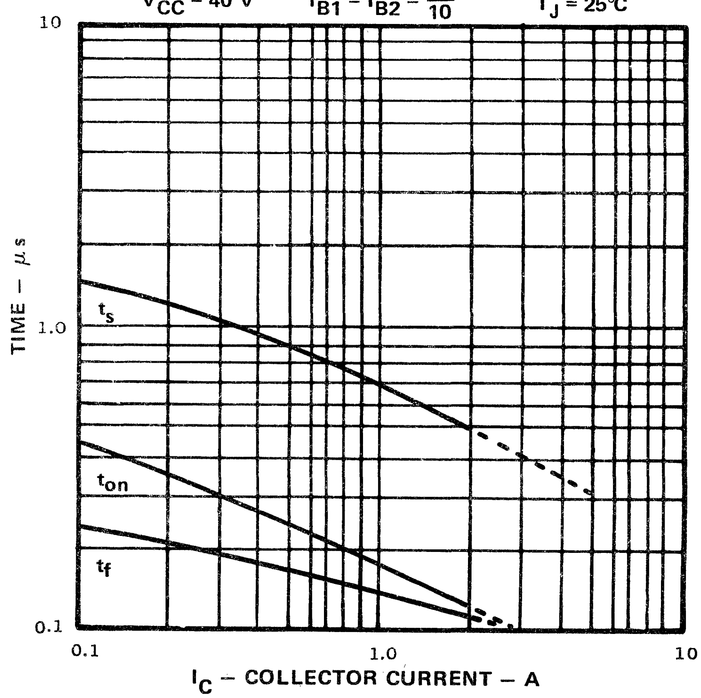


TYPICAL BASE EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



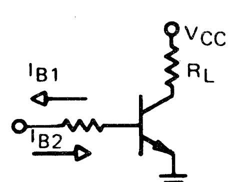
TYPICAL SWITCHING TIME

$V_{CC} = 40$ V $\quad I_{B1} = I_{B2} = \frac{I_C}{10} \quad T_J = 25°C$



TYPICAL
RESISTIVE SWITCHING CKT.

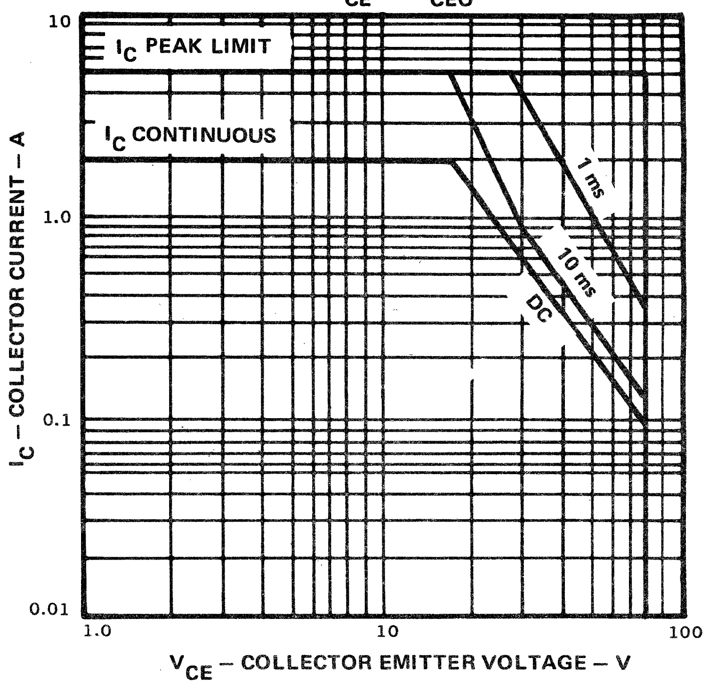
FIG. 1



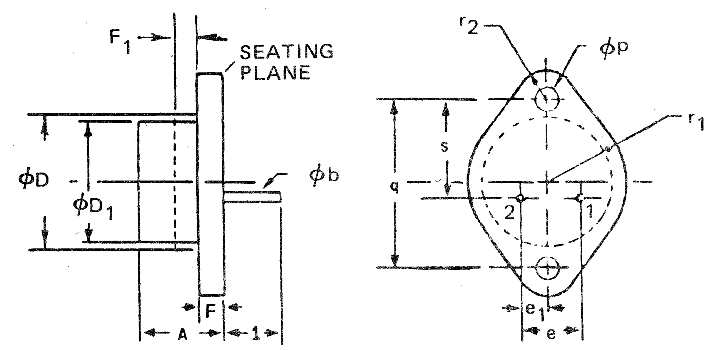
MAXIMUM OPERATING CONDITIONS

$T_C = 25°C$

DERATE V_{CE} TO V_{CEO} MAX.



OUTLINE DRAWING FOR TO-66



SYMBOL	MILLIMETERS AA MIN.	MILLIMETERS AA MAX.	NOTE	INCHES AA MIN.	INCHES AA MAX.	NOTE
A	6.35	8.64		0.250	0.340	
ϕb	0.711	0.863		0.028	0.034	
ϕD		15.75			0.620	
ϕD_1	11.94	12.70		0.470	0.500	
e	4.83	5.33		0.190	0.210	
e_1	2.36	2.72		0.093	0.107	
F	1.27	1.91	2	0.050	0.075	2
F_1		1.27	1		0.050	1
l	9.14			0.360		
ϕp	3.61	3.86		0.142	0.152	
q	24.33	24.43		0.958	0.962	
r_1		8.89			0.350	
r_2		3.68			0.145	
s	14.48	14.99		0.570	0.590	
NOTE	3			3		

NOTES:

1. THE OUTLINE CONTOUR IS OPTIONAL WITHIN ZONE DEFINED BY ϕD and F_1.
2. DIMENSION DOES NOT INCLUDE SEALING FLANGES.
3. CONTROLLING DIMENSIONS: INCH

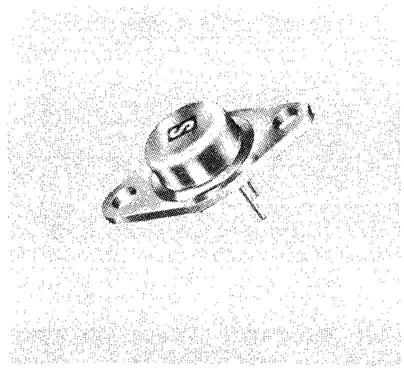
SDT 5909
SDT 5910

NPN SILICON POWER TRANSISTORS

2 AMPERES – FAST SWITCHING

FEATURES:
HIGH RELIABILITY, MEDIUM POWER, PLANAR CONSTRUCTION

APPLICATIONS:
HIGH SPEED SWITCHING AND LINEAR AMPLIFIER APPLICATIONS



TO-66

ABSOLUTE MAXIMUM RATINGS
@ 25° C (unless otherwise noted)

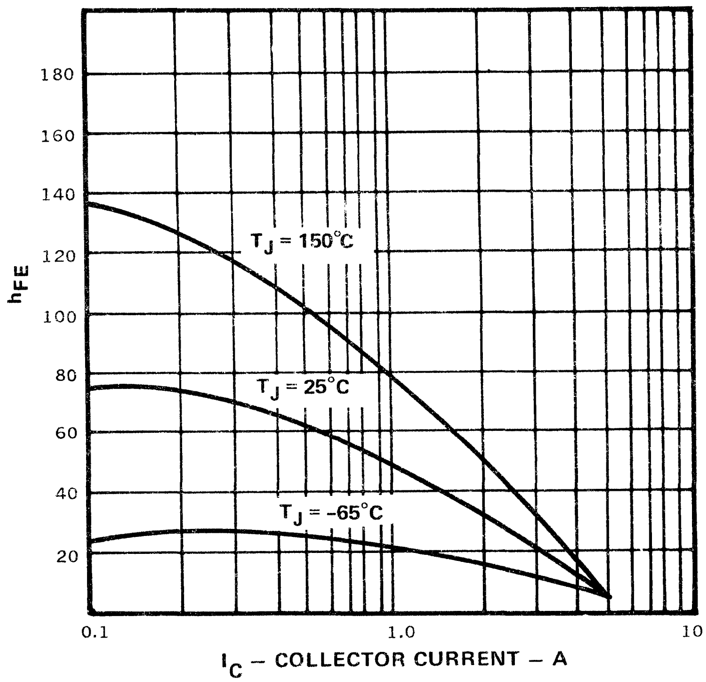
		SDT 5909	SDT 5910
V_{CBO}	COLLECTOR-BASE VOLTAGE	140 V	180 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	100 V	120 V
V_{EBO}	EMITTER-BASE VOLTAGE	8 V	8 V
I_C	CONTINUOUS COLLECTOR CURRENT	2 A	2 A
I_C (PK)	PEAK COLLECTOR CURRENT	5 A	5 A
I_B	CONTINUOUS BASE CURRENT	1 A	1 A
I_B (PK)	PEAK BASE CURRENT	2 A	2 A
T_J	OPERATING JUNCTION TEMPERATURE	-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	5°C/W	5°C/W
P_D	POWER DISSIPATION (25°C)	35 W	35 W

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

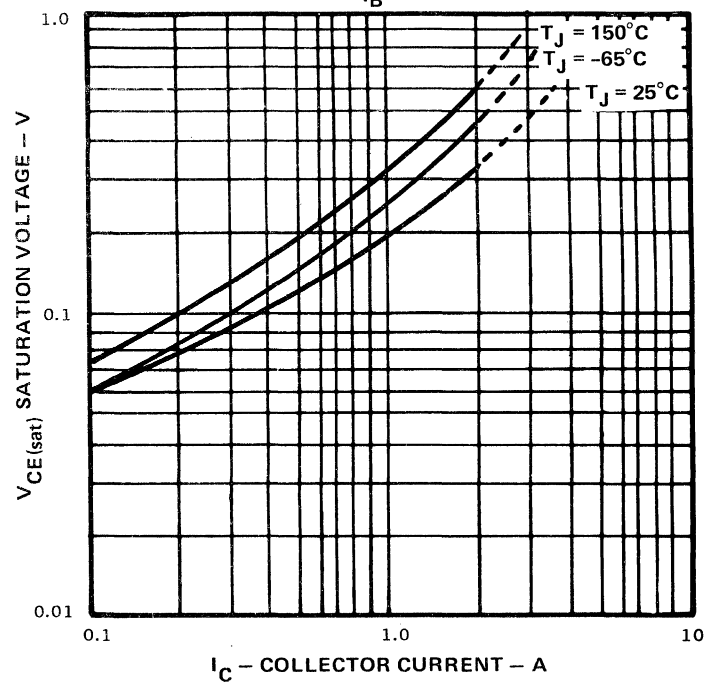
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 10 mA)* SDT 5909 SDT 5910 *PULSED (INDUCTIVE SWEEP 60 Hz)	$V_{CEO(sus)}$	 100 120		 V V
COLLECTOR-BASE BREAKDOWN VOLTAGE (I_C = 10μA) SDT 5909 SDT 5910	V_{CBO}	 140 180		 V V
EMITTER-BASE VOLTAGE (I_E = 10μA)	V_{EBO}	8		V
COLLECTOR-CUTOFF CURRENT SDT 5909 V_{CB} = 60 V SDT 5910 V_{CB} = 60 V	I_{CBO}		 0.1 0.1	 μA μA
COLLECTOR-CUTOFF CURRENT T_C = 150°C SDT 5909 V_{CB} = 60 V SDT 5910 V_{CB} = 60 V	I_{CBO}		 10 10	 μA μA
DC CURRENT GAIN (I_C = 0.5 A V_{CE} = 5 V)**	h_{FE}	30	150	
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 0.5 A I_B = 0.05 A)**	$V_{CE(sat)}$		0.35	V V
BASE EMITTER SATURATION VOLTAGE (I_C = 0.5 A I_B = 0.05 A)**	$V_{BE(sat)}$		1.2	V V
TRANSITION FREQUENCY (I_C = 0.1 A V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	50		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		50	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME V_{CC} = 40 V, I_C = 2.0 A, I_{B1} = I_{B2} = 0.2 A, t_p = 10μs	 t_{on} t_s t_f		 150 700 170	 ns ns ns
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1 sec NON REPETITIVE, V_{CE} = 30 V	$I_{s/b}$	1.0		A

**PULSED—300 μs—2%

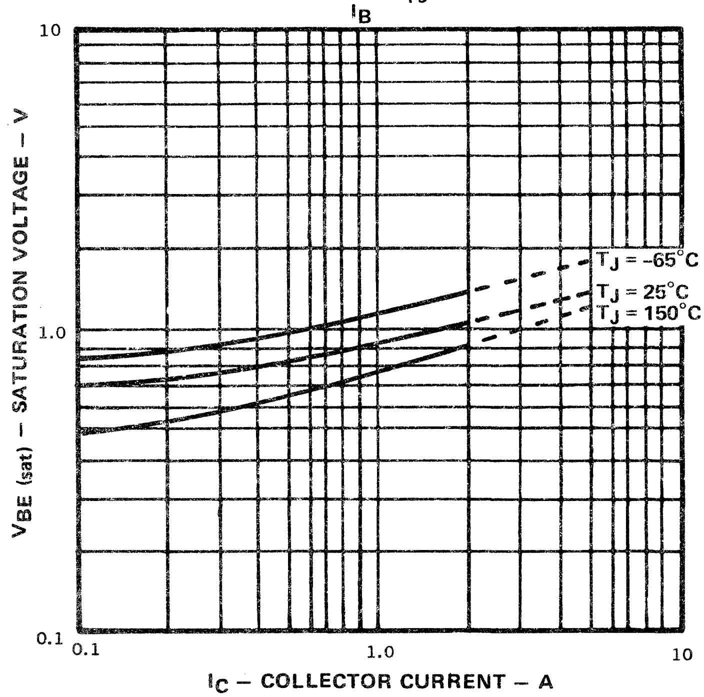
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5$ V



TYPICAL COLLECTOR–EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

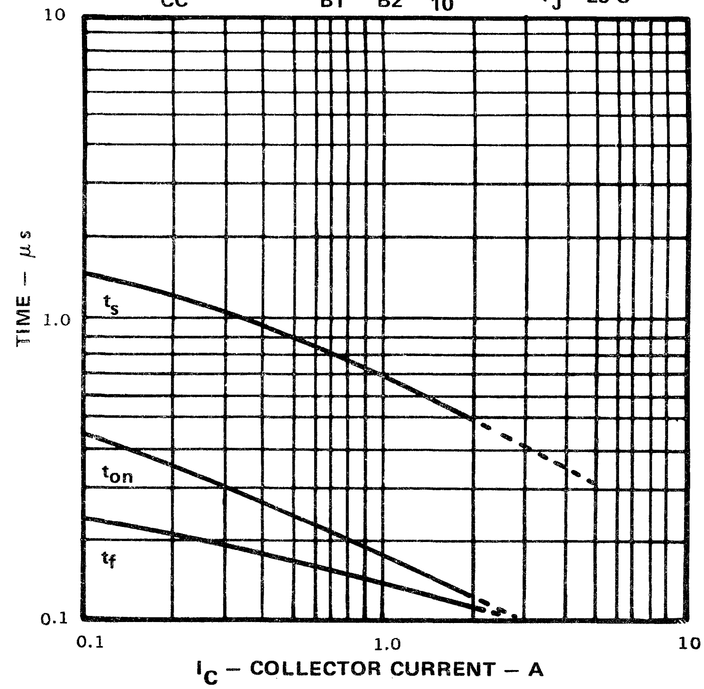


TYPICAL BASE EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



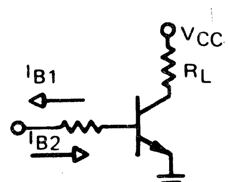
TYPICAL SWITCHING TIME

$V_{CC} = 40$ V $\quad I_{B1} = I_{B2} = \frac{I_C}{10} \quad T_J = 25°C$

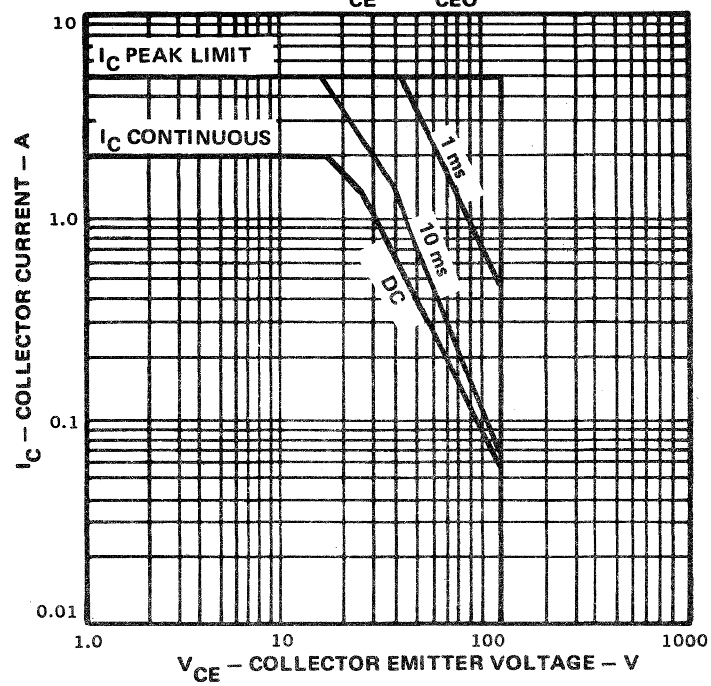


TYPICAL
RESISTIVE SWITCHING CKT.

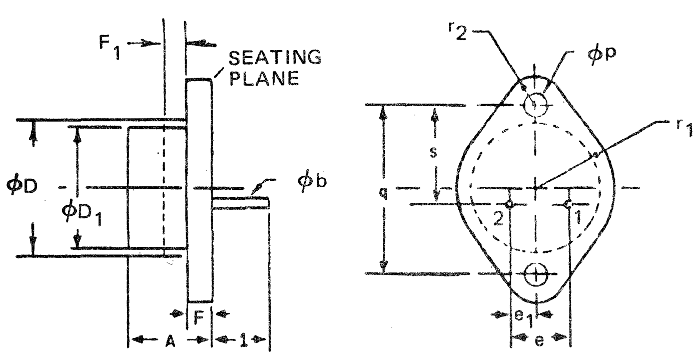
FIG. 1



MAXIMUM OPERATING CONDITIONS
$T_C = 25°C$
DERATE V_{CE} TO V_{CEO} MAX.



OUTLINE DRAWING FOR TO-66



SYMBOL	MILLIMETERS AA MIN.	MILLIMETERS AA MAX.	NOTE	INCHES AA MIN.	INCHES AA MAX.	NOTE
A	6.35	8.64		0.250	0.340	
ϕb	0.711	0.863		0.028	0.034	
ϕD		15.75			0.620	
ϕD_1	11.94	12.70		0.470	0.500	
e	4.83	5.33		0.190	0.210	
e_1	2.36	2.72		0.093	0.107	
F	1.27	1.91	2	0.050	0.075	2
F_1		1.27	1		0.050	1
1	9.14			0.360		
ϕp	3.61	3.86		0.142	0.152	
q	24.33	24.43		0.958	0.962	
r_1		8.89			0.350	
r_2		3.68			0.145	
s	14.48	14.99		0.570	0.590	
NOTE	3			3		

NOTES:

1. THE OUTLINE CONTOUR IS OPTIONAL WITHIN ZONE DEFINED BY ϕD and F_1.
2. DIMENSION DOES NOT INCLUDE SEALING FLANGES.
3. CONTROLLING DIMENSIONS: INCH

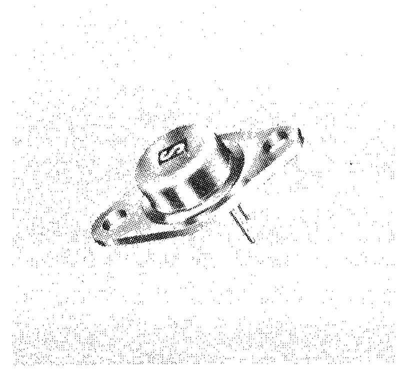
SDT 5911
SDT 5912
SDT 5913

NPN SILICON POWER TRANSISTORS

2 AMPERES – FAST SWITCHING

FEATURES:
HIGH RELIABILITY, MEDIUM POWER, PLANAR CONSTRUCTION

APPLICATIONS:
HIGH SPEED SWITCHING AND LINEAR AMPLIFIER APPLICATIONS



TO-66

ABSOLUTE MAXIMUM RATINGS
@ 25° C (unless otherwise noted)

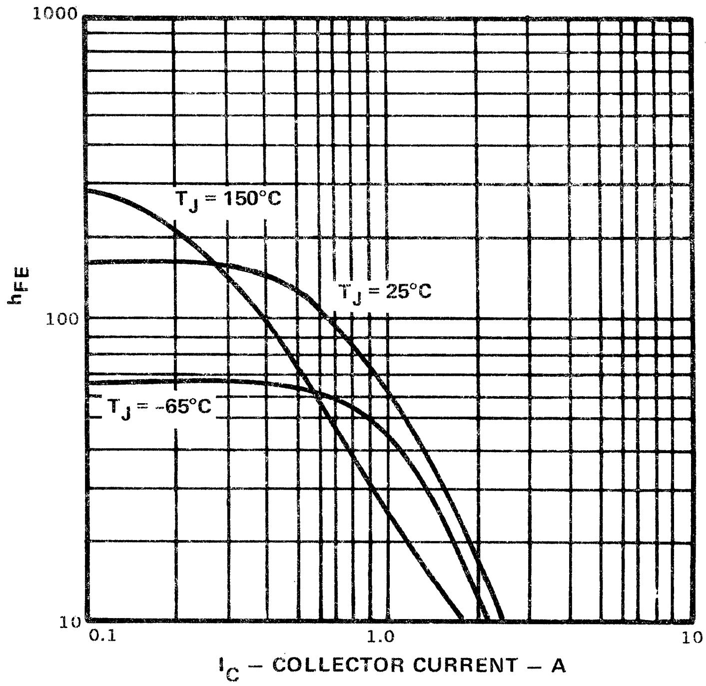
		SDT 5911	SDT 5912	SDT 5913
V_{CBO}	COLLECTOR-BASE VOLTAGE	60 V	80 V	100 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	40 V	60 V	80 V
V_{EBO}	EMITTER-BASE VOLTAGE	8 V	8 V	8 V
I_C	CONTINUOUS COLLECTOR CURRENT	2 A	2 A	2 A
I_C (PK)	PEAK COLLECTOR CURRENT	5 A	5 A	5 A
I_B	CONTINUOUS BASE CURRENT	1 A	1 A	1 A
I_B (PK)	PEAK BASE CURRENT	2 A	2 A	2 A
T_J	OPERATING JUNCTION TEMPERATURE		-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE		-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	5°C/W	5°C/W	5°C/W
P_D	POWER DISSIPATION (25°C)	35 W	35 W	35 W

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

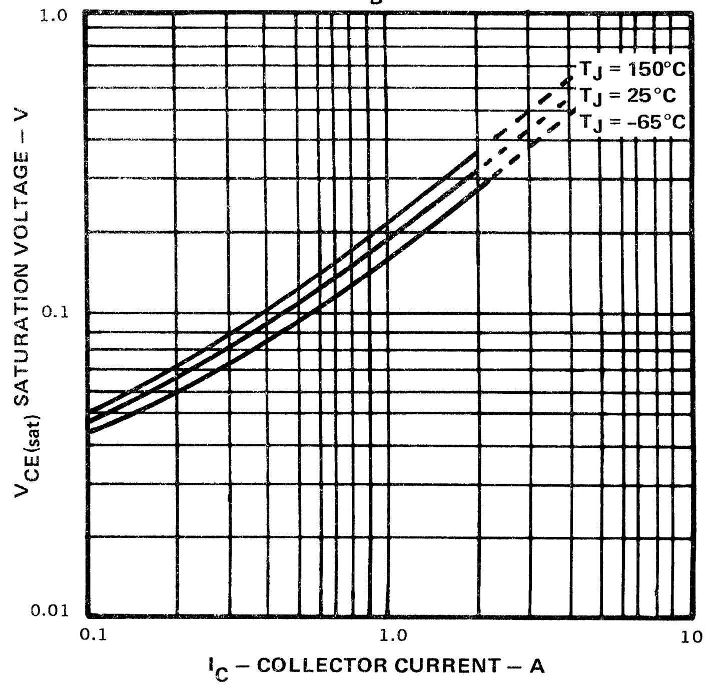
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 10 mA)*	$V_{CEO(sus)}$			
SDT 5911		40		V
SDT 5912		60		V
SDT 5913		80		V
*PULSED (INDUCTIVE SWEEP 60 Hz)				
COLLECTOR-BASE BREAKDOWN VOLTAGE (I_C = 10μA)	V_{CBO}			
SDT 5911		60		V
SDT 5912		80		V
SDT 5913		100		V
EMITTER-BASE VOLTAGE (I_E = 10μA)	V_{EBO}	8		V
COLLECTOR-CUTOFF CURRENT	I_{CBO}			
SDT 5911 V_{CB} = 30 V			0.1	μA
SDT 5912 V_{CB} = 30 V			0.1	μA
SDT 5913 V_{CB} = 60 V			0.1	μA
COLLECTOR-CUTOFF CURRENT T_C = 150°C	I_{CBO}			
SDT 5911 V_{CB} = 30 V			10	μA
SDT 5912 V_{CB} = 30 V			10	μA
SDT 5913 V_{CB} = 60 V			10	μA
DC CURRENT GAIN	h_{FE}			
(I_C = 0.5 A V_{CE} = 5 V)**		120		
(I_C = 2.0 A V_{CE} = 5 V)**		10		
COLLECTOR-EMITTER SATURATION VOLTAGE	$V_{CE(sat)}$			
(I_C = 0.5 A I_B = 0.05 A)**			0.35	V
(I_C = 2.0 A I_B = 0.2 A)**			0.8	V
BASE EMITTER SATURATION VOLTAGE	$V_{BE(sat)}$			
(I_C = 0.5 A I_B = 0.05 A)**			1.2	V
(I_C = 2.0 A I_B = 0.2 A)**			1.4	V
TRANSITION FREQUENCY (I_C = 0.1 A V_{CE} = 10 V, $f_{(TEST)}$ = 1 MHz)	f_T	50		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		50	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1)				
TURN-ON TIME	t_{on}		150	ns
STORAGE TIME	t_s		700	ns
FALL TIME	t_f		170	ns
V_{CC} = 40 V, I_C = 2.0 A, I_{B1} = I_{B2} = 0.2 A, t_p = 10μs				
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1 sec NON REPETITIVE, V_{CE} = 20 V)	$I_{s/b}$	1.5		A

**PULSED—300 μs—2%

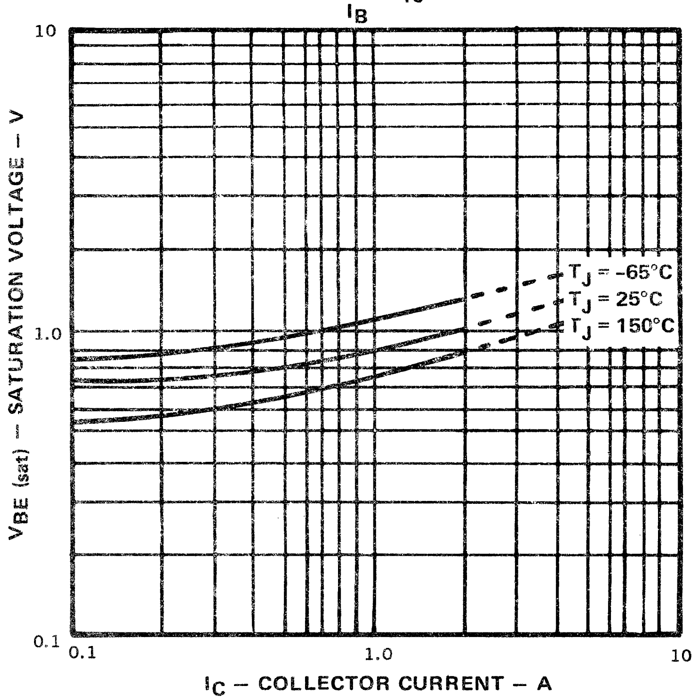
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5$ V



TYPICAL COLLECTOR–EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

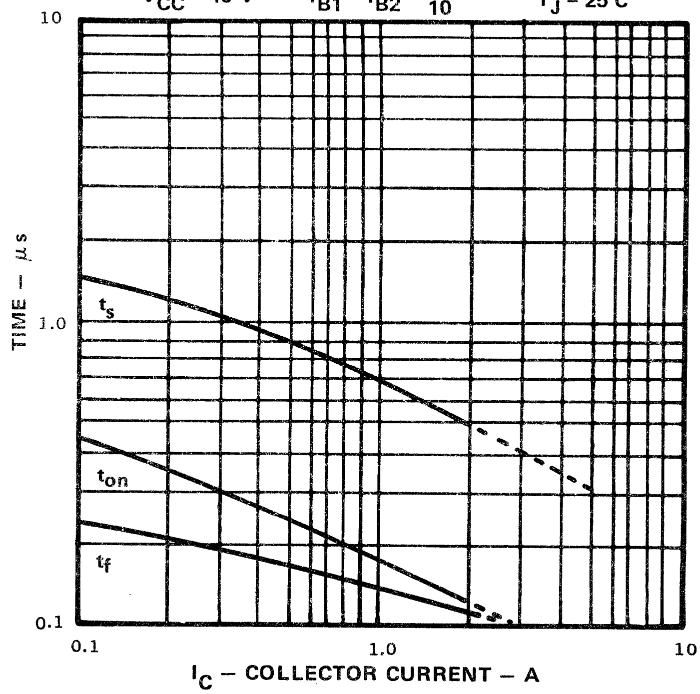


TYPICAL BASE EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



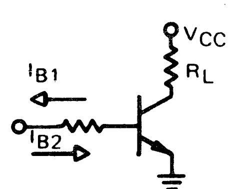
TYPICAL SWITCHING TIME

$V_{CC} = 40$ V $\quad I_{B1} = I_{B2} = \frac{IC}{10} \quad T_J = 25°C$



TYPICAL
RESISTIVE SWITCHING CKT.

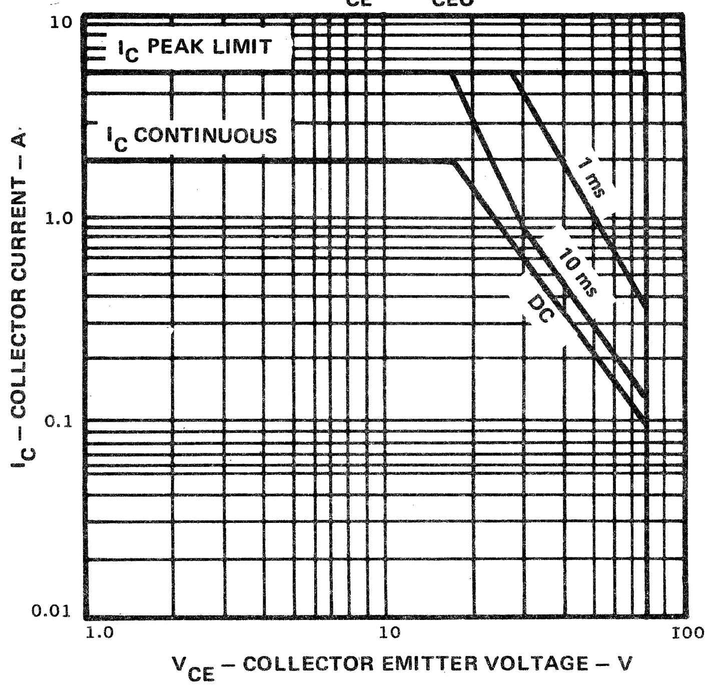
FIG. 1



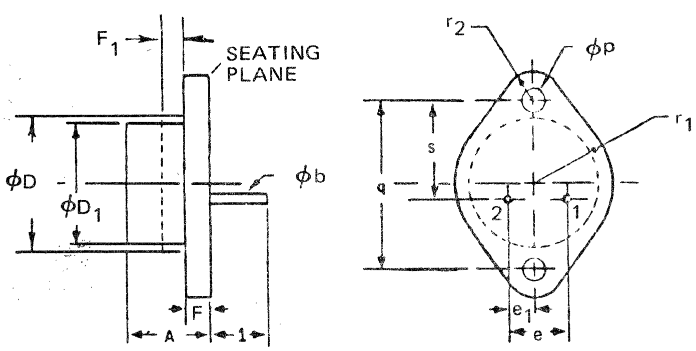
MAXIMUM OPERATING CONDITIONS

$T_C = 25°C$

DERATE V_{CE} TO V_{CEO} MAX.



OUTLINE DRAWING FOR TO-66



SYMBOL	MILLIMETERS			INCHES		
	AA		NOTE	AA		NOTE
	MIN.	MAX.		MIN.	MAX.	
A	6.35	8.64		0.250	0.340	
ϕb	0.711	0.863		0.028	0.034	
ϕD		15.75			0.620	
ϕD_1	11.94	12.70		0.470	0.500	
e	4.83	5.33		0.190	0.210	
e_1	2.36	2.72		0.093	0.107	
F	1.27	1.91	2	0.050	0.075	2
F_1		1.27	1		0.050	1
1	9.14			0.360		
ϕp	3.61	3.86		0.142	0.152	
q	24.33	24.43		0.958	0.962	
r_1		8.89			0.350	
r_2		3.68			0.145	
s	14.48	14.99		0.570	0.590	
NOTE	3			3		

NOTES:

1. THE OUTLINE CONTOUR IS OPTIONAL WITHIN ZONE DEFINED BY ϕD and F_1.
2. DIMENSION DOES NOT INCLUDE SEALING FLANGES.
3. CONTROLLING DIMENSIONS: INCH

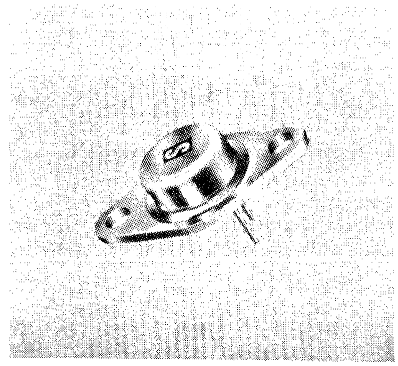
SDT 5914
SDT 5915

NPN SILICON POWER TRANSISTORS

2 AMPERES – FAST SWITCHING

FEATURES:
HIGH RELIABILITY, MEDIUM POWER, PLANAR CONSTRUCTION

APPLICATIONS:
HIGH SPEED SWITCHING AND LINEAR AMPLIFIER APPLICATIONS



TO-66

ABSOLUTE MAXIMUM RATINGS
@ 25° C (unless otherwise noted)

		SDT 5914	SDT 5915
V_{CBO}	COLLECTOR-BASE VOLTAGE	140 V	180 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	100 V	120 V
V_{EBO}	EMITTER-BASE VOLTAGE	8 V	8 V
I_C	CONTINUOUS COLLECTOR CURRENT	2 A	2 A
I_C (PK)	PEAK COLLECTOR CURRENT	5 A	5 A
I_B	CONTINUOUS BASE CURRENT	1 A	1 A
I_B (PK)	PEAK BASE CURRENT	2 A	2 A
T_J	OPERATING JUNCTION TEMPERATURE	-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	5°C/W	5°C/W
P_D	POWER DISSIPATION (25°C)	35 W	35 W

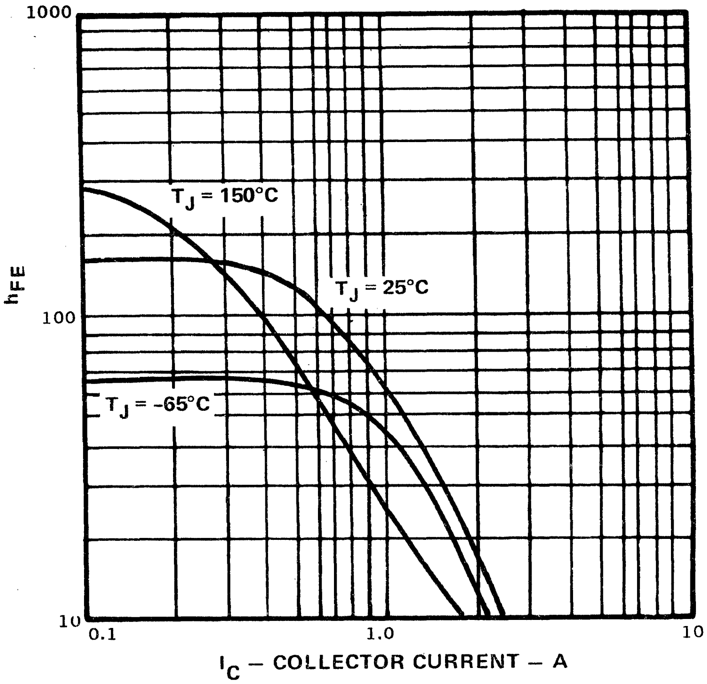
REV. 7-77-91

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

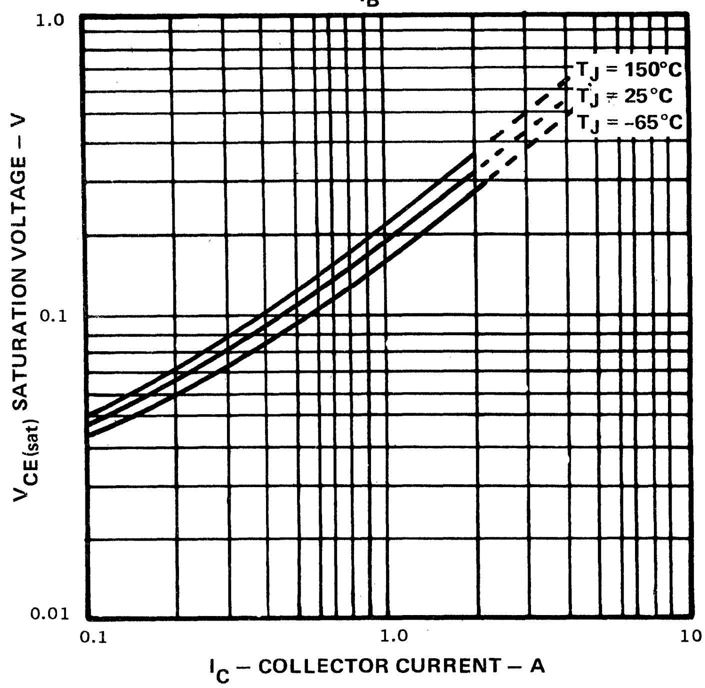
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 10 mA)* SDT 5914 SDT 5915 *PULSED (INDUCTIVE SWEEP 60 Hz)	$V_{CEO(sus)}$	 100 120		 V V
COLLECTOR-BASE BREAKDOWN VOLTAGE (I_C = 10μA) SDT 5914 SDT 5915	V_{CBO}	 140 180		 V V
EMITTER-BASE VOLTAGE (I_E = 10μA)	V_{EBO}	8		V
COLLECTOR-CUTOFF CURRENT SDT 5914 V_{CB} = 60 V SDT 5915 V_{CB} = 60 V	I_{CBO}		 0.1 0.1	 μA μA
COLLECTOR-CUTOFF CURRENT T_C = 150°C SDT 5914 V_{CB} = 60 V SDT 5915 V_{CB} = 60 V	I_{CBO}		 10 10	 μA μA
DC CURRENT GAIN (I_C = 0.5 A V_{CE} = 5 V)** (I_C = 2.0 A V_{CE} = 5 V)**	h_{FE}	 120 10		
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 0.5 A I_B = 0.05 A)** (I_C = 2.0 A I_B = 0.2 A)**	$V_{CE(sat)}$		 0.35 0.8	 V V
BASE EMITTER SATURATION VOLTAGE (I_C = 0.5 A I_B = 0.05 A)** (I_C = 2.0 A I_B = 0.2 A)**	$V_{BE(sat)}$		 1.2 1.4	 V V
TRANSITION FREQUENCY (I_C = 0.1 A V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	50		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		50	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME V_{CC} = 40 V, I_C = 2.0 A, I_{B1} = I_{B2} = 0.2 A, t_p = 10μs	 t_{on} t_s t_f		 150 700 170	 ns ns ns
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1 sec NON REPETITIVE, V_{CE} = 30 V	$I_{s/b}$	1.0		A

**PULSED—300 μs—2%

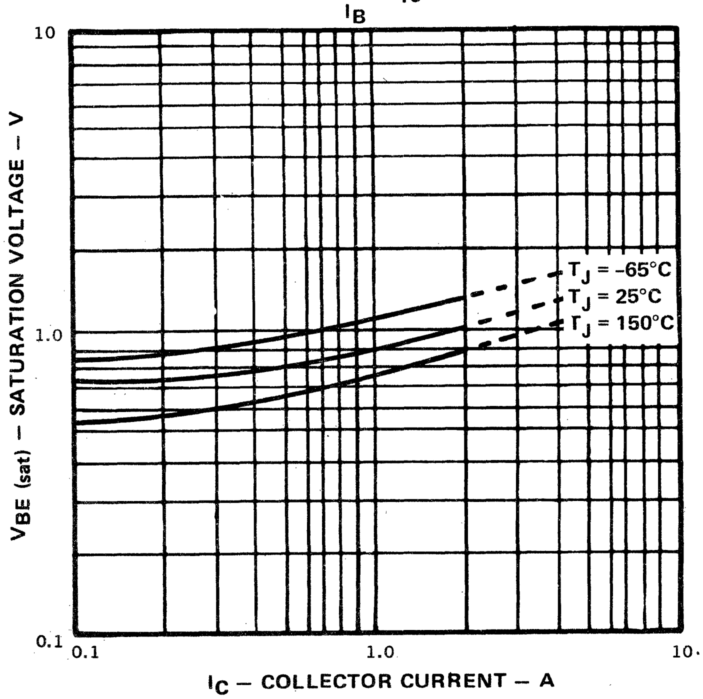
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5\ V$



TYPICAL COLLECTOR–EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

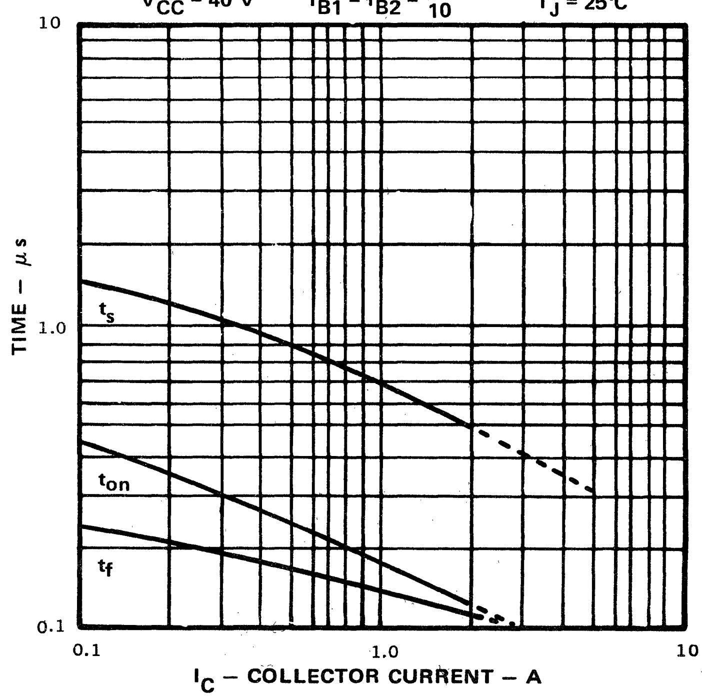


TYPICAL BASE EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



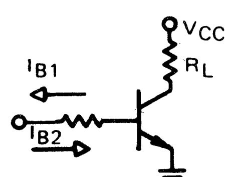
TYPICAL SWITCHING TIME

$V_{CC} = 40\ V$ $\quad I_{B1} = I_{B2} = \frac{I_C}{10}$ $\quad T_J = 25°C$

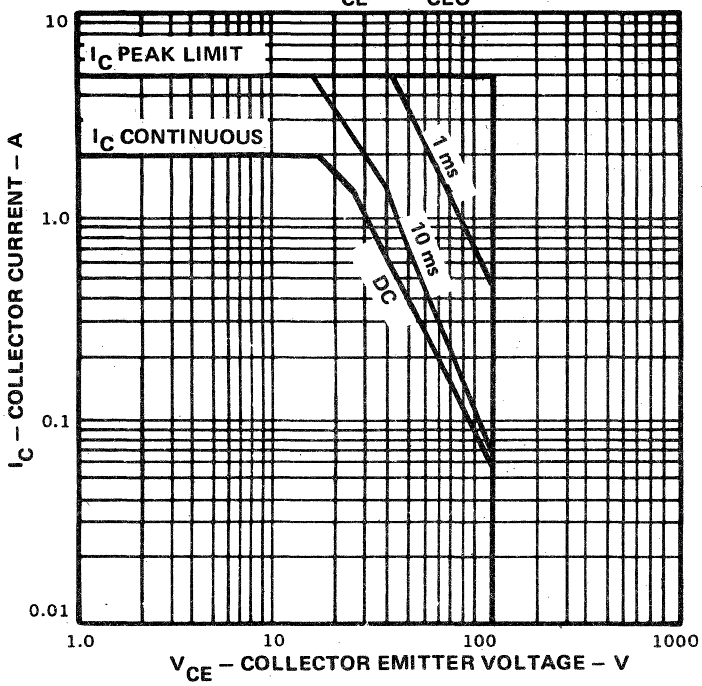


TYPICAL
RESISTIVE SWITCHING CKT.

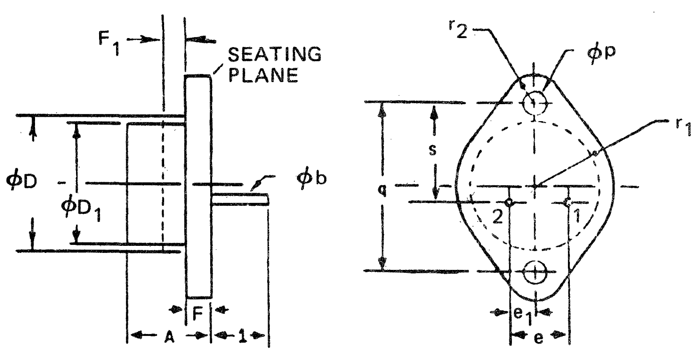
FIG. 1



MAXIMUM OPERATING CONDITIONS
$T_C = 25°C$
DERATE V_{CE} TO V_{CEO} MAX.



OUTLINE DRAWING FOR TO-66



SYMBOL	MILLIMETERS AA MIN.	MILLIMETERS AA MAX.	NOTE	INCHES AA MIN.	INCHES AA MAX.	NOTE
A	6.35	8.64		0.250	0.340	
ϕb	0.711	0.863		0.028	0.034	
ϕD		15.75			0.620	
ϕD_1	11.94	12.70		0.470	0.500	
e	4.83	5.33		0.190	0.210	
e_1	2.36	2.72		0.093	0.107	
F	1.27	1.91	2	0.050	0.075	2
F_1		1.27	1		0.050	1
1	9.14			0.360		
ϕp	3.61	3.86		0.142	0.152	
q	24.33	24.43		0.958	0.962	
r_1		8.89			0.350	
r_2		3.68			0.145	
s	14.48	14.99		0.570	0.590	
NOTE	3			3		

NOTES:

1. THE OUTLINE CONTOUR IS OPTIONAL WITHIN ZONE DEFINED BY ϕD and F_1.
2. DIMENSION DOES NOT INCLUDE SEALING FLANGES.
3. CONTROLLING DIMENSIONS: INCH

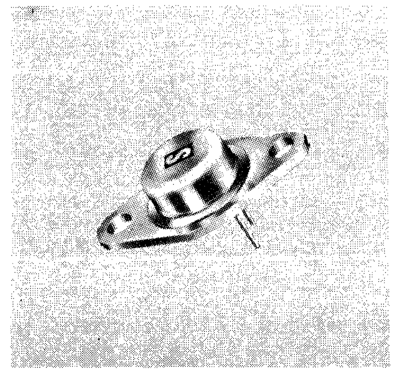
SDT 5951
SDT 5952
SDT 5953

NPN SILICON POWER TRANSISTORS

2 AMPERES – FAST SWITCHING

FEATURES:
HIGH RELIABILITY, MEDIUM POWER, PLANAR CONSTRUCTION

APPLICATIONS:
HIGH SPEED SWITCHING AND LINEAR AMPLIFIER APPLICATIONS



TO-66

ABSOLUTE MAXIMUM RATINGS
@ 25° C (unless otherwise noted)

		SDT 5951	SDT 5952	SDT 5953
V_{CBO}	COLLECTOR-BASE VOLTAGE	175 V	200 V	225 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	150 V	175 V	200 V
V_{EBO}	EMITTER-BASE VOLTAGE	8 V	8 V	8 V
I_C	CONTINUOUS COLLECTOR CURRENT	2 A	2 A	2 A
I_C (PK)	PEAK COLLECTOR CURRENT	5 A	5 A	5 A
I_B	CONTINUOUS BASE CURRENT	1 A	1 A	1 A
I_B (PK)	PEAK BASE CURRENT	2 A	2 A	2 A
T_J	OPERATING JUNCTION TEMPERATURE		-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE		-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	5°C/W	5°C/W	5°C/W
P_D	POWER DISSIPATION (25°C)	35 W	35 W	35 W

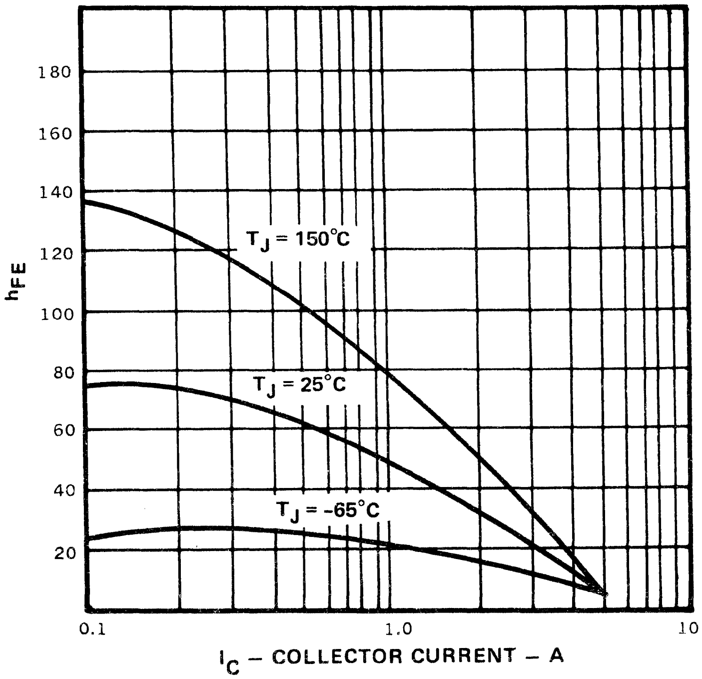
ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 10 mA)*	$V_{CEO(sus)}$			
SDT 5951		150		V
SDT 5952		175		V
SDT 5953		200		V
*PULSED (INDUCTIVE SWEEP 60 Hz)				
COLLECTOR-BASE BREAKDOWN VOLTAGE (I_C = 10μA)	V_{CBO}			
SDT 5951		175		V
SDT 5952		200		V
SDT 5953		225		V
EMITTER-BASE VOLTAGE (I_E = 10μA)	V_{EBO}	8		V
COLLECTOR-CUTOFF CURRENT	I_{CBO}			
SDT 5951 V_{CB} = 60V			0.1	μA
SDT 5952 V_{CB} = 60V			0.1	μA
SDT 5953 V_{CB} = 60V			0.1	μA
COLLECTOR-CUTOFF CURRENT T_C = 150°C	I_{CBO}			
SDT 5951 V_{CB} = 100V			10	μA
SDT 5952 V_{CB} = 100V			10	μA
SDT 5953 V_{CB} = 100V			10	μA
DC CURRENT GAIN	h_{FE}			
(I_C = 0.5 A V_{CE} = 5 V)**		50	150	
(I_C = 2.0 A V_{CE} = 5 V)**		5		
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 0.5 A I_B = 0.05 A)**	$V_{CE(sat)}$		0.35	V
BASE EMITTER SATURATION VOLTAGE (I_C = 0.5 A I_B = 0.05 A)**	$V_{BE(sat)}$		1.2	V
TRANSITION FREQUENCY (I_C = 0.1 A V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	50		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		50	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1)				
TURN-ON TIME	t_{on}		200	ns
STORAGE TIME	t_s		1000	ns
FALL TIME	t_f		600	ns
V_{CC} = 40 V, I_C = 1.0 A, I_{B1} = I_{B2} = 0.1 A, t_p = 10μs				
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1 sec NON REPETITIVE, V_{CE} = 30 V	$I_{s/b}$	1.2		A

**PULSED—300 μs—2%

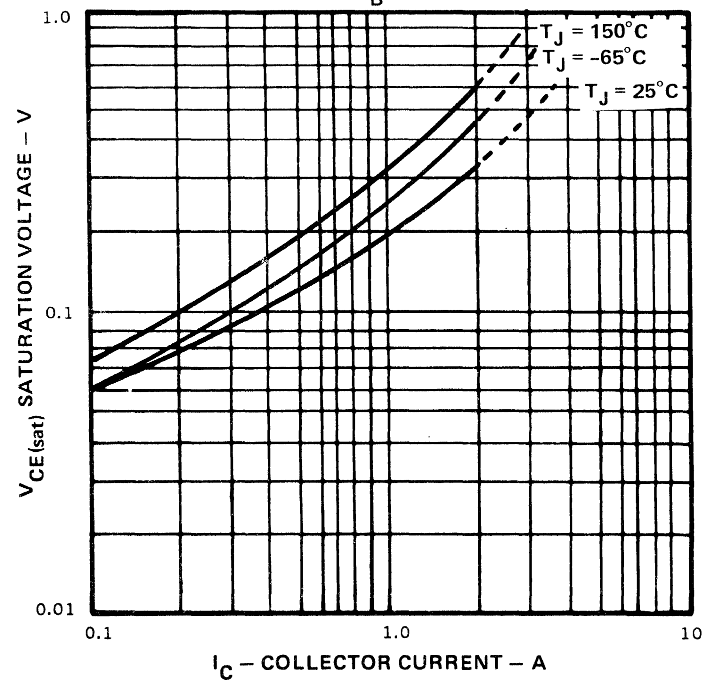
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO

$V_{CE} = 5\ V$



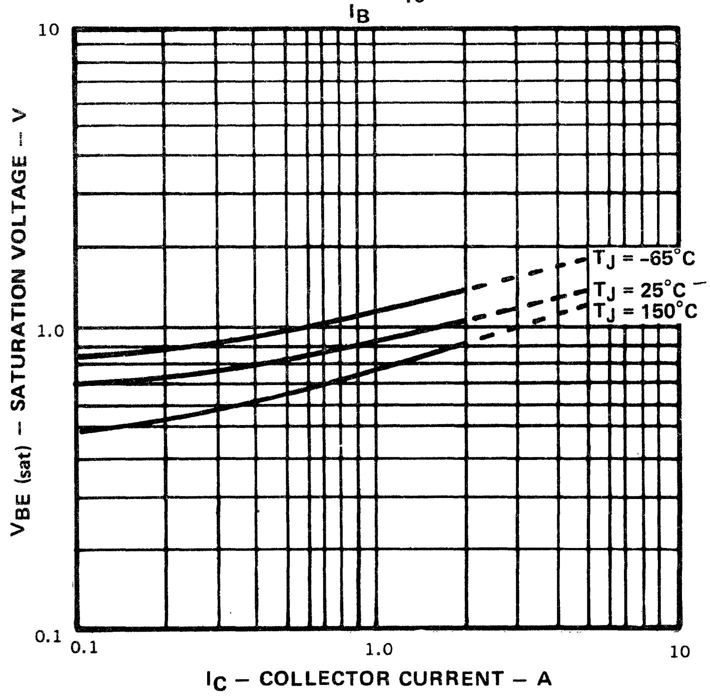
TYPICAL COLLECTOR–EMITTER SATURATION VOLTAGE

$\frac{I_C}{I_B} = 10$



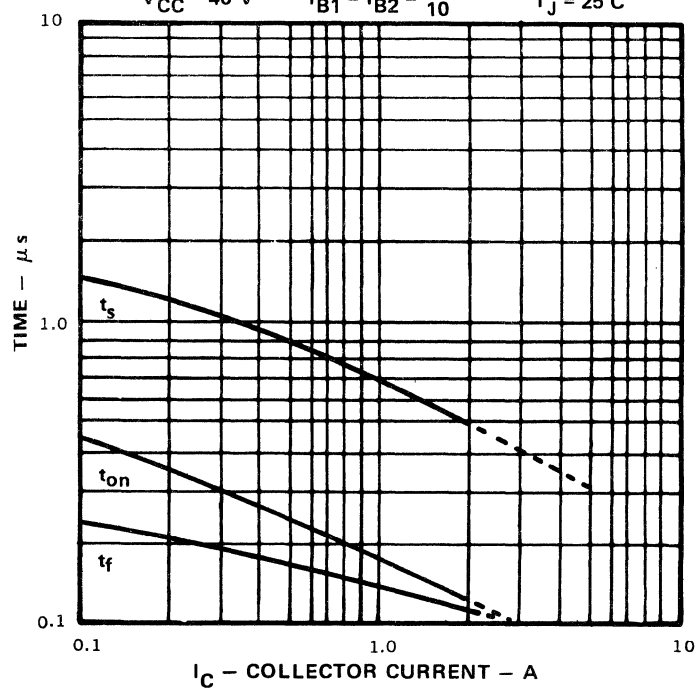
TYPICAL BASE EMITTER SATURATION VOLTAGE

$\frac{I_C}{I_B} = 10$



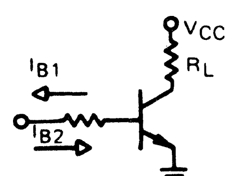
TYPICAL SWITCHING TIME

$V_{CC} = 40\ V$ $I_{B1} = I_{B2} = \frac{IC}{10}$ $T_J = 25°C$

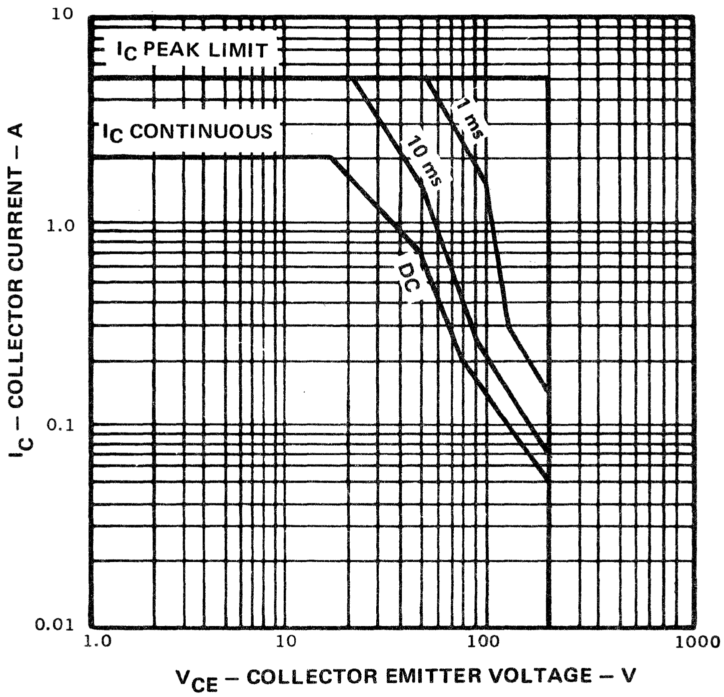


TYPICAL
RESISTIVE SWITCHING CKT.

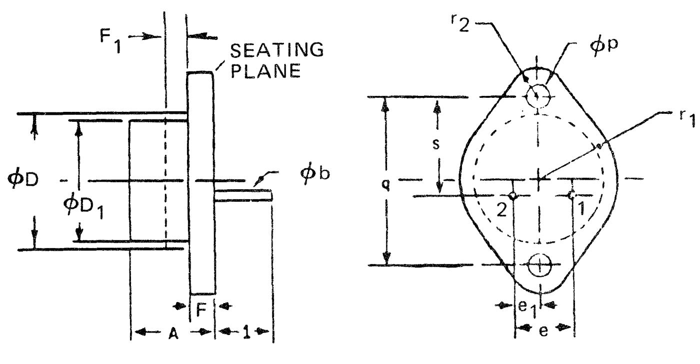
FIG. 1



MAXIMUM OPERATING CONDITIONS
T_C = 25°C
DERATE V_{CE} TO V_{CEO} MAX.



OUTLINE DRAWING FOR TO-66



NOTES:

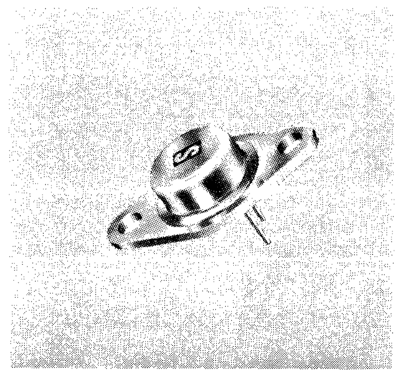
1. THE OUTLINE CONTOUR IS OPTIONAL WITHIN ZONE DEFINED BY φD and F_1.
2. DIMENSION DOES NOT INCLUDE SEALING FLANGES.
3. CONTROLLING DIMENSIONS: INCH

SYMBOL	MILLIMETERS AA MIN.	MILLIMETERS AA MAX.	NOTE	INCHES AA MIN.	INCHES AA MAX.	NOTE
A	6.35	8.64		0.250	0.340	
φb	0.711	0.863		0.028	0.034	
φD		15.75			0.620	
$φD_1$	11.94	12.70		0.470	0.500	
e	4.83	5.33		0.190	0.210	
e_1	2.36	2.72		0.093	0.107	
F	1.27	1.91	2	0.050	0.075	2
F_1		1.27	1		0.050	1
1	9.14			0.360		
φp	3.61	3.86		0.142	0.152	
q	24.33	24.43		0.958	0.962	
r_1		8.89			0.350	
r_2		3.68			0.145	
s	14.48	14.99		0.570	0.590	
NOTE	3			3		

SDT 5954
SDT 5955
SDT 5956

NPN SILICON POWER TRANSISTORS

2 AMPERES – FAST SWITCHING



TO-66

FEATURES:
HIGH RELIABILITY, MEDIUM POWER, PLANAR CONSTRUCTION

APPLICATIONS:
HIGH SPEED SWITCHING AND LINEAR AMPLIFIER APPLICATIONS

ABSOLUTE MAXIMUM RATINGS
@ 25° C (unless otherwise noted)

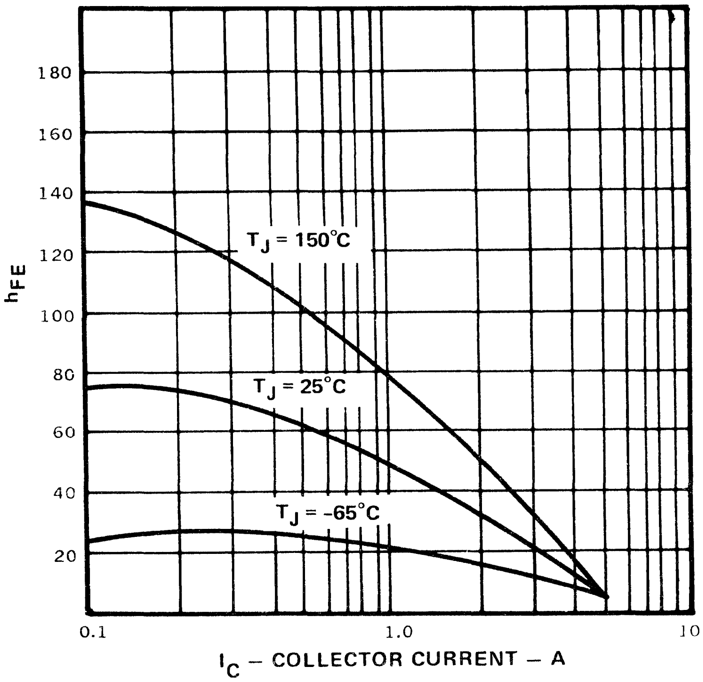
		SDT 5954	SDT 5955	SDT 5956
V_{CBO}	COLLECTOR-BASE VOLTAGE	175 V	200 V	225 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	150 V	175 V	200 V
V_{EBO}	EMITTER-BASE VOLTAGE	8 V	8 V	8 V
I_C	CONTINUOUS COLLECTOR CURRENT	2 A	2 A	2 A
I_C (PK)	PEAK COLLECTOR CURRENT	5 A	5 A	5 A
I_B	CONTINUOUS BASE CURRENT	1 A	1 A	1 A
I_B (PK)	PEAK BASE CURRENT	2 A	2 A	2 A
T_J	OPERATING JUNCTION TEMPERATURE		-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE		-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	5°C/W	5°C/W	5°C/W
P_D	POWER DISSIPATION (25°C)	35 W	35 W	35 W

ELECTRICAL CHARACTERISTICS (T_C = 25° C UNLESS OTHERWISE NOTED)

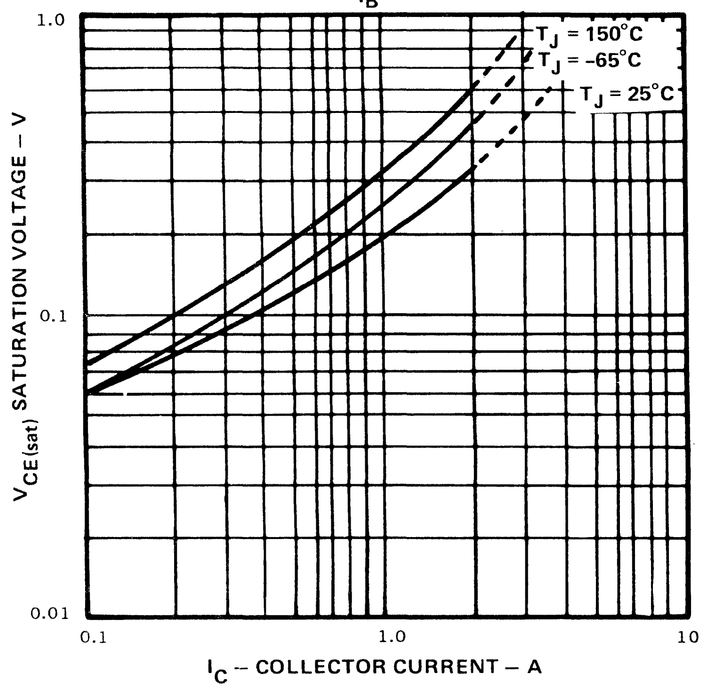
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 10 mA)*	$V_{CEO(sus)}$			
SDT 5954		150		V
SDT 5955		175		V
SDT 5956		200		V
*PULSED (INDUCTIVE SWEEP 60 Hz)				
COLLECTOR-BASE BREAKDOWN VOLTAGE (I_C = 10μA)	V_{CBO}			
SDT 5954		175		V
SDT 5955		200		V
SDT 5956		225		V
EMITTER-BASE VOLTAGE (I_E = 10μA)	V_{EBO}	8		V
COLLECTOR-CUTOFF CURRENT	I_{CBO}			
SDT 5954 V_{CB} = 60 V			0.1	μA
SDT 5955 V_{CB} = 60 V			0.1	μA
SDT 5956 V_{CB} = 60 V			0.1	μA
COLLECTOR-CUTOFF CURRENT T_C = 150°C	I_{CBO}			
SDT 5954 V_{CB} = 100 V			10	μA
SDT 5955 V_{CB} = 100 V			10	μA
SDT 5956 V_{CB} = 100 V			10	μA
DC CURRENT GAIN (I_C = 0.5 A V_{CE} = 5 V)**	h_{FE}	30		
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 0.5 A I_B = 0.05 A)**	$V_{CE(sat)}$		0.35	V
BASE EMITTER SATURATION VOLTAGE (I_C = 0.5 A I_B = 0.05 A)**	$V_{BE(sat)}$		1.2	V
TRANSITION FREQUENCY (I_C = 0.1 A V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	50		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		50	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1)				
TURN-ON TIME	t_{on}		200	ns
STORAGE TIME	t_s		1000	ns
FALL TIME	t_f		600	ns
V_{CC} = 40 V, I_C = 1.0 A, I_{B1} = I_{B2} = 0.1, t_p = 10μs				
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1 sec NON REPETITIVE, V_{CE} = 20 V)	$I_{s/b}$	1.5		A

**PULSED—300 μs—2%

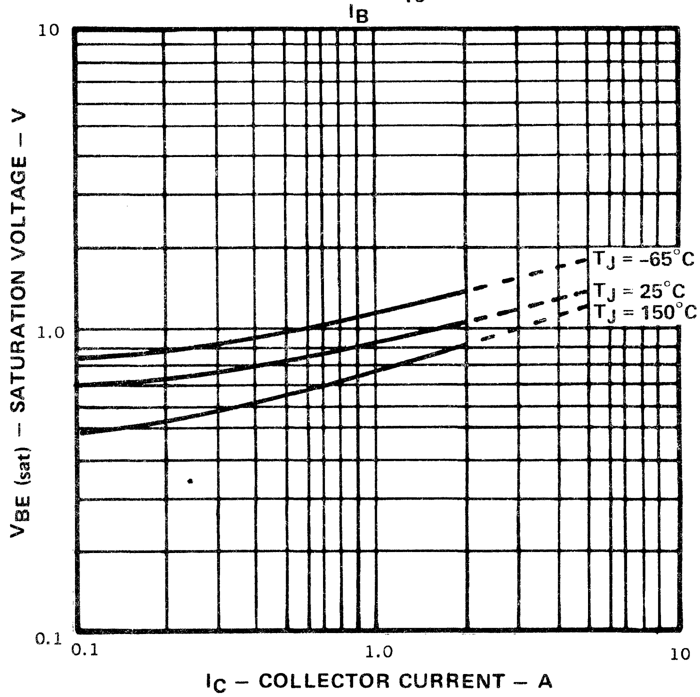
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5$ V



TYPICAL COLLECTOR–EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

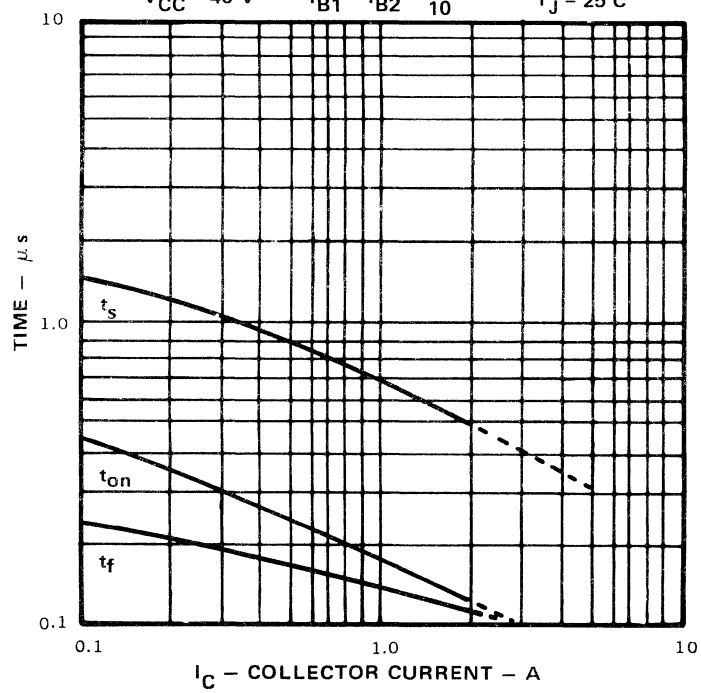


TYPICAL BASE EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



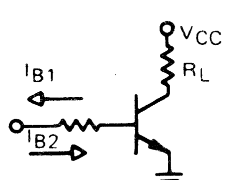
TYPICAL SWITCHING TIME

$V_{CC} = 40$ V $\quad I_{B1} = I_{B2} = \frac{IC}{10} \quad T_J = 25°C$

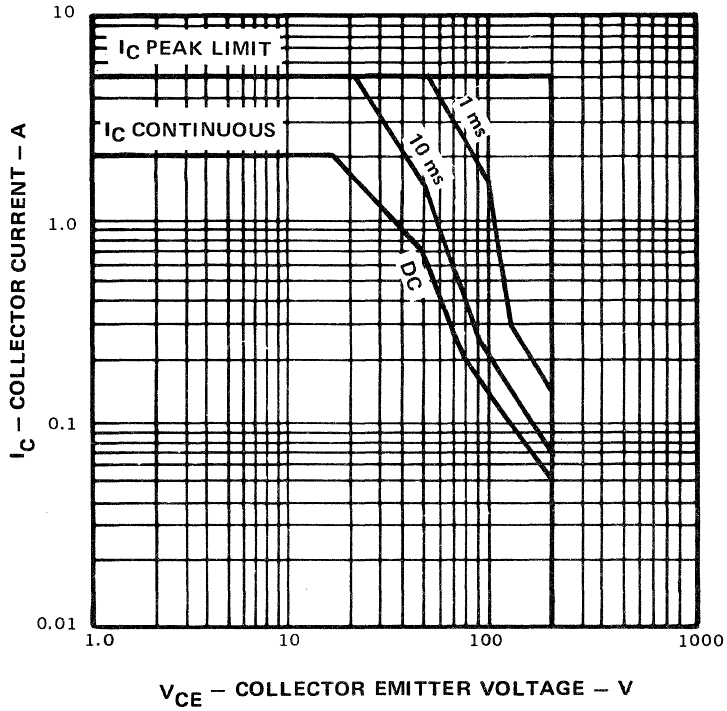


TYPICAL
RESISTIVE SWITCHING CKT.

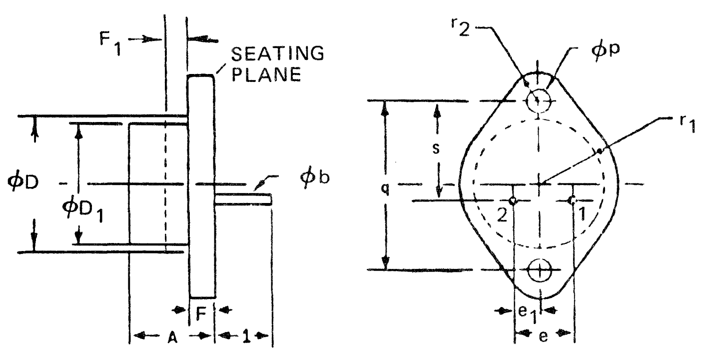
FIG. 1



MAXIMUM OPERATING CONDITIONS
T_C = 25°C
DERATE V_{CE} TO V_{CEO} MAX.



OUTLINE DRAWING FOR TO-66



SYMBOL	MILLIMETERS AA MIN.	MILLIMETERS AA MAX.	NOTE	INCHES AA MIN.	INCHES AA MAX.	NOTE
A	6.35	8.64		0.250	0.340	
ϕb	0.711	0.863		0.028	0.034	
ϕD		15.75			0.620	
ϕD_1	11.94	12.70		0.470	0.500	
e	4.83	5.33		0.190	0.210	
e_1	2.36	2.72		0.093	0.107	
F	1.27	1.91	2	0.050	0.075	2
F_1		1.27	1		0.050	1
l	9.14			0.360		
ϕp	3.61	3.86		0.142	0.152	
q	24.33	24.43		0.958	0.962	
r_1		8.89			0.350	
r_2		3.68			0.145	
s	14.48	14.99		0.570	0.590	
NOTE	3			3		

NOTES:

1. THE OUTLINE CONTOUR IS OPTIONAL WITHIN ZONE DEFINED BY ϕD and F_1.
2. DIMENSION DOES NOT INCLUDE SEALING FLANGES.
3. CONTROLLING DIMENSIONS: INCH

10 AMP SILICON PLANAR NPN POWER TRANSISTORS

SPECIFICATIONS

(TO-3)	(TO-66)	(TO-61)	(TO-5)
SDT7601	SDT7A01	SDT7014	SDT7401
SDT7602	SDT7A02	SDT7015	SDT7402
SDT7603	SDT7A03	SDT7016	SDT7403
SDT7604	SDT7A04	SDT7154	
SDT7605	SDT7A05	SDT7155	
SDT7607	SDT7A07	SDT7011	SDT7411
SDT7608	SDT7A08	SDT7012	SDT7412
SDT7609	SDT7A09	SDT7013	SDT7413
SDT7610	SDT7A10	SDT7150	
SDT7611	SDT7A11	SDT7151	
SDT7612	SDT7A12	SDT7152	

DESIGNED-IN ADVANTAGES

GREATER GAIN STABILITY — planar fabrication techniques give these new Solitron transistors unusually consistent gain, even across a wide range of currents. Gain is flat from below 10 milliamps to above 5 amps.

MINIMUM LONG-TERM DRIFT — planar construction eliminates surface contamination, ensuring consistent performance for the life of the device.

FAST SWITCHING — shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents. f_T = 60 MHz typical.

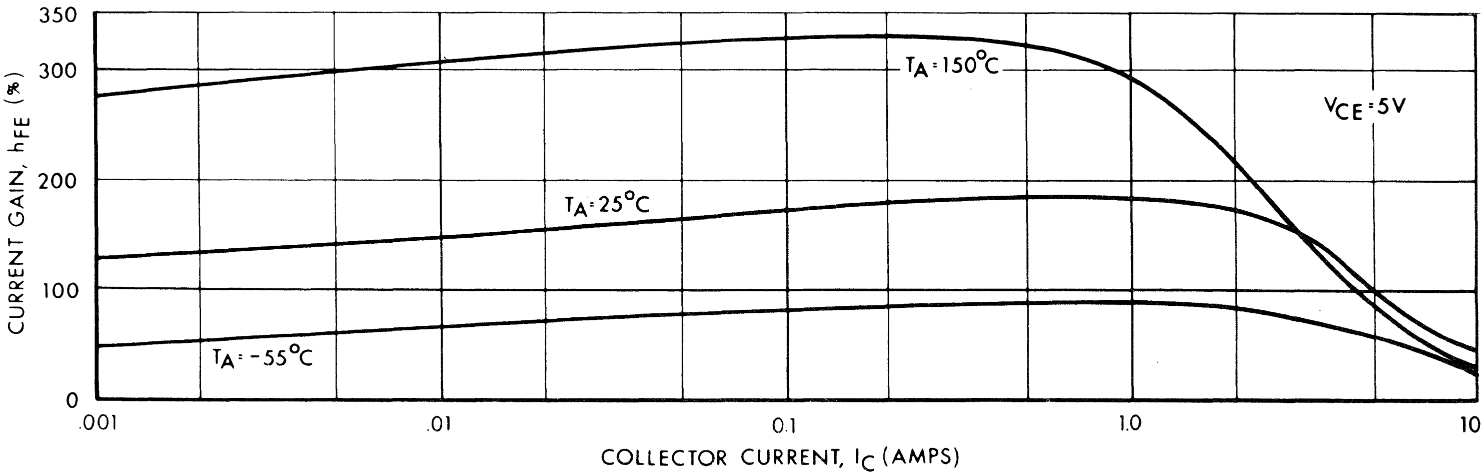
ABSOLUTE MAXIMUM RATINGS

	TO-3	TO-66	TO-61	TO-5	
Collector-to-Base Voltage					
	7601	7A01	7014	7401	60 Vdc max.
	7602	7A02	7015	7402	80 Vdc max.
	7603	7A03	7016	7403	100 Vdc max.
	7604	7A04	7154		140 Vdc max.
	7605	7A05	7155		170 Vdc max.
Emitter-to-Base Voltage					8 Vdc max.
Collector-to-Emitter Voltage					
	7601	7A01	7014	7401	40 Vdc max.
	7602	7A02	7015	7402	60 Vdc max.
	7603	7A03	7016	7403	80 Vdc max.
	7604	7A04	7154		120 Vdc max.
	7605	7A05	7155		150 Vdc max.
Collector Current					10 Adc max.
Total Dissipation at: 100°C Case Temperature					60 W max.
Thermal Resistance, Junction to Case					1.5 $^{\circ}$C/W
Operating Junction Temperature					–65°C to +200°C

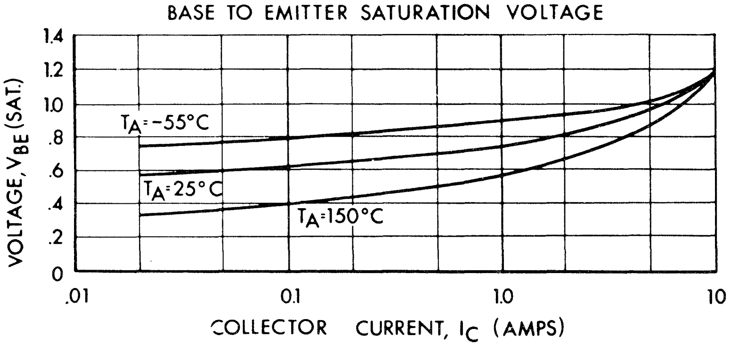
Solitron DEVICES, INC. / TRANSISTOR DIVISION

High Reliability versions of the 10 amp family, sustaining voltages to 200 volts.

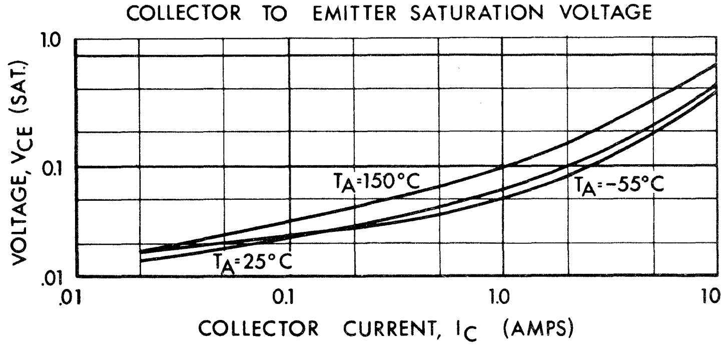
NORMALIZED CURRENT GAIN



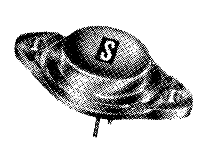
BASE TO EMITTER SATURATION VOLTAGE

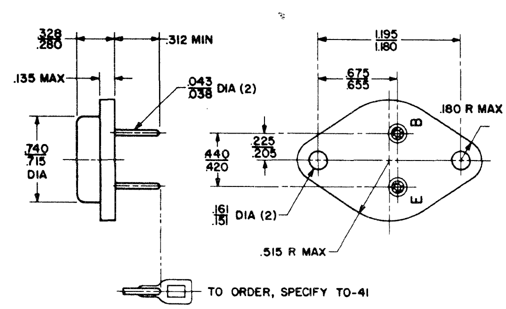


COLLECTOR TO EMITTER SATURATION VOLTAGE



TYPE NUMBERS	RATED BREAKDOWN VOLTAGES			h_{FE} @I_C=5.0A V_{CE}=5.0V		SAT. VOLTAGES (Max.) @I_C=5.0A I_B=0.5A		I_{CBO}	
	V_{CB}	V_{CE}	V_{EB}	Min.	Max.	V_{CE}	V_{BE}	(µA) Max.	@ V_{CB}
2N4070	120	100	8	40	120	0.6	1.5	0.1	60
2N4071	200	150	8	40	120	0.6	1.5	0.1	100
SDT7601	60	40	8	40	120	0.5	1.5	0.5	30
SDT7602	80	60	8	40	120	0.5	1.5	0.5	30
SDT7603	100	80	8	40	120	0.5	1.5	0.5	60
SDT7604	140	120	8	40	120	0.5	1.5	0.5	60
SDT7605	170	150	8	40	120	0.6	1.5	0.5	100
SDT7607	60	40	8	20	60	0.5	1.5	0.5	30
SDT7608	80	60	8	20	60	0.5	1.5	0.5	30
SDT7609	100	80	8	20	60	0.5	1.5	0.5	60
SDT7610	140	120	8	20	60	0.5	1.5	0.5	60
SDT7611	170	150	8	20	60	0.6	1.5	0.5	100
SDT7612	220	200	8	20	60	0.6	1.5	0.5	100

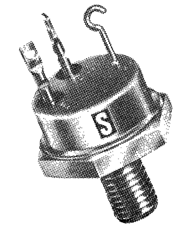


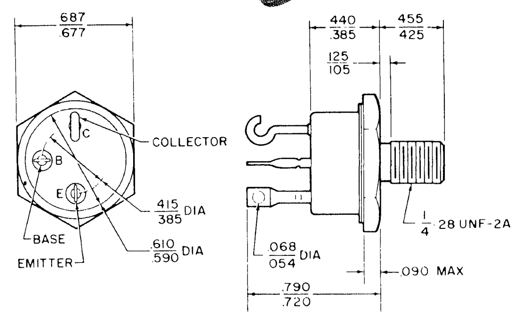


TO-3

$\theta_{J\text{-}C}$ = 1.5°C/Watt (65 Watts Max. @ T_C = 100°C)
$\theta_{J\text{-}A}$ = 45°C/Watt

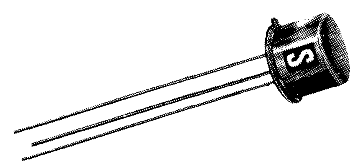
TYPE NUMBERS	RATED BREAKDOWN VOLTAGES			h_{FE} @I_C=5.0A V_{CE}=5.0V		SAT. VOLTAGES (Max.) @I_C=5.0A I_B=0.5A		I_{CBO} (µA)	@
	V_{CB}	V_{CE}	V_{EB}	Min.	Max.	V_{CE}	V_{BE}	Max.	V_{CB}
2N2811	80	60	8	20	60	0.5	1.2	0.1	60
2N2812	80	60	8	40	120	0.5	1.2	0.1	60
2N2813	120	80	8	20	60	0.5	1.2	0.1	60
2N2814	120	80	8	40	120	0.5	1.2	0.1	60
SDT7011	60	40	5	20	60	0.5	1.5	1.0	60
SDT7012	80	60	5	20	60	0.5	1.5	1.0	60
SDT7013	100	80	5	20	60	0.5	1.5	1.0	60
SDT7014	60	40	5	40	120	0.5	1.5	1.0	60
SDT7015	80	60	5	40	120	0.5	1.5	1.0	60
SDT7016	100	80	5	40	120	0.5	1.5	1.0	60
SDT7017	60	40	5	100	–	0.5	1.5	1.0	60
SDT7018	80	60	5	100	–	0.5	1.5	1.0	60
SDT7019	100	80	5	100	–	0.5	1.5	1.0	60
SDT7140	120	100	8	40	120	0.6	1.5	0.1	60
SDT7141	200	150	8	40	120	0.6	1.5	0.1	100
SDT7150	140	120	8	20	60	0.5	1.5	0.5	60
SDT7151	170	150	8	20	60	0.6	1.5	0.5	100
SDT7152	220	200	8	20	60	0.6	1.5	0.5	100
SDT7154	140	120	8	40	120	0.5	1.5	0.5	60
SDT7155	170	150	8	40	120	0.6	1.5	0.5	100



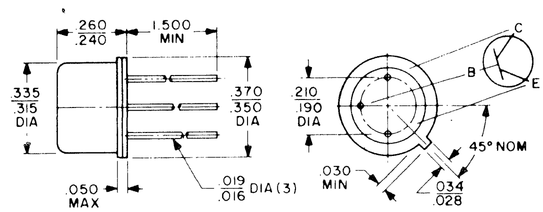


TO-61

θ_{J-C} = 2°C/Watt (50 Watts Max. @ T_C = 100°C)

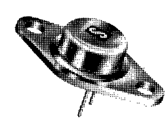


2N4150	100	80	5	40	120	0.6	1.5	0.1	60
SDT7401	60	40	5	40	120	0.5	1.5	1.0	30
SDT7402	80	60	5	40	120	0.5	1.5	1.0	60
SDT7403	100	80	5	40	120	0.5	1.5	1.0	60
SDT7411	60	40	5	20	60	0.6	1.5	1.0	30
SDT7412	80	60	5	20	60	0.6	1.5	1.0	60
SDT7413	100	80	5	20	60	0.6	1.5	1.0	60
SDT7414	60	40	5	40	120	0.6	1.5	1.0	30
SDT7415	80	60	5	40	120	0.6	1.5	1.0	60
SDT7416	100	80	5	40	120	0.6	1.5	1.0	60
SDT7417	60	40	5	100	–	0.6	1.5	1.0	30
SDT7418	80	60	5	100	–	0.6	1.5	1.0	60
SDT7419	100	80	5	100	–	0.6	1.5	1.0	60

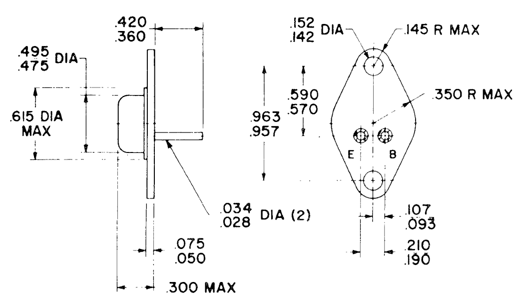


TO-5

θ_{J-C} = 20°C/Watt (5 Watts Max. @ T_C = 100°C)
θ_{J-A} = 140°C/Watt



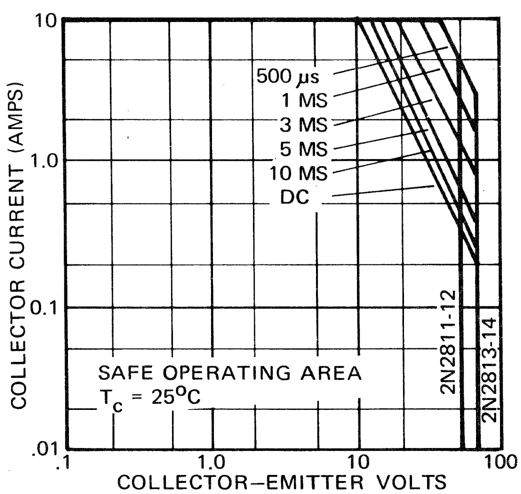
SDT7A01	60	40	8	40	120	0.5	1.5	0.5	30
SDT7A02	80	60	8	40	120	0.5	1.5	0.5	30
SDT7A03	100	80	8	40	120	0.5	1.5	0.5	60
SDT7A04	140	120	8	40	120	0.5	1.5	0.5	60
SDT7A05	170	150	8	40	120	0.6	1.5	0.5	100
SDT7A07	60	40	8	20	60	0.5	1.5	0.5	30
SDT7A08	80	60	8	20	60	0.5	1.5	0.5	30
SDT7A09	100	80	8	20	60	0.5	1.5	0.5	60
SDT7A10	140	120	8	20	60	0.5	1.5	0.5	60
SDT7A11	170	150	8	20	60	0.6	1.5	0.5	100
SDT7A12	220	200	8	20	60	0.6	1.5	0.5	100

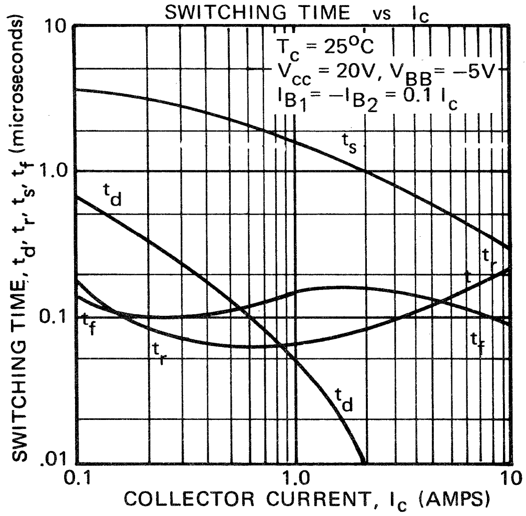


TO-66

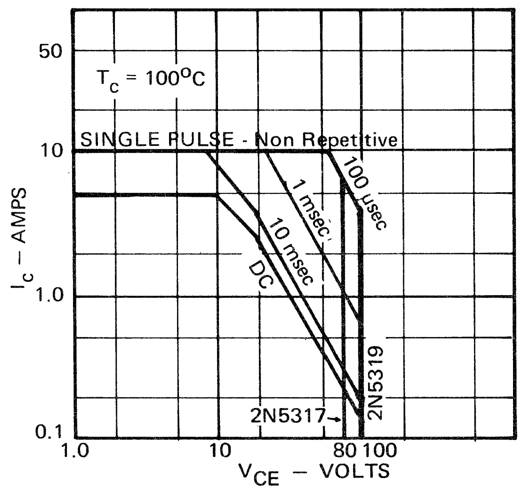
θ_{J-C} = 2.5°C/Watt (40 Watts Max. @ T_C = 100°C)

TO–61 FAMILY, TO-3 FAMILY

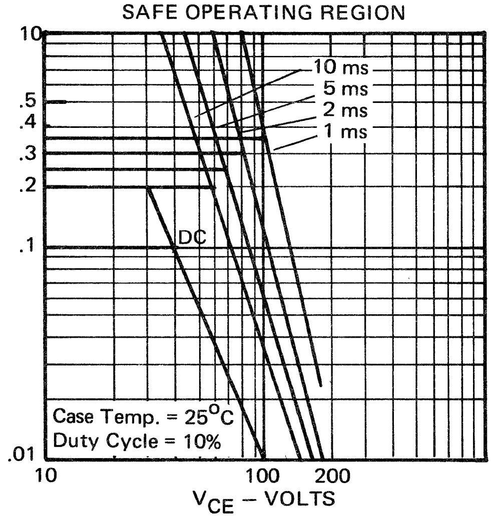




TO–66 FAMILY
SAFE OPERATING REGION – FORWARD BIAS MODE



TO–5 FAMILY
SAFE OPERATING REGION



SOLITRON FACILITIES

TAPPAN, N.Y.
256 Oak Tree Road
714 / 278-8780

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

SAN DIEGO, CAL.
8808 Balboa Avenue
714 / 278-8780

FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311

Hi Rel Power Transistors
Si. & Ge. Power Transistors
RF & small Signal Transistors
PNP-NPN Industrial Transistors

LONG ISLAND CITY, N.Y.
37-11 47th Ave.
212 / 937-0400

Microwave Components
Attenuation Devices
Waveguard & Coax Loads
Bolometer Elements
Ferrite & Ferrite Devices
Microwave Semicond.

PORT SALERNO, FLA.
Cove Road
305 / 833-6528

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

NEWTON HIGHLANDS, MASS.
70 Jacconet Street
617 / 527-6438

Plaxial (R) Cable
Precision RF Coax
Cable Assemblies

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone (941) 359-5050, TWX (710) 576-2654

MIDWEST
Suite 218, O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone (312) 842-8127, TWX (910) 233-2634

WESTERN
20944 Sherman Way, Suite 112
Canoga Park, California 91303
Telephone (213) 833-3822, TWX (910) 494-1238

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone (305) 848-4311, TWX (510) 952-6676

SOUTHWEST
10511 Church Road, Suite No. 1
Dallas, Texas
Telephone (214) 363-7921

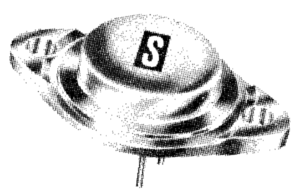
EUROPE
Solidev Ltd.
Sevenoaks, Kent, England
Telephone (Sevenoaks) 57541/2/3
Cable – Solitron Svoaks, Telex. # 95378

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

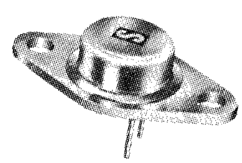
(TO–3)	(TO–66)	(TO–61)
SDT7731	SDT7741	SDT7761
SDT7732	SDT7742	SDT7762
SDT7733	SDT7743	SDT7763
SDT7734	SDT7744	SDT7764
SDT7735	SDT7745	SDT7765
SDT7736	SDT7746	SDT7766

20 AMP Peak

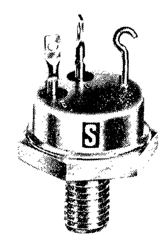
SILICON NPN POWER TRANSISTORS



TO-3



TO-66



TO-61

FEATURES:

- Planar process for excellent reliability
- Low f_T speed to eliminate unwanted oscillations
- Outstanding fast switching characteristics with low storage time
- Safe Operating ARea (SOAR) curves specified

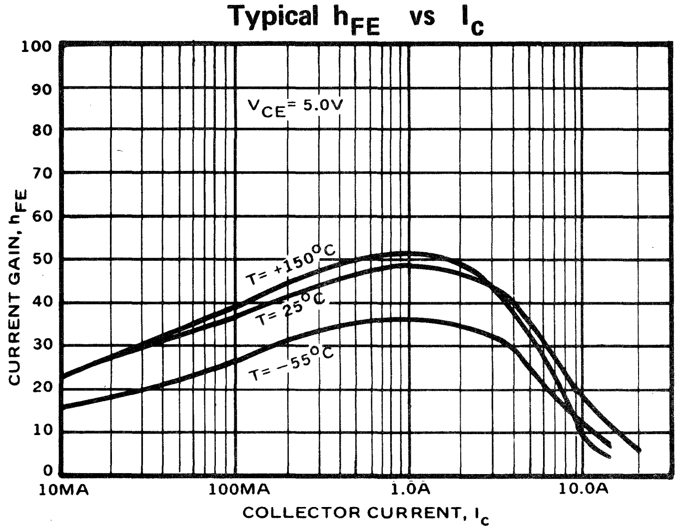
ABSOLUTE MAXIMUM RATINGS

	SDT7731 SDT7741 SDT7761	SDT7732 SDT7742 SDT7762	SDT7733 SDT7743 SDT7763	SDT7734 SDT7744 SDT7764	SDT7735 SDT7745 SDT7765	SDT7736 SDT7746 SDT7766
Collector-Base Voltage	60 V	80 V	100 V	120 V	140 V	165 V
Collector-Emitter Voltage	40 V	60 V	80 V	100 V	125 V	150 V
Emitter-Base Voltage	20 V	20 V	20 V	20 V	20 V	20 V
Continuous Collector Current	10 A	10 A	10 A	10 A	10 A	10 A
Peak Collector Current	20 A	20 A	20 A	20 A	20 A	20 A
Continuous Base Current	2 A	2 A	2 A	2 A	2 A	2 A
Peak Base Current	4 A	4 A	4 A	4 A	4 A	4 A
Storage Temperature			−65°C to +200°C			
Operating Junction Temperature ...			−65°C to +200°C			
Power Dissipation (100°C Case) TO-66	35.7 W	35.7 W	35.7 W	35.7 W	35.7 W	35.7 W
Power Dissipation (100°C Case) TO-3 TO-61	71.4 W	71.4 W	71.4 W	71.4 W	71.4 W	71.4 W

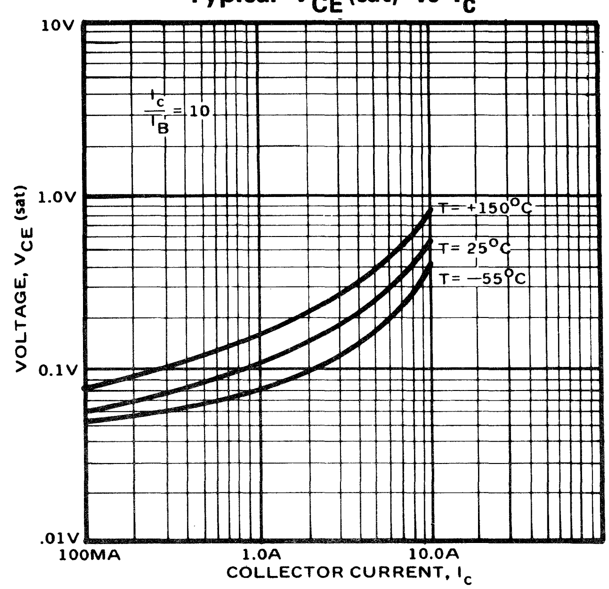
ELECTRICAL CHARACTERISTICS (25°C Ambient)

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPES
Static					
BV_{CEX}	$I_c = 100\,\mu A$, $V_{BE} = -1.5$ V	60	–	Volts	SDT7731, SDT7741, SDT7761
	" "	80	–	Volts	SDT7732, SDT7742, SDT7762
	" "	100	–	Volts	SDT7733, SDT7743, SDT7763
	" "	120	–	Volts	SDT7734, SDT7744, SDT7764
	" "	140	–	Volts	SDT7735, SDT7745, SDT7765
	" "	165	–	Volts	SDT7736, SDT7746, SDT7766
V_{CEO} (sus)	$I_c = 200$ MA	40	–	Volts	SDT7731, SDT7741, SDT7761
	"	60	–	Volts	SDT7732, SDT7742, SDT7762
	"	80	–	Volts	SDT7733, SDT7743, SDT7763
	"	100	–	Volts	SDT7734, SDT7744, SDT7764
	"	125	–	Volts	SDT7735, SDT7745, SDT7765
	"	150	–	Volts	SDT7736, SDT7746, SDT7766
BV_{EBO}	$I_E = 100\,\mu A$	20	–	Volts	ALL
I_{CBO}	$V_{CB} = 30$ V	–	1.0	μAMP	SDT7731-2,SDT7741-2,SDT7751-2
	$V_{CB} = 60$ V	–	1.0	μAMP	SDT7733-6,SDT7743-6,SDT7763-6
h_{FE}	$V_{CE} = 5.0$ V, $I_c = 5.0$ A	20	80	–	ALL
V_{CE} (sat)	$I_c = 5.0$ A, $I_B = 0.5$ A	–	0.5	Volts	ALL
V_{BE} (sat)	$I_c = 5.0$ A, $I_B = 0.5$ A	–	1.2	Volts	ALL
Dynamic					
C_{ob}	$V_{CB} = 10$ V	–	350	pf	ALL
$\lvert h_{fe} \rvert$	$V_{CE} = 10$ V, $I_c = 1$A, f = 1 MHz	5.0	–	–	ALL
$T_{(ON)}$	$V_{CE} = 20$ V, $I_c = 5$A, $I_B = 0.5$A	0.4 typ		μSEC	ALL
$T_{(OFF)}$	$V_{CE} = 20$ V, $I_c = 5$A, $I_B = 0.5$A	0.6 typ		μSEC	ALL

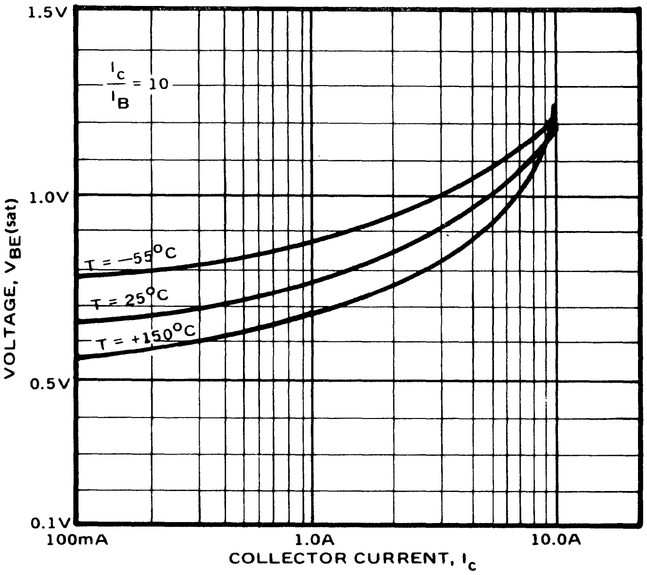
Typical h_{FE} vs I_c



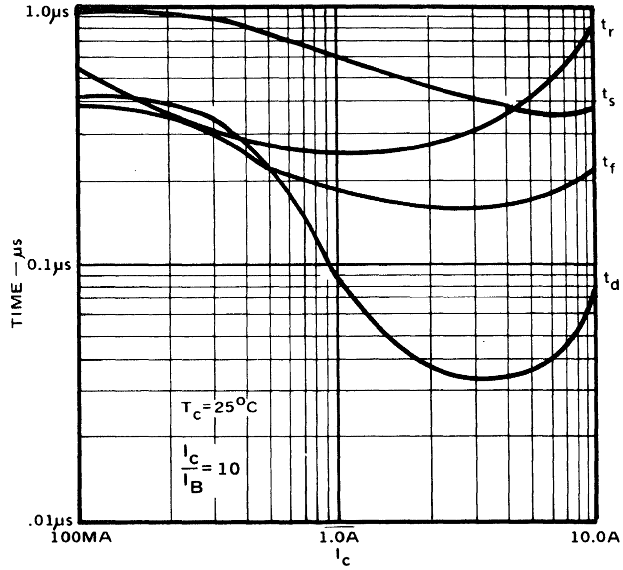
Typical V_{CE}(sat) vs I_c



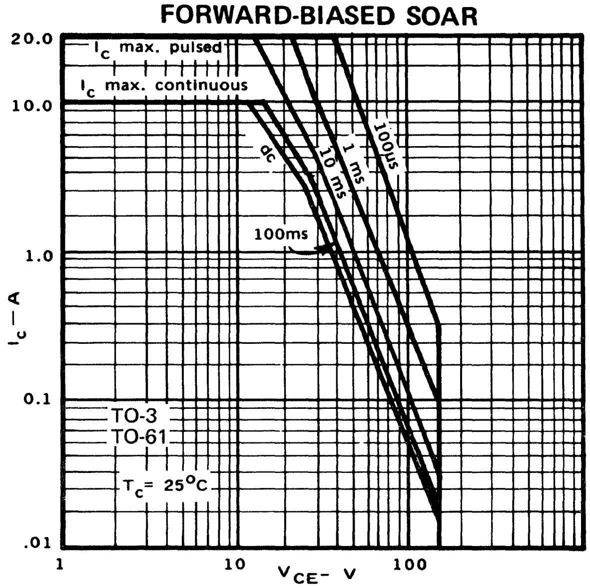
Typical V_{BE}(sat) vs I_C



Typical SWITCHING TIME vs I_C

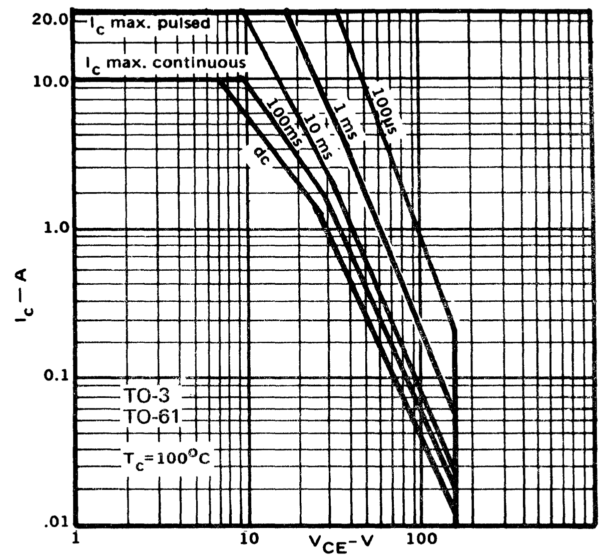


FORWARD-BIASED SOAR



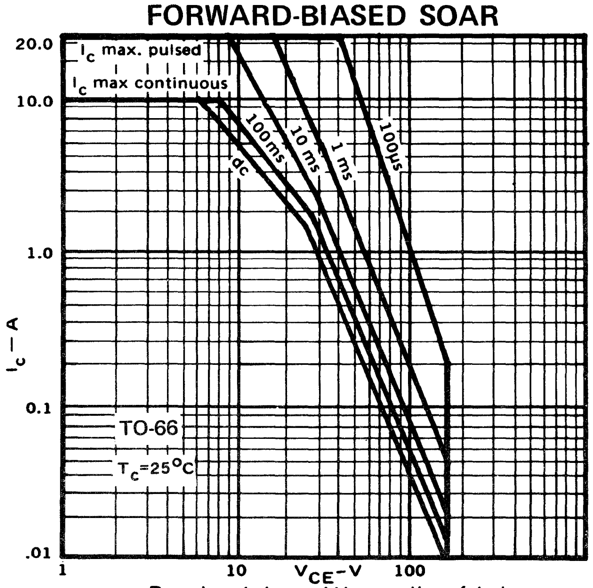
Do not apply beyond V_{CEO} rating of device.

FORWARD-BIASED SOAR



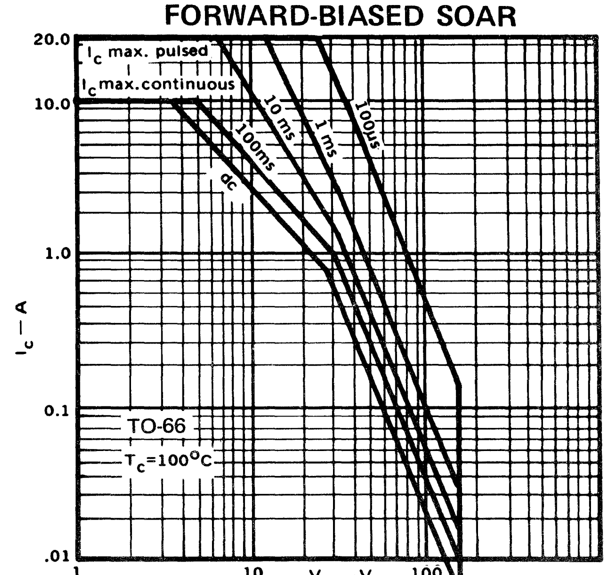
Do not apply beyond V_{CEO} rating of device.

FORWARD-BIASED SOAR



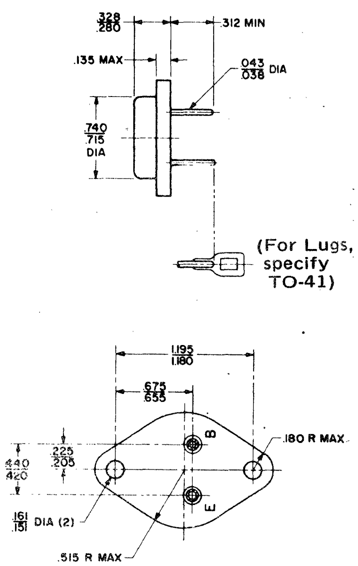
Do not apply beyond V_{CEO} rating of device

FORWARD-BIASED SOAR

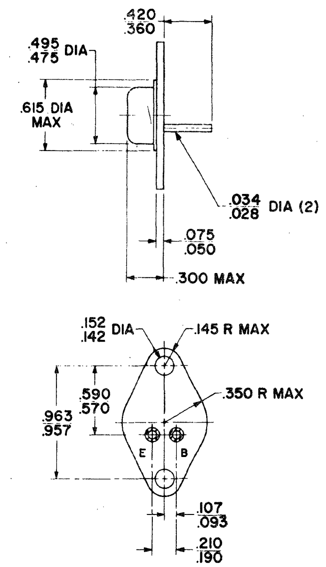


Do not apply beyond V_{CEO} rating of device

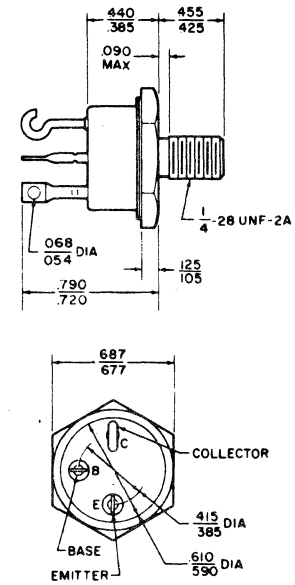
OUTLINE DIMENSIONS



TO-3



TO-66



TO-61

NOTES: 1. Collector is electrically common to case. 2. All dimensions in inches.

SOLITRON FACILITIES

TAPPAN, N. Y.
256 Oak Tree Road
714 / 278-8780

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311

Hi Rel Power Transistors
Si. & Ge. Power Transistors
PNP-NPN Industrial Transistors

PORT SALERNO, FLA.
Cove Road
305 / 833-6528

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

SAN DIEGO, CALIF.
8808 Balboa Avenue
714 / 278-8780

FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

JUPITER, FLA.
1440 W. Indiantown Rd.
305 / 746-8311

Microwave Stripline
Microwave Semiconductors
RF Transistors
Microwave Integrated Circuits

SOLITRON REGIONAL OFFICES

NORTHEAST
52 Pickering Street
Needham, Massachusetts 92192
Telephone (617) 444-1152, TWX (710) 325-7514

WESTERN
20944 Sherman Way, Suite 112
Canoga Park, California 91303
Telephone (213) 833-3822, TWX (910) 494-1238

SOUTHWEST
10511 Church Road, Suite No. 1
Dallas, Texas
Telephone (214) 363-7921

MIDWEST
Suite 218, O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone (312) 842-8127, TWX (910) 233-2634

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone (305) 848-4311, TWX (510) 952-7610

EUROPE
Solidev Ltd.
Sevenoaks, Kent, England
Telephone (Sevenoaks) 57541/2/3
Cable – Solitron Svoaks, Telex. # 95378

When you think of semiconductors... think Solitron!

20 AMP SILICON PLANAR NPN POWER TRANSISTORS

SDT8002 SDT8003

S P E C I F I C A T I O N S

DESIGNED-IN ADVANTAGES

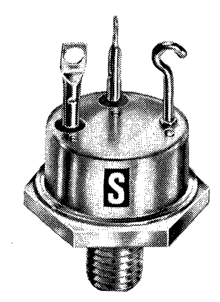
Greater Gain Linearity – planar fabrication techniques result in unusually constant gain over a wide current range. Gain is essentially flat from below 50 milliamps to over 5 amperes.

Low Saturation Voltage – $V_{CE\ (SAT)}$ is less than 0.6V at $I_C = 10A$ for lower losses in the saturated mode.

Minimum Long-Term Drift – planar construction eliminates surface contamination, ensuring consistent performance for the life of the device.

Fast Switching – shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents.

High Frequency Response – a minimum gain cutoff frequency of 20 MHz makes these transistors desirable for high power, high frequency switching and amplifier applications.



TO-63 Actual Size

ABSOLUTE MAXIMUM RATINGS

Collector-to-Base Voltage	
SDT8002	80 Vdc max.
SDT8003	100 Vdc max.
Collector-to-Emitter Voltage	
SDT8002	60 Vdc max.
SDT8003	80 Vdc max.
Emitter-to-Base Voltage	8 Vdc max.
Collector Current	20 Adc max.
Thermal Resistance; Junction to Case	1°C/W
Total Dissipation at:	
100°C Case Temperature	100 W max.
Junction Temperature; Operating	+200°C max.
Storage Temperature	−65°C to +200°C

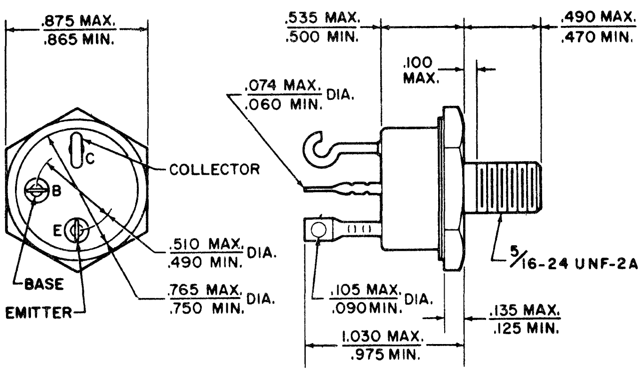
Solitron DEVICES, INC./TRANSISTOR DIVISION

ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise noted.

Symbol	Min.	Max.	Unit	Conditions
h_{FE} (1)	40 10	120		$I_C = 10A$, $V_{CE} = 5V$ $I_C = 20A$, $V_{CE} = 5V$
V_{BE} (sat.) (1)		1.7	Vdc	$I_C = 10A$, $I_B = 1A$
V_{CE} (sat.) (1)		1.0	Vdc	$I_C = 10A$, $I_B = 1A$
$V_{(BR)CBO}$	80 100		Vdc Vdc	$I_{CBO} = 200\mu A$, $I_E = 0$ SDT8002 SDT8003
$V_{(BR)CEO}$	60 80		Vdc Vdc	$I_{CEO} = 10mA$, $I_B = 0$ SDT8002 SDT8003
$V_{(BR)EBO}$	8		Vdc	$I_{EBO} = 200\mu A$, $I_C = 0$
I_{CBO}		0.1	mAdc	$V_{CB} = 60V$, $I_E = 0$
$\|h_{fe}\|$ (High Frequency Small Signal)	2.0			$V_{CE} = 10V$, $I_C = 1A$, $f = 10$ MHz

NOTE: 1. Pulse Measurement conditions: Length $\leqq$ 300 μsec; Duty cycle $\leqq$ 2%

OUTLINE DIMENSIONS



TO-63

NOTES: 1. Collector is electrically common to case.
2. All dimensions in inches.

MOUNTING

It is very important that a power transistor be provided with a good heat dissipating facility. The surface to which the transistor is attached must be flat and free from burrs. The nut must be tightened securely (12 in.-lb minimum to 20 in.-lb maximum torque limit when used against a metal chassis or the bushing supplied, provided that all parts are clean and dry).

TYPICAL CHARACTERISTICS: The curves of the typical characteristics for these devices are very similar to those of the 2N3597, 2N3598, and 2N3599, including the "Safe Operating Area."

For additional technical information, prices and quotations contact your local sales representative or

Solitron DEVICES, INC./TRANSISTOR DIVISION

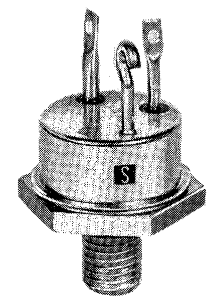
1177 BLUE HERON BLVD. / RIVIERA BEACH, FLORIDA / (305) 848-4311 / TWX: (510) 952-6676

20 AMP SILICON PLANAR NPN POWER TRANSISTORS

SDT8012 SDT8013

SPECIFICATIONS

DESIGNED-IN ADVANTAGES



TO-63 Actual Size

Greater Gain Linearity — planar fabrication techniques result in unusually constant gain over a wide current range. Gain is essentially flat from below 50 milliamps to over 5 amperes.

Low Saturation Voltage —V_{CE} (SAT) is less than 0.6V at I_C= 10A for lower losses in the saturated mode.

Minimum Long-Term Drift — planar construction eliminates surface contamination, ensuring consistent performance for the life of the device.

Fast Switching — shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents.

High Frequency Response — a minimum gain cutoff frequency of 25 MHz makes these transistors desirable for high power, high frequency switching and amplifier applications.

ABSOLUTE MAXIMUM RATINGS

Collector-to-Base Voltage	
SDT8012	80 Vdc max.
SDT8013	100 Vdc max.
Collector-to-Emitter Voltage	
SDT8012	60 Vdc max.
SDT8013	80 Vdc max.
Emitter-to-Base Voltage	8 Vdc max.
Collector Current	20 Adc max.
Thermal Resistance; Junction to Case	1°C/W
Total Dissipation at: 100°C Case Temperature	100 W max.
Junction Temperature; Operating	+200°C max.
Storage Temperature	−65°C to +200°C

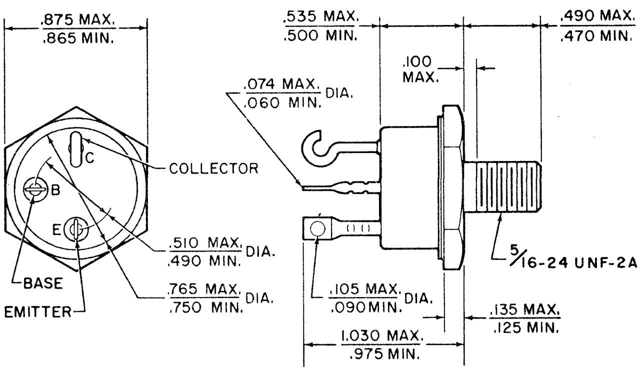
Solitron DEVICES, INC./TRANSISTOR DIVISION

ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise noted.

Symbol	Min.	Max.	Unit	Conditions
h_{FE} (1)	20 10	60		$I_C=10A$, $V_{CE}=5V$ $I_C=20A$, $V_{CE}=5V$
V_{BE} (sat.) (1)		1.5	Vdc	$I_C=10A$, $I_B=1A$
V_{CE} (sat.) (1)		0.6	Vdc	$I_C=10A$, $I_B=1A$
$V_{(BR)CBO}$	80 100		Vdc Vdc	$I_{CBO}=200\mu A$, $I_E=0$ SDT8012 SDT8013
$V_{(BR)CEO}$	60 80		Vdc Vdc	$I_{CEO}=10mA$, $I_B=0$ SDT8012 SDT8013
$V_{(BR)EBO}$	8		Vdc	$I_{EBO}=200\mu A$, $I_C=0$
I_{CBO}		10	μAdc	$V_{CB}=60V$, $I_E=0$
$\|h_{fe}\|$ (High Frequency Small Signal)	2.5			$V_{CE}=10V$, $I_C=1A$, $f=10$ MHz

NOTE: 1. Pulse Measurement conditions: Length $\leqq$ 300 μsec; Duty cycle $\leqq$ 2%

OUTLINE DIMENSIONS



TO-63

NOTES: 1. Collector is electrically common to case.
2. All dimensions in inches.

MOUNTING

It is very important that a power transistor be provided with a good heat dissipating facility. The surface to which the transistor is attached must be flat and free from burrs. The nut must be tightened securely (12 in.-lb minimum to 20 in.-lb maximum torque limit when used against a metal chassis or the bushing supplied, provided that all parts are clean and dry).

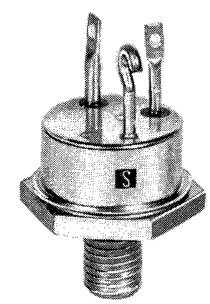
TYPICAL CHARACTERISTICS: The curves of the typical characteristics for these devices are very similar to those of the 2N3597, 2N3598, and 2N3599, including the "Safe Operating Area."

20 AMP SILICON PLANAR NPN POWER TRANSISTORS

SDT8015 SDT8016

S P E C I F I C A T I O N S

DESIGNED-IN ADVANTAGES



TO-63 Actual Size

Greater Gain Linearity – planar fabrication techniques result in unusually constant gain over a wide current range. Gain is essentially flat from below 50 milliamps to over 5 amperes.

Low Saturation Voltage –$V_{CE\,(SAT)}$ is less than 0.6V at I_C= 10A for lower losses in the saturated mode.

Minimum Long-Term Drift – planar construction eliminates surface contamination, ensuring consistent performance for the life of the device.

Fast Switching – shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents.

High Frequency Response – a minimum gain cutoff frequency of 25 MHz makes these transistors desirable for high power, high frequency switching and amplifier applications.

ABSOLUTE MAXIMUM RATINGS

Collector-to-Base Voltage	
SDT8015	80 Vdc max.
SDT8016	100 Vdc max.
Collector-to-Emitter Voltage	
SDT8015	60 Vdc max.
SDT8016	80 Vdc max.
Emitter-to-Base Voltage	8 Vdc max.
Collector Current	20 Adc max.
Thermal Resistance; Junction to Case	1°C/W
Total Dissipation at: 100°C Case Temperature	100 W max.
Junction Temperature; Operating	+200°C max.
Storage Temperature	−65°C to +200°C

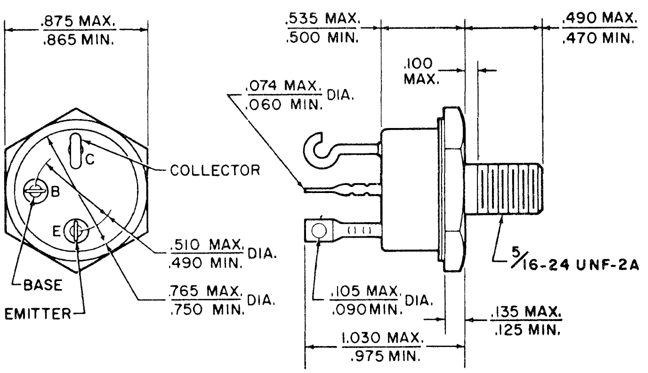
Solitron DEVICES, INC./TRANSISTOR DIVISION

ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise noted.

Symbol	Min.	Max.	Unit	Conditions
h_{FE} (1)	40 10	120		$I_C = 10A$, $V_{CE} = 5V$ $I_C = 20A$, $V_{CE} = 5V$
V_{BE} (sat.) (1)		1.5	Vdc	$I_C = 10A$, $I_B = 1A$
V_{CE} (sat.) (1)		0.6	Vdc	$I_C = 10A$, $I_B = 1A$
$V_{(BR)CBO}$	80 100		Vdc Vdc	$I_{CBO} = 200\mu A$, $I_E = 0$ SDT8015 SDT8016
$V_{(BR)CEO}$	60 80		Vdc Vdc	$I_{CEO} = 10mA$, $I_B = 0$ SDT8015 SDT8016
$V_{(BR)EBO}$	8		Vdc	$I_{EBO} = 200\mu A$, $I_C = 0$
I_{CBO}		10	μAdc	$V_{CB} = 60V$, $I_E = 0$
$\|h_{fe}\|$ (High Frequency Small Signal)	2.5			$V_{CE} = 10V$, $I_C = 1A$, f = 10 MHz

NOTE: 1. Pulse Measurement conditions: Length $\leqq$ 300 μsec; Duty cycle $\leqq$ 2%

OUTLINE DIMENSIONS



TO-63

NOTES: 1. Collector is electrically common to case.
2. All dimensions in inches.

MOUNTING

It is very important that a power transistor be provided with a good heat dissipating facility. The surface to which the transistor is attached must be flat and free from burrs. The nut must be tightened securely (12 in.-lb minimum to 20 in.-lb maximum torque limit when used against a metal chassis or the bushing supplied, provided that all parts are clean and dry).

TYPICAL CHARACTERISTICS: The curves of the typical characteristics for these devices are very similar to those of the 2N3597, 2N3598, and 2N3599, including the "Safe Operating Area."

For additional technical information, prices and quotations contact your local sales representative or

Solitron DEVICES, INC./TRANSISTOR DIVISION

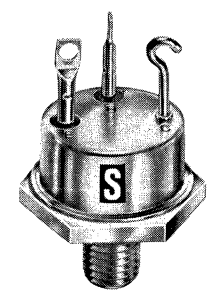
1177 BLUE HERON BLVD. / RIVIERA BEACH, FLORIDA / (305) 848-4311 / TWX: (510) 952-6676

20 AMP SILICON PLANAR NPN POWER TRANSISTORS

SDT8045

S P E C I F I C A T I O N S

DESIGNED-IN ADVANTAGES



TO-63 Actual Size

Greater Gain Linearity – planar fabrication techniques result in unusually constant gain over a wide current range. Gain is essentially flat from below 50 milliamps to over 5 amperes.

Low Saturation Voltage – V_{CE} (SAT) is less than 1.5V at I_C= 10A for lower losses in the saturated mode.

Minimum Long-Term Drift – planar construction eliminates surface contamination, ensuring consistent performance for the life of the device.

Fast Switching – shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents.

ABSOLUTE MAXIMUM RATINGS

Collector-to-Base Voltage	40 Vdc max.
Collector-to-Emitter Voltage	25 Vdc max.
Emitter-to-Base Voltage	5 Vdc max.
Collector Current	20 Adc max.
Thermal Resistance; Junction to Case	1°C/W
Total Dissipation at: 100°C Case Temperature	100 W max.
Junction Temperature; Operating	+200°C max.
Storage Temperature	−65°C to +200°C

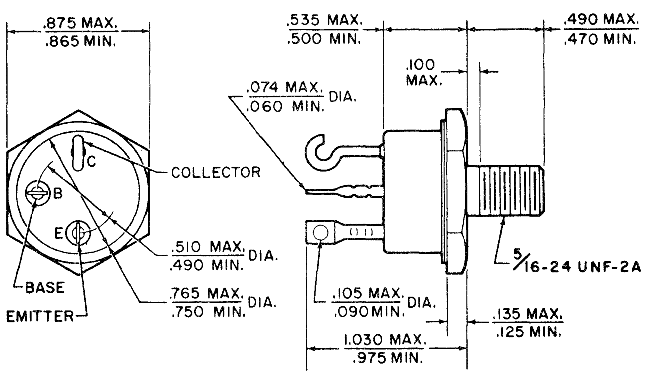
Solitron DEVICES, INC./TRANSISTOR DIVISION

ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise noted.

Symbol	Min.	Max.	Unit	Conditions
h_{FE} (1)	40 10			$I_C = 10A$, $V_{CE} = 5V$ $I_C = 20A$, $V_{CE} = 5V$
V_{BE} (sat.) (1)		2.0	Vdc	$I_C = 10A$, $I_B = 1A$
V_{CE} (sat.) (1)		1.5	Vdc	$I_C = 10A$, $I_B = 1A$
$V_{(BR)CBO}$	40			$I_{CBO} = 200\mu A$, $I_E = 0$
$V_{(BR)CEO}$	25			$I_{CEO} = 10mA$, $I_B = 0$
$V_{(BR)EBO}$	5		Vdc	$I_{EBO} = 200\mu A$, $I_C = 0$
I_{CBO}		10	μAdc	$V_{CB} = 60V$, $I_E = 0$

NOTE: 1. Pulse Measurement conditions: Length $\leqq$ 300 μsec; Duty cycle $\leqq$ 2%

OUTLINE DIMENSIONS



TO-63

NOTES: 1. Collector is electrically common to case.
2. All dimensions in inches.

MOUNTING

It is very important that a power transistor be provided with a good heat dissipating facility. The surface to which the transistor is attached must be flat and free from burrs. The nut must be tightened securely (12 in.-lb minimum to 20 in.-lb maximum torque limit when used against a metal chassis or the bushing supplied, provided that all parts are clean and dry).

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

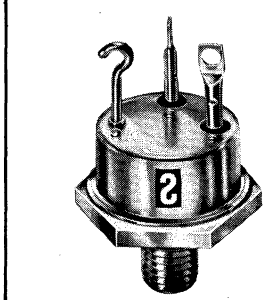
TYPICAL CHARACTERISTICS: The curves of the typical characteristics for these devices are very similar to those of the 2N3597, 2N3598, and 2N3599, including the "Safe Operating Area."

20 AMP SILICON PLANAR NPN POWER TRANSISTORS

SDT8070 SDT8071

S P E C I F I C A T I O N S

DESIGNED-IN ADVANTAGES



TO-63 Actual Size

Greater Gain Linearity – planar fabrication techniques result in unusually constant gain over a wide current range. Gain is essentially flat from below 50 milliamps to over 5 amperes.

Low Saturation Voltage – $V_{CE(SAT)}$ is less than 0.6V at $I_C = 10A$ for lower losses in the saturated mode.

Minimum Long-Term Drift – planar construction eliminates surface contamination, ensuring consistent performance for the life of the device.

Fast Switching – shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents.

High Frequency Response – a minimum gain cutoff frequency of 25 MHz makes these transistors desirable for high power, high frequency switching and amplifier applications.

ABSOLUTE MAXIMUM RATINGS

Collector-to-Base Voltage	
SDT8070	80 Vdc max.
SDT8071	100 Vdc max.
Collector-to-Emitter Voltage	
SDT8070	60 Vdc max.
SDT8071	80 Vdc max.
Emitter-to-Base Voltage	8 Vdc max.
Collector Current	20 Adc max.
Thermal Resistance; Junction to Case	1°C/W
Total Dissipation at: 100°C Case Temperature	100 W max.
Junction Temperature; Operating	+200°C max.
Storage Temperature	−65°C to +200°C

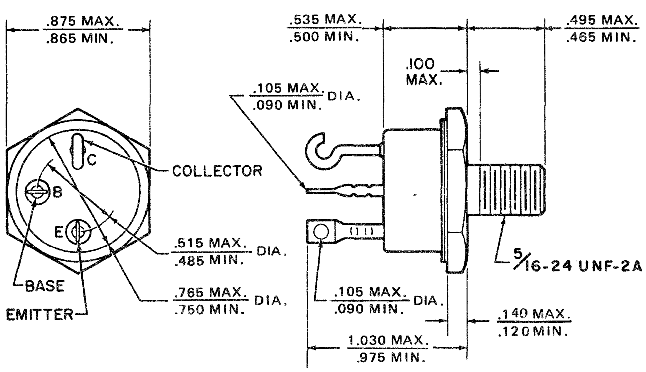
Solitron DEVICES, INC./TRANSISTOR DIVISION

ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise noted.

Symbol	Min.	Max.	Unit	Conditions
h_{FE} (1)	100 10			$I_C=10A$, $V_{CE}=5V$ $I_C=20A$, $V_{CE}=5V$
V_{BE} (sat.) (1)		1.5	Vdc	$I_C=10A$, $I_B=1A$
V_{CE} (sat.) (1)		0.6	Vdc	$I_C=10A$, $I_B=1A$
$V_{(BR)CBO}$	80 100		Vdc Vdc	$I_{CBO}=200\mu A$, $I_E=0$ SDT8070 SDT8071
$V_{(BR)CEO}$	60 80		Vdc Vdc	$I_{CEO}=10mA$, $I_B=0$ SDT8070 SDT8071
$V_{(BR)EBO}$	8		Vdc	$I_{EBO}=200\mu A$, $I_C=0$
I_{CBO}		10	μAdc	$V_{CB}=60V$, $I_E=0$
$\|h_{fe}\|$ (High Frequency Small Signal)	2.5			$V_{CE}=10V$, $I_C=1A$, f= 10 MHz

NOTE: 1. Pulse Measurement conditions: Length $\leqq$ 300 μsec; Duty cycle $\leqq$ 2%

OUTLINE DIMENSIONS



TO-63

NOTES: 1. Collector is electrically common to case.
2. All dimensions in inches.

MOUNTING

It is very important that a power transistor be provided with a good heat dissipating facility. The surface to which the transistor is attached must be flat and free from burrs. The nut must be tightened securely (12 in.-lb minimum to 20 in.-lb maximum torque limit when used against a metal chassis or the bushing supplied, provided that all parts are clean and dry).

TYPICAL CHARACTERISTICS: The curves of the typical characteristics for these devices are very similar to those of the 2N3597, 2N3598, and 2N3599, including the "Safe Operating Area."

For additional technical information, prices and quotations contact your local sales representative or

Solitron DEVICES, INC./TRANSISTOR DIVISION

1177 BLUE HERON BLVD. / RIVIERA BEACH, FLORIDA / (305) 848-4311 / TWX: (510) 952-6676

Leader in Germanium and Silicon Power Transistors, Cryogenic Thermometers, High Voltage Rectifiers, Hot Carrier Diodes, Temperature Compensated Zeners, Voltage Variable Capacitors, Random/White Noise Components, Microelectronic Circuits, and High-Pac Interconnection Systems.

30 AMP SILICON PLANAR NPN POWER TRANSISTORS

SDT8301 SDT8302

S P E C I F I C A T I O N S

DESIGNED-IN ADVANTAGES

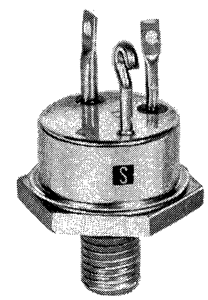
Greater Gain Linearity – planar fabrication techniques result in unusually constant gain over a wide current range. Gain is essentially flat from below 50 milliamps to over 5 amperes.

Low Saturation Voltage – V_{CE} (SAT) is less than 0.6V at $I_C = 10A$ for lower losses in the saturated mode.

Minimum Long-Term Drift – planar construction eliminates surface contamination, ensuring consistent performance for the life of the device.

Fast Switching – shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents.

High Frequency Response – a minimum gain cutoff frequency of 25 MHz makes these transistors desirable for high power, high frequency switching and amplifier applications.



TO-63 Actual Size

ABSOLUTE MAXIMUM RATINGS

Collector-to-Base Voltage	
SDT8301	80 Vdc max.
SDT8302	100 Vdc max.
Collector-to-Emitter Voltage	
SDT8301	60 Vdc max.
SDT8302	80 Vdc max.
Emitter-to-Base Voltage	8 Vdc max.
Collector Current	30 Adc max.
Thermal Resistance; Junction to Case	1°C/W
Total Dissipation at: 100°C Case Temperature	100 W max.
Junction Temperature; Operating	+200°C max.
Storage Temperature	–65°C to +200°C

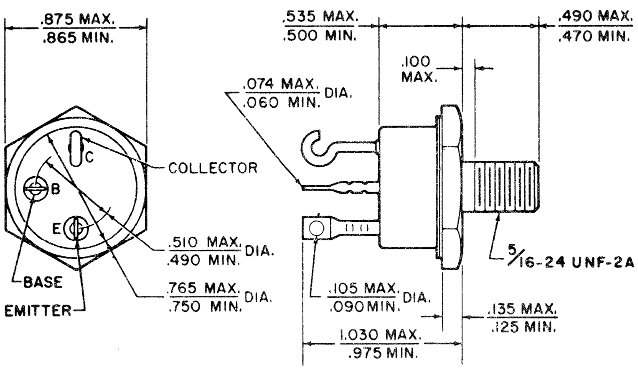
Solitron DEVICES, INC./TRANSISTOR DIVISION

ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise noted.

Symbol	Min.	Max.	Unit	Conditions
h_{FE} (1)	40 10	120		$I_C = 10A$, $V_{CE} = 5V$ $I_C = 30A$, $V_{CE} = 5V$
V_{BE} (sat.) (1)		1.5	Vdc	$I_C = 10A$, $I_B = 1A$
V_{CE} (sat.) (1)		0.6	Vdc	$I_C = 10A$, $I_B = 1A$
$V_{(BR)CBO}$	80 100		Vdc Vdc	$I_{CBO} = 200\mu A$, $I_E = 0$ SDT8301 SDT8302
$V_{(BR)CEO}$	60 80		Vdc Vdc	$I_{CEO} = 10mA$, $I_B = 0$ SDT8301 SDT8302
$V_{(BR)EBO}$	8		Vdc	$I_{EBO} = 200\mu A$, $I_C = 0$
I_{CBO}		10	μAdc	$V_{CB} = 60V$, $I_E = 0$
$\lvert h_{fe} \rvert$ (High Frequency Small Signal)	2.5			$V_{CE} = 10V$, $I_C = 1A$, f = 10 MHz

NOTE: 1. Pulse Measurement conditions: Length $\leqq$ 300 μsec; Duty cycle $\leqq$ 2%

OUTLINE DIMENSIONS



TO-63

NOTES: 1. Collector is electrically common to case.
2. All dimensions in inches.

MOUNTING

It is very important that a power transistor be provided with a good heat dissipating facility. The surface to which the transistor is attached must be flat and free from burrs. The nut must be tightened securely (12 in.-lb minimum to 20 in.-lb maximum torque limit when used against a metal chassis or the bushing supplied, provided that all parts are clean and dry).

TYPICAL CHARACTERISTICS: The curves of the typical characteristics for these devices are very similar to those of the 2N3597, 2N3598, and 2N3599, including the "Safe Operating Area."

For additional technical information, prices and quotations contact your local sales representative or

Solitron DEVICES, INC./TRANSISTOR DIVISION

1177 BLUE HERON BLVD. / RIVIERA BEACH, FLORIDA / (305) 848-4311 / TWX: (510) 952-6676

30 AMP SILICON PLANAR NPN POWER TRANSISTORS

SDT8303 SDT8304

S P E C I F I C A T I O N S

DESIGNED-IN ADVANTAGES

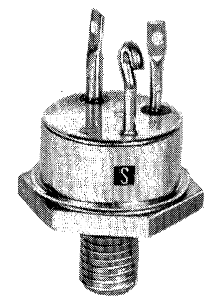
Greater Gain Linearity — planar fabrication techniques result in unusually constant gain over a wide current range. Gain is essentially flat from below 50 milliamps to over 5 amperes.

Low Saturation Voltage — V_{CE} (SAT) is less than 0.6V at $I_C = 10A$ for lower losses in the saturated mode.

Minimum Long-Term Drift — planar construction eliminates surface contamination, ensuring consistent performance for the life of the device.

Fast Switching — shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents.

High Frequency Response — a minimum gain cutoff frequency of 25 MHz makes these transistors desirable for high power, high frequency switching and amplifier applications.



TO-63 Actual Size

ABSOLUTE MAXIMUM RATINGS

Collector-to-Base Voltage	
SDT8303	80 Vdc max.
SDT8304	100 Vdc max.
Collector-to-Emitter Voltage	
SDT8303	60 Vdc max.
SDT8304	80 Vdc max.
Emitter-to-Base Voltage	8 Vdc max.
Collector Current	30 Adc max.
Thermal Resistance; Junction to Case	1°C/W
Total Dissipation at: 100°C Case Temperature	100 W max.
Junction Temperature; Operating	+200°C max.
Storage Temperature	−65°C to +200°C

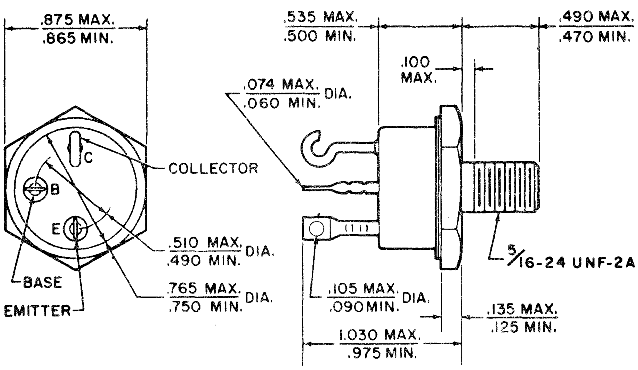
Solitron DEVICES, INC./TRANSISTOR DIVISION

ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise noted.

Symbol	Min.	Max.	Unit	Conditions
h_{FE} (1)	100 10			$I_C = 10A$, $V_{CE} = 5V$ $I_C = 30A$, $V_{CE} = 5V$
V_{BE} (sat.) (1)		1.5	Vdc	$I_C = 10A$, $I_B = 1A$
V_{CE} (sat.) (1)		0.6	Vdc	$I_C = 10A$, $I_B = 1A$
$V_{(BR)CBO}$	 80 100		 Vdc Vdc	$I_{CBO} = 200\mu A$, $I_E = 0$ SDT8303 SDT8304
$V_{(BR)CEO}$	 60 80		 Vdc Vdc	$I_{CEO} = 10mA$, $I_B = 0$ SDT8303 SDT8304
$V_{(BR)EBO}$	8		Vdc	$I_{EBO} = 200\mu A$, $I_C = 0$
I_{CBO}		10	μAdc	$V_{CB} = 60V$, $I_E = 0$
$\lvert h_{fe} \rvert$ (High Frequency Small Signal)	2.5			$V_{CE} = 10V$, $I_C = 1A$, f = 10 MHz

NOTE: 1. Pulse Measurement conditions: Length $\leqq$ 300 μsec; Duty cycle $\leqq$ 2%

OUTLINE DIMENSIONS



TO-63

NOTES: 1. Collector is electrically common to case.
2. All dimensions in inches.

MOUNTING

It is very important that a power transistor be provided with a good heat dissipating facility. The surface to which the transistor is attached must be flat and free from burrs. The nut must be tightened securely (12 in.-lb minimum to 20 in.-lb maximum torque limit when used against a metal chassis or the bushing supplied, provided that all parts are clean and dry).

TYPICAL CHARACTERISTICS: The curves of the typical characteristics for these devices are very similar to those of the 2N3597, 2N3598, and 2N3599, including the "Safe Operating Area."

For additional technical information, prices and quotations contact your local sales representative or

Solitron DEVICES, INC./TRANSISTOR DIVISION

1177 BLUE HERON BLVD. / RIVIERA BEACH, FLORIDA / (305) 848-4311 / TWX: (510) 952-6676

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

(TO–68)	(TO–114)
SDT8601	**SDT8920**
SDT8602	**SDT8921**
SDT8603	**SDT8922**
SDT8604	**SDT8923**

100 AMP

NPN SILICON POWER

ABSOLUTE MAXIMUM RATINGS

	SDT8601	SDT8602	SDT8603	SDT8604
BV_{CBO}	80 V	100 V	120 V	140 V
V_{CEO} (sus)	60 V	80 V	100 V	120 V
BV_{EBO}	8 V	8 V	8 V	8 V
I_C (Max.)	100 A	100 A	100 A	100 A
I_B (Max.)	20 A	20 A	20 A	20 A
P_T (25°C Case)	290 W	290 W	290 W	290 W
Thermal Resistance	0.6 °C/W	0.6 °C/W	0.6 °C/W	0.6 °C/W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
BV_{CBO}	$I_C = 1$ mA, $I_E = 0$	80	–	Volts	SDT8601
	$I_C = 1$ mA, $I_E = 0$	100	–	Volts	SDT8602
	$I_C = 1$ mA, $I_E = 0$	120	–	Volts	SDT8603
	$I_C = 1$ mA, $I_E = 0$	140	–	Volts	SDT8604
V_{CEO} (sus)*	$I_C = 200$ mA, $I_B = 0$	60	–	Volts	SDT8601
	$I_C = 200$ mA, $I_B = 0$	80	–	Volts	SDT8602
	$I_C = 200$ mA, $I_B = 0$	100	–	Volts	SDT8603
	$I_C = 200$ mA, $I_B = 0$	120	–	Volts	SDT8604
BV_{EBO}	$I_E = 1$ mA, $I_C = 0$	8	–	Volts	ALL
h_{FE}*	$I_C = 75$ A, $V_{CE} = 5$ V	10	–	–	ALL
h_{FE}*	$I_C = 90$ A, $V_{CE} = 5$ V	5	–	–	ALL
V_{CE} (sat)*	$I_C = 50$ A, $I_B = 5$ A	–	1.5	Volts	ALL
V_{BE} (sat)*	$I_C = 50$ A, $I_B = 5$ A	–	2.0	Volts	ALL
I_{CBO}	$V_{CB} = 60$ V, $I_E = 0$	–	10	μA	ALL
f_T	$I_C = 5$ A, $V_{CE} = 10$ V	20 Typical		MHz	ALL

*Pulse measurement conditions: Length ≤ 330 μs; Duty cycle ≤ 2%

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT8920	SDT8921	SDT8922	SDT8923
BV_{CBO}	80 V	100 V	120 V	140 V
V_{CEO}(sus)	60 V	80 V	100 V	120 V
BV_{EBO}	8 V	8 V	8 V	8 V
I_C(Max.)	100 A	100 A	100 A	100 A
I_B(Max.)	20 A	20 A	20 A	20 A
P_T(25°C Case)	350 W	350 W	350 W	350 W
Thermal Resistance	0.5 °C/W	0.5 °C/W	0.5 °C/W	0.5 °C/W
Operating Junction Temperature	200°C			
Storage Temperature Range	−65°C to +200°C			

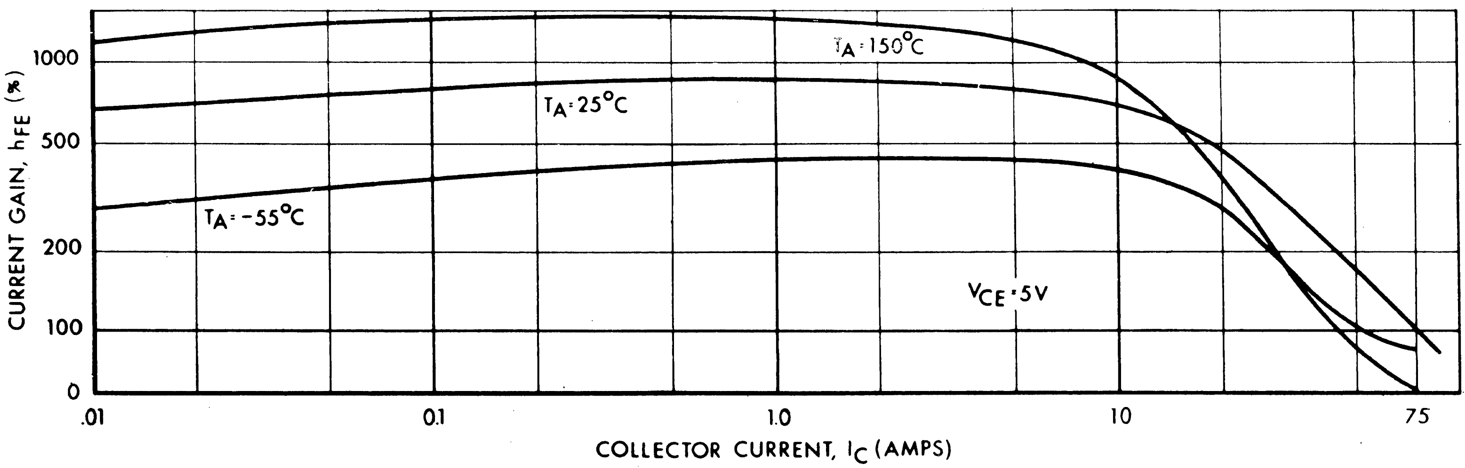
ELECTRICAL CHARACTERISTICS (25°C Ambient)

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
BV_{CBO}	I_C= 1 mA, I_E= 0	80	–	Volts	SDT8920
	I_C= 1 mA, I_E= 0	100	–	Volts	SDT8921
	I_C= 1 mA, I_E= 0	120	–	Volts	SDT8922
	I_C= 1 mA, I_E= 0	140	–	Volts	SDT8923
V_{CEO}(sus)*	I_C= 200 mA, I_B= 0	60	–	Volts	SDT8920
	I_C= 200 mA, I_B= 0	80	–	Volts	SDT8921
	I_C= 200 mA, I_B= 0	100	–	Volts	SDT8922
	I_C= 200 mA, I_B= 0	120	–	Volts	SDT8923
BV_{EBO}	I_E= 1 mA, I_C= 0	8	–	Volts	ALL
h_{FE}*	I_C= 75A, V_{CE}= 5 V	10	–	–	ALL
h_{FE}*	I_C= 90A, V_{CE}= 5 V	5	–	–	ALL
V_{CE}(sat)*	I_C= 50 A, I_B= 5 A	–	1.5	Volts	ALL
V_{BE}(sat)*	I_C= 50 A, I_B= 5 A	–	2.0	Volts	ALL
I_{CBO}	V_{CB}= 60 V, I_E= 0	–	10	μA	ALL
f_T	I_C= 5 A, V_{CE}= 10 V	20 Typical		MHz	ALL

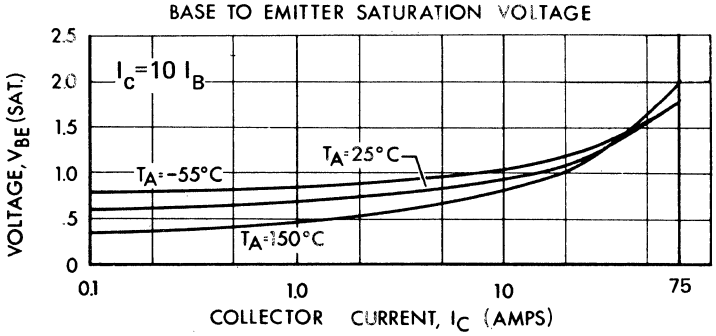
*Pulse measurement conditions. Length $\leq$ 330 μs; Duty cycle $\leq$ 2%

TYPICAL CHARACTERISTIC CURVES

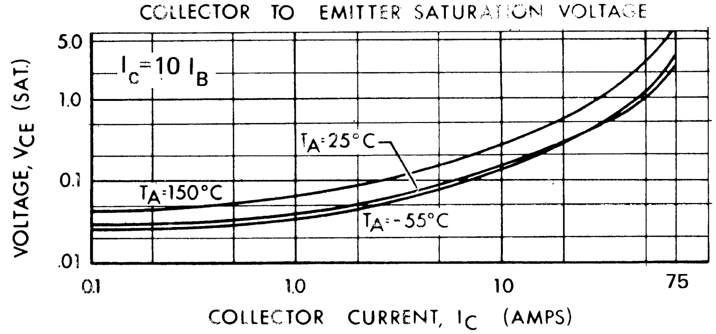
NORMALIZED CURRENT GAIN



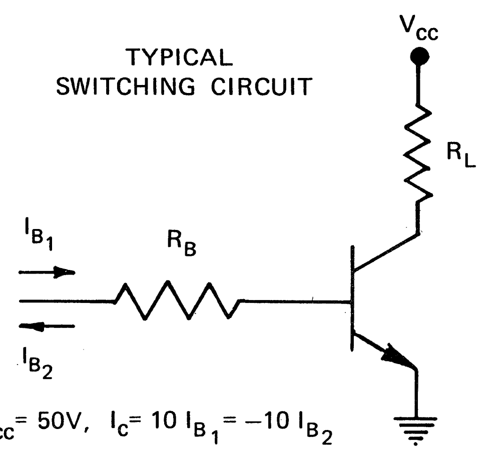
BASE TO EMITTER SATURATION VOLTAGE



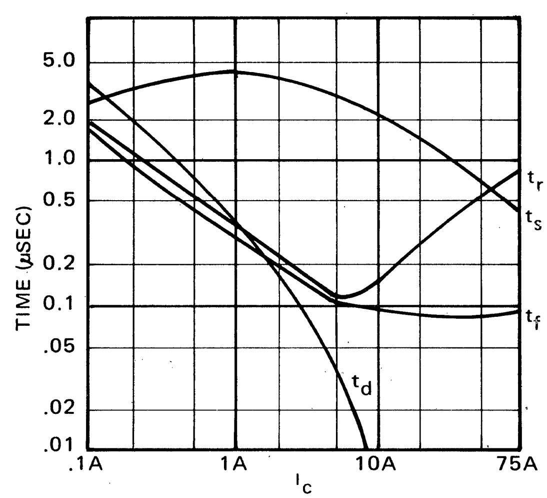
COLLECTOR TO EMITTER SATURATION VOLTAGE



TYPICAL SWITCHING CIRCUIT

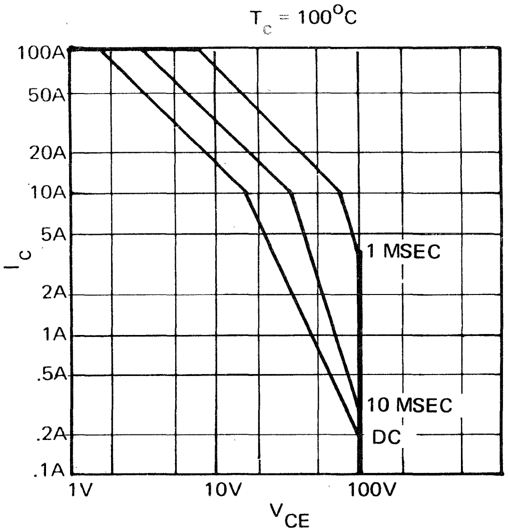


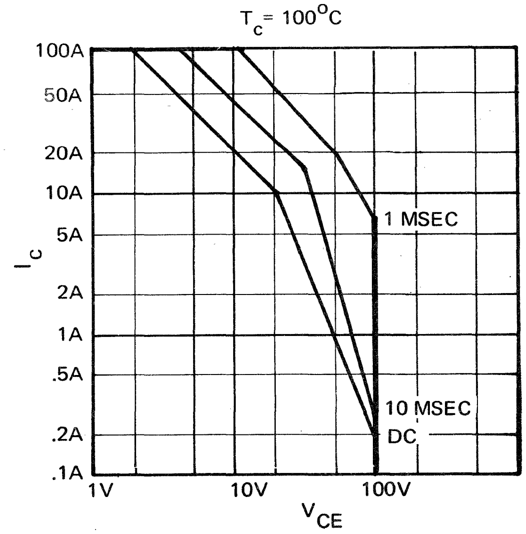
$V_{CC} = 50V$, $I_C = 10\, I_{B_1} = -10\, I_{B_2}$

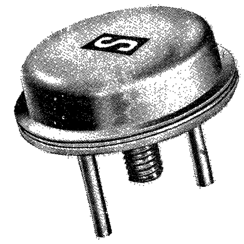


SWITCHING TIME vs I_C

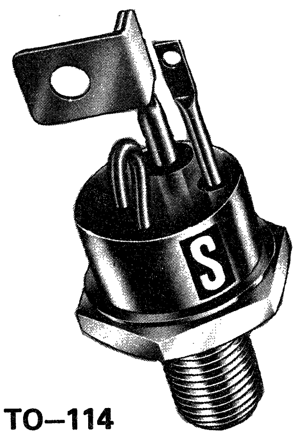
MAXIMUM OPERATING AREAS







TO–68



TO–114

SOLITRON FACILITIES

TAPPAN, N.Y.
256 Oak Tree Road
714 / 278-8780

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

SAN DIEGO, CAL.
8808 Balboa Avenue
714 / 278-8780

FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311

Hi Rel Power Transistors
Si. & Ge. Power Transistors
RF & small Signal Transistors
PNP-NPN Industrial Transistors

LONG ISLAND CITY, N.Y.
37-11 47th Ave.
212 / 937-0400

Microwave Components
Attenuation Devices
Waveguard & Coax Loads
Bolometer Elements
Ferrite & Ferrite Devices
Microwave Semicond.

PORT SALERNO, FLA.
Cove Road
305 / 833-6528

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

NEWTON HIGHLANDS, MASS.
70 Jacconet Street
617 / 527-6438

Plaxial (R) Cable
Precision RF Coax
Cable Assemblies

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone (941) 359-5050, TWX (710) 576-2654

MIDWEST
Suite 218, O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone (312) 842-8127, TWX (910) 233-2634

WESTERN
20944 Sherman Way, Suite 112
Canoga Park, California 91303
Telephone (213) 833-3822, TWX (910) 494-1238

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone (305) 848-4311, TWX (510) 952-6676

SOUTHWEST
10511 Church Road, Suite No. 1
Dallas, Texas
Telephone (214) 363-7921

EUROPE
Solidev Ltd.
Sevenoaks, Kent, England
Telephone (Sevenoaks) 57541/2/3
Cable – Solitron Svoaks, Telex. # 95378

When you think of semiconductors... think Solitron!

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

SDT8751 SDT8755 SDT8752 SDT8756 SDT8753 SDT8757 SDT8754 SDT8758

20 AMP

NPN HI-VOLTAGE TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	SDT8751	SDT8752	SDT8755	SDT8756
BV_{CBO}	120 V	140 V	120 V	140 V
BV_{CEO}	100 V	120 V	100 V	120 V
BV_{EBO}	8 V	8 V	8 V	8 V
I_c(Max.)	20 A	20 A	20 A	20 A
I_B(Max.)	5 A	5 A	5 A	5 A
P_T(100°C Case)	100 W	100 W	100 W	100 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
Static						
BV_{CBO}	$I_c = 200\,\mu A$, $I_E = 0$	120	–	–	Volts	SDT8751, SDT8755
	$I_c = 200\,\mu A$, $I_E = 0$	140	–	–	Volts	SDT8752, SDT8756
BV_{EBO}	$I_c = 200\,\mu A$, $I_E = 0$	8.0	–	–	Volts	All
V_{CEO}(sus)	$I_c = 10$ mA, $I_B = 0$	100	–	–	Volts	SDT8751, SDT8755
	$I_c = 10$ mA, $I_B = 0$	120	–	–	Volts	SDT8752, SDT8756
I_{CBO}	$V_{CB} = 60$ V, $I_E = 0$	–	–	10	μA	All
h_{FE}	$V_{CE} = 5$ V, $I_c = 10$ A	15	–	60	–	SDT8751, SDT8752
	$V_{CE} = 5$ V, $I_c = 10$ A	30	–	90	–	SDT8755, SDT8756
V_{BE}(sat)	$I_c = 10$ A, $I_B = 1.0$ A	–	–	1.5	Volts	All
V_{CE}(sat)	$I_c = 10$ A, $I_B = 1.0$ A	–	–	0.6	Volts	All
Dynamic						
f_t	$V_{CE} = 10$ V, $I_c = 1.0$ A	20	30	–	MHz	All
t_d	(See Figure No. 1)	–	30	–	nsec	All
t_r	(See Figure No. 1)	–	300	–	nsec	All
t_s	(See Figure No. 1)	–	800	–	nsec	All
t_f	(See Figure No. 1)	–	100	–	nsec	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT8753	SDT8754	SDT8757	SDT8758
BV_{CBO}	170 V	200 V	170 V	200 V
BV_{CEO}	150 V	180 V	150 V	180 V
BV_{EBO}	8 V	8 V	8 V	8 V
I_c(Max.)	20 A	20 A	20 A	20 A
I_B(Max.)	5 A	5 A	5 A	5 A
P_T(100°C Case)	100 W	100 W	100 W	100 W
Operating Junction Temperature	200°C			
Storage Temperature Range.	−65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

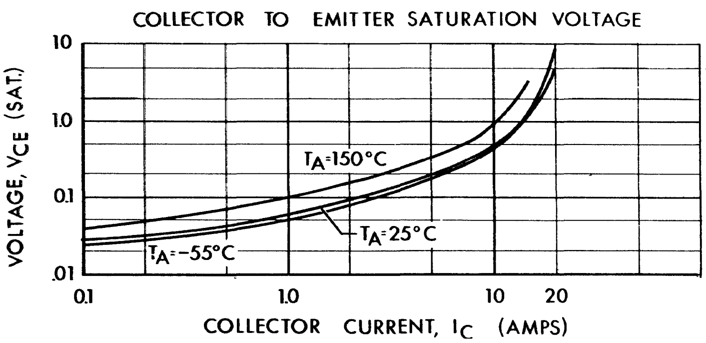
Static

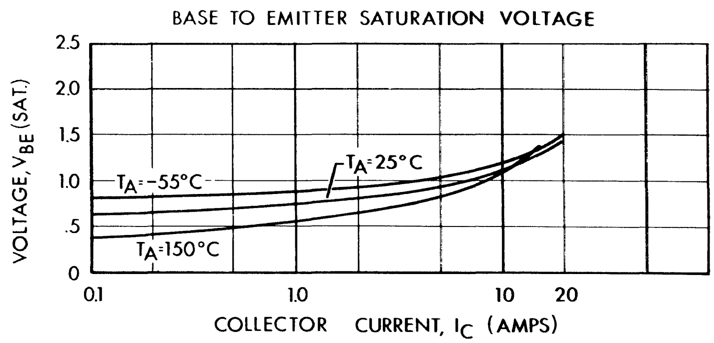
SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
BV_{CBO}	I_c= 200 μA, I_E= 0	170	–	–	Volts	SDT8753, SDT8757
	I_c= 200 μA, I_E= 0	200	–	–	Volts	SDT8754, SDT8758
BV_{EBO}	I_E= 200 μA, I_c= 0	8.0	–	–	Volts	All
V_{CEO}(sus)	I_c= 10 mA, I_B= 0	150	–	–	Volts	SDT8753, SDT8757
	I_c= 10 mA, I_B= 0	180	–	–	Volts	SDT8754, SDT8758
I_{CBO}	V_{CB}= 100 V, I_E= 0	–	–	10	μA	All
h_{FE}	V_{CE}= 5.0 V, I_c= 10 A	15	–	60	–	SDT8753, SDT8754
	V_{CE}= 5.0 V, I_c= 10 A	30	–	90	–	SDT8757, SDT8758
V_{BE}(sat)	I_c= 10 A, I_B= 1.0 A	–	–	1.5	Volts	All
V_{CE}(sat)	I_c= 10 A, I_B= 1.0 A	–	–	0.6	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
f_t	V_{CE}= 10 V, I_c= 1.0 A	20	30	–	MHz	All
t_d	(See Figure No. 1)	–	30	–	nsec	All
t_r	(See Figure No. 1)	–	300	–	nsec	All
t_s	(See Figure No. 1)	–	800	–	nsec	All
t_f	(See Figure No. 1)	–	100	–	nsec	All

CHARACTERISTIC CURVES (ALL TYPES)





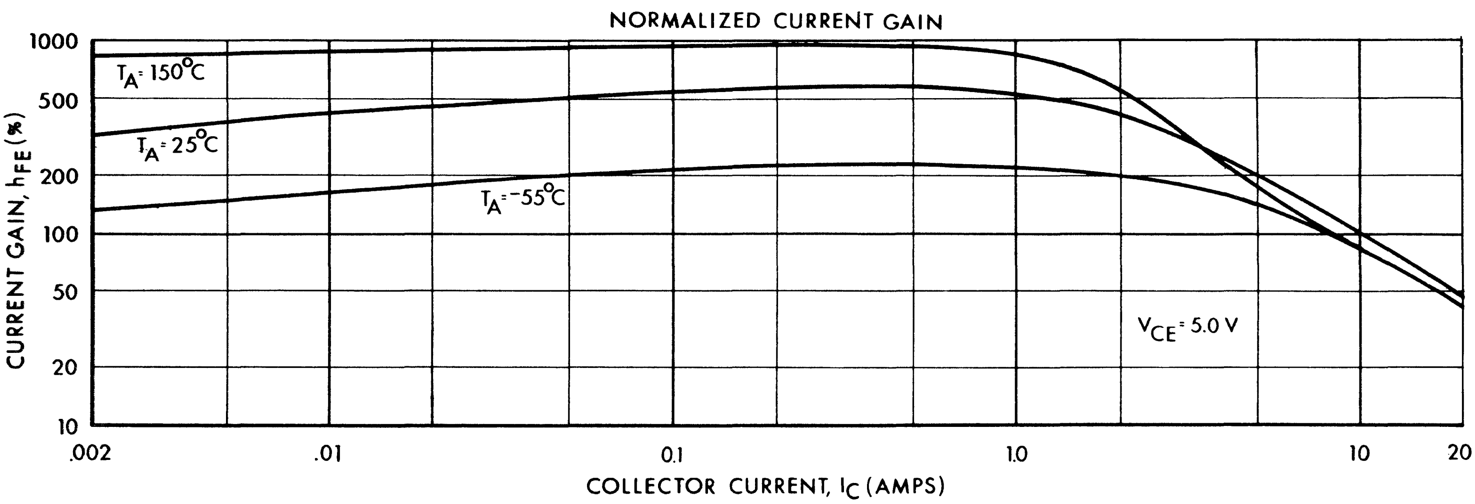
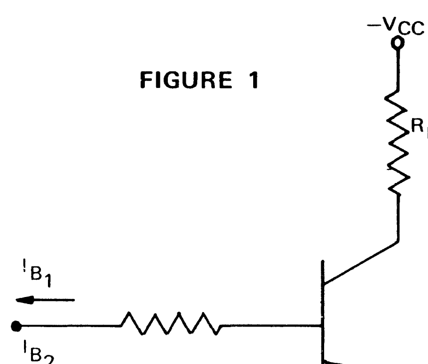
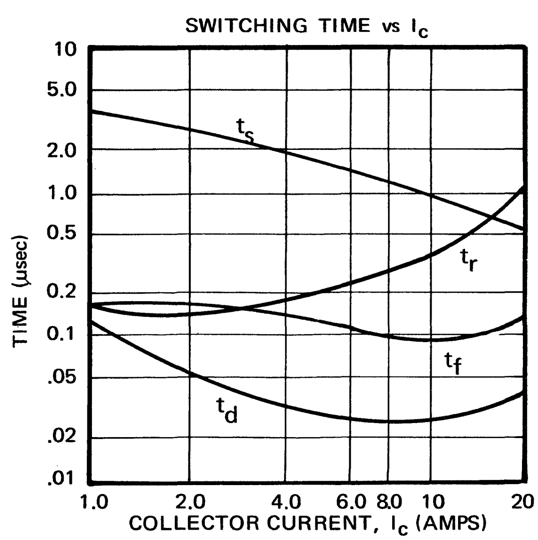
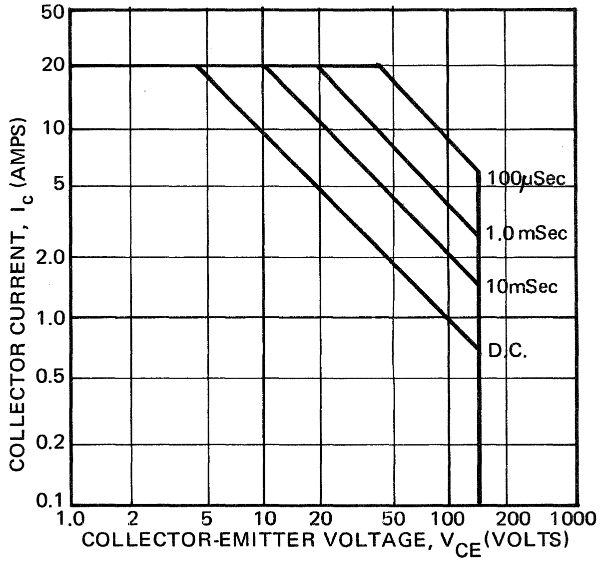


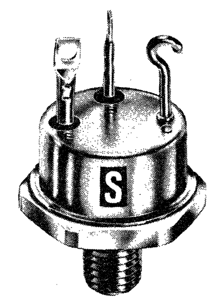
FIGURE 1



V_{CC} = 40 V, R_L = 4 Ω, I_c = 10 A
$I_{B_1} = I_{B_2}$ = 1.0 A







TO–63

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
20944 Sherman Way
Suite 112
Canoga Park, California
Telephone No. (213) 833-3822
TWX No. (910) 494-1238

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 363-7921

EUROPE
Solidev Ltd.
Tubs Hill House
Sixth Floor
London Road
Sevenoaks, Kent, England
Telephone (Sevenoaks) 57541/2/3
Cable – Solitron Svoaks
Telex. # 95378

When you think of semiconductors... think Solitron!

5 AMP SILICON PLANAR NPN POWER TRANSISTORS

SDT9001 through SDT9012

S P E C I F I C A T I O N S

DESIGNED-IN ADVANTAGES

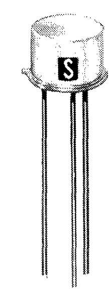
Greater Gain Linearity — planar fabrication techniques result in unusually constant gain over a wide current range. Gain is essentially flat from below 50 milliamps to over 1 ampere.

Low Saturation Voltage — $V_{CE\,(SAT)}$ is less than 0.7V at $I_C = 1A$ for lower losses in the saturated mode.

Minimum Long-Term Drift — planar construction eliminates surface contamination, ensuring consistent performance for the life of the device.

Fast Switching — shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents.

High Frequency Response — a minimum gain cutoff frequency of 10 MHz makes these transistors desirable for high power, high frequency switching and amplifier applications.



Actual Size

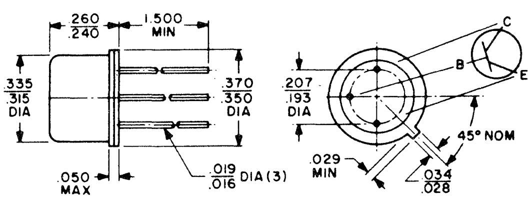
ABSOLUTE MAXIMUM RATINGS

Collector-to-Base Voltage	
SDT9001, SDT9004, SDT9007, SDT9010	50 Vdc max.
SDT9002, SDT9005, SDT9008, SDT9011	70 Vdc max.
SDT9003, SDT9006, SDT9009, SDT9012	90 Vdc max.
Collector-to-Emitter Voltage	
SDT9001, SDT9004, SDT9007, SDT9010	30 Vdc max.
SDT9002, SDT9005, SDT9008, SDT9011	50 Vdc max.
SDT9003, SDT9006, SDT9009, SDT9012	70 Vdc max.
Emitter-to-Base Voltage	5 Vdc max.
Collector Current	5 Adc max.
Thermal Resistance; Junction to Case	25 °C/W
Total Dissipation at:	
100°C Case Temperature	4 W max.
Junction Temperature; Operating	200 °C max.
Storage Temperature	−65 to +200 °C

ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise noted.

Symbol	Min.	Max.	Unit	Conditions
h_{FE} (1)				$I_C = 1A$, $V_{CE} = 2V$
	20			SDT9001, 2, 3
	30	90		SDT9004, 5, 6
	50	150		SDT9007, 8, 9
	100			SDT9010, 11, 12
	10			$I_C = 5A$, $V_{CE} = 6V$ (all types)
$V_{BE}(sat)$ (1)		0.7	Vdc	$I_C = 1A$, $I_B = 0.1A$
$V_{CE}(sat)$ (1)		2.0	Vdc	$I_C = 1A$, $I_B = 0.1A$
$V_{(BR)CBO}$				$I_C = 100\mu A$, $I_E = 0$
	50		Vdc	SDT9001, 4, 7, 10
	70		Vdc	SDT9002, 5, 8, 11
	90		Vdc	SDT9003, 6, 9, 12
$V_{(BR)CEO}$				$I_C = 100\mu A$, $I_B = 0$
	30		Vdc	SDT9001, 4, 7, 10
	50		Vdc	SDT9002, 5, 8, 11
	70		Vdc	SDT9003, 6, 9, 12
$V_{(BR)EBO}$	5		Vdc	$I_E = 100\mu A$, $I_C = 0$
I_{CBO}		1.0	μAdc	$V_{CB} = 25V$, $I_E = 0$
$\|h_{fe}\|$ (High Frequency Small Signal)	1.0			$V_{CE} = 10V$, $I_C = 0.2A$, $f = 10MHz$
C_{obo}		150	pF	$V_{CB} = 10V$, $I_E = 0$, $f = 1 MHz$

OUTLINE DIMENSIONS (3) (4)



TO-5

NOTES:

1. Pulse measurement conditions: length ≤ 330 μsec; duty cycle ≤ 2%.
2. Measured within ¼" of case.
3. Collector is electrically common to case.
4. All dimensions in inches.

TYPICAL CHARACTERISTICS: The curves of the typical characteristics for these devices are very similar to those of the 2N2657 and 2N2658, including "Safe Operating Area."

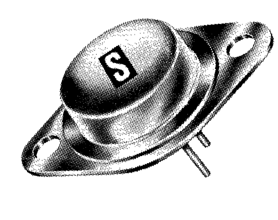
Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

SDT 9301 SDT 9305 SDT 9302 SDT 9306 SDT 9303 SDT 9307 SDT 9304 SDT 9308 SDT 9309

10 AMP PEAK

SILICON NPN POWER TRANSISTORS

This 10 Amp single diffused series is intended for use in many commercial applications. In addition to use in power supplies, inverters, and converters, the secondary-breakdown characteristics of this single diffused series makes them ideal for most audio applications—such as stereo or hi-fi output amplifiers. This family, although packaged in a TO-3 metal can, is priced lower than most epoxy power transistors.



TO-3

ABSOLUTE MAXIMUM RATINGS

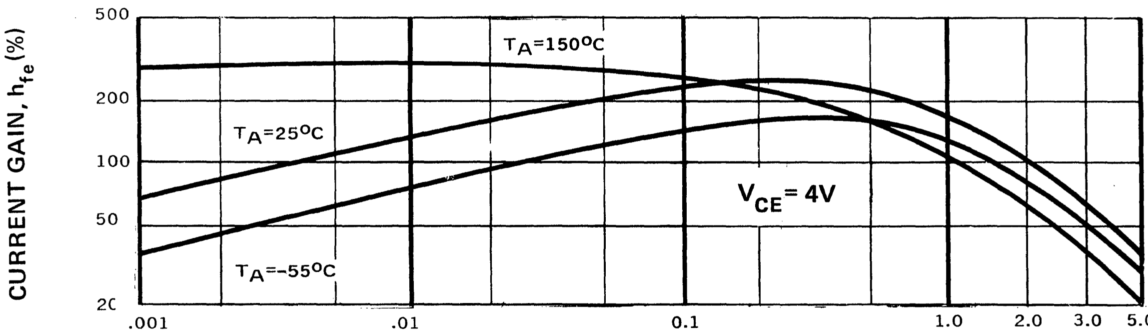
	SDT 9301 SDT 9304 SDT 9307	SDT 9302 SDT 9305 SDT 9308	SDT 9303 SDT 9306 SDT 9309
Collector-Base Voltage	40V	60V	80V
Collector-Emitter Voltage	40V	60V	80V
Emitter-Base Voltage	6V	6V	6V
Continuous Collector Current	7.5A	7.5A	7.5A
Peak Collector Current	10A	10A	10A
Continuous Base Current	1A	1A	1A
Peak Base Current	2A	2A	2A
Storage Temperature	—65° C	to	200° C
Operating Junction Temperature		200° C	
Thermal Resistance		2° C/WATT	
Power Dissipation (100° C Case)	50W	50W	50W

ELECTRICAL CHARACTERISTICS: T_C = 25°C unless otherwise specified

PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	TYPES
I_{CEX}		5.0	mA	V_{CE} = 40V, V_{EB} = 1.5V	SDT 9301, SDT 9304, SDT 9307
		5.0	mA	V_{CE} = 60V, V_{EB} = 1.5V	SDT 9302, SDT 9305, SDT 9308
		5.0	mA	V_{CE} = 80V, V_{EB} = 1.5V	SDT 9303, SDT 9306, SDT 9309
* BV_{CEO}	40		V	I_C = 200mA	SDT 9301, SDT 9304, SDT 9307
	60		V	I_C = 200mA	SDT 9302, SDT 9305, SDT 9308
	80		V	I_C = 200mA	SDT 9303, SDT 9306, SDT 9309
I_{CEO}		5.0	mA	V_{CE} = 20V	SDT 9301, SDT 9304, SDT 9307
		5.0	mA	V_{CE} = 30V	SDT 9302, SDT 9305, SDT 9308
		5.0	mA	V_{CE} = 40V	SDT 9303, SDT 9306, SDT 9309
BV_{EBO}	6		V	I_E = 1mA	ALL
* H_{FE}	15			V_{CE} = 4V, I_C = 1A	SDT 9301, SDT 9302, SDT 9303
	15			V_{CE} = 4V, I_C = 2A	SDT 9304, SDT 9305, SDT 9306
	15			V_{CE} = 4V, I_C = 3A	SDT 9307, SDT 9308, SDT 9309
* V_{BE}(sat)		1.8	V	I_C = 1A, I_B = .1A	SDT 9301, SDT 9302, SDT 9303
		1.8	V	I_C = 2A, I_B = .2A	SDT 9304, SDT 9305, SDT 9306
		1.8	V	I_C = 3A, I_B = .3A	SDT 9307, SDT 9308, SDT 9309
* V_{CE}(sat)		1.0	V	I_C = 1A, I_B = .1A	SDT 9301, SDT 9302, SDT 9303
		1.0	V	I_C = 2A, I_B = .2A	SDT 9304, SDT 9305, SDT 9306
		1.0	V	I_C = 3A, I_B = .3A	SDT 9307, SDT 9308, SDT 9309
	TYPICAL				
f_t	0.8		mHz	V_{CE} = 10V, I_C = .5A	ALL
C_{OB}	450		pf	V_{CB} = 10V, I_E = 0	ALL

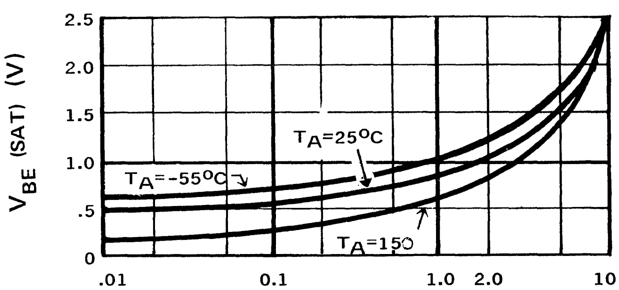
* Pulsed

ELECTRICAL CHARACTERISTICS (All Types)

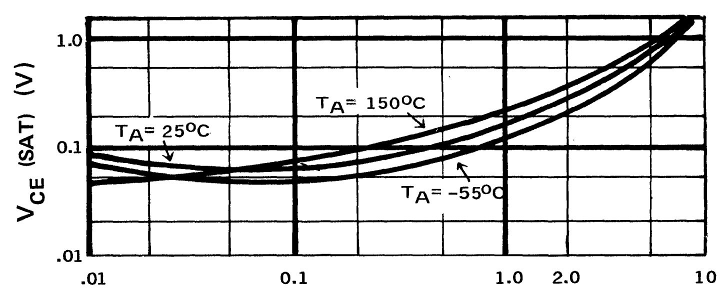


COLLECTOR CURRENT, I_C (AMPS)

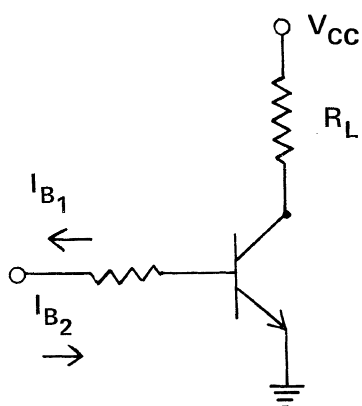
H_{FE} vs I_C



V_{BE} (SAT) vs I_C



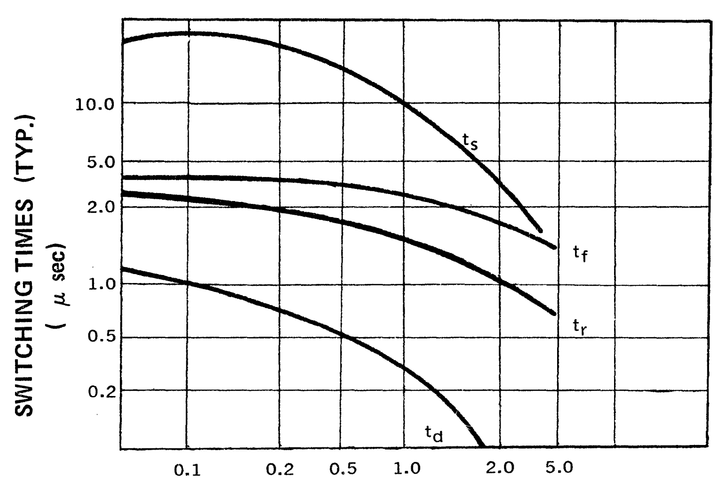
V_{CE} (SAT) vs I_C



V_{CC} = 20 V

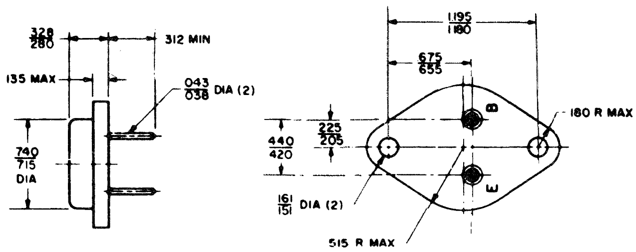
$I_C = 10\, I_{B_1} = 10\, I_{B_2}$

Figure 1

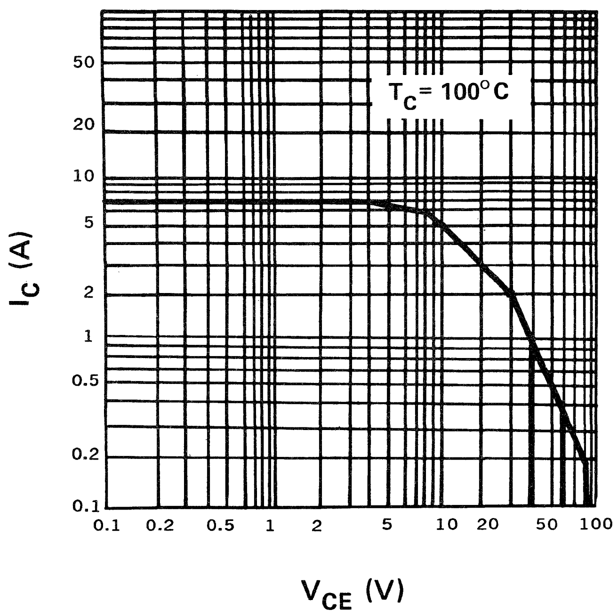


I_C (A)

DIMENSIONAL DRAWING



TO-3



SOLITRON FACILITIES

TAPPAN, N.Y.
256 Oak Tree Road
914 / 359-5050
TWX 710 / 576-2654

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311
TWX 510 / 952-7610

Hi Rel Power Transistors
Si. & Ge. Power Transistors
PNP-NPN Industrial Transistors
Power Hybrids

PORT SALERNO, FLA.
Cove Road
305 / 287-5000
TWX 510 / 953-7500

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

SAN DIEGO, CALIF.
8808 Balboa Avenue
714 / 278-8780
TWX 910 / 335-1221

FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

JUPITER, FLA.
1440 W. Indiantown Rd.
305 / 746-8311
TWX 510 / 952-7610

Microwave Stripline
Microwave Semiconductors
RF Transistors
Microwave Integrated Circuits

SOLITRON REGIONAL OFFICES

NORTHEAST
52 Pickering Street
Needham, Massachusetts 92192
Tel. 617 / 444-1152, TWX 710 / 325-7514

WESTERN
20944 Sherman Way, Suite 112
Canoga Park, California 91303
Tel. 213 / 883-3822, TWX 910 / 494-1238

SOUTHWEST
10511 Church Road, Suite No.1
Dallas, Texas
Tel. 214 / 314-1180, TWX 910 / 861-1180

MIDWEST
Suite 218, O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Tel. 312 / 842-8127, TWX 910 / 233-2634

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Tel. 305 / 848-4311, TWX 510 / 952-7610

EUROPE
Solidev Ltd.
Sevenoaks, Kent, England
Tel. (Sevenoaks) 57541/2/3
Cable—Solitron Svoaks, Telex.No. 95378

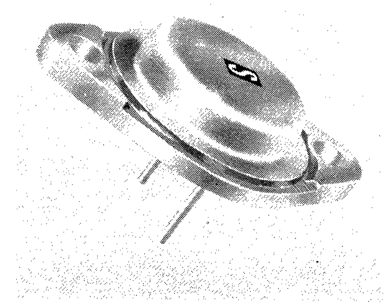
SDT 12301
SDT 12302
SDT 12303

NPN SILICON POWER TRANSISTORS

20 AMPERE - FAST SWITCHING

FEATURES:
HIGH VOLTAGE, FAST SWITCHING, HIGH RELIABILITY - SINGLE CHIP PLANAR CONSTRUCTION

APPLICATIONS:
PUSH - PULL INVERTERS, SWITCHING REGULATORS, PULSE - WIDTH MODULATORS



TO-232AA (TO-3)
ALSO AVAILABLE IN TO-61/I

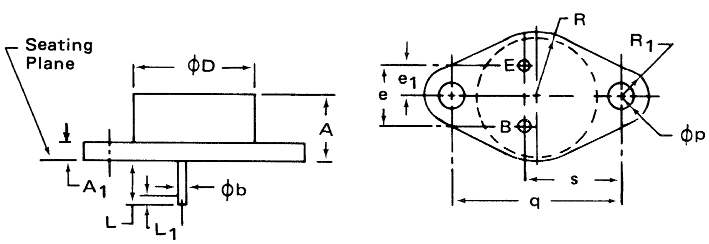
ABSOLUTE MAXIMUM RATINGS

		SDT 12301	SDT 12302	SDT 12303
V_{CBO}	COLLECTOR-BASE VOLTAGE	200 V	250 V	300 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	200 V	250 V	300 V
V_{EBO}	EMITTER-BASE VOLTAGE	5 V	5 V	5 V
I_C	CONTINUOUS COLLECTOR CURRENT	10 A	10 A	10 A
I_C (PK)	PEAK COLLECTOR CURRENT	20 A	20 A	20 A
I_B	CONTINUOUS BASE CURRENT	2 A	2 A	2 A
I_B (PK)	PEAK BASE CURRENT	5 A	5 A	5 A
T_J	OPERATING JUNCTION TEMPERATURE		-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE		-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	0.8 °C/W	0.8 °C/W	0.8 °C/W
P_D	POWER DISSIPATION (25°C)	220 W	220 W	220 W

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 100mA) *	$V_{CEO(sus)}$			
SDT 12301		200		V
SDT 12302		250		V
SDT 12303		300		V
*PULSED (INDUCTIVE SWEEP 60 Hz)				
COLLECTOR-CUTOFF CURRENT	I_{CBO}			
SDT 12301 V_{CB} = 200 V			1.0	mA
SDT 12302 V_{CB} = 250 V			1.0	mA
SDT 12303 V_{CB} = 300 V			1.0	mA
COLLECTOR-CUTOFF CURRENT T_C = 150°C	I_{CBO}			
SDT 12301 V_{CB} = 150 V			1.0	mA
SDT 12302 V_{CB} = 190 V			1.0	mA
SDT 12303 V_{CB} = 230 V			1.0	mA
COLLECTOR-CUTOFF CURRENT (V_{CE} = 200 V, R_{BE} = 50 Ω)	I_{CER}		1.0	mA
EMITTER-BASE VOLTAGE (I_B = 1.0 mA)	V_{EBO}	5.0		V
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1.0 s NON REPETITIVE, V_{CE} = 50 V)	$I_{s/b}$	1.0		A

OUTLINE DRAWING FOR TO-232 AA (TO-3)



SYMBOL	MILLIMETERS AA MIN.	MILLIMETERS AA MAX.	NOTE	INCHES AA MIN.	INCHES AA MAX.	NOTE
A	6.4	11.4		0.250	0.450	
A_1	–	3.42		–	0.135	
b	–	–		–	–	
Øb	0.966	1.092	2	0.038	0.043	2
ØD	–	22.22		–	0.875	
e	10.67	11.17		0.420	0.440	
e_1	5.21	5.71		0.205	0.225	
L	7.93	–	2	0.312	–	2
L_1	–	–		–	–	
O	–	–		–	–	
O_1	–	–		–	–	
Øp	3.84	4.08	3	0.151	0.161	3
q	29.90	30.40		1.177	1.197	
R	–	13.33		–	0.525	
R_1	–	4.77		–	0.188	
s	16.64	17.14	4	0.655	0.675	4
ØT	–	–		–	–	
NOTE	1, 5			1, 5		

NOTES:

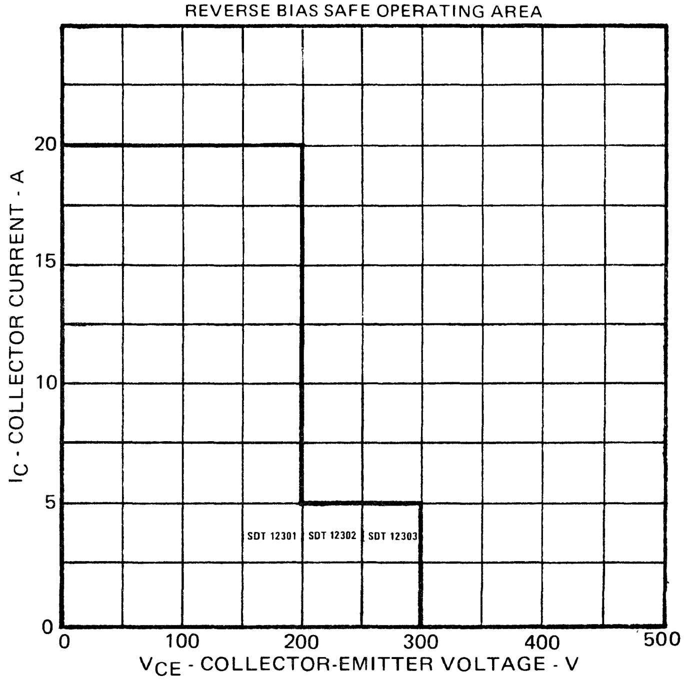
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5, 1973.
2. TWO LEADS.
3. TWO HOLES.
4. AT BOTH ENDS.
5. CONTROLLING DIMENSIONS: INCH.

ELECTRICAL CHARACTERISTICS (T_C = 25ºC UNLESS OTHERWISE NOTED)

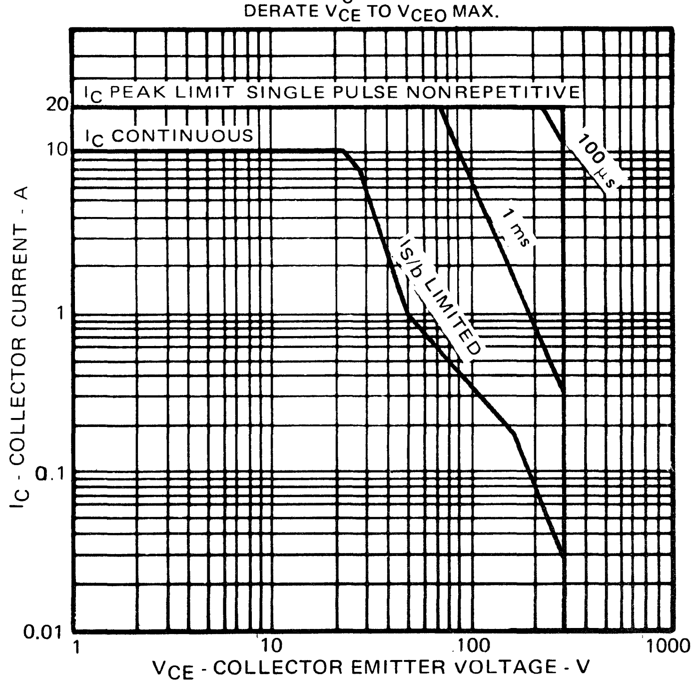
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
DC CURRENT GAIN (I_C = 10A, V_{CE} = 5 V) ** (I_C = 20A, V_{CE} = 5 V)**	h_{FE}	 10 5	 50 –	
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 1A, I_B = 0.1A)** (I_C = 10A, I_B = 1.0A)**	$V_{CE(sat)}$		 0.4 1.0	 V V
BASE EMITTER SATURATION VOLTAGE (I_C = 1A, I_B = 0.1A)** (I_C = 10A, I_B = 1.0 A)**	$V_{BE(sat)}$		 1.0 1.6	 V V
TRANSITION FREQUENCY (I_C = 1A, V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	20		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		600	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME (V_{CC} = 150V, I_C = 10A I_{B1} = I_{B2} = 1.0A, t_p = 10 μs)	 t_{on} t_s t_f		 0.30 1.5 0.35	 μs μs μs
SWITCHING CHARACTERISTICS INDUCTIVE (FIG. 2) CURRENT STORAGE TIME CURRENT FALL TIME V_{CLAMP} = 200 V, I_C = 10A, L = 35 μH I_{B1} = 1.0A, I_{B2} = 1.0A	 t_{si} t_{fi}		 2.0 0.3	 μs μs

**PULSED—300 μs—2%

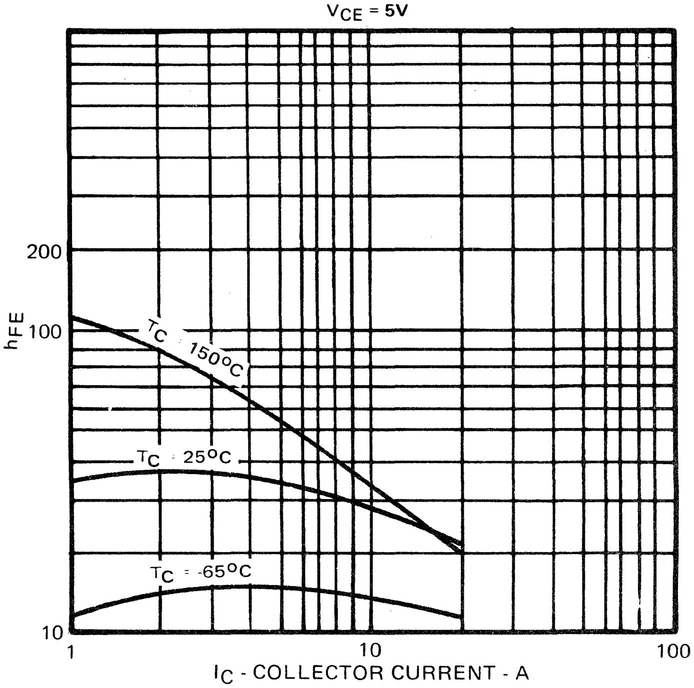
REVERSE BIAS SAFE OPERATING AREA



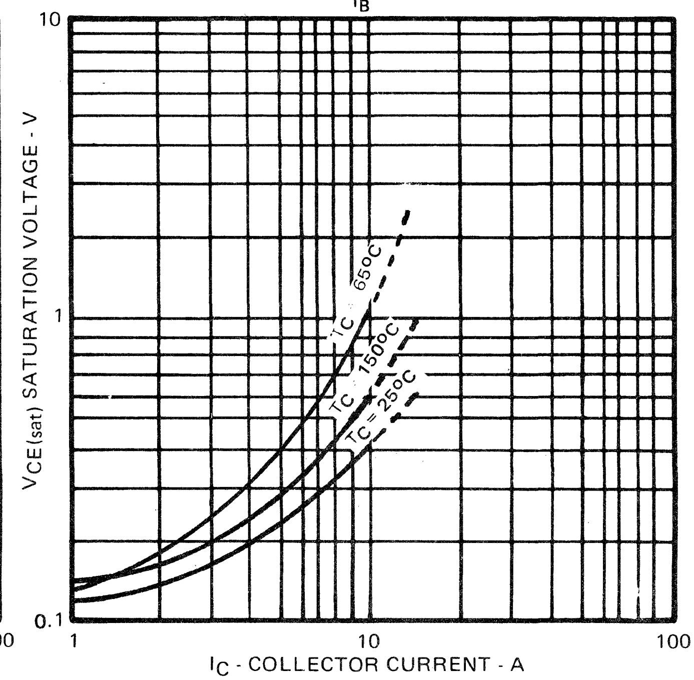
MAXIMUM OPERATING CONDITIONS
T_C = 25ºC
DERATE V_{CE} TO V_{CEO} MAX.



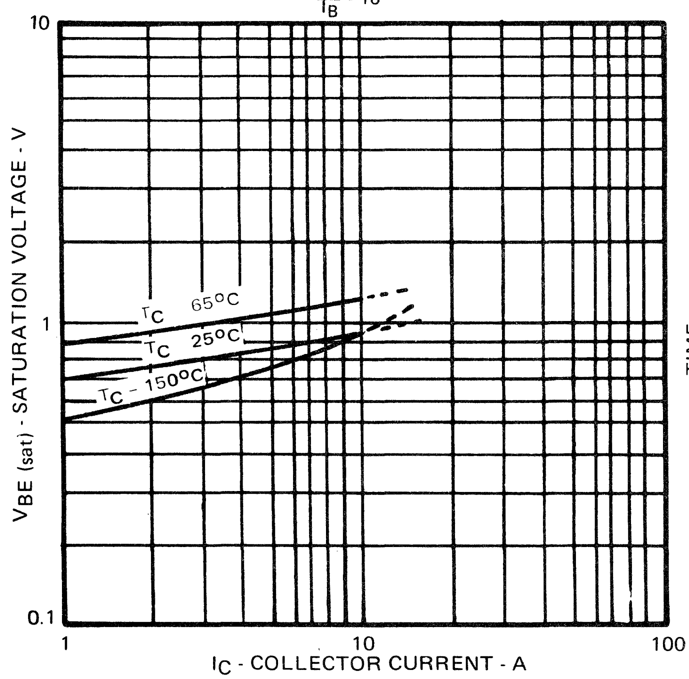
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5V$



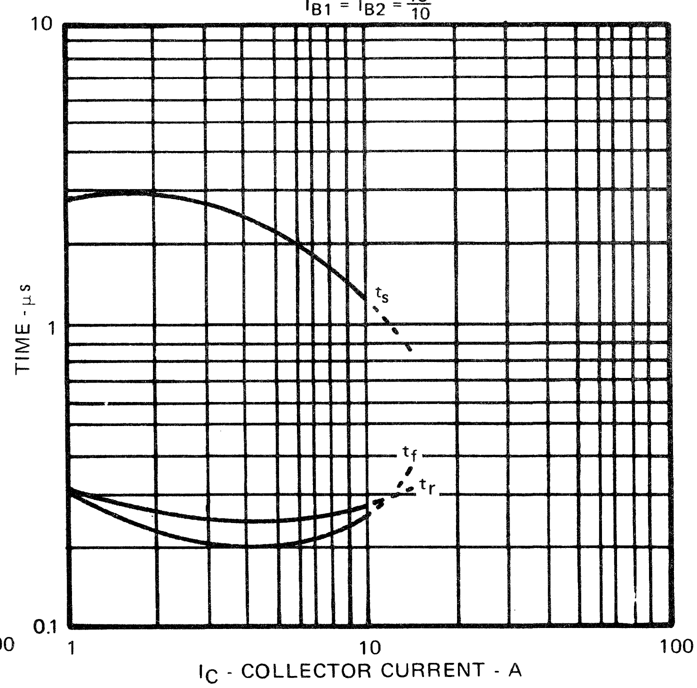
TYPICAL COLLECTOR-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



TYPICAL BASE-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

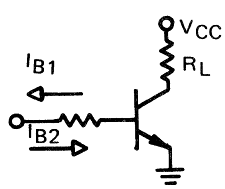


TYPICAL SWITCHING TIME
$V_{CC} = 150V$
$I_{B1} = I_{B2} = \frac{I_C}{10}$



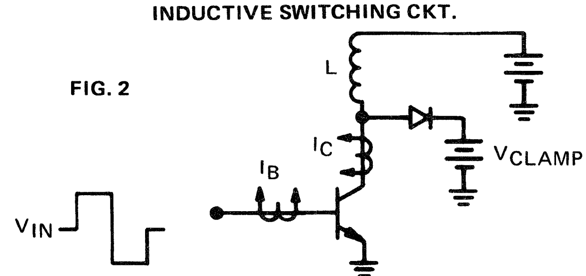
TYPICAL
RESISTIVE SWITCHING CKT.

FIG. 1



TYPICAL
INDUCTIVE SWITCHING CKT.

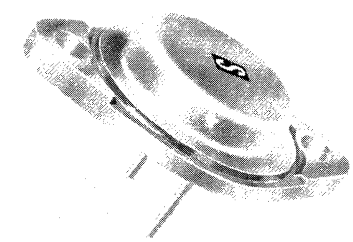
FIG. 2



SDT 13301
SDT 13302
SDT 13303

NPN SILICON POWER TRANSISTORS

20 AMPERE - FAST SWITCHING



TO-232AA (TO-3)
ALSO AVAILABLE
IN TO-61/I

FEATURES:
HIGH VOLTAGE, FAST SWITCHING, HIGH RELIABILITY -
SINGLE CHIP PLANAR CONSTRUCTION

APPLICATIONS:
PUSH - PULL INVERTERS, SWITCHING REGULATORS,
PULSE - WIDTH MODULATORS

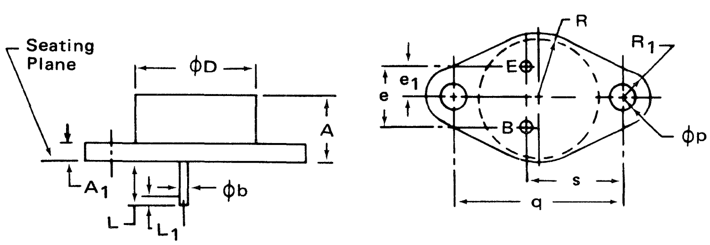
ABSOLUTE MAXIMUM RATINGS

		SDT 13301	SDT 13302	SDT 13303
V_{CBO}	COLLECTOR-BASE VOLTAGE	300 V	350 V	400 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	300 V	350 V	400 V
V_{EBO}	EMITTER-BASE VOLTAGE	5 V	5 V	5 V
I_C	CONTINUOUS COLLECTOR CURRENT	10 A	10 A	10 A
I_C (PK)	PEAK COLLECTOR CURRENT	20 A	20 A	20 A
I_B	CONTINUOUS BASE CURRENT	2 A	2 A	2 A
I_B (PK)	PEAK BASE CURRENT	5 A	5 A	5 A
T_J	OPERATING JUNCTION TEMPERATURE		-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE		-65°C to +200°C	
$R_{\Theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	0.8 °C/W	0.8 °C/W	0.8 °C/W
P_D	POWER DISSIPATION (25°C)	220 W	220 W	220 W

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 100mA) *	$V_{CEO(sus)}$			
SDT 13301		300		V
SDT 13302		350		V
SDT 13303		400		V
*PULSED (INDUCTIVE SWEEP 60 Hz)				
COLLECTOR-CUTOFF CURRENT	I_{CBO}			
SDT 13301 V_{CB} = 300 V			1.0	mA
SDT 13302 V_{CB} = 350 V			1.0	mA
SDT 13303 V_{CB} = 400 V			1.0	mA
COLLECTOR-CUTOFF CURRENT T_C = 150°C	I_{CBO}			
SDT 13301 V_{CB} = 220 V			1.0	mA
SDT 13302 V_{CB} = 260 V			1.0	mA
SDT 13303 V_{CB} = 300 V			1.0	mA
COLLECTOR-CUTOFF CURRENT (V_{CE} = 200 V, R_{BE} = 50 Ω)	I_{CER}		1.0	mA
EMITTER-BASE VOLTAGE (I_B = 1.0 mA)	V_{EBO}	5.0		V
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1.0 s NON REPETITIVE, V_{CE} = 50 V)	$I_{s/b}$	1.6		A

OUTLINE DRAWING FOR TO-232 AA (TO-3)



SYMBOL	MILLIMETERS AA MIN.	MILLIMETERS AA MAX.	NOTE	INCHES AA MIN.	INCHES AA MAX.	NOTE
A	6.4	11.4		0.250	0.450	
A_1	–	3.42		–	0.135	
b	–	–		–	–	
Øb	0.966	1.092	2	0.038	0.043	2
ØD	–	22.22		–	0.875	
e	10.67	11.17		0.420	0.440	
e_1	5.21	5.71		0.205	0.225	
L	7.93	–	2	0.312	–	2
L_1	–	–		–	–	
O	–	–		–	–	
O_1	–	–		–	–	
Øp	3.84	4.08	3	0.151	0.161	3
q	29.90	30.40		1.177	1.197	
R	–	13.33		–	0.525	
R_1	–	4.77		–	0.188	
s	16.64	17.14	4	0.655	0.675	4
ØT	–	–		–	–	
NOTE	1, 5			1, 5		

NOTES:

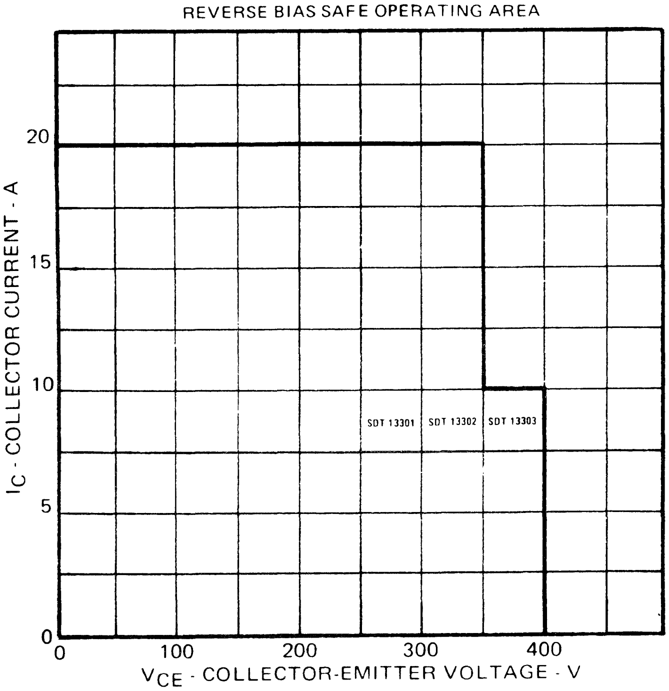
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5, 1973.
2. TWO LEADS.
3. TWO HOLES.
4. AT BOTH ENDS.
5. CONTROLLING DIMENSIONS: INCH.

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

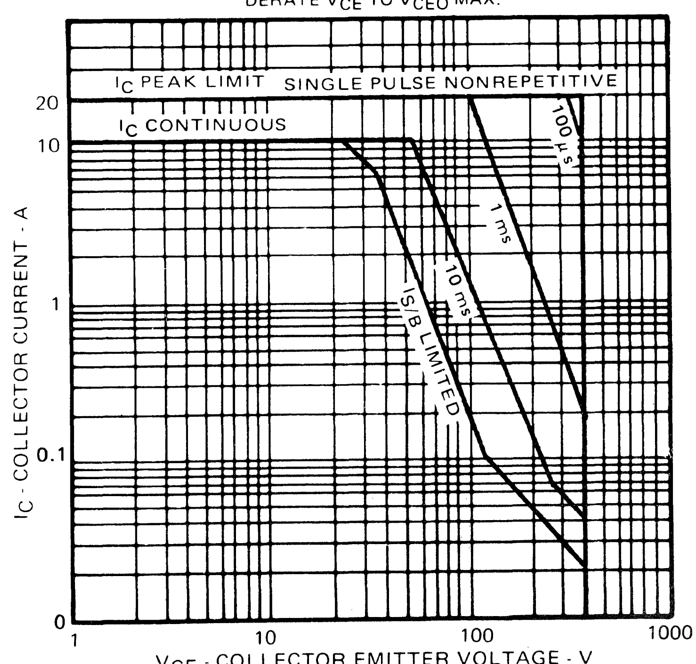
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
DC CURRENT GAIN (I_C = 5A, V_{CE} = 5 V) ** (I_C = 15A, V_{CE} = 5 V)**	h_{FE}	10 5	50 —	
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 1A, I_B = 0.1A)** (I_C = 5A, I_B = 0.5A)**	$V_{CE(sat)}$		0.2 1.0	V V
BASE EMITTER SATURATION VOLTAGE (I_C = 1A, I_B = 0.1A)** (I_C = 5A, I_B = 0.5A)**	$V_{BE(sat)}$		1.0 1.4	V V
TRANSITION FREQUENCY (I_C = 1A, V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	12		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		600	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME (V_{CC} = 150V, I_C = 5.0A I_{B1} = I_{B2} = 0.5A, t_p = 10 μs)	 t_{on} t_s t_f		 0.25 2.5 0.5	 μs μs μs
SWITCHING CHARACTERISTICS INDUCTIVE (FIG. 2) CURRENT STORAGE TIME CURRENT FALL TIME V_{CLAMP} = 300 V, I_C = 10A, L = 35 μH I_{B1} = 1.0A, I_{B2} = 1.0A	 t_{si} t_{fi}		 2.2 0.30	 μs μs

**PULSED—300 μs—2%

REVERSE BIAS SAFE OPERATING AREA

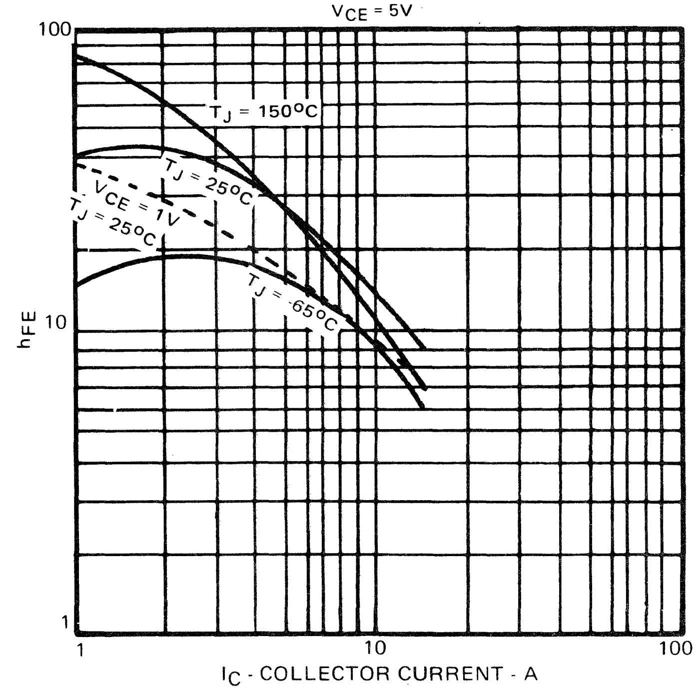


MAXIMUM OPERATING CONDITIONS
T_C = 25°C
DERATE V_{CE} TO V_{CEO} MAX.

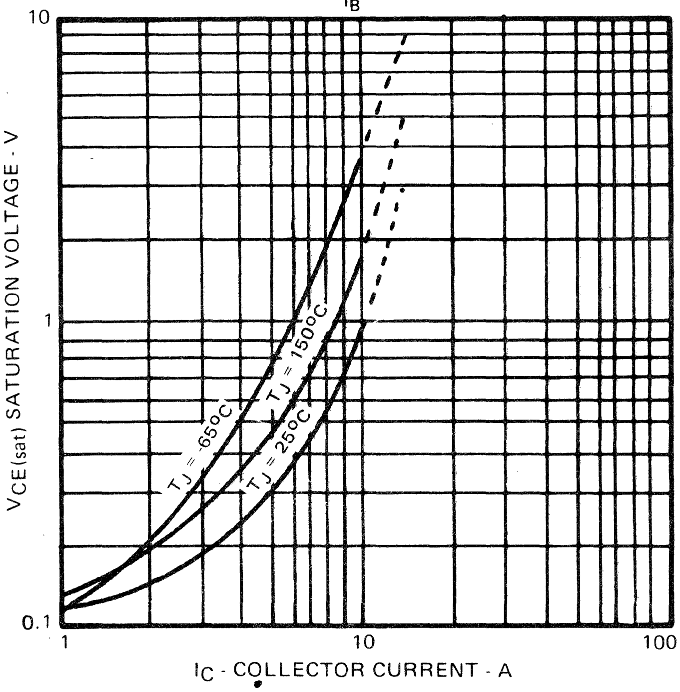


SDT 13301, SDT 13302, SDT 13303

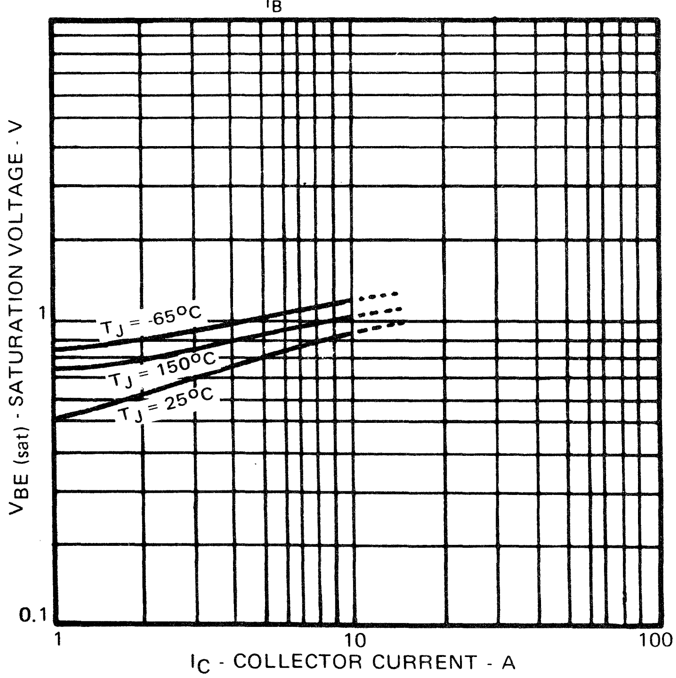
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5V$



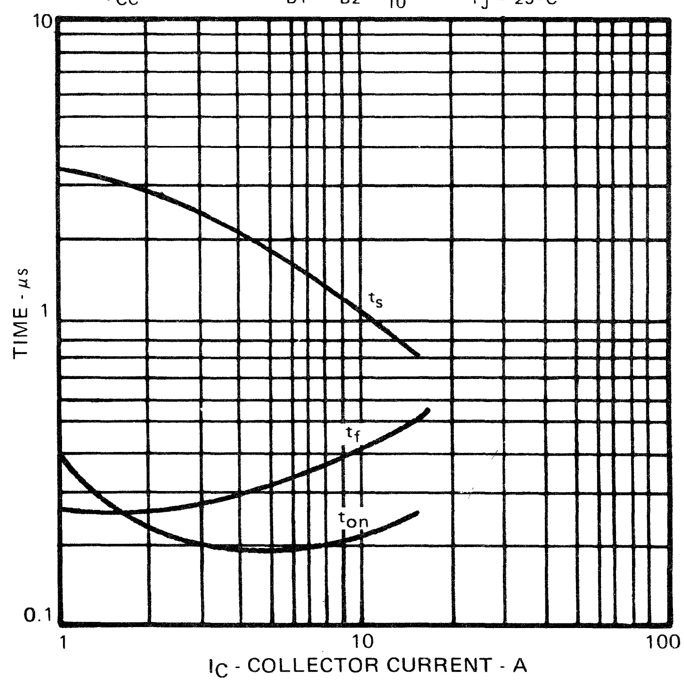
TYPICAL COLLECTOR-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



TYPICAL BASE-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

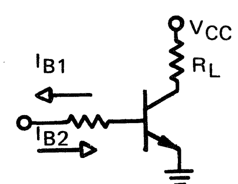


TYPICAL SWITCHING TIME
$V_{CC} = 150V$ $I_{B1} = I_{B2} = \frac{I_C}{10}$ $T_J = 25^oC$



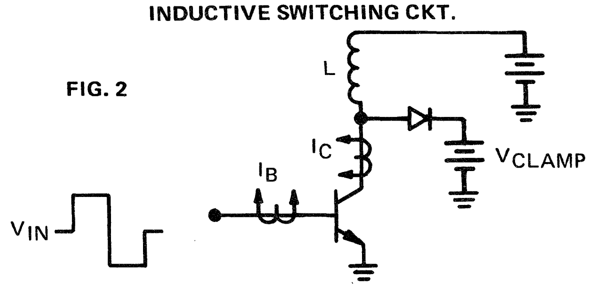
TYPICAL
RESISTIVE SWITCHING CKT.

FIG. 1



TYPICAL
INDUCTIVE SWITCHING CKT.

FIG. 2



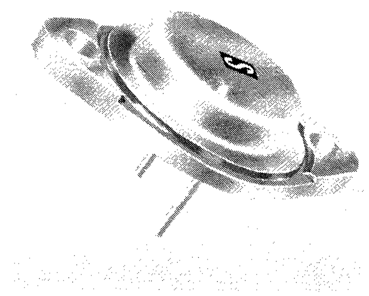
SDT 13304
SDT 13305

NPN SILICON POWER TRANSISTORS

20 AMPERE - FAST SWITCHING

FEATURES:
HIGH VOLTAGE, FAST SWITCHING, HIGH RELIABILITY - SINGLE CHIP PLANAR CONSTRUCTION

APPLICATIONS:
PUSH - PULL INVERTERS, SWITCHING REGULATORS, PULSE - WIDTH MODULATORS



TO-232AA (TO-3)
ALSO AVAILABLE IN TO-61/I

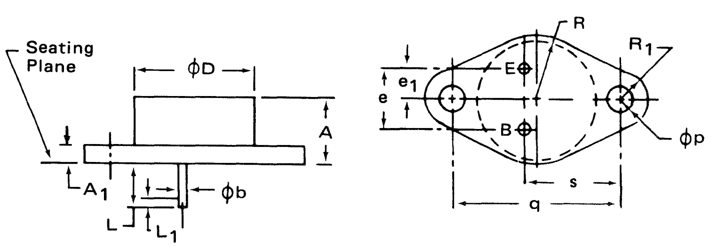
ABSOLUTE MAXIMUM RATINGS

		SDT 13304	SDT 13305
V_{CBO}	COLLECTOR-BASE VOLTAGE	450 V	500 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	450 V	500 V
V_{EBO}	EMITTER-BASE VOLTAGE	5 V	5 V
I_C	CONTINUOUS COLLECTOR CURRENT	10 A	10 A
I_C (PK)	PEAK COLLECTOR CURRENT	20 A	20 A
I_B	CONTINUOUS BASE CURRENT	2 A	2 A
I_B (PK)	PEAK BASE CURRENT	5 A	5 A
T_J	OPERATING JUNCTION TEMPERATURE	-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	0.8 °C/W	0.8 °C/W
P_D	POWER DISSIPATION (25°C)	220 W	220 W

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 100mA) * SDT 13304 SDT 13305 *PULSED (INDUCTIVE SWEEP 60 Hz)	$V_{CEO(sus)}$	 450 500		 V V
COLLECTOR-CUTOFF CURRENT SDT 13304 V_{CB} = 450 V SDT 13305 V_{CB} = 500 V	I_{CBO}		 1.0 1.0	 mA mA
COLLECTOR-CUTOFF CURRENT T_C = 150°C SDT 13304 V_{CB} = 330 V SDT 13305 V_{CB} = 370 V	I_{CBO}		 1.0 1.0	 mA mA
COLLECTOR-CUTOFF CURRENT (V_{CE} = 200 V, R_{BE} = 50 Ω)	I_{CER}		1.0	mA
EMITTER-BASE VOLTAGE (I_B = 1.0 mA)	V_{EBO}	5.0		V
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1.0 s NON REPETITIVE, V_{CE} = 50 V)	$I_{s/b}$	1.8		A

OUTLINE DRAWING FOR TO-232 AA (TO-3)



SYMBOL	MILLIMETERS AA MIN.	MILLIMETERS AA MAX.	NOTE	INCHES AA MIN.	INCHES AA MAX.	NOTE
A	6.4	11.4		0.250	0.450	
A_1	–	3.42		–	0.135	
b	–	–		–	–	
Øb	0.966	1.092	2	0.038	0.043	2
ØD	–	22.22		–	0.875	
e	10.67	11.17		0.420	0.440	
e_1	5.21	5.71		0.205	0.225	
L	7.93	–	2	0.312	–	2
L_1	–	–		–	–	
O	–	–		–	–	
O_1	–	–		–	–	
Øp	3.84	4.08	3	0.151	0.161	3
q	29.90	30.40		1.177	1.197	
R	–	13.33		–	0.525	
R_1	–	4.77		–	0.188	
s	16.64	17.14	4	0.655	0.675	4
ØT	–	–		–	–	
NOTE	1, 5			1, 5		

NOTES:

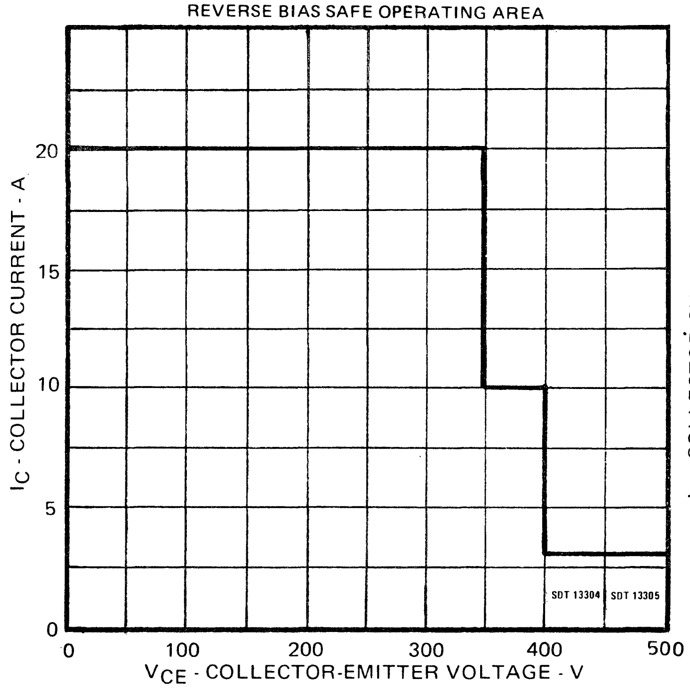
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5, 1973.
2. TWO LEADS.
3. TWO HOLES.
4. AT BOTH ENDS.
5. CONTROLLING DIMENSIONS: INCH.

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

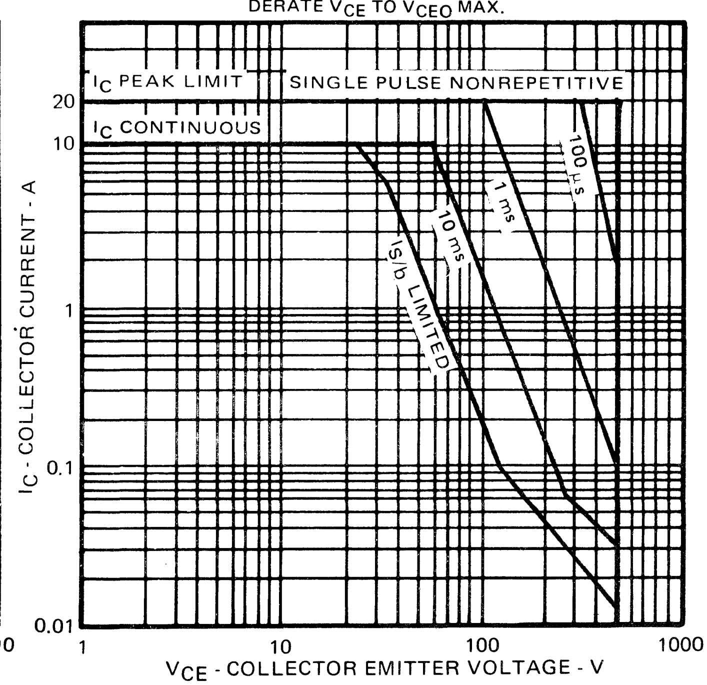
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
DC CURRENT GAIN (I_C = 5A, V_{CE} = 5 V) ** (I_C = 15A, V_{CE} = 5 V)**	h_{FE}	 10 5	 50 —	
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 1A, I_B = 0.1A)** (I_C = 5A, I_B = 0.5A)**	$V_{CE(sat)}$		 0.3 1.5	 V V
BASE EMITTER SATURATION VOLTAGE (I_C = 1A, I_B = 0.1A)** (I_C = 5A, I_B = 0.5A)**	$V_{BE(sat)}$		 1.0 1.4	 V V
TRANSITION FREQUENCY (I_C = 1A, V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	12		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		600	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME (V_{CC} = 150V, I_C = 5.0A I_{B1} = I_{B2} = 0.5A, t_p = 10 μs)	 t_{on} t_s t_f		 0.25 2.5 0.5	 μs μs μs
SWITCHING CHARACTERISTICS INDUCTIVE (FIG. 2) CURRENT STORAGE TIME CURRENT FALL TIME V_{CLAMP} = 300 V, I_C = 10A, L = 35 μH I_{B1} = 1.0A, I_{B2} = 1.0A	 t_{si} t_{fi}		 2.2 0.3	 μs μs

**PULSED—300 μs—2%

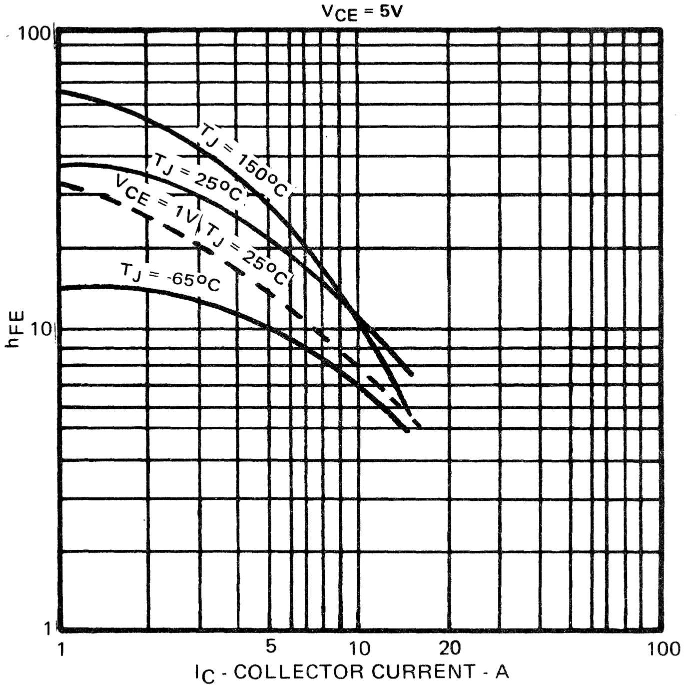
REVERSE BIAS SAFE OPERATING AREA



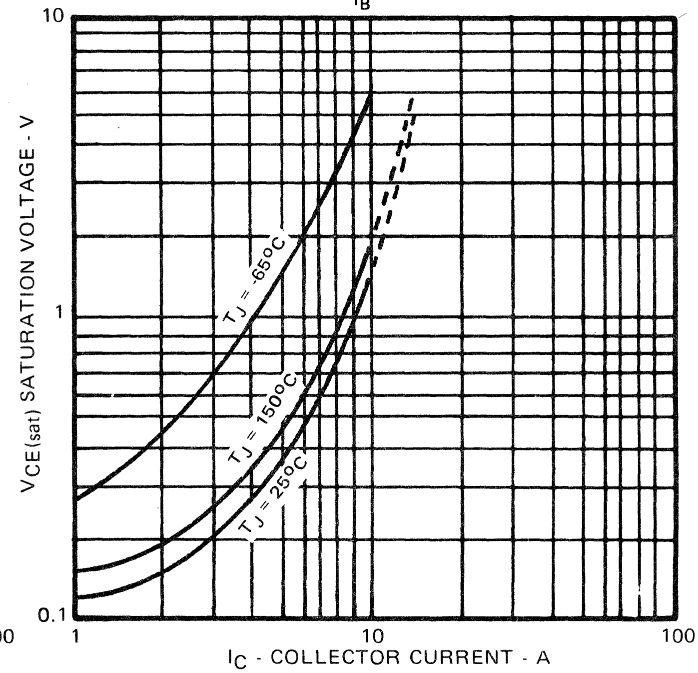
MAXIMUM OPERATING CONDITIONS
T_C = 25°C
DERATE V_{CE} TO V_{CEO} MAX.



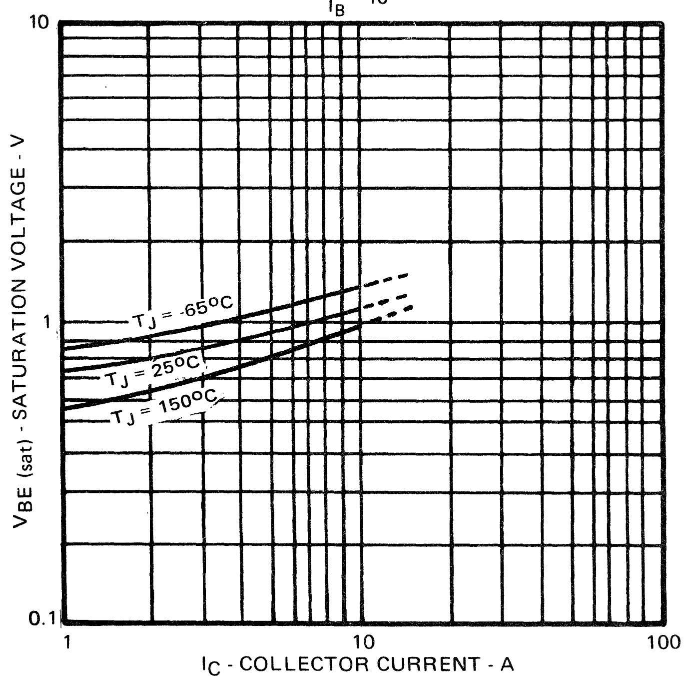
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5V$



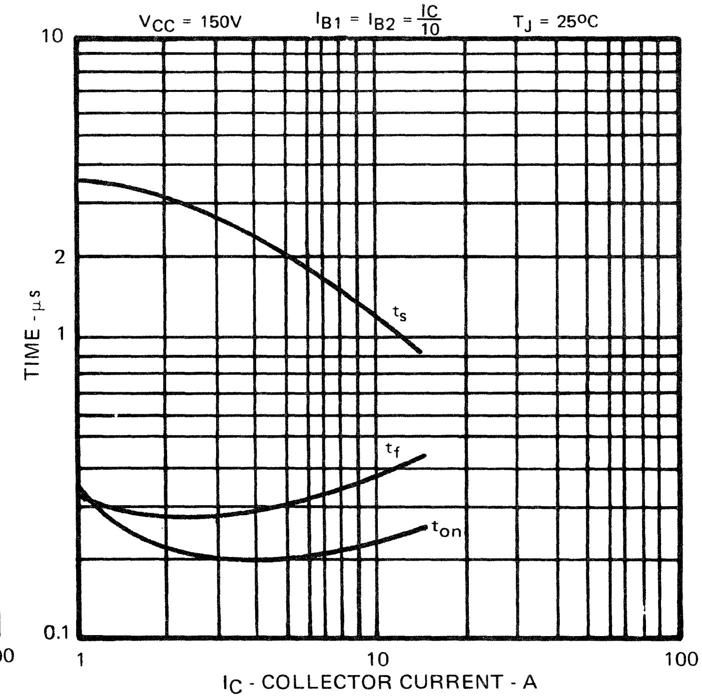
TYPICAL COLLECTOR-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



TYPICAL BASE-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

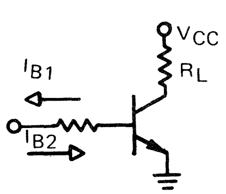


TYPICAL SWITCHING TIME
$V_{CC} = 150V$ $I_{B1} = I_{B2} = \frac{I_C}{10}$ $T_J = 25^oC$



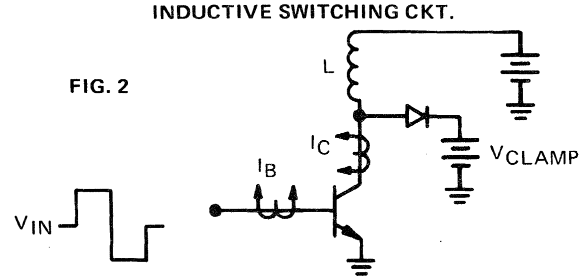
TYPICAL
RESISTIVE SWITCHING CKT.

FIG. 1



TYPICAL
INDUCTIVE SWITCHING CKT.

FIG. 2



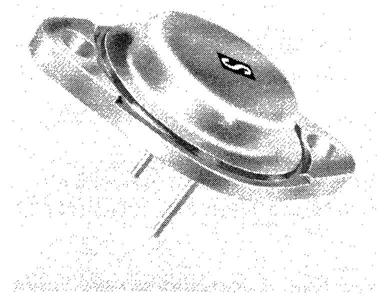
SDT 14304
SDT 14305

NPN SILICON POWER TRANSISTORS

20 AMPERE - FAST SWITCHING

FEATURES:
HIGH VOLTAGE, FAST SWITCHING, HIGH RELIABILITY - SINGLE CHIP PLANAR CONSTRUCTION

APPLICATIONS:
PUSH - PULL INVERTERS, SWITCHING REGULATORS, PULSE - WIDTH MODULATORS



TO-232AA (TO-3)
ALSO AVAILABLE IN TO-61/I

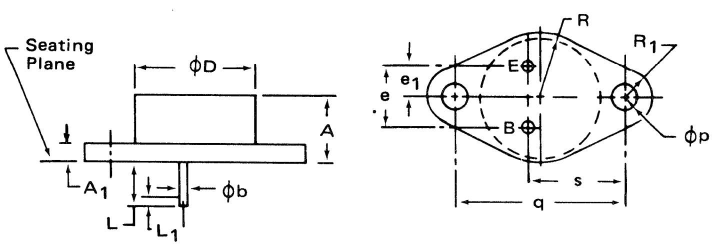
ABSOLUTE MAXIMUM RATINGS
@ 25° C (unless otherwise noted)

		SDT 14304	SDT 14305
V_{CBO}	COLLECTOR-BASE VOLTAGE	300 V	400 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	300 V	400 V
V_{EBO}	EMITTER-BASE VOLTAGE	10 V	5 V
I_C	CONTINUOUS COLLECTOR CURRENT	10 A	10 A
I_C (PK)	PEAK COLLECTOR CURRENT	20 A	20 A
I_B	CONTINUOUS BASE CURRENT	2 A	2 A
I_B (PK)	PEAK BASE CURRENT	5 A	5 A
T_J	OPERATING JUNCTION TEMPERATURE	-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	0.8 °C/W	0.8 °C/W
P_D	POWER DISSIPATION (25°C)	220 W	220 W

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 100mA) *	$V_{CEO(sus)}$			
SDT 14304		300		V
SDT 14305		400		V
*PULSED (INDUCTIVE SWEEP 60 Hz)				
COLLECTOR-CUTOFF CURRENT	I_{CBO}			
SDT 14304 V_{CB} = 300 V			1.0	mA
SDT 14305 V_{CB} = 400 V			1.0	mA
COLLECTOR-CUTOFF CURRENT T_C = 150°C	I_{CBO}			
SDT 14304 V_{CB} = 240 V			1.0	mA
SDT 14305 V_{CB} = 320 V			1.0	mA
COLLECTOR-CUTOFF CURRENT (V_{CE} = 200 V, R_{BE} = 50 Ω)	I_{CER}		1.0	mA
EMITTER-BASE VOLTAGE (I_B = 1.0 mA)	V_{EBO}	10		V
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t=1.0 s NON REPETITIVE, V_{CE} = 50 V)	$I_{s/b}$	3.8		A

OUTLINE DRAWING FOR TO-232 AA (TO-3)



SYMBOL	MILLIMETERS AA MIN.	MILLIMETERS AA MAX.	NOTE	INCHES AA MIN.	INCHES AA MAX.	NOTE
A	6.4	11.4		0.250	0.450	
A_1	–	3.42		–	0.135	
b	–	–		–	–	
Øb	0.966	1.092	2	0.038	0.043	2
ØD	–	22.22		–	0.875	
e	10.67	11.17		0.420	0.440	
e_1	5.21	5.71		0.205	0.225	
L	7.93	–	2	0.312	–	2
L_1	–	–		–	–	
O	–	–		–	–	
O_1	–	–		–	–	
Øp	3.84	4.08	3	0.151	0.161	3
q	29.90	30.40		1.177	1.197	
R	–	13.33		–	0.525	
R_1	–	4.77		–	0.188	
s	16.64	17.14	4	0.655	0.675	4
ØT	–	–		–	–	
NOTE	1, 5			1, 5		

NOTES:

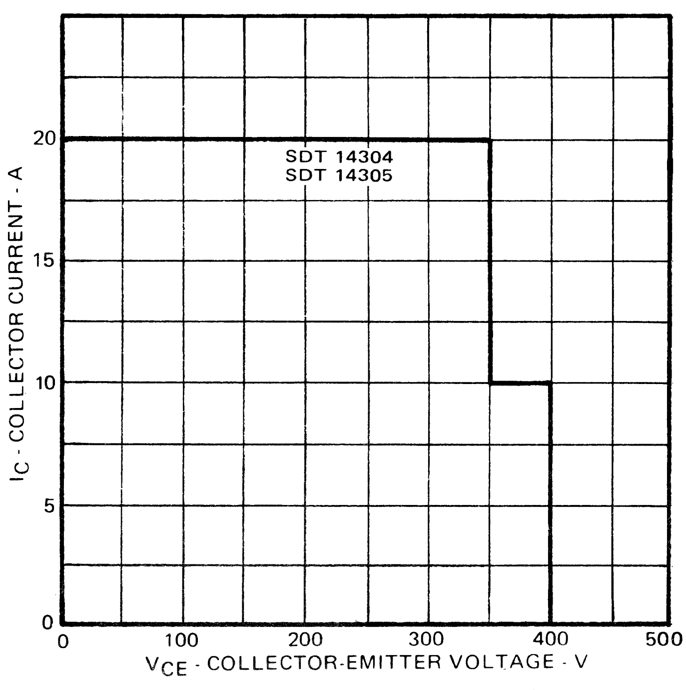
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5, 1973.
2. TWO LEADS.
3. TWO HOLES.
4. AT BOTH ENDS.
5. CONTROLLING DIMENSIONS: INCH.

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

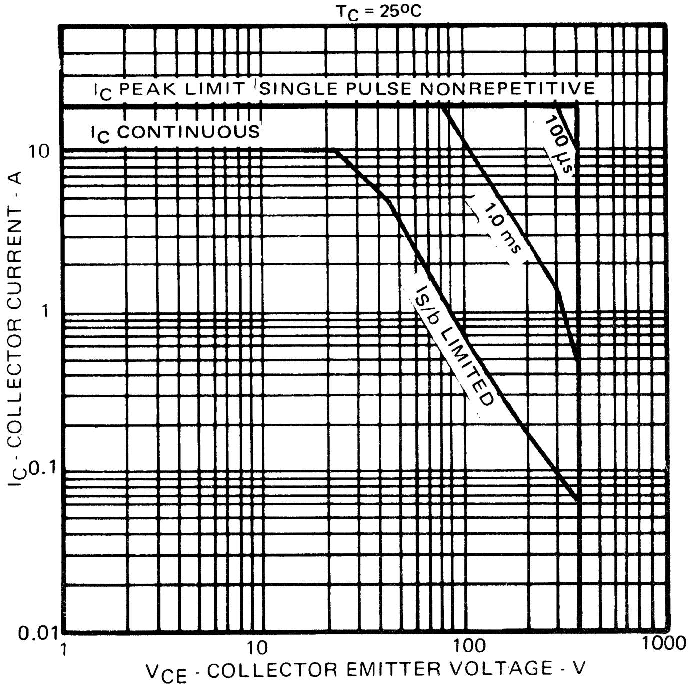
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
DC CURRENT GAIN (I_C = 5.0A, V_{CE} = 5.0 V)** (I_C = 10A, V_{CE} = 5.0 V)**	h_{FE}	 15 10	 75 —	
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 5.0A, I_B = 0.5A)** (I_C = 10A, I_B = 1.5A)**	$V_{CE(sat)}$		 0.30 0.70	 V V
BASE EMITTER SATURATION VOLTAGE (I_C = 5.0A, I_B = 0.5A)** (I_C = 10A, I_B = 1.5A)**	$V_{BE(sat)}$		 1.0 1.4	 V V
TRANSITION FREQUENCY (I_C = 1.0A, V_{CE} = 10 V, $f_{(TEST)}$ = 1 MHz)	f_T	7		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		600	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME (V_{CC} = 150V, I_C = 5.0A I_{B1} = I_{B2} = 0.5A, t_p = 10 μs)	 t_{on} t_s t_f		 0.45 2.5 0.45	 μs μs μs
SWITCHING CHARACTERISTICS INDUCTIVE (FIG. 2) CURRENT STORAGE TIME CURRENT FALL TIME V_{CLAMP} = 300 V, I_C = 10A, L = 35 μH I_{B1} = 1.0A, I_{B2} = 1.0A	 t_{si} t_{fi}		 1.5 0.25	 μs μs

**PULSED—300 μs—2%

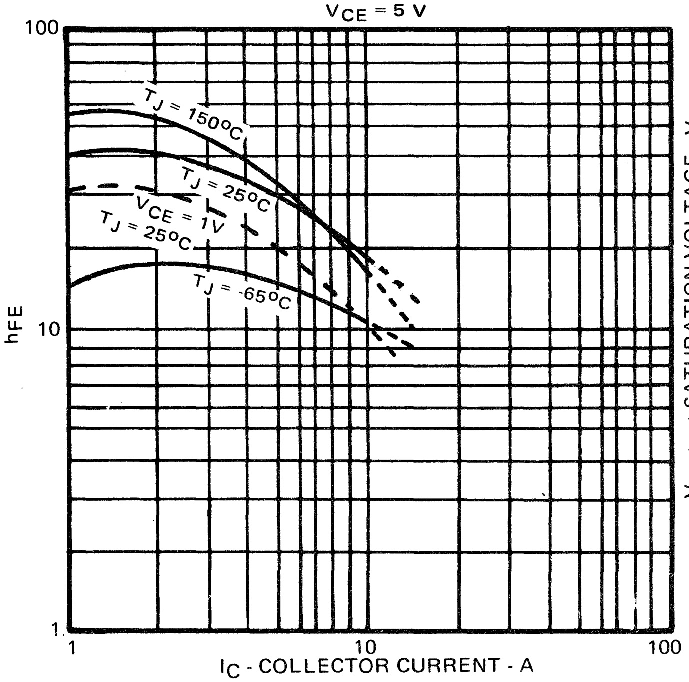
REVERSE BIASED SAFE OPERATING AREA



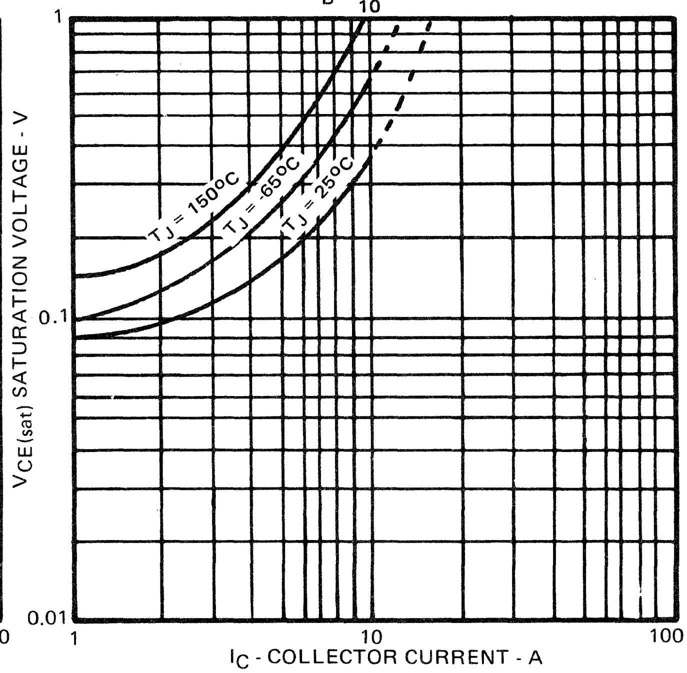
FORWARD BIASED SAFE OPERATING AREA
DERATE V_{CE} TO V_{CEO} MAX.
T_C = 25°C



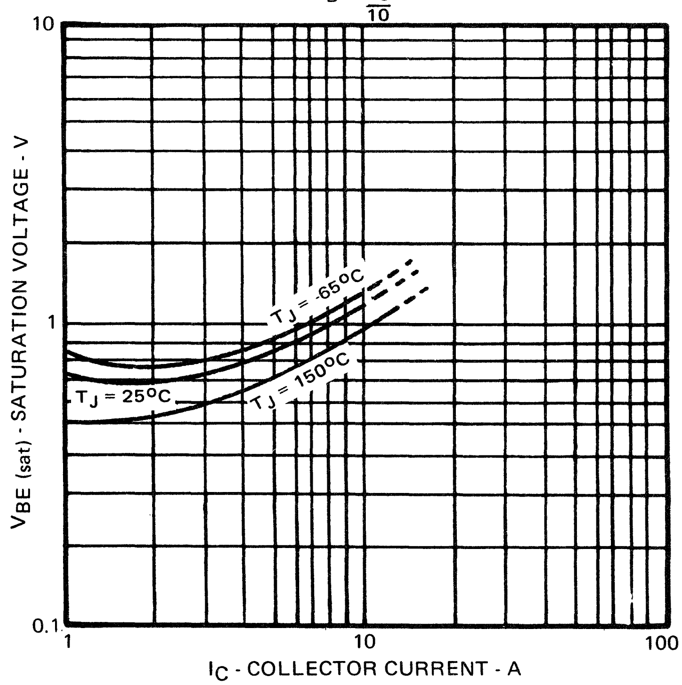
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5\ V$



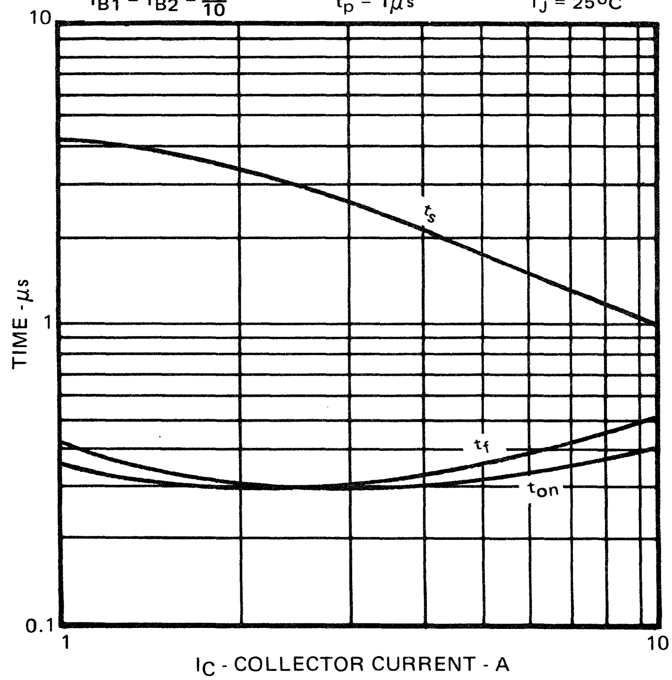
TYPICAL COLLECTOR-EMITTER SATURATION VOLTAGE
$I_B = \frac{I_C}{10}$



TYPICAL BASE-EMITTER SATURATION VOLTAGE
$I_B = \frac{I_C}{10}$

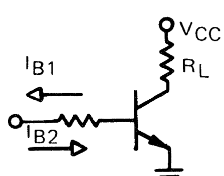


TYPICAL SWITCHING TIME
$I_{B1} = I_{B2} = \frac{I_C}{10}$ $t_p = 1\mu s$ $I_J = 25^oC$



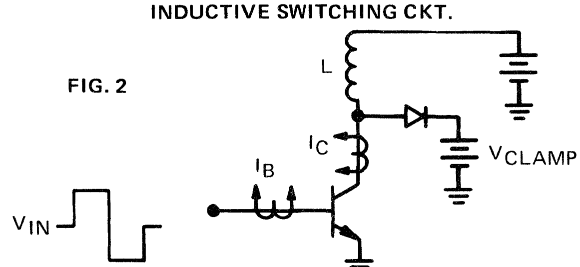
TYPICAL
RESISTIVE SWITCHING CKT.

FIG. 1



TYPICAL
INDUCTIVE SWITCHING CKT.

FIG. 2



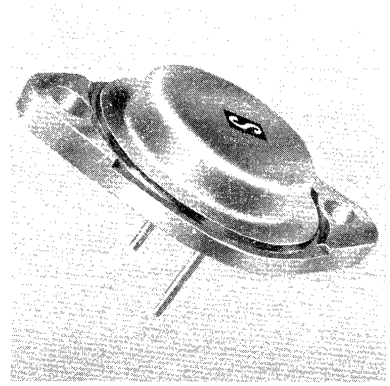
SDT 40301
SDT 40302

NPN SILICON POWER TRANSISTORS

5 AMPERES

FEATURES:
HIGH VOLTAGE RATING
LOW SATURATION VOLTAGE

APPLICATIONS:
HIGH VOLTAGE BRIDGE AMPLIFIERS, INVERTERS,
HIGH VOLTAGE SWITCHING CIRCUITS



TO - 3

ABSOLUTE MAXIMUM RATINGS

		SDT 40301	SDT 40302
V_{CBO}	COLLECTOR-BASE VOLTAGE	200 V	250 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	150 V	200 V
V_{EBO}	EMITTER-BASE VOLTAGE	10 V	10 V
I_C	CONTINUOUS COLLECTOR CURRENT	5 A	5 A
I_C (PK)	PEAK COLLECTOR CURRENT	10 A	10 A
I_B	CONTINUOUS BASE CURRENT	2 A	2 A
I_B (PK)	PEAK BASE CURRENT	5 A	5 A
T_J	OPERATING JUNCTION TEMPERATURE	-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C	
$R_{\Theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	0.80° C/W	0.80° C/W
P_D	POWER DISSIPATION (25°C)	220 W	220 W

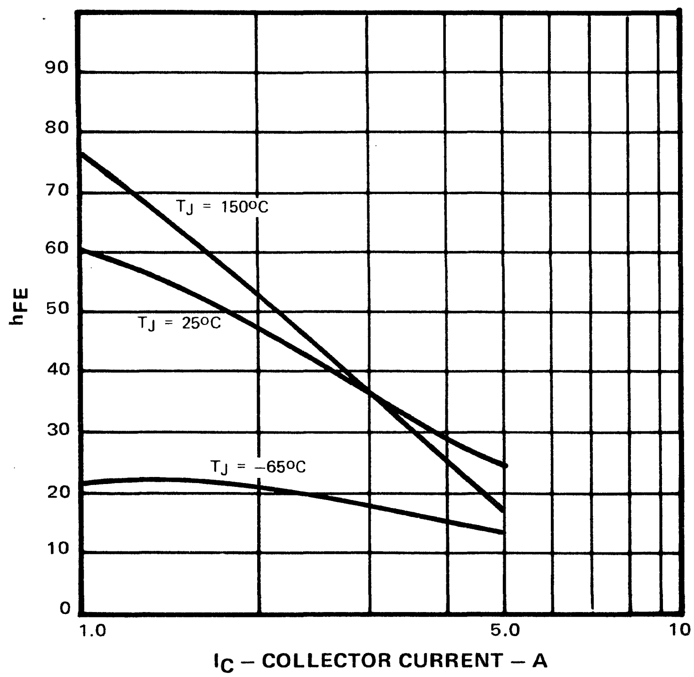
ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 100 mA)*	$V_{CEO(sus)}$			
SDT 40301		150		V
SDT 40302		200		V
*PULSED (INDUCTIVE SWEEP 60 Hz)				
COLLECTOR-BASE BREAKDOWN VOLTAGE (I_C = 100 μA)	V_{CBO}			
SDT 40301		200		V
SDT 40302		250		V
EMITTER-BASE VOLTAGE (I_E = 1.0 mA)	V_{EBO}	10		V
COLLECTOR-CUTOFF CURRENT	I_{CBO}			
SDT 40301 V_{CB} = 100 V			10	μA
SDT 40302 V_{CB} = 100 V			10	μA
COLLECTOR-CUTOFF CURRENT T_C = 150°C	I_{CBO}			
SDT 40301 V_{CB} = 100 V			50	μA
SDT 40302 V_{CB} = 100 V			50	μA
DC CURRENT GAIN	h_{FE}			
(I_C = 2.0 A V_{CE} = 5 V)**		20	80	
(I_C = 5.0 A V_{CE} = 5 V)**		10		
COLLECTOR-EMITTER SATURATION VOLTAGE	$V_{CE(sat)}$			
(I_C = 2.0 A I_B = 0.2 A)**			0.3	V
(I_C = 5.0 A I_B = 0.5 A)**			1.2	V
BASE EMITTER SATURATION VOLTAGE	$V_{BE(sat)}$			
(I_C = 2.0 A I_B = 0.2 A)**			1.00	V
(I_C = 5.0 A I_B = 0.5 A)**			1.50	V
TRANSITION FREQUENCY (I_C = 0.5 A V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	25		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		120	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1)				
TURN-ON TIME	t_{on}		0.35	μs
STORAGE TIME	t_s		2.5	μs
FALL TIME	t_f		0.5	μs
V_{CC}=150 V, I_C=2.0 A, I_{B1}=I_{B2}=0.2 A, t_p=10 μs				
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1 sec NON REPETITIVE, V_{CE} = 50 V)	$I_{s/b}$	3.0		A

**PULSED-300 μs—2%

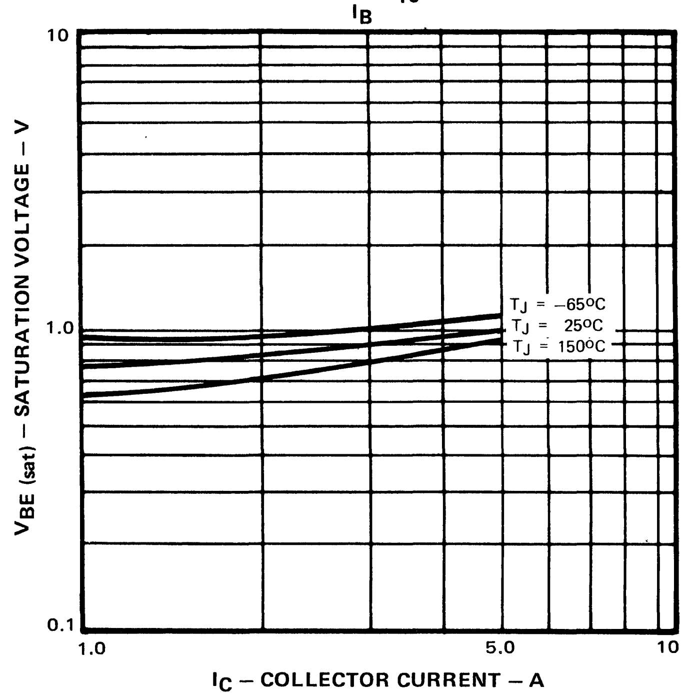
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO

$V_{CE} = 5\ V$



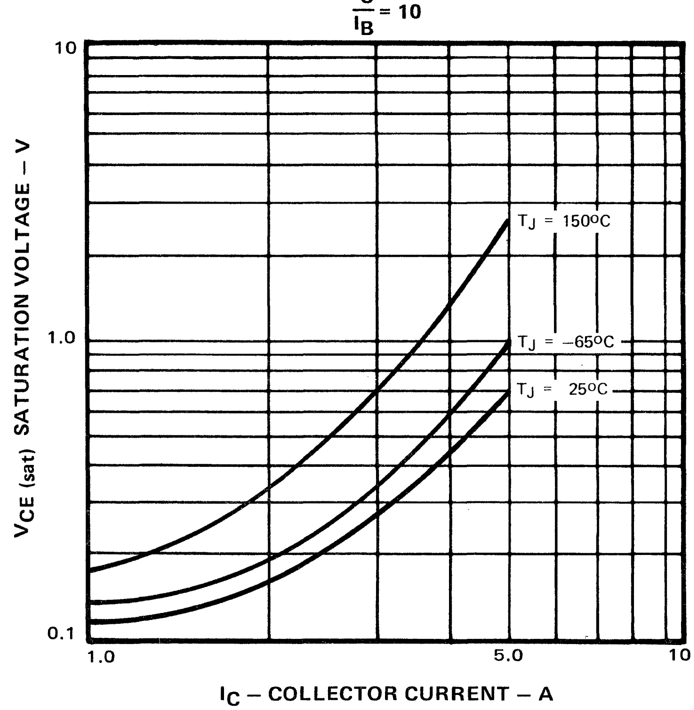
TYPICAL BASE EMITTER SATURATION VOLTAGE

$\frac{I_C}{I_B} = 10$



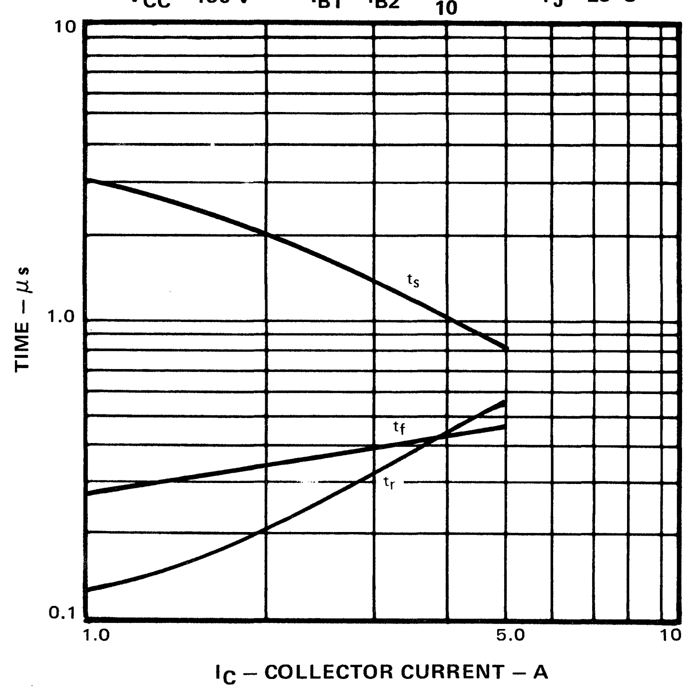
TYPICAL COLLECTOR–EMITTER SATURATION VOLTAGE

$\frac{I_C}{I_B} = 10$



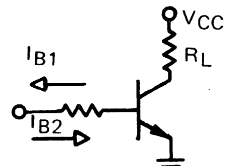
TYPICAL SWITCHING TIME

$V_{CC} = 150\ V$ $I_{B1} = I_{B2} = \frac{IC}{10}$ $T_J = 25^oC$

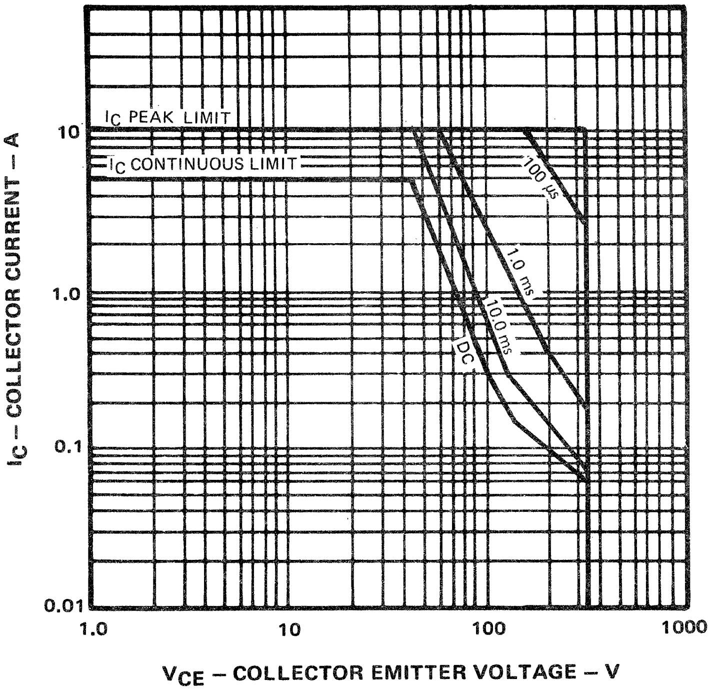


TYPICAL
RESISTIVE SWITCHING CKT.

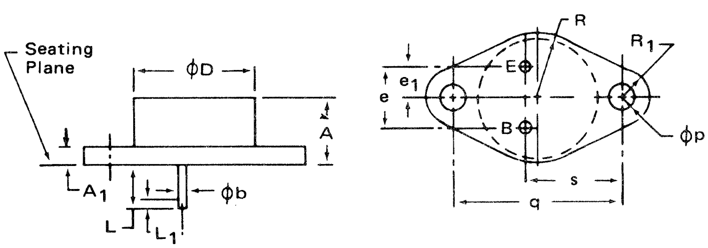
FIG. 1



MAXIMUM OPERATING CONDITIONS
$T_C = 25^oC$
DERATE V_{CE} TO V_{CEO} MAX.



OUTLINE DRAWING FOR TO - 3



SYMBOL	MILLIMETERS AA MIN.	MILLIMETERS AA MAX.	NOTE	INCHES AA MIN.	INCHES AA MAX.	NOTE
A	6.4	11.4		0.250	0.450	
A_1	–	3.42		–	0.135	
b	–	–		–	–	
Øb	0.966	1.092	2	0.038	0.043	2
ØD	–	22.22		–	0.875	
e	10.67	11.17		0.420	0.440	
e_1	5.21	5.71		0.205	0.225	
L	7.93	–	2	0.312	–	2
L_1	–	–		–	–	
O	–	–		–	–	
O_1	–	–		–	–	
Øp	3.84	4.08	3	0.151	0.161	3
q	29.90	30.40		1.177	1.197	
R	–	13.33		–	0.525	
R_1	–	4.77		–	0.188	
s	16.64	17.14	4	0.655	0.675	4
ØT	–	–		–	–	
NOTE	1, 5			1, 5		

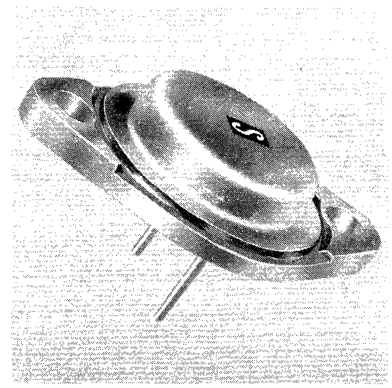
NOTES:

1. DIMENSIONING & TOLERANCING PER ANSI Y14.5, 1973.
2. TWO LEADS.
3. TWO HOLES.
4. AT BOTH ENDS.
5. CONTROLLING DIMENSIONS: INCH.

SDT 40303
SDT 40304
SDT 40305

NPN SILICON POWER TRANSISTORS

5 AMPERES



TO - 3

FEATURES:
HIGH VOLTAGE RATING
LOW SATURATION VOLTAGE

APPLICATIONS:
HIGH VOLTAGE BRIDGE AMPLIFIERS, INVERTERS,
HIGH VOLTAGE SWITCHING CIRCUITS

ABSOLUTE MAXIMUM RATINGS

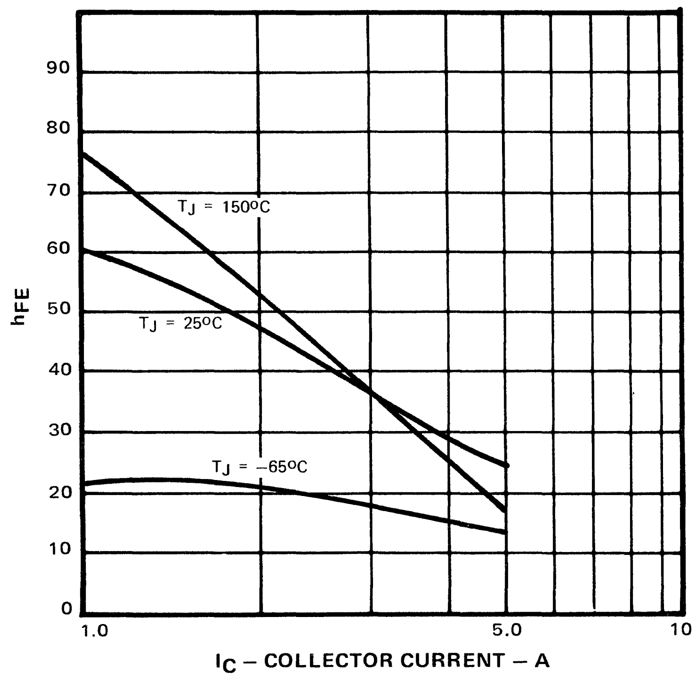
		SDT 40303	SDT 40304	SDT 40305
V_{CBO}	COLLECTOR-BASE VOLTAGE	300 V	350 V	400 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	250 V	300 V	350 V
V_{EBO}	EMITTER-BASE VOLTAGE	10 V	10 V	10 V
I_C	CONTINUOUS COLLECTOR CURRENT	5 A	5 A	5 A
I_C (PK)	PEAK COLLECTOR CURRENT	10 A	10 A	10 A
I_B	CONTINUOUS BASE CURRENT	2 A	2 A	2 A
I_B (PK)	PEAK BASE CURRENT	5 A	5 A	5 A
T_J	OPERATING JUNCTION TEMPERATURE	-65°C to +200°C		
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C		
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	0.80°C/W	0.80°C/W	0.80°C/W
P_D	POWER DISSIPATION (25°C)	220 W	220 W	220 W

ELECTRICAL CHARACTERISTICS ($T_C = 25^oC$ UNLESS OTHERWISE NOTED)

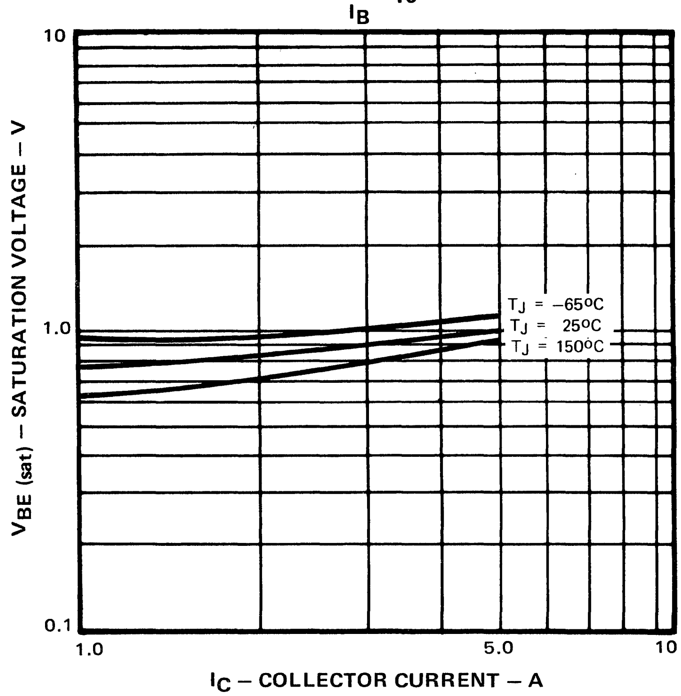
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 100 mA)*	$V_{CEO(sus)}$			
SDT 40303		250		V
SDT 40304		300		V
SDT 40305		350		V
*PULSED (INDUCTIVE SWEEP 60 Hz)				
COLLECTOR-BASE BREAKDOWN VOLTAGE (I_C = 100 μA)	V_{CBO}			
SDT 40303		300		V
SDT 40304		350		V
SDT 40305		400		V
EMITTER-BASE VOLTAGE (I_E = 1.0 mA)	V_{EBO}	10		V
COLLECTOR-CUTOFF CURRENT	I_{CBO}			
SDT 40303 V_{CB} = 100 V			10	μA
SDT 40304 V_{CB} = 100 V			10	μA
SDT 40305 V_{CB} = 100 V			10	μA
COLLECTOR-CUTOFF CURRENT $T_C = 150^oC$	I_{CBO}			
SDT 40303 V_{CB} = 100 V			50	μA
SDT 40304 V_{CB} = 100 V			50	μA
SDT 40305 V_{CB} = 100 V			50	μA
DC CURRENT GAIN	h_{FE}			
(I_C = 2.0 A V_{CE} = 5 V)**		20	80	
(I_C = 5.0 A V_{CE} = 5 V)**		10		
COLLECTOR-EMITTER SATURATION VOLTAGE	$V_{CE(sat)}$			
(I_C = 2.0 A I_B = 0.2 A)**			0.3	V
(I_C = 5.0 A I_B = 0.5 A)**			1.2	V
BASE EMITTER SATURATION VOLTAGE	$V_{BE(sat)}$			
(I_C = 2.0 A I_B = 0.2 A)**			1.00	V
(I_C = 5.0 A I_B = 0.5 A)**			1.50	V
TRANSITION FREQUENCY (I_C = 0.5 A V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	25		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		120	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1)				
TURN-ON TIME	t_{on}		0.35	μs
STORAGE TIME	t_s		2.5	μs
FALL TIME	t_f		0.5	μs
V_{CC}=150 V, I_C=2.0 A, I_{B1}=I_{B2}=0.2 A, t_p=10 μs				
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1 sec NON REPETITIVE, V_{CE} = 50 V)	$I_{s/b}$	3.0		A

**PULSED-300 μs—2%

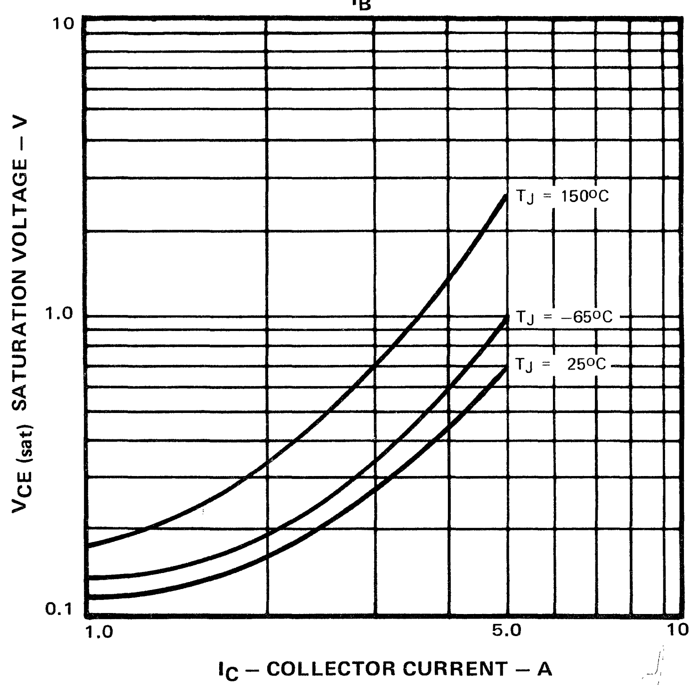
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5\ V$



TYPICAL BASE EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

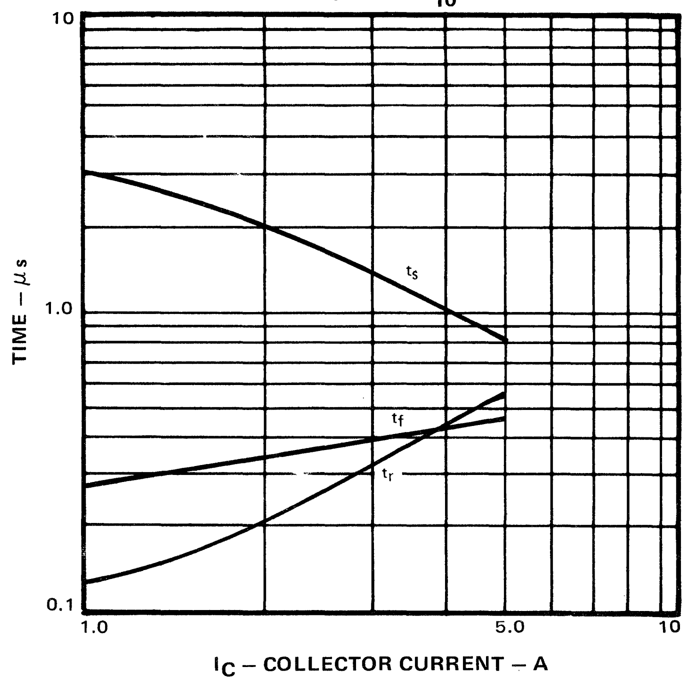


TYPICAL COLLECTOR–EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



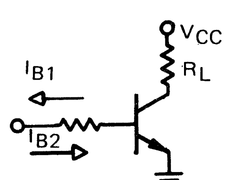
TYPICAL SWITCHING TIME

$V_{CC} = 150\ V$ $\quad I_{B1} = I_{B2} = \frac{IC}{10}$ $\quad T_J = 25^oC$

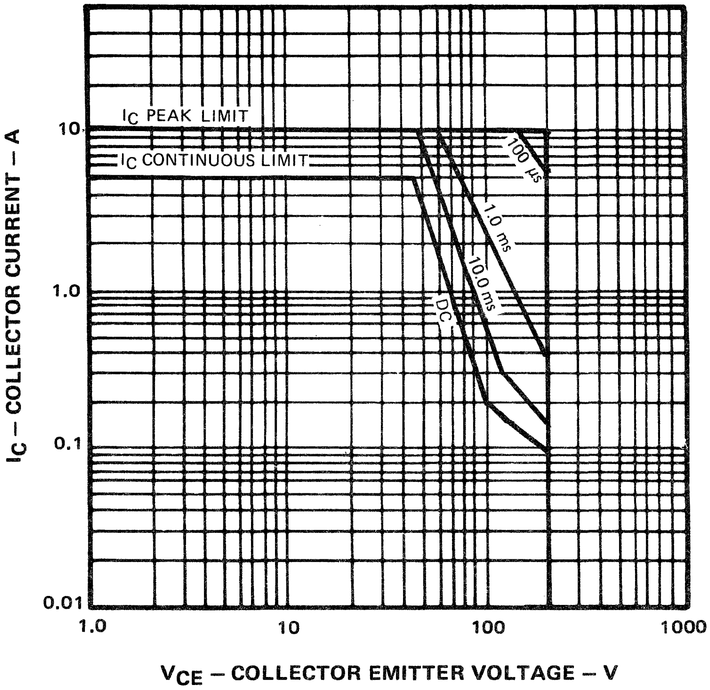


TYPICAL
RESISTIVE SWITCHING CKT.

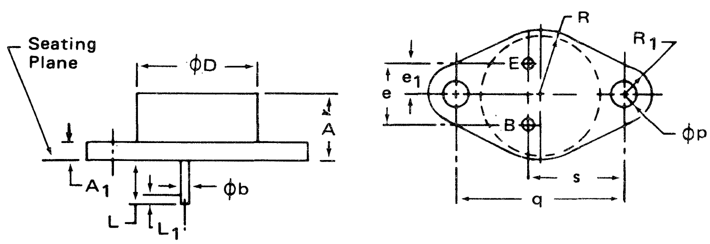
FIG. 1



MAXIMUM OPERATING CONDITIONS
$T_C = 25^oC$
DERATE V_{CE} TO V_{CEO} MAX.



OUTLINE DRAWING FOR TO - 3



NOTES:

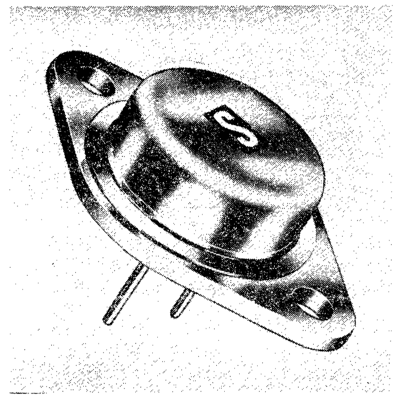
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5, 1973.
2. TWO LEADS.
3. TWO HOLES.
4. AT BOTH ENDS.
5. CONTROLLING DIMENSIONS: INCH.

SYMBOL	MILLIMETERS			INCHES		
	AA		NOTE	AA		NOTE
	MIN.	MAX.		MIN.	MAX.	
A	6.4	11.4		0.250	0.450	
A_1	–	3.42		–	0.135	
b	–	–		–	–	
Øb	0.966	1.092	2	0.038	0.043	2
ØD	–	22.22		–	0.875	
e	10.67	11.17		0.420	0.440	
e_1	5.21	5.71		0.205	0.225	
L	7.93	–	2	0.312	–	2
L_1	–	–		–	–	
O	–	–		–	–	
O_1	–	–		–	–	
Øp	3.84	4.08	3	0.151	0.161	3
q	29.90	30.40		1.177	1.197	
R	–	13.33		–	0.525	
R_1	–	4.77		–	0.188	
s	16.64	17.14	4	0.655	0.675	4
ØT	–	–		–	–	
NOTE	1, 5			1, 5		

SDT 49302
SDT 49304

NPN SILICON POWER TRANSISTORS

80 AMPERES
SINGLE DIFFUSED MESA-HIGH CURRENT



TO–3

FEATURES

GAINS AT VERY HIGH CURRENTS
LOW SATURATION VOLTAGES AT HIGH CURRENTS
COPPER CORE LEADS
STEEL CASE WITH HEAVY DUTY CLIP CONNECTORS

APPLICATIONS

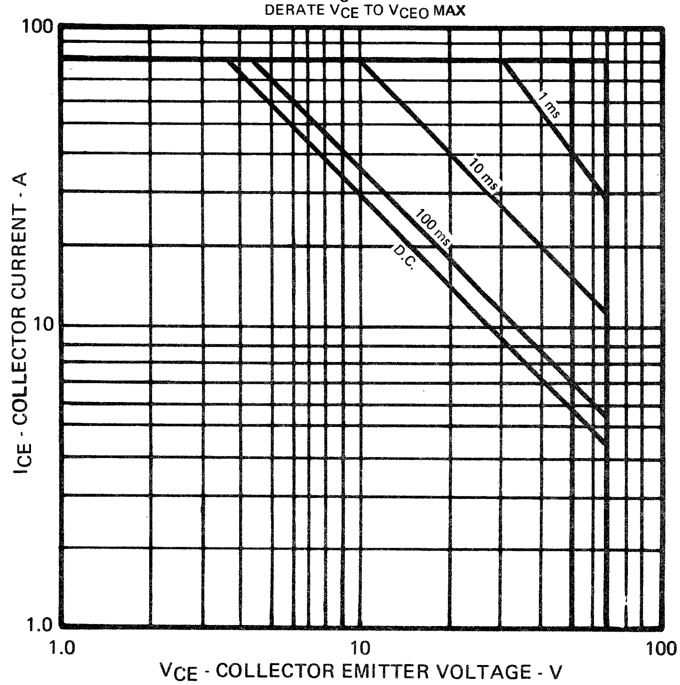
POWER SWITCHING CIRCUITS, DC TO DC CONVERTERS, AUDIO AMPLIFIERS, CONTROL CIRCUITS, SERIES AND SHUNT REGULATORS, SOLENOID DRIVERS, INVERTERS

SIMILAR TO 2N 5575/2N 5578

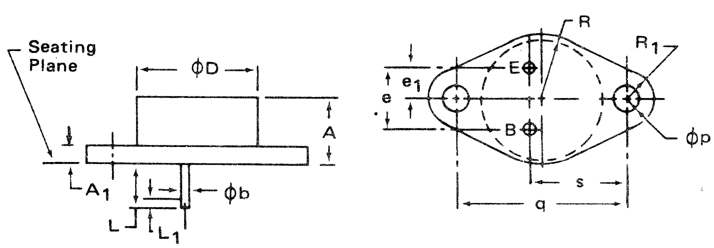
ABSOLUTE MAXIMUM RATINGS
@ 25°C (unless otherwise noted)

		SDT 49302	SDT 49304
V_{CBO}	COLLECTOR-BASE VOLTAGE	70V	90V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	50V	70V
V_{EBO}	EMITTER-BASE VOLTAGE	7V	7V
I_C	CONTINUOUS COLLECTOR CURRENT	80A	60A
I_C (PK)	PEAK COLLECTOR CURRENT	100A	80A
I_B	CONTINUOUS BASE CURRENT	15A	10A
I_B (PK)	PEAK BASE CURRENT	20A	15A
T_J	OPERATING JUNCTION TEMPERATURE	-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C	
$R_{\Theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	0.58°C/W	0.58°C/W
P_D	POWER DISSIPATION (25°C)	300W	300W

MAXIMUM OPERATING CONDITIONS
$T_C = 25°C$
DERATE V_{CE} TO V_{CEO} MAX



OUTLINE DRAWING FOR TO-3



NOTES:

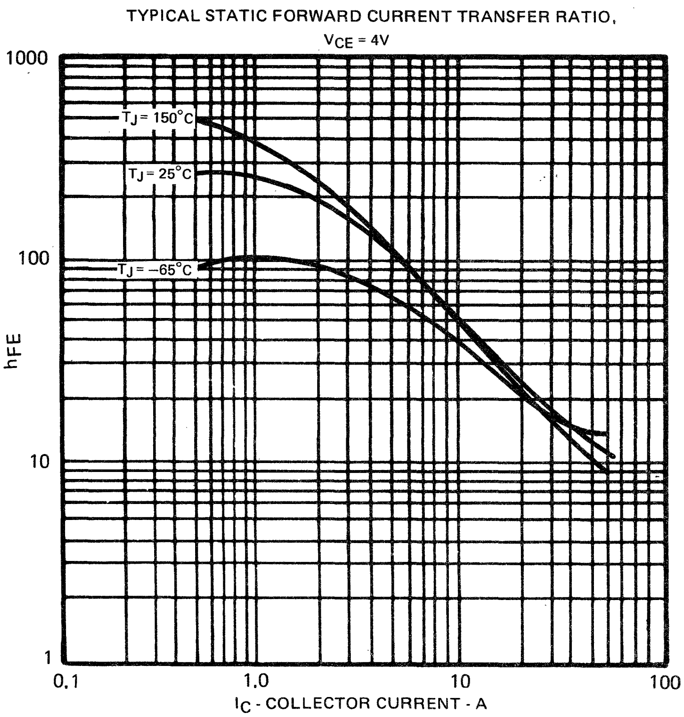
1. DIMENSIONING & TOLERANCING PER ANSI Y14.5, 1973.
2. TWO LEADS.
3. TWO HOLES.
4. AT BOTH ENDS.
5. CONTROLLING DIMENSIONS: INCH.

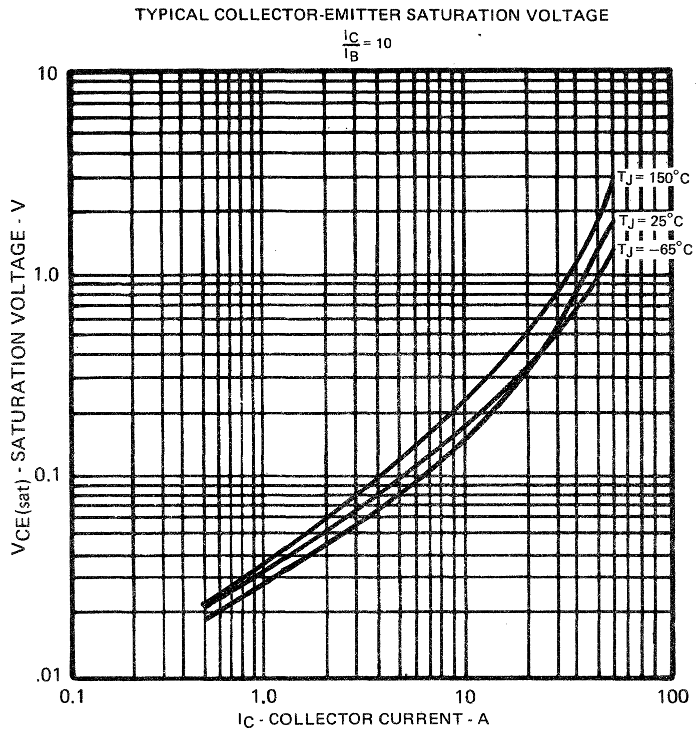
SYMBOL	MILLIMETERS			INCHES		
	MIN.	MAX.	NOTE	MIN.	MAX.	NOTE
A	6.4	11.4		0.250	0.450	
A_1	–	3.42		–	0.135	
b	–	–		–	–	
Øb	0.966	1.092	2	0.038	0.043	2
ØD	–	22.22		–	0.875	
e	10.67	11.17		0.420	0.440	
e_1	5.21	5.71		0.205	0.225	
L	7.93	–	2	0.312	–	2
L_1	–	–		–	–	
O	–	–		–	–	
O_1	–	–		–	–	
Øp	3.84	4.08	3	0.151	0.161	3
q	29.90	30.40		1.177	1.197	
R	–	13.33		–	0.525	
R_1	–	4.77		–	0.188	
s	16.64	17.14	4	0.655	0.675	4
ØT	–	–		–	–	
NOTE	1, 5			1, 5		

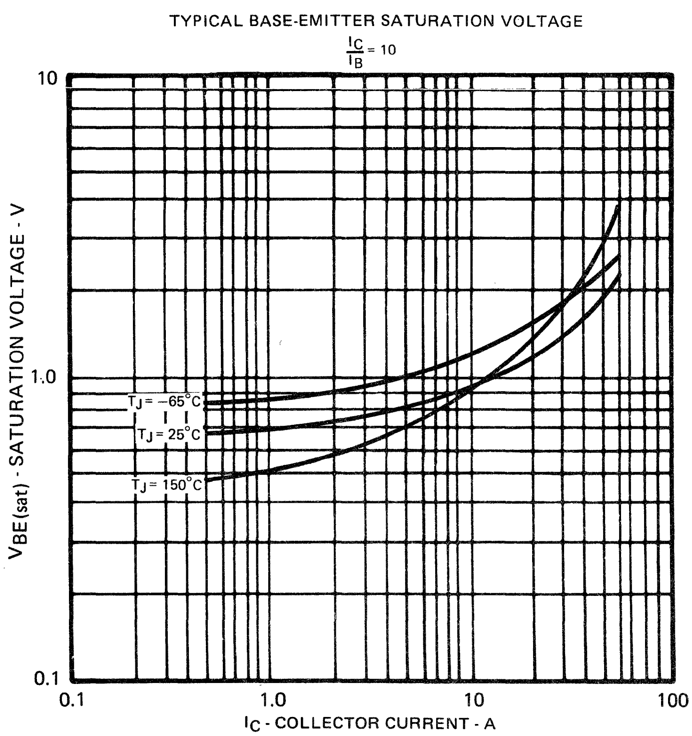
ELECTRICAL CHARACTERISTICS (T_C=25°C UNLESS OTHERWISE NOTED)

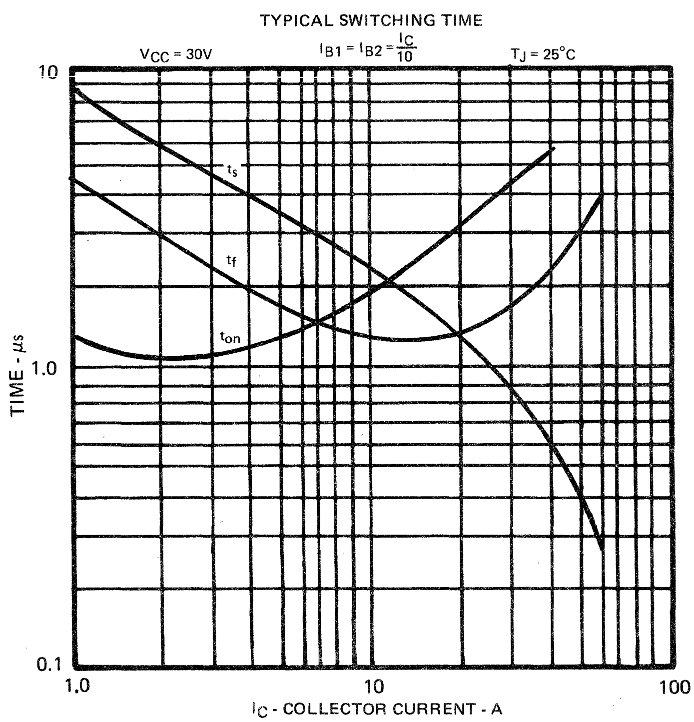
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C=200mA)* SDT 49302 SDT 49304 *PULSED (INDUCTIVE SWEEP 60 Hz)	$V_{CEO(sus)}$	 50 70		 V V
COLLECTOR-BASE BREAKDOWN VOLTAGE (I_C=0.1A)** SDT 49302 SDT 49304	V_{CBO}	 70 90		 V V
EMITTER-BASE VOLTAGE (I_E=5mA)	V_{EBO}	7		V
COLLECTOR-CUTOFF CURRENT SDT 49302 V_{CB}=60V SDT 49304 V_{CB}=80V	I_{CBO}		 5.0 5.0	 mA mA
COLLECTOR-CUTOFF CURRENT T_C=150°C SDT 49302 V_{CB}=60V SDT 49304 V_{CB}=80V	I_{CBO}		 10 10	 mA mA
DC CURRENT GAIN (I_C=60A V_{CE}=4V)** SDT 49302 (I_C=40A V_{CE}=4V)** SDT 49304	h_{FE}	 10 10	 40 40	
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C=60A I_B=6.0A)** SDT 49302 (I_C=40A I_B=4.0A)** SDT 49304	$V_{CE(sat)}$		 1.9 1.4	 V V
BASE-EMITTER SATURATION VOLTAGE (I_C=60A I_B=6.0A)** SDT 49302 (I_C=60A I_B=4.0A)** SDT 49304	$V_{BE(sat)}$		 2.9 2.4	 V V
TRANSITION FREQUENCY (I_C=1.0A V_{CE}=10V, $f_{(TEST)}$=0.2MHz)	f_T	400	4000	KHz
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME V_{CC}=30V, I_C=20A, I_{B1}=I_{B2}=2.0A, t_p=10µs	 t_{on} t_s t_f		 5.0 3.0 3.0	 µs µs µs
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t=1 sec NON REPETITIVE, V_{CE}=50V) SDT 49302 (t=1 sec NON REPETITIVE, V_{CE}=70V) SDT 49304	$I_{s/b}$	 6.0 4.3		 A A

**PULSED—300µs—2%



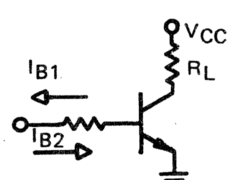






TYPICAL
RESISTIVE SWITCHING CKT.

FIG. 1



Solitron DEVICES, INC.
SEMICONDUCTOR GROUP
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

SDT 55405
SDT 55407

75 AMPERE PEAK

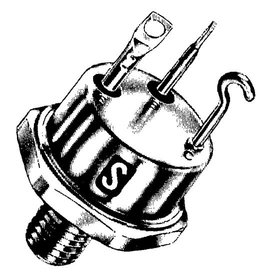
NPN SILICON POWER TRANSISTOR

HIGH RELIABILITY

SINGLE CHIP PLANAR CONSTRUCTION

LOW SATURATION VOLTAGE AT HIGH CURRENT

HIGH DISSIPATION RATING



TO-63

ABSOLUTE MAXIMUM RATINGS

@ 25°C (unless otherwise noted)

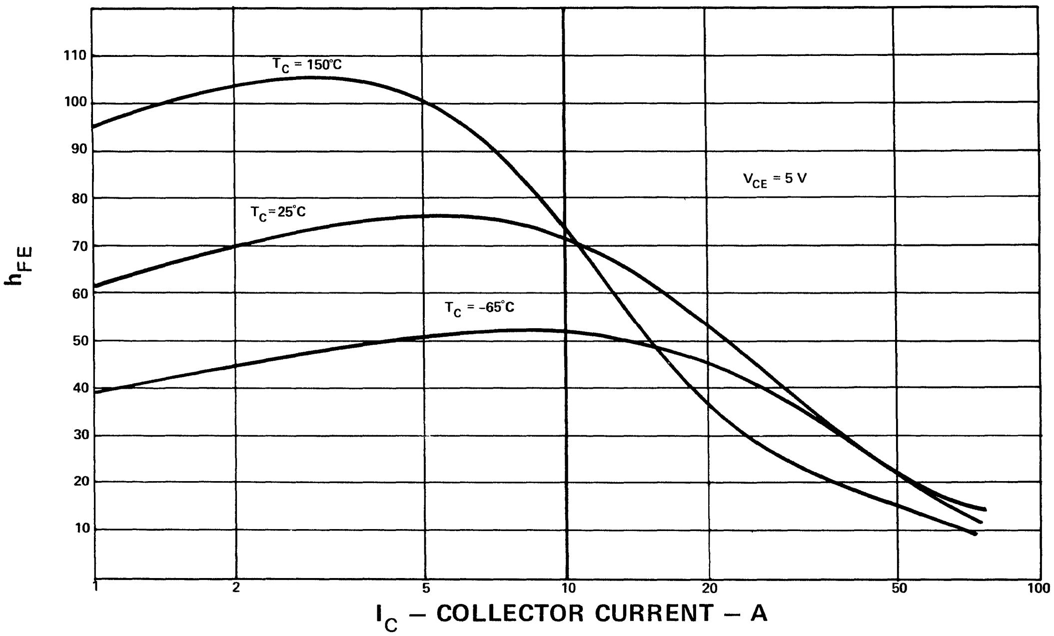
PARAMETER	SDT 55405	SDT 55407	UNITS
V_{CBO}	225	275	V
V_{CEO}	150	200	V
V_{EBO}	10	10	V
I_C (CONT.)	50	50	A
I_C (PK.)	75	75	A
I_B (CONT.)	10	10	A
I_B (PK.)	15	15	A
$T_{(STORAGE)}$	-65 to +200	-65 to +200	°C
T_J	-65 to +200	-65 to +200	°C
$\Theta_{J\text{-}C}$	0.35	0.35	°C/W
P_T (MAX.) @T_C=100°C	280	280	W

ELECTRICAL CHARACTERISTICS: $T_C = 25°C$ unless otherwise specified.

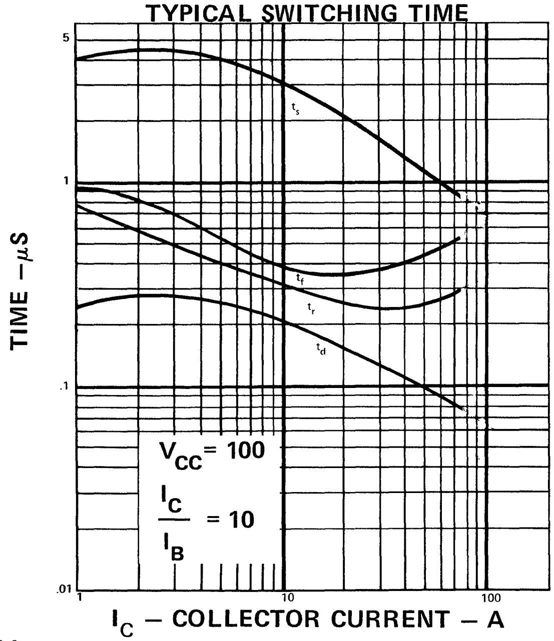
SYMBOL	TEST CONDITIONS: DC Collector Voltage (V)		DC Emitter or Base Voltage (V)		DC Current (A)			LIMITS: SDT 55405		SDT 55407		UNITS
	V_{CB}	V_{CE}	V_{EB}	V_{BE}	I_C	I_E	I_B	MIN.	MAX	MIN	MAX	
V_{CBO}					1mA			225		275		V
$V_{CEO(sus)}$*					0.1			150		200		V
V_{EBO}						100μA		10		10		V
I_{CBO}	150								100			μA
I_{CBO}	200										100	μA
I_{CBO} T_C=150°C	150								1.0			mA
I_{CBO} T_C=150°C	200										1.0	mA
I_{CES}		150							125			μA
I_{CES}		200									125	μA
I_{EBO}			8						100		100	μA
h_{FE}**		5			50			10	50	10	50	
h_{FE}**		5			75			5		5		
$V_{CE(sat)}$**					50		5.0		0.7		0.7	V
$V_{BE(sat)}$**					50		5.0		1.6		1.6	V
C_{obo} f= 1 MHz	10								1200		1200	pF
h_{FE} f=10 MHz		10			1.0			1.0		1.0		
t_r		100			20		2.0		0.4		0.4	μs
t_s		100			20		2.0(1) 2.0(2)		1.35		1.35	μs
t_f		100			20		2.0(1) 2.0(2)		0.4		0.4	μs

* Pulsed Inductive (60 Hz) ** Pulsed 300 μs – 2% (1) I_{B1} (2) I_{B2}

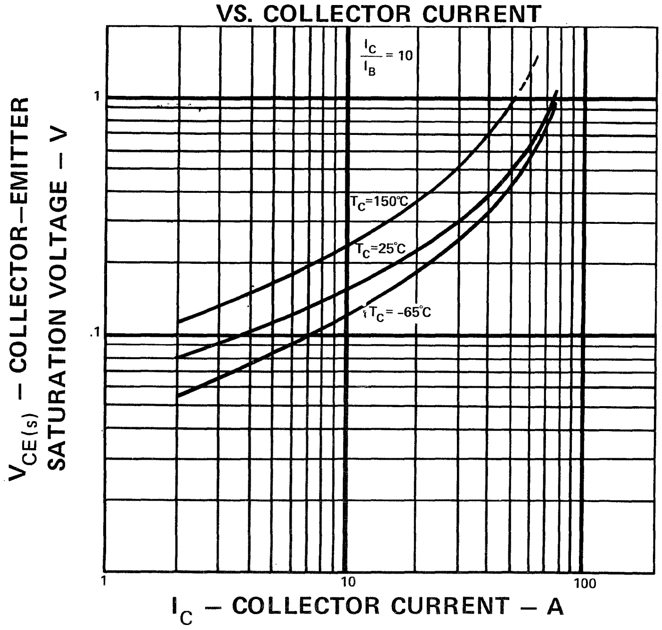
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO



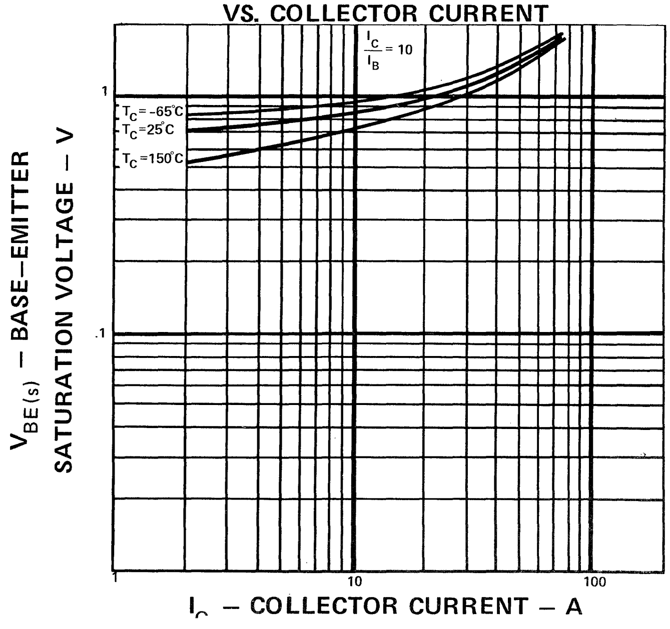
TYPICAL SWITCHING TIME



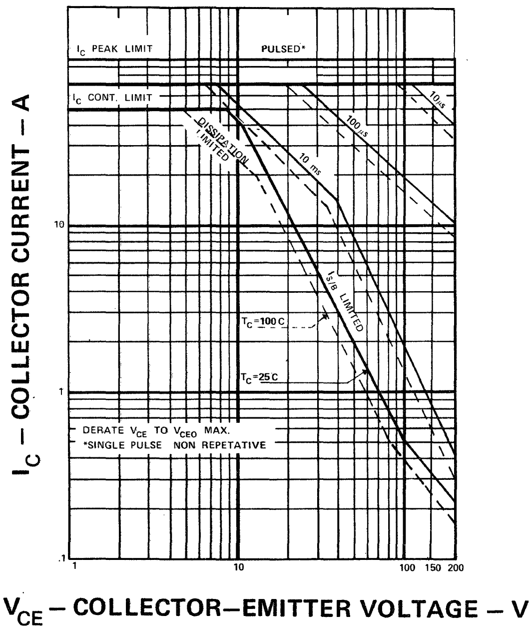
TYPICAL COLLECTOR–EMITTER SATURATION VOLTAGE VS. COLLECTOR CURRENT



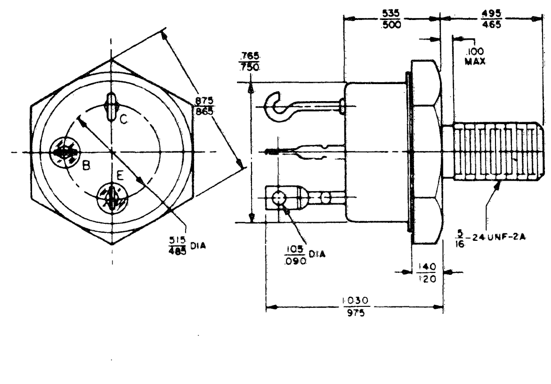
TYPICAL BASE–EMITTER SATURATION VOLTAGE VS. COLLECTOR CURRENT



SAFE OPERATING AREA



DIMENSIONAL DRAWING



SOLITRON FACILITIES

TAPPAN, NEW YORK 10983
256 Oak Tree Road
Phone 914 / 359-5050
TWX 710 / 576-2654

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLORIDA 33404
1177 Blue Heron Boulevard
Phone 305 / 848-4311
TWX 510 / 952-7610

Hi-rel Power Transistors (silicon)
Industrial/Commercial Power Transistors (silicon)
Power Hybrids (standard)
Custom Hybrids
Schottky & Planar Diodes
Semiconductor Die (silicon)

PORT SALERNO, FLORIDA 33492
Cove Road, Post Office Box 278
Phone 305 / 287-5000
TWX 510 / 953-7500

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies
Thin Film Microwave Products

SAN DIEGO, CALIFORNIA 92100
8808 Balboa Avenue
Phone 714 / 278-8780
TWX 910 / 335-1221

CMOS Devices
FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Diodes/Rectifiers
Zeners
High Voltage Rectifier Stacks

JUPITER, FLORIDA 33458
1440 West Indiantown Road
Phone 305 / 746-8311

When you think of semiconductors . . . think Solitron !

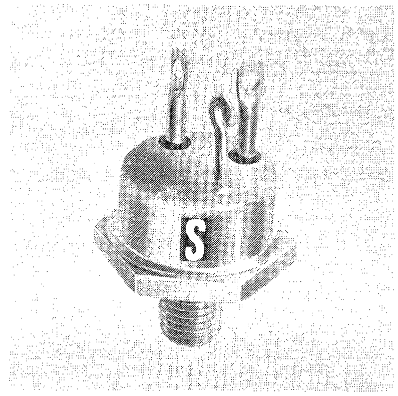
SDT 55456
SDT 55460

NPN SILICON POWER TRANSISTORS

75 AMPERES

FEATURES:
HIGH VOLTAGE, FAST SWITCHING, HIGH RELIABILITY - SINGLE CHIP PLANAR CONSTRUCTION

APPLICATIONS:
PUSH - PULL INVERTERS, SWITCHING REGULATORS, PULSE - WIDTH MODULATORS



TO–63

ABSOLUTE MAXIMUM RATINGS
@ 25° C (unless otherwise noted)

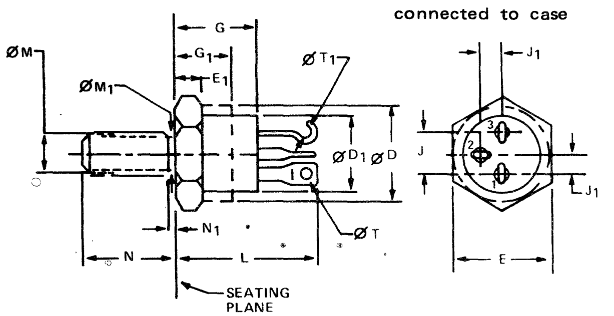
		SDT 55456	SDT 55460
V_{CBO}	COLLECTOR-BASE VOLTAGE	325 V	375 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	250 V	300 V
V_{EBO}	EMITTER-BASE VOLTAGE	10 V	10 V
I_C	CONTINUOUS COLLECTOR CURRENT	40 A	40 A
I_C (PK)	PEAK COLLECTOR CURRENT	75 A	75 A
I_B	CONTINUOUS BASE CURRENT	10 A	10 A
I_B (PK)	PEAK BASE CURRENT	15 A	15 A
T_J	OPERATING JUNCTION TEMPERATURE	-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	0.28 °C/W	0.28 °C/W
P_D	POWER DISSIPATION (25°C)	625 W	625 W

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 100mA) * SDT 55456 SDT 55460 *PULSED (INDUCTIVE SWEEP 60 Hz)	$V_{CEO(sus)}$	 250 300		 V V
COLLECTOR-CUTOFF CURRENT SDT 55456 V_{CB} = 325 V SDT 55460 V_{CB} = 375 V	I_{CBO}		 1.0 1.0	 mA mA
COLLECTOR-CUTOFF CURRENT T_C = 150°C SDT 55456 V_{CB} = 275 V SDT 55460 V_{CB} = 300 V	I_{CBO}		 2.0 2.0	 mA mA
COLLECTOR-CUTOFF CURRENT (V_{CE} = 200 V, R_{BE} = 50 Ω)	I_{CER}		1.0	mA
EMITTER-BASE VOLTAGE (I_B = 1.0 mA)	V_{EBO}	10		V
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t=1.0 s NON REPETITIVE, V_{CE} = 50 V)	$I_{s/b}$	3.0		A

OUTLINE DRAWING FOR TO — 63

(1) Emitter
(2) Base
(3) Collector Electrically connected to case



SYMBOL	DIMENSIONS INCHES MIN.	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX	NOTES
ØD	0.775	0.875	19.69	22.22	2
ØD1	0.745	0.775	18.93	19.68	
E	0.847	0.875	21.52	22.22	
E1	1.090	0.167	2.29	4.24	1
G	0.480	0.535	12.20	13.58	
G1		0.300		7.62	2
J1	0.240	0.260	6.10	6.60	5
J	0.485	0.515	12.32	13.08	5
L	0.937	1.030	23.80	26.16	
ØM	0.27				3
ØM1	0.278	0.312	7.07	7.92	
N	0.460	0.495	11.69	12.57	
N1		0.105		2.66	6
ØT	0.060	0.105	1.53	2.66	
ØT1	0.060	0.105	1.53	2.66	4
NOTE	7		7		

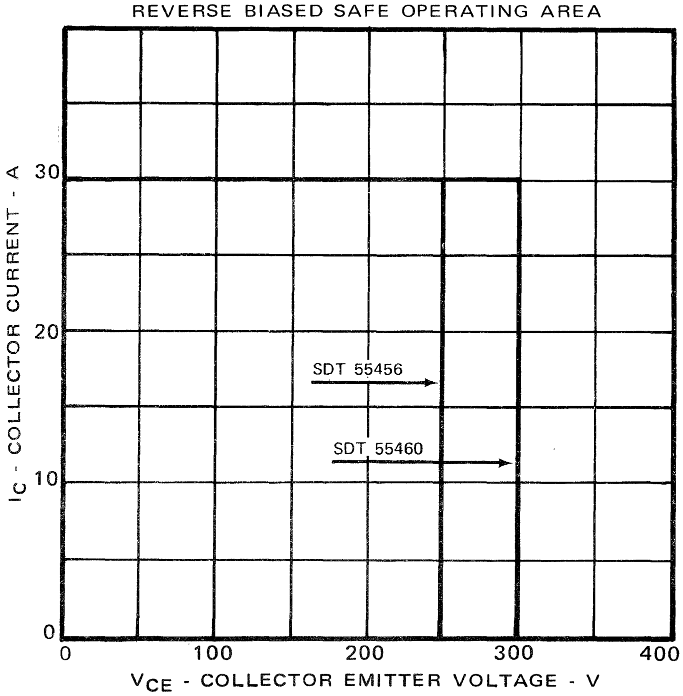
NOTES:
1. Chamfer or undercut on one or both ends of hexagonal portion is optional.
2. Package contour with the exception of the hexagon is optional within dimensions specified.
3. Pitch diameter 5/16 24 UNF-2A (coated) - .2854 (7.25 mm).
4. This terminal can be flattened and pierced or hook type.
5. Position of leads in relation to the hexagon is not controlled.
6. Length of incomplete or undercut threads of $ØM_1$.
7. Controlling dimensions: inch.

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

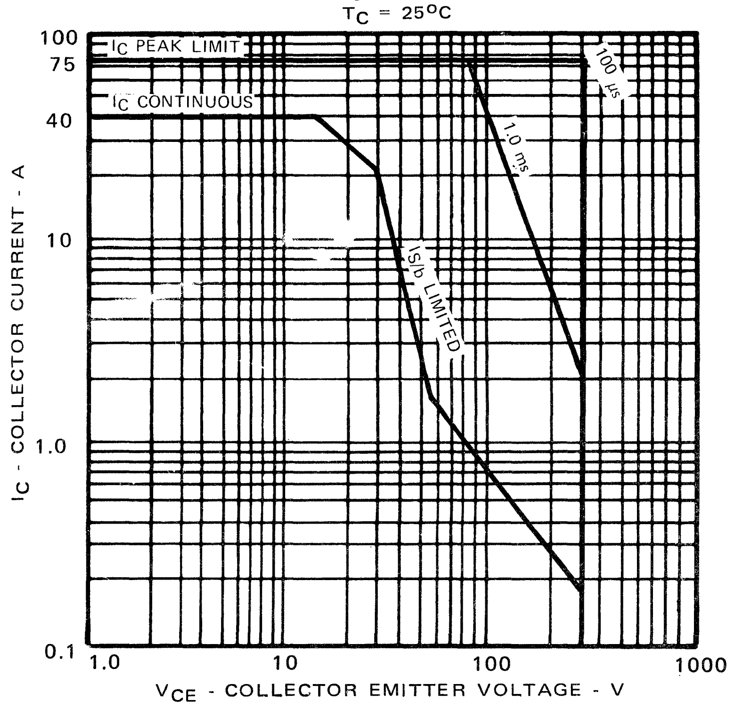
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
DC CURRENT GAIN (I_C = 40A, V_{CE} = 5 V) ** (I_C = 75A, V_{CE} = 5 V)**	h_{FE}	10 5	50 —	
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 40A, I_B = 4.0A) **	$V_{CE(sat)}$		1.6	V V
BASE EMITTER SATURATION VOLTAGE (I_C = 40A, I_B = 4.0A) **	$V_{BE(sat)}$		1.7	V V
TRANSITION FREQUENCY (I_C = 1A, V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	2		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		1200	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME (V_{CC} = 100V, I_C = 20A I_{B1} = I_{B2} = 2.0A, tp = 10 μs	t_{on} t_s t_f		1.4 2.8 1.3	μs μs μs
SWITCHING CHARACTERISTICS INDUCTIVE (FIG. 2) CURRENT STORAGE TIME CURRENT FALL TIME V_{CLAMP} = 200V, I_C = 10A, L = 35 μH I_{B1} = 1.0A, I_{B2} = 1.0A	t_{si} t_{fi}		6.0 0.75	μs μs

**PULSED—300 μs—2%

REVERSE BIASED SAFE OPERATING AREA

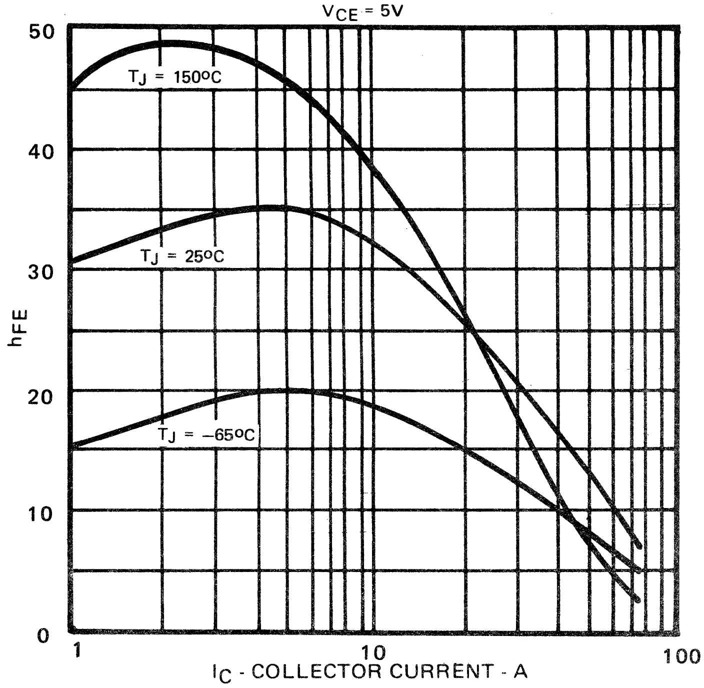


FORWARD BIASED SAFE OPERATING AREA
DERATE V_{CE} TO V_{CEO} MAX.
T_C = 25°C



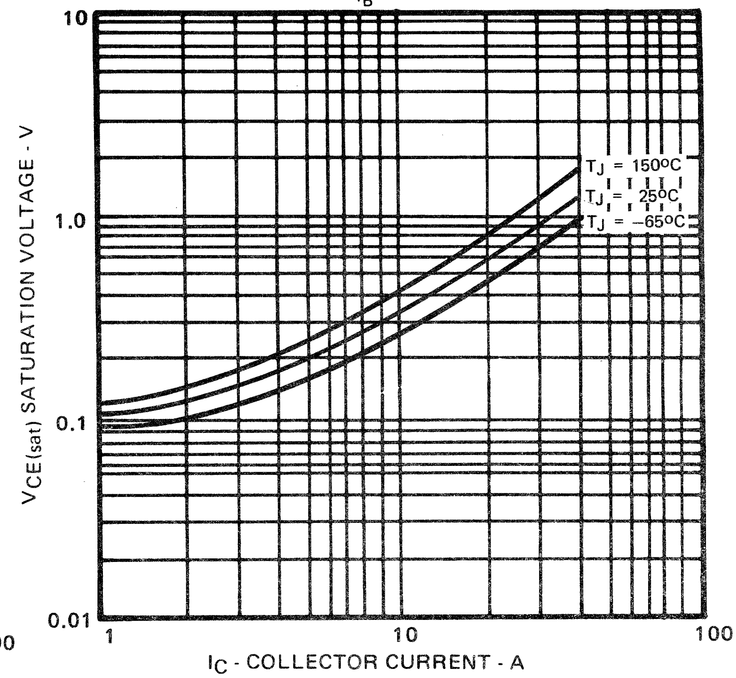
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO

$V_{CE} = 5V$



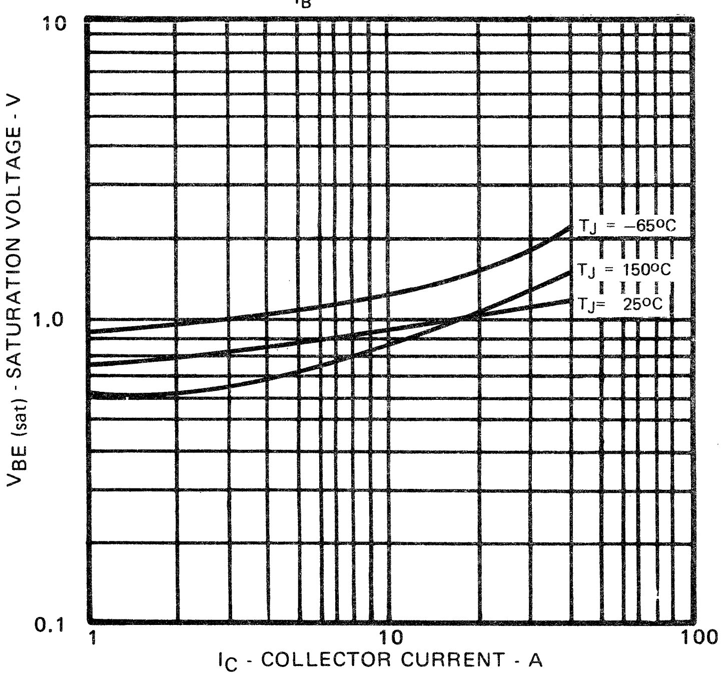
TYPICAL COLLECTOR-EMITTER SATURATION VOLTAGE

$\frac{I_C}{I_B} = 10$



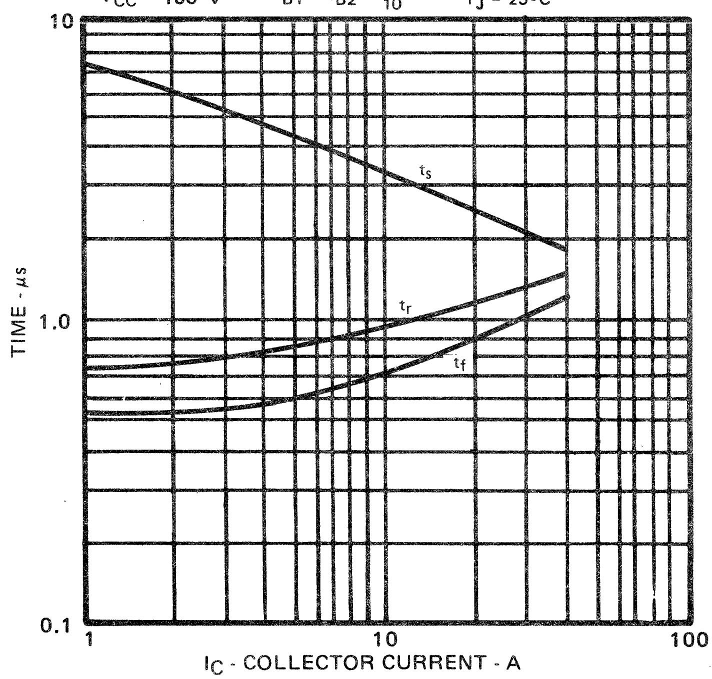
TYPICAL BASE-EMITTER SATURATION VOLTAGE

$\frac{I_C}{I_B} = 10$



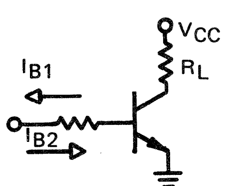
TYPICAL SWITCHING TIME

$V_{CC} = 100$ V $\quad I_{B1} = I_{B2} = \frac{I_C}{10} \quad T_J = 25^oC$



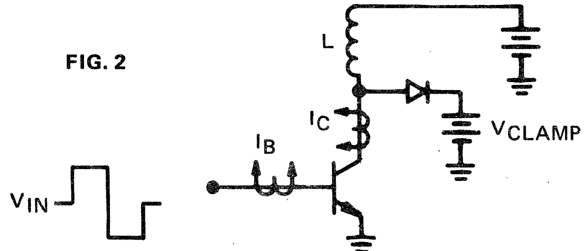
TYPICAL RESISTIVE SWITCHING CKT.

FIG. 1



TYPICAL INDUCTIVE SWITCHING CKT.

FIG. 2



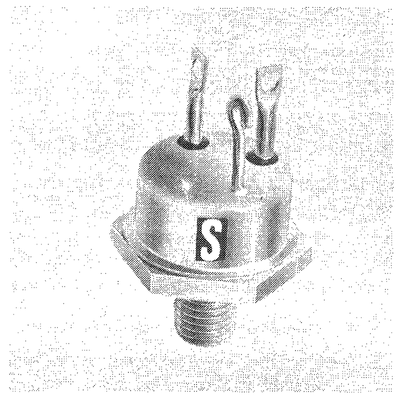
SDT 55462
SDT 55464

NPN SILICON POWER TRANSISTORS

50 AMPERES

FEATURES:
HIGH VOLTAGE, FAST SWITCHING, HIGH RELIABILITY - SINGLE CHIP PLANAR CONSTRUCTION

APPLICATIONS:
PUSH - PULL INVERTERS, SWITCHING REGULATORS, PULSE - WIDTH MODULATORS



TO—63

ABSOLUTE MAXIMUM RATINGS
@ 25° C (unless otherwise noted)

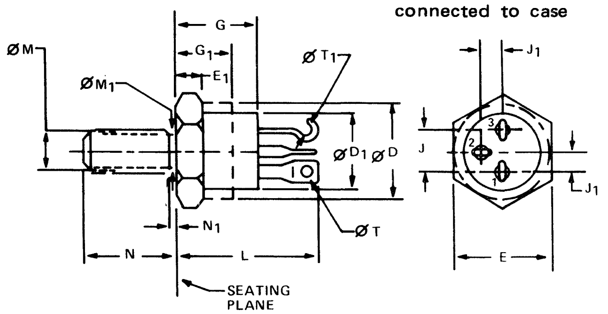
		SDT 55462	SDT 55464
V_{CBO}	COLLECTOR-BASE VOLTAGE	425 V	475 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	350 V	400 V
V_{EBO}	EMITTER-BASE VOLTAGE	10 V	10 V
I_C	CONTINUOUS COLLECTOR CURRENT	30 A	30 A
I_C (PK)	PEAK COLLECTOR CURRENT	50 A	50 A
I_B	CONTINUOUS BASE CURRENT	10 A	10 A
I_B (PK)	PEAK BASE CURRENT	15 A	15 A
T_J	OPERATING JUNCTION TEMPERATURE	-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	0.28 °C/W	0.28 °C/W
P_D	POWER DISSIPATION (25°C)	625 W	625 W

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 100mA) * SDT 55462 SDT 55464 *PULSED (INDUCTIVE SWEEP 60 Hz)	$V_{CEO(sus)}$	 350 400		 V V
COLLECTOR-CUTOFF CURRENT SDT 55462 V_{CB} = 425 V SDT 55464 V_{CB} = 475 V	I_{CBO}		 1.0 1.0	 mA mA
COLLECTOR-CUTOFF CURRENT T_C = 150°C SDT 55462 V_{CB} = 360 V SDT 55464 V_{CB} = 400 V	I_{CBO}		 2.0 2.0	 mA mA
COLLECTOR-CUTOFF CURRENT (V_{CE} = 200 V, R_{BE} = 50 Ω)	I_{CER}		1.0	mA
EMITTER-BASE VOLTAGE (I_B = 1.0 mA)	V_{EBO}	10		V
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t=1.0 s NON REPETITIVE, V_{CE} = 50 V)	$I_{s/b}$	3.0		A

OUTLINE DRAWING FOR TO — 63

(1) Emitter
(2) Base
(3) Collector Electrically connected to case



SYMBOL	DIMENSIONS INCHES MIN.	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX	NOTES
ØD	0.775	0.875	19.69	22.22	2
ØD1	0.745	0.775	18.93	19.68	
E	0.847	0.875	21.52	22.22	
E1	1.090	0.167	2.29	4.24	1
G	0.480	0.535	12.20	13.58	
G1		0.300		7.62	2
J1	0.240	0.260	6.10	6.60	5
J	0.485	0.515	12.32	13.08	5
L	0.937	1.030	23.80	26.16	
ØM	0.27				3
ØM1	0.278	0.312	7.07	7.92	
N	0.460	0.495	11.69	12.57	
N1		0.105		2.66	6
ØT	0.060	0.105	1.53	2.66	
ØT1	0.060	0.105	1.53	2.66	4
NOTE	7		7		

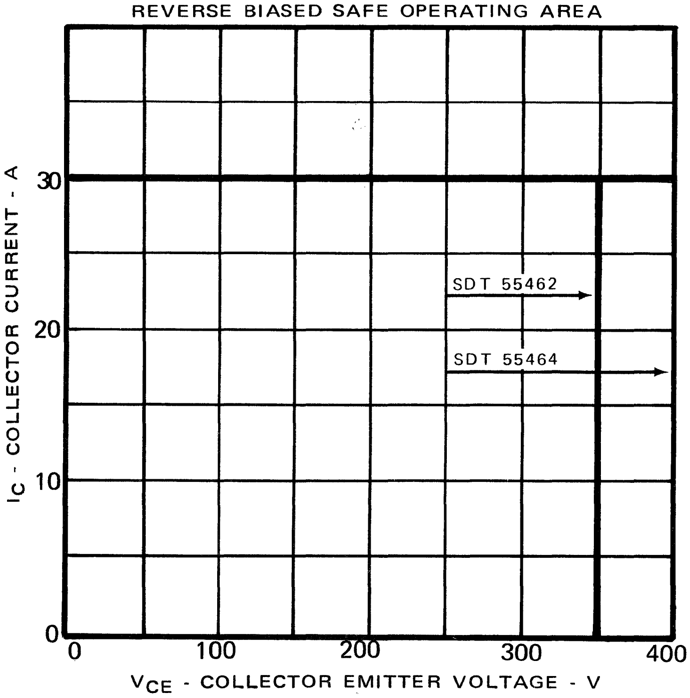
NOTES:
1. Chamfer or undercut on one or both ends of hexagonal portion is optional.
2. Package contour with the exception of the hexagon is optional within dimensions specified.
3. Pitch diameter 5/16 24 UNF-2A (coated) - .2854 (7.25 mm).
4. This terminal can be flattened and pierced or hook type.
5. Position of leads in relation to the hexagon is not controlled.
6. Length of incomplete or undercut threads of $ØM_1$.
7. Controlling dimensions: inch.

ELECTRICAL CHARACTERISTICS (T_C = 25ºC UNLESS OTHERWISE NOTED)

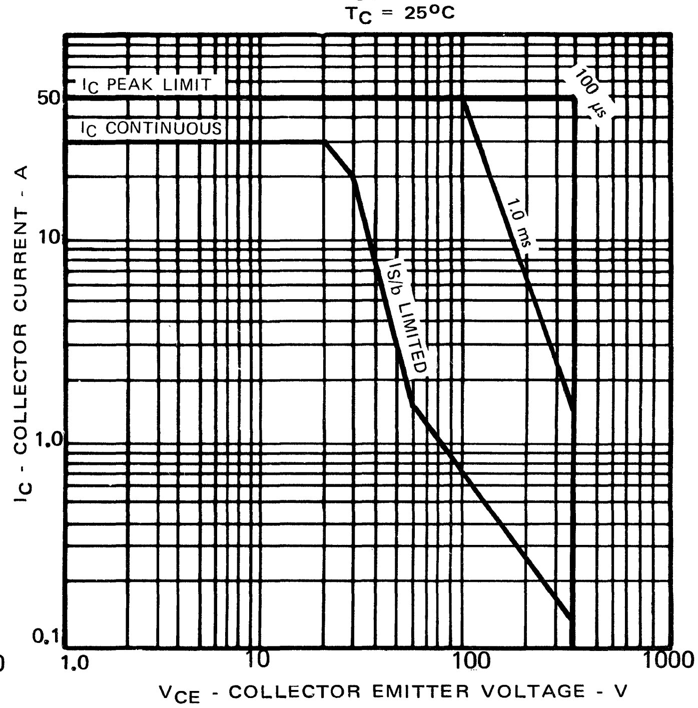
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
DC CURRENT GAIN (I_C = 30 A, V_{CE} = 5.0 V)** (I_C = 50 A, V_{CE} = 5.0 V)**	h_{FE}	8 5	40 —	
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 30 A, I_B = 4.0 A)**	$V_{CE(sat)}$		1.5	V V
BASE EMITTER SATURATION VOLTAGE (I_C = 30 A, I_B = 4.0 A)**	$V_{BE(sat)}$		1.6	V V
TRANSITION FREQUENCY (I_C = 1A, V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	2		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		1000	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME (V_{CC} = 100 V, I_C = 10 A I_{B1} I_{B2} = 1.0 A, t_p = 10 μs)	t_{on} t_s t_f		1.4 2.6 1.3	μs μs μs
SWITCHING CHARACTERISTICS INDUCTIVE (FIG. 2) CURRENT STORAGE TIME CURRENT FALL TIME V_{CLAMP} = 300V, I_C = 10A, L = 35 μH I_{B1} = 1.0A, I_{B2} = 1.0A	t_{si} t_{fi}		5.0 0.75	μs μs

**PULSED—300 μs—2%

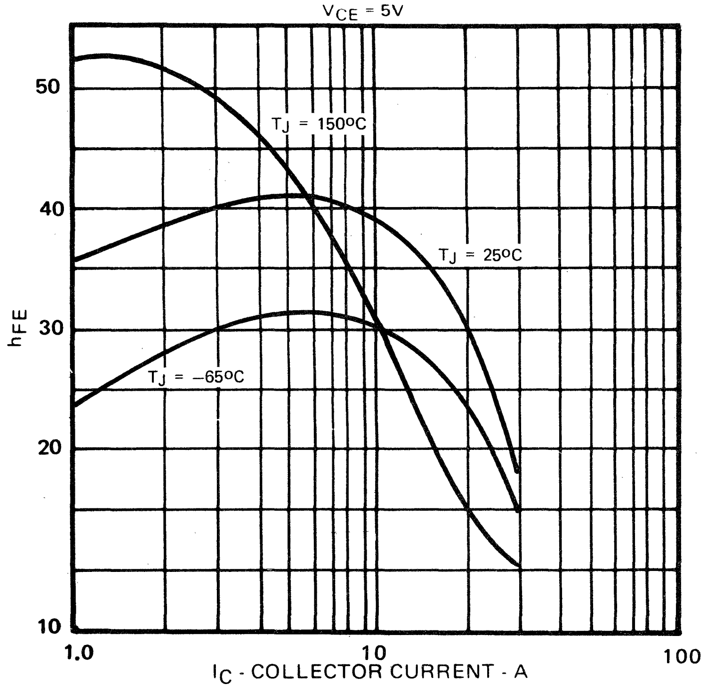
REVERSE BIASED SAFE OPERATING AREA



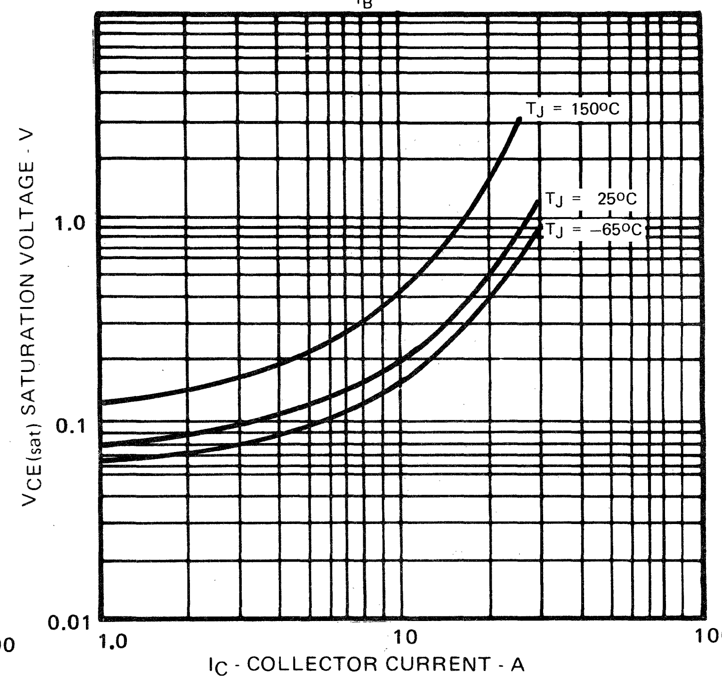
FORWARD BIASED SAFE OPERATING AREA
DERATE V_{CE} TO V_{CEO} MAX.
T_C = 25ºC



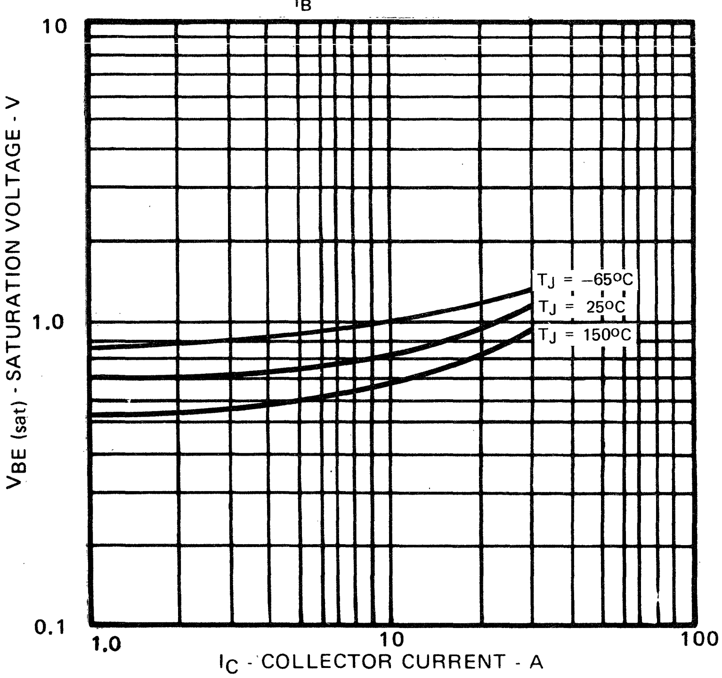
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5V$



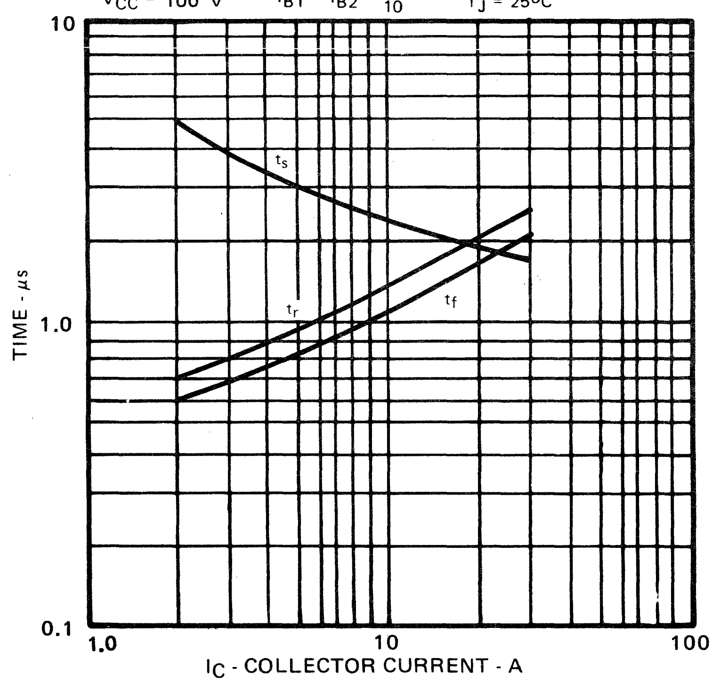
TYPICAL COLLECTOR-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



TYPICAL BASE-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

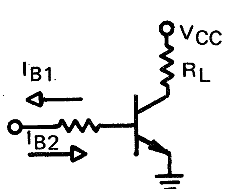


TYPICAL SWITCHING TIME
$V_{CC} = 100\ V$ $I_{B1} = I_{B2} = \frac{I_C}{10}$ $T_J = 25^oC$



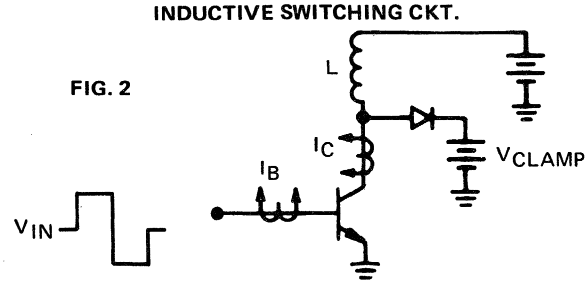
TYPICAL
RESISTIVE SWITCHING CKT.

FIG. 1



TYPICAL
INDUCTIVE SWITCHING CKT.

FIG. 2



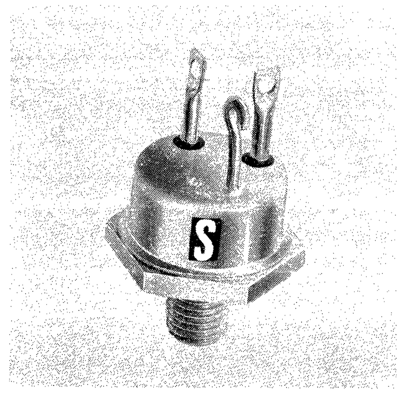
SDT 55470
SDT 55472

NPN SILICON POWER TRANSISTORS

40 AMPERES

FEATURES:
HIGH VOLTAGE, FAST SWITCHING, HIGH RELIABILITY - SINGLE CHIP PLANAR CONSTRUCTION

APPLICATIONS:
PUSH - PULL INVERTERS, SWITCHING REGULATORS, PULSE - WIDTH MODULATORS



TO-63

ABSOLUTE MAXIMUM RATINGS

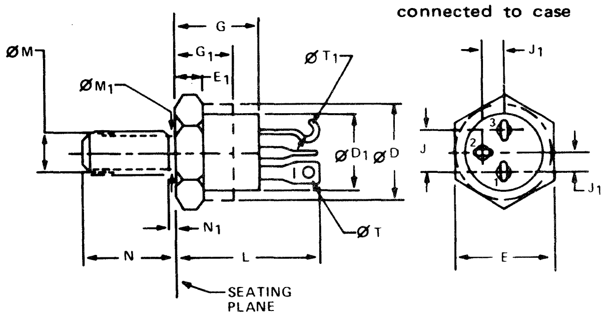
		SDT 55470	SDT 55472
V_{CBO}	COLLECTOR-BASE VOLTAGE	450 V	500 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	450 V	500 V
V_{EBO}	EMITTER-BASE VOLTAGE	15 V	15 V
I_C	CONTINUOUS COLLECTOR CURRENT	20 A	20 A
I_C (PK)	PEAK COLLECTOR CURRENT	40 A	40 A
I_B	CONTINUOUS BASE CURRENT	10 A	10 A
I_B (PK)	PEAK BASE CURRENT	20 A	20 A
T_J	OPERATING JUNCTION TEMPERATURE	−65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE	−65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	0.28°C/W	0.28°C/W
P_D	POWER DISSIPATION (25°C)	620 W	620 W

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 100mA) * SDT 55470 SDT 55472 *PULSED (INDUCTIVE SWEEP 60 Hz)	$V_{CEO(sus)}$	 450 500		 V V
COLLECTOR-CUTOFF CURRENT SDT 55470 V_{CB} = 450 V SDT 55472 V_{CB} = 500 V	I_{CBO}		 1.0 1.0	 mA mA
COLLECTOR-CUTOFF CURRENT T_C = 150°C SDT 55470 V_{CB} = 360 V SDT 55472 V_{CB} = 400 V	I_{CBO}		 2.0 2.0	 mA mA
COLLECTOR-CUTOFF CURRENT (V_{CE} = 200 V, R_{BE} = 50 Ω)	I_{CER}		1.0	mA
EMITTER-BASE VOLTAGE (I_B = 1.0 mA)	V_{EBO}	15		V
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1.0 s NON REPETITIVE, V_{CE} = 50 V)	$I_{s/b}$	5.0		A

OUTLINE DRAWING FOR TO – 63

(1) Emitter
(2) Base
(3) Collector Electrically connected to case



SYMBOL	INCHES MIN.	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX	NOTES
ØD	0.775	0.875	19.69	22.22	2
ØD1	0.745	0.775	18.93	19.68	
E	0.847	0.875	21.52	22.22	
E1	1.090	0.167	2.29	4.24	1
G	0.480	0.535	12.20	13.58	
G1		0.300		7.62	2
J1	0.240	0.260	6.10	6.60	5
J	0.485	0.515	12.32	13.08	5
L	0.937	1.030	23.80	26.16	
ØM	0.27				3
ØM1	0.278	0.312	7.07	7.92	
N	0.460	0.495	11.69	12.57	
N1		0.105		2.66	6
ØT	0.060	0.105	1.53	2.66	
ØT1	0.060	0.105	1.53	2.66	4
NOTE	7		7		

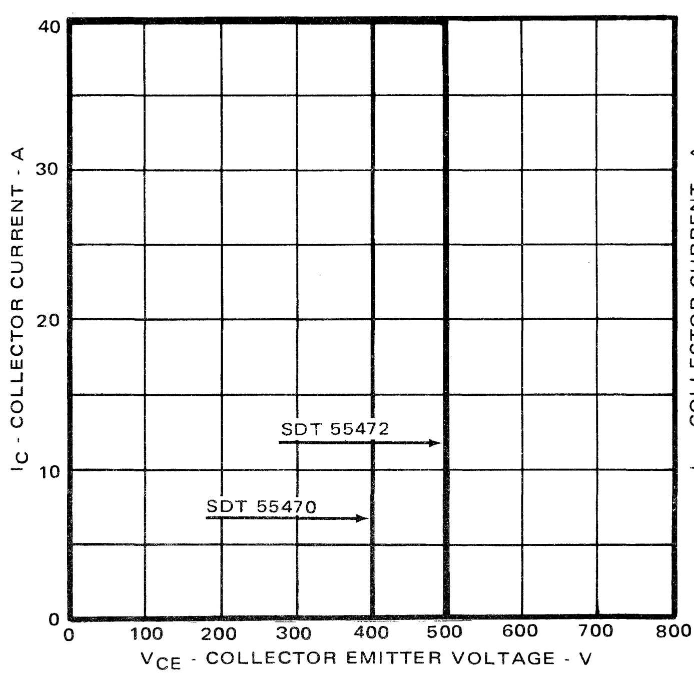
NOTES:
1. Chamfer or undercut on one or both ends of hexagonal portion is optional.
2. Package contour with the exception of the hexagon is optional within dimensions specified.
3. Pitch diameter 5/16 24 UNF-2A (coated) - .2854 (7.25 mm).
4. This terminal can be flattened and pierced or hook type.
5. Position of leads in relation to the hexagon is not controlled.
6. Length of incomplete or undercut threads of ØM1.
7. Controlling dimensions: inch.

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

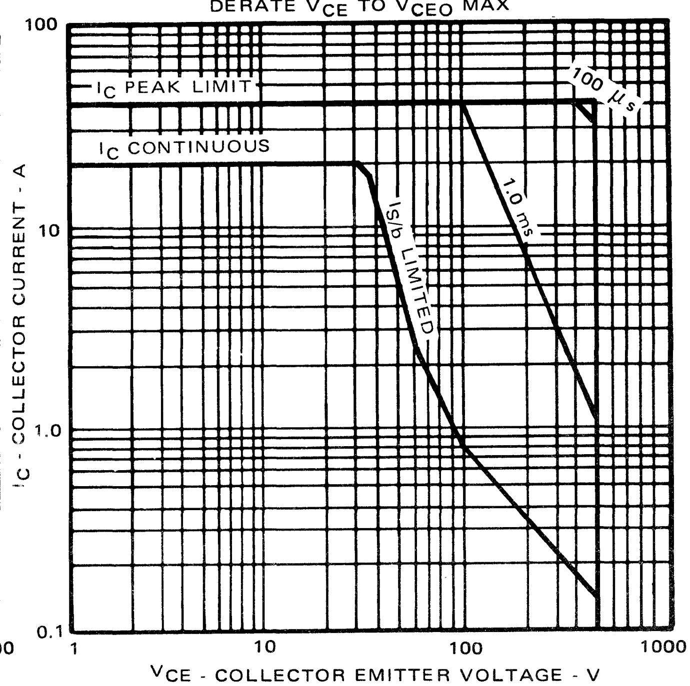
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
DC CURRENT GAIN (I_C = 20 A, V_{CE} = 5 V)** (I_C = 40 A, V_{CE} = 5 V)**	h_{FE}	 10 5	 40 –	
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 20 A, I_B = 2.0 A)**	$V_{CE(sat)}$		1.0	V
BASE EMITTER SATURATION VOLTAGE (I_C = 20 A, I_B = 2.0 A)**	$V_{BE(sat)}$		1.5	V
TRANSITION FREQUENCY (I_C = 1A, V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	1.5		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		800	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME (V_{CC} = 100 V, I_C = 20 A I_{B1} = I_{B2} = 4.0 A, t_p = 10 µs)	 t_{on} t_s t_f		 2.0 3.5 1.6	 µs µs µs
SWITCHING CHARACTERISTICS INDUCTIVE (FIG. 2) CURRENT STORAGE TIME CURRENT FALL TIME V_{CLAMP} = 300 V, I_C = 10A, L = 35 µH I_{B1} = 1.0A, I_{B2} = 1.0A	 t_{si} t_{fi}		 7.5 1.2	 µs µs

**PULSED–300 µs–2%

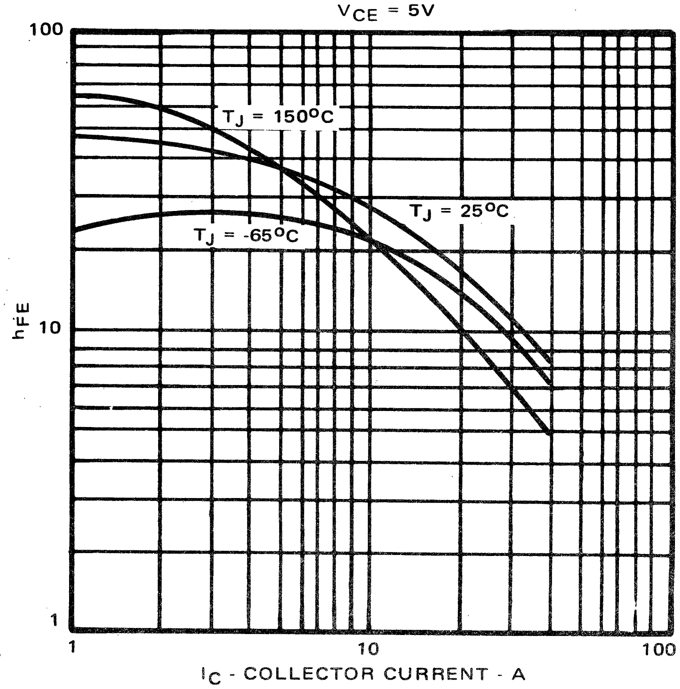
REVERSE BIAS SAFE OPERATING AREA



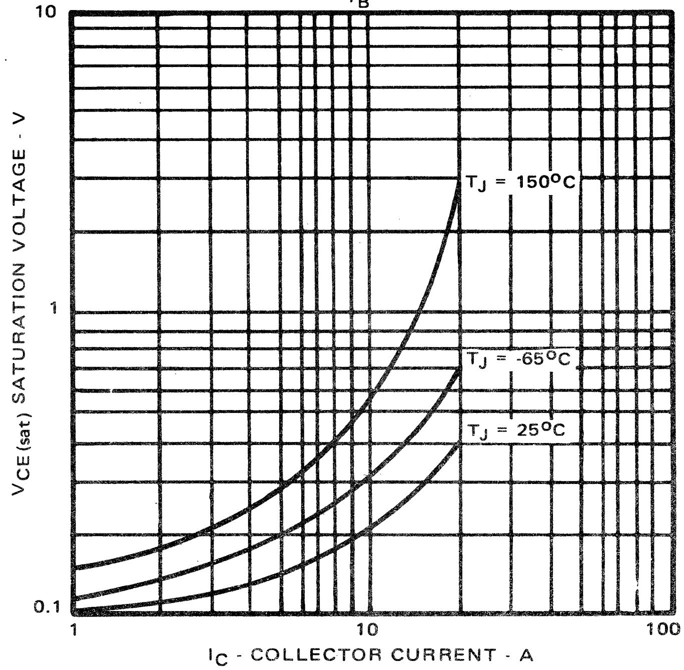
MAXIMUM OPERATING CONDITIONS
T_C = 25°C
DERATE V_{CE} TO V_{CEO} MAX



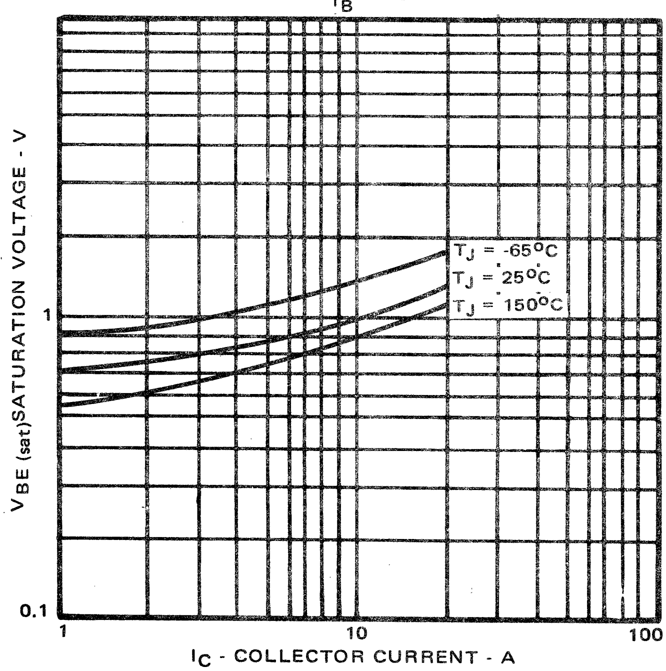
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5V$



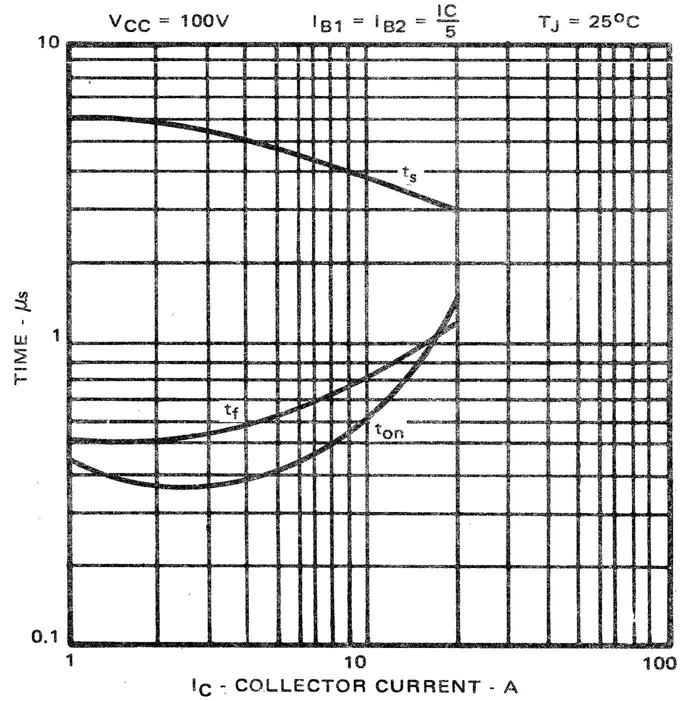
TYPICAL COLLECTOR-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



TYPICAL BASE-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

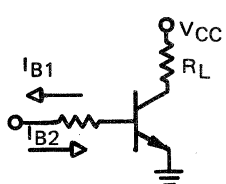


TYPICAL SWITCHING TIME
$V_{CC} = 100V$ $I_{B1} = I_{B2} = \frac{I_C}{5}$ $T_J = 25^oC$



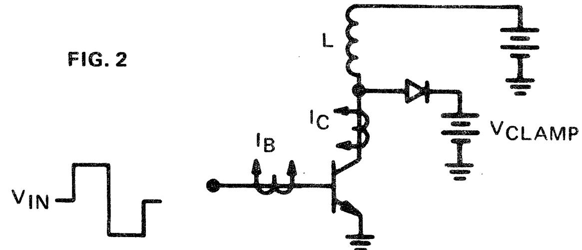
TYPICAL
RESISTIVE SWITCHING CKT.

FIG. 1



TYPICAL
INDUCTIVE SWITCHING CKT.

FIG. 2



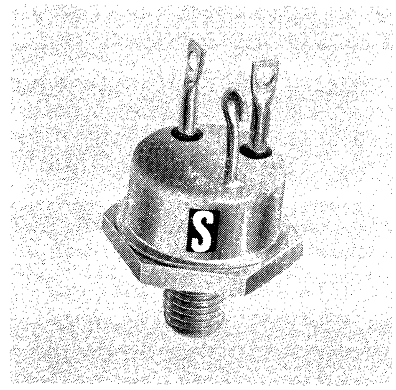
SDT 55474
SDT 55476

NPN SILICON POWER TRANSISTORS

25 AMPERES

FEATURES:
HIGH VOLTAGE, FAST SWITCHING, HIGH RELIABILITY - SINGLE CHIP PLANAR CONSTRUCTION

APPLICATIONS:
PUSH - PULL INVERTERS, SWITCHING REGULATORS, PULSE - WIDTH MODULATORS



TO-63

ABSOLUTE MAXIMUM RATINGS

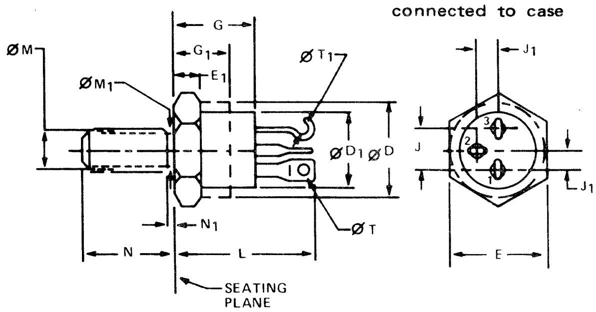
		SDT 55474	SDT 55476
V_{CBO}	COLLECTOR-BASE VOLTAGE	550 V	600 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	550 V	600 V
V_{EBO}	EMITTER-BASE VOLTAGE	15 V	15 V
I_C	CONTINUOUS COLLECTOR CURRENT	10 A	10 A
I_C (PK)	PEAK COLLECTOR CURRENT	25 A	25 A
I_B	CONTINUOUS BASE CURRENT	5 A	5 A
I_B (PK)	PEAK BASE CURRENT	10 A	10 A
T_J	OPERATING JUNCTION TEMPERATURE	-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	0.28°C/W	0.28°C/W
P_D	POWER DISSIPATION (25°C)	620 W	620 W

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 100mA) *	$V_{CEO(sus)}$			
SDT 55474		550		V
SDT 55476		600		V
*PULSED (INDUCTIVE SWEEP 60 Hz)				
COLLECTOR-CUTOFF CURRENT	I_{CBO}			
SDT 55474 V_{CB} = 550 V			1.0	mA
SDT 55476 V_{CB} = 600 V			1.0	mA
COLLECTOR-CUTOFF CURRENT T_C = 150°C	I_{CBO}			
SDT 55474 V_{CB} = 440 V			2.0	mA
SDT 55476 V_{CB} = 480 V			2.0	mA
COLLECTOR-CUTOFF CURRENT (V_{CE} = 200 V, R_{BE} = 50 Ω)	I_{CER}		1.0	mA
EMITTER-BASE VOLTAGE (I_B = 1.0 mA)	V_{EBO}	15		V
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1.0 s NON REPETITIVE, V_{CE} = 50 V)	$I_{s/b}$	5.0		A

OUTLINE DRAWING FOR TO — 63

(1) Emitter
(2) Base
(3) Collector Electrically connected to case



NOTES:
1. Chamfer or undercut on one or both ends of hexagonal portion is optional.
2. Package contour with the exception of the hexagon is optional within dimensions specified.
3. Pitch diameter 5/16 24 UNF-2A (coated) - .2854 (7.25 mm).
4. This terminal can be flattened and pierced or hook type.
5. Position of leads in relation to the hexagon is not controlled.
6. Length of incomplete or undercut threads of $ØM_1$.
7. Controlling dimensions: inch.

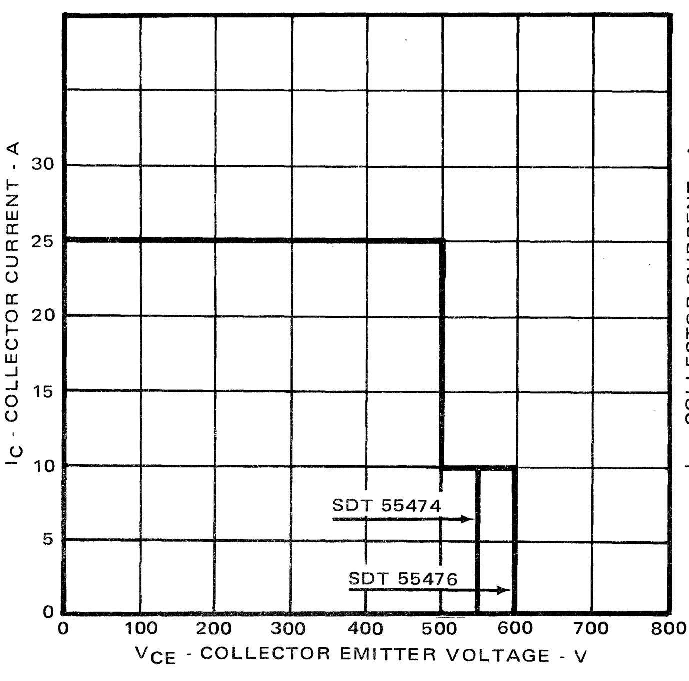
SYMBOL	DIMENSIONS				NOTES
	INCHES		MILLIMETERS		
	MIN.	MAX	MIN	MAX	
ØD	0.775	0.875	19.69	22.22	2
ØD1	0.745	0.775	18.93	19.68	
E	0.847	0.875	21.52	22.22	
E1	1.090	0.167	2.29	4.24	1
G	0.480	0.535	12.20	13.58	
G1		0.300		7.62	2
J1	0.240	0.260	6.10	6.60	5
J	0.485	0.515	12.32	13.08	5
L	0.937	1.030	23.80	26.16	
ØM	0.27				3
ØM1	0.278	0.312	7.07	7.92	
N	0.460	0.495	11.69	12.57	
N1		0.105		2.66	6
ØT	0.060	0.105	1.53	2.66	
ØT1	0.060	0.105	1.53	2.66	4
NOTE	7		7		

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

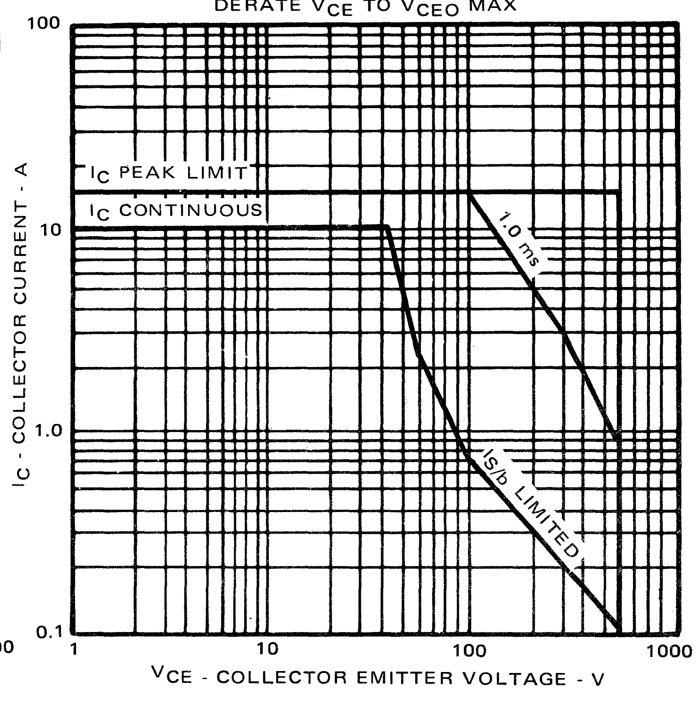
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
DC CURRENT GAIN (I_C = 10 A, V_{CE} = 5 V)** (I_C = 25 A, V_{CE} = 5 V)**	h_{FE}	 10 5	 40 —	
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 10 A, I_B = 1.0 A)**	$V_{CE(sat)}$		1.0	V
BASE EMITTER SATURATION VOLTAGE (I_C = 10 A, I_B = 1.0 A)**	$V_{BE(sat)}$		1.5	V
TRANSITION FREQUENCY (I_C = 1A, V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	1.5		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		800	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME (V_{CC} = 100 V, I_C = 10 A I_{B1} = I_{B2} = 1.0 A, t_p = 10 μs)	 t_{on} t_s t_f		 1.2 4.0 1.6	 μs μs μs
SWITCHING CHARACTERISTICS INDUCTIVE (FIG. 2) CURRENT STORAGE TIME CURRENT FALL TIME V_{CLAMP} = 300 V, I_C = 10A, L = 35 μH I_{B1} = 1.0A, I_{B2} = 1.0A	 t_{si} t_{fi}		 7.6 1.4	 μs μs

**PULSED—300 μs—2%

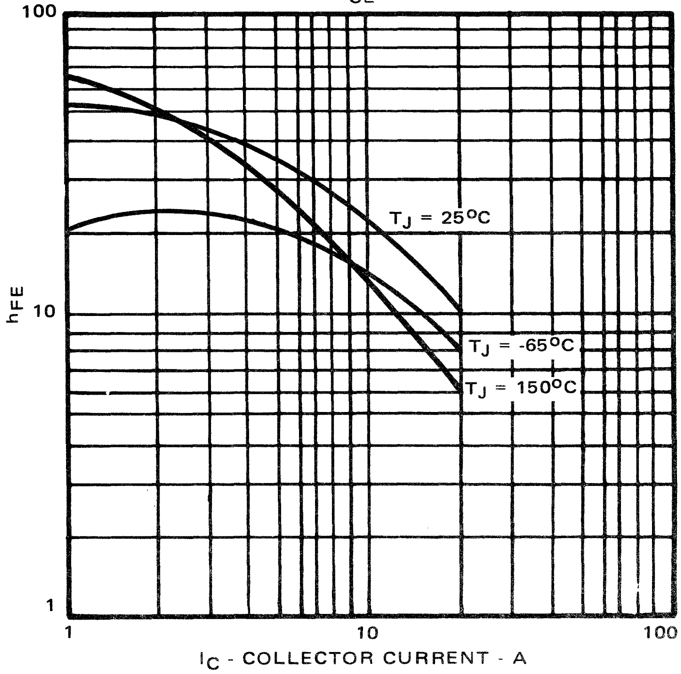
REVERSE BIAS SAFE OPERATING AREA



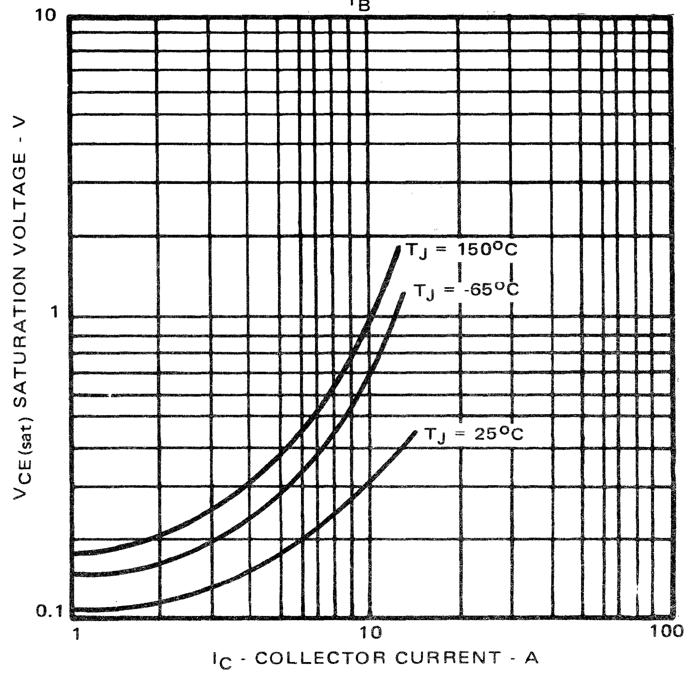
MAXIMUM OPERATING CONDITIONS
T_C = 25°C
DERATE V_{CE} TO V_{CEO} MAX



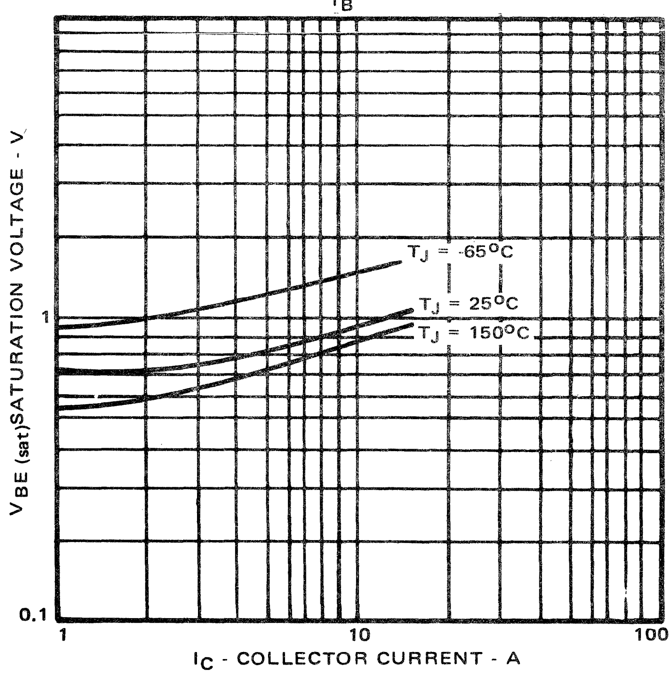
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5V$



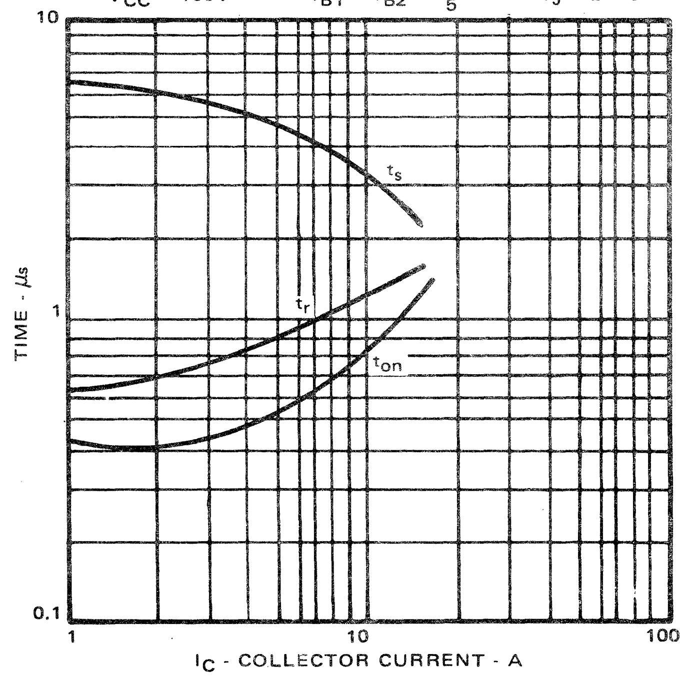
TYPICAL COLLECTOR-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



TYPICAL BASE-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

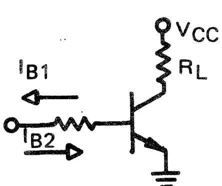


TYPICAL SWITCHING TIME
$V_{CC} = 100V$ $I_{B1} = I_{B2} = \frac{I_C}{5}$ $T_J = 25^oC$



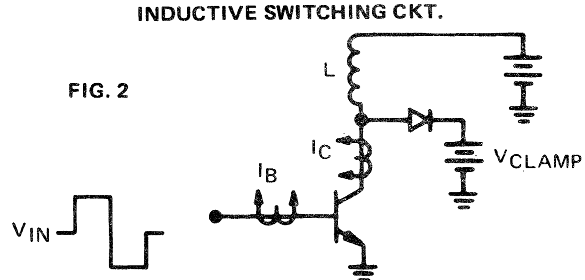
TYPICAL
RESISTIVE SWITCHING CKT.

FIG. 1



TYPICAL
INDUCTIVE SWITCHING CKT.

FIG. 2



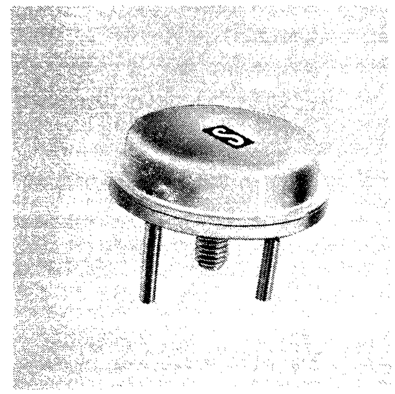
SDT 55556
SDT 55560

NPN SILICON POWER TRANSISTORS

75 AMPERES

FEATURES:
HIGH VOLTAGE, FAST SWITCHING, HIGH RELIABILITY - SINGLE CHIP PLANAR CONSTRUCTION

APPLICATIONS:
PUSH - PULL INVERTERS, SWITCHING REGULATORS, PULSE - WIDTH MODULATORS



TO - 68

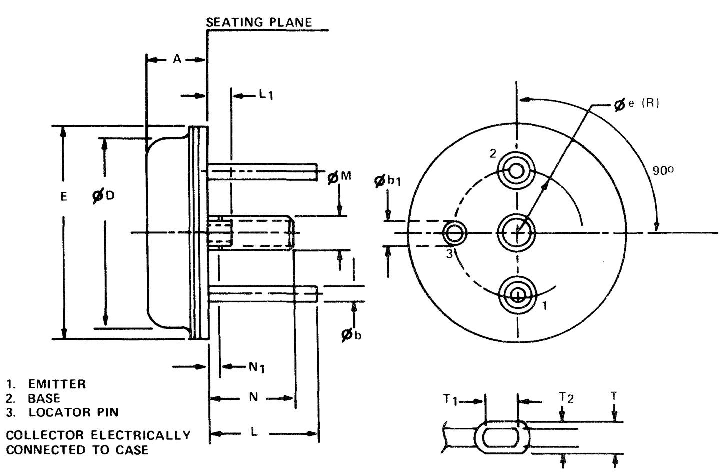
ABSOLUTE MAXIMUM RATINGS

		SDT 55556	SDT 55560
V_{CBO}	COLLECTOR-BASE VOLTAGE	325 V	375 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	250 V	300 V
V_{EBO}	EMITTER-BASE VOLTAGE	10 V	10 V
I_C	CONTINUOUS COLLECTOR CURRENT	40 A	40 A
I_C (PK)	PEAK COLLECTOR CURRENT	75 A	75 A
I_B	CONTINUOUS BASE CURRENT	10 A	10 A
I_B (PK)	PEAK BASE CURRENT	15 A	15 A
T_J	OPERATING JUNCTION TEMPERATURE	-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	0.28 °C/W	0.28 °C/W
P_D	POWER DISSIPATION (25°C)	625 W	625 W

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 100mA) * SDT 55556 SDT 55560 *PULSED (INDUCTIVE SWEEP 60 Hz)	$V_{CEO(sus)}$	 250 300		 V V
COLLECTOR-CUTOFF CURRENT SDT 55556 V_{CB} = 325 V SDT 55560 V_{CB} = 375 V	I_{CBO}		 1.0 1.0	 mA mA
COLLECTOR-CUTOFF CURRENT T_C = 150°C SDT 55556 V_{CB} = 275 V SDT 55560 V_{CB} = 300 V	I_{CBO}		 2.0 2.0	 mA mA
COLLECTOR-CUTOFF CURRENT (V_{CE} = 200 V, R_{BE} = 50 Ω)	I_{CER}		1.0	mA
EMITTER-BASE VOLTAGE (I_B = 1.0 mA)	V_{EBO}	10		V
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1.0 s NON REPETITIVE, V_{CE} = 50 V)	$I_{s/b}$	2.5		A

OUTLINE DRAWING FOR TO - 68



1. EMITTER
2. BASE
3. LOCATOR PIN

COLLECTOR ELECTRICALLY CONNECTED TO CASE

SYMBOL	DIMENSIONS INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX	NOTES
A	0.275	0.500	6.99	12.70	
A_1					
L	0.610	0.710	15.49	18.03	
Øb	0.040	0.095	1.02	2.41	2
ØD	0.990		25.15		1
Øe(R)	0.335	0.355	8.51	9.02	4
L_1	0.100	0.312	2.54	7.92	
Øb_1	0.090	0.140	2.27	3.56	
ØM					3
N	0.375	0.400	9.53	10.16	
N_1	0	0.060		1.52	5
E		1.25		31.75	
T		0.180		4.57	
T_1		0.195		4.95	
T_2		0.120		3.05	
NOTE	6		6		

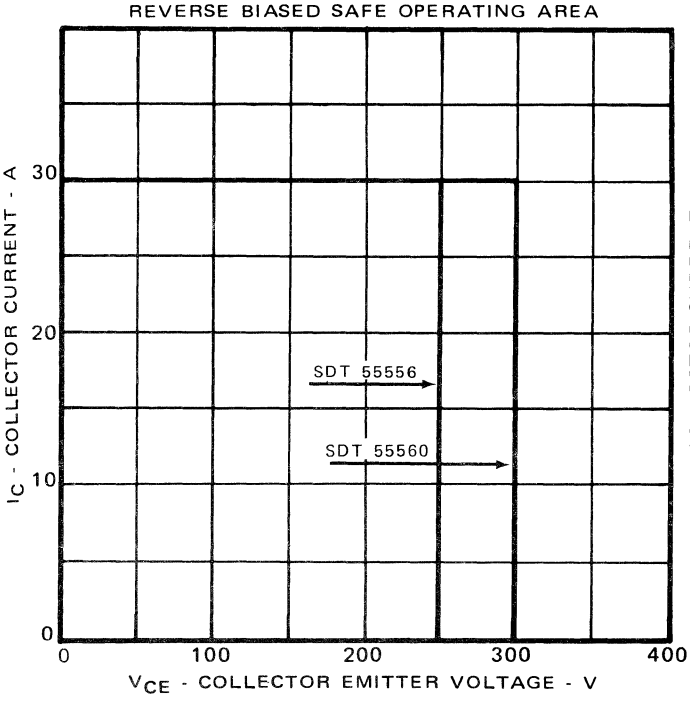
NOTES:
1. Package contour optional within dimensions specified.
2. Terminals can be flattened and pierced (optional).
3. Pitch diameter: 10-32NF-2A (plated).
4. Measured at seating plane.
5. Length of incomplete or undercut threads of ϕ M.
6. Controlling dimensions: inch.

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

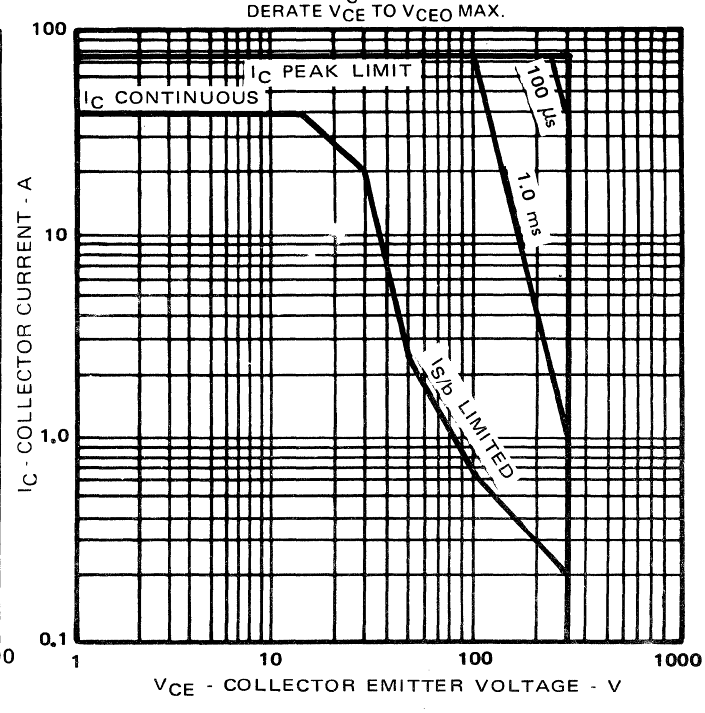
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
DC CURRENT GAIN (I_C = 40 A, V_{CE} = 5 V)** (I_C = 75 A, V_{CE} = 5 V)**	h_{FE}	 10 5	 50 —	
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 40 A, I_B = 4.0 A)**	$V_{CE(sat)}$		1.5	V V
BASE EMITTER SATURATION VOLTAGE (I_C = 40 A, I_B = 4.0 A)**	$V_{BE(sat)}$		1.6	V V
TRANSITION FREQUENCY (I_C = 1A, V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	2.0		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		1200	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME (V_{CC} = 100 V, I_C = 20 A I_{B1} = I_{B2} = 2.0 A, t_p = 10 μs	 t_{on} t_s t_f		 1.4 2.6 1.3	 μs μs μs
SWITCHING CHARACTERISTICS INDUCTIVE (FIG. 2) CURRENT STORAGE TIME CURRENT FALL TIME V_{CLAMP} = 200 V, I_C = 10 A, L = 35 μH I_{B1} = 1.0 A, I_{B2} = 1.0 A	 t_{si} t_{fi}		 6.0 0.75	 μs μs

**PULSED—300 μs—2%

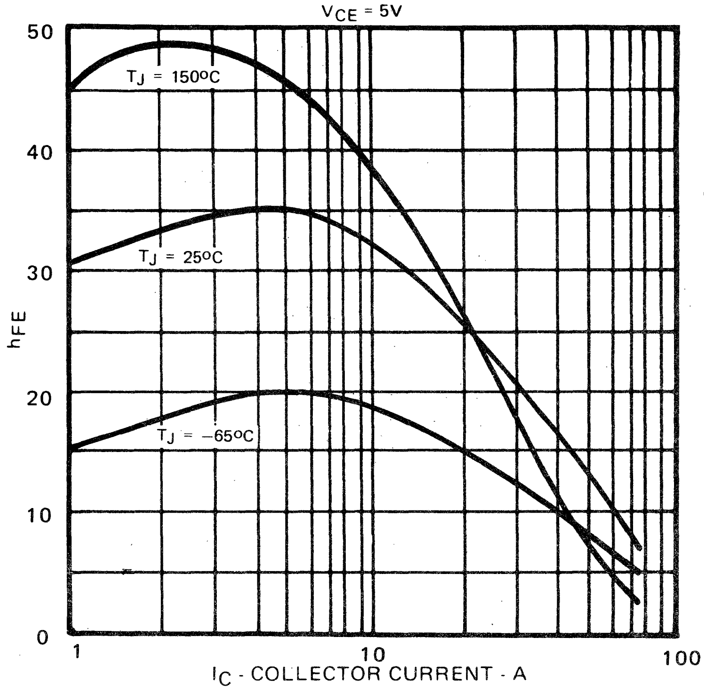
REVERSE BIASED SAFE OPERATING AREA



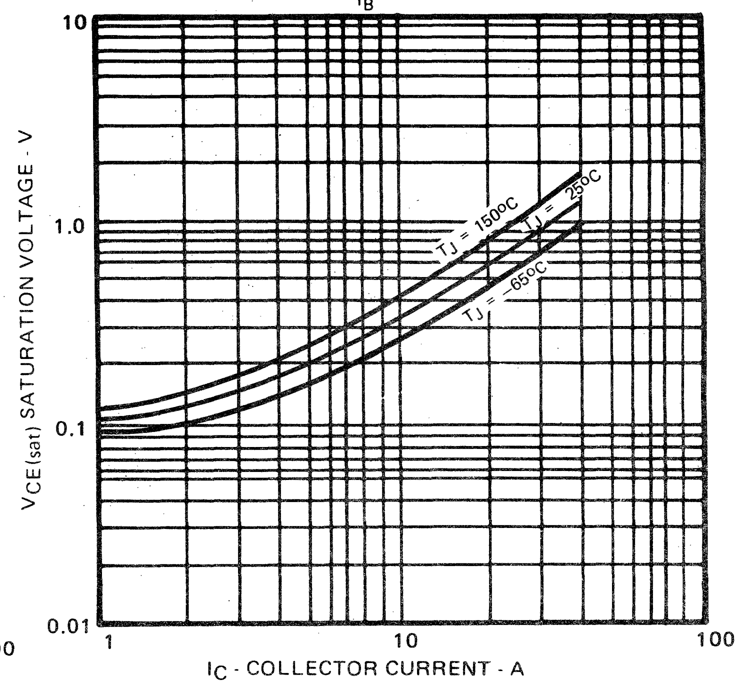
MAXIMUM OPERATING CONDITIONS
T_C = 25°C
DERATE V_{CE} TO V_{CEO} MAX.



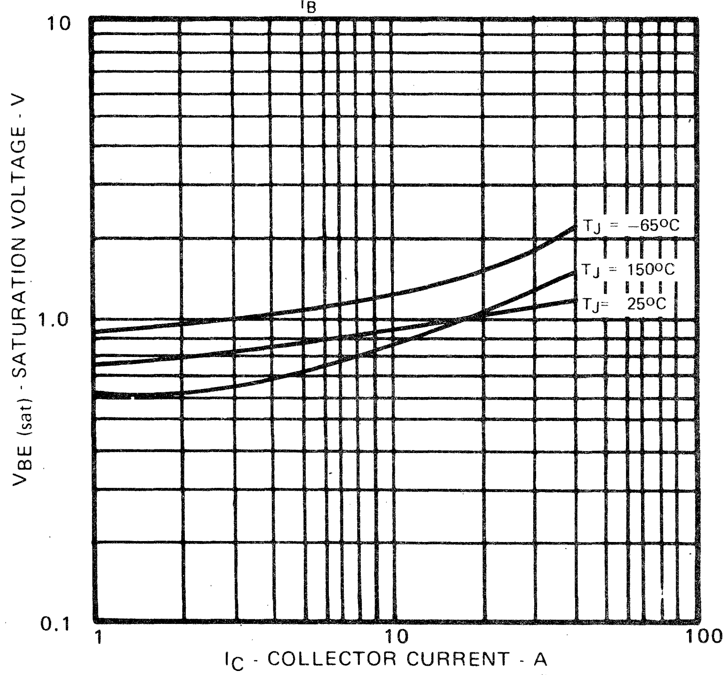
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
V_{CE} = 5V



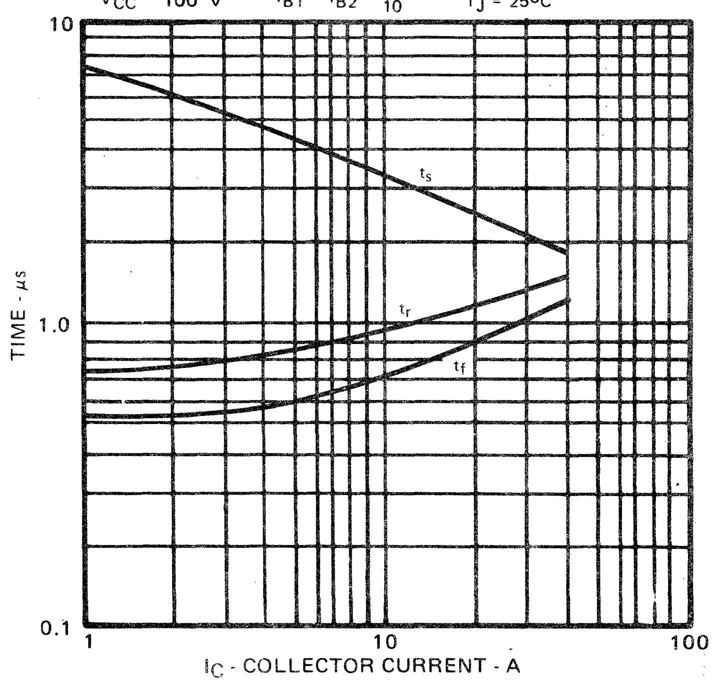
TYPICAL COLLECTOR-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B}$ = 10



TYPICAL BASE-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B}$ = 10

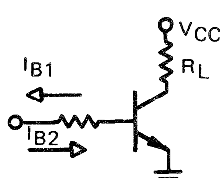


TYPICAL SWITCHING TIME
V_{CC} = 100 V $I_{B1} = I_{B2} = \frac{I_C}{10}$ T_J = 25°C



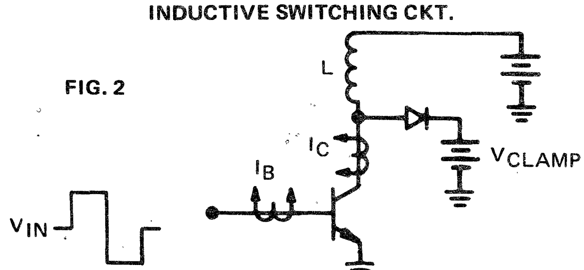
TYPICAL
RESISTIVE SWITCHING CKT.

FIG. 1



TYPICAL
INDUCTIVE SWITCHING CKT.

FIG. 2

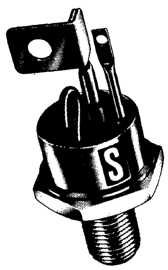


Solitron DEVICES, INC.
SEMICONDUCTOR GROUP
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

TO-114	TO-68
SDT 55903	SDT 55503
SDT 55904	SDT 55504

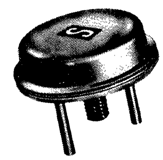
150 AMPERE PEAK

NPN SILICON POWER TRANSISTOR



TO-114

- HIGH RELIABILITY
- SINGLE CHIP PLANAR CONSTRUCTION
- LOW SATURATION VOLTAGE AT HIGH CURRENT
- HIGH DISSIPATION RATING



TO-68

ABSOLUTE MAXIMUM RATINGS

@ 25°C (unless otherwise noted)

PARAMETER	SDT 55903	SDT 50904	SDT 55503	SDT 55504	UNITS
V_{CBO}	175	200	175	200	V
V_{CEO}	100	125	100	125	V
V_{EBO}	10	10	10	10	V
I_{C} (CONT.)	100	100	100	100	A
I_{C} (PK.)	150	150	150	150	A
I_{B} (CONT.)	20	20	20	20	A
I_{B} (PK.)	40	40	40	40	A
$T_{(STORAGE)}$	-65 to +200	-65 to +200	-65 to +200	-65 to +200	°C
T_J	-65 to +200	-65 to +200	-65 to +200	-65 to +200	°C
$\theta_{J\text{-}C}$	0.33	0.33	0.45	0.45	°C/W
P_T (MAX.) @T_C=100°C	300	300	220	220	W

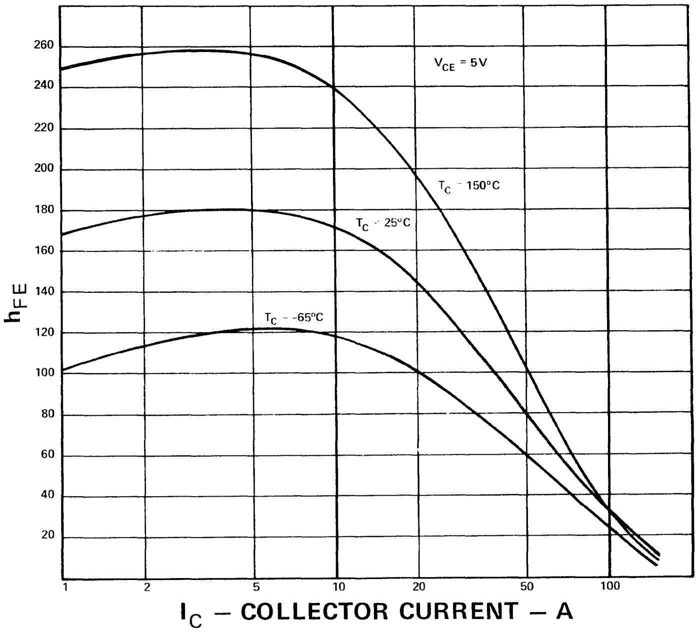
SDT 55903 FORMERLY SDT 5843
SDT 55904 FORMERLY SDT 5850
SDT 55503 FORMERLY SDT 5813
SDT 55504 FORMERLY SDT 5820

ELECTRICAL CHARACTERISTICS: $T_C = 25°C$ unless otherwise specified.

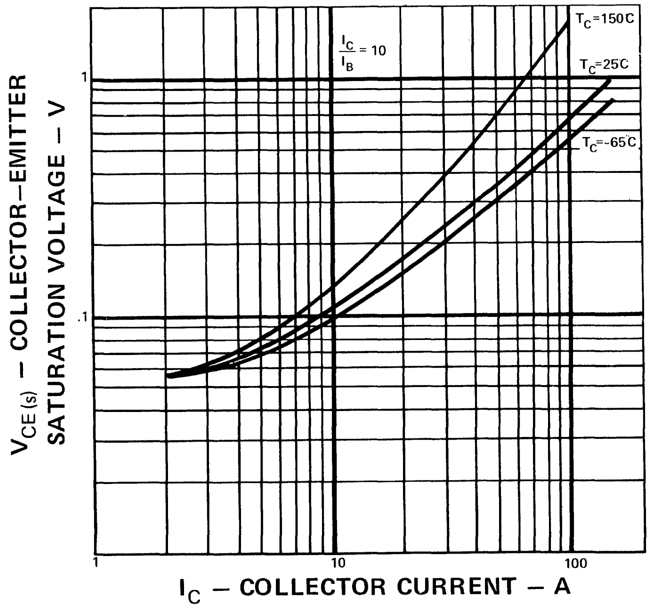
SYMBOL	TEST CONDITIONS						LIMITS								UNITS
	VOLTAGE (V)			CURRENT (A)			SDT 55903		SDT 55904		SDT 55503		SDT 55504		
	V_{CB}	V_{CE}	V_{EB}	I_C	I_E	I_B	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
V_{CBO}				1 mA			175		200		175		200		V
$V_{CEO(sus)}$*				0.1			100		125		100		125		V
V_{EBO}					100 μA		10		10		10		10		V
I_{CBO}	100							100				100			μA
I_{CBO}	125									100				100	μA
I_{CBO} T_C=150°C	100							1.0				1.0			mA
I_{CBO} T_C=150°C	125									1.0				1.0	mA
I_{CES}		100						125				125			μA
I_{CES}		125								125				125	μA
I_{EBO}			8					100		100		100		100	μA
h_{FE} **		5		100			15	75	15	75	15	75	15	75	
h_{FE} **		5		150			5		5		5		5		
$V_{CE(s)}$ **				100		10		0.8		0.8		0.8		0.8	V
$V_{BE(s)}$ **				100		10		1.8		1.8		1.8		1.8	V
C_{obo} f= 1 MHz	10							1200		1200		1200		1200	pF
h_{fe} f= 10 MHz		10		1.0			1.0		1.0		1.0		1.0		
t_r		100		20		2.0		0.4		0.4		0.4		0.4	μs
t_s		100		20		2.0 (1) 2.0 (2)		1.35		1.35		1.35		1.35	μs
t_f		100		20		2.0 (1) 2.0 (2)		0.5		0.5		0.5		0.5	μs

* Pulsed Inductive (60 Hz) ** Pulsed 300 μs - 2% (1) I_{B_1} (2) I_{B_2}

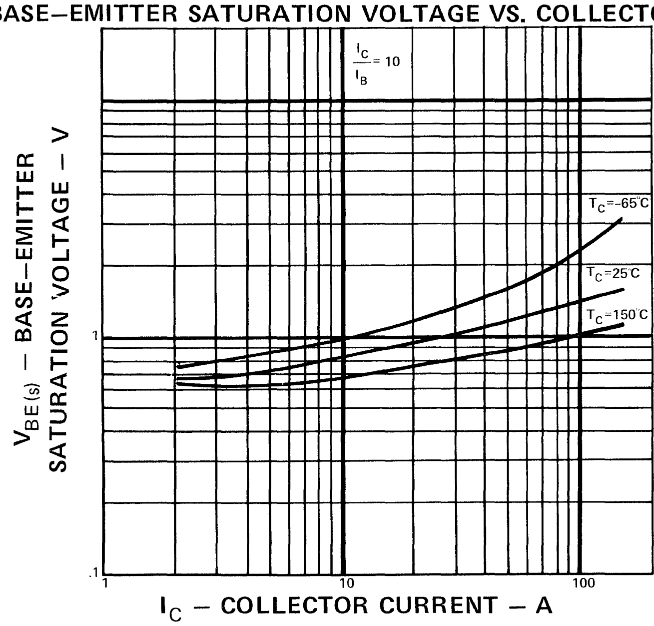
TYPICAL
STATIC FORWARD CURRENT TRANSFER RATIO



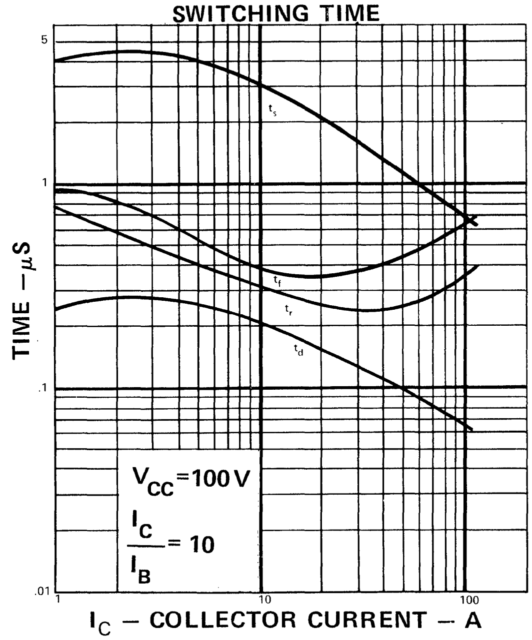
TYPICAL
COLLECTOR–EMITTER SATURATION VOLTAGE VS. COLLECTOR CURRENT



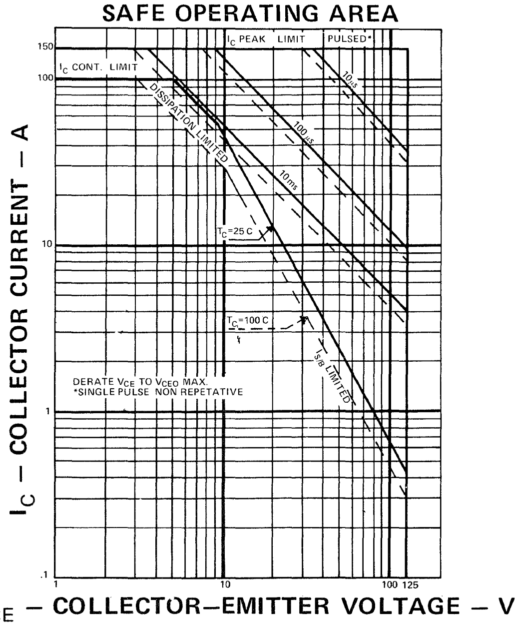
TYPICAL
BASE–EMITTER SATURATION VOLTAGE VS. COLLECTOR CURRENT



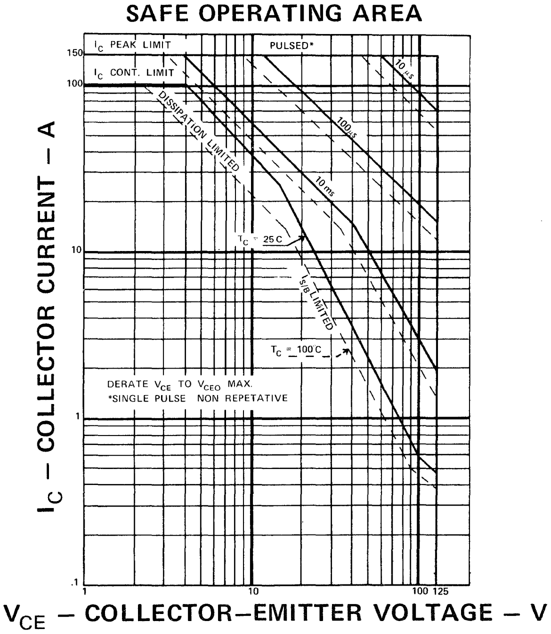
SWITCHING TIME



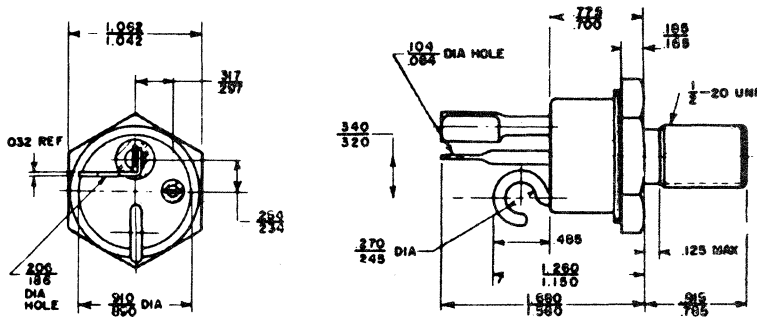
SDT 55903 & SDT 55904 — TO-114
SAFE OPERATING AREA



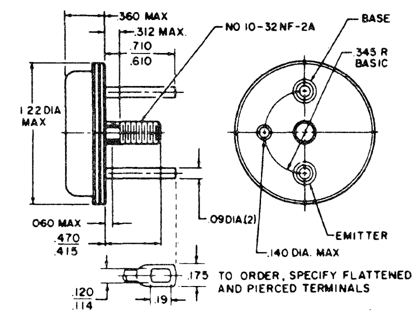
SDT 55503 & SDT 55504 — TO-68
SAFE OPERATING AREA



DIMENSIONAL DRAWINGS



TO-114



TO-68

SOLITRON FACILITIES

TAPPAN, NEW YORK 10983
256 Oak Tree Road

Phone 914 / 359-5050
TWX 710 / 576-2654

- Diodes & Rectifiers
- Zeners
- High Voltage Assemblies
- Power Rectifiers
- Thick Film Hybrid Circuits

RIVIERA BEACH, FLORIDA 33404
1177 Blue Heron Boulevard

Phone 305 / 848-4311
TWX 510 / 952-7610

- Hi-rel Power Transistors (silicon)
- Industrial/Commercial Power Transistors (silicon)
- Power Hybrids (standard)
- Custom Hybrids
- Schottky & Planar Diodes
- Semiconductor Die (silicon)

PORT SALERNO, FLORIDA 33492
Cove Road, Post Office Box 278

Phone 305 / 287-5000
TWX 510 / 953-7500

- Precision RF Connectors
- Cable Assemblies
- Loads & Terminations
- Strip Line Launchers
- Couplers
- Custom Strip Line Assemblies
- Thin Film Microwave Products

SAN DIEGO, CALIFORNIA 92100
8808 Balboa Avenue

Phone 714 / 278-8780
TWX 910 / 335-1221

- CMOS Devices
- FET & Dual FET Transistors
- MOS Devices
- MOS/FET Memory Arrays
- Shift Registers
- Diodes/Rectifiers
- Zeners
- High Voltage Rectifier Stacks

JUPITER, FLORIDA 33458
1440 West Indiantown Road

Phone 305 / 746-8311

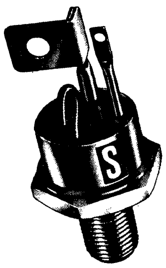
When you think of semiconductors . . . think Solitron !

Solitron DEVICES, INC.
SEMICONDUCTOR GROUP
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

TO-114	TO-68
SDT 55905	SDT 55505
SDT 55907	SDT 55507

100 AMPERE PEAK

NPN SILICON POWER TRANSISTOR



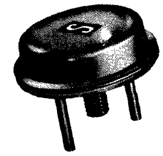
TO-114

HIGH RELIABILITY

SINGLE CHIP PLANAR CONSTRUCTION

LOW SATURATION VOLTAGE AT HIGH CURRENT

HIGH DISSIPATION RATING



TO-68

ABSOLUTE MAXIMUM RATINGS

@ 25°C (unless otherwise noted)

PARAMETER	SDT 55905	SDT 55907	SDT 55505	SDT 55507	UNITS
V_{CBO}	225	275	225	275	V
V_{CEO}	150	200	150	200	V
V_{EBO}	10	10	10	10	V
I_C (CONT.)	75	75	75	75	A
I_C (PK.)	100	100	100	100	A
I_B (CONT.)	20	20	20	20	A
I_B (PK.)	40	40	40	40	A
$T_{(STORAGE)}$	-65 to +200	-65 to +200	-65 to +200	-65 to +200	°C
T_J	-65 to +200	-65 to +200	-65 to +200	-65 to +200	°C
$\theta_{J\text{-}C}$	0.33	0.33	0.45	0.45	°C/W
P_T (MAX.) @T_C=100°C	300	300	220	220	W

SDT 55905 FORMERLY SDT 5851

SDT 55907 FORMERLY SDT 5853

SDT 55505 FORMERLY SDT 5821

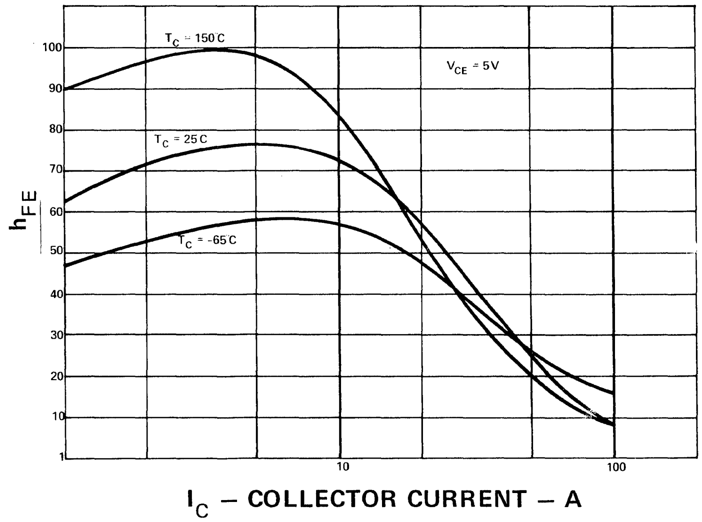
SDT 55507 FORMERLY SDT 5823

ELECTRICAL CHARACTERISTICS: $T_C = 25°C$ unless otherwise specified.

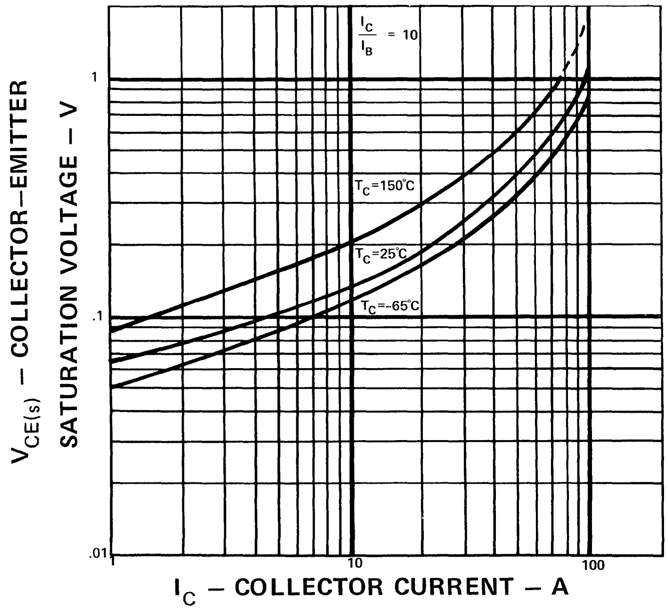
SYMBOL	TEST CONDITIONS						LIMITS								UNITS
	VOLTAGE (V)			CURRENT (A)			SDT 55905		SDT 55907		SDT 55505		SDT 55507		
	V_{CB}	V_{CE}	V_{EB}	I_C	I_E	I_B	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
V_{CBO}				1 mA			225		275		225		275		V
$V_{CEO(sus)}$*				0.1			150		200		150		200		V
V_{EBO}					100μA		10		10		10		10		V
I_{CBO}	150							100				100			μA
I_{CBO}	200									100				100	μA
I_{CBO} T_C=150°C	150							1.0				1.0			mA
I_{CBO} T_C=150°C	200									1.0				1.0	mA
I_{CES}		150						125				125			μA
I_{CES}		200								125				125	μA
I_{EBO}			8					100		100		100		100	μA
h_{FE} **		5		75			10	50	10	50	10	50	10	50	
h_{FE} **		5		100			5		5		5		5		
$V_{CE(s)}$ **				75		7.5		1.4		1.4		1.4		1.4	V
$V_{BE(s)}$ **				75		7.5		1.6		1.6		1.6		1.6	V
C_{obo} f= 1 MHz	10							1200		1200		1200		1200	pF
h_{fe} f= 10 MHz		10		1.0			1.0		1.0		1.0		1.0		
t_r		100		20		2.0		0.4		0.4		0.4		0.4	μs
t_s		100		20		2.0 (1) 2.0 (2)		1.35		1.35		1.35		1.35	μs
t_f		100		20		2.0 (1) 2.0 (2)		0.5		0.5		0.5		0.5	μs

* Pulsed Inductive (60 Hz) ** Pulsed 300μs - 2% (1) I_{B_1} (2) I_{B_2}

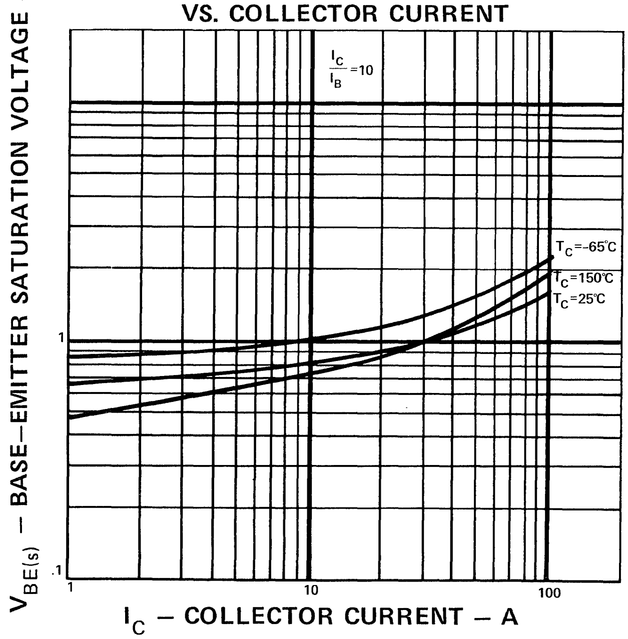
TYPICAL
STATIC FORWARD CURRENT TRANSFER RATIO



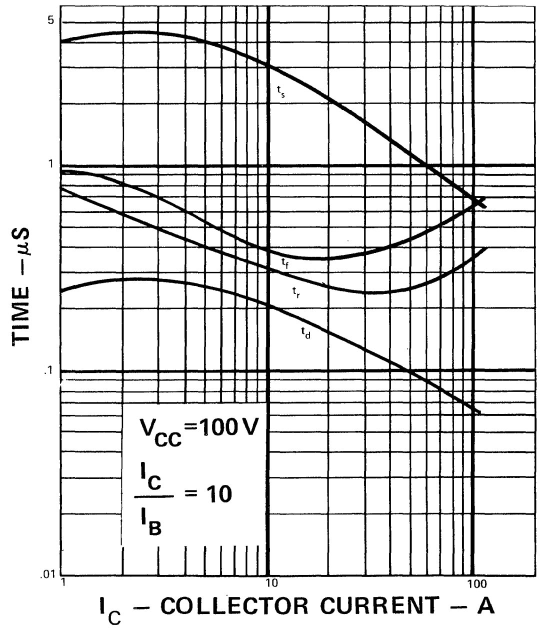
TYPICAL
COLLECTOR–EMITTER SATURATION VOLTAGE
VS. COLLECTOR CURRENT



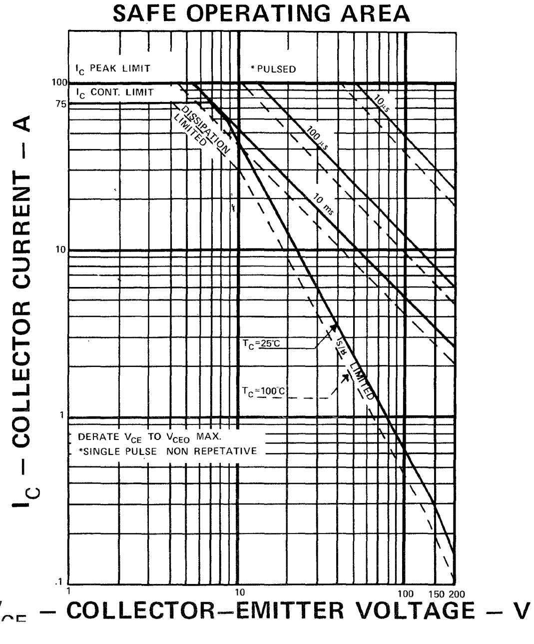
TYPICAL
BASE–EMITTER SATURATION VOLTAGE
VS. COLLECTOR CURRENT



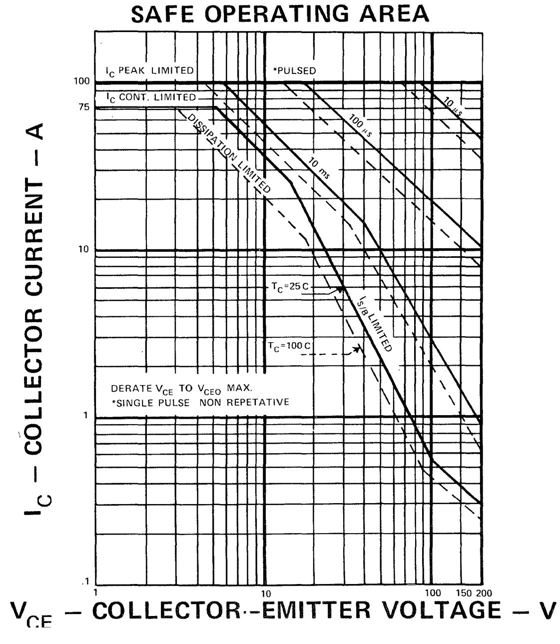
SWITCHING TIME



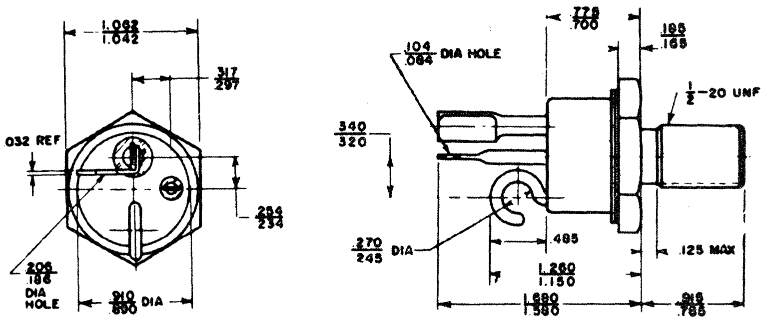
SDT 55905 & SDT 55907 – TO-114
SAFE OPERATING AREA



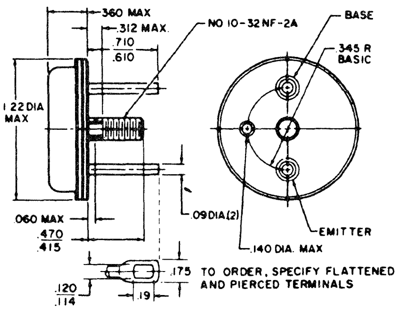
SDT 55505 & SDT 55507 – TO-68
SAFE OPERATING AREA



DIMENSIONAL DRAWINGS



TO-114



TO-68

SOLITRON FACILITIES

TAPPAN, NEW YORK 10983
256 Oak Tree Road
Phone: (914) 359-5050
TWX: (710) 576-2654

Automotive Electronics Products
Solitron Consumer Products
Thick Film Hybrid Circuits

PORT SALERNO, FLORIDA 33492
Cove Road, Post Office Box 278
Phone: (305) 287-5000
TWX: (510) 953-7500

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Couplers
Strip Line Launchers
Thin Film Microwave Products

RIVIERA BEACH, FLORIDA 33404
1177 Blue Heron Boulevard
Phone: (305) 848-4311
TWX: (510) 952-7610
TELEX: 51-3435

Hi-rel Power Transistors (silicon)
Industrial/Commercial Power Transistors (silicon)
Power Hybrids (standard)
Custom Hybrids
Planar Diodes (fast recovery)
Schottky Diodes (including power)
Semiconductor Dice (including assemblies)

SAN DIEGO, CALIFORNIA 92123
8808 Balboa Avenue
Phone: (714) 278-8780
TWX: (910) 335-1221

CMOS Devices
FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Diodes/Rectifiers
Zeners
High Voltage Rectifier Stacks

JUPITER, FLORIDA 33458
1440 West Indiantown Road
Phone: (305) 746-8311

Research & Development Division

When you think of semiconductors . . . think Solitron !

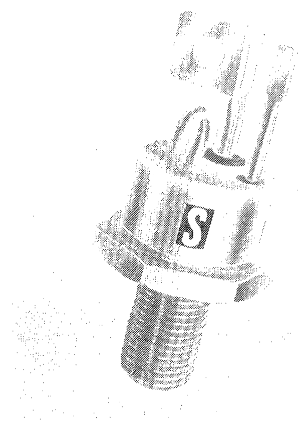
SDT 55956
SDT 55960

NPN SILICON POWER TRANSISTORS

75 AMPERES

FEATURES:
HIGH VOLTAGE, FAST SWITCHING, HIGH RELIABILITY - SINGLE CHIP PLANAR CONSTRUCTION

APPLICATIONS:
PUSH - PULL INVERTERS, SWITCHING REGULATORS, PULSE - WIDTH MODULATORS



TO - 236 AB (TO - 114)

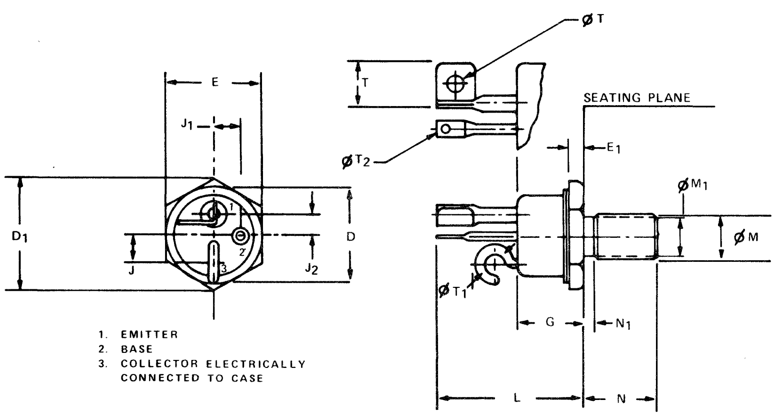
ABSOLUTE MAXIMUM RATINGS

		SDT 55956	SDT 55960
V_{CBO}	COLLECTOR-BASE VOLTAGE	325 V	375 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	250 V	300 V
V_{EBO}	EMITTER-BASE VOLTAGE	10 V	10 V
I_C	CONTINUOUS COLLECTOR CURRENT	40 A	40 A
I_C (PK)	PEAK COLLECTOR CURRENT	75 A	75 A
I_B	CONTINUOUS BASE CURRENT	10 A	10 A
I_B (PK)	PEAK BASE CURRENT	15 A	15 A
T_J	OPERATING JUNCTION TEMPERATURE	-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	0.25 °C/W	0.25 °C/W
P_D	POWER DISSIPATION (25°C)	700 W	700 W

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = 100mA) *	$V_{CEO(sus)}$			
SDT 55956		250		V
SDT 55960		300		V
*PULSED (INDUCTIVE SWEEP 60 Hz)				
COLLECTOR-CUTOFF CURRENT	I_{CBO}			
SDT 55956 V_{CB} = 325 V			1.0	mA
SDT 55960 V_{CB} = 375 V			1.0	mA
COLLECTOR-CUTOFF CURRENT T_C = 150°C	I_{CBO}			
SDT 55956 V_{CB} = 275 V			2.0	mA
SDT 55960 V_{CB} = 300 V			2.0	mA
COLLECTOR-CUTOFF CURRENT (V_{CE} = 200 V, R_{BE} = 50 Ω)	I_{CER}		1.0	mA
EMITTER-BASE VOLTAGE (I_B = 1.0 mA)	V_{EBO}	10		V
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1.0 s NON REPETITIVE, V_{CE} = 50 V)	$I_{s/b}$	2.5		A

OUTLINE DRAWING FOR TO - 236 AB (TO - 114)



NOTES:

1. Chamfer or undercut on one or both ends of hexagonal portion is optional.
2. Package contour with the exception of the hexagon is optional within dimensions specified.
3. Pitch diameter: ½ - 20 UNF - 2A (plated).
4. Position of leads in relation to the hexagon is not controlled.
5. Length of incomplete or undercut threads of ϕ M.
6. Controlling dimensions: inch.

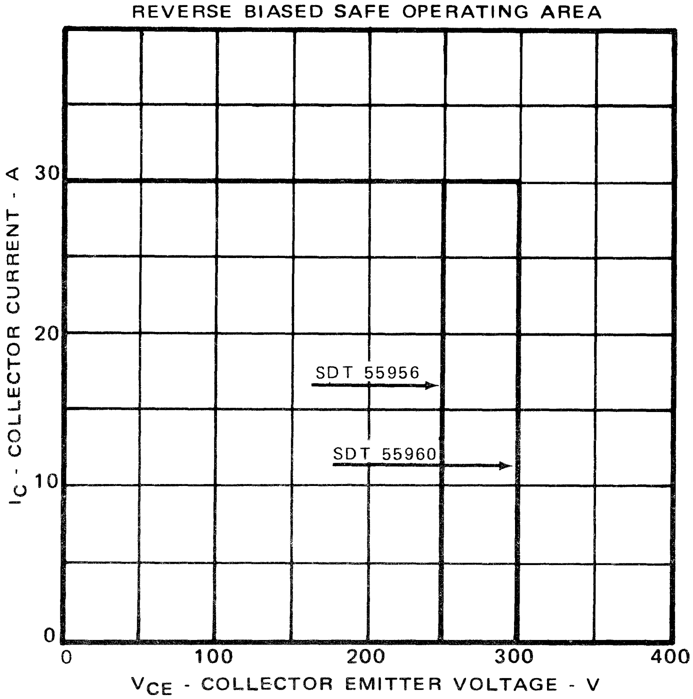
SYMBOL	DIMENSIONS INCHES MIN	INCHES MAX	MILLIMETERS MIN	MILLIMETERS MAX	NOTES
ØD	0.885	1.031	22.48	26.19	2
ØD		1.227		31.17	
E	1.031	1.065	26.19	27.05	
E_1		0.185		4.70	1
G		0.775		19.69	
J_1	0.297	0.317	7.54	8.05	4
J	0.320	0.340	8.13	8.64	4
J_2	0.234	0.254	5.94	6.45	4
L		1.680		42.67	
ØM					3
$ØM_1$	0.425	0.500	10.80	12.70	
N	0.781	0.828	19.84	21.03	
N_1		0.125		3.18	5
T		0.512		13.01	
ØT	0.180	0.210	4.57	5.33	
$ØT_1$	0.234	0.281	5.94	7.14	
$ØT_2$		0.104	2.64		
NOTE	6		6		

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

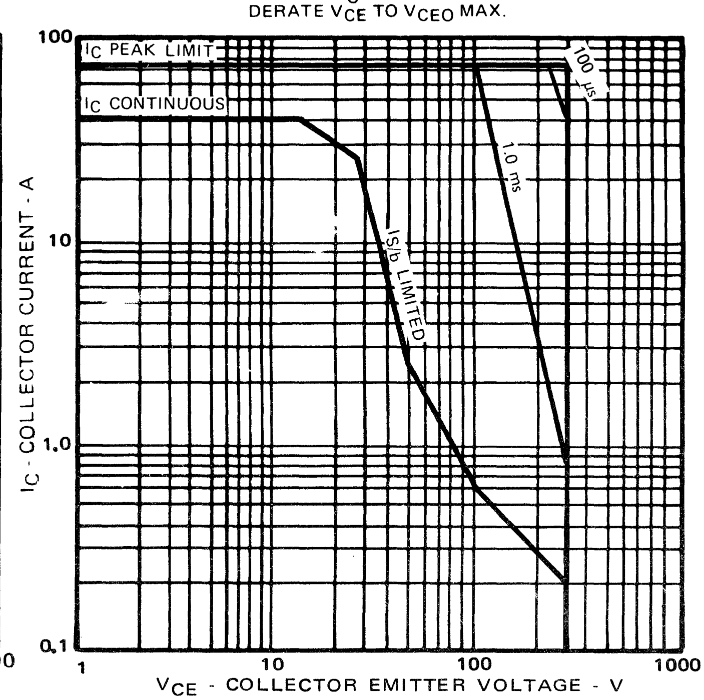
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
DC CURRENT GAIN (I_C = 40 A, V_{CE} = 5 V)** (I_C = 75 A, V_{CE} = 5 V)**	h_{FE}	 10 5	 50 —	
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = 40 A, I_B = 4.0 A)**	$V_{CE(sat)}$		1.5	V V
BASE EMITTER SATURATION VOLTAGE (I_C = 40 A, I_B = 4.0 A)**	$V_{BE(sat)}$		1.6	V V
TRANSITION FREQUENCY (I_C = 1A, V_{CE} = 10 V, $f_{(TEST)}$ = 10 MHz)	f_T	2.0		MHz
OUTPUT CAPACITANCE (V_{BC} = 10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		1200	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME (V_{CC} = 100 V, I_C = 20 A I_{B1} = I_{B2} = 2.0 A, t_p = 10 μs	 t_{on} t_s t_f		 1.4 2.6 1.3	 μs μs μs
SWITCHING CHARACTERISTICS INDUCTIVE (FIG. 2) CURRENT STORAGE TIME CURRENT FALL TIME V_{CLAMP} = 200 V, I_C = 10 A, L = 35 μH I_{B1} = 1.0 A, I_{B2} = 1.0 A	 t_{si} t_{fi}		 6.0 0.75	 μs μs

**PULSED—300 μs—2%

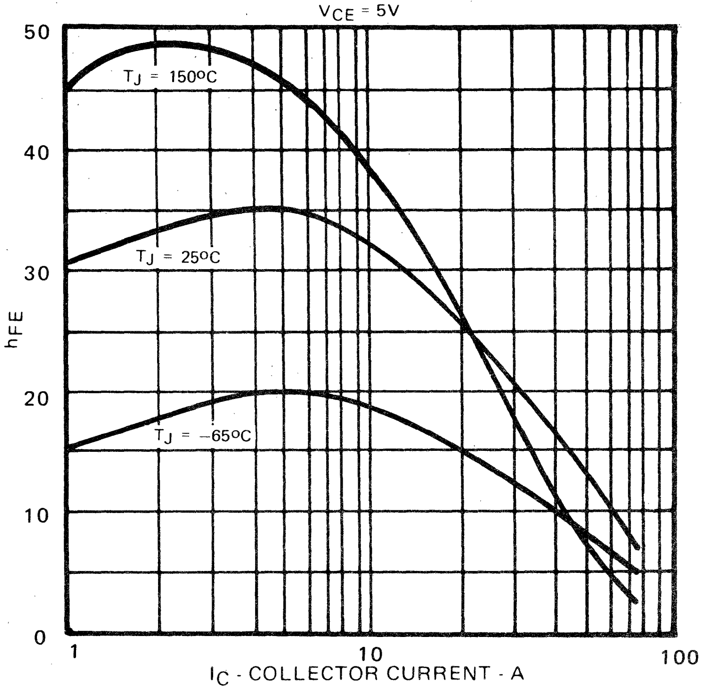
REVERSE BIASED SAFE OPERATING AREA



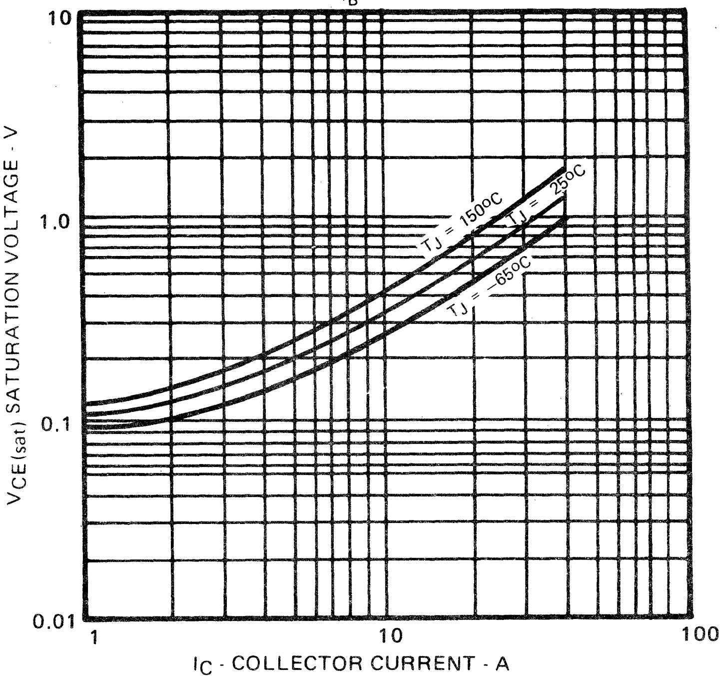
MAXIMUM OPERATING CONDITIONS
T_C = 25°C
DERATE V_{CE} TO V_{CEO} MAX.



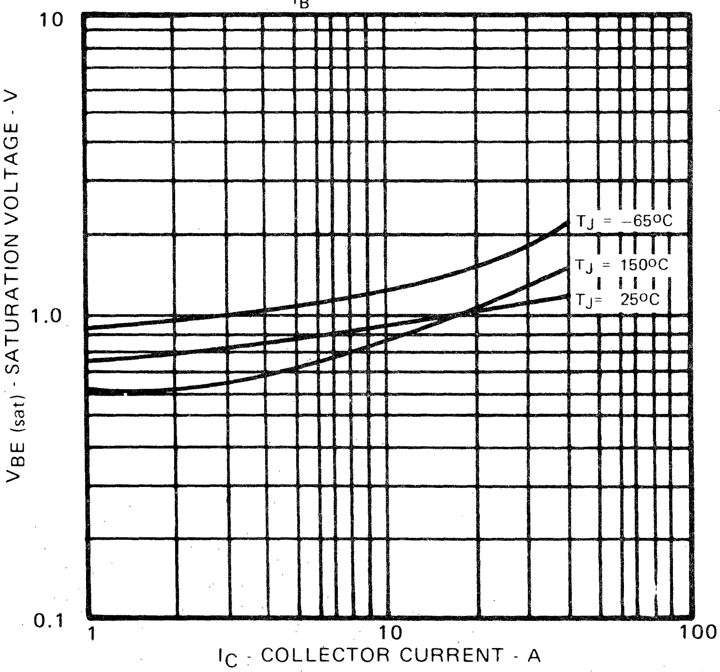
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5V$



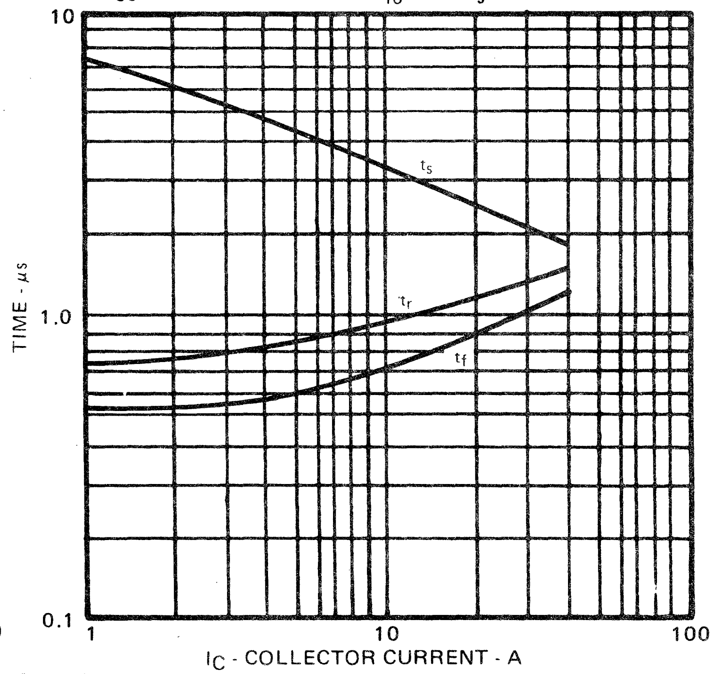
TYPICAL COLLECTOR-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



TYPICAL BASE-EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

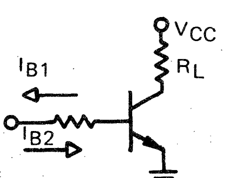


TYPICAL SWITCHING TIME
$V_{CC} = 100\ V$ $\quad I_{B1} = I_{B2} = \frac{I_C}{10}$ $\quad T_J = 25^oC$



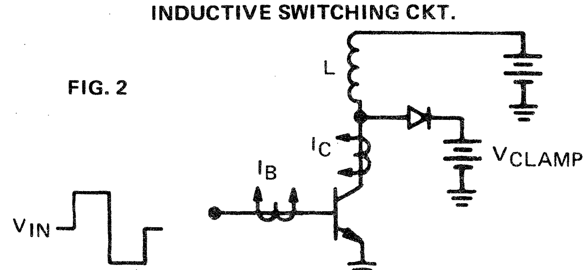
TYPICAL
RESISTIVE SWITCHING CKT.

FIG. 1



TYPICAL
INDUCTIVE SWITCHING CKT.

FIG. 2



Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

TO-3	TO-66	TO-39
SDT 85301	SDT 85601	SDT 85501
SDT 85302	SDT 85602	SDT 85502
SDT 85303	SDT 85603	SDT 85503
SDT 85304	SDT 85604	SDT 85504
SDT 85305	SDT 85605	SDT 85505
SDT 85306	SDT 85606	SDT 85506
SDT 85307	SDT 85607	SDT 85507
SDT 85308	SDT 85608	SDT 85508
SDT 85309	SDT 85609	SDT 85509
SDT 85310	SDT 85610	SDT 85510

10 AMP

SILICON NPN POWER TRANSISTORS

DESIGNED-IN ADVANTAGES

GREATER GAIN STABILITY — planar fabrication techniques give these new Solitron transistors unusually consistent gain, even across a wide range of currents. Gain is flat from below 10 milliamps to above 5 amps.

MINIMUM LONG-TERM DRIFT — planar construction eliminates surface contamination, ensuring consistent performance for the life of the device.

FAST SWITCHING — shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents. f_T = 40 MHz typical.

ABSOLUTE MAXIMUM RATINGS

SDT	85301, 85306 85601, 85606 85501, 85506	85302, 85307 85602, 85607 85502, 85507	85303, 85308 85603, 85608 85503, 85508	85304, 85309 85604, 85609 85504, 85509	85305, 85310 85605, 85610 85505, 85510
BV_{CBO} . . .	60 V	80 V	100 V	140 V	170 V
BV_{CEO} . . .	40 V	60 V	80 V	120 V	150 V
BV_{EBO} . . .	8 V	8 V	8 V	8 V	8 V
I_C	10 A	10 A	10 A	10 A	10 A
I_B	1 A	1 A	1 A	1 A	1 A
T_J	—	—	−55°C to 200°C	—	—
T_S	—	—	−55°C to 200°C	—	—

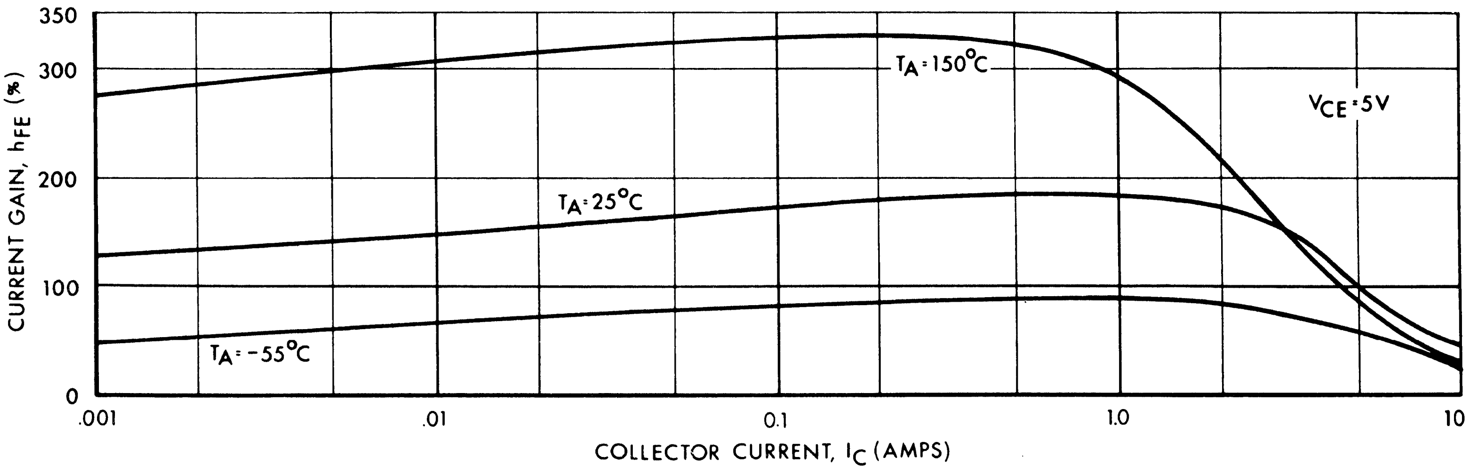
	TO-3	TO-66	TO-39
$\Theta_{J\text{-}C}$	1.5°C/Watt	2.5°C/Watt	20°C/Watt

ELECTRICAL CHARACTERISTICS $T_c = 25^oC$ unless otherwise noted

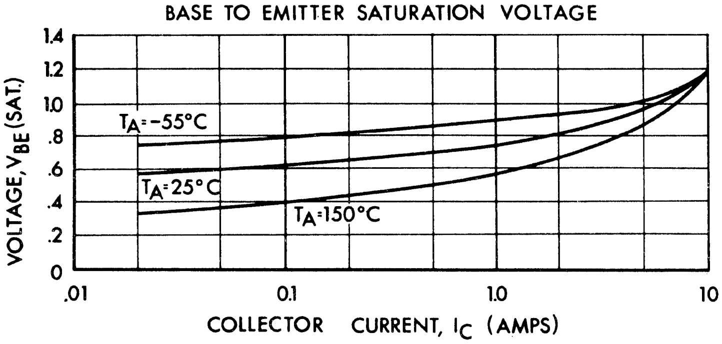
PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	DEVICE TYPE
BV_{EBO}	8.0		V	$I_E = 10\ \mu A$	ALL
I_{CBO}		5.0	µA	$V_{CB} = 30\ V$	SDT 85301, 85601, 85501 SDT 85306, 85606, 85506
		5.0	µA	$V_{CB} = 40\ V$	SDT 85302, 85602, 85502 SDT 85307, 85607, 85507
		5.0	µA	$V_{CB} = 60\ V$	SDT 85303, 85603, 85503 SDT 85308, 85608, 85508
		5.0	µA	$V_{CB} = 100\ V$	SDT 85304, 85604, 85504 SDT 85309, 85609, 85509
		5.0	µA	$V_{CB} = 130\ V$	SDT 85305, 85605, 85505 SDT 85310, 85610, 85510
BV_{CBO}	60		V	$I_c = 10\ \mu A$	SDT 85301, 85601, 85501 SDT 85306, 85606, 85506
	80		V	$I_c = 10\ \mu A$	SDT 85302, 85602, 85502 SDT 85307, 85607, 85507
	100		V	$I_c = 10\ \mu A$	SDT 85303, 85603, 85503 SDT 85308, 85608, 85508
	140		V	$I_c = 10\ \mu A$	SDT 85304, 85604, 85504 SDT 85309, 85609, 85509
	170		V	$I_c = 10\ \mu A$	SDT 85305, 85605, 85505 SDT 85310, 85610, 85510
*BV_{CEO}(sus)	40		V	$I_c = 100\ mA$	SDT 85301, 85601, 85501 SDT 85306, 85606, 85506
	60		V	$I_c = 100\ mA$	SDT 85302, 85602, 85502 SDT 85307, 85607, 85507
	80		V	$I_c = 100\ mA$	SDT 85303, 85603, 85503 SDT 85308, 85608, 85508
	120		V	$I_c = 100\ mA$	SDT 85304, 85604, 85504 SDT 85309, 85609, 85509
	150		V	$I_c = 100\ mA$	SDT 85305, 85605, 85505 SDT 85310, 85610, 85510
*h_{FE}	40	120		$I_c = 5A$, $V_{CE} = 5V$	SDT 85301-305 SDT 85601-605 SDT 85501-505
	20			$I_c = 5A$, $V_{CE} = 5V$	SDT 85306-310 SDT 85606-610 SDT 85506-510
*V_{CE}(sat)		.6	V	$I_c = 5A$, $I_b = .5A$	ALL
*V_{BE}(sat)		1.5	V	$I_c = 5A$, $I_b = .5A$	ALL
f_t	40		Typ.	$I_c = 1A$, $V_{CE} = 10V$	ALL
C_{OB}		350	pf	$V_{CB} = 10V$, $f = 1\ MHz$	ALL

*Pulse width ≦ 300 µsec, Duty cycle ≦ 2%

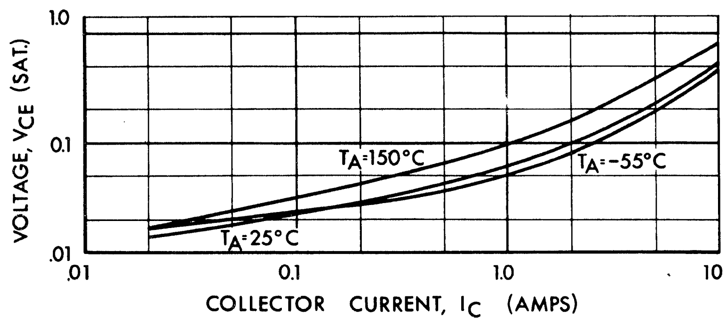
NORMALIZED CURRENT GAIN



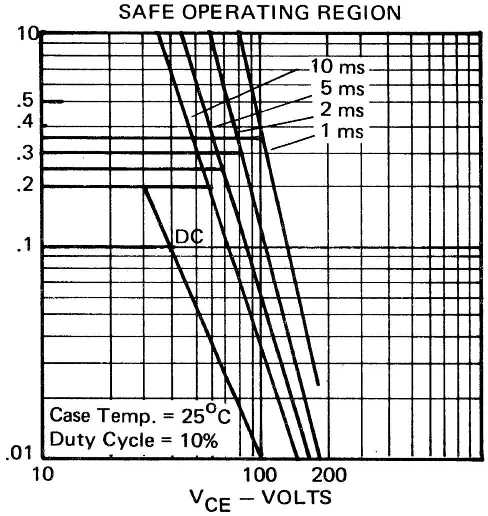
BASE TO EMITTER SATURATION VOLTAGE



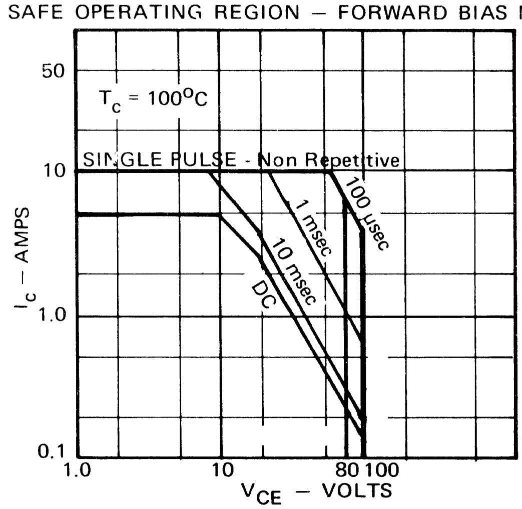
COLLECTOR TO EMITTER SATURATION VOLTAGE



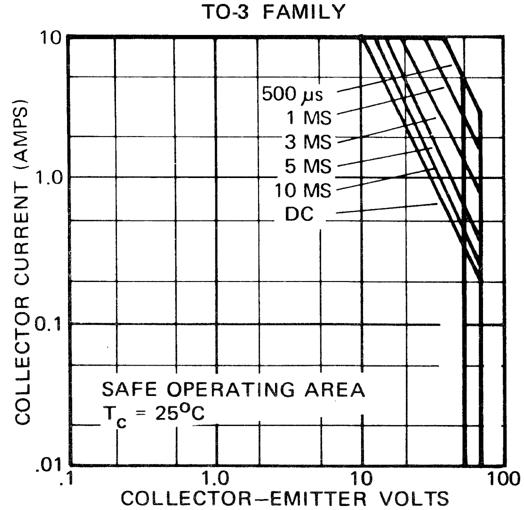
TO–5 FAMILY
SAFE OPERATING REGION



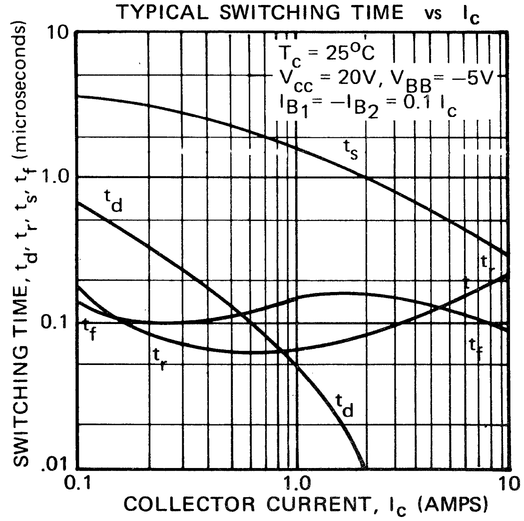
TO–66 FAMILY
SAFE OPERATING REGION – FORWARD BIAS MODE

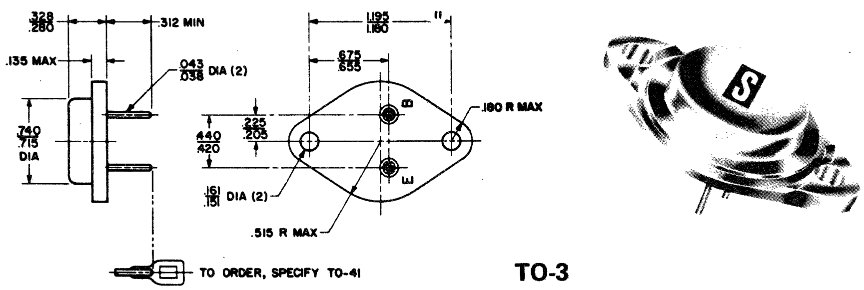


TO-3 FAMILY



TYPICAL SWITCHING TIME vs I_c

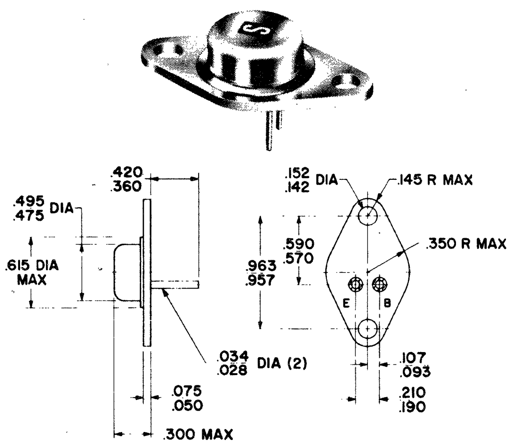




TO-3

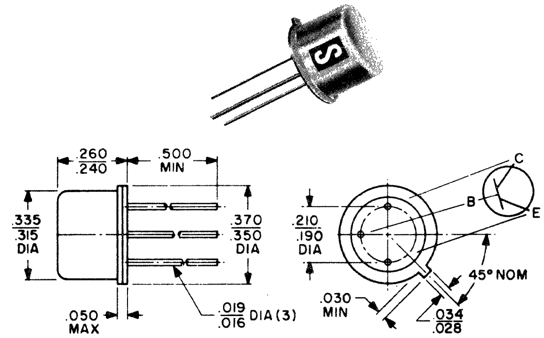
$\Theta_{J\text{-}C}$ = 1.5°C/Watt (65 Watts Max. = T_C = 100°C)

$\Theta_{J\text{-}A}$ = 45°C/Watt



TO-66

$\Theta_{J\text{-}C}$ = 2.5°C/Watt (40 Watts Max. @ T_C = 100°C)



TO-39

$\Theta_{J\text{-}C}$ = 20°C/Watt (5 Watts Max. @ T_C = 100°C)

$\Theta_{J\text{-}A}$ = 140°C/Watt

SOLITRON FACILITIES

TAPPAN, N. Y.
256 Oak Tree Road
914 / 359-5050
Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311
Hi Rel Power Transistors
Si. Power Transistors
PNP-NPN Industrial Transistors

PORT SALERNO, FLA.
Cove Road
305 / 287-5000
Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

SAN DIEGO, CALIF.
8808 Balboa Avenue
714 / 278-8780
FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

JUPITER, FLA.
1440 W. Indiantown Rd.
305 / 746-8311
Microwave Stripline
Microwave Semiconductors
RF Transistors
Microwave Integrated Circuits

When you think of semiconductors . . . think Solitron!

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

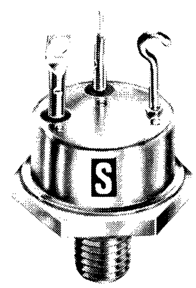
TO-63	TO-3
SDT96401	SDT96301
SDT96402	SDT96302
SDT96403	SDT96303

100 AMP

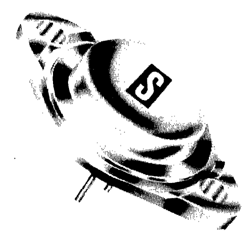
SILICON NPN POWER TRANSISTORS

FEATURES

- Single Chip Planar Construction
- Low V_{CE}(sat) at 70 Amps (0.7 V Typ.)
- High h_{FE} at 70 Amps (40 Typ.)
- From same generic family as JAN2N5250



TO-63



TO-3

ABSOLUTE MAXIMUM RATINGS

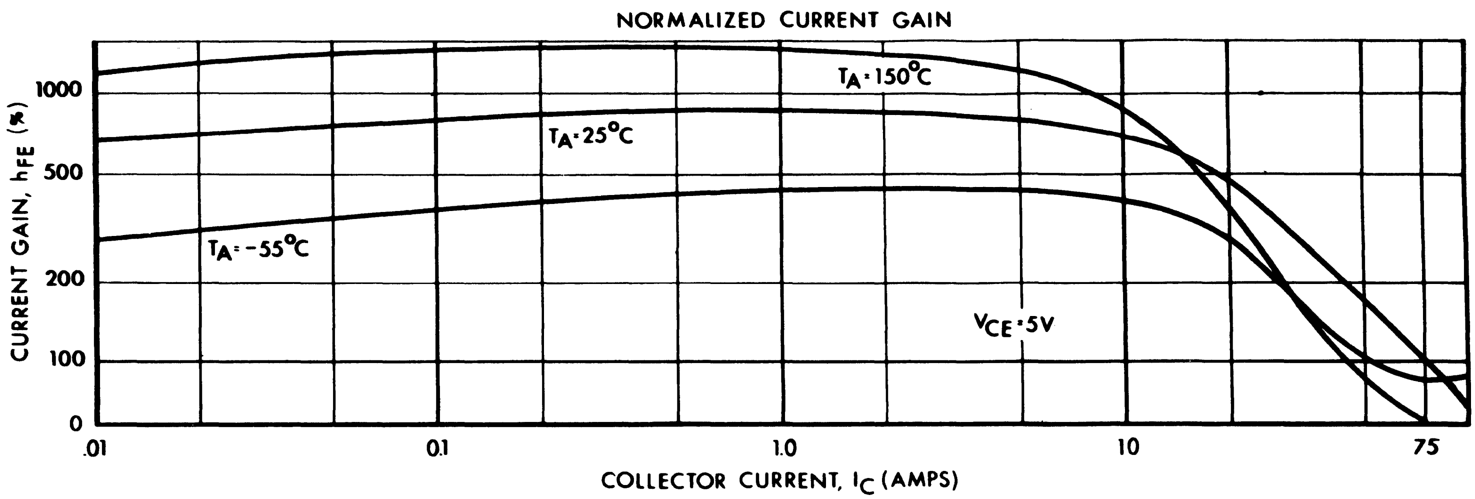
	SDT96401 SDT96301	SDT96402 SDT96302	SDT96403 SDT96303
BV_{CBO}	80 V	120 V	160 V
BV_{CEO}	60 V	100 V	140 V
BV_{EBO}	10 V	10 V	10 V
I_c (Cont)	100 A	120 A	120 A
I_c (Pk)	120 A	120 A	120 A
I_B (cont)	15 A	15 A	15 A
I_B (pk)	20 A	20 A	20 A
P_D (100°C Case)(TO-63)	125 W	125 W	125 W
P_D (100°C Case)(TO-3)	100 W	100 W	100 W
$T_{(STG)}$		−65°C to +200°C	
$T_{(OPR)}$		−65°C to +200°C	

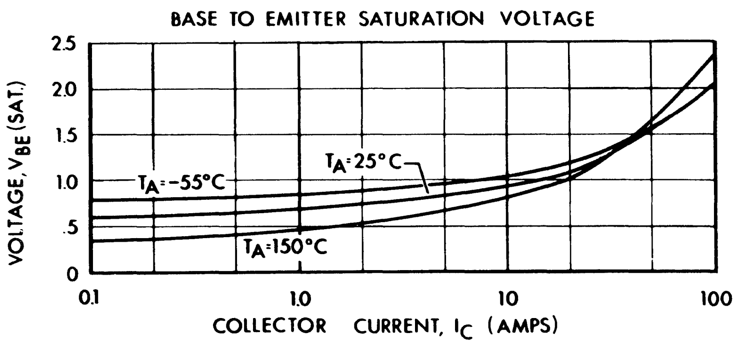
ELECTRICAL CHARACTERTISTICS (@ 25°C)

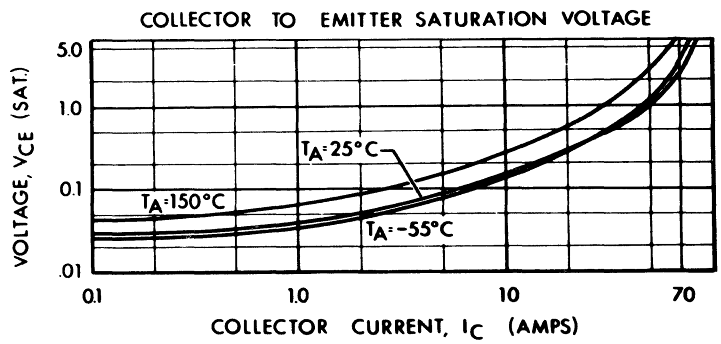
PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	TYPE
I_{EBO}		10	μA	$V_{EB} = 8$ V	ALL
I_{CBO}		1.0	μA	$V_{CB} = 40$ V	SDT96401, SDT96301
		1.0	μA	$V_{CB} = 80$ V	SDT96402, SDT96302
		1.0	μA	$V_{CB} = 120$ V	SDT96403, SDT96303
I_{CEO}		1.0	mA	$V_{CE} = 40$ V	SDT96401, SDT96301
		1.0	mA	$V_{CE} = 80$ V	SDT96402, SDT96302
		1.0	mA	$V_{CE} = 120$ V	SDT96403, SDT96303
BV_{CBO}	80		V	$I_c = 100$ μA	SDT96401, SDT96301
	120		V	$I_c = 100$ μA	SDT96402, SDT96302
	160		V	$I_c = 100$ μA	SDT96403, SDT96303
*BV_{CEO}(sus)	60		V	$I_c = 200$ mA	SDT96401, SDT96301
	100		V	$I_c = 200$ mA	SDT96402, SDT96302
	140		V	$I_c = 200$ mA	SDT96403, SDT96303
*h_{FE}	10			I_c= 70A, V_{CE}= 5V	ALL
	5			I_c= 90A, V_{CE}= 5V	ALL
*V_{CE}(sat)		1.8	V	I_c= 70A, I_B= 7A	ALL
*V_{BE}(sat)		2.2	V	I_c= 70A, I_B= 7A	ALL
h_{fe}	10			I_c=5A, V_{CE}=10V, f=1 MHz	ALL
C_{OB}		600	pf	V_{CB}= 10 V, f = 1 MHz	ALL

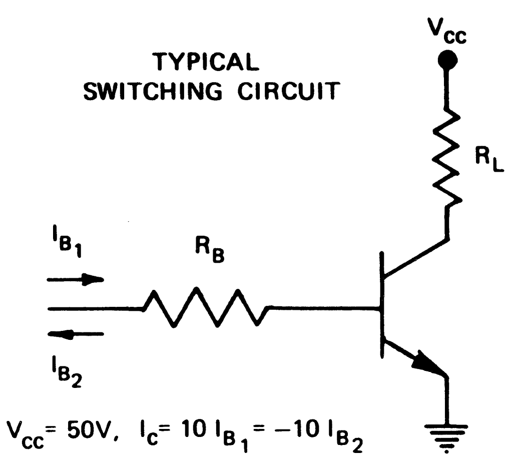
*Pulse width ≤ 300 μsec, Duty Cycle ≤ 2%

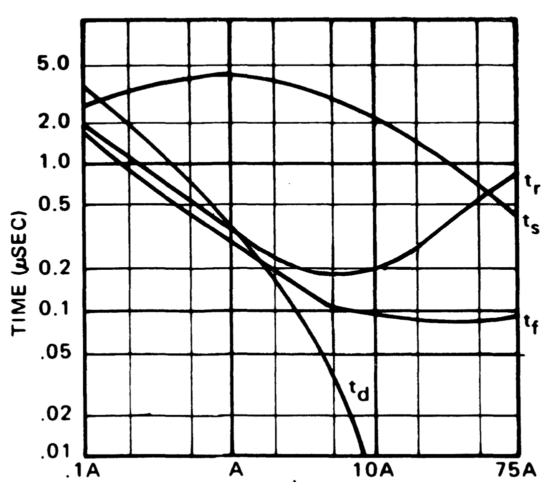
TYPICAL CHARACTERISTIC CURVES





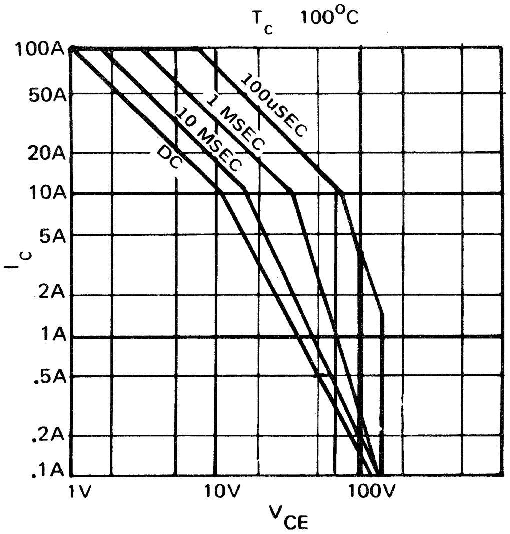




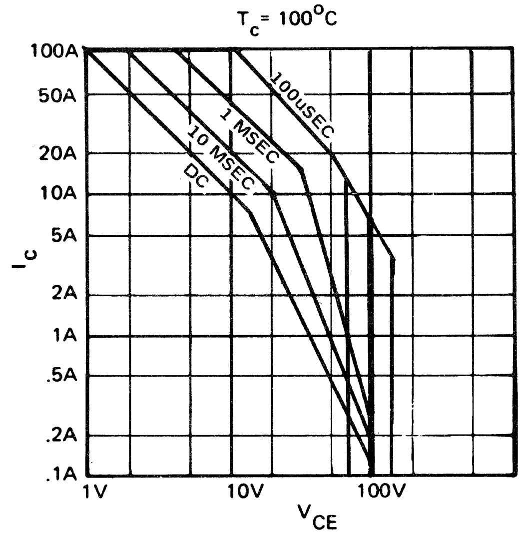


SWITCHING TIME vs I_c

MAXIMUM OPERATING AREAS



TO-63



TO-3

SOLITRON FACILITIES

TAPPAN, N. Y.
256 Oak Tree Road
914 / 359-5050

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311

Hi Rel Power Transistors
Si. & Ge. Power Transistors
PNP-NPN Industrial Transistors

PORT SALERNO, FLA.
Cove Road
305 / 287-5000

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

SAN DIEGO, CALIF.
8808 Balboa Avenue
714 / 278-8780

FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

JUPITER, FLA.
1440 W. Indiantown Rd.
305 / 746-8311

Microwave Stripline
Microwave Semiconductors
RF Transistors
Microwave Integrated Circuits

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

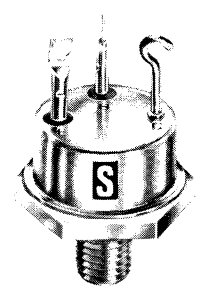
TO-63	TO-3
SDT96404	SDT96304
SDT96405	SDT96305
SDT96406	SDT96306

70 AMP

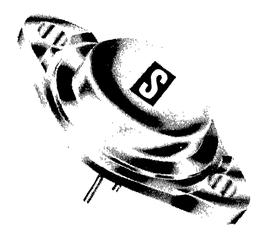
SILICON NPN POWER TRANSISTORS

FEATURES

- Single Chip Planar Construction
- Low V_{CE}(sat) at 40 Amps (1.6 V Typ.)
- High h_{FE} at 40 Amps (20 Typ.)
- From same generic family as JAN2N5250



TO-63



TO-3

ABSOLUTE MAXIMUM RATINGS

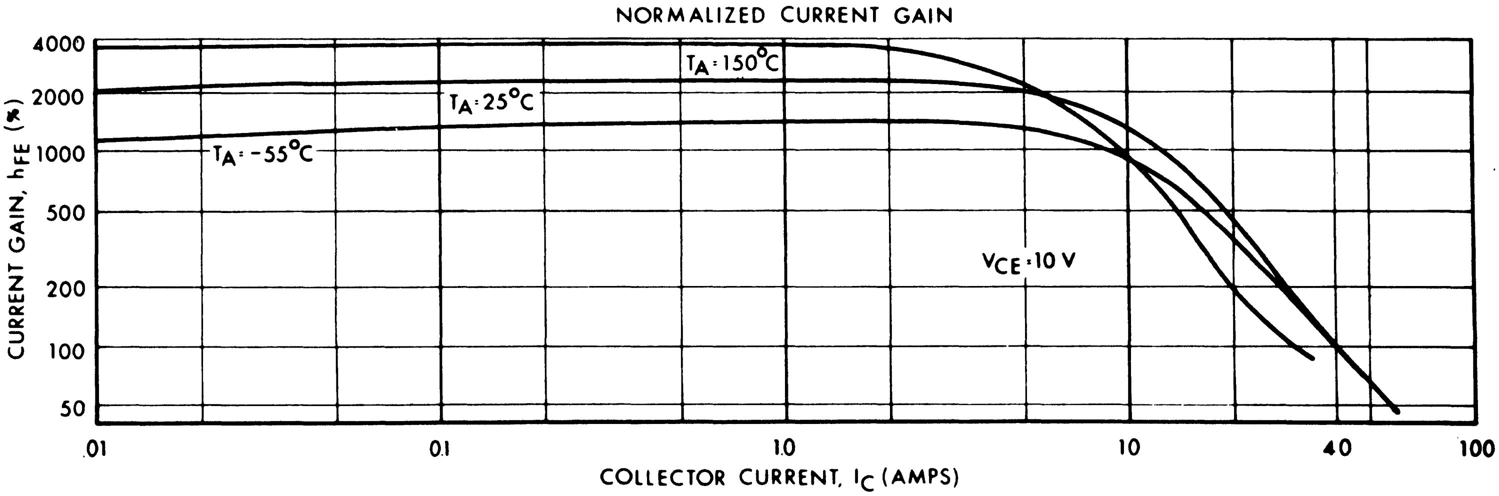
	SDT96404 SDT96304	SDT96405 SDT96305	SDT96406 SDT96306
BV_{CBO}	225 V	275 V	325 V
BV_{CEO}	200 V	250 V	300 V
BV_{EBO}	10 V	10 V	10 V
I_c (cont)	50 A	50 A	50 A
I_c (pk)	70 A	70 A	70 A
I_B (cont)	10 A	10 A	10 A
I_B (pk)	15 A	15 A	15 A
P_D (100^oC Case)(TO-63)	125 W	125 W	125 W
P_D (100^oC Case)(TO-3)	100 W	100 W	100 W
$T_{(STG)}$		-65^oC to $+200^oC$	
$T_{(OPR)}$		-65^oC to $+200^oC$	

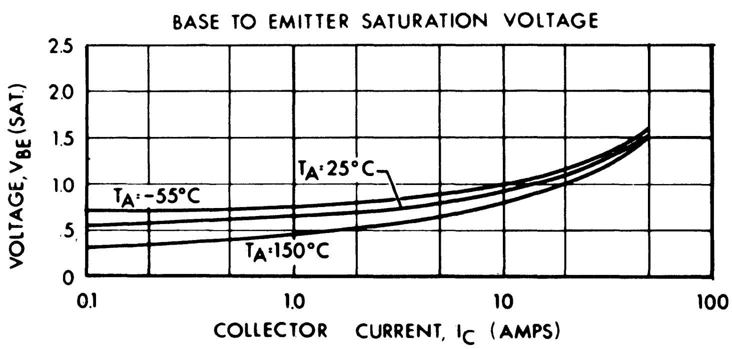
ELECTRICAL CHARACTERISTICS (@ 25°C)

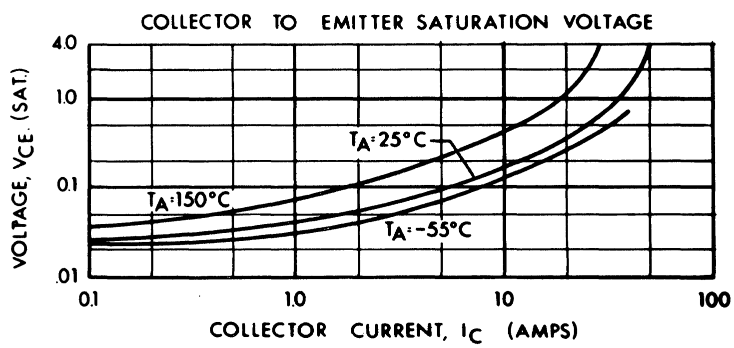
PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	TYPE
I_{EBO}		10	μA	$V_{EB} = 8$ V	ALL
I_{CBO}		1.0	μA	$V_{CB} = 150$ V	SDT96404, SDT96304
		1.0	μA	$V_{CB} = 200$ V	SDT96405, SDT96305
		1.0	μA	$V_{CB} = 250$ V	SDT96406, SDT96306
I_{CEO}		1.0	mA	$V_{CE} = 150$ V	SDT96404, SDT96304
		1.0	mA	$V_{CE} = 200$ V	SDT96405, SDT96305
		1.0	mA	$V_{CE} = 250$ V	SDT96406, SDT96306
BV_{CBO}	225		V	$I_c = 100\,\mu$A	SDT96404, SDT96304
	275		V	$I_c = 100\,\mu$A	SDT96405, SDT96305
	325		V	$I_c = 100\,\mu$A	SDT96406, SDT96306
*BV_{CEO}(sus)	200		V	$I_c = 200$ mA	SDT96404, SDT96304
	250		V	$I_c = 200$ mA	SDT96405, SDT96305
	300		V	$I_c = 200$ mA	SDT96406, SDT96306
*h_{FE}	8	40		$I_c = 40$A, $V_{CE} = 10$V	ALL
	5			$I_c = 50$A, $V_{CE} = 10$V	ALL
*V_{CE}(sat)		2.0	V	$I_c = 40$A, $I_B = 8$A	ALL
*V_{BE}(sat)		2.2	V	$I_c = 40$A, $I_B = 8$A	ALL
h_{fe}	10			I_c=5A, V_{CE}=10V, f = 1MHz	ALL
C_{OB}		600	pf	$V_{CB} = 10$ V, f = 1 MHz	ALL

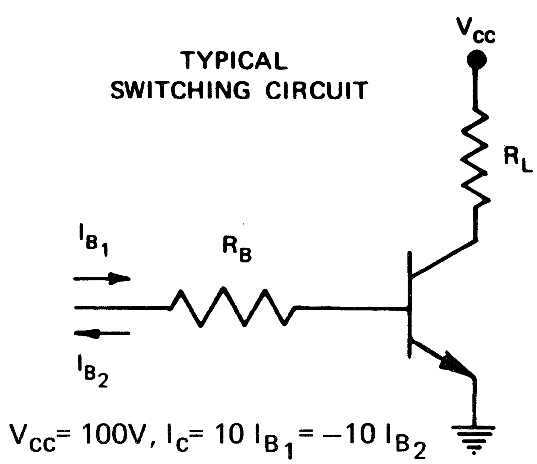
*Pulse width ≦ 300 μsec, Duty Cycle ≦ 2%

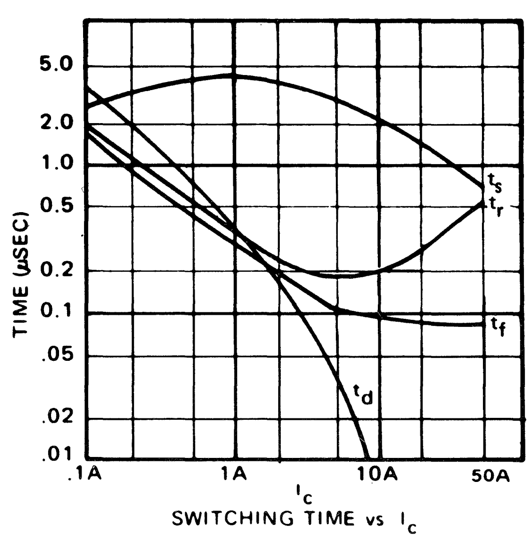
TYPICAL CHARACTERISTIC CURVES



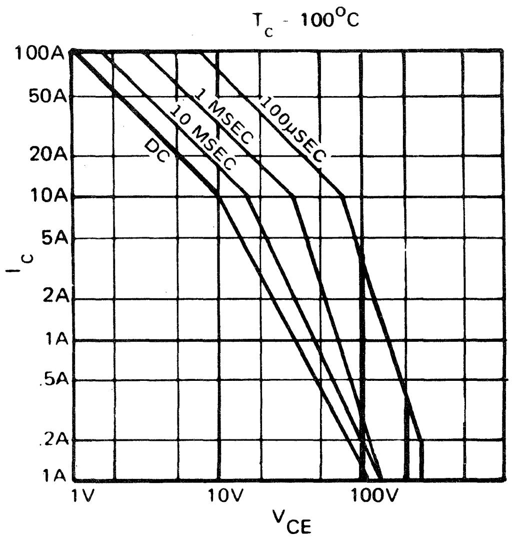




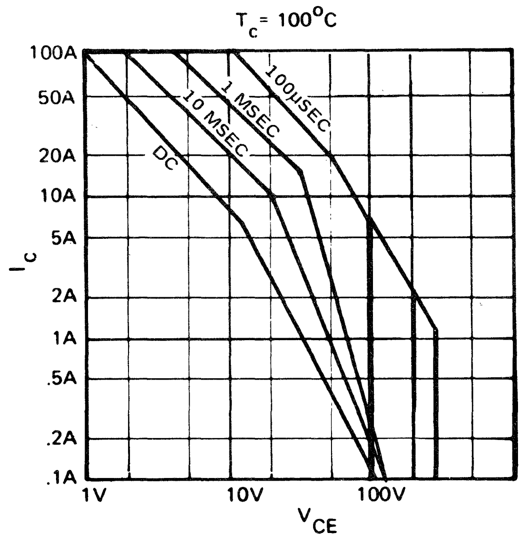




MAXIMUM OPERATING AREAS



TO-63



TO-3

SOLITRON FACILITIES

TAPPAN, N. Y.
256 Oak Tree Road
914 / 359-5050

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311

Hi Rel Power Transistors
Si. & Ge. Power Transistors
PNP-NPN Industrial Transistors

PORT SALERNO, FLA.
Cove Road
305 / 287-5000

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

SAN DIEGO, CALIF.
8808 Balboa Avenue
714 / 278-8780

FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

JUPITER, FLA.
1440 W. Indiantown Rd.
305 / 746-8311

Microwave Stripline
Microwave Semiconductors
RF Transistors
Microwave Integrated Circuits

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

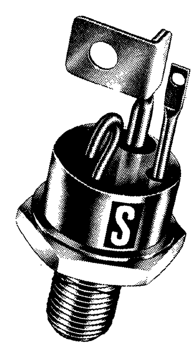
TO-114	TO-68
SDT96901	SDT96501
SDT96902	SDT96502
SDT96903	SDT96503

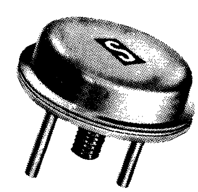
100 AMP

SILICON NPN POWER TRANSISTORS

FEATURES

- Single Chip Planar Construction
- Low V_{CE}(sat) at 70 Amps, (0.7 V Typ.)
- High h_{FE} at 70 Amps (40 Typ.)
- From same generic family as JAN2N5250


TO-114


TO-68

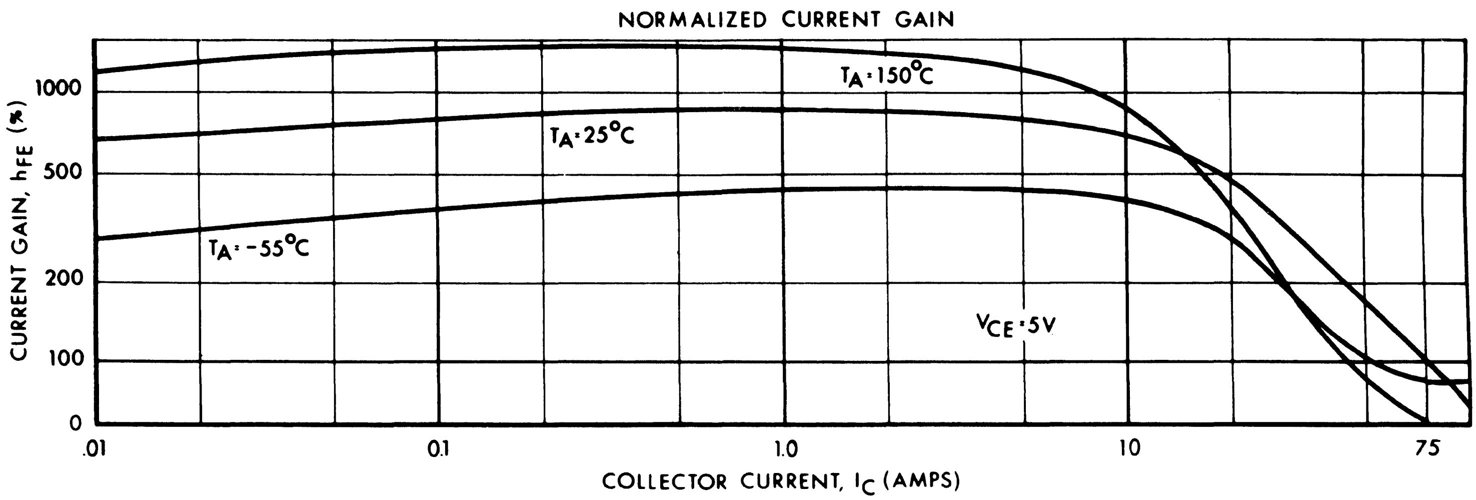
ABSOLUTE MAXIMUM RATINGS

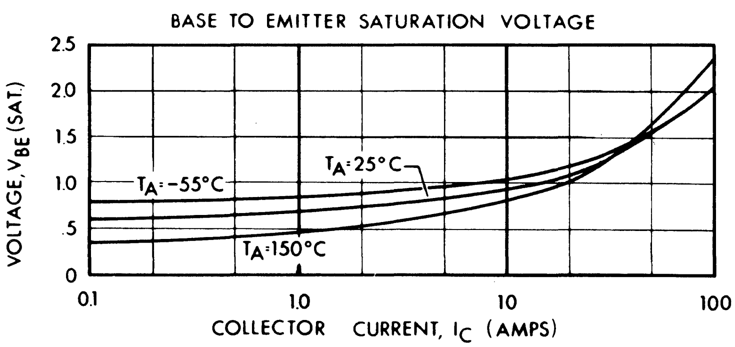
	SDT96901 SDT96501	SDT96902 SDT96502	SDT96903 SDT96503
BV_{CBO}	80 V	120 V	160 V
BV_{CEO}	60 V	100 V	140 V
BV_{EBO}	10 V	10 V	10 V
I_C (cont)	100 A	100 A	100 A
I_C (pk)	120 A	120 A	120 A
I_B (cont)	15 A	15 A	15 A
I_B (pk)	20 A	20 A	20 A
P_D (100°C Case)(TO-114)	200 W	200 W	200 W
P_D (100°C Case)(TO-68)	166 W	166 W	166 W
$T_{(STG)}$		–65°C to +200°C	
$T_{(OPR)}$		–65°C to +200°C	

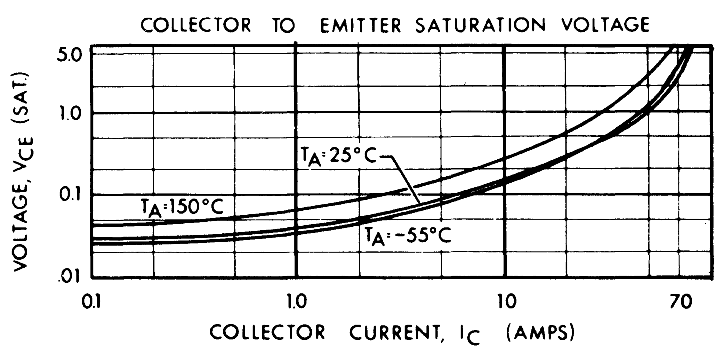
ELECTRICAL CHARACTERISTICS (@ 25°C)

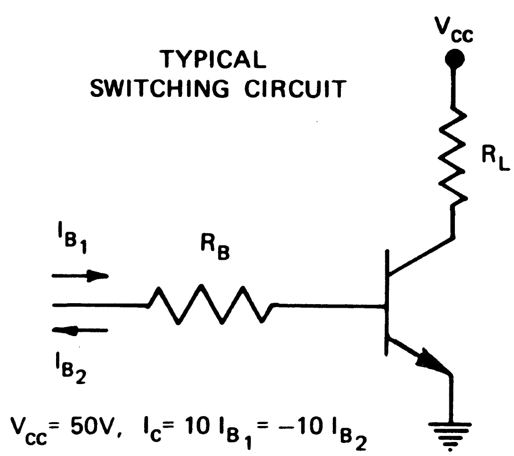
PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	TYPE
I_{EBO}		10	μA	$V_{EB} = 8$ V	ALL
I_{CBO}		1.0	μA	$V_{CB} = 40$ V	SDT96901, SDT96501
		1.0	μA	$V_{CB} = 80$ V	SDT96902, SDT96502
		1.0	μA	$V_{CB} = 120$ V	SDT96903, SDT96503
I_{CEO}		1.0	mA	$V_{CE} = 40$ V	SDT96901, SDT96501
		1.0	mA	$V_{CE} = 80$ V	SDT96902, SDT96502
		1.0	mA	$V_{CE} = 120$ V	SDT96903, SDT96503
BV_{CBO}	80		V	$I_c = 100\,\mu$A	SDT96901, SDT96501
	120		V	$I_c = 100\,\mu$A	SDT96902, SDT96502
	160		V	$I_c = 100\,\mu$A	SDT96903, SDT96503
BV_{CEO}(sus)	60		V	$I_c = 200$ mA	SDT96901, SDT96501
	100		V	$I_c = 200$ mA	SDT96902, SDT96502
	140		V	$I_c = 200$ mA	SDT96903, SDT96503
h_{FE}	10			$I_c = 70$ A, $V_{CE} = 5$ V	ALL
	5			$I_c = 90$ A, $V_{CE} = 5$ V	ALL
V_{CE}(sat)		1.8	V	$I_c = 70$ A, $I_B = 7$A	ALL
V_{BE}(sat)		2.2	V	$I_c = 70$A, $I_B = 7$A	ALL
h_{fe}	10			I_c=5A, V_{CE}=10V, f = 1 MHz	ALL
C_{OB}		600	pf	$V_{CB} = 10$ V, f = 1 MHz	ALL

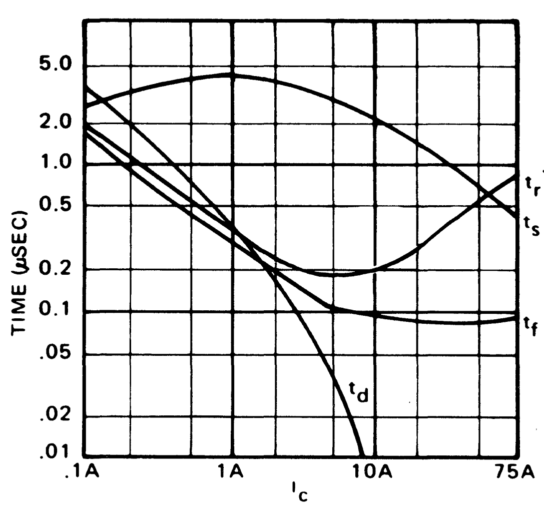
TYPICAL CHARACTERISTIC CURVES





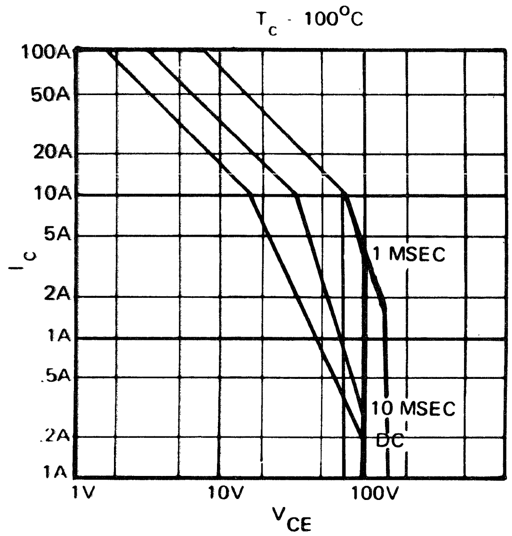




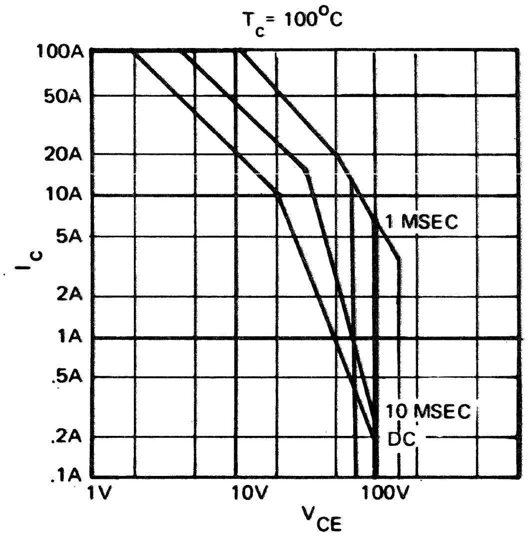


SWITCHING TIME vs I_C

MAXIMUM OPERATING AREAS



TO-68



TO-114

SOLITRON FACILITIES

TAPPAN, N. Y.
256 Oak Tree Road
914 / 359-5050

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311

Hi Rel Power Transistors
Si. & Ge. Power Transistors
PNP-NPN Industrial Transistors

PORT SALERNO, FLA.
Cove Road
305 / 287-5000

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

SAN DIEGO, CALIF.
8808 Balboa Avenue
714 / 278-8780

FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

JUPITER, FLA.
1440 W. Indiantown Rd.
305 / 746-8311

Microwave Stripline
Microwave Semiconductors
RF Transistors
Microwave Integrated Circuits

When you think of semiconductors ... think Solitron!

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

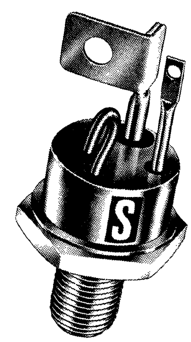
TO-114	TO-68
SDT96904	SDT96504
SDT96905	SDT96505
SDT96906	SDT96506

70 AMP

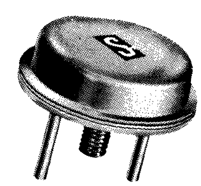
SILICON NPN POWER TRANSISTORS

FEATURES

- Single Chip Planar Construction
- Low V_{CE} (sat) at 40 Amps (1.6 V Typ.)
- High h_{FE} at 40 Amps (20 Typ.)
- From same generic family as JAN2N5250



TO-114



TO-68

ABSOLUTE MAXIMUM RATINGS

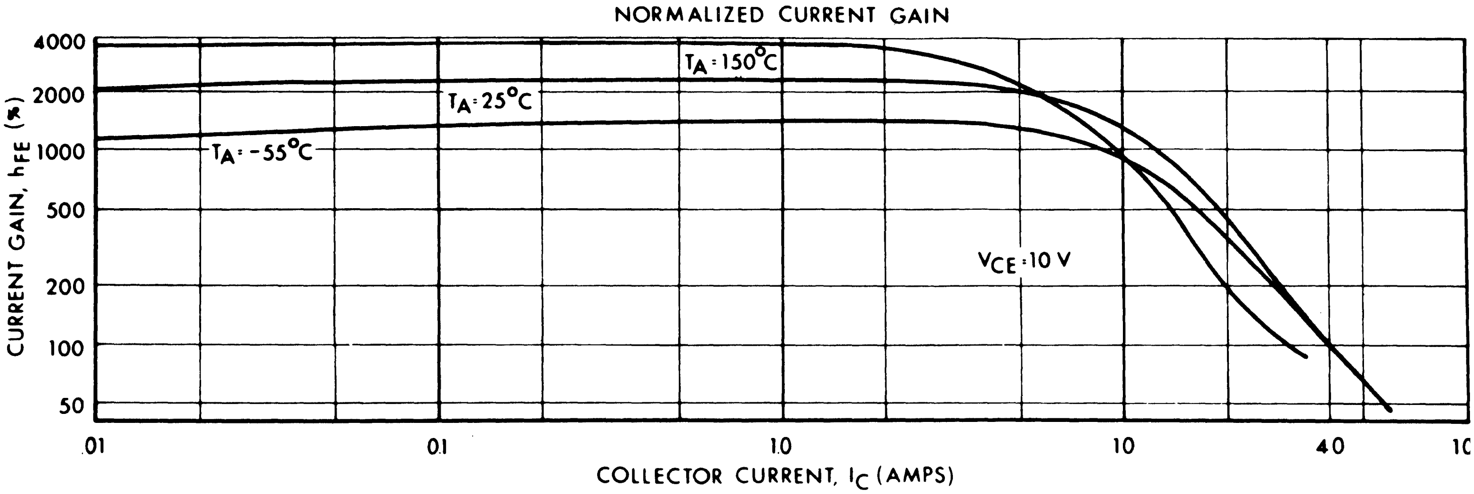
	SDT96904 SDT96504	SDT96905 SDT96505	SDT96906 SDT96506
BV_{CBO}	225 V	275 V	325 V
BV_{CEO}	200 V	250 V	300 V
BV_{EBO}	10 V	10 V	10 V
I_C (cont)	50 A	50 A	50 A
I_C (pk)	70 A	70 A	70 A
I_B (cont)	10 A	10 A	10 A
I_B (pk)	15 A	15 A	15 A
P_D (100°C Case)(TO-114)	200 W	200 W	200 W
P_D (100°C Case)(TO-68)	166 W	166 W	166 W
$T_{(STG)}$		−65°C to +200°C	
$T_{(OPR)}$		−65°C to +200°C	

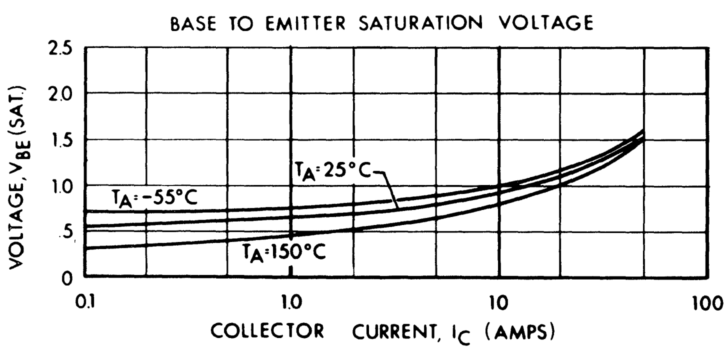
ELECTRICAL CHARACTERISTICS (@ 25°C)

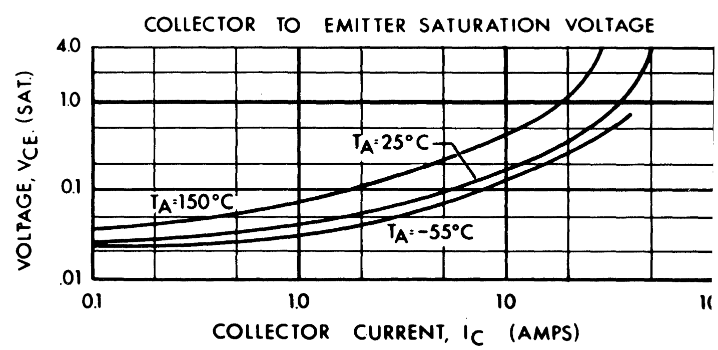
PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	TYPE
I_{EBO}		10	μA	V_{EB} = 8 V	ALL
I_{CBO}		1.0	μA	V_{CB} = 150 V	SDT96904, SDT96504
		1.0	μA	V_{CB} = 200 V	SDT96905, SDT96505
		1.0	μA	V_{CB} = 250 V	SDT96906, SDT96506
I_{CEO}		1.0	mA	V_{CE} = 150 V	SDT96904, SDT96504
		1.0	mA	V_{CE} = 200 V	SDT96905, SDT96505
		1.0	mA	V_{CE} = 250 V	SDT96906, SDT96506
BV_{CBO}	225		V	I_c = 100 μA	SDT96904, SDT96504
	275		V	I_c = 100 μA	SDT96905, SDT96505
	325		V	I_c = 100 μA	SDT96906, SDT96506
*BV_{CEO}(sus)	200		V	I_c = 200 mA	SDT96904, SDT96504
	250		V	I_c = 200 mA	SDT96905, SDT96505
	300		V	I_c = 200 mA	SDT96906, SDT96506
*h_{FE}	8	40		I_c = 40A, V_{CE}= 10V	ALL
	5			I_c = 50A, V_{CE}= 10V	ALL
*V_{CE}(sat)		2.0	V	I_c = 40A, I_B= 8A	ALL
*V_{BE}(sat)		2.2	V	I_c = 40A, I_B= 8A	ALL
h_{fe}	10			I_c=5A, V_{CE}=10V, f= 1 MHz	ALL
C_{OB}		600	pf	V_{CB}= 10V, f = 1 MHz	ALL

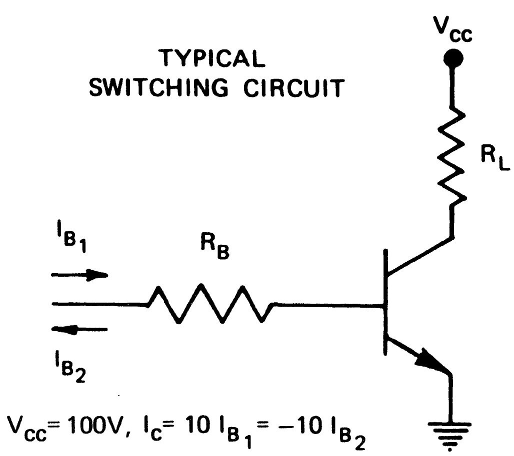
Pulse width ≤ 300 μsec, Duty Cycle ≤ 2%.

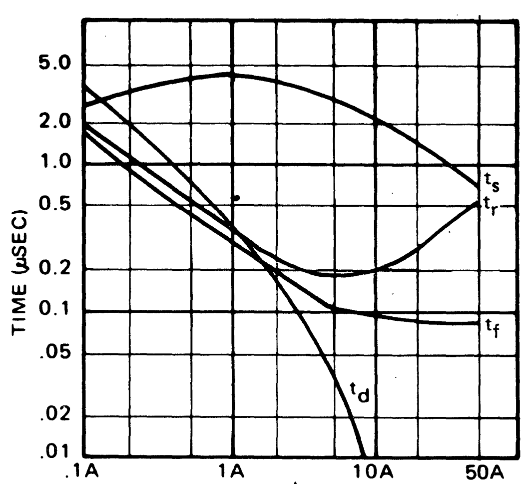
TYPICAL CHARACTERISTIC CURVES





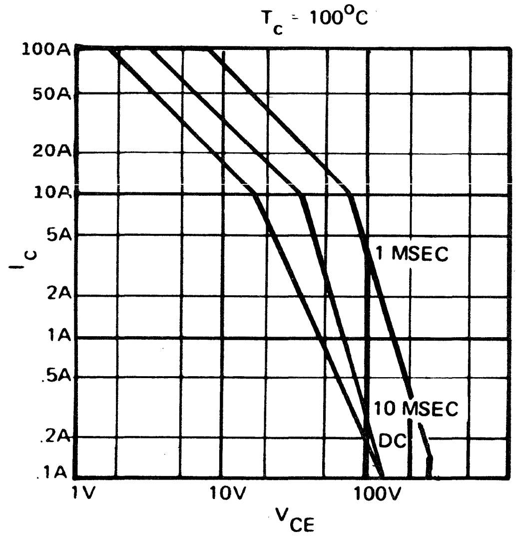




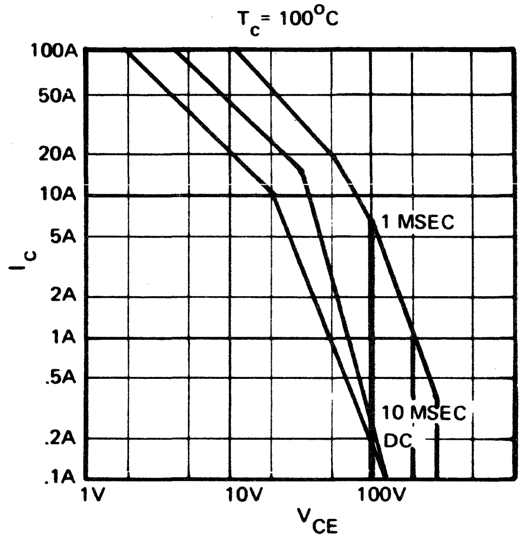


SWITCHING TIME vs I_c

MAXIMUM OPERATING AREAS



TO-68



TO-114

SOLITRON FACILITIES

TAPPAN, N. Y.
256 Oak Tree Road
914 / 359-5050

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311

Hi Rel Power Transistors
Si. & Ge. Power Transistors
PNP-NPN Industrial Transistors

PORT SALERNO, FLA.
Cove Road
305 / 287-5000

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

SAN DIEGO, CALIF.
8808 Balboa Avenue
714 / 278-8780

FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

JUPITER, FLA.
1440 W. Indiantown Rd.
305 / 746-8311

Microwave Stripline
Microwave Semiconductors
RF Transistors
Microwave Integrated Circuits

SP 3439
SP 3440

NPN SILICON POWER TRANSISTORS

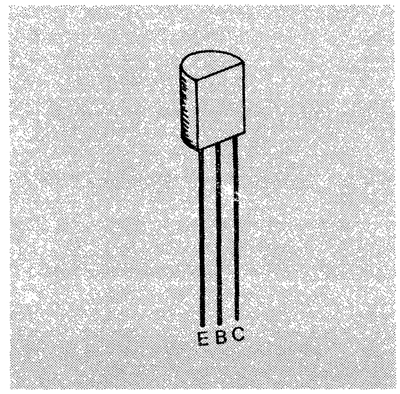
1 AMPERE

TO-92 CASE

SIMILAR TO:
JEDEC 2N 3439 AND 2N 3440

PNP COMPLIMENTS:

SP 5415
SP 5416



TO-92

ABSOLUTE MAXIMUM RATINGS

		SP 3439	SP 3440
V_{CBO}	COLLECTOR-BASE VOLTAGE	450V	300V
V_{CEO} (sus)	COLLECTOR-EMITTER VOLTAGE	350V	250V
V_{EBO}	EMITTER-BASE VOLTAGE	7V	7V
I_C(PK)	PEAK COLLECTOR CURRENT	1A	1A
I_B	BASE CURRENT	0.5A	0.5A
T_J	OPERATING JUNCTION TEMPERATURE	–55°C to +150°C	
T_{stg}	STORAGE TEMPERATURE	–55°C to +150°C	
P_D	POWER DISSIPATION (T_A=25°C)	900mW	900mW

ELECTRICAL CHARACTERISTICS (T_C = 25°C)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR CUTOFF CURRENT, BASE OPEN SP 3439 V_{CE} = 300V SP 3440 V_{CE} = 200V	I_{CEO}		20 50	μA μA
COLLECTOR CUTOFF CURRENT, BASE EMITTER JUNCTION, REVERSE BIASED SP 3439 V_{CE} = 450V, V_{BE} = -1.5V SP 3440 V_{CE} = 300V, V_{BE} = -1.5V	I_{CEV}		500 500	μA μA
EMITTER CUTOFF CURRENT V_{EB} = 6V	I_{EBO}		20	μA
DC CURRENT GAIN SP 3439/3440 V_{CE} = 10V, I_C = 20mA* SP 3439 V_{CE} = 10V, I_C = 2mA*	h_{FE}	40 30	160	
COLLECTOR EMITTER SUSTAINING VOLTAGE SP 3439 I_C = 50mA** SP 3440	$V_{CEO(sus)}$	350 250		V V
BASE EMITTER SATURATION VOLTAGE I_C = 50mA, I_B = 4mA	$V_{BE(sat)}$		1.3	V
COLLECTOR EMITTER SATURATION VOLTAGE I_C = 50mA, I_B = 4mA*	$V_{CE(sat)}$		0.5	V
COMMON EMITTER, SMALL SIGNAL SHORT CIRCUIT, FORWARD CURRENT TRANSFER RATIO I_C = 5mA, V_{CE} = 10V, f = 1KHz	h_{fe}	25		
TRANSITION FREQUENCY I_C = 10mA, V_{CE} = 10V, $f_{(test)}$ = 5MHz	f_T	15		MHz
OUTPUT CAPACITANCE V_{CB} = 10V, I_E = 0V, $f_{(test)}$ = 1MHz	C_{obo}		10	pF
THERMAL RESISTANCE JUNCTION-TO-AMBIENT (Above 25°C derate 7.25mW/°C)	Θ_{J-A}		0.140	°C/mW

* Pulsed - 30μs - 2%

** Pulsed - Inductive Sweep 60Hz

SECTION 2

NPN POWER TRANSISTORS

2N Devices

5 AMP SILICON PLANAR NPN POWER TRANSISTORS

2N2879 2N2880

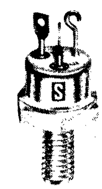
S P E C I F I C A T I O N S

DESIGNED-IN ADVANTAGES

Greater Gain Stability — planar fabrication techniques give these new Solitron transistors unusually consistent gain, even across a wide range of currents. Gain is flat from below 50 milliamps to above 1 amp.

Fast Switching — shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents.

High Frequency Response — a minimum gain cutoff frequency of 40 mc makes these transistors desirable for high power, high frequency switching and amplifier application.



TO 111

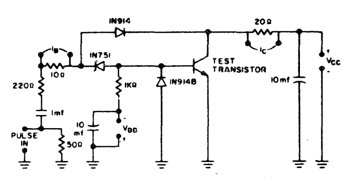
ABSOLUTE MAXIMUM RATINGS

Collector-to-Base Voltage	
2N2879	80 Vdc max.
2N2880	100 Vdc max.
Collector-to-Emitter Voltage	
2N2879	60 Vdc max.
2N2880	80 Vdc max.
Emitter-to-Base Voltage	
2N2879, 2N2880	8 Vdc max.
Collector Current	5 Adc max.
Base Current	0.5 Adc max.
Thermal Resistance, Junction to Case	3.33 ^{o}C/W
Total Dissipation at I_C (max.)[1]	
100^{o}C Case Temperature	30 W max.
Operating Junction Temperature	200 ^{o}C max.
Storage Temperature Range	–65 to +200^{o}C

NOTE.
1. See safe operating area curves for derating.

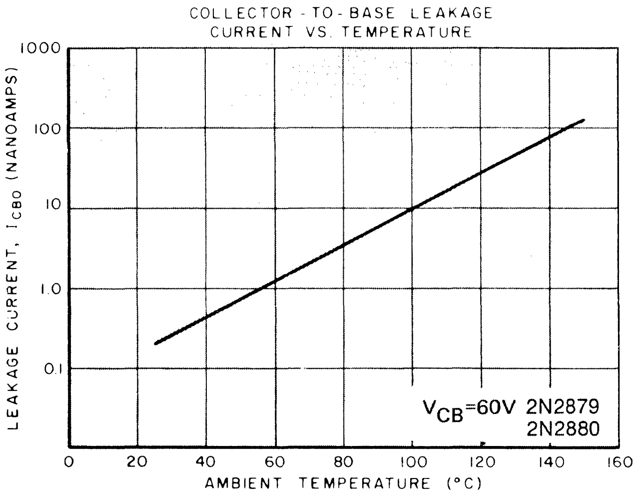
Solitron DEVICES, INC. /TRANSISTOR DIVISION

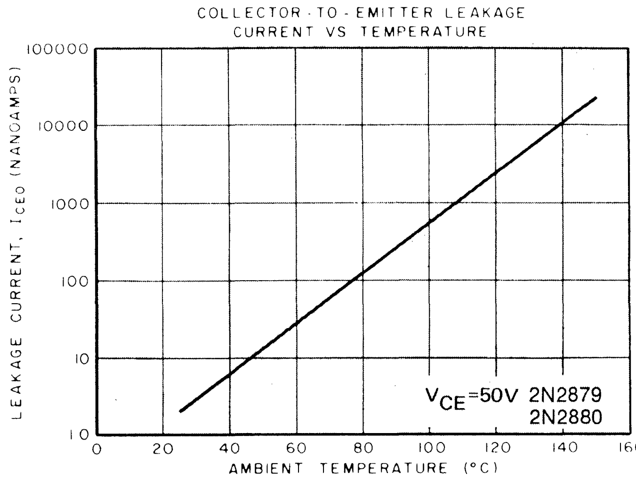
ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise noted.

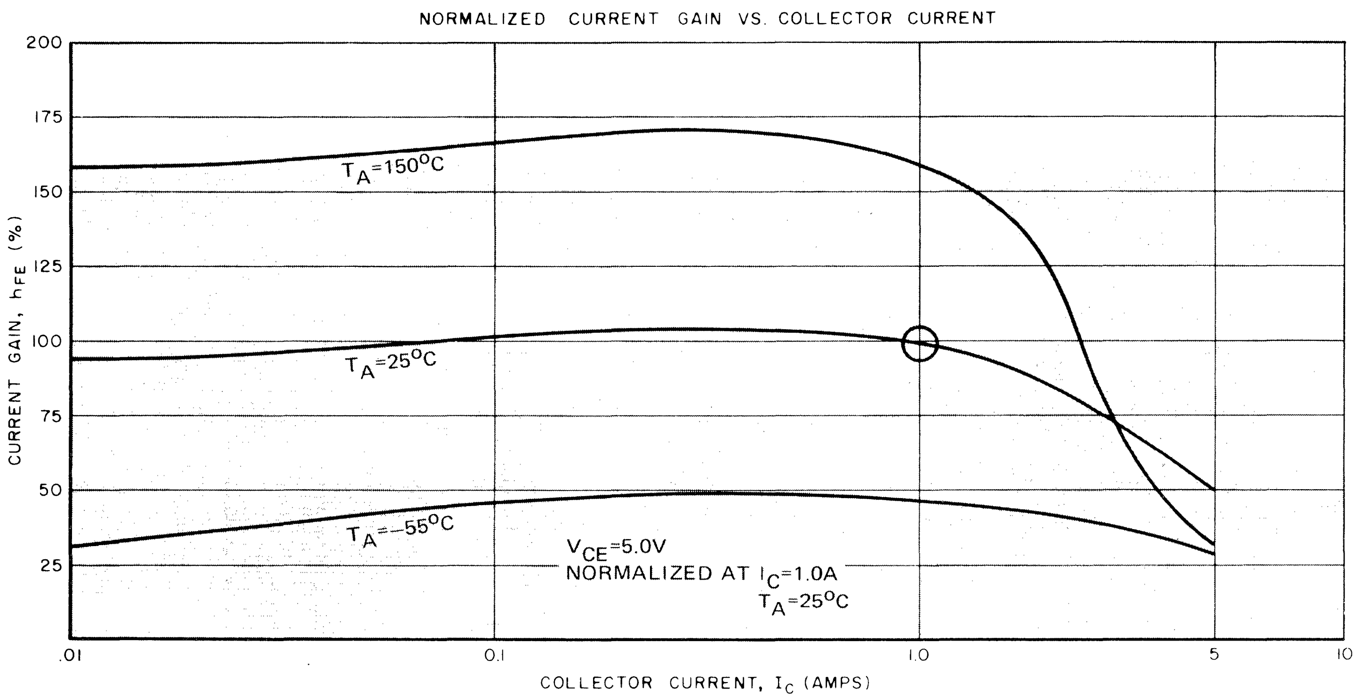
SYMBOL	MIN.	MAX.	UNIT	CONDITIONS
h_{FE} (1)	40 15 15 30	120		I_C = 1A, V_{CE} = 2V I_C = 1A, V_{CE} = 2V, T_C = –55°C I_C = 5A, V_{CE} = 2V I_C = 10mA, V_{CE} = 2V
V_{CE}(sat) (1)		0.25 2.0	Vdc Vdc	I_C = 1A, I_B = 0.1A I_C = 5A, I_B = 0.5A
V_{BE} (1)		1.2	Vdc	I_C = 1A, V_{CE} = 5 V
V_{BE}(sat) (1)		1.2	Vdc	I_C = 1A, I_B = 0.1A
BV_{CBO}	80 100		Vdc Vdc	I_C = 10 μA, I_E = 0 2N2879 2N2880
BV_{CEO}	60 80		Vdc Vdc	I_C = 10mA, I_B = 0 2N2879 2N2880
BV_{EBO}	8		Vdc	I_E = 10 μA, I_C = 0 2N2879, 2N2880
V_{CEO}(sust) (1) (Collector-to-Emitter Sustain Voltage)	50 70		Vdc Vdc	I_C = 100mA, I_B = 0 2N2879 2N2880
I_{CEX} (Collector Cutoff Current, Reverse Bias)		10 10 50	μA μA μA	V_{EB} = 0.5 V 2N2879 @ V_{CE} = 80V 2N2880 @ V_{CE} = 100V 2N2879, 2N2880 @ V_{CE} = 60V, T_C = 150°C
I_{CBO}		0.1	μA	I_E = 0 2N2879, 2N2880 @ V_{CB} = 60V
I_{EBO}		0.1	μA	V_{EB} = 5V, I_C = 0
I_{CEO}		100	μA	I_B = 0 2N2879, 2N2880 @ V_{CE} = 50V
h_{fe} (High Frequency Small Signal)	4			V_{CE} = 10V, I_C = 1A, f= 10mc
h_{fe} (Small Signal)	40	140		V_{CE} = 5V, I_E = 50mA, f= 1kc
C_{ob}		150	pf	V_{CB} = 10V, I_E = 0, f= 1mc
t_r (Pulse Rise Time)		80	nsec	
t_s (Pulse Storage Time)		60	nsec	
t_f (Pulse Fall Time)		80	nsec	

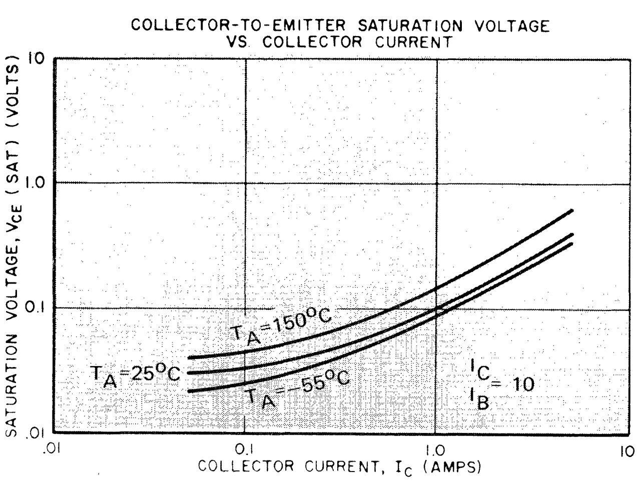
NOTE: 1. Pulse measurement conditions: length ≤ 330 μsec; duty cycle 2%.

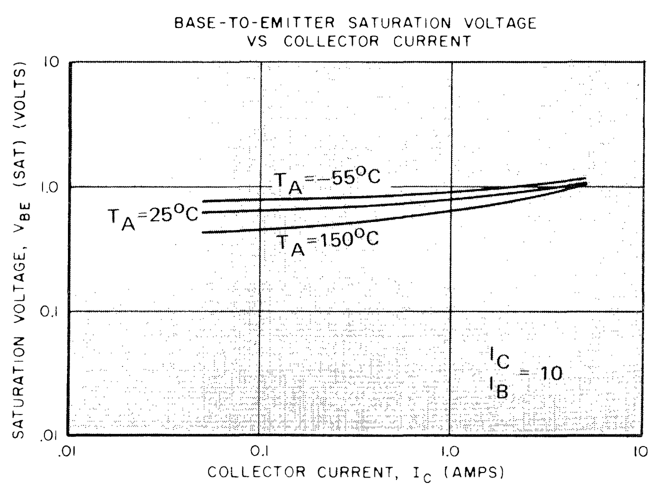
TYPICAL CHARACTERISTICS



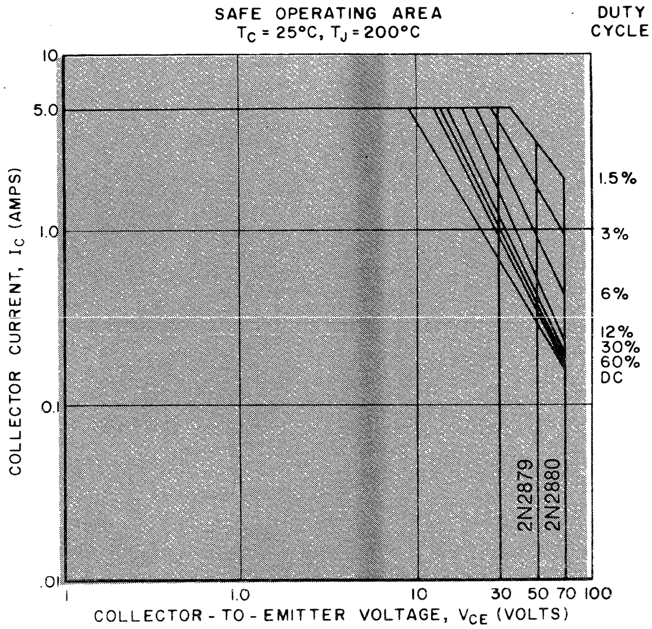


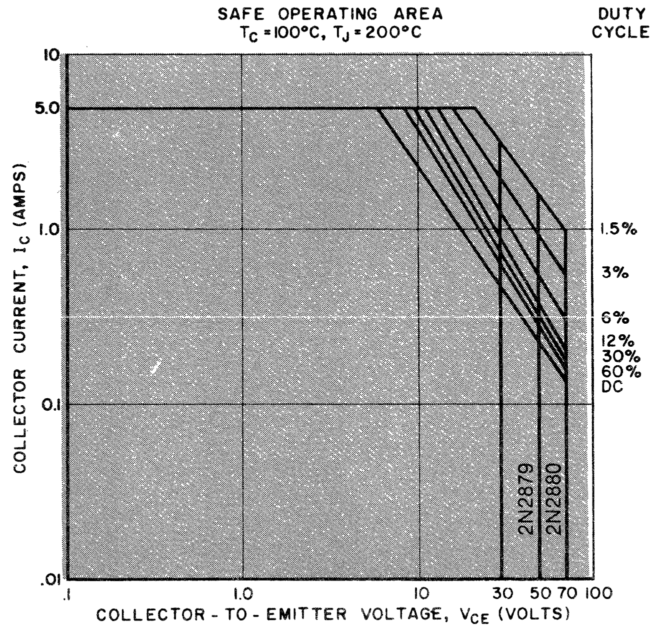






TYPICAL CHARACTERISTICS, continued





MOUNTING

It is very important that a power transistor be provided with a good heat dissipating facility. The surface to which the transistor is attached must be flat and free from burrs. The nut must be tightened securely (16 in.-lb. minimum to 23 in.-lb. maximum torque limit when used against a metal chassis, provided that all parts are clean and dry).

SOLITRON FACILITIES

TAPPAN, N.Y.
256 Oak Tree Road
714 / 278-8780

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311

PORT SALERNO, FLA.
Cove Road
305 / 833-6528

SAN DIEGO, CAL.
8808 Balboa Avenue
714 / 278-8780

LONG ISLAND CITY, N.Y.
37-11 47th Ave.
212 / 937-0400

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

2N3055
2N3055/1 to 10
SDT9201 to SDT9210

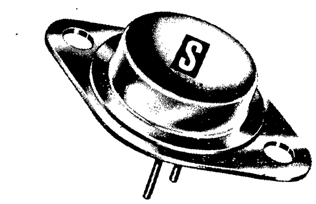
15 AMP SINGLE DIFFUSED

SILICON NPN POWER TRANSISTORS

DESIGNED-IN ADVANTAGES

Low Saturation Voltage typically 0.3 volts at I_C = 4 amps.
High Typical Gain
Useable gains at high current levels
Freedom from Secondary Breakdown
100% tested at power rating

These single diffused 15 amp Silicon Transistors provide a complete family of voltage ranges ideal for applications such as Stereo Amplifiers, Regulators and Power Supply Systems.



TO-3

ABSOLUTE MAXIMUM RATINGS

		2N3055									
	2N3055	/1	/2	/3	/4	/5	/6	/7	/8	/9	/10
BV_{CEX}(V)	100	40	40	100	30	30	100	100	100	55	55
BV_{CEO}(SUS)(V)	60	30	30	60	20	20	60	60	60	45	45
BV_{EBO}(V)	7	7	7	7	7	7	7	7	7	7	7

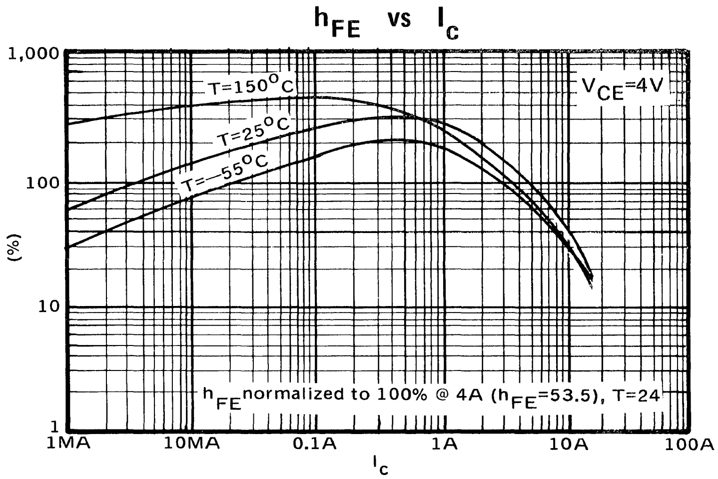
	SDT									
	9201	9202	9203	9204	9205	9206	9207	9208	9209	9210
BV_{CEX}(V)	55	100	120	140	55	80	100	120	140	40
BV_{CEO}(SUS)(V)	45	80	100	120	45	60	80	100	120	30
BV_{EBO}(V)	12	12	12	12	12	12	12	12	12	5

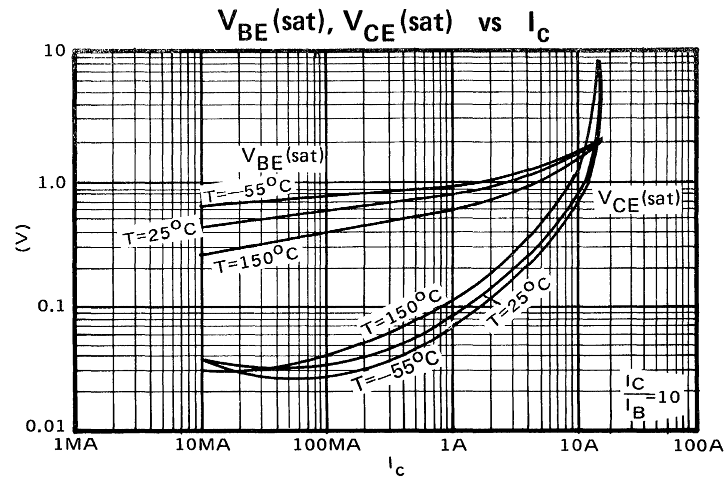
I_C(MAX)	15 A	All types
I_B(MAX)	7 A	All types
P_T (25°C Case)	117 W	All types
Thermal Resistance	1.5 °C/W	All types
Operating Junction Temperature . . .	200 °C	All types
Storage Temperature Range	−65°C to +200°C	All types

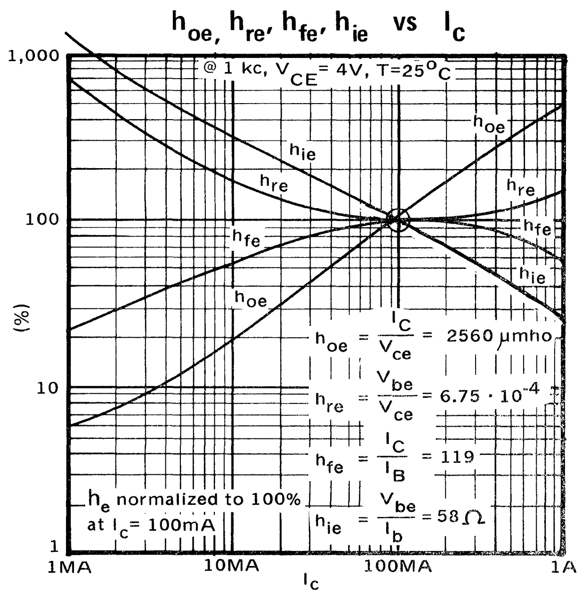
ELECTRICAL CHARACTERISTICS: T_C= 25°C unless otherwise specified

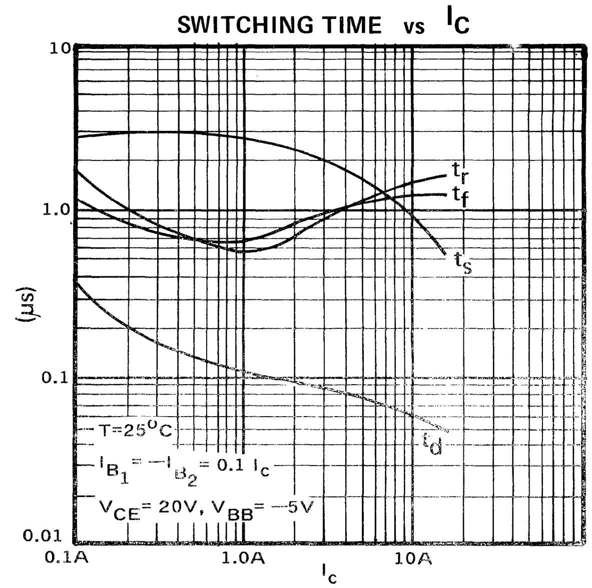
PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	TYPES
V_{CEO}* (sus)	20		V	I_c= 200mA	2N3055/4, /5
	30		V	"	2N3055/1, /2, SDT9210
	45		V	"	2N3055/9, /10, SDT9201, 9205
	60		V	"	2N3055, /3, /6, /7, /8, SDT9206
	80		V	"	SDT9202, 9207
	100		V	"	SDT9203, 9208
	120		V	"	SDT9204, 9209
V_{CEX}	30		V	I_c=5.0mA, V_{BE}=—1.5V	2N3055/4, /5
	40		V	"	2N3055/1, /2, SDT9210
	55		V	"	2N3055/9, /10, SDT9201, 9205
	80		V	"	SDT9206
	100		V	"	2N3055, /3, /6, /7, /8, SDT9202,
	120		V	"	SDT9203, 9208
	140		V	"	SDT9204, 9209
I_{CEX}		30	mA	V_{CE}=40V, V_{BE}=—1.5V, T_c=150°C	SDT9210
		30	mA	55V	SDT9201, 9205
		30	mA	80V	SDT9206
		30	mA	100V	2N3055, SDT9202, 9207
		30	mA	120V	SDT9203, 9208
		30	mA	140V	SDT9204, 9209
I_{CEO}		0.7	mA	V_{CE}=30V	2N3055, SDT9202-4, 9206-9
		2.0	mA	30V	SDT9201, 9205
		5.0	mA	V_{CE}=20V	SDT9210
I_{EBO}		5.0	mA	V_{EB}=5.0V	SDT9210
		5.0	mA	7.0V	2N3055
		5.0	mA	12.0V	SDT9201-9209
h_{FE}*	15			I_c=2.0A, V_{CE}=2.0V	SDT9210
	10	70		I_c=3.0A, V_{CE}=4.0V	2N3055/2
	14	70		"	2N3055/7, /9
	20	70		"	2N3055/1, /3
	30	70		"	2N3055/4
	14			I_c=4.0A, V_{CE}=4.0V	2N3055/5
	15	70		"	2N3055/6, SDT9205-9
	20	70		"	2N3055, SDT9201-4
	70			"	2N3055/8, /10
	5			I_c=8.0A, V_{CE}=4.0V	SDT9205-9
	5			I_c=10.0A, V_{CE}=4.0V	2N3055, SDT9201-4
V_{CE}(sat)*		1.1	V	I_c=2.0A, I_B=200mA	SDT9210
		1.5	V	I_c=4.0A, I_B=400mA	2N3055/1-/5
		1.1	V	"	2N3055, /6-/10, SDT9201-9
V_{BE}(on)*		1.8	V	I_c=2.0A, V_{CE}=2.0V	SDT9210
		2.0	V	I_c=4.0A, V_{CE}=4.0V	2N3055/1-/5
		1.8	V	"	2N3055, /6-/10, SDT9201-9
f_T	800		KHz	I_c=1.0A, V_{CE}=4.0V	ALL

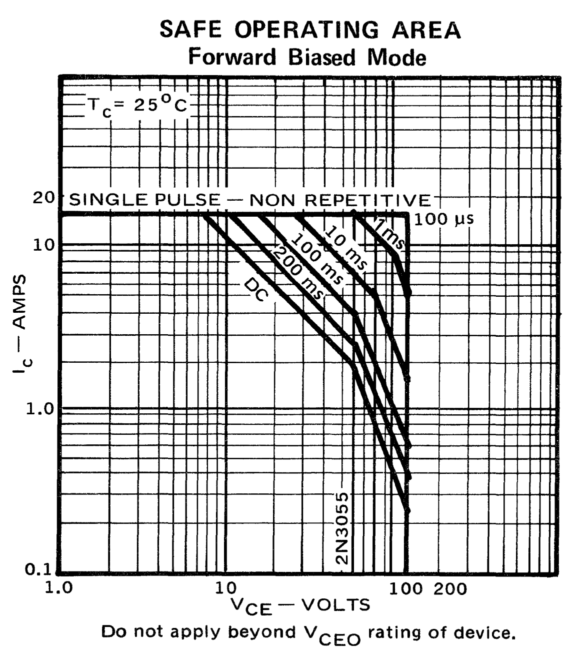
*Pulse width ≤ 300 μs, Duty Cycle ≤ 2%



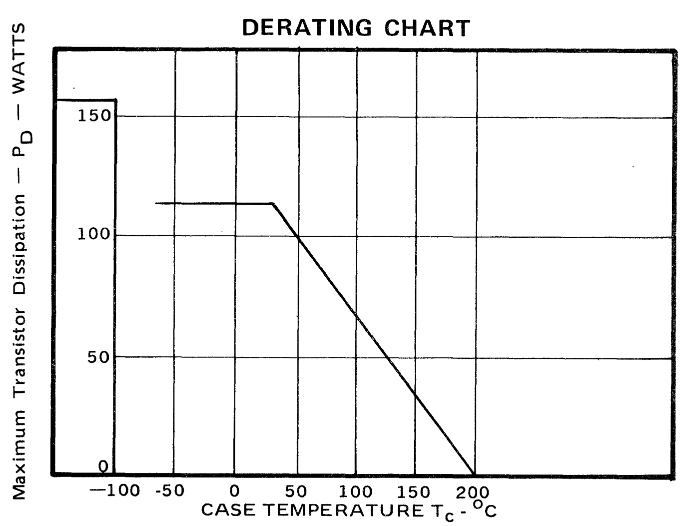




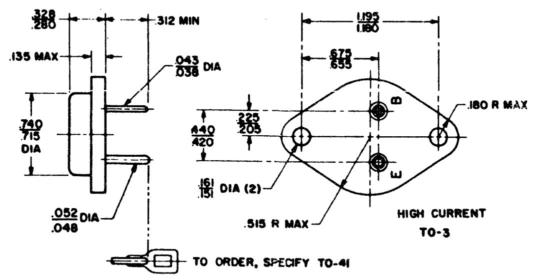




Do not apply beyond V_{CEO} rating of device.



OUTLINE DIMENSIONS TO-3



NOTES:
1. Collector is electrically common to case.
2. All dimensions in inches

SOLITRON FACILITIES

TAPPAN, N. Y.
256 Oak Tree Road
914 / 359-5050

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311

Hi Rel Power Transistors
Si. & Ge. Power Transistors
PNP-NPN Industrial Transistors

PORT SALERNO, FLA.
Cove Road
305 / 833-6528

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

SAN DIEGO, CALIF.
8808 Balboa Avenue
714 / 278-8780

FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

JUPITER, FLA.
1440 W. Indiantown Rd.
305 / 746-8311

Microwave Stripline
Microwave Semiconductors
RF Transistors
Microwave Integrated Circuits

SOLITRON REGIONAL OFFICES

NORTHEAST
52 Pickering Street
Needham, Massachusetts 92192
Telephone (617) 444-1152, TWX (710) 325-7514

MIDWEST
Suite 218, O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone (312) 842-8127, TWX (910) 233-2634

WESTERN
20944 Sherman Way, Suite 112
Canoga Park, California 91303
Telephone (213) 833-3822, TWX (910) 494-1238

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone (305) 848-4311, TWX (510) 952-7610

SOUTHWEST
10511 Church Road, Suite No. 1
Dallas, Texas
Telephone (214) 363-7921

EUROPE
Solidev Ltd.
Sevenoaks, Kent, England
Telephone (Sevenoaks) 57541/2/3
Cable – Solitron Svoaks, Telex. # 95378

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

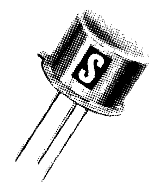
2N3440*
2N3439*

1 AMP HIGH VOLTAGE

PNP COMPLEMENTS:
2N5415, 2N5416

NPN SILICON POWER TRANSISTOR

HIGH SPEED SWITCHING AND
LINEAR AMPLIFIER APPLICATIONS
IN INDUSTRIAL, COMMERCIAL & MILITARY EQUIPMENT



TO-39*

*Exception

ABSOLUTE MAXIMUM RATINGS

@ 25°C (unless otherwise noted)

PARAMETER	2N3439	2N3440	UNITS
V_{CBO}	450	300	V
V_{CEO}(sus)	350	250	V
V_{EBO}	7	7	V
I_C	1	1	A
I_B	0.5	0.5	A
T_J	−55°C to 200°C		
T_S	−55°C to 200°C		
P_T @ T_C=25°C	10	10	W
PIN temperature (during soldering) at distance ≥ 1/32 in. (0.8mm) from seating plane for 10s max	255	255	°C

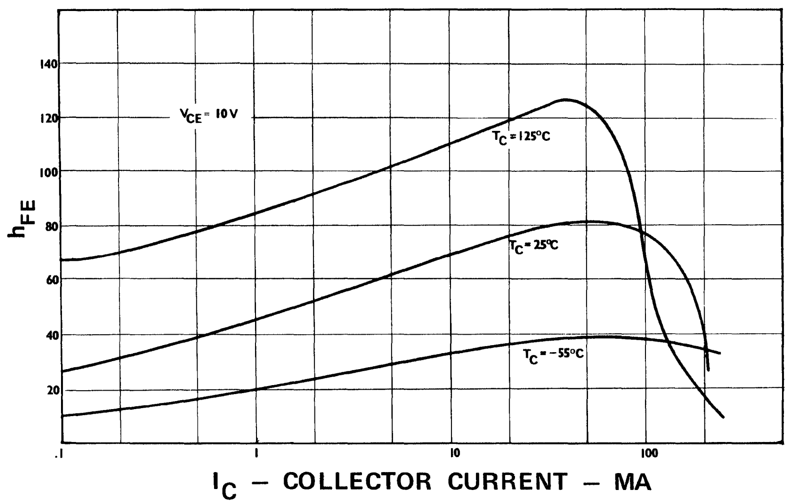
ELECTRICAL CHARACTERISTICS: T_C=25°C unless otherwise specified.

SYMBOL	TEST CONDITIONS: DC Collector Voltage (V) V_{CB}	V_{CE}	DC Emitter or Base Voltage (V) V_{EB}	V_{BE}	DC Current (mA) I_C	I_E	I_B	LIMITS: Types 2N3439 MIN.	MAX.	Types 2N3440 MIN.	MAX.	UNITS
I_{CEO}		300					0	–	20	–	–	μA
		200					0	–	–	–	50	
I_{CEV}		450		−1.5				–	500	–	–	μA
		300		−1.5				–	–	–	500	
I_{EBO}			6		0			–	20	–	20	μA
h_{FE}		10			20			40	160	40	160	
		10			2			30	–	–	–	
V_{CEO}(sus)					50		0	350[a]	–	250[a]	–	V
V_{BE}(sat)					50		4	–	1.3	–	1.3	V
V_{CE}(sat)					50		4	–	0.5	–	0.5	V
$\|h_{fe}\|$ f=5MHz		10			10			3	–	3	–	
h_{fe} f=1KHz		10			5			25	–	25	–	
C_{ibo} f=1MHz			5		0			–	75	–	75	pF
C_{obo} f=1MHz	10					0		–	10	–	10	pF
$I_{S/b}$		200						50	–	50	–	mA
$\Theta_{J\text{-}C}$								–	17.5	–	17.5	°C/W

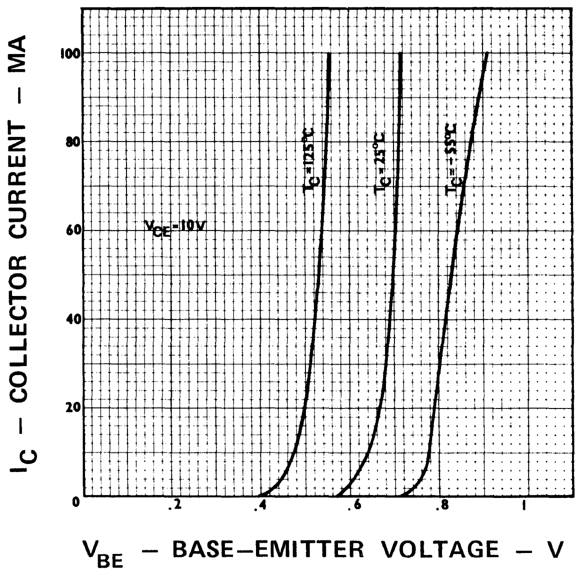
a) The sustaining voltage V_{CEO}(sus) must not be measured on a curve tracer.

CHARACTERISTIC CURVES

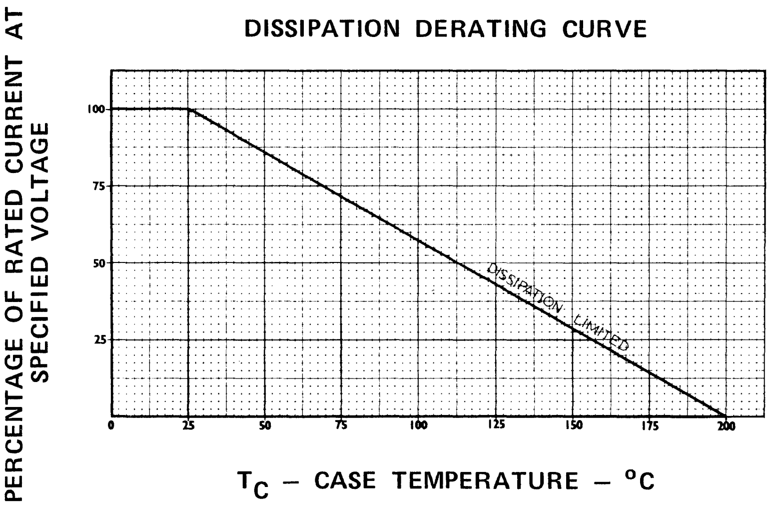
STATIC FORWARD CURRENT TRANSFER RATIO



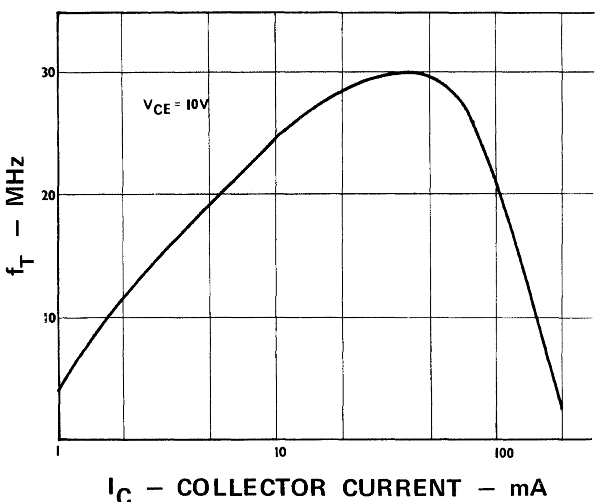
BASE–EMITTER VOLTAGE



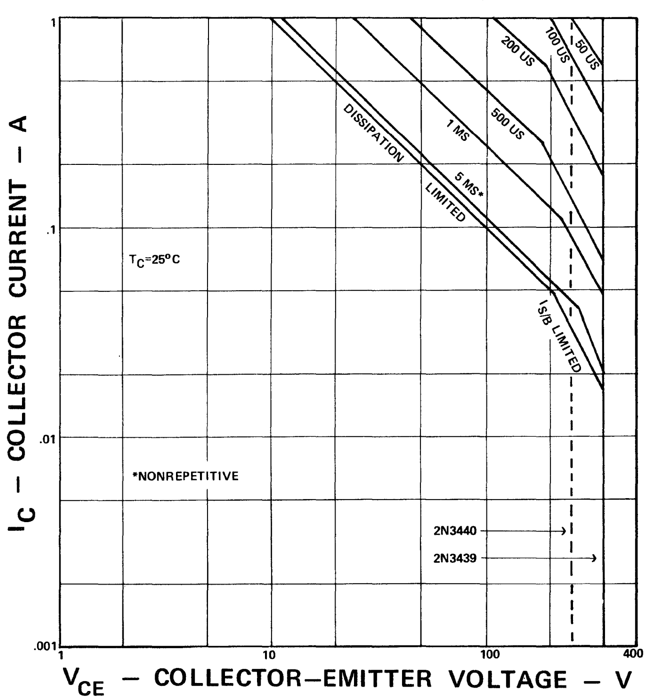
DISSIPATION DERATING CURVE



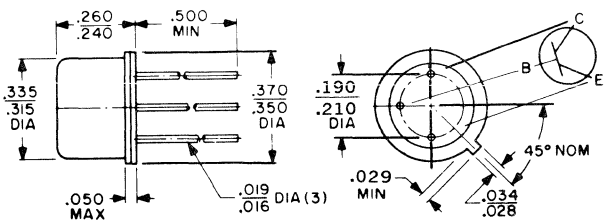
GAIN–BANDWIDTH PRODUCT



SAFE OPERATING AREA



OUTLINE DIMENSIONS (1) (2)



TO-39*

NOTES:

1. Collector is electrically common to case.
2. All dimensions in inches.

*Exception

SOLITRON FACILITIES

TAPPAN, N.Y. 10983
256 Oak Tree Road
Phone 914 / 359-5050
TWX 710 / 576-2654

RIVIERA BEACH, FLA. 33404
1177 Blue Heron Boulevard
Phone 305 / 848-4311
TWX 510 / 952-7610

PORT SALERNO, FLA. 33492
Cove Road, P.O. Box 278
Phone 305 / 287-5000
TWX 510 / 953-7500

SAN DIEGO, CALIF. 92100
8808 Balboa Avenue
Phone 714 / 278-8780
TWX 910 / 335-1221

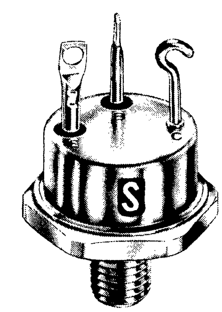
JUPITER, FLA. 33458
1440 West Indiantown Road
Phone 305 / 746-8311

20 AMP SILICON PLANAR NPN POWER TRANSISTORS

2N3597 2N3598 2N3599

S P E C I F I C A T I O N S

DESIGNED-IN ADVANTAGES



TO-63 Actual Size

Greater Gain Linearity — planar fabrication techniques result in unusually constant gain over a wide current range. Gain is essentially flat from below 50 milliamps to over 10 ampere.

Low Saturation Voltage — V_{CE} (SAT) is less than 0.5V at I_C=10A for lower losses in the saturated mode.

Fast Switching — shorter rise, fall, and storage time make these transistors ideal for switching applications that demand high speed at high currents.

High Frequency Response — a minimum gain cutoff frequency of 30 mc makes these transistors desirable for high power, high frequency switching and amplifier applications.

Low Leakage — I_{CBO} is less than 100 nanoamps at V_{CB}= 60V for exceptional circuit stability.

ABSOLUTE MAXIMUM RATINGS

Collector-to-Base Voltage	
2N3597	60 Vdc max.
2N3598	80 Vdc max.
2N3599	100 Vdc max.
Collector-to-Emitter Voltage	
2N3597	40 Vdc max.
2N3598	60 Vdc max.
2N3599	80 Vdc max.
Emitter-to-Base Voltage	8 Vdc max.
Collector Current	20 Adc max.
Base Current	5 Adc max.
Thermal Resistance, Junction to Case	1 °C/W
Total Dissipation at I_C (max.) (1)	
100°C Case Temperature	100 W max.
Operating Junction Temperature	200 °C max.
Storage Temperature Range	–65 to +200°C

NOTE: (1) See safe operating area curves for derating.

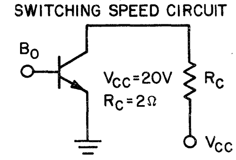
Solitron DEVICES, INC. / TRANSISTOR DIVISION

JUNE 1966

ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise noted.

Symbol	Min.	Max.	Unit	Conditions
h_{FE}[1]	40 20 10 75	120 225		$I_C = 10A, V_{CE} = 2V$ $I_C = 10A, V_{CE} = 2V$ $T_C = -55°C$ $I_C = 20A, V_{CE} = 5V$ $I_C = 50mA, V_{CE} = 2V$
$V_{CE}(sat)$[1]		0.5 1.5	Vdc Vdc	$I_C = 10A,\ I_B = 1A$ $I_C = 20A,\ I_B = 2A$
V_{BE}[1]		1.2	Vdc	$I_C = 10A, V_{CE} = 2V$
$V_{BE}(sat)$[1]		1.5 2.0	Vdc Vdc	$I_C = 10A,\ I_B = 1A$ $I_C = 20A,\ I_B = 2A$
BV_{CBO}	 60 80 100		 Vdc Vdc Vdc	$I_C = 100\mu A,\ I_E = 0$ 2N3597 2N3598 2N3599
BV_{CEO}	 40 60 80		 Vdc Vdc Vdc	$I_C \leq 10mA,\ I_B = 0$ 2N3597 2N3598 2N3599
BV_{EBO}	8		Vdc	$I_E = 100\mu A,\ I_C = 0$
$V_{CEO}(sust)$[1] (Collector-to-Emitter Sustain Voltage)	 30 50 70		 Vdc Vdc Vdc	$I_C = 100mA,\ I_B = 0$ 2N3597 2N3598 2N3599
I_{CEX} (Collector Cutoff Current, Reverse Bias)		 10 10 10 100	 µA µA µA µA	$V_{EB} = 0.5V$ 2N3597 @ $V_{CE} = 60V$ 2N3598 @ $V_{CE} = 80V$ 2N3599 @ $V_{CE} = 100V$ $V_{EB} = 0.5V, V_{CE} = 60V,$ $T = 150°C$ (all types)
I_{CBO}		0.1	µA	$V_{CB} = 60V,\ I_E = 0$
I_{EBO}		0.1	µA	$V_{EB} = 5V,\ I_C = 0$
I_{CEO}		 1.0 1.0 1.0 1.0	 µA µA mA mA	$I_B = 0$ 2N3597 @ $V_{CE} = 30V$ 2N3598, 99 @ $V_{CE} = 50V$ 2N3597 @ $V_{CE} = 30V, T_C = 150°C$ 2N3598, 99 @ $V_{CE} = 50V, T_C = 150°C$
$\|h_{fe}\|$ (High Frequency Small Signal)	3			$V_{CE} = 10V, I_C = 1A, f = 10mc$
h_{fe} (Small Signal)	75	250		$V_{CE} = 5V, I_C = 50mA, f = 1kc$
C_{ob}		700	pf	$V_{CB} = 10V,$ $I_E = 0,$ $f = 1mc$
t_{ON}[2] (Turn On Time)		700	nsec	$I_C = 10A,$ $I_{B1} = 1A,\ I_{BO} = 0$
t_{OFF}[2] (Turn Off Time)		2700	nsec	$I_C = 10A,$ $I_{B1} = I_{B2} = 1A$

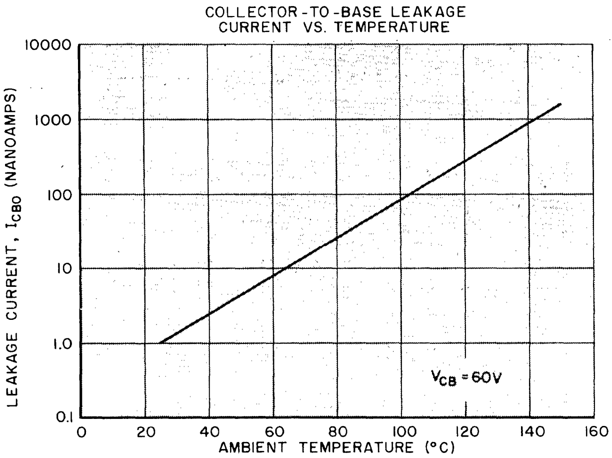
SWITCHING SPEED CIRCUIT

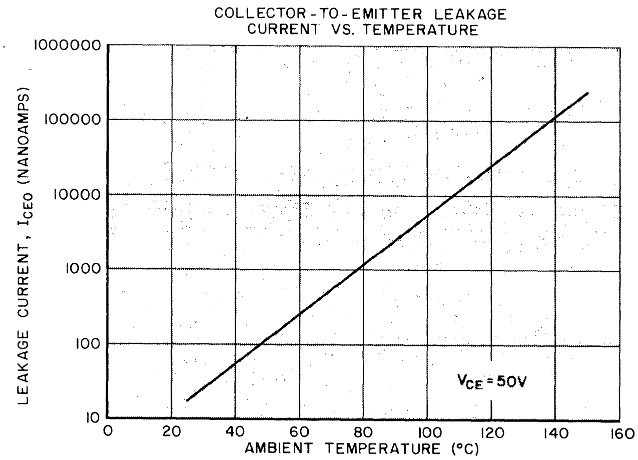


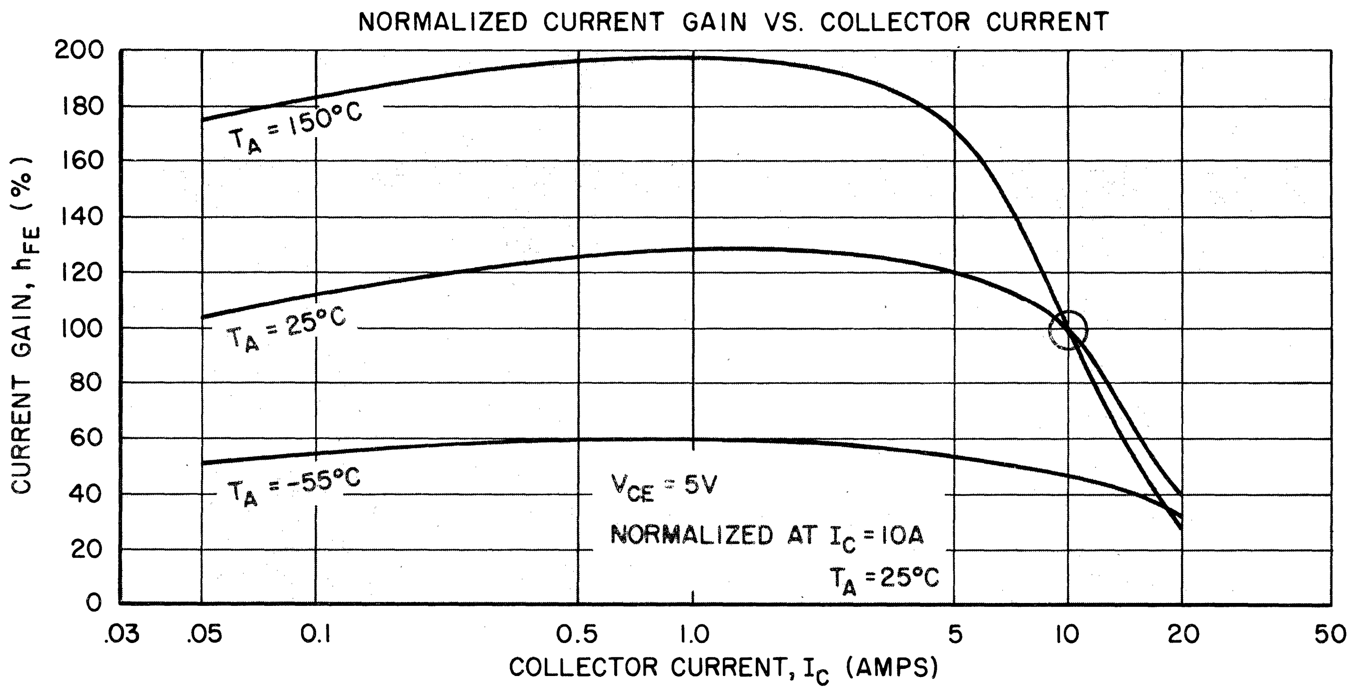
NOTES:

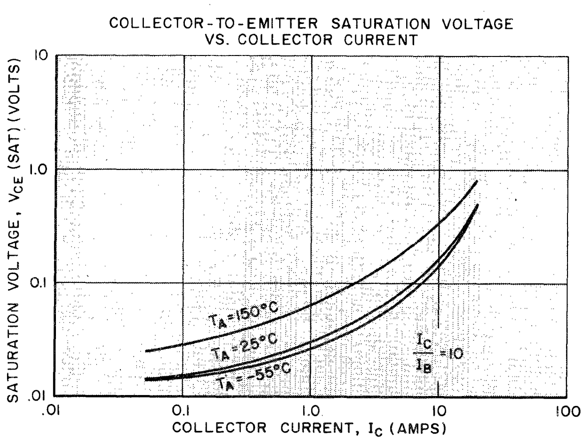
1. Pulse measurement conditions: length ≤ 330 µsec; duty cycle ≤ 2%.
2. All switching circuit resistances are ± 1%. Pulse rate = 500 PPS. Pulse width = 10 µsec. The pulse must be wide enough to prevent any change from affecting storage time. Reference MIL-STD-750, method 3251, test condition A.

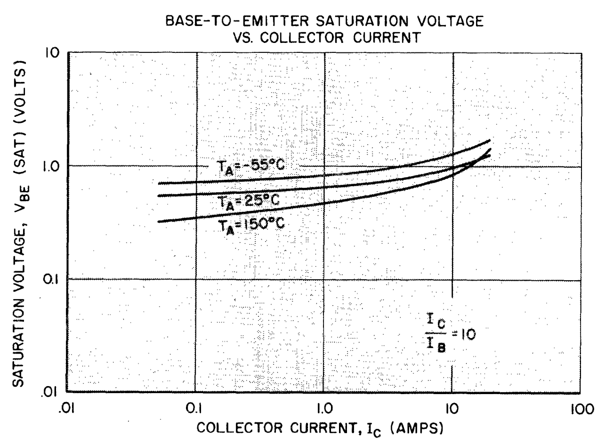
TYPICAL CHARACTERISTICS





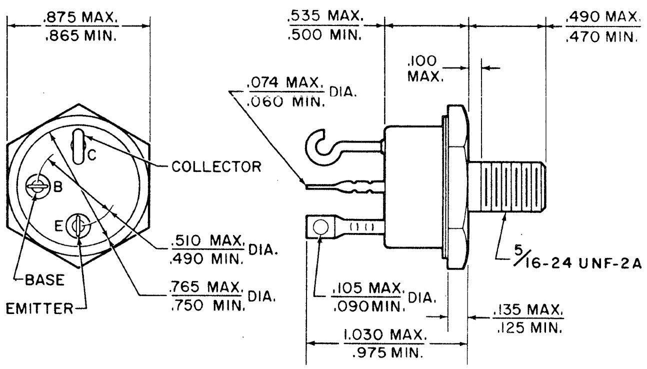






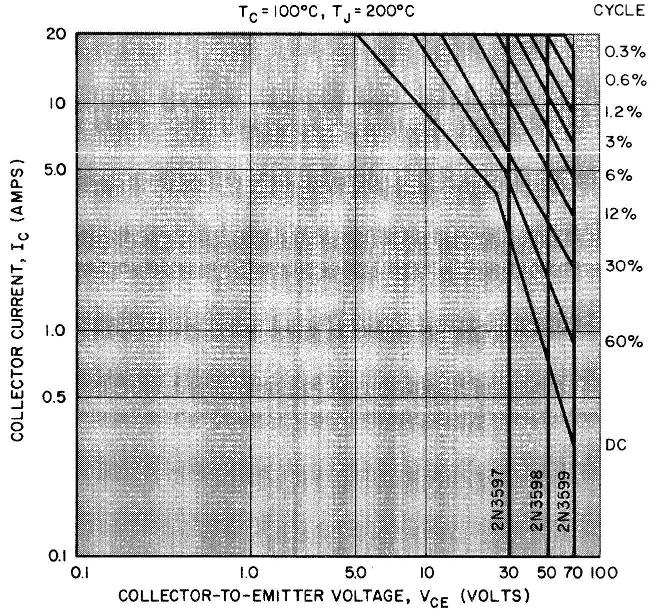
TYPICAL CHARACTERISTICS, continued

OUTLINE DIMENSIONS



TO-63

NOTES: 1. Collector is electrically common to case.
2. All dimensions in inches.



SOLITRON FACILITIES

TAPPAN, N.Y.
256 Oak Tree Road
714 / 278-8780

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

SAN DIEGO, CAL.
8808 Balboa Avenue
714 / 278-8780

FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311

Hi Rel Power Transistors
Si. & Ge. Power Transistors
RF & small Signal Transistors
PNP-NPN Industrial Transistors

LONG ISLAND CITY, N.Y.
37-11 47th Ave.
212 / 937-0400

Microwave Components
Attenuation Devices
Waveguard & Coax Loads
Bolometer Elements
Ferrite & Ferrite Devices
Microwave Semicond.

PORT SALERNO, FLA.
Cove Road
305 / 833-6528

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

NEWTON HIGHLANDS, MASS.
70 Jacconet Street
617 / 527-6438

Plaxial (R) Cable
Precision RF Coax
Cable Assemblies

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone (941) 359-5050, TWX (710) 576-2654

MIDWEST
Suite 218, O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone (312) 842-8127, TWX (910) 233-2634

WESTERN
20944 Sherman Way, Suite 112
Canoga Park, California 91303
Telephone (213) 833-3822, TWX (910) 494-1238

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone (305) 848-4311, TWX (510) 952-6676

SOUTHWEST
10511 Church Road, Suite No. 1
Dallas, Texas
Telephone (214) 363-7921

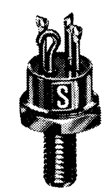
EUROPE
Solidev Ltd.
Sevenoaks, Kent, England
Telephone (Sevenoaks) 57541/2/3
Cable – Solitron Svoaks, Telex. # 95378

5 AMP SILICON PLANAR NPN POWER TRANSISTORS

2N3747 2N3748 2N3749

SPECIFICATIONS

DESIGNED-IN ADVANTAGES



Actual Size

Isolated Collector Package — beryllium oxide wafer electrically isolates the transistor chip from the case, eliminating the need for mica washers and insulating bushings. Design freedom without power derating, simplified production assembly, and increased reliability are all gained by using the isolated-collector package.

Greater Gain Stability — planar fabrication techniques give these new Solitron transistors unusually consistent gain, even across a wide range of currents. Gain is flat from below 50 milliamps to above 1 amp.

Fast Switching — shorter rise, fall, and storage times make these transistors ideal for switching applications that demand high speed at high currents.

High Frequency Response — a minimum gain cutoff frequency of 40 mc makes these transistors desirable for high power, high frequency switching and amplifier application.

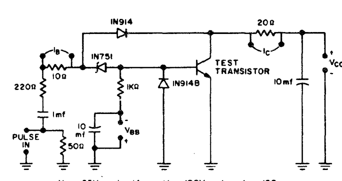
ABSOLUTE MAXIMUM RATINGS

Collector-to-Base Voltage	
2N3747	60 Vdc max.
2N3748	80 Vdc max.
2N3749	100 Vdc max.
Collector-to-Emitter Voltage	
2N3747	40 Vdc max.
2N3748	60 Vdc max.
2N3749	80 Vdc max.
Emitter-to-Base Voltage	
2N3747	7 Vdc max.
2N3748, 2N3749	8 Vdc max.
Collector Current	5 Adc max.
Base Current	0.5 Adc max.
Thermal Resistance, Junction to Case	3.33 °C/W
Total Dissipation at I_C (max.) (1)	
100°C Case Temperature	30 W max.
Operating Junction Temperature	200 °C max.
Storage Temperature Range	–65 to +200°C

NOTE.
1. See safe operating area curves for derating.

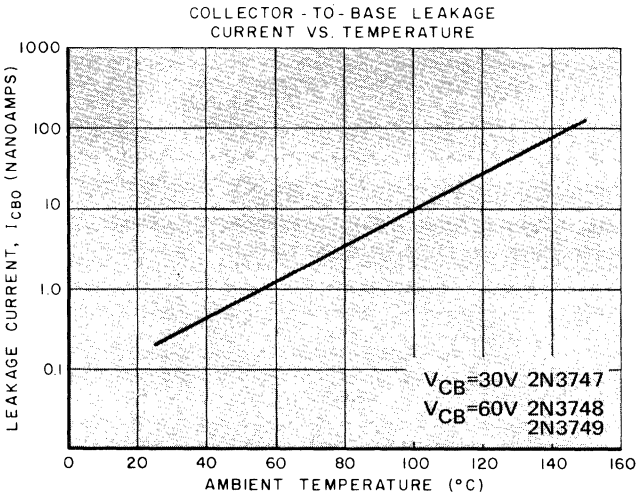
Solitron DEVICES, INC. /TRANSISTOR DIVISION

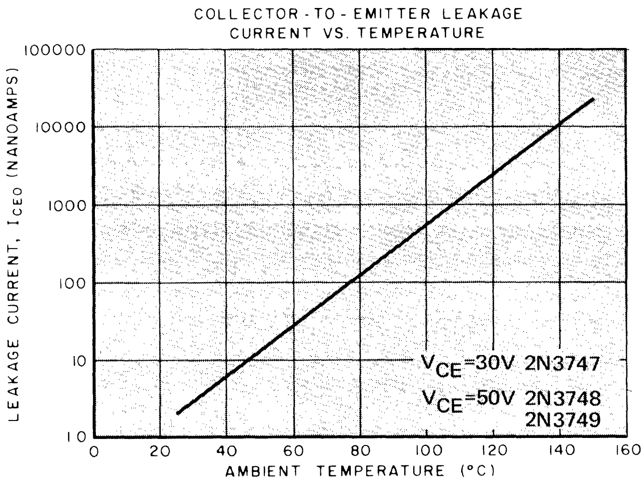
ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise noted.

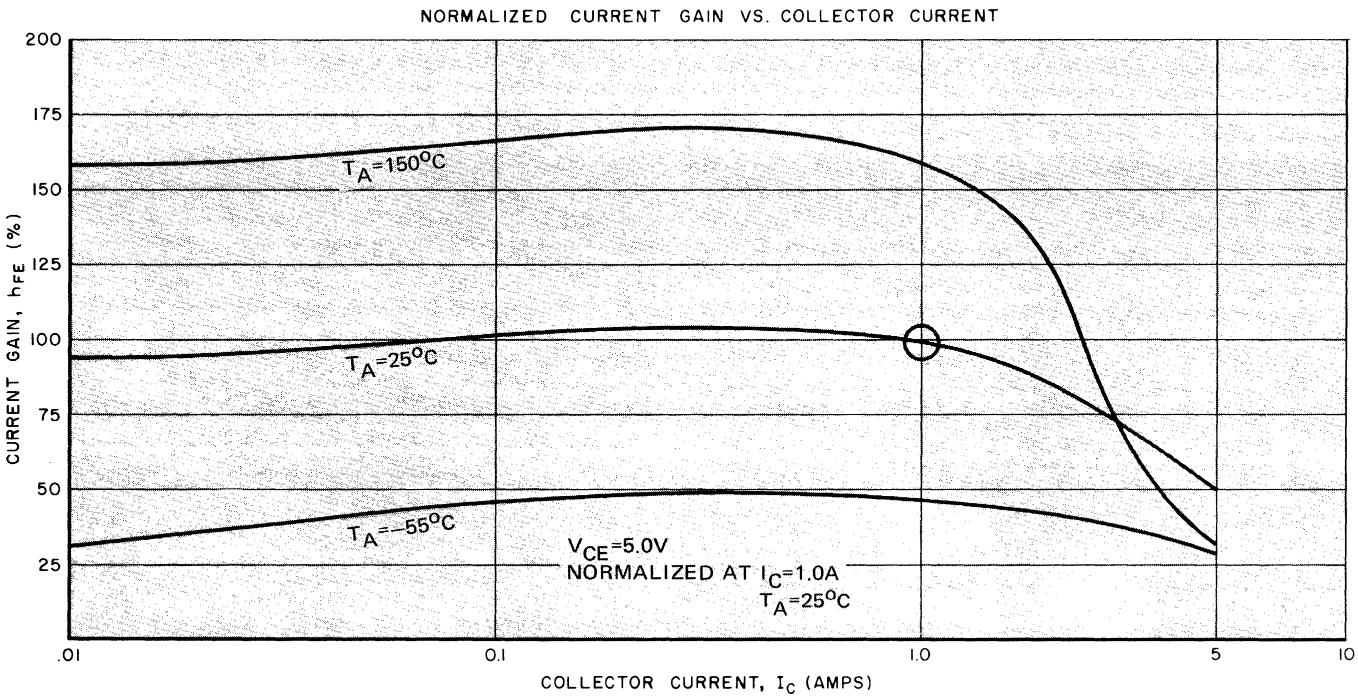
SYMBOL	MIN.	MAX.	UNIT	CONDITIONS
h_{FE} (1)	40 15 15 30	120		I_C= 1A, V_{CE}= 5V I_C= 1A, V_{CE}= 2V, T_C= –55°C I_C= 5A, V_{CE}= 5V I_C= 10mA, V_{CE}= 2V
V_{CE} (sat) (1)		0.25 2.0	Vdc Vdc	I_C= 1A, I_B= 0.1A I_C= 5A, I_B= 0.5A
V_{BE} (1)		1.2	Vdc	I_C= 1A, V_{CE}= 5 V
V_{BE} (sat) (1)		1.2	Vdc	I_C= 1A, I_B= 0.1A
BV_{CBO}	60 80 100		Vdc Vdc Vdc	I_C= 10 µA, I_E= 0 2N3747 2N3748 2N3749
BV_{CEO}	40 60 80		Vdc Vdc Vdc	I_C= 10mA, I_B= 0 2N3747 2N3748 2N3749
BV_{EBO}	7 8		Vdc Vdc	I_E= 10 µA, I_C= 0 2N3747 2N3748, 2N3749
V_{CEO} (sust) (1) (Collector-to-Emitter Sustain Voltage)	30 50 70		Vdc Vdc Vdc	I_C= 100mA, I_B= 0 2N3747 2N3748 2N3749
I_{CEX} (Collector Cutoff Current, Reverse Bias)		10 10 10 50 50	µA µA µA µA µA	V_{EB}= 0.5 V 2N3747 @V_{CE}= 60V 2N3748 @V_{CE}= 80V 2N3749 @V_{CE}= 100V 2N3747 @V_{CE}= 40V, T_C=150°C 2N3748, 2N3749 @V_{CE}= 60V, T_C= 150°C
I_{CBO}		0.1 0.1	µA µA	I_E= 0 2N3747 @V_{CB}= 30V 2N3748, 2N3749 @V_{CB}= 60V
I_{EBO}		0.1	µA	V_{EB}= 5V, I_C= 0
I_{CEO}		100 100	µA µA	I_B= 0 2N3747 @V_{CE}= 30V 2N3748, 2N3749 @V_{CE}= 50V
h_{fe} (High Frequency Small Signal)	4			V_{CE}= 10V, I_C= 1A, f= 10mc
h_{fe} (Small Signal)	40	140		V_{CE}= 5V, I_E= 50mA, f= 1kc
C_{ob}		150	pf	V_{CB}= 10V, I_E= 0, f= 1mc
t_r (Pulse Rise Time)		80	nsec	
t_s (Pulse Storage Time)		60	nsec	
t_f (Pulse Fall Time)		80	nsec	

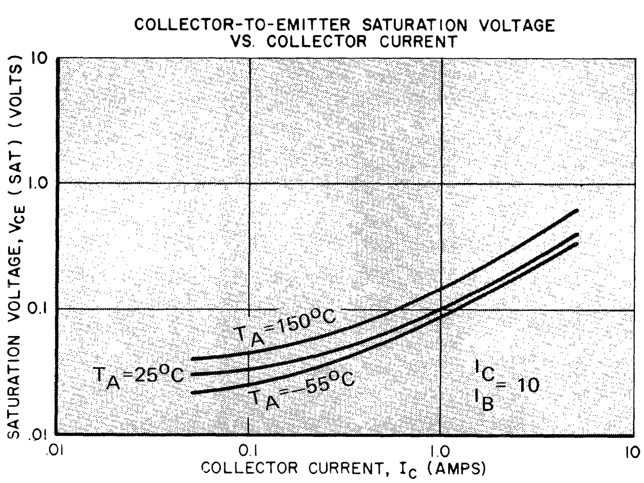
NOTE: 1. Pulse measurement: conditions: length ≤ 330 µsec; duty cycle 2%.

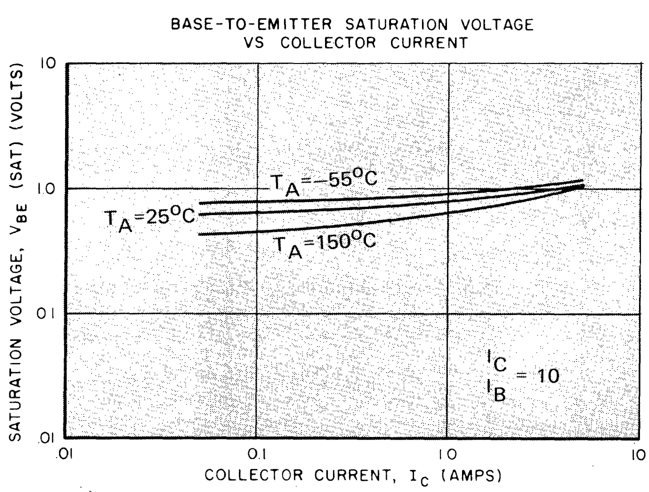
TYPICAL CHARACTERISTICS



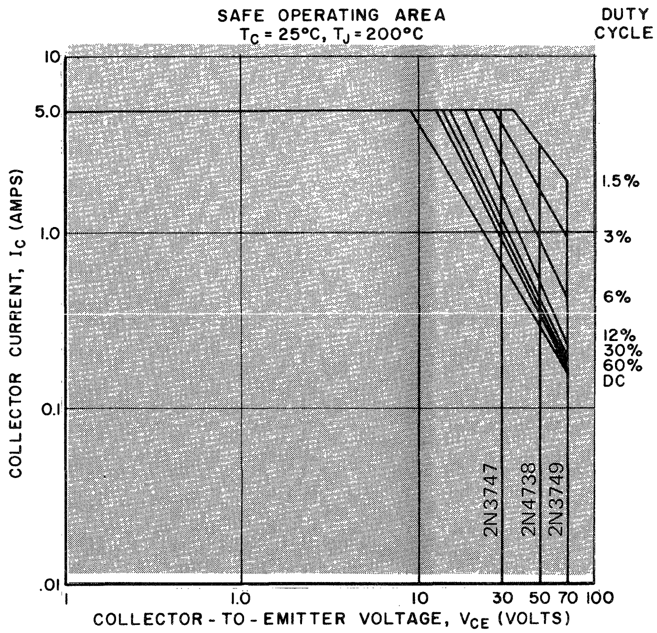


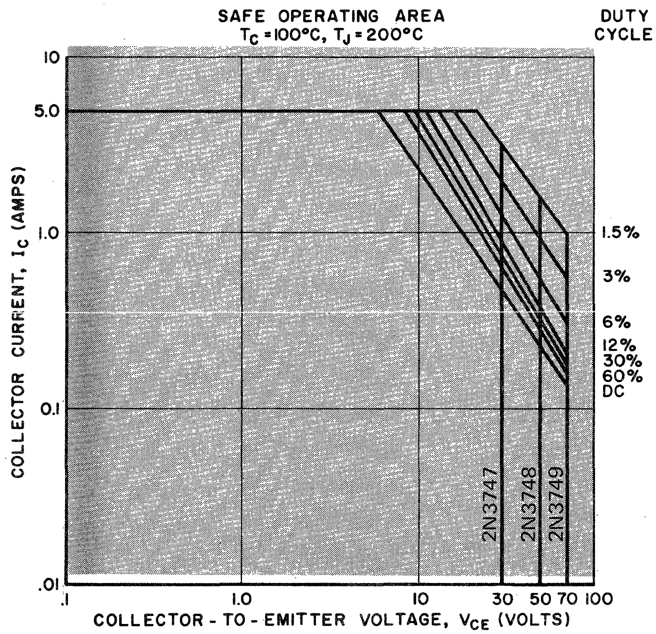




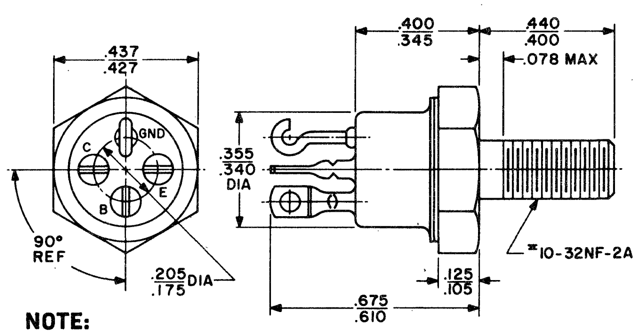


TYPICAL CHARACTERISTICS, continued





OUTLINE DIMENSIONS



NOTE:
1. All dimensions in inches.

MOUNTING

It is very important that a power transistor be provided with a good heat dissipating facility. The surface to which the transistor is attached must be flat and free from burrs. The nut must be tightened securely (16 in.-lb. minimum to 23 in.-lb. maximum torque limit when used against a metal chassis, provided that all parts are clean and dry).

SOLITRON FACILITIES

TAPPAN, N.Y.
256 Oak Tree Road
714 / 278-8780

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311

PORT SALERNO, FLA.
Cove Road
305 / 833-6528

30 AMP SILICON SINGLE DIFFUSED NPN POWER TRANSISTORS

S P E C I F I C A T I O N S

2N 3771
2N 3772
2N 3773

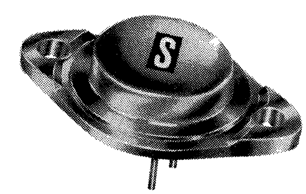
DESIGNED-IN ADVANTAGES

Low saturation voltage typically 0.5 volts at I_C = 8 amps for all types.

High typical gains for all types.

High power dissipation capability 150 watts.
High collector current rating 30 amps maximum for all three types.

These single diffused 30 amp Silicon Transistors are suitable for a wide range of high power applications inculding Power Supplies, Inverters, Low Speed Switching Regulators and Audio Public Address Equipment.



T O-3 Actual Size

GENERAL INFORMATION

NPN Silicon Power Transistor in a TO-3 Package for Power Amplifiers.

ABSOLUTE MAXIMUM RATINGS

	2N3771	2N3772	2N3773
BV_{CBO}	50	100	160
BV_{EBO}	5	7	7
BV_{CEO}(V)	40	60	140
I_C (A)	30	30	30
I_B (A)	15	15	15
P_T(25°C Case)(W)	150	150	150
Thermal Res. (°C/W)	1.17	1.17	1.17
Oper. Junc. Temp (°C)	200	200	200
Storage Temp. Range		−65°C to +200°C	

Solitron DEVICES, INC./TRANSISTOR DIVISION

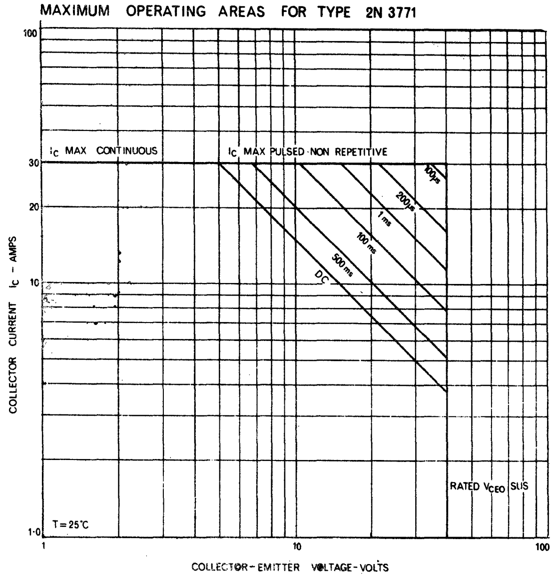
1177 BLUE HERON BLVD. . RIVIERA BEACH, FLORIDA 33404 . TELEPHONE: (305) 848-4311 . TWX: (510) 952-6676

ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise noted.

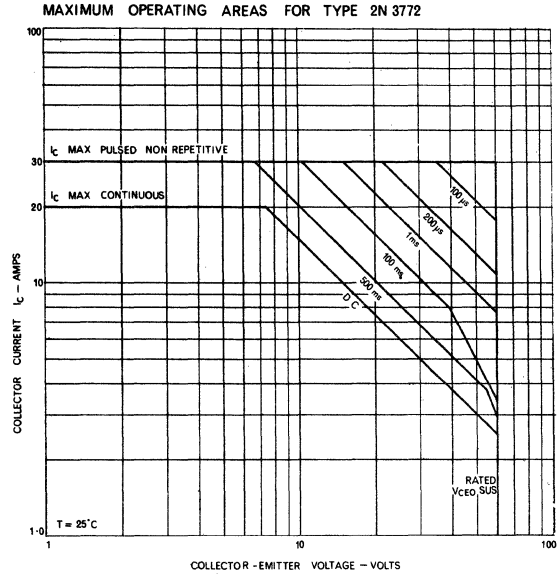
Symbol	Min.	Max.	Unit	Conditions	Type
I_{CEV}	—	10	mA	V_{CE} = 30V, V_{EB} = 1.5V, T = 150°C	ALL
	—	2	,,	V_{CE} = 50V, V_{EB} = 1.5V	2N3771
	—	5	,,	V_{CE} = 100V, V_{EB} = 1.5V	2N3772
	—	2	,,	V_{CE} = 140V, V_{EB} = 1.5V	2N3773
I_{EBO}	—	5	mA	V_{EB} = 5V	2N3771
	—	,,	,,	V_{EB} = 7V	2N3772–3
V_{CEO} (Sus)	40	—	V	I_C = 200 mA*	2N3771
	60	—	,,	,,	2N3772
	140	—	,,	,,	2N3773
h_{FE}	15	60	—	I_C = 15A*, V_{CE} = 4V	2N3771
	,,	,,	—	I_C = 10A*, V_{CE} = 4V	2N3772
	,,	,,	—	I_C = 8A*, V_{CE} = 4V	2N3773
	40	—	—	I_C = 1.0A*, V_{CE} = 4V	ALL
V_{CE} (Sat)	—	2.0	V	I_C = 15A*, I_B = 1.5A	2N3771
	—	1.4	,,	I_C = 10A*, I_B = 1.0A	2N3772
	—	1.4	,,	I_C = 8A*, I_B = 0.8A	2N3773
V_{BE}	—	2.7	V	I_C = 15A*, V_{CE} = 4V	2N3771
	—	2.2	,,	I_C = 10A*, V_{CE} = 4V	2N3772
	—	2.2	,,	I_C = 8A*, V_{CE} = 4V	2N3773
h_{FE}	4	—	—	I_C = 1A, V_{CE} = 4V, f = 50 KHz	ALL
	40	—	—	I_C = 1A, V_{CE} = 4V, f = 1KHz	ALL

* PULSE TEST ≤ 330 μs 2% DUTY CYCLE.

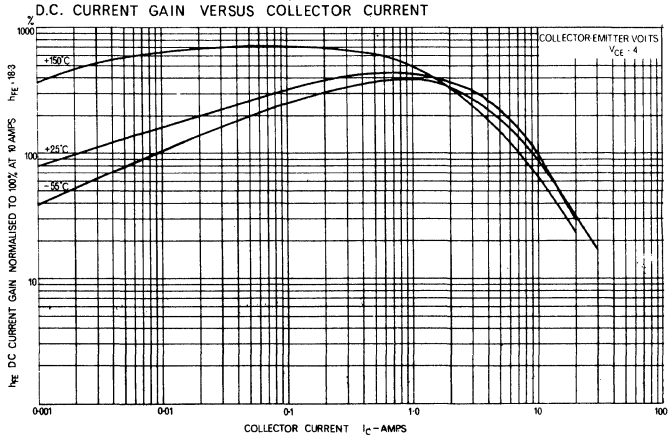
MAXIMUM OPERATING AREAS FOR TYPE 2N 3771



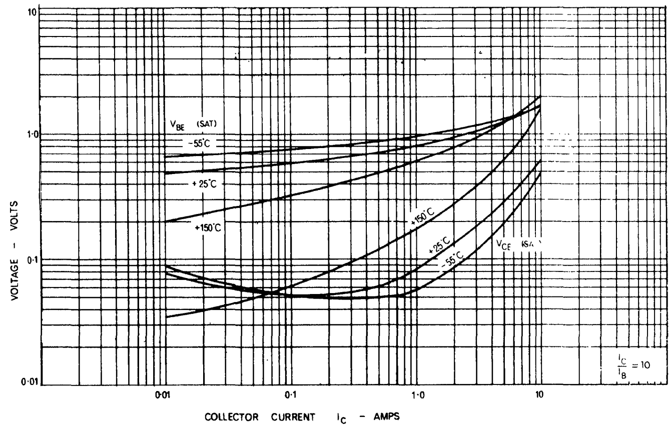
MAXIMUM OPERATING AREAS FOR TYPE 2N 3772



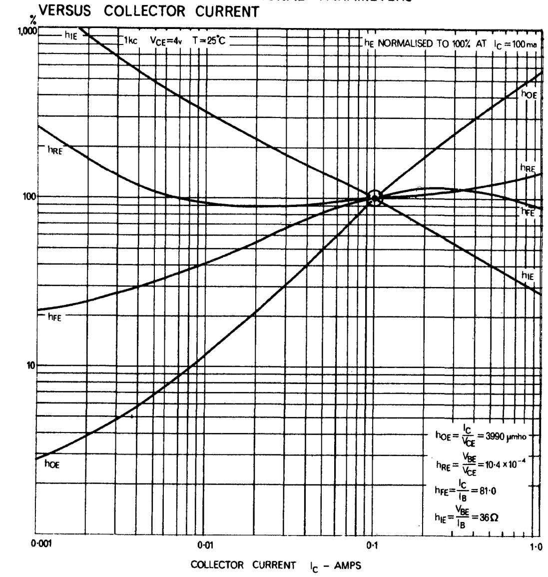
D.C. CURRENT GAIN VERSUS COLLECTOR CURRENT



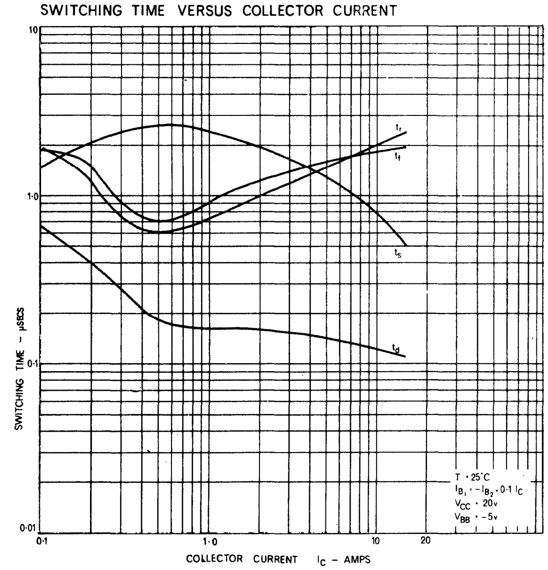
SATURATION VOLTAGES



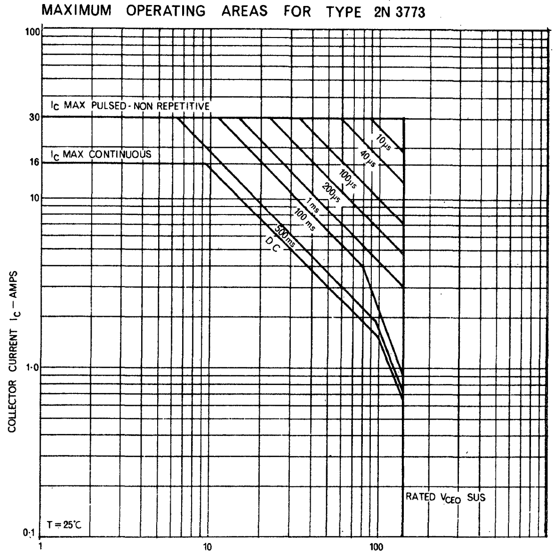
COMMON EMITTER SMALL SIGNAL PARAMETERS VERSUS COLLECTOR CURRENT



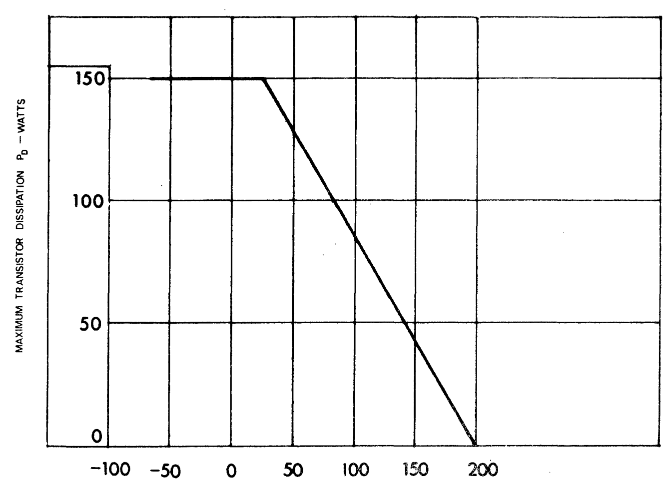
SWITCHING TIME VERSUS COLLECTOR CURRENT



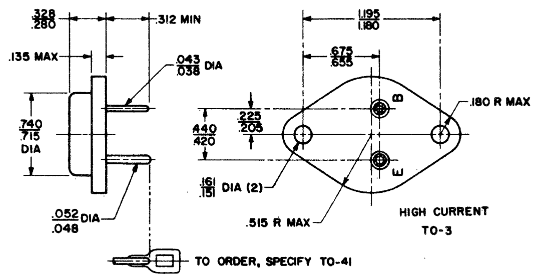
MAXIMUM OPERATING AREAS FOR TYPE 2N 3773



DERATING CHART



OUTLINE DIMENSIONS



NOTES:

1. Pulse measurement conditions: length $\leq$ 330 µsec; duty cycle $\leq$2%.
2. Collector is electrically common to case.
3. All dimensions in inches.

SOLITRON AREA SALES OFFICES

NORTHEAST

SOLITRON DEVICES, INC.
256 Oak Tree Road, Tappan, New York 10983
Telephone (914) 359-5050, TWX (710) 576-2654, TLX 13-7346

SOUTHEAST

SOLITRON DEVICES, INC.
1177 Blue Heron Blvd., Riviera Beach, Florida 33404
Telephone (305) 848-4311, WATS (800) 327-3243, TWX (510) 952-6676

MIDWEST

SOLITRON DEVICES, INC.
Suite #218, O'Hare Office Center North, 2720 Des Plaines Avenue, Des Plaines, Illinois 60018
Telephone (312) 824-8127, TWX (910) 233-2634

SOUTHWEST

SOLITRON DEVICES, INC.
13333 North Central Expressway, Suite #220, Dallas, Texas 75080
Telephone (214) 231-8224

WESTERN

SOLITRON DEVICES, INC.
4014 Long Beach Boulevard, Long Beach, California 90807
Telephone (213) 426-0331, TWX (910) 341-6417

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

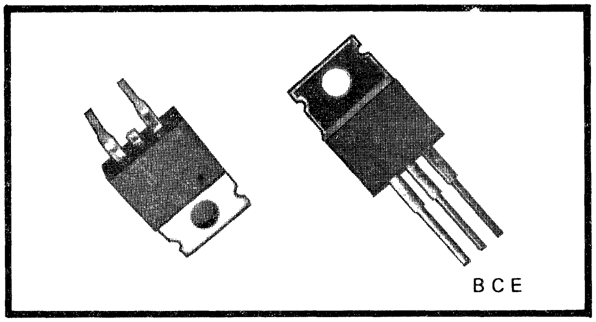
2N5293 2N5294 2N5295 2N5296 2N5297 2N5298

MOLDED PLASTIC NPN SILICON POWER TRANSISTORS

Designed for general purpose medium power switching, shunt regulators and amplifiers applications in commercial and industrial equipment.

Types 2N5293, 2N5295 and 2N5297 are intended for direct insertion into existing TO-66 sockets. The types 2N5294, 2N5296 and 2N5298 are electrically identical, and are primarily for printed circuit board applications.

Mechanical Outline — See page 2.



2N5293, 2N5295 2N5297 — 2N5294, 2N5296 2N5298

ABSOLUTE MAXIMUM RATINGS: $T_C = 25^oC$

BV_{CBO} V	BV_{CEX} V	BV_{CER} V	BV_{CEO} V	BV_{EBO} V	I_C A	I_B A	P_T W	
80	80	75	70	7	4.0	2.0	36	2N5293, 2N5294
60	60	50	40	5	4.0	2.0	36	2N5295, 2N5296
80	80	70	60	5	4.0	2.0	36	2N5297, 2N5298

$R_{BE} = 100\,\Omega$

T_{STG} -65^oC to $+150^oC$

T_J -65^oC to $+150^oC$

Lead Temperature 1/8″ (3.17mm) from case for 10 seconds = 235^oC Max.

$\Theta_{J\text{-}C}$ 3.5 $^oC/W$ Max.

$\Theta_{J\text{-}A}$ 70 $^oC/W$ Max.

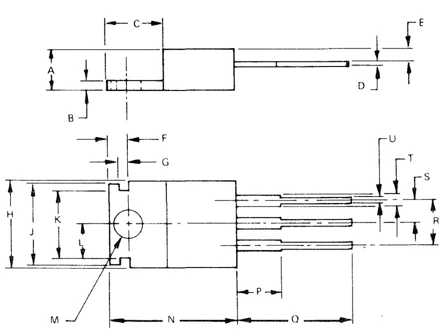
Pulse Power Dissipation at $T_C \leq 25^oC$. See Fig. 1.

ELECTRICAL CHARACTERISTICS: $T_C = 25^oC$

PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	TYPE
I_{CEX}		3.0	mA	$V_{CE} = 65V$, $V_{BE} = -1.5V$, $T_C = 150^oC$	2N5293, 2N5294, 2N5297, 2N5298
		5.0	mA	$V_{CE} = 35V$, $V_{BE} = -1.5V$, $T_C = 150^oC$	2N5295, 2N5296
		0.5	mA	$V_{CE} = 65V$, $V_{BE} = -1.5V$	2N5293, 2N5294, 2N5297, 2N5298
		2.0	mA	$V_{CE} = 35V$, $V_{BE} = -1.5V$	2N5295, 2N5296
I_{EBO}		1	mA	$V_{EB} = 7V$	2N5293, 2N5294
		1	mA	$V_{EB} = 5V$	2N5295, 2N5296, 2N5297, 2N5298
V_{CEO} (sus)*	70		V	$I_C = 0.1A$	2N5293, 2N5294
	40		V	$I_C = 0.1A$	2N5295, 2N5296
	60		V	$I_C = 0.1A$	2N5297, 2N5298
h_{FE} *	5			$V_{CE} = 4V$, $I_C = 4.0A$	ALL
	30	120		$V_{CE} = 4V$, $I_C = 0.5A$	2N5293, 2N5294
	30	120		$V_{CE} = 4V$, $I_C = 1.0A$	2N5295, 2N5296
	20	80		$V_{CE} = 4V$, $I_C = 1.5A$	2N5297, 2N5298
V_{CE} (sat)*		2	V	$I_C = 4.0A$, $I_B = 1.0A$	ALL
V_{BE}		1.1	V	$V_{CE} = 4V$, $I_C = 0.5A$	2N5293, 2N5294
		1.3	V	$V_{CE} = 4V$, $I_C = 1.0A$	2N5295, 2N5296
		1.5	V	$V_{CE} = 4V$, $I_C = 1.5A$	2N5297, 2N5298
f_T	0.8		MHz	$V_{CE} = 4V$, $I_C = 0.2A$	ALL

Typical Switching Time $t_{on} = 5.0\ \mu s$ $t_{off} = 15\ \mu s$

*Pulse width ≤ 300 μs, Duty Cycle ≤ 2%



SYMBOL	INCHES	
	MIN.	MAX.
A	160	190
B	.020	055
C	235	265
D	016	018
E	050	.070
F	100	120
G	040	060
H	380	420
J	365	385
K	300	320
L	145	165
M	141	145
N	560	620
P	160	180
Q	500	
R	190	210
S	090	110
T	045	055
U	029	035

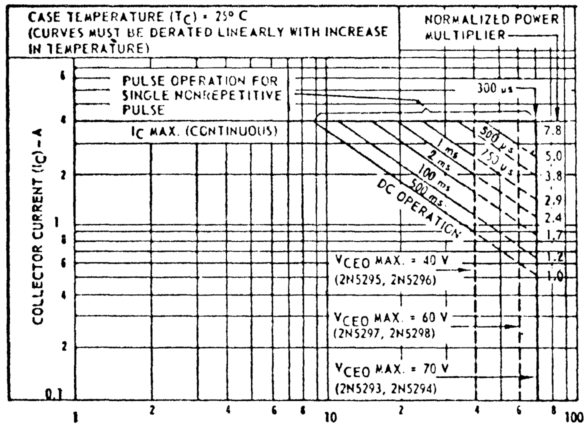
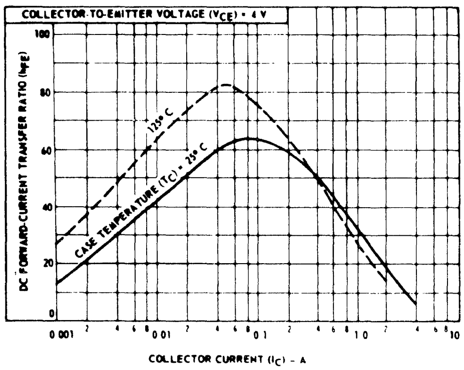
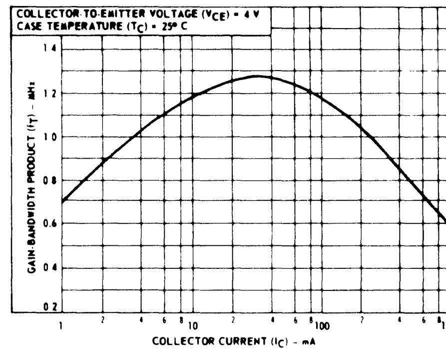


Fig. 1

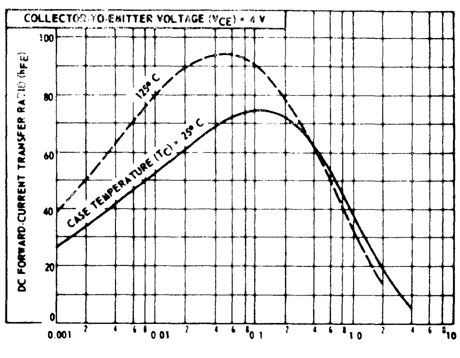
Maximum Operating Areas for
Types 2N5293, 2N5294, 2N5295, 2N5296, 2N5297, & 2N5298



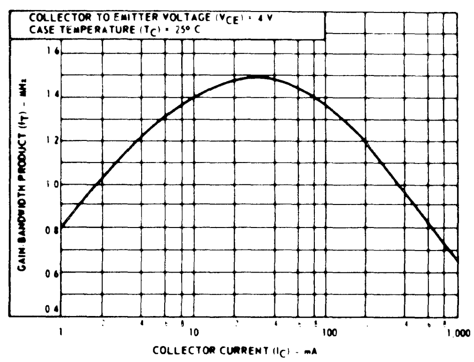
Typical DC Beta
for Types 2N5293 & 2N5294



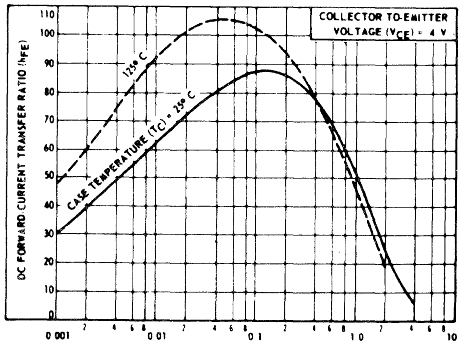
Typical Gain-Bandwidth Product
for Types 2N5293 & 2N5294



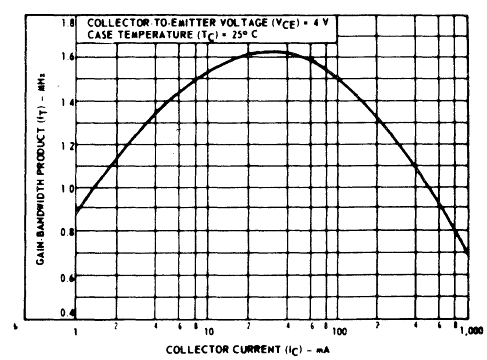
Typical DC Beta
for Types 2N5295 & 2N5296



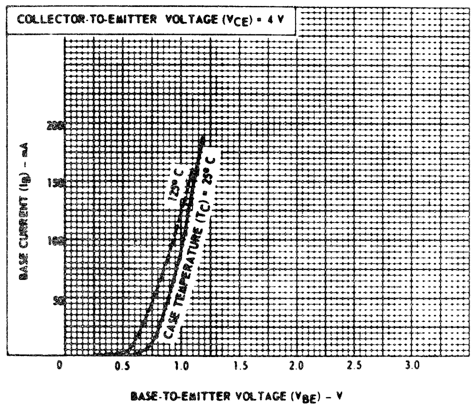
Typical Gain-Bandwidth Product
for Types 2N5295 & 2N5296



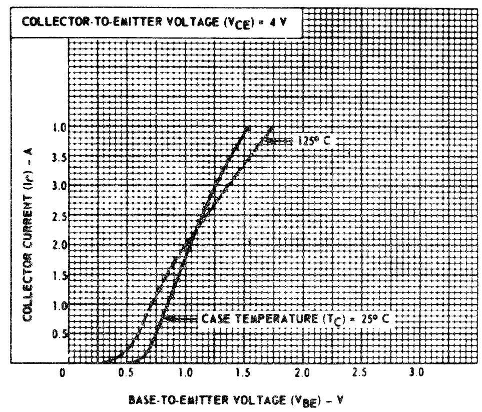
Typical DC Beta
for Types 2N5297 & 2N5298



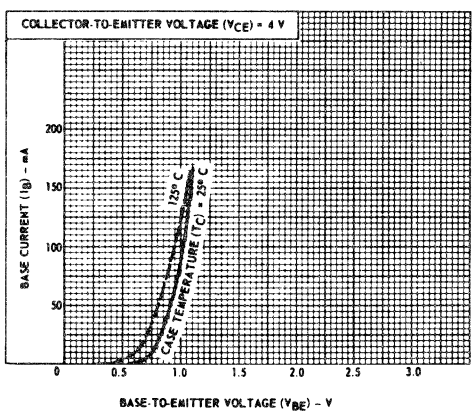
Typical Gain-Bandwidth Product
for Types 2N5297 & 2N5298



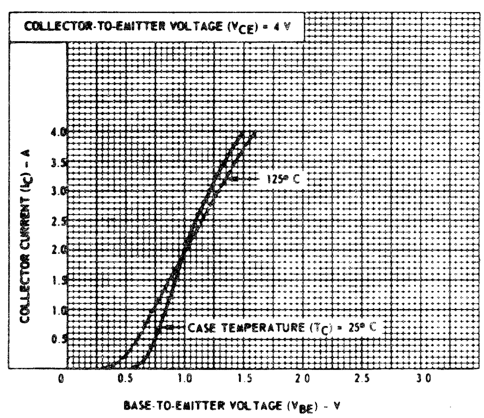
Typical Input Characteristics for Types 2N5293 & 2N5294.



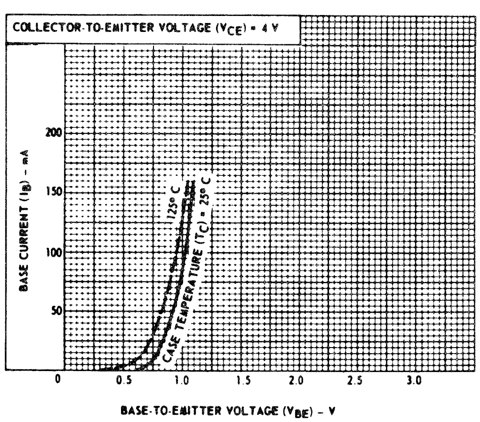
Typical Transfer Characteristics for Types 2N5293 & 2N5294.



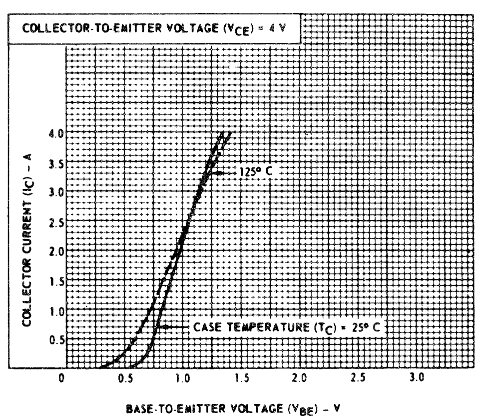
Typical Input Characteristics for Types 2N5295 & 2N5296.



Typical Transfer Characteristics for Types 2N5295 & 2N5296.



Typical Input Characteristics for Types 2N5297 & 2N5298.



Typical Transfer Characteristics for Types 2N5297 & 2N5298.

Solitron DEVICES, INC.

TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

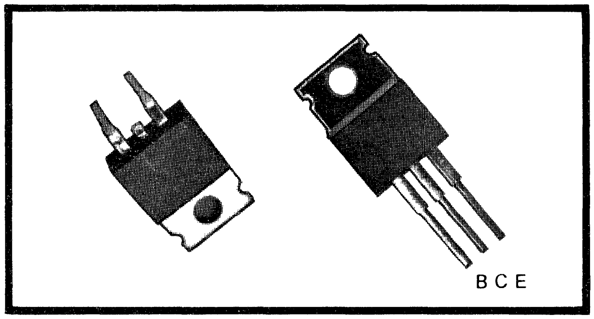
2N5490 2N5491 2N5492 2N5493 2N5494 2N5495 2N5496 2N5497

MOLDED PLASTIC NPN SILICON POWER TRANSISTOR

Designed for general purpose medium power switching, shunt regulators and amplifiers applications in commercial and industrial equipment.

Types 2N5491, 2N5493, 2N5495 and 2N5497 are intended for direct insertion into existing TO-66 sockets. The types 2N5490, 2N5492, 2N5494 and 2N5496 are electrically identical and are primarily for printed circuit board applications.

Mechanical outline — See page 2.



2N5491, 2N5493
2N5495, 2N5497

2N5490, 2N5492
2N5494, 2N5496

ABSOLUTE MAXIMUM RATINGS: $T_C = 25^oC$

V_{CBO} V	V_{CEX} V	V_{CER} V	V_{CEO} V	V_{EBO} V	I_C A	I_B A	P_T W	
60	60	50	40	5	7	3	50	2N5490, 2N5491 2N5494, 2N5495
75	75	65	55	5	7	3	50	2N5492, 2N5493
90	90	80	70	5	7	3	50	2N5496, 2N5497

$R_{BE} = 100\,\Omega$

T_{STE} -65^oC to 150^oC

T_J -65^oC to 150^oC

Lead Temperature 1/8″ (3.17mm) from case for 10 seconds = 235^oC Max.

$\Theta_{J\text{-}C}$ 2.5 $^oC/W$ Max.

$\Theta_{J\text{-}A}$ 70 $^oC/W$ Max.

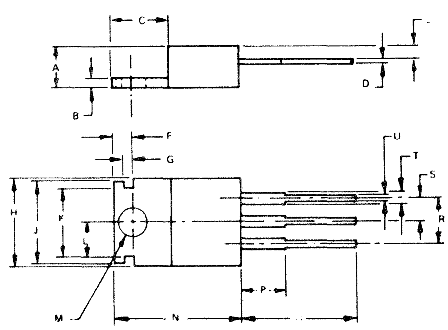
Pulsed Power Dissipation at $T_C \leq 25^oC$. See Fig. 1.

ELECTRICAL CHARACTERISTICS: $T_C = 25^oC$

PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	TYPE
I_{CEX}		5	mA	$V_{CE} = 85V$, $V_{BE} = -1.5V$ $T_C = 150^oC$	2N5496, 2N5497
		5	mA	$V_{CE} = 70V$, $V_{BE} = -1.5V$ $T_C = 150^oC$	2N5492, 2N5493
		5	mA	$V_{CE} = 55V$, $V_{BE} = -1.5V$ $T_C = 150^oC$	2N5494, 2N5495
		1	mA	$V_{CE} = 85V$, $V_{BE} = -1.5V$	2N5496, 2N5497
		1	mA	$V_{CE} = 70V$, $V_{BE} = -1.5V$	2N5492, 2N5493
		1	mA	$V_{CE} = 55V$, $V_{BE} = -1.5V$	2N5494, 2N5495
I_{EBO}		1	mA	$V_{EB} = 5$ V	ALL
V_{CEO} (sus)*	70		V	$I_C = 0.1A$	2N5496, 2N5497
	55		V	$I_C = 0.1A$	2N5492, 2N5493
	40		V	$I_C = 0.1A$	2N5490, 2N5491 2N5494, 2N5495
h_{FE}*	20	100		$V_{CE} = 4V$, $I_C = 3.5A$	2N5496, 2N5497
	20	100		$V_{CE} = 4V$, $I_C = 3.0A$	2N5494, 2N5495
	20	100		$V_{CE} = 4V$, $I_C = 2.5A$	2N5492, 2N5493
	20	100		$V_{CE} = 4V$, $I_C = 2.0A$	2N5490, 2N5491
V_{CE} (sat)		1	V	I_C 3.5A, I_B - 0.35A	2N5496, 2N5497
		1	V	$I_C = 3.0A$, I_B - 0.3A	2N5494, 2N5495
		1	V	$I_C = 2.5A$, $I_B = 0.25A$	2N5492 2N5493
		1	V	$I_C = 2.0A$, $I_B = 0.2A$	2N5490, 2N5491
V_{BE}		1.7	V	$V_{CE} = 4V$, $I_C = 3.5A$	2N5496, 2N5497
		1.5	V	$V_{CE} = 4V$, $I_C = 3.0A$	2N5494, 2N5495
		1.3	V	$V_{CE} = 4V$, $I_C = 2.5A$	2N5492, 2N5493
		1.1	V	$V_{CE} = 4V$, $I_C = 2.0A$	2N5490, 2N5491
f_T	0.8		MHz	$V_{CE} = 4V$, I_C 0.5A	ALL

Typical Switching Time $t_{on} = 5\ \mu s$ $t_{off} = 15\ \mu s$

*Pulse width ≤ 300 μs, Duty Cycle ≤ 2%



SYMBOL	INCHES	
	MIN	MAX
[illegible]	[illegible]	[illegible]
B	020	055
C	235	265
	016	018
F	050	07
	[illegible]	[illegible]20
G	040	060
H	380	420
J	365	385
K	300	320
	[illegible]	6[illegible]
M	141	145
N	560	620
P	160	180
Q	500	
R	190	210
S	090	11[illegible]
T	045	055
U	029	035

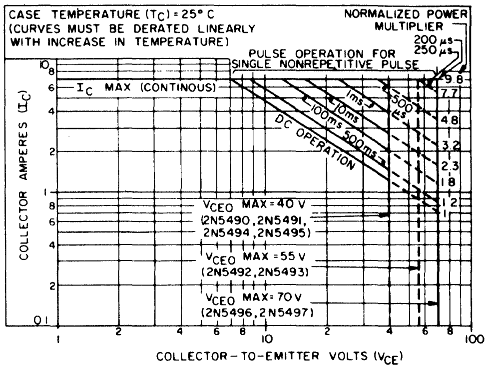


Fig 1 - Maximum operating areas for types 2N5490 through 2N5497 inclusive.

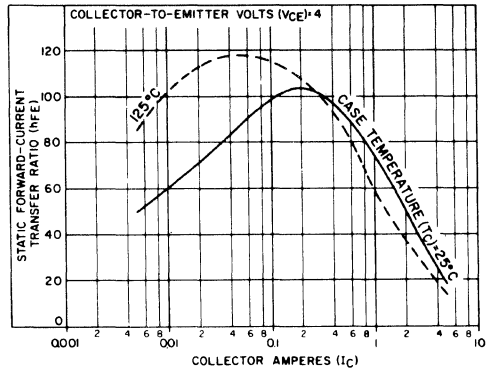


Fig 2 - Typical static beta characteristics for types 2N5496 and 2N5497.

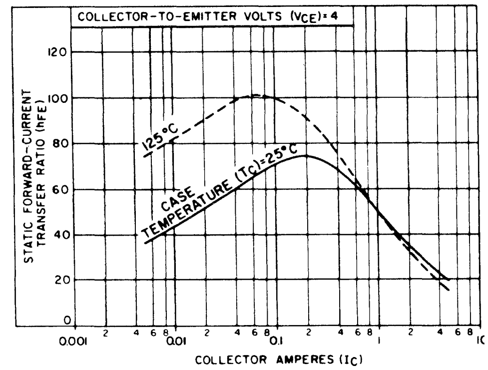


Fig 3 - Typical static beta characteristics for types 2N5494 and 2N5495.

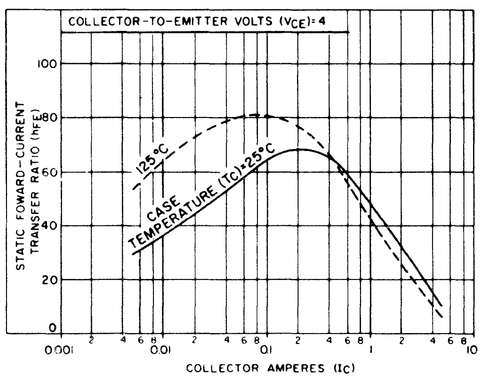


Fig 4 - Typical static beta characteristics for types 2N5490 through 2N5493 inclusive.

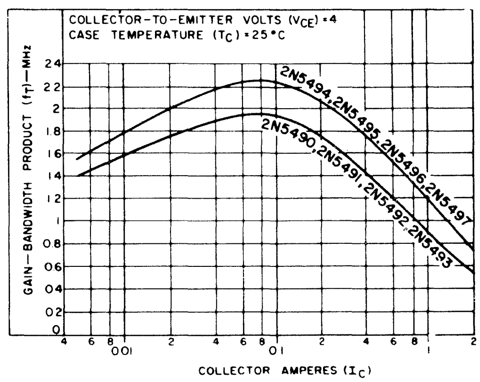


Fig 5 - Typical gain-bandwidth product for types 2N5490 through 2N5497 inclusive.

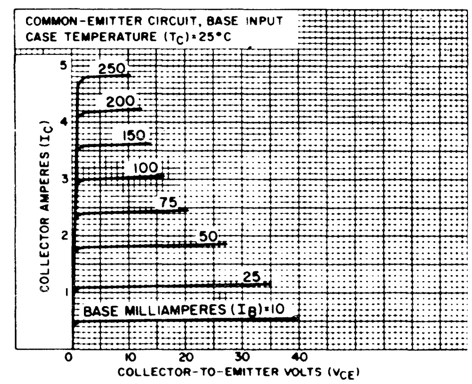


Fig 6 - Typical output characteristics for types 2N5494 through 2N5497 inclusive.

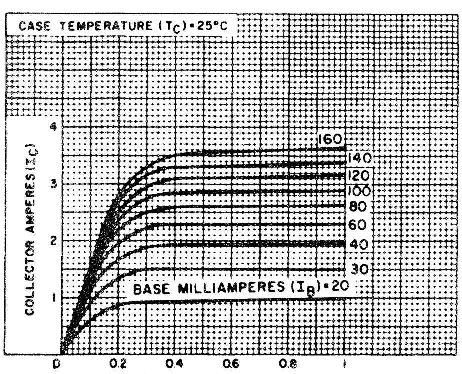


Fig 7 - Typical output characteristics for types 2N5494 and 2N5495.

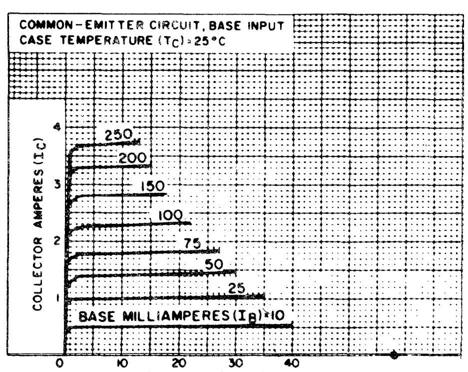


Fig 8 - Typical output characteristics for types 2N5490 through 2N5493 inclusive.

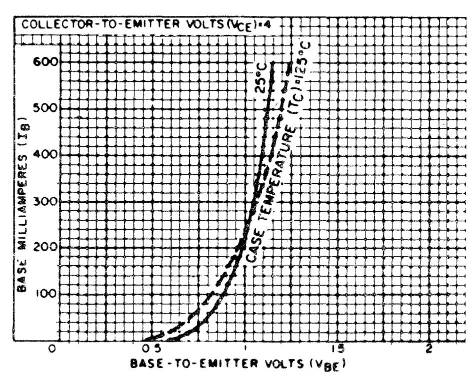


Fig 9 - Typical input characteristics for types 2N5494 through 2N5497 inclusive.

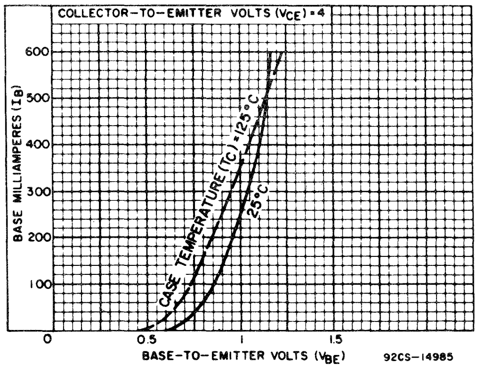


Fig 10 - Typical input characteristics for types 2N5490 through 2N5493 inclusive.

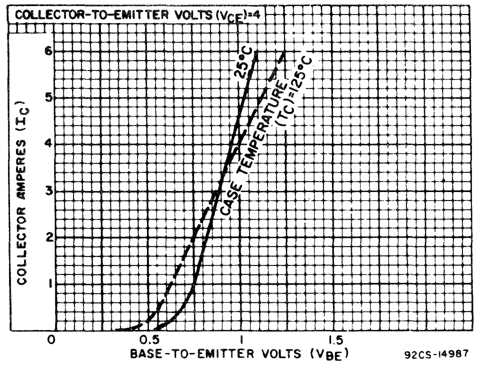


Fig 11 - Typical transfer characteristics for types 2N5494 through 2N5497 inclusive.

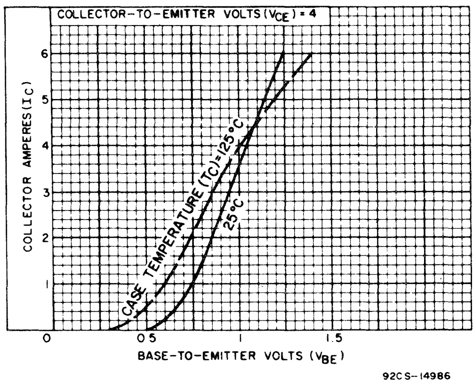


Fig 12 - Typical transfer characteristics for types 2N5490 through 2N5493 inclusive.

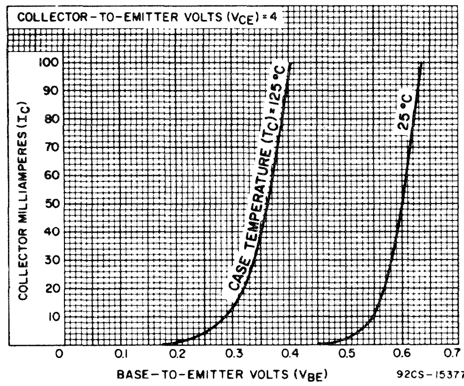


Fig 13 - Typical transfer characteristics for types 2N5490 through 2N5497 inclusive.

SOLITRON FACILITIES

TAPPAN, N.Y.
256 Oak Tree Road
714 / 278-8780

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311

PORT SALERNO, FLA.
Cove Road
305 / 833-6528

SAN DIEGO, CAL.
8808 Balboa Avenue
714 / 278-8780

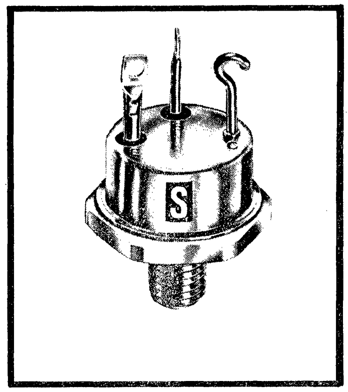
LONG ISLAND CITY, N.Y.
37-11 47th Ave.
212 / 937-0400

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

2N6215

70 AMP Peak

SILICON NPN POWER TRANSISTORS



FEATURES:

- Multiple diffused planar structure for excellent reliability.
- Excellent high-current gain and switching characteristics, with fast turn-off times.
- Safe Operating ARea specified with curves for forward-biased operation and clamped inductive switching.

ABSOLUTE MAXIMUM RATINGS

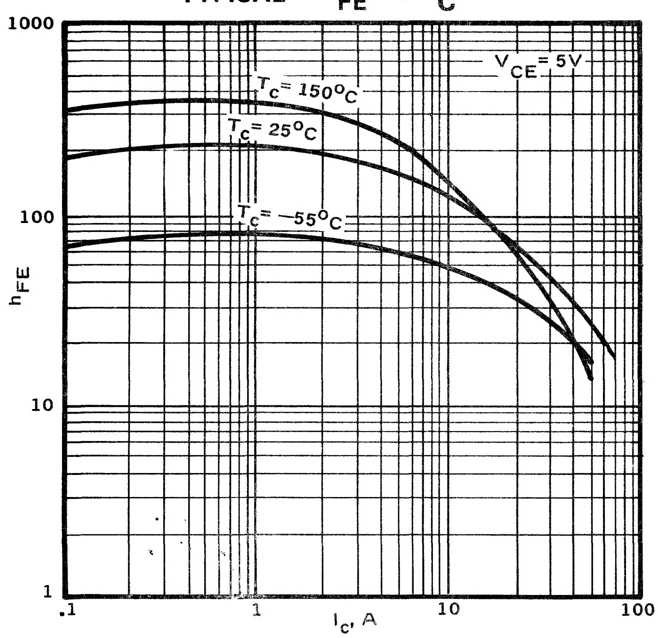
*Collector-Base Voltage	100 V
*Collector-Emitter Voltage	80 V
*Emitter- Base Voltage	8.0 V
*Peak Collector Current	70 A
*Continuous Collector Current	50 A
*Base Current	10 A
*Storage Temperature	–65°C to +200°C
*Operation Temperature	–65°C to +200°C
*Power Dissipation (100°C Case)	125 W
*Power Dissipation (25°C Case)	219 W
*Lead Temperature 1/16" from case for 10 sec. max.	250°C
*Thermal Resistance Θ_{j-c}	0.8°C/W
Thermal Time Constant of Chip	35 msec typical

*In accordance with JEDEC registration

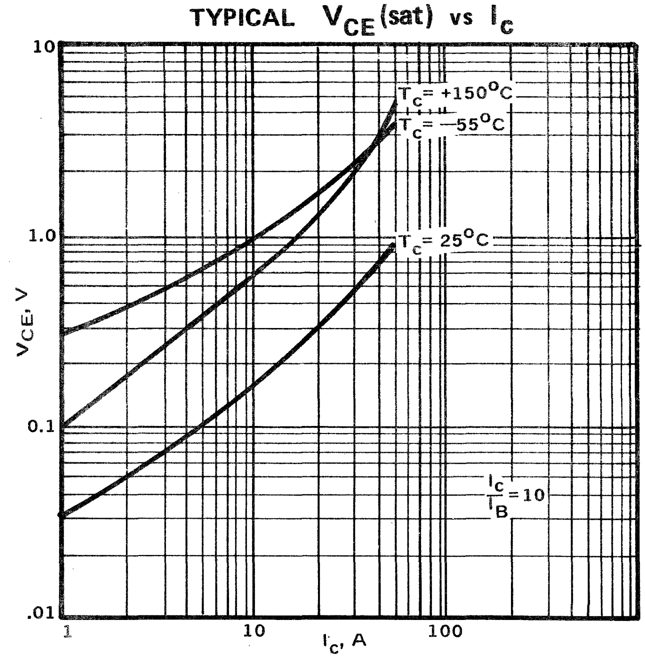
ELECTRICAL CHARACTERISTICS @ 25°C ambient unless otherwise specified
All in accordance with JEDEC registration. [1]Pulsed, t_p= 300µs, duty cycle=2%

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS
I_{CEV}	V_{CE}= 80V, V_{EB}= 0.5V, T_A= 150°C	—	200	µA
I_{CEV}	V_{CE}= 100V, V_{EB}= 0.5V	—	200	µA
I_{CBO}	V_{CB}= 80V	—	1.0	µA
I_{EBO}	V_{EB}= 8.0V	—	200	µA
I_{EBO}	V_{EB}= 5.0V	—	1.0	µA
V_{CEO}(sus)[1]	I_c= 200mA	80	—	V
h_{FE}[1]	I_c= 25A, V_{CE}= 2.0V	25	150	—
h_{FE}[1]	I_c= 50A, V_{CE}= 5.0V	15	—	—
V_{CE}(sat)[1]	I_c= 25A, I_B= 1.25A	—	0.8	V
V_{CE}(sat)[1]	I_c= 50A, I_B= 5.0A	—	1.5	V
V_{BE}(sat)[1]	I_c= 25A, I_B= 1.25A	—	1.5	V
V_{BE}(sat)[1]	I_c= 50A, I_B= 5.0A	—	2.5	V
t_r	I_c= 25A, I_{B_1}= 1.25A	—	1.0	µs
t_s	I_c= 25A, I_{B_1}= $-I_{B_2}$= 1.25A	—	1.0	µs
t_f	I_c= 25A, I_{B_1}= $-I_{B_2}$= 1.25A	—	0.25	µs
$\lvert h_{fe} \rvert$	I_c= 1.0A, V_{CE}= 10V, f= 10 MHz	2.0	—	—

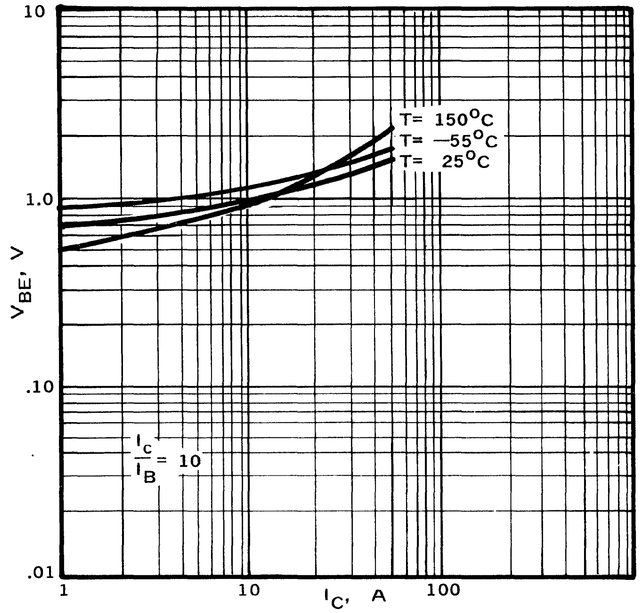
TYPICAL h_{FE} vs I_C



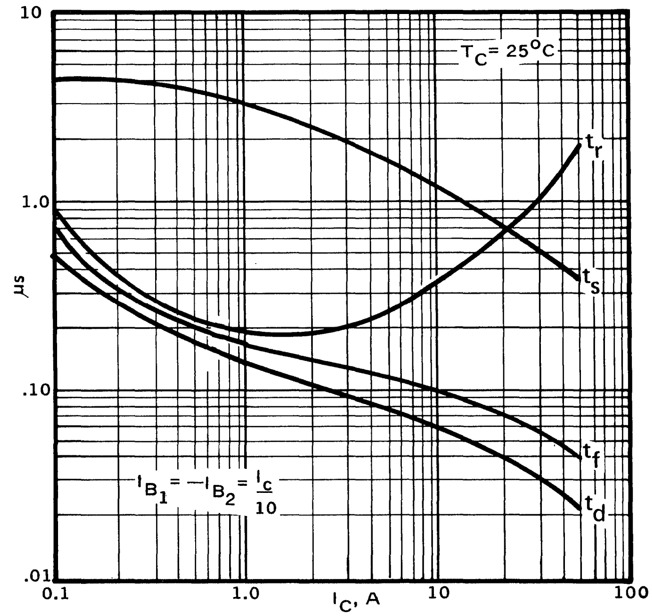
TYPICAL V_{CE}(sat) vs I_c



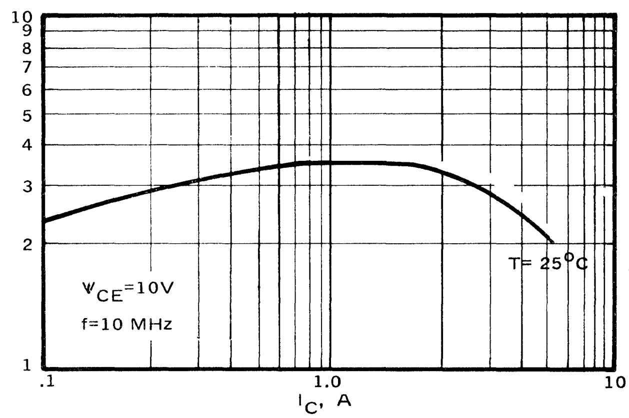
Typical V_{BE}(sat) vs I_C



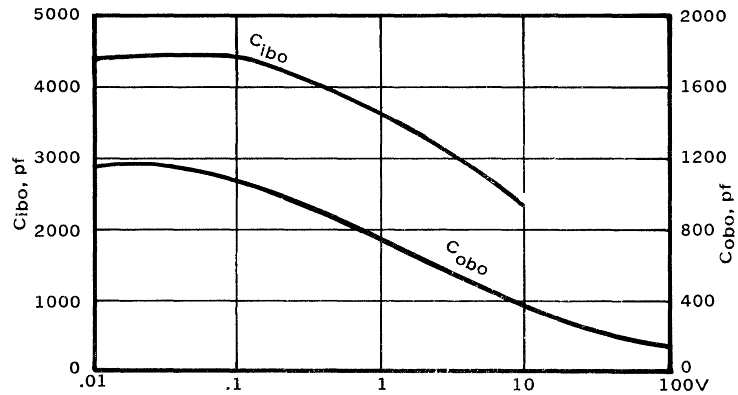
Typical SWITCHING TIME



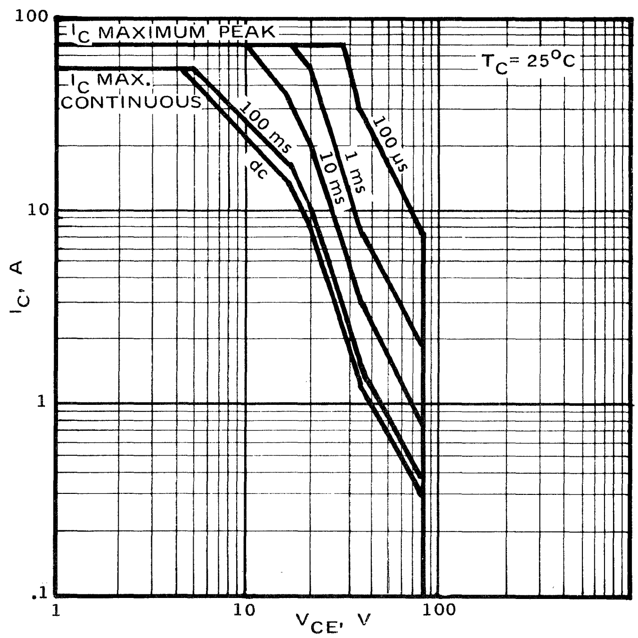
Typical h_{fe} vs I_C



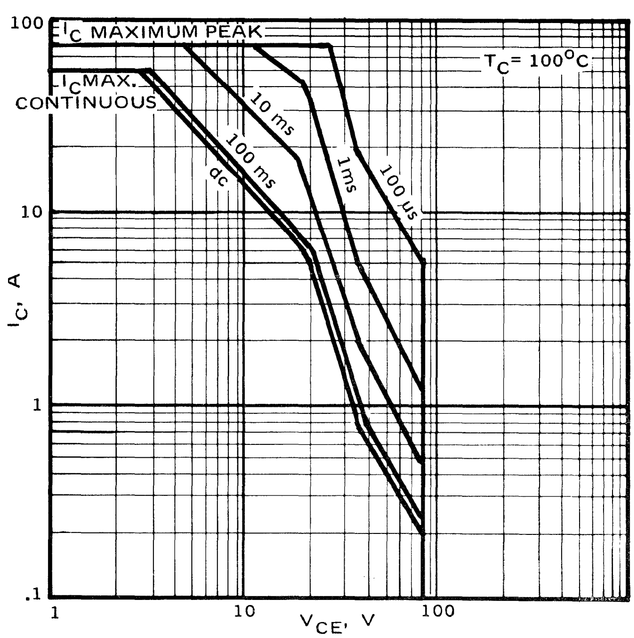
C_{ibo} vs V_{EB} C_{obo} vs V_{CB}



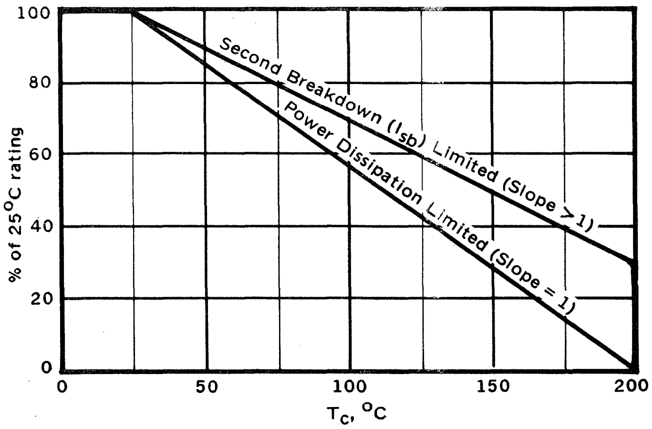
FORWARD-BIASED SAFE AREA



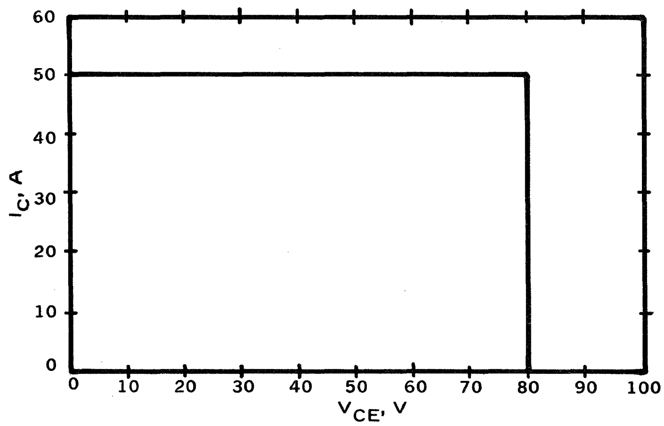
FORWARD-BIASED SAFE AREA



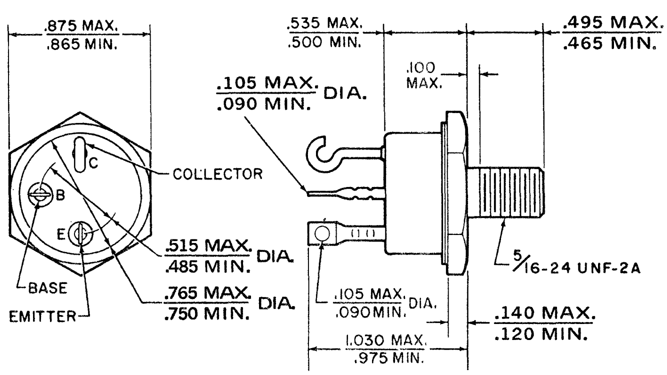
DERATING CURVE
for FORWARD-BIASED SAFE AREA PLOTS



SAFE OPERATING AREA
CLAMPED INDUCTIVE SWITCHING



OUTLINE DIMENSIONS TO-63



NOTES: 1. Collector is electrically common to case.
2. All dimensions in inches.

MOUNTING

It is very important that a power transistor be provided with a good heat dissipating facility. The surface to which the transistor is attached must be flat and free from burrs. The nut must be tightened securely (12 in.-lb. minimum to 20 in.-lb. maximum torque limit when used against a metal chassis or the bushing supplied, provided that all parts are clean and dry).

SOLITRON FACILITIES

TAPPAN, N. Y.
256 Oak Tree Road
914 / 359-5050

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA.
1177 Blue Heron Blvd.
305 / 848-4311

Hi Rel Power Transistors
Si. & Ge. Power Transistors
PNP-NPN Industrial Transistors

PORT SALERNO, FLA.
Cove Road
305 / 833-6528

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

SAN DIEGO, CALIF.
8808 Balboa Avenue
714 / 278-8780

FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

JUPITER, FLA.
1440 W. Indiantown Rd.
305 / 746-8311

Microwave Stripline
Microwave Semiconductors
RF Transistors
Microwave Integrated Circuits

SOLITRON REGIONAL OFFICES

NORTHEAST
52 Pickering Street
Needham, Massachusetts 92192
Telephone (617) 444-1152, TWX (710) 325-7514

WESTERN
20944 Sherman Way, Suite 112
Canoga Park, California 91303
Telephone (213) 833-3822, TWX (910) 494-1238

SOUTHWEST
10511 Church Road, Suite No. 1
Dallas, Texas
Telephone (214) 341-1180

MIDWEST
Suite 218, O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone (312) 842-8127, TWX (910) 233-2634

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone (305) 848-4311, TWX (510) 952-7610

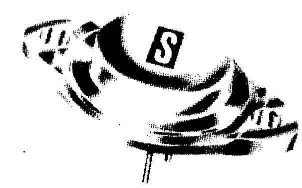
EUROPE
Solidev Ltd.
Sevenoaks, Kent, England
Telephone (Sevenoaks) 57541/2/3
Cable – Solitron Svoaks, Telex. # 95378

2N6216
2N6217

20 AMP Peak
SILICON NPN POWER TRANSISTORS

FEATURES:

- Planar process for excellent reliability
- Low f_T speed to eliminate unwanted oscillations
- Outstanding fast switching characteristics with low storage time.
- Safe Operating ARea (SOAR) specified with curves for forward-biased operation and for unclamped inductive switching



TO–3

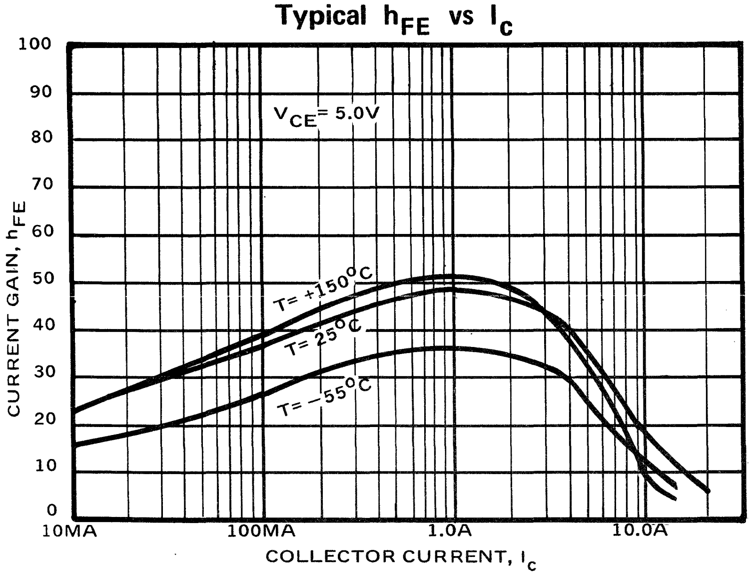
ABSOLUTE MAXIMUM RATINGS

	2N6216	2N6217
Collector-Base Voltage	200 V	140 V
Collector-Emitter Voltage	150 V	80 V
Emitter-Base Voltage	20 V	20 V
Continuous Collector Current	10 A	10 A
Peak Collector Current	20 A	20 A
Continuous Base Current	2 A	2 A
Peak Base Current	4 A	4 A
Storage Temperature	–65°C to +200°C	
Operating Junction Temperature	–65°C to +200°C	
Power Dissipation (100°C Case)	71.4 W	71.4 W
Power Dissipation (25°C Case)	125 W	125 W
Lead Temperature 1/16" from case for 10 seconds max.	250°C	250°C

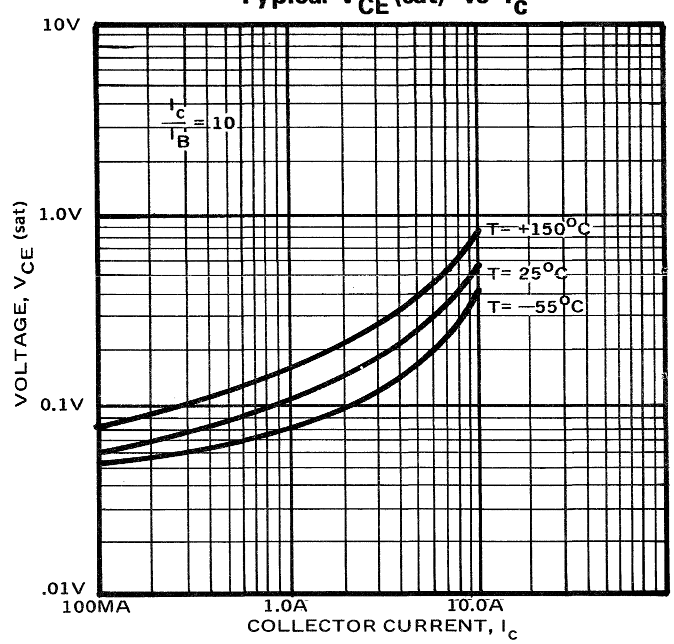
ELECTRICAL CHARACTERISTICS (25°C Ambient unless noted)

SYMBOL	CONDITIONS	MIN	MAX.	UNITS	TYPE
Static					
I_{CEX}	V_{CE} = 60 V, V_{BE} = −0.5 V, T_c = 150°C	—	100	µA	Both
I_{CEX}	V_{CE} = 200 V, V_{BE} = −0.5 V	—	100	µA	2N6216
I_{CEX}	V_{CE} = 140 V, V_{BE} = −0.5 V	—	100	µA	2N6217
I_{CBO}	V_{CB} = 60 V	—	1.0	µA	Both
I_{EBO}	V_{EB} = 20 V	—	100	µA	Both
I_{CEO}	V_{CE} = 50 V	—	10	µA	Both
V_{CEO}(sus)	I_c = 200 mA	150	—	Volts	2N6216
V_{CEO}(sus)	I_c = 200 mA	80	—	Volts	2N6217
h_{FE}	I_c = 10 A, V_{CE} = 5.0 V	15	—	—	Both
h_{FE}	I_c = 5.0 A, V_{CE} = 5.0 V	20	80	—	Both
V_{CE}(sat)	I_c = 10 A, I_B = 1.0 A	—	1.25	Volts	Both
V_{CE}(sat)	I_c = 5.0 A, I_B = 0.5 A	—	0.50	Volts	Both
V_{BE}	I_c = 10 A, V_{CE} = 5.0 V	—	1.5	Volts	Both
V_{BE}(sat)	I_c = 5.0 A, I_B = 0.5 A	—	1.2	Volts	Both
Dynamic					
C_{ob}	V_{CB} = 10 V	—	250	pf	Both
h_{fe}	V_{CE}=5.0V, I_c=0.5A, f = 1 KHz	20	—	—	Both
$\lvert h_{fe} \rvert$	V_{CE} = 10V, I_c = 1A, f = 1 MHz	5.0	—	—	Both
$T_{(ON)}$	V_{CE} = 20V, I_c = 5A, I_B = 0.5A	—	0.8	µsec	Both
$T_{(OFF)}$	V_{CE} = 20V, I_c = 5A, I_B = 0.5A	—	1.0	µsec	Both

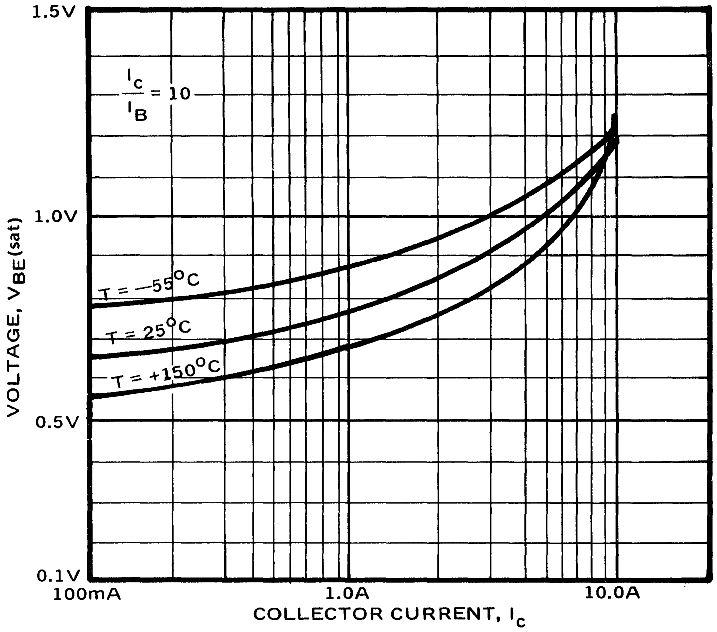
Typical h_{FE} vs I_c



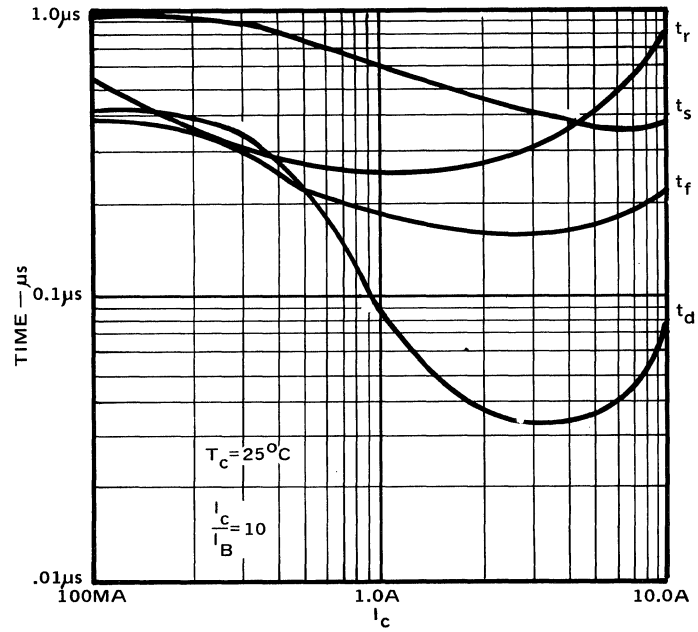
Typical V_{CE}(sat) vs I_c



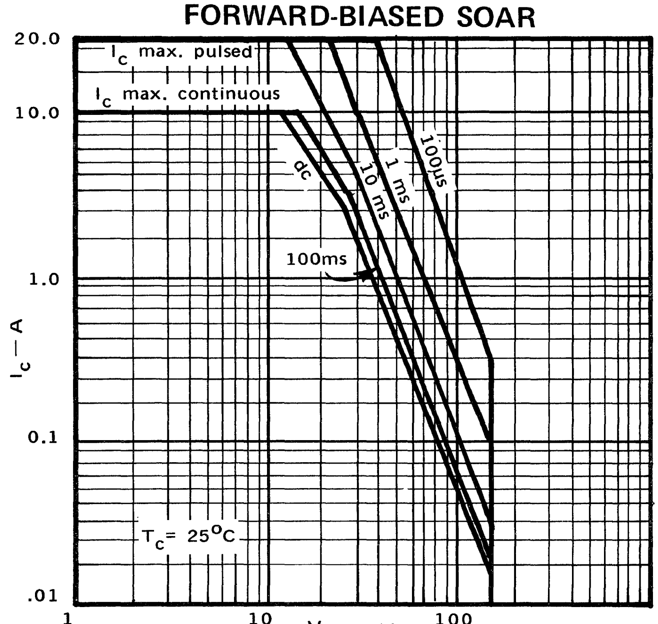
Typical V_{BE}(sat) vs I_C



Typical SWITCHING TIME vs I_C

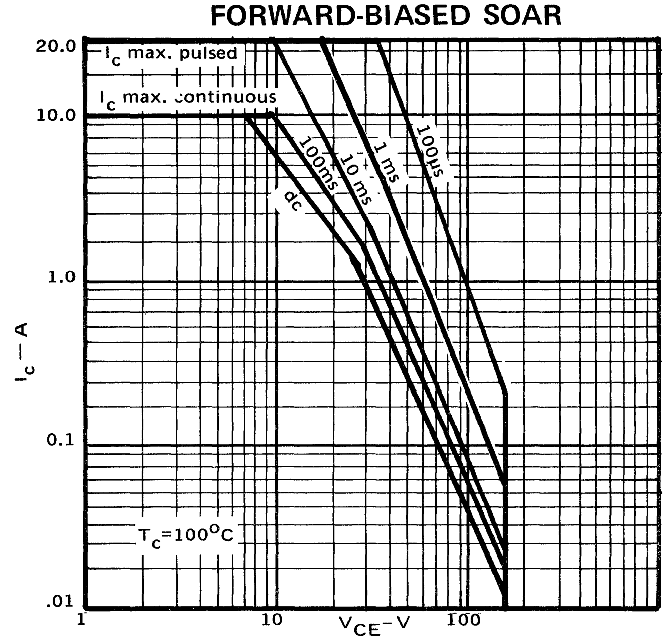


FORWARD-BIASED SOAR



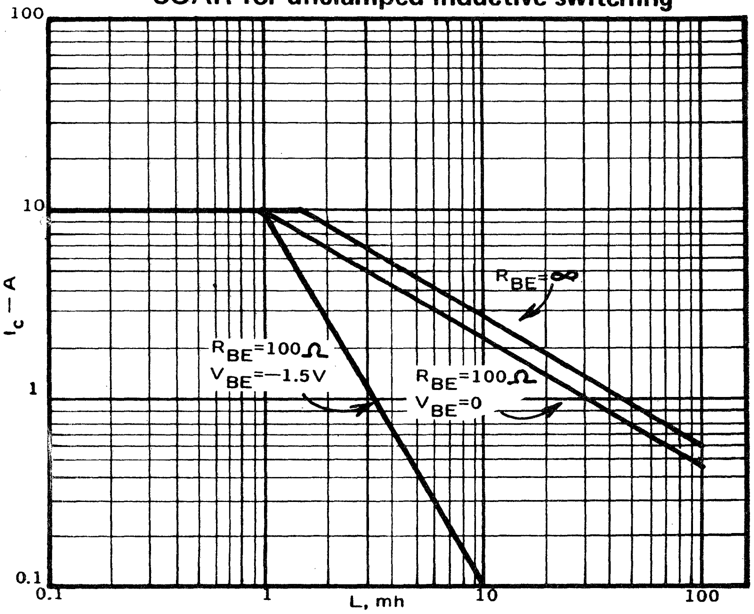
Do not apply beyond V_{CEO} rating of device.

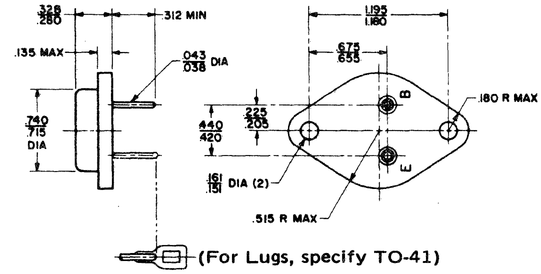
FORWARD-BIASED SOAR



Do not apply beyond V_{CEO} rating of device.

SOAR for unclamped inductive switching





TO–3

OUTLINE DRAWING

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

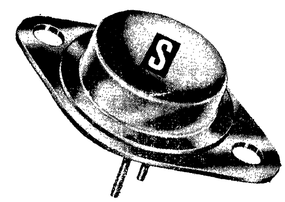
2N6258
2N6259

30 AMP

NPN SILICON POWER TRANSISTORS

TYPICAL APPLICATIONS

- Power switching circuits
- Audio amplifiers, series- and shunt-regulators
- DC to DC Converters
- Inverters



TO-3

ABSOLUTE MAXIMUM RATINGS
@ 25°C (unless otherwise noted)

PARAMETER	2N6258	2N6259	UNITS
* V_{CBO}	100	170	V
* V_{CEX}	90	170	V
* V_{CEO}	80	150	V
* V_{EBO}	7	7	V
* I_C (cont.)	30	16	A
* I_C (peak)	30	30	A
* I_B (cont.)	7.5	4	A
* I_B (peak)	15	15	A
T_J	−65°C to 200°C		
T_S	−65°C to 200°C		
P_T @ 25°C	250	250	W
P_T > 25°C	See Fig. 9	See Fig. 9	
$\Theta_{J\text{-}C}$	0.7	0.7	°C/W
PIN temperature (during soldering)	230	230	°C

at distance ≥ 1/32 in. (0.8mm) from seating plane for 10s max.

12-74-49

* In accordance with JDEC Registration Data Format JS-6 RDF-2.

ELECTRICAL CHARACTERISTICS: $T_c = 25^oC$ unless otherwise specified.

SYMBOL	TEST CONDITIONS							LIMITS				UNITS
	VOLTAGE (V)				CURRENT (R)			2N6258		2N6259		
	V_{CB}	V_{CE}	V_{EB}	V_{BE}	I_C	I_E	I_B	MIN	MAX	MIN	MAX	
*I_{CBO}	100					0		–	1.0	–	–	mA
*I_{CEX}		100		–1.5				–	1.0	–	–	mA
		150		–1.5				–	–	–	0.2	mA
*I_{CEX}		100		–1.5				–	10.0	–	–	mA
T_c=150°C		150		–1.5				–	–	–	4.0	mA
*I_{CEO}		60					0	–	2.0	–	–	mA
		120					0	–	–	–	2.0	mA
*I_{EBO}			7		0			–	2.0	–	–	mA
			7		0			–	–	–	2.0	mA
*h_{FE}		4			30^a			5	–	–	–	
		2			15^a			20	60	–	–	
		4			16^a			–	–	10	–	
		2			8^a			–	–	15	60	
V_{CEX} (sus)				–1.5	0.2			90	–	–	–	V
				–1.5	0.1			–	–	170	–	V
V_{CER} (sus)					0.2^a			85	–	–	–	V
R=100 Ω					0.2^a			–	–	160	–	V
*V_{CEO}(sus)					0.2^a			80	–	–	–	V
					0.2^a			–	–	150	–	V
*V_{BE}		4			30^a			–	3.5	–	–	V
		2			8^a			–	–	–	2.0	V
*V_{CE} (sat)					30^a		6	–	3.0	–	–	V
					15^a		1.5	–	0.75	–	–	V
					16^a		3.2	–	–	–	2.5	V
					8^a		0.8	–	–	–	1.0	V
$I_{S/B}$ [b]		80						3.1	–	–	–	A
		100						–	–	2.5	–	A
$E_{S/B}$ [c]				–1.5	5			500	–	–	–	mJ
L = 40mH, R_{BE} = 100				–1.5	2.5			–	–	125	–	mJ
*h_{fe}		4			1.0			40	–	–	–	
f = 1 kHz		4			1.0			–	–	40	–	
* $\|h_{fe}\|$		4			1.0			4	–	–	–	
f=50kHz		4			1.0			–	–	4	–	

* In accordance with JEDEC registration data format JS-6 RDF-2.

[a] Pulsed: pulse duration = 300 μs, rep. rate = 60 Hz.

[b] $I_{s/b}$ is defined as the current at which second breakdown occurs at a specified collector voltage with the emitter base junction forward-biased for transistor operation in the active region.

[c] $E_{s/b}$ is defined as the energy at which second breakdown occurs under specified reverse-bias conditions. $E_{s/b} = 1/2LI^2$ where L is a series load or leakage inductance and I is the peak collector current.

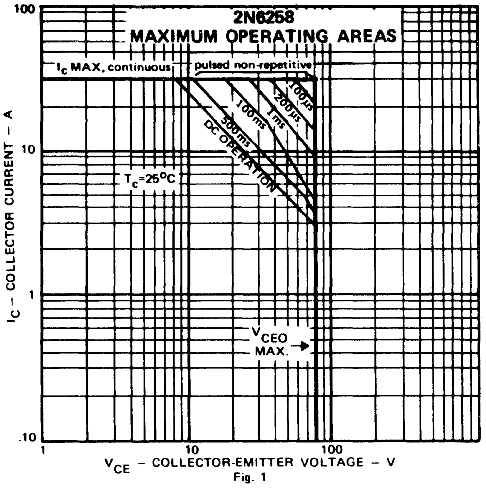


Fig. 1

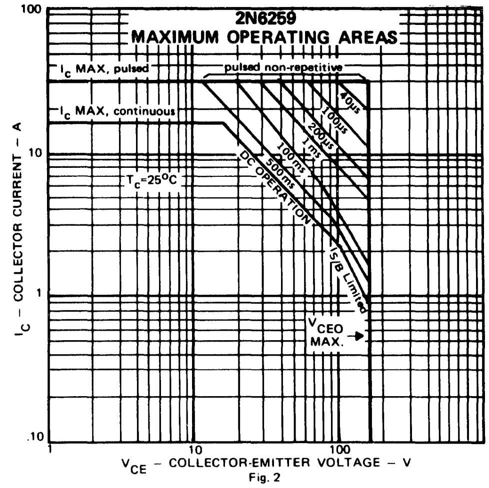


Fig. 2

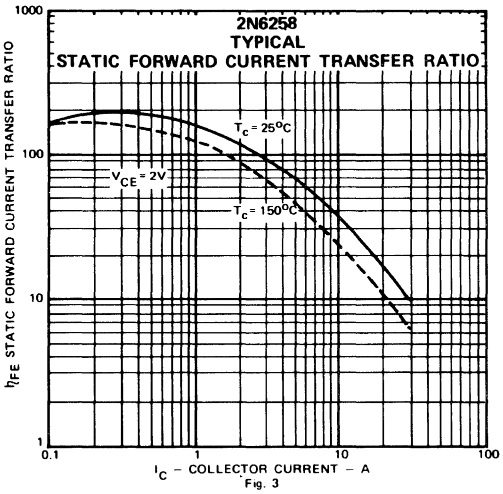


Fig. 3

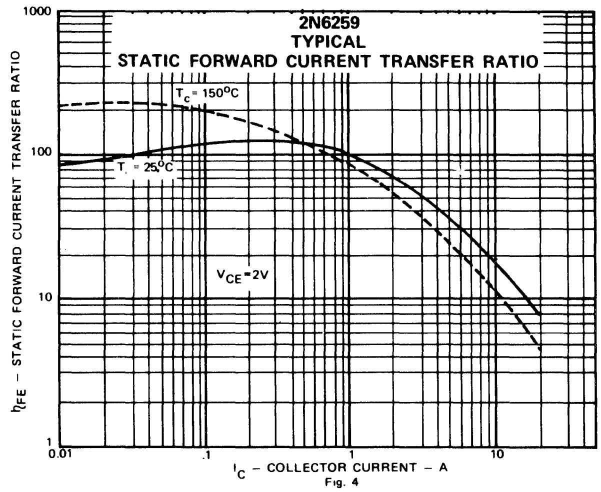


Fig. 4

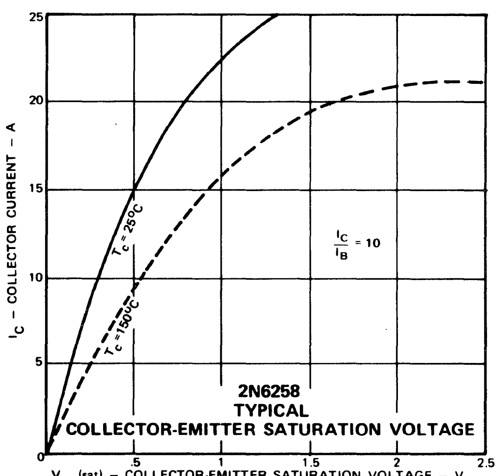


Fig. 5

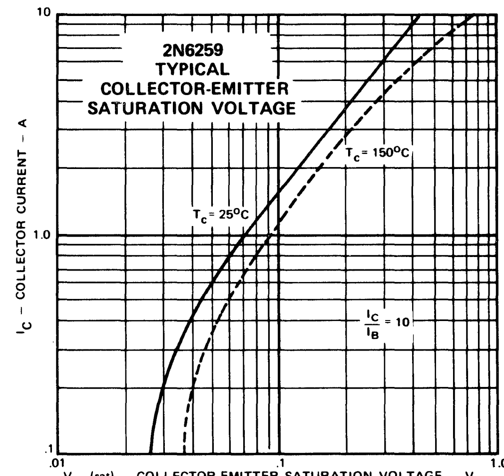


Fig. 6

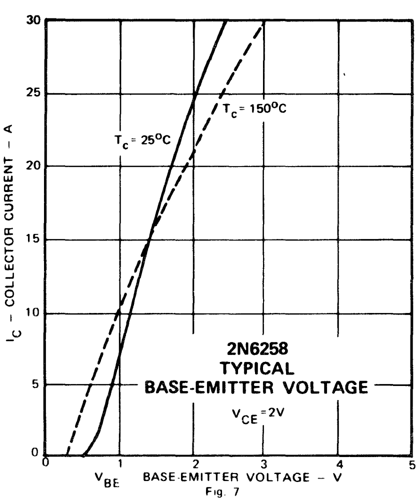


Fig. 7

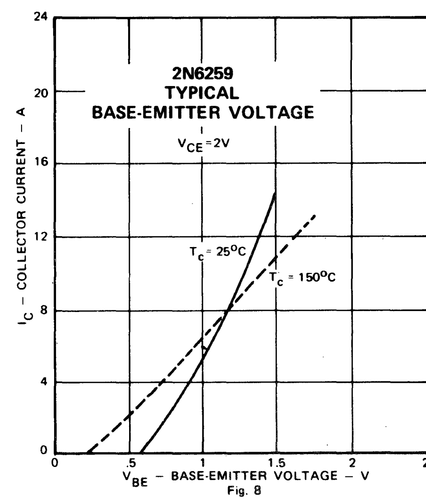


Fig. 8

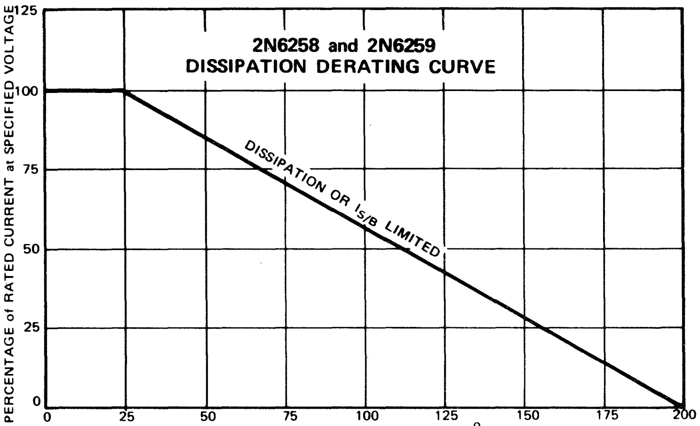
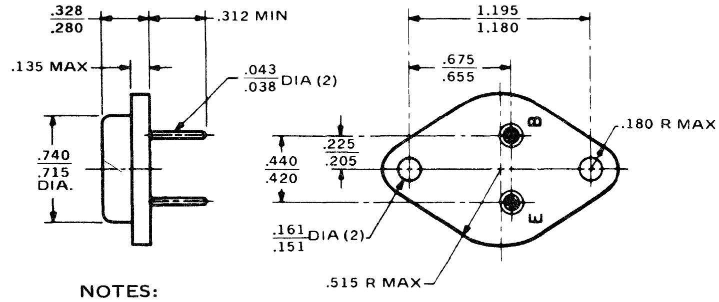


Fig. 9

OUTLINE DIMENSIONS



NOTES:
1. Collector is electrically common to case.
2. All dimensions in inches

TO-3

SOLITRON FACILITIES

TAPPAN, N.Y 10983
256 Oak Tree Road
Phone 914 / 359-5050
TWX 710 / 576-2654
Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA. 33404
1177 Blue Heron Blvd.
Phone 305 / 848-4311
TWX 510 / 952-7610
Hi-rel Power Transistors (silicon)
Industrial/Commercial Power Transistors (silicon)
Power Hybrids (standard)
Custom Hybrids
Schottky & Planar Diodes
Semiconductor Die (silicon)

PORT SALERNO, FLA. 33492
Cove Road, P. O. Box 278
Phone 305 / 287-5000
TWX 510 / 953-7500
Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies
Thin Film Microwave Products

SAN DIEGO, CALIF. 92100
8808 Balboa Ave.
Phone 714 / 278-8780
TWX 910 / 335-1221
CMOS Devices
FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Diodes/Rectifiers
Zeners
CMOS Devices
High Voltage Rectifier Stacks

JUPITER, FLA. 33458
1440 W. Indiantown Rd.
Phone 305 / 746-8311

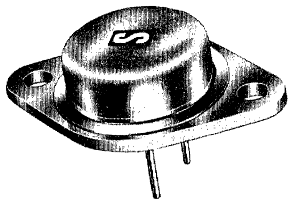
When you think of semiconductors . . . think Solitron!

Solitron DEVICES, INC.
SEMICONDUCTOR GROUP
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

2N6560
2N6562

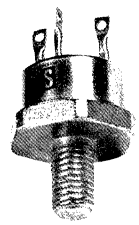
FAST SWITCHING

NPN SILICON POWER TRANSISTOR



TO-3

2N6560



TO-61/I

2N6562

ABSOLUTE MAXIMUM RATINGS

@ 25°C (unless otherwise noted)

PARAMETER	2N6560	2N6562	UNITS
V_{CBO}	450	450	V
V_{CEO} (sus)	450	450	V
V_{EBO}	5	5	V
I_C cont.	10	10	A
I_C pk.	15	15	A
I_B	2	2	A
P_T @ 100 °C.	125	100	W
T_J	–65 °C to +200 °C.		
T_S	–65 °C to +200 °C.		
$\Theta_{J\text{-}C}$	0.8	1.0	°C/W

*ELECTRICAL CHARACTERISTICS: T_c = 25 °C unless otherwise specified

SYMBOL	TEST CONDITIONS							LIMITS				UNITS
	DC COLLECTOR VOLTAGE (V)		DC EMITTER OR BASE VOLTAGE (V)		DC CURRENT (A)			2N6560		2N6562		
	V_{CB}	V_{CE}	V_{EB}	V_{BE}	I_C	I_E	I_B	MIN	MAX	MIN	MAX	
V_{CEO}(sus)					0.1			450	—	450	—	V
I_{CEV}		450		−1.5				—	1.0	—	1.0	mA
I_{CEV} T_c = 100 °C		335		−1.5				—	1.0	—	1.0	mA
I_{EBO}			5.0					—	1.0	—	1.0	mA
h_{FE}		2.0			5.0			10	40	10	40	
		5.0			15			5	—	5	—	
V_{CE} (sat)					5.0		1.0	—	0.75	—	0.75	V
V_{CE} (sat)					10		2.0	—	1.0	—	1.0	V
V_{BE} (sat)					5.0		1.0	—	1.4	—	1.4	V
f_T f = 10 MHz		10			1.0			10	50	10	50	MHz
C_{obo} f = 1.0 MHz	10							100	450	100	450	pF
t_d		150[a]			5.0		1.0	—	0.1	—	0.1	μs
t_r		150[a]			5.0		1.0	—	0.5	—	0.5	μs
t_s		150[a]			5.0		1.0 1.0[b]	—	2.5	—	2.5	μs
t_f		150[a]			5.0		1.0 1.0[b]	—	0.5	—	0.5	μs
$\Theta_{J\text{-}C}$		10			10			—	0.8	—	1.0	°C/W

(a) V_{CC}

(b) I_{B_2}

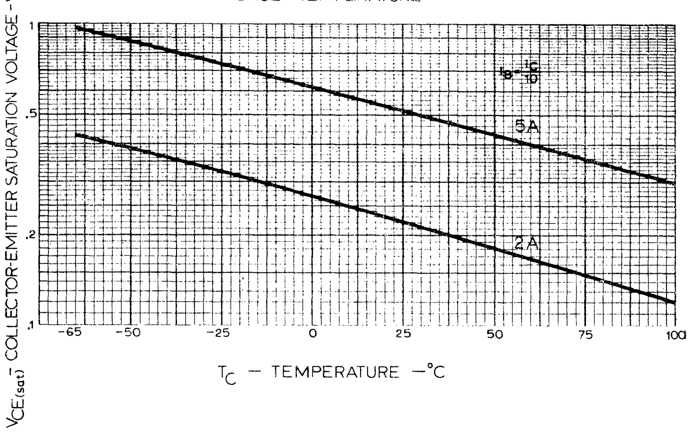
* IN ACCORDANCE WITH JEDEC REGISTRATION DATA FORMAT (J_c - 25 RDF - 1)

TYPICAL

COLLECTOR EMITTER SATURATION VOLTAGE

VS

CASE TEMPERATURE

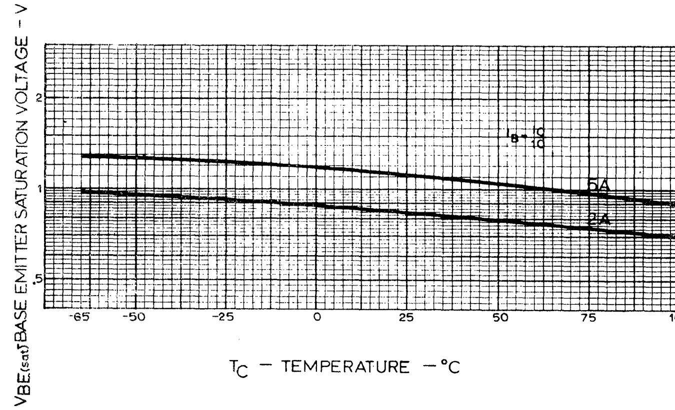


TYPICAL

BASE EMITTER SATURATION VOLTAGE

VS

CASE TEMPERATURE

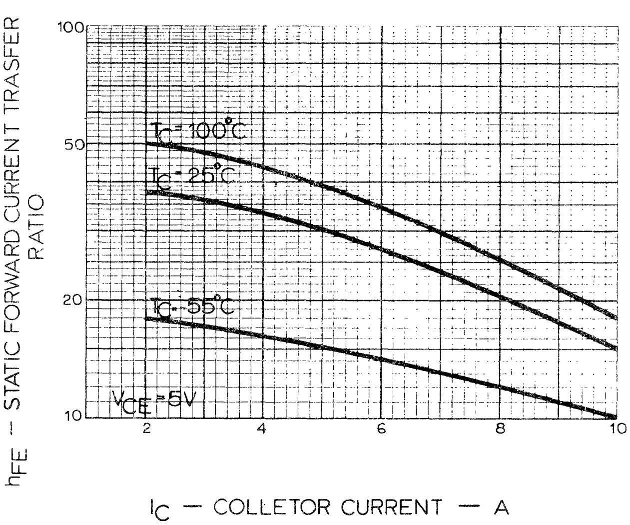


TYPICAL

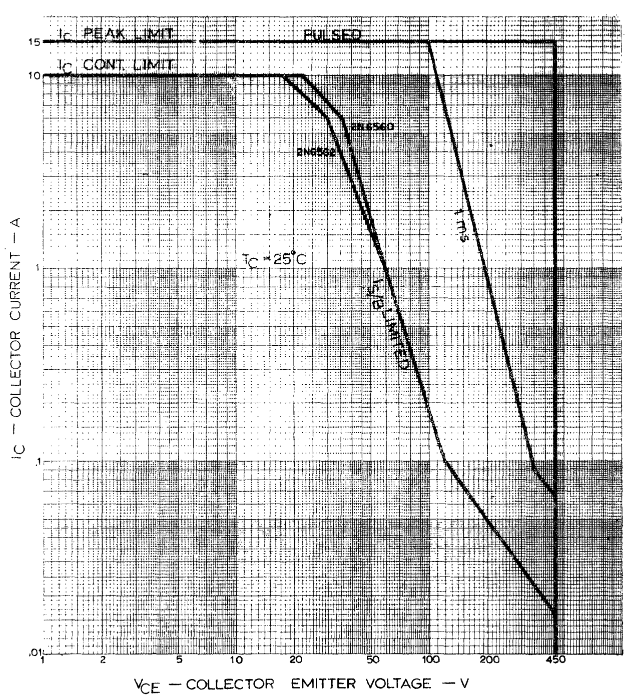
STATIC FORWARD CURRENT TRANSFER RATIO

VS

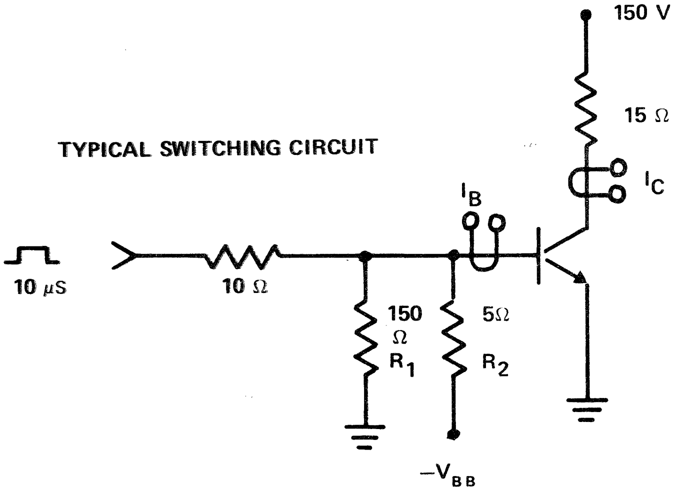
COLLECTOR CURRENT



MAXIMUM OPERATING CONDITIONS



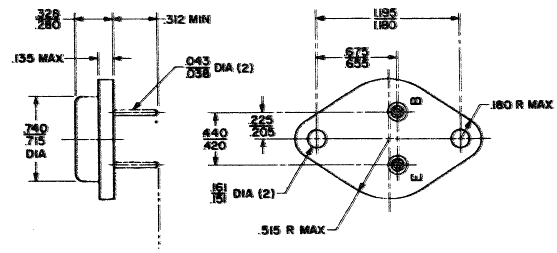
TYPICAL SWITCHING CIRCUIT



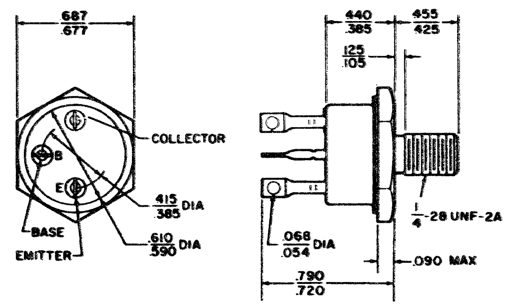
t_{ON} USE R_1 – DELETE R_2
t_S USE R_2 – DELETE R_1

$I_{B_1} = I_{B_2} = 1.0$ A

TO-3 OUTLINE DRAWING



TO-61 OUTLINE DRAWING



SOLITRON FACILITIES

TAPPAN, N.Y. 10983
256 Oak Tree Road
Phone 914 / 359-5050
TWX 710 / 576-2654

RIVIERA BEACH, FLA. 33404
1177 Blue Heron Boulevard
Phone 305 / 848-4311
TWX 510 / 952-7610

PORT SALERNO, FLA. 33492
Cove Road, P.O. Box 278
Phone 305 / 287-5000
TWX 510 / 953-7500

SAN DIEGO, CALIF. 92100
8808 Balboa Avenue
Phone 714 / 278-8780
TWX 910 / 335-1221

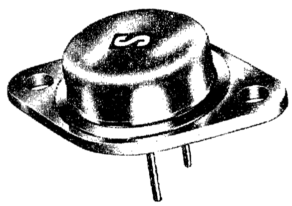
JUPITER, FLA. 33458
1440 West Indiantown Road
Phone 305 / 746-8311

Solitron DEVICES, INC.
SEMICONDUCTOR GROUP
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

2N6561
2N6563

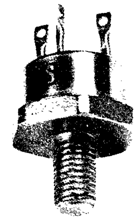
FAST SWITCHING

NPN SILICON POWER TRANSISTOR



TO-3

2N6561



TO-61/I

2N6563

ABSOLUTE MAXIMUM RATINGS

@ 25°C (unless otherwise noted)

PARAMETER	2N6561	2N6563	UNITS
V_{CBO}	300	300	V
V_{CEO} (sus)	300	300	V
V_{EBO}	5	5	V
I_C cont.	10	10	A
I_C pk.	20	20	A
I_B	2	2	A
P_T @ 100 °C.	125	100	W
T_J	–65 °C to +200 °C.		
T_S	–65 °C to +200 °C.		
$\Theta_{J\text{-}C}$	0.8	1.0	°C/W

*ELECTRICAL CHARACTERISTICS: $T_c = 25\ ^\circ C$ unless otherwise specified

SYMBOL	TEST CONDITIONS							LIMITS				UNITS
	DC COLLECTOR VOLTAGE (V)		DC EMITTER OR BASE VOLTAGE (V)		DC CURRENT (A)			2N6561		2N6563		
	V_{CB}	V_{CE}	V_{EB}	V_{BE}	I_C	I_E	I_B	MIN	MAX	MIN	MAX	
$V_{CEO}(sus)$					0.1			300	—	300	—	V
I_{CEV}		300		−1.5				—	1.0	—	1.0	mA
I_{CEV} $T_c = 100\ ^\circ C$		225		−1.5				—	1.0	—	1.0	mA
I_{EBO}			5.0					—	1.0	—	1.0	mA
h_{FE}		2.0			10			10	50	10	50	
		5.0			20			5	—	5	—	
V_{CE} (sat)					10		2.0	—	0.75	—	0.75	V
V_{CE} (sat)					10		1.0	—	1.0	—	1.0	V
V_{BE} (sat)					10		2.0	—	1.8	—	1.8	V
f_T f = 10 MHz		10			1.0			15	60	15	60	MHz
C_{obo} f = 1.0 MHz	10							100	450	100	450	pF
t_d		150[a]			5.0		1.0	—	0.1	—	0.1	μs
t_r		150[a]			5.0		1.0	—	0.5	—	0.5	μs
t_s		150[a]			5.0		1.0 1.0[b]	—	1.2	—	1.2	μs
t_f		150[a]			5.0		1.0 1.0[b]	—	0.5	—	0.5	μs
$\Theta_{J\text{-}C}$		10			10			—	0.8	—	1.0	°C/W

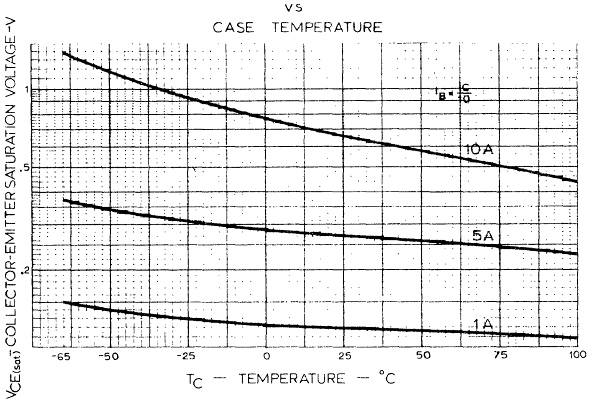
(a) V_{CC}

(b) I_{B_2}

* IN ACCORDANCE WITH JEDEC REGISTRATION DATA FORMAT (J_c - 25 RDF - 1)

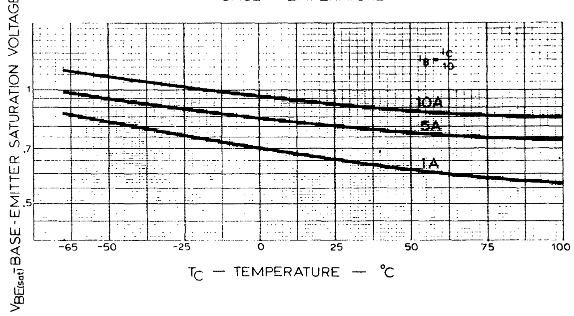
TYPICAL

COLLECTOR EMITTER SATURATION VOLTAGE
VS
CASE TEMPERATURE



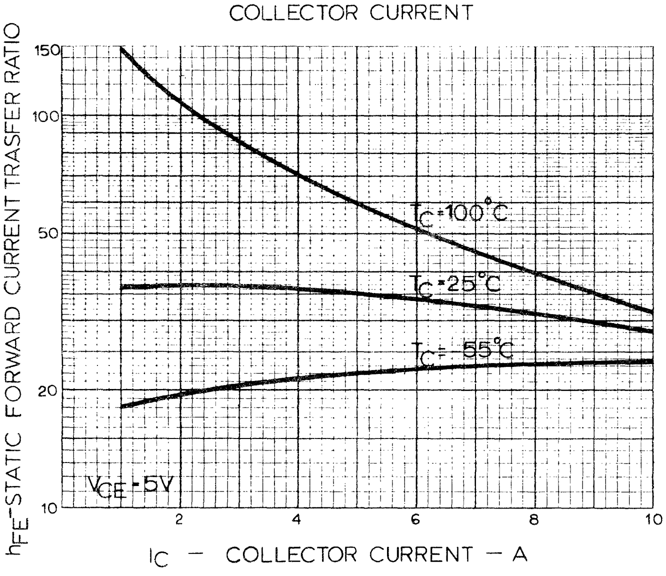
TYPICAL

BASE EMITTER SATURATION VOLTAGE
VS
CASE TEMPERATURE

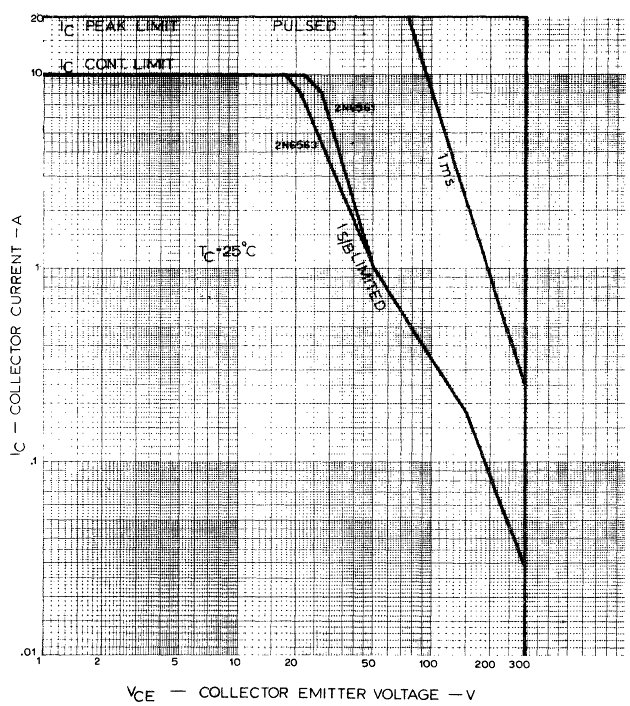


TYPICAL

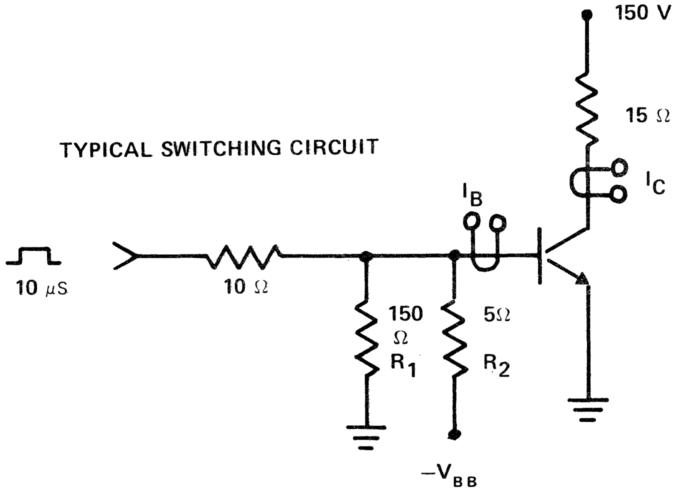
STATIC FORWARD CURRENT TRANSFER RATIO
VS
COLLECTOR CURRENT



MAXIMUM OPERATING CONDITIONS



TYPICAL SWITCHING CIRCUIT

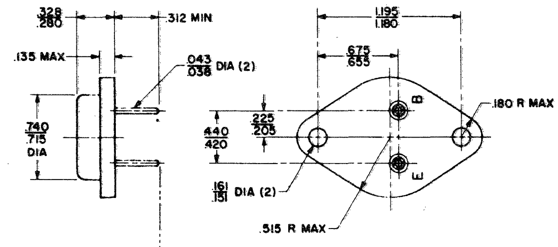


t_{ON} USE R_1 – DELETE R_2

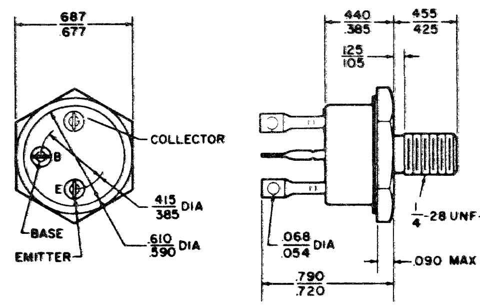
t_S USE R_2 – DELETE R_1

$I_{B_1} = I_{B_2} = 1.0$ A

TO-3 OUTLINE DRAWING



TO-61 OUTLINE DRAWING



SOLITRON FACILITIES

TAPPAN, N.Y. 10983
256 Oak Tree Road
Phone 914 / 359-5050
TWX 710 / 576-2654

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA. 33404
1177 Blue Heron Boulevard
Phone 305 / 848-4311
TWX 510 / 952-7610

Hi-rel Power Transistors (silicon)
Industrial/Commercial Power Transistors (silicon)
Power Hybrids (standard)
Custom Hybrids
Schottky & Planar Diodes
Semiconductor Die (silicon)

PORT SALERNO, FLA. 33492
Cove Road, P.O. Box 278
Phone 305 / 287-5000
TWX 510 / 953-7500

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies
Thin Film Microwave Products

SAN DIEGO, CALIF. 92100
8808 Balboa Avenue
Phone 714 / 278-8780
TWX 910 / 335-1221

CMOS Devices
FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Diodes/Rectifiers
Zeners
High Voltage Rectifier Stacks

JUPITER, FLA. 33458
1440 West Indiantown Road
Phone 305 / 746-8311

When you think of semiconductors . . . think Solitron!

SECTION 3

PNP POWER TRANSISTORS

SDT and SP Devices

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

TO–61 – Isolated Collector

SDT3101 SDT3105 SDT3102 SDT3106 SDT3103 SDT3107 SDT3104 SDT3108 SDT3109

20 AMP

PNP POWER TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	SDT3101	SDT3102	SDT3103	SDT3104
BV_{CEX}	–40 V	–60 V	–80 V	–100 V
BV_{CEO}	–40 V	–60 V	–80 V	–100 V
BV_{EBO}	–6 V	–6 V	–6 V	–6 V
I_c(Max.)	–20 A	–20 A	–20 A	–20 A
I_B(Max.)	–5 A	–5 A	–5 A	–5 A
P_T(100°C Case)	50 W	50 W	50 W	50 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
V_{CEO}(sus)	I_c= –100 mA, I_B= 0	–40	–	Volts	SDT3101
	I_c= –100 mA, I_B= 0	–60	–	Volts	SDT3102
	I_c= –100 mA, I_B= 0	–80	–	Volts	SDT3103
	I_c= –100 mA, I_B= 0	–100	–	Volts	SDT3104
I_{CEX}	V_{CE}= Rated V_{CEX}, V_{BE}= 1.5V	–	–10	μA	All
	V_{CE}= Rated V_{CEX}, V_{BE}= 1.5V, T_c= 150°C	–	–500	μA	All
I_{EBO}	V_{EB}= –4 V, I_c= 0	–	–10	μA	All
h_{FE}	I_c= –10 A, V_{CE}= –5.0 V	20	80	–	All
	I_c= –20 A, I_B= –5.0 V	5	–	–	All
V_{CE}(sat)	I_c= –10 A, I_B= –1.0 A	–	–1.75	Volts	All
V_{BE}(sat)	I_c= –10 A, I_B= –1.0 A	–	–1.75	Volts	All
Dynamic					
C_{OBO}	V_{CB}= –10 V, f = 1 MHz	–	500	pf	All
f_t	V_{CE}= –10 V, I_c= –1.0 A	30	–	MHz	All
t_r	I_c= –10 A, I_{B_1}= $-I_{B_2}$= 1.0 A	–	500	nsec	All
t_s	I_c= –10 A, I_{B_1}= $-I_{B_2}$= 1.0 A	–	750	nsec	All
t_f	I_c= –10 A, I_{B_1}= $-I_{B_2}$= 1.0 A	–	500	nsec	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3105	SDT3106	SDT3107	SDT3108	SDT3109
BV_{CEX}	–40 V	–60 V	–80 V	–100 V	–120 V
BV_{CEO}	–40 V	–60 V	–80 V	–100 V	–120 V
BV_{EBO}	–6 V	–6 V	–6 V	–6 V	–6 V
I_C(Max.)	–10 A	–10 A	–10 A	–10 A	–10 A
I_B(Max.)	–4 A	–4 A	–4 A	–4 A	–4 A
P_T(100°C Case)	50 W	50 W	50 W	50 W	50 W
Operating Junction Temperature .			200°C		
Storage Temperature Range ...			–65°C to +200°C		

ELECTRICAL CHARACTERISTICS (25°C Ambient)

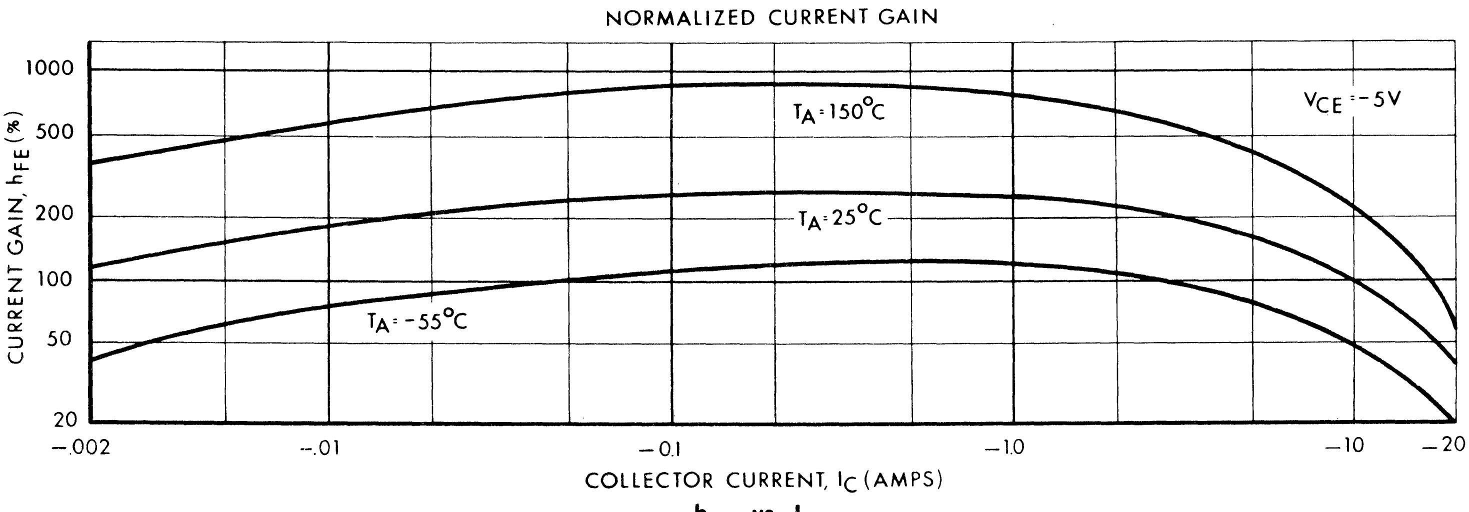
Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
V_{CEO}(sus)	I_C= –100 mA, I_B= 0	–40	–	Volts	SDT3105
	I_C= –100 mA, I_B= 0	–60	–	Volts	SDT3106
	I_C= –100 mA, I_B= 0	–80	–	Volts	SDT3107
	I_C= –100 mA, I_B= 0	–100	–	Volts	SDT3108
	I_C= –100 mA, I_B= 0	–120	–	Volts	SDT3109
BV_{EBO}	I_E= –1.0 mA, I_C= 0	–6	–	Volts	All
I_{CEX}	V_{CE}= Rated V_{CEX}, V_{BE}= 1.5V	–	–10	μA	All
	V_{CE}= Rated V_{CEX}, V_{BE}= 1.5V, T_C= 150°C	–	–500	μA	All
I_{EBO}	V_{EB}= –4 V, I_C= 0	–	–10	μA	All
h_{FE}	I_C= –5.0 A, V_{CE}= –5.0 V	20	80	–	All
	I_C= –10 A, I_B= –5.0 V	10	–	–	All
V_{CE}(sat)	I_C= –5.0 A, I_B= –0.5 A	–	–0.75	Volts	All
V_{BE}(sat)	I_C= –5.0 A, I_B= –0.5 A	–	–1.5	Volts	All

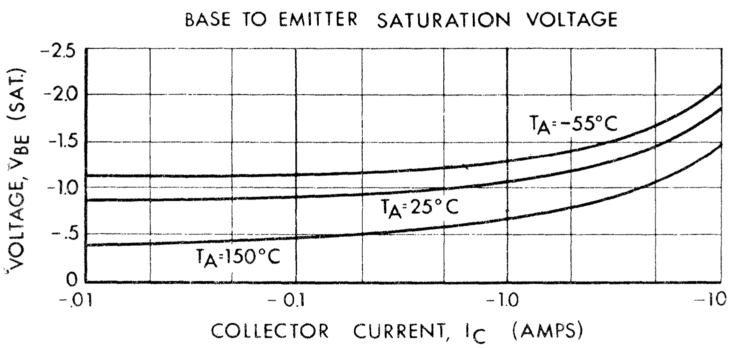
Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
C_{OB}	V_{CE}= –10V, f= 1 MHz	–	500	pf	All
f_t	V_{CE}= –10V, I_C= –1.0 A	30	–	MHz	All
t_r	I_C= –5 A, I_{B_1}= $-I_{B_2}$= 0.5 A	–	0.2	usec	All
t_s	I_C= –5 A, I_{B_1}= $-I_{B_2}$= 0.5 A	–	1.0	usec	All
t_f	I_C= –5 A, I_{B_1}= $-I_{B_2}$= 0.5 A	–	0.2	usec	All

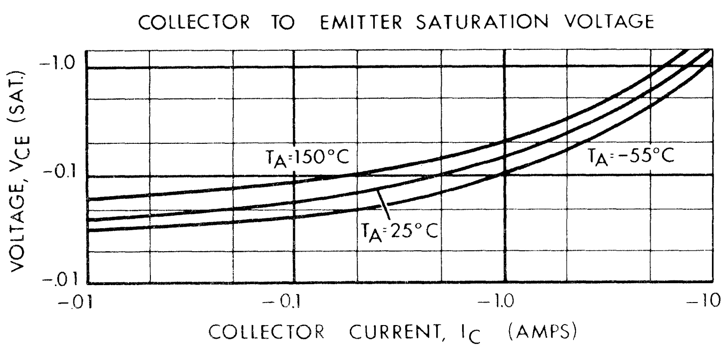
CHARACTERISTIC CURVES (ALL TYPES)



h_{FE} vs I_c



V_{BE}(sat) vs I_c

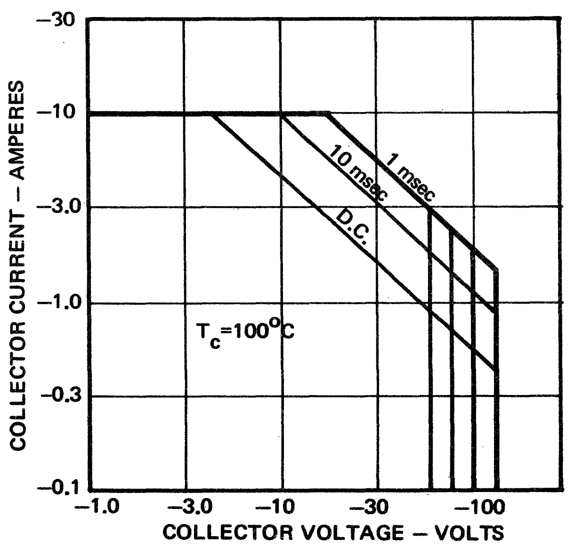


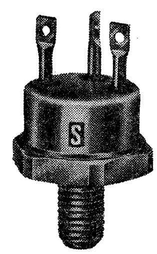
V_{CE}(sat) vs I_c

ELECTRICALLY IDENTICAL NPN TRANSISTORS

PNP	NPN
SDT3101	SDT3201
SDT3102	SDT3202
SDT3103	SDT3203
SDT3104	SDT3204

PNP	NPN
SDT3105	SDT3205
SDT3106	SDT3206
SDT3107	SDT3207
SDT3108	SDT3208
SDT3109	SDT3209





TO–61
(Isolated Collector)

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

When you think of semiconductors... think Solitron!

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

TO–111
(Isolated)

SDT3125
SDT3126
SDT3127
SDT3128
SDT3129

10 AMP

PNP POWER TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	SDT3125	SDT3126
BV_{CEX}	–40 V	–60 V
BV_{CEO}	–40 V	–60 V
BV_{EBO}	–6 V	–6 V
I_C(Max.)	–10 A	–10 A
I_B(Max.)	–4 A	–4 A
P_T(100°C Case)	30 W	30 W
Operating Junction Temperature	200°C	
Storage Temperature Range	–65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
V_{CEO}(sus)	I_C= 100 mA, I_B= 0	–40	–	Volts	SDT3125
	I_C= 100 mA, I_B= 0	–60	–	Volts	SDT3126
I_{CEX}	V_{CE}= Rated V_{CEX}, V_{BE}= 1.5 V	–	–10	μA	Both
I_{CEX}	V_{CE}= Rated V_{CEX}, V_{BE}= 1.5 V T_C= 150°C	–	–500	μA	Both
I_{EBO}	V_{EB}= –4.0 V, I_C= 0	–	–10	μA	Both
h_{FE}	I_C= –5 A, V_{CE}= –5.0 V	20	80	–	Both
	I_C= –10 A, V_{CE}= –5.0 V	10	–	–	Both
V_{CE}(sat)	I_C= –5 A, I_B= –0.5 A	–	–0.75	Volts	Both
V_{BE}(sat)	I_C= –5 A, I_B= –0.5 A	–	–1.50	Volts	Both

Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
C_{OBO}	V_{CB}= –10 V, f= 1 MHz	–	500	pf	Both
f_t	V_{CE}= –10 V, I_C= –1 A	30	–	MHz	Both
t_r	I_C= –5 A, I_{B_1}= $-I_{B_2}$= 0.5 A	–	0.2	μsec	Both
t_s	I_C= –5 A, I_{B_1}= $-I_{B_2}$= 0.5 A	–	1.0	μsec	Both
t_f	I_C= –5 A, I_{B_1}= $-I_{B_2}$= 0.5 A	–	0.2	μsec	Both

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3127	SDT3128	SDT3129
BV_{CEX}	–80 V	–100 V	–120 V
BV_{CEO}	–80 V	–100 V	–120 V
BV_{EBO}	–6 V	–6 V	–6 V
I_c(Max.)	–10 A	–10 A	–10 A
I_B(Max.)	–4 V	–4 V	–4 V
P_T(100°C Case)	30 W	30 W	30 W
Operating Junction Temperature	——	200°C	——
Storage Temperature Range	——	–65°C to +200°C	——

ELECTRICAL CHARACTERISTICS (25°C Ambient)

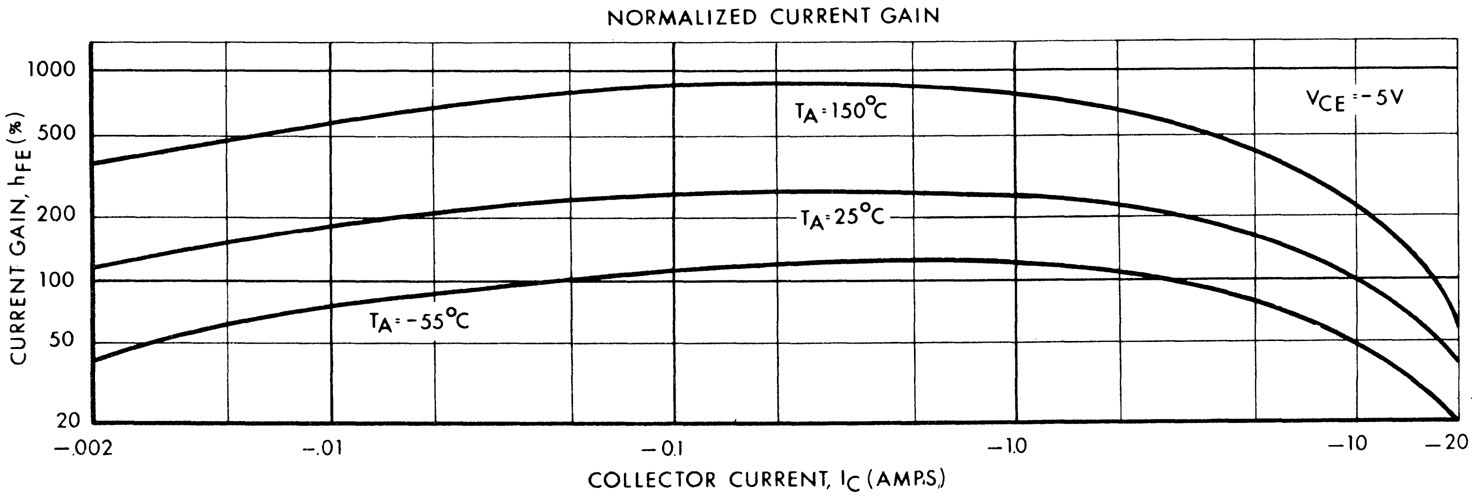
Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
V_{CEO}(sus)	I_c= –100 mA, I_B= 0	–80	–	Volts	SDT3127
	I_c= –100m A, I_B= 0	–100	–	Volts	SDT3128
	I_c= –100 mA, I_B= 0	–120	–	Volts	SDT3129
I_{CEX}	V_{CE}= Rated V_{CEX}, V_{BE}= 1.5 V	–	–10	μA	All
I_{CEX}	V_{CE}= Rated V_{CEX}, V_{BE}=1.5V T_c= 150°C	–	–500	μA	All
I_{EBO}	V_{EB}= –4 V, I_c= 0	–	–10	μA	All
h_{FE}	I_c= –5 A, V_{CE}= –5.0 V	20	80	–	All
	I_c=–10 A, V_{CE}= –5.0 V	10	–	–	All
V_{CE}(sat)	I_c= –5 A, I_B= –0.5 A	–	–1.5	Volts	All
V_{BE}(sat)	I_c= –5 A, I_B= –0.5 A	–	–1.5	Volts	All

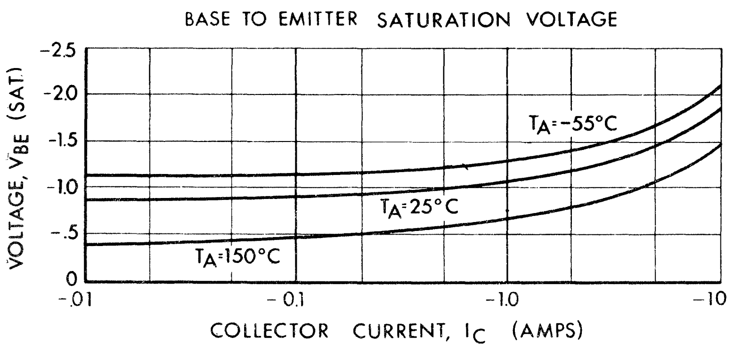
Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
C_{OBO}	V_{CE}= –10 V, f= 1 MHz	–	500	pf	All
f_t	V_{CE}= –10 V, I_c= 1 A	30	–	MHz	All
t_r	I_c= –5 A, I_{B_1}= $-I_{B_2}$= 0.5 A	–	0.2	μsec	All
t_s	I_c= –5 A, I_{B_1}= $-I_{B_2}$= 0.5 A	–	1.0	μsec	All
t_f	I_c= –5 A, I_{B_1}= $-I_{B_2}$= 0.5 A	–	0.2	μsec	All

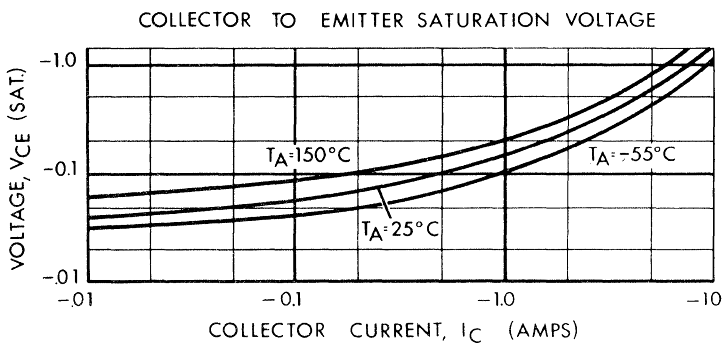
CHARACTERISTIC CURVES (ALL TYPES)



h_{FE} vs I_c



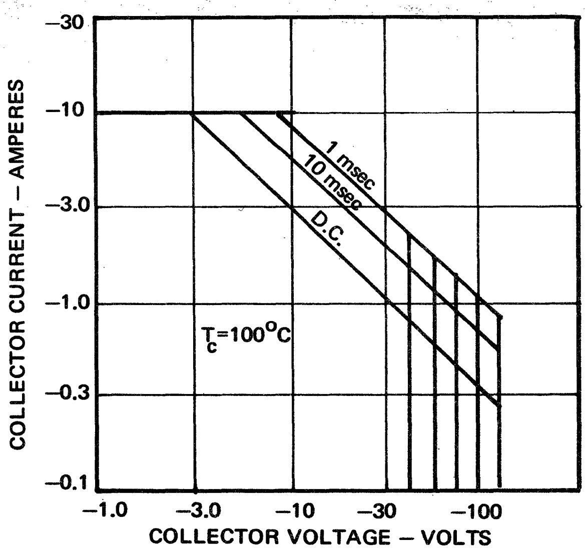
V_{BE}(sat) vs I_c

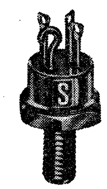


V_{CE}(sat) vs I_c

ELECTRICALLY IDENTICAL NPN TRANSISTORS

PNP	NPN
SDT3125	SDT3225
SDT3126	SDT3226
SDT3127	SDT3227
SDT3128	SDT3228
SDT3129	SDT3229





TO–111
(Isolated Collector)

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
20944 Sherman Way
Suite 112
Canoga Park, California
Telephone No. (213) 833-3822
TWX No. (910) 494-1238

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 363-7921

EUROPE
Solidev Ltd.
Tubs Hill House
Sixth Floor
London Road
Sevenoaks, Kent, England
Telephone (Sevenoaks) 57541/2/3
Cable – Solitron Svoaks
Telex. # 95378

When you think of semiconductors ... think Solitron!

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

TO–111	TO–5
SDT3301	SDT3321
SDT3302	SDT3322
SDT3303	SDT3323
SDT3304	SDT3324

5 AMP

PNP POWER TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	SDT3301	SDT3302	SDT3321	SDT3322
BV_{CEX}	–40 V	–60 V	–40 V	–60 V
BV_{CEO}	–40 V	–60 V	–40 V	–60 V
BV_{EBO}	–6 V	–6 V	–6 V	–6 V
I_c(Max.)	–5 A	–5 A	–5 A	–5 A
I_B(Max.)	–2 A	–2 A	–2 A	–2 A
P_T (100°C Case)	30 W	30 W	5 W	5 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
V_{CEO}(sus)	I_c = 100 mA, I_B = 0	–40	–	Volts	SDT3301, SDT3321
	I_c = 100 mA, I_B = 0	–60	–	Volts	SDT3302, SDT3322
BV_{EBO}	I_E = –1.0 mA, I_c = 0	–6.0	–	Volts	All
I_{CEX}	V_{CE} = Rated V_{CEX}, V_{BE} = 1.5V	–	–10	μA	All
	V_{CE} = Rated V_{CEX}, V_{BE} = 1.5V, T_c = 150°C	–	–500	μA	All
I_{EBO}	V_{EB} = –4.0 V, I_c = 0	–	–10	μA	All
h_{FE}	I_c = –2.0 A, V_{CE} = –5.0 V	40	120	–	All
V_{CE}(sat)	I_c = –2.0 A, I_B = –0.2 A	–	–0.75	Volts	All
V_{BE}(sat)	I_c = –2.0 A, I_B = –0.2 A	–	–1.50	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
C_{OBO}	V_{CB} = –10 V, f = 1 MHz	–	200	pf	All
f_t	V_{CE} = –10 V, I_c = –1.0 A	40	–	MHz	All
t_r	I_c = –2.0A, I_{B1} = $-I_{B2}$ = 0.2A	–	500	nsec	All
t_s	I_c = –2.0A, I_{B1} = $-I_{B2}$ = 0.2A	–	1000	nsec	All
t_f	I_c = –2.0A, I_{B1} = $-I_{B2}$ = 0.2A	–	300	nsec	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3303	SDT3304	SDT3323	SDT3324
BV_{CEX}	–80 V	–100 V	–80 V	–100 V
BV_{CEO}	–80 V	–100 V	–80 V	–100 V
BV_{EBO}	–6 V	–6 V	–6 V	–6 V
I_c(Max.)	–5 A	–5 A	–2 A	–2 A
I_B(Max.)	–2 A	–2 A	–2 A	–2 A
P_T(100°C Case)	30 W	30 W	5 W	5 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

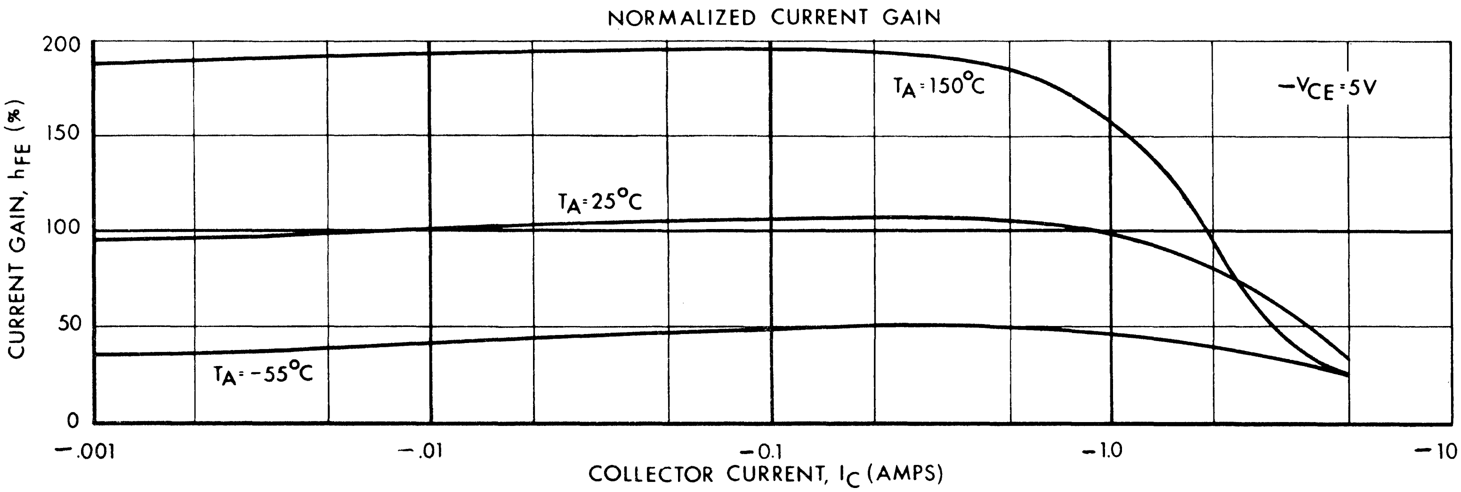
Static

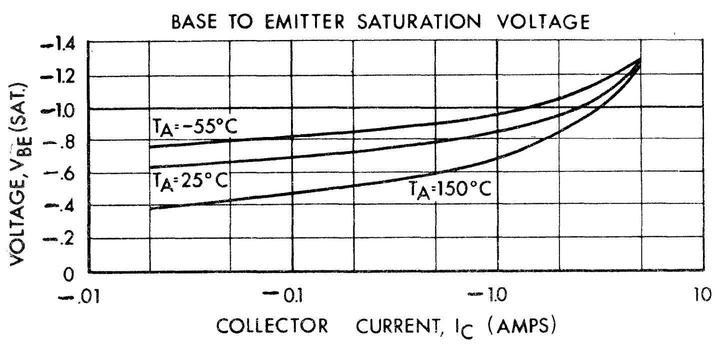
SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
V_{CEO}(sus)	I_c= –100 mA, I_B= 0	–80	–	Volts	SDT3303, SDT3323
	I_c= –100 mA, I_B= 0	–100	–	Volts	SDT3304, SDT3324
BV_{EBO}(sus)	I_E= –1.0 mA, I_c= 0	–6	–	Volts	All
I_{CEX}	V_{CE}= Rated V_{CEX}, V_{BE}= 1.5V	–	–10	μA	All
	V_{CE}= Rated V_{CEX}, V_{BE}= 1.5V, T_c= 150°C	–	–500	μA	All
I_{EBO}	V_{EB}= –4.0 V, I_c= 0	–	–10	μA	All
h_{FE}	V_{CE}= –5.0 V, I_c= –2.0 A	40	120	–	All
V_{CE}(sat)	I_c= –2.0 A, I_B= –0.2 A	–	–0.75	Volts	All
V_{BE}(sat)	I_c= –2.0 A, I_B= –0.2 A	–	–1.50	Volts	All

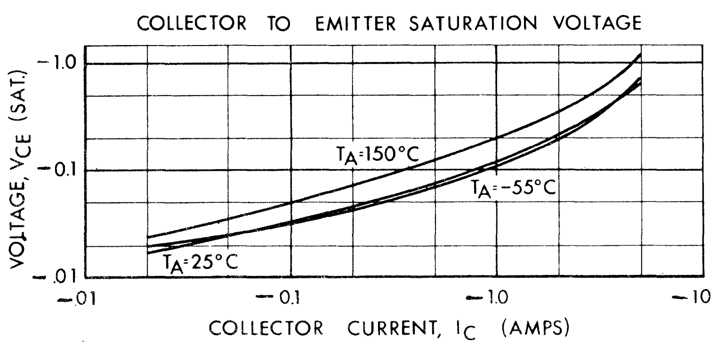
Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
C_{OBO}	V_{CB}= –10 V, f = 1 MHz	–	200	pf	All
f_t	V_{CE}= –10 V, I_c= –1.0 A	40	–	MHz	All
t_r	I_c= –2.0 A, I_{B_1}= $-I_{B_2}$= 0.2 A	–	500	nsec	All
t_s	I_c= –2.0 A, I_{B_1}= $-I_{B_2}$= 0.2 A	–	1000	nsec	All
t_f	I_c= –2.0 A, I_{B_1}= $-I_{B_2}$= 0.2 A	–	300	nsec	All

CHARACTERISTIC CURVES (ALL TYPES)



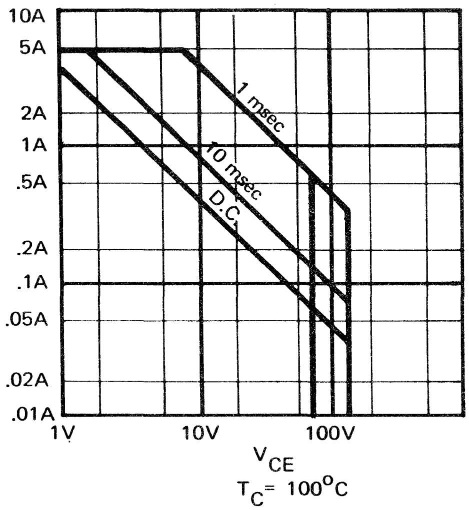


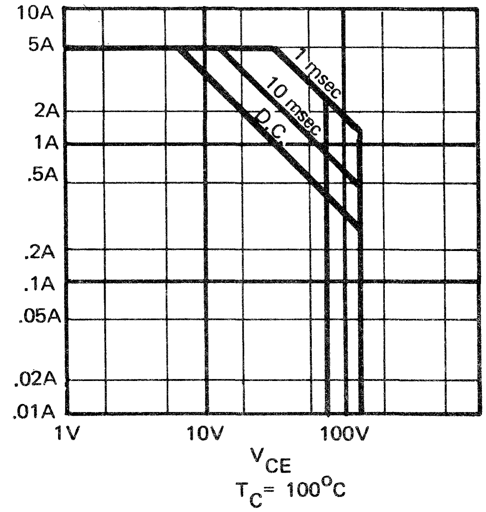


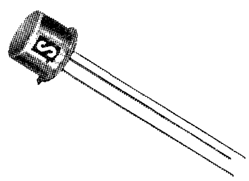
ELECTRICALLY IDENTICAL NPN TRANSISTORS

PNP	NPN
SDT3301	SDT3401
SDT3302	SDT3402
SDT3303	SDT3403
SDT3304	SDT3404

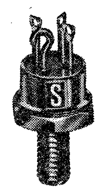
PNP	NPN
SDT3321	SDT3421
SDT3322	SDT3422
SDT3323	SDT3423
SDT3324	SDT3424







TO–5



TO–111

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

TO–111	TO–5
SDT3305	SDT3325
SDT3306	SDT3326
SDT3307	SDT3327
SDT3308	SDT3328
SDT3309	SDT3329

5 AMP

PNP POWER TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	SDT3305	SDT3306	SDT3325	SDT3326
BV_{CEX}	–40 V	–60 V	–40 V	–60 V
BV_{CEO}	–40 V	–60 V	–40 V	–60 V
BV_{EBO}	–6 V	–6 V	–6 V	–6 V
I_c(Max.)	–5 A	–5 A	–5 A	–5 A
I_B(Max.)	–2 A	–2 A	–2 A	–2 A
P_T(100°C Case)	30 W	30 W	5 W	5 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
V_{CEO}(sus)	I_c= –100 mA, I_B= 0	–40	–	Volts	SDT3305, SDT3325
	I_c= –100 mA, I_B= 0	–60	–	Volts	SDT3306, SDT3326
BV_{EBO}	I_E= –1.0 mA, I_c= 0	–6.0	–	Volts	All
I_{CEX}	V_{CE}= Rated V_{CEX}, V_{BE}=1.5V	–	–10	μA	All
	V_{CE}= Rated V_{CEX}, V_{BE}=1.5V, T_c= 150°C	–	–500	μA	All
I_{EBO}	V_{EB}= –4 V, I_c= 0	–	–10	μA	All
h_{FE}	I_c= –2.0 A, V_{CE}= –5.0 V	20	60	–	All
V_{CE}(sat)	I_c= –2.0 A, I_B= –0.2 A	–	–0.75	Volts	All
V_{BE}(sat)	I_c= –2.0 A, I_B= –0.2 A	–	–1.50	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
C_{OBO}	V_{CB}= –10 V, f = 1 MHz	–	200	pf	All
f_t	V_{CE}= –10 V, I_c= –1.0 A	40	–	MHz	All
t_r	I_c= –2.0 A, I_{B_1}= $-I_{B_2}$	–	500	nsec	All
t_s	I_c= –2.0 A, I_{B_1}= $-I_{B_2}$	–	750	nsec	All
t_f	I_c= –2.0 A, I_{B_1}= $-I_{B_2}$	–	200	nsec	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3307 SDT3327	SDT3308 SDT3328	SDT3309 SDT3329
BV_{CEX}	–80 V	–100 V	–120 V
BV_{CEO}	–80 V	–100 V	–120 V
BV_{EBO}	–6 V	–6 V	–6 V
I_c(Max.)	–5 A	–5 A	–5 A
I_B(Max.)	–2 A	–2 A	–2 A
P_T(100°C Case) TO-111 ...	30 W	30 W	30 W
P_T(100°C Case) TO-5	4 W	4 W	4 W
Operating Junction Temperature		200°C	
Storage Temperature Range		–65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

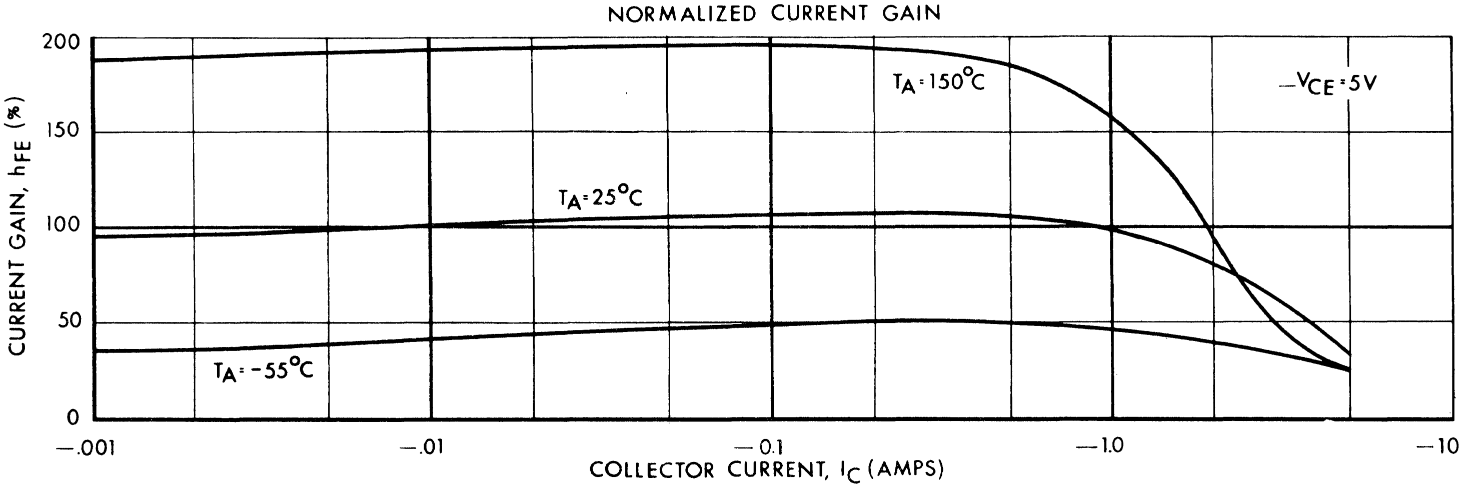
Static

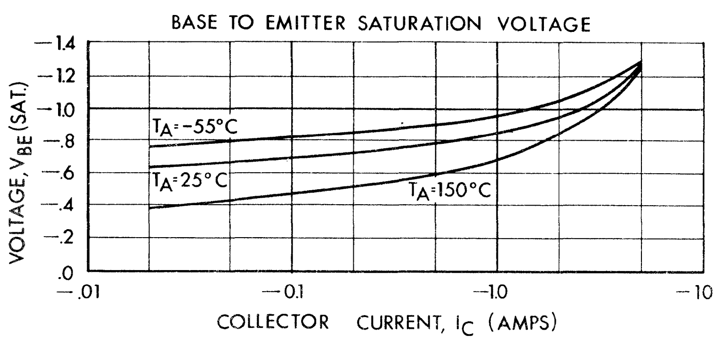
SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
V_{CEO}(sus)	I_c= –100 mA, I_B= 0	–80	–	Volts	SDT3307, SDT3327
	I_c= –100 mA, I_B= 0	–100	–	Volts	SDT3308, SDT3328
	I_c= –100 mA, I_B= 0	–120	–	Volts	SDT3309, SDT3329
BV_{EBO}	I_E= –1.0 mA, I_c= 0	–6	–	Volts	All
I_{CEX}	V_{CE}= Rated V_{CEX}, V_{BE}= 1.5V	–	–10	μA	All
	V_{CE}= Rated V_{CEX}, V_{BE}= 1.5V, T_c= 150°C	–	–500	μA	All
I_{EBO}	V_{EB}= –4 V, I_c= 0	–	–10	μA	All
h_{FE}	V_{CE}= –5.0 V, I_c= –2.0 A	20	60	–	All
V_{CE}(sat)	I_c= –2.0 A, I_B= –0.2 A	–	–0.75	Volts	All
V_{BE}(sat)	I_c= –2.0 A, I_B= –0.2 A	–	–1.5	Volts	All

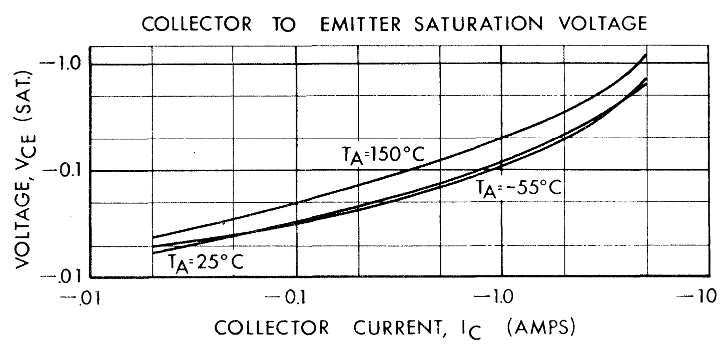
Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
C_{OBO}	V_{CB}= –10 V, f= 1 MHz	–	200	pf	All
f_t	V_{CE}= –10 V, I_c= –0.2 A	40	–	MHz	All
t_r	I_c= –2.0 A, I_{B_1}= $-I_{B_2}$= 0.2A	–	500	nsec	All
t_s	I_c= –2.0 A, I_{B_1}= $-I_{B_2}$= 0.2A	–	750	nsec	All
t_f	I_c= –2.0 A, I_{B_1}= $-I_{B_2}$= 0.2A	–	200	nsec	All

CHARACTERISTIC CURVES (ALL TYPES)

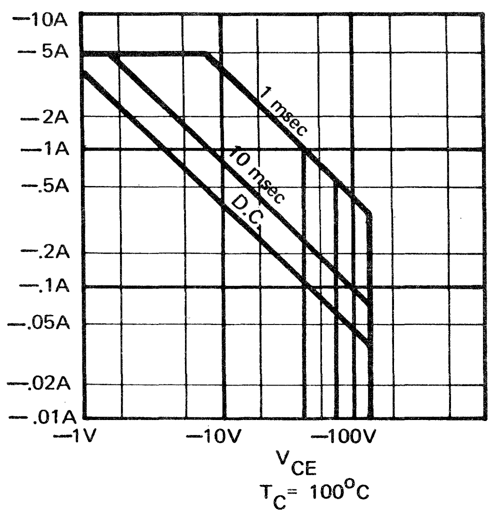


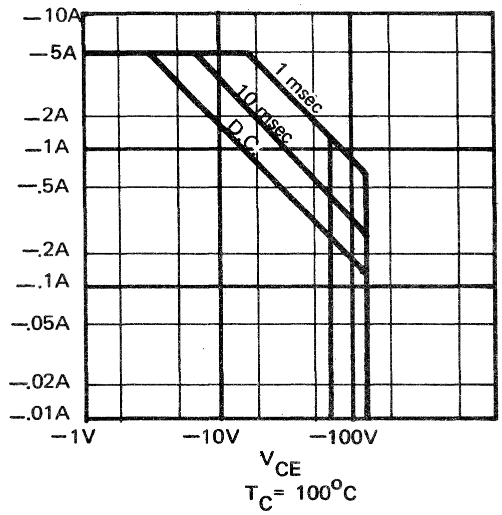


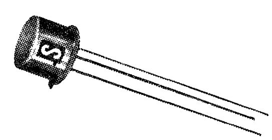


ELECTRICALLY IDENTICAL NPN TRANSISTORS

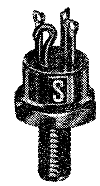
PNP	NPN	PNP	NPN
SDT3305	SDT3405	SDT3325	SDT3425
SDT3306	SDT3406	SDT3326	SDT3426
SDT3307	SDT3407	SDT3327	SDT3427
SDT3308	SDT3408	SDT3328	SDT3428
SDT3309	SDT3409	SDT3329	SDT3429







TO–5



TO–111

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

(TO–5)	(TO–66)
SDT3501	SDT3509
SDT3502	SDT3510
SDT3503	SDT3511
SDT3504	SDT3512

2 AMP

PNP POWER TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	SDT3501	SDT3502	SDT3509	SDT3510
BV_{CBO}	–40 V	–60 V	–40 V	–60 V
BV_{CEO}	–40 V	–60 V	–40 V	–60 V
BV_{EBO}	–6 V	–6 V	–6 V	–6 V
I_c(Max.)	–2 A	–2 A	–2 A	–2 A
I_B(Max.)	–0.8 A	–0.8 A	–0.8 A	–0.8 A
P_T (100°C Case)	4 W	4 W	16.6 W	16.6 W
Operating Junction Temperature	200°C			
Storage Temperature Range .	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
BV_{CBO}	I_c= –10 μA, I_E= 0	–40	–	–	Volts	SDT3501, SDT3509
	I_c= –10 μA, I_E= 0	–60	–	–	Volts	SDT3502, SDT3510
BV_{EBO}	I_E= –10 μA, I_c= 0	–6	–	–	Volts	All
V_{CEO}(sus)	I_c= –10 mA, I_B= 0	–40	–	–	Volts	SDT3501, SDT3509
	I_c= –10 mA, I_B= 0	–60	–	–	Volts	SDT3502, SDT3510
I_{CBO}	V_{CB}= –30 V, I_E= 0	–	–	–0.1	μA	SDT3501, SDT3509
	V_{CB}= –40 V, I_E= 0	–	–	–0.1	μA	SDT3502, SDT3510
h_{FE}	V_{CE}= –5.0 V, I_c= –0.5 A	30	–	–	–	All
V_{BE}(sat)	I_c= –0.5 A, I_B= –50 mA	–	–	–1.0	Volts	All
V_{CE}(sat)	I_c= –0.5 A, I_B= –50 mA	–	–	–0.4	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
C_{OB}	V_{CB}= –10 V, f= 1 MHz	–	–	100	pf	All
f_t	V_{CE}= –10 V, I_c= –0.2 A	–	50	–	MHz	All
t_r	(See Figure No. 1)	–	250	–	nsec	All
t_s	(See Figure No. 1)	–	450	–	nsec	All
t_f	(See Figure No. 1)	–	250	–	nsec	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3503	SDT3504	SDT3511	SDT3512
BV_{CBO}	–80 V	–100 V	–80 V	–100 V
BV_{CEO}	–80 V	–100 V	–80 V	–100 V
BV_{EBO}	–6 V	–6 V	–6 V	–6 V
I_c(Max.)	–2 A	–2 A	–2 A	–2 A
I_B(Max.)	–0.8 A	–0.8 A	–0.8 A	–0.8 A
P_T(100°C Case)	4 W	4 W	16.6 W	16.6 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

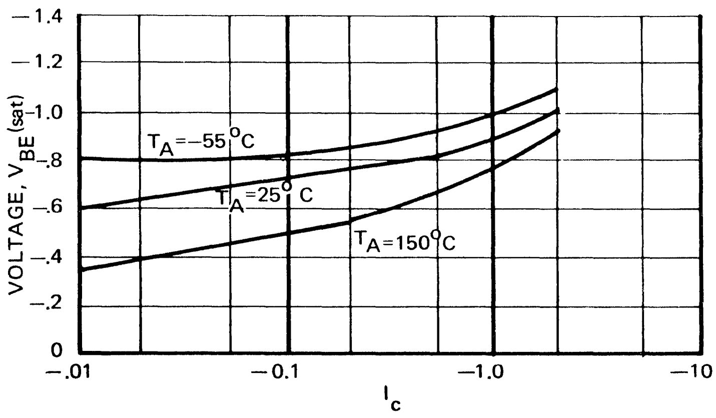
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
BV_{CBO}	$I_c = -10\,\mu A$, $I_E = 0$	–80	–	–	Volts	SDT3503, SDT3511
	$I_c = -10\,\mu A$, $I_E = 0$	–100	–	–	Volts	SDT3504, SDT3512
BV_{EBO}	$I_E = -10\,\mu A$, $I_c = 0$	–6	–	–	Volts	All
V_{CEO}(sus)	$I_c = -10$ mA, $I_B = 0$	–80	–	–	Volts	SDT3503, SDT3511
	$I_c = -10$ mA, $I_B = 0$	–100	–	–	Volts	SDT3504, SDT3512
I_{CBO}	$V_{CB} = -60$ V, $I_E = 0$	–	–	–0.1	μA	SDT3503, SDT3511
	$V_{CB} = -80$ V, $I_E = 0$	–	–	–0.1	μA	SDT3504, SDT3512
h_{FE}	$V_{CE} = -5.0$ V, $I_c = -0.5$ A	30	–	–	–	All
V_{BE}(sat)	$I_c = -0.5$ A, $I_B = -50$ mA	–	–	–1.0	Volts	All
V_{CE}(sat)	$I_c = -0.5$ A, $I_B = -50$ mA	–	–	–0.4	Volts	All

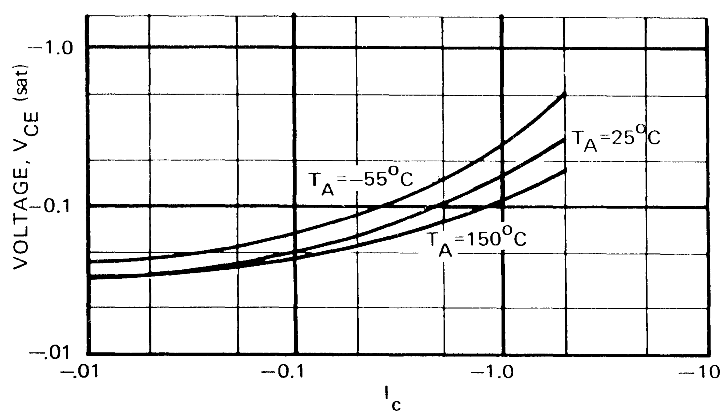
Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
C_{OB}	$V_{CB} = -10$ V, f=1 MHz	–	–	100	pf	All
f_t	$V_{CE} = -10$ V, $I_c = -0.2$ A	–	50	–	MHz	All
t_r	(See Figure No. 1)	–	250	–	nsec	All
t_s	(See Figure No. 1)	–	450	–	nsec	All
t_f	(See Figure No. 1)	–	250	–	nsec	All

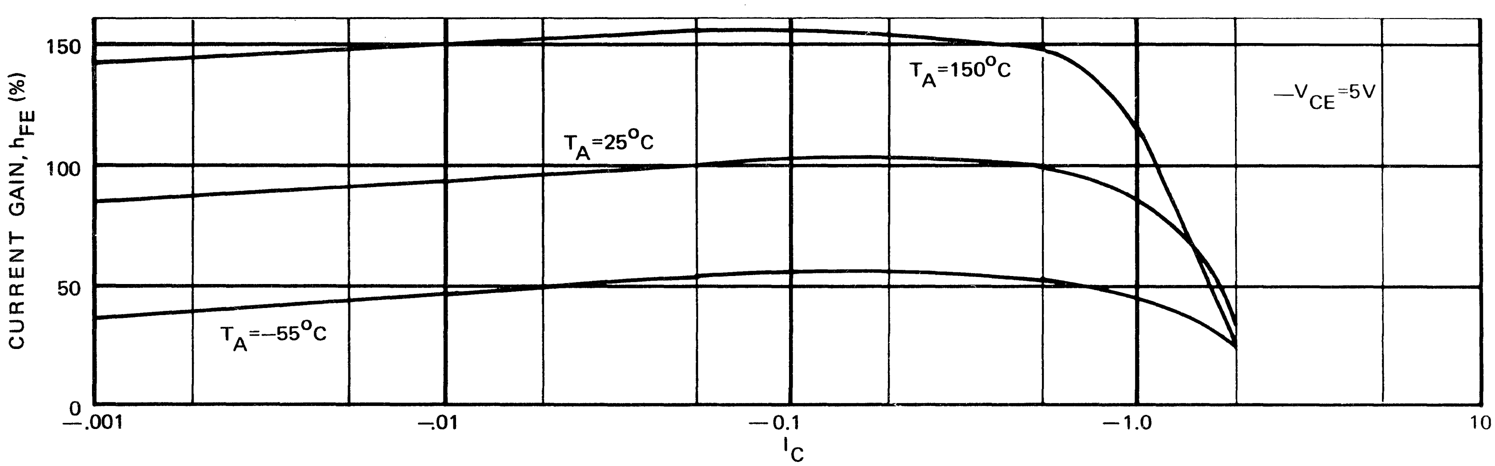
CHARACTERISTIC CURVES (ALL TYPES)



V_{BE}(sat) vs I_C

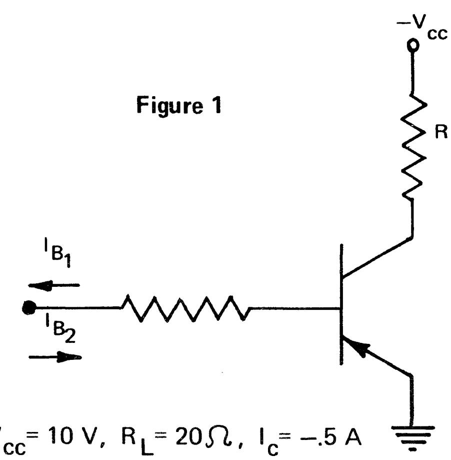


V_{CE}(sat) vs I_C

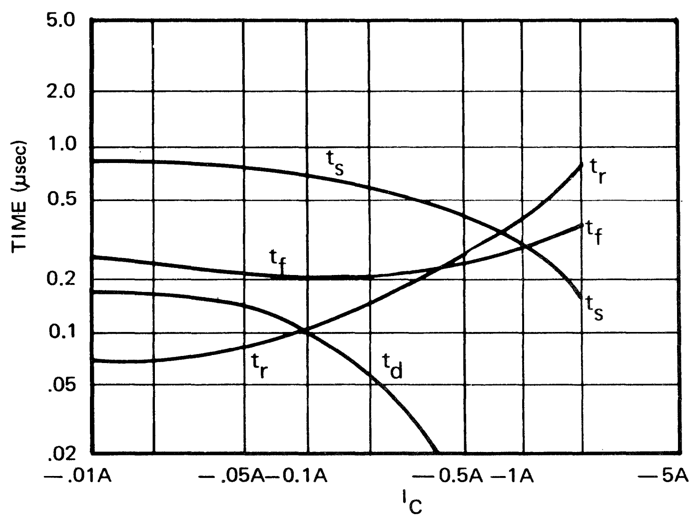


h_{FE} vs I_C

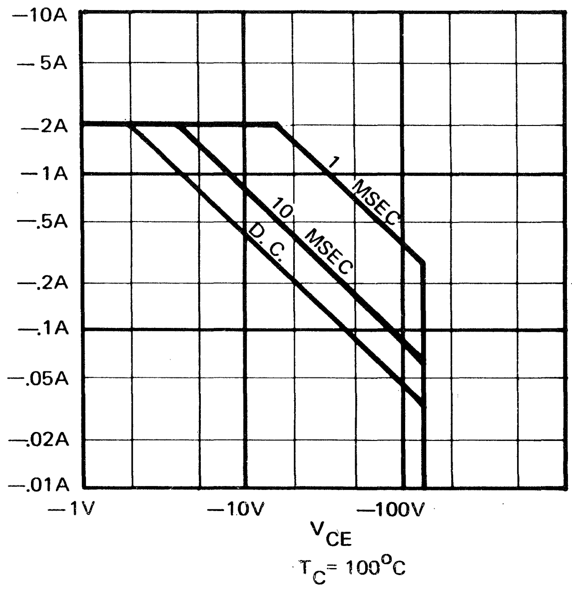
Figure 1

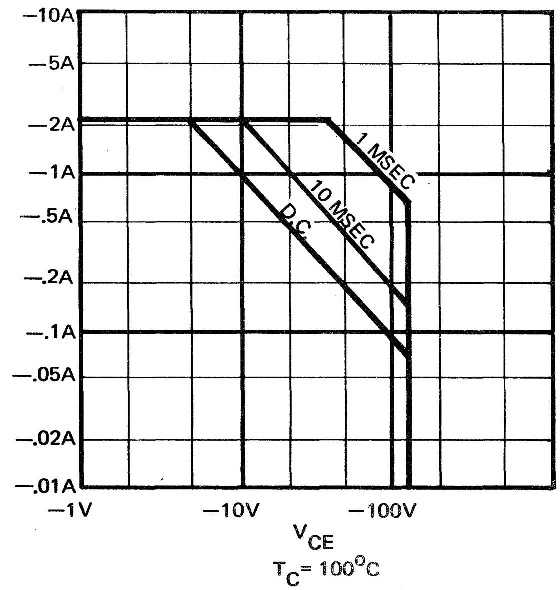


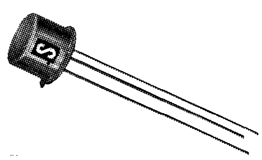
$-V_{cc}$= 10 V, R_L= 20Ω, I_c= –.5 A
$I_{B_1} = I_{B_2}$= .05 A



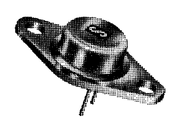
SWITCHING TIME vs I_C







TO–5



TO–66

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

(TO–5)	(TO–66)
SDT3505	SDT3513
SDT3506	SDT3514
SDT3507	SDT3515
SDT3508	SDT3516

2 AMP

PNP POWER TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	SDT3505	SDT3506	SDT3513	SDT3514
BV_{CBO}	–40 V	–60 V	–40 V	–60 V
BV_{CEO}	–40 V	–60 V	–40 V	–60 V
BV_{EBO}	–6 V	–6 V	–6 V	–6 V
I_c(Max.)	–2 A	–2 A	–2 A	–2 A
I_B(Max.)	–0.8 A	–0.8 A	–0.8 A	–0.8 A
P_T(100°C Case)	4 W	4 W	16.6 W	16.6 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
BV_{CBO}	I_c= –10 μA, I_E= 0	–40	–	–	Volts	SDT3505, SDT3513
	I_c= –10 μA, I_E= 0	–60	–	–	Volts	SDT3506, SDT3514
BV_{EBO}	I_E= –10 μA, I_c= 0	–6	–	–	Volts	All
V_{CEO}(sus)	I_c= –10 mA, I_B= 0	–40	–	–	Volts	SDT3505, SDT3513
	I_c= –10 mA, I_B= 0	–60	–	–	Volts	SDT3506, SDT3514
I_{CBO}	V_{CB}= –30 V, I_E= 0	–	–	–0.1	μA	SDT3505, SDT3513
	V_{CB}= –40 V, I_E= 0	–	–	–0.1	μA	SDT3506, SDT3514
h_{FE}	V_{CE}= –5.0 V, I_c= –0.5 A	50	–	150	–	All
V_{BE}(sat)	I_c= –0.5 A, I_B= –50 mA	–	–	–1.0	Volts	All
V_{CE}(sat)	I_c= –0.5 A, I_B= –50 mA	–	–	–0.4	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
C_{OB}	V_{CB}= –10 V, f= 1 MHz	–	–	100	pf	All
f_t	V_{CE}= –10 V, I_c= –0.2 A	–	50	–	MHz	All
t_r	(See Figure No. 1)	–	250	–	nsec	All
t_s	(See Figure No. 1)	–	450	–	nsec	All
t_f	(See Figure No. 1)	–	250	–	nsec	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

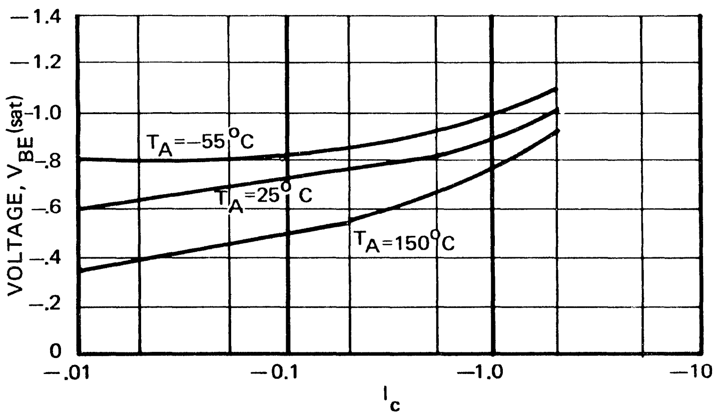
	SDT3507	SDT3508	SDT3515	SDT3516
BV_{CBO}	–80 V	–100 V	–80 V	–100 V
BV_{CEO}	–80 V	–100 V	–80 V	–100 V
BV_{EBO}	–6 V	–6 V	–6 V	–6 V
I_c(Max.)	–2 A	–2 A	–2 A	–2 A
I_B(Max.)	0.8 A	0.8 A	0.8 A	0.8 A
P_T(100°C Case)	4 W	4 W	16.6 W	16.6 W
Operating Junction Temperature	200°C			
Storage Temperature Range.	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

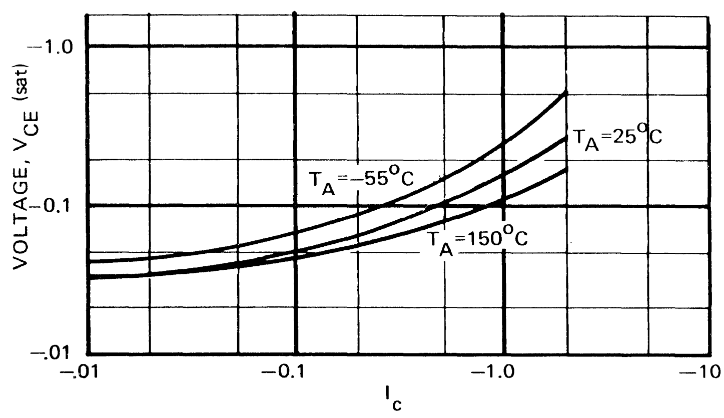
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
BV_{CBO}	I_c= –10 μA, I_E= 0	–80	–	–	Volts	SDT3507, SDT3515
	I_c= –10 μA, I_E= 0	–100	–	–	Volts	SDT3508, SDT3516
BV_{EBO}	I_E= –10 μA, I_c= 0	–6	–	–	Volts	All
V_{CEO}(sus)	I_c= –10 mA, I_B= 0	–80	–	–	Volts	SDT3507, SDT3515
	I_c= –10 mA, I_B= 0	–100	–	–	Volts	SDT3508, SDT3516
I_{CBO}	V_{CB}= –60 V, I_E= 0	–	–	–0.1	μA	SDT3507, SDT3515
	V_{CB}= –80 V, I_E= 0	–	–	–0.1	μA	SDT3508, SDT3516
h_{FE}	V_{CE}= –5.0 V, I_c= –0.5 A	30	–	–	–	All
V_{BE}(sat)	I_c= –0.5 A, I_B= –50 mA	–	–	–1.0	Volts	All
V_{CE}(sat)	I_c= –0.5 A, I_B= –50 mA	–	–	–0.4	Volts	All
Dynamic						
C_{OB}	V_{CB}= –10 V, f= 1 MHz	–	–	100	pf	All
f_t	V_{CE}= –10 V, I_c= –0.2 A	–	50	–	MHz	All
t_r	(See Figure No. 1)	–	250	–	nsec	All
t_s	(See Figure No. 1)	–	450	–	nsec	All
t_f	(See Figure No. 1)	–	250	–	nsec	All

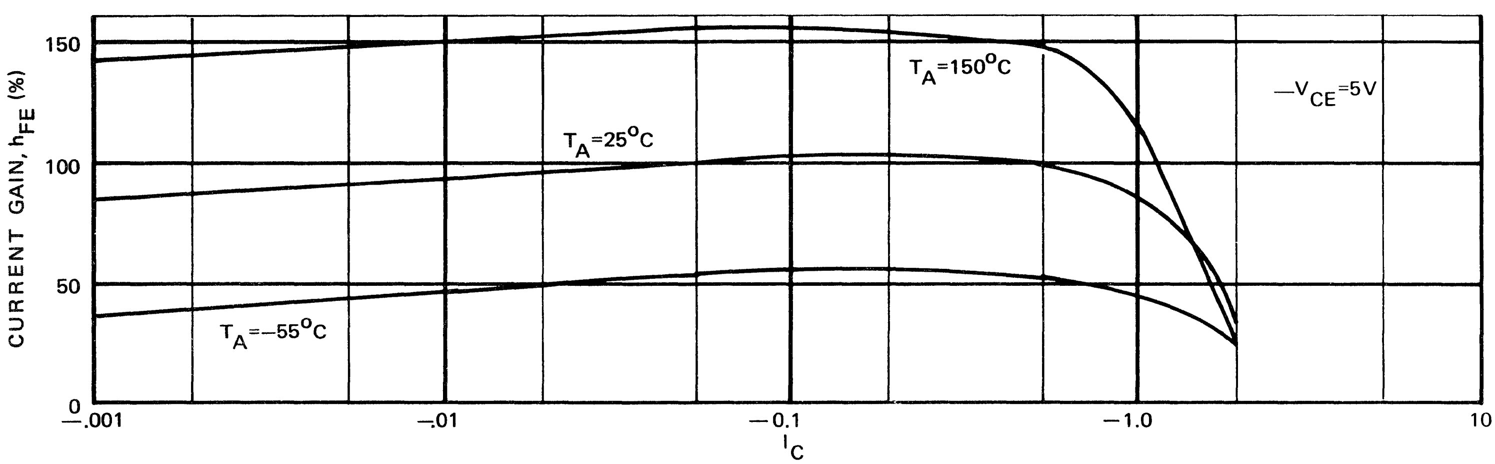
CHARACTERISTIC CURVES (ALL TYPES)



V_{BE}(sat) vs I_C

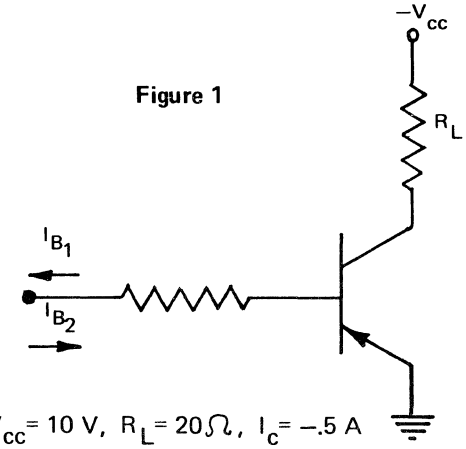


V_{CE}(sat) vs I_C

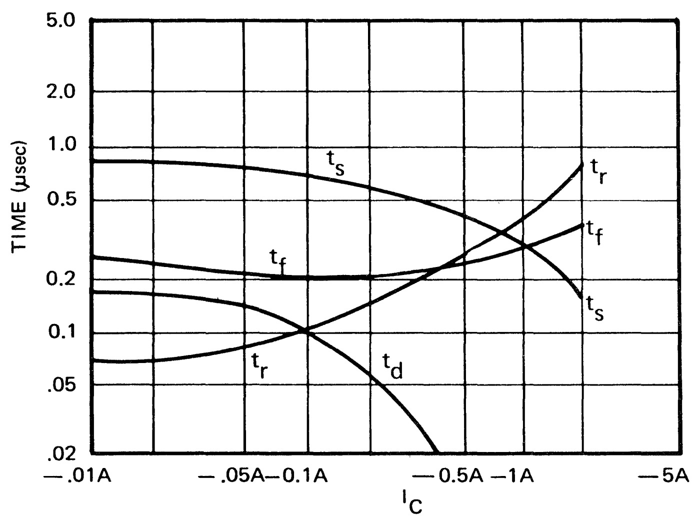


h_{FE} vs I_C

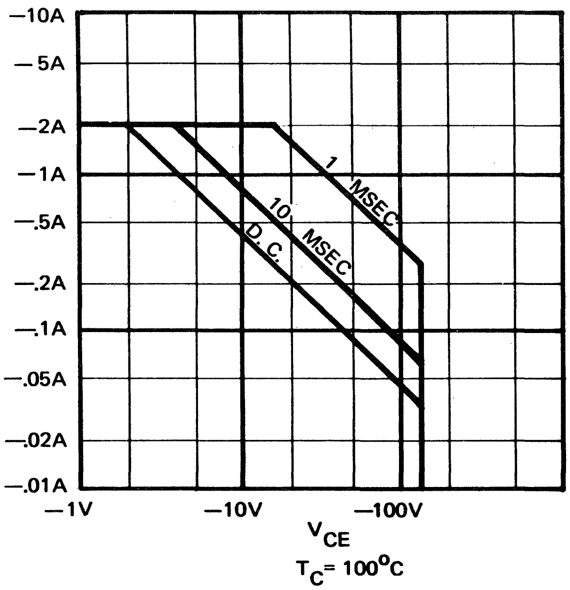
Figure 1

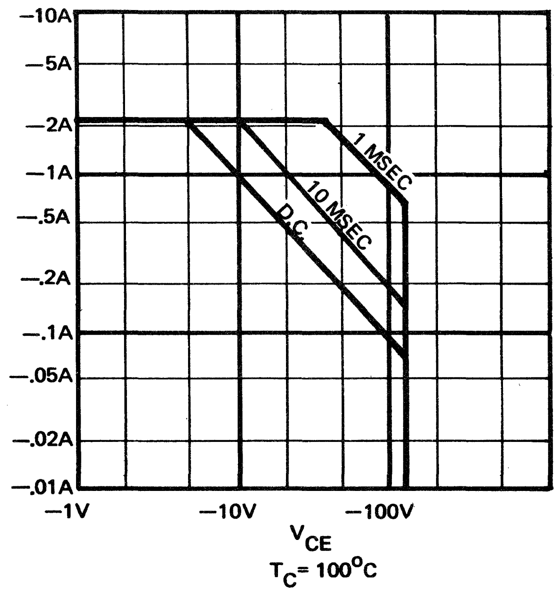


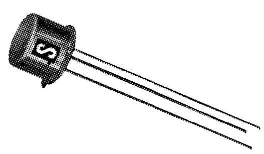
$-V_{cc}$= 10 V, R_L= 20Ω, I_c= −.5 A
I_{B_1} = I_{B_2} = .05 A



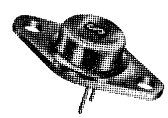
SWITCHING TIME vs I_C







TO–5



TO–66

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

TO–68	TO–114
SDT3601	SDT3901
SDT3602	SDT3902
SDT3603	SDT3903
SDT3604	SDT3904

60 AMP

PNP POWER TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	SDT3601	SDT3602	SDT3603	SDT3604
BV_{CEX}	–40 V	–60 V	–80 V	–100 V
BV_{CEO}	–40 V	–60 V	–80 V	–100 V
BV_{EBO}	–5 V	–5 V	–5 V	–5 V
I_c(Max.)	–60 A	–60 A	–60 A	–60 A
I_B(Max.)	–15 A	–15 A	–15 A	–15 A
P_T (100^{o}C Case)	100 W	100 W	100 W	100 W
Operating Junction Temperature	200^{o}C			
Storage Temperature Range	–65^{o}C to +200^{o}C			

ELECTRICAL CHARACTERISTICS (25^{o}C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
V_{CEO}(sus)	I_B= 0, I_c= –200 mA	–40	–	–	Volts	SDT3601
	I_B= 0, I_c= –200 mA	–60	–	–	Volts	SDT3602
	I_B= 0, I_c= –200 mA	–80	–	–	Volts	SDT3603
	I_B= 0, I_c= –200 mA	–100	–	–	Volts	SDT3604
I_{CBO}	I_E= 0, V_{CB}= –40 V	–	–	–10	μA	SDT3601
	I_E= 0, V_{CB}= –60 V	–	–	–10	μA	SDT3602
	I_E= 0, V_{CB}= –80 V	–	–	–10	μA	SDT3603
	I_E= 0, V_{CB}= –100 V	–	–	–10	μA	SDT3604
V_{EBO}	I_E= –1.0 mA, I_c= 0	–5	–	–	Volts	All
h_{FE}	V_{CE}= –10 V, I_c= –40 A	10	–	40	–	All
V_{CE}(sat)	I_c= –40 A, I_B= –8.0 A	–	–	–2.0	Volts	All
V_{BE}(sat)	I_c= –40 A, I_B= –8.0 A	–	–	–2.5	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
C_{OB}	V_{CB}= –30 V, f= 1 MHz	–	–	700	pf	All
f_t	V_{CE}= –10 V, I_c= –2 A	–	25	–	MHz	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3901	SDT3902	SDT3903	SDT3904
BV_{CEX}	–40 V	–60 V	–80 V	–100 V
BV_{CEO}	–40 V	–60 V	–80 V	–100 V
BV_{EBO}	–5 V	–5 V	–5 V	–5 V
I_c(Max.)	–60 A	–60 A	–60 A	–60 A
I_B(Max.)	–15 A	–15 A	–15 A	–15 A
P_T(100°C Case)	125 W	125 W	125 W	125 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

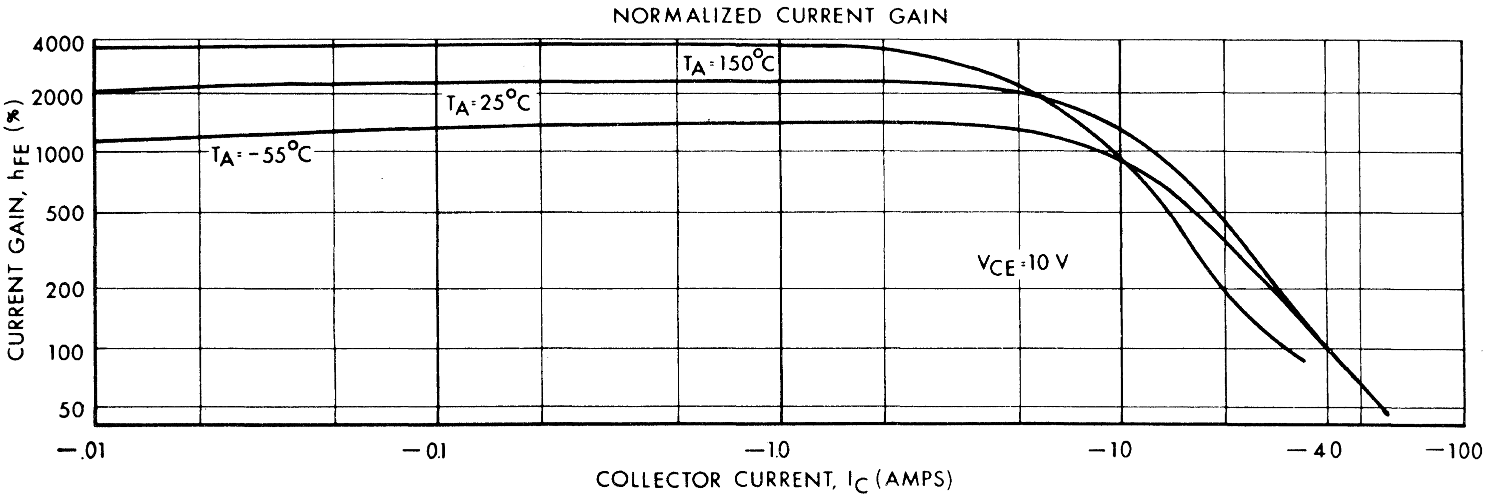
Static

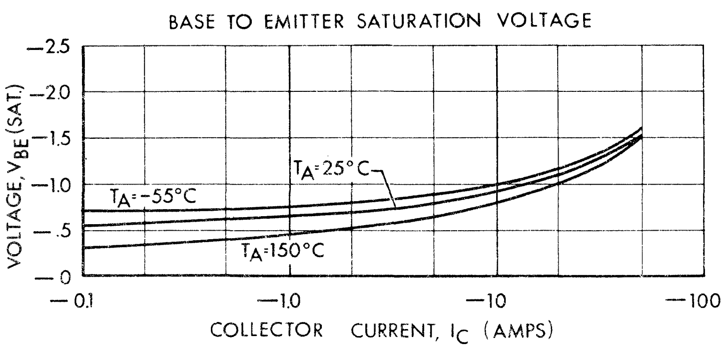
SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
V_{CEO}(sus)	$I_B = 0$, $I_c = -200$ mA	–40	–	–	Volts	SDT3901
	$I_B = 0$, $I_c = -200$ mA	–60	–	–	Volts	SDT3902
	$I_B = 0$, $I_c = -200$ mA	–80	–	–	Volts	SDT3903
	$I_B = 0$, $I_c = -200$ mA	–100	–	–	Volts	SDT3904
I_{CBO}	$I_E = 0$, $V_{CB} = -40$ V	–	–	–10	μA	SDT3901
	$I_E = 0$, $V_{CB} = -60$ V	–	–	–10	μA	SDT3902
	$I_E = 0$, $V_{CB} = -80$ V	–	–	–10	μA	SDT3903
	$I_E = 0$, $V_{CB} = -100$ V	–	–	–10	μA	SDT3904
BV_{EBO}	$I_E = 1.0$ mA, $I_c = 0$	5	–	–	Volts	All
h_{FE}	$V_{CE} = -10$ V, $I_c = -40$ A	10	–	40	–	All
V_{CE}(sat)	$I_c = -40$ A, $I_B = -8.0$ A	–	–	–2.0	Volts	All
V_{BE}(sat)	$I_c = -40$ A, $I_B = -8.0$ A	–	–	–2.5	Volts	All

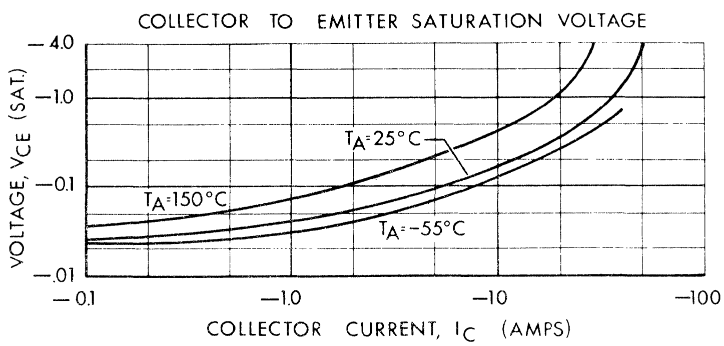
Dynamic

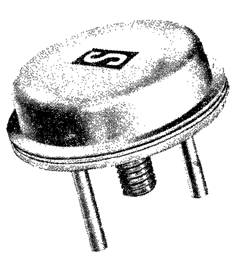
SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
C_{OB}	$V_{CB} = -30$ V, f= 1 MHz	–	–	700	pf	All
f_t	$V_{CE} = -10$ V, $I_c = -2$ A	–	25	–	MHz	All

CHARACTERISTIC CURVES (ALL TYPES)

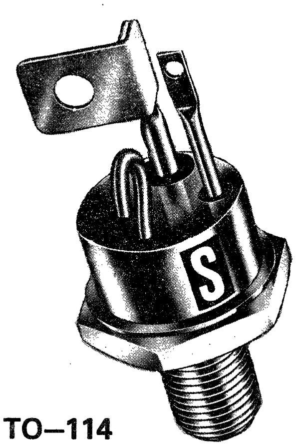




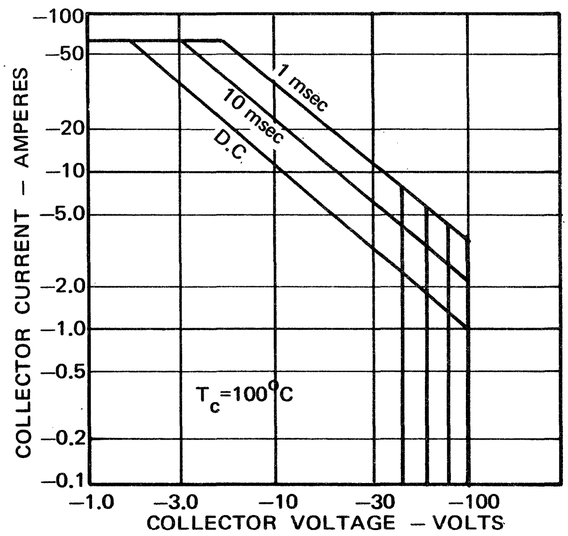




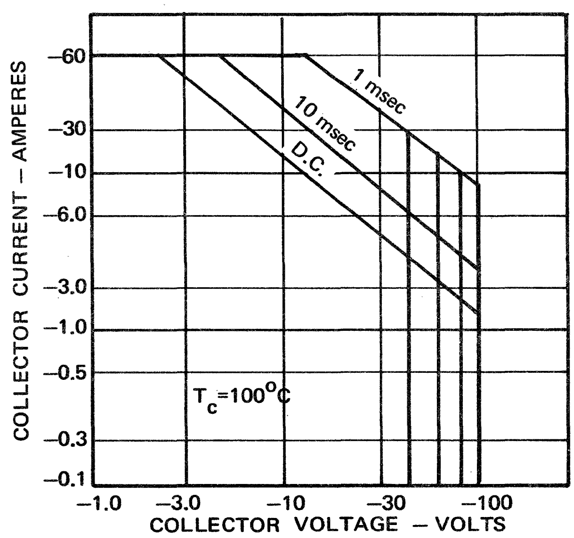
TO–68



TO–114



TO–68



TO–114

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

When you think of semiconductors... think Solitron!

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

(TO–68)	(TO–114)
SDT3620	SDT3920
SDT3621	SDT3921
SDT3622	SDT3922
SDT3623	SDT3923

100 AMP

PNP SILICON POWER

ABSOLUTE MAXIMUM RATINGS

	SDT3620	SDT3621	SDT3622	SDT3623
BV_{CBO}	–80 V	–100 V	–120 V	–140 V
BV_{CEO}	–60 V	–80 V	–100 V	–120 V
BV_{EBO}	–8 V	–8 V	–8 V	–8 V
I_c(Max.)	100 A	100 A	100 A	100 A
I_B(Max.)	20 A	20 A	20 A	20 A
P_T (100°C Case)	166 W	166 W	166 W	166 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

SYMBOL	CONDITIONS	MIN	MAX	UNITS	TYPE
BV_{CBO}	I_c= 1 MA	–80	–	Volts	SDT3620
	I_c= 1 MA	–100	–	Volts	SDT3621
	I_c= 1 MA	–120	–	Volts	SDT3622
	I_c= 1 MA	–140	–	Volts	SDT3623
$BV_{(CEO)}sus.$	I_c= 200 MA	–60	–	Volts	SDT3620
	I_c= 200 MA	–80	–	Volts	SDT3621
	I_c= 200 MA	–100	–	Volts	SDT3622
	I_c= 200 MA	–120	–	Volts	SDT3623
BV_{EBO}	I_B= 1 MA	–8	–	Volts	ALL
I_{CBO}	V_{CB}= –60 V	–	10	μAMP	ALL
h_{FE}	V_{CE}= 5 V, I_c= 75A	10	–	–	ALL
	V_{CE}= 5 V, I_c= 90A	5	–	–	ALL
V_{BE}(sat)	I_c= 50 A, I_B= 5 A	–	2.0	Volts	ALL
V_{CE}(sat)	I_c= 50 A, I_B= 5 A	–	1.5	Volts	ALL

ADDITIONAL DEVICES

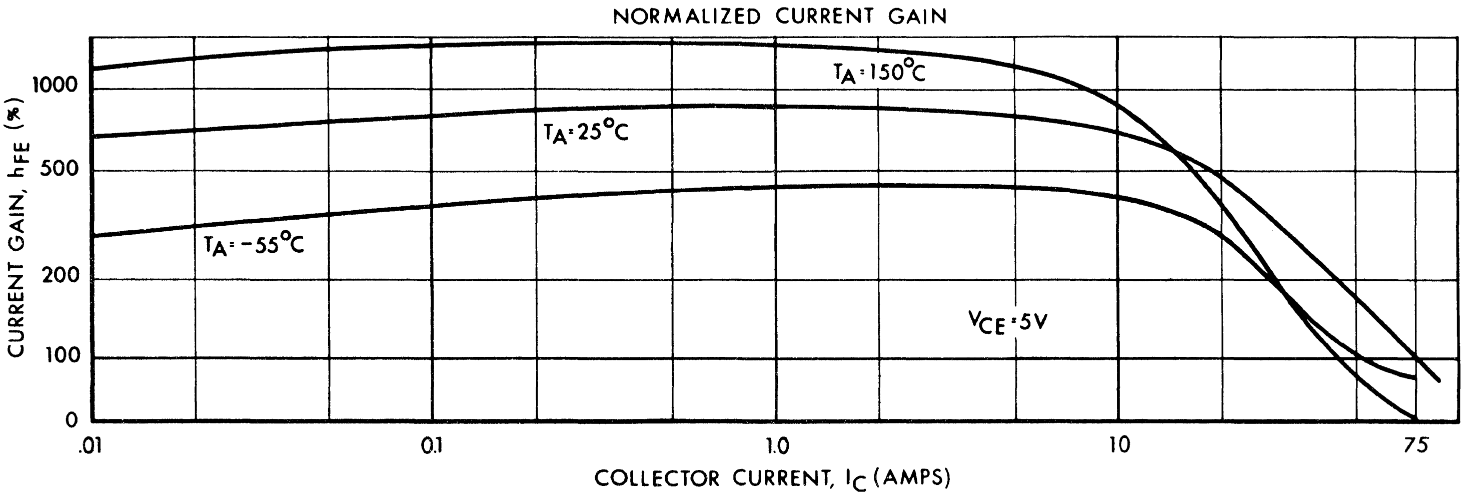
ABSOLUTE MAXIMUM RATINGS

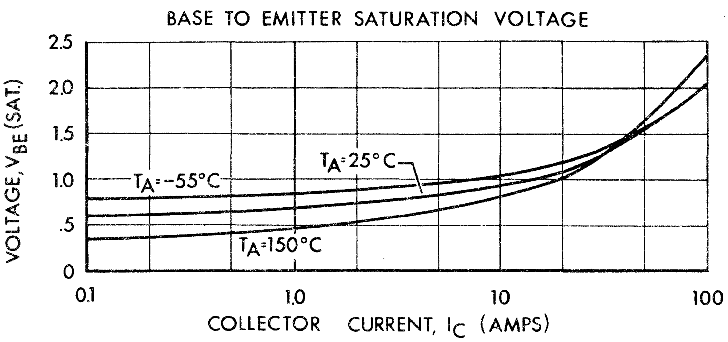
	SDT3920	SDT3921	SDT3922	SDT3923
BV_{CBO}	–80 V	–100 V	–120 V	–140 V
BV_{CEO}	–60 V	–80 V	–100 V	–120 V
BV_{EBO}	–8 V	–8 V	–8 V	–8 V
I_C(Max.)	100 A	100 A	100 A	100 A
I_B(Max.)	20 A	20 A	20 A	20 A
P_T(100°C Case)	200 W	200 W	200 W	200 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

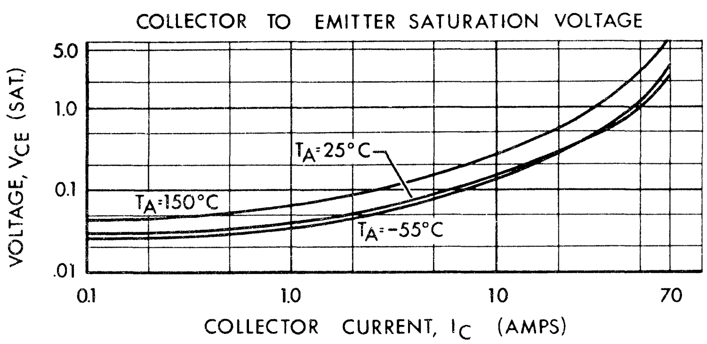
ELECTRICAL CHARACTERISTICS (25°C Ambient)

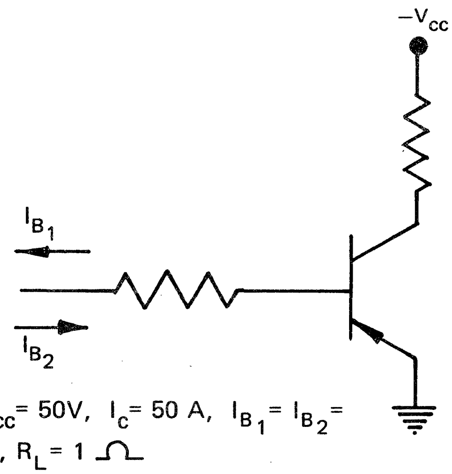
SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
BV_{CBO}	I_C= 1 MA	–80	–	Volts	SDT3920
	I_C= 1 MA	–100	–	Volts	SDT3921
	I_C= 1 MA	–120	–	Volts	SDT3922
	I_C= 1 MA	–140	–	Volts	SDT3923
$BV_{(CEO)}$	I_C= 200 MA	–60	–	Volts	SDT3920
	I_C= 200 MA	–80	–	Volts	SDT3921
	I_C= 200 MA	–100	–	Volts	SDT3922
	I_C= 200 MA	–120	–	Volts	SDT3923
BV_{EBO}	I_B= 1 MA	–8	–	Volts	ALL
I_{CBO}	V_{CB}= –60 V	–	10	μAMP	ALL
h_{FE}	V_{CE}= 5 V, I_C= 75 A	10	–	–	ALL
	V_{CE}= 5 V, I_C= 90 A	5	–	–	ALL
V_{BE}(sat)	I_C= 50 A, I_B= 5 A	–	2.0	Volts	ALL
V_{CE}(sat)	I_C= 50 A, I_B= 5 A	–	1.5	Volts	ALL

CHARACTERISTIC CURVES (ALL TYPES)

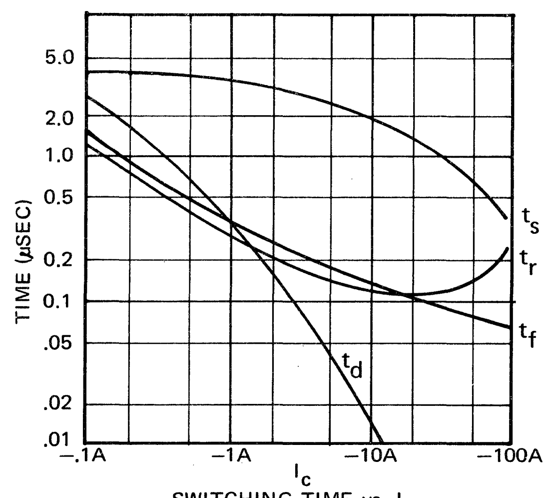




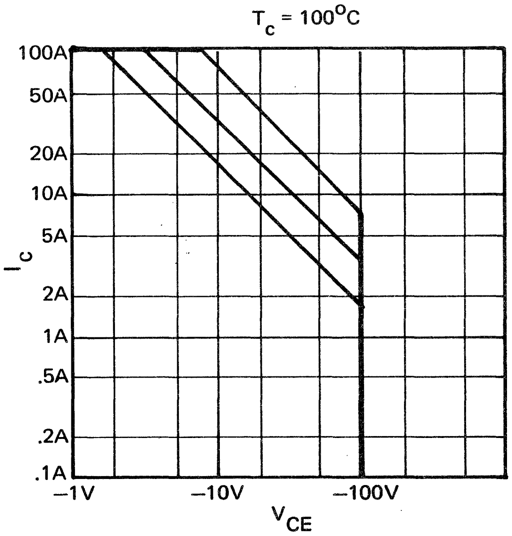


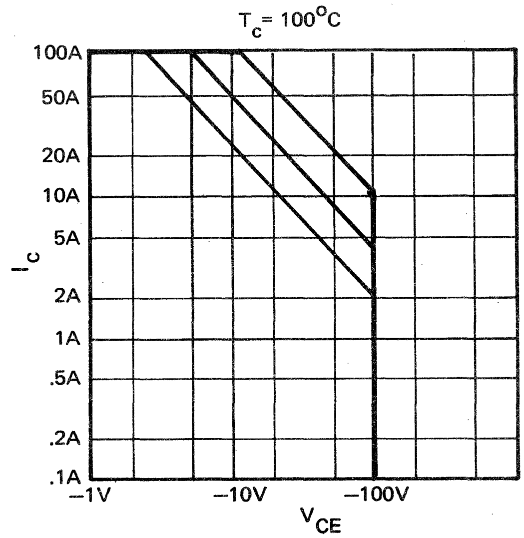


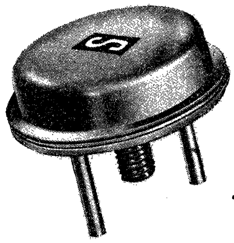
$-V_{cc} = 50V$, $I_c = 50$ A, $I_{B_1} = I_{B_2} =$ 5 A, $R_L = 1\ \Omega$



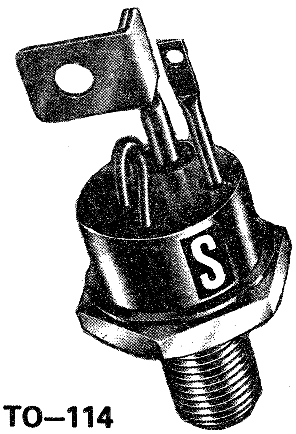
SWITCHING TIME vs I_c







TO–68



TO–114

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
20944 Sherman Way
Suite 112
Canoga Park, California
Telephone No. (213) 833-3822
TWX No. (910) 494-1238

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 363-7921

EUROPE
Solidev Ltd.
Tubs Hill House
Sixth Floor
London Road
Sevenoaks, Kent, England
Telephone (Sevenoaks) 57541/2/3
Cable – Solitron Svoaks
Telex. # 95378

When you think of semiconductors ... think Solitron!

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

TO–5	TO–111
2N5404	2N5408
2N5405	2N5409
2N5406	2N5410
2N5407	2N5411

5 AMP

PNP POWER TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N5404	2N5405	2N5406	2N5407
BV_{CBO}	–80 V	–100 V	–80 V	–100 V
BV_{CEO}	–80 V	–100 V	–80 V	–100 V
BV_{EBO}	–6.0 V	–6.0 V	–6.0 V	–6.0 V
I_c(Max.)	–5.0 A	–5.0 A	–5.0 A	–5.0 A
I_B(Max.)	–2.0 A	–2.0 A	–2.0 A	–2.0 A
P_T(100°C Case)	5.0 W	5.0 W	5.0 W	5.0 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE}= Rated BV_{CEO}, V_{BE}=1.5V	–	–10	μA	All
	V_{CE}= Rated BV_{CEO}, V_{BE}=1.5V, T_c= 150°C	–	–500	μA	All
V_{CEO}(sus)	I_c= –100 mA, I_B= 0	–80	–	Volts	2N5404, 2N5406
	I_c= –100 mA, I_B= 0	–100	–	Volts	2N5405, 2N5407
I_{EBO}	V_{EB}= –4.0 V, I_c= 0	–	–1.0	μA	All
I_{CEO}	V_{CE}= –50 V, I_B= 0	–	–100	μA	All
h_{FE}	I_c= –2.0 A, V_{CE}= –5.0 V	20	60	–	2N5404, 2N5405
	I_c= –2.0 A, V_{CE}= –5.0 V	40	120	–	2N5406, 2N5407
V_{CE}(sat)	I_c= –2.0 A, I_B= –0.2 A	–	–0.6	Volts	All
V_{BE}(sat)	I_c= –2.0 A, I_B= –0.2 A	–	–1.2	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
C_{OBO}	V_{CB}= –10 V, f = 1 MHz	–	150	pf	All
f_t	V_{CE}= –5.0 V, I_c= –0.2 A	40	–	MHz	All
t_r	I_c= –2.0 A, I_{B_1}= $-I_{B_2}$= 0.2A	–	0.5	μsec	All
t_s	I_c= –2.0 A, I_{B_1}= $-I_{B_2}$= 0.2A	–	0.75	μsec	2N5404, 2N5405
	I_c= –2.0 A, I_{B_1}= $-I_{B_2}$= 0.2A	–	1.0	μsec	2N5406, 2N5407
t_f	I_c= –2.0 A, I_{B_1}= $-I_{B_2}$= 0.2A	–	0.2	μsec	2N5404, 2N5405
	I_c= –2.0 A, I_{B_1}= $-I_{B_2}$= 0.2A	–	0.3	μsec	2N5406, 2N5407

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	2N5408	2N5409	2N5410	2N5411
BV_{CBO}	–80 V	–100 V	–80 V	–100 V
BV_{CEO}	–80 V	–100 V	–80 V	–100 V
BV_{EBO}	–6.0 V	–6.0 V	–6.0 V	–6.0 V
I_c(Max.)	–5.0 A	–5.0 A	–5.0 A	–5.0 A
I_B(Max.)	–2.0 A	–2.0 A	–2.0 A	–2.0 A
P_T(100°C Case)	30 W	30 W	30 W	30 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

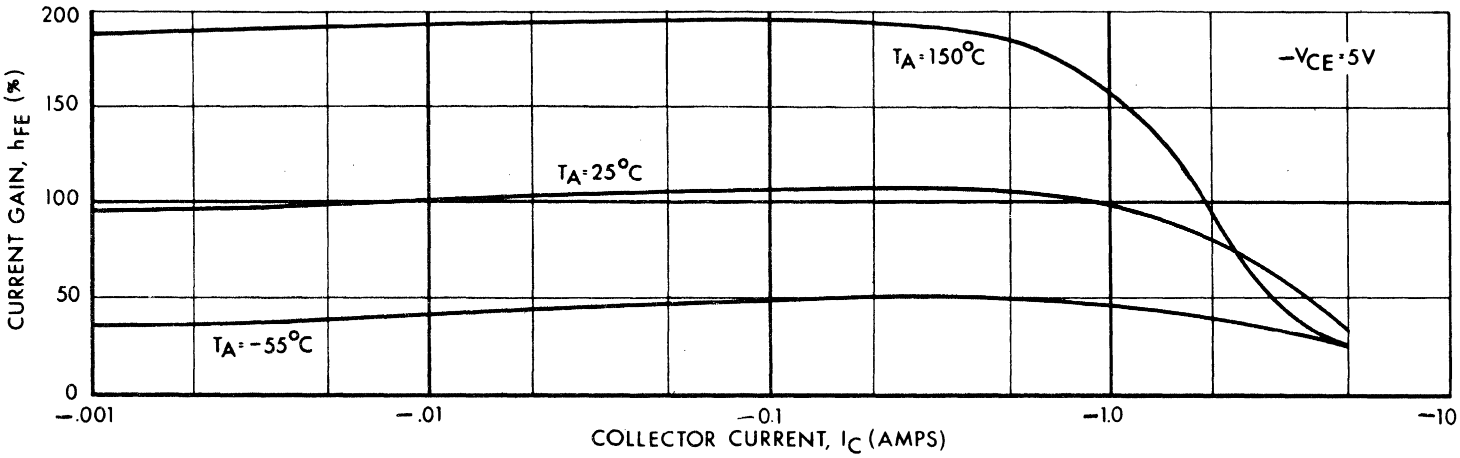
SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
V_{CEO}(sus)	I_c= –100 mA, I_B= 0	–80	–	Volts	2N5408, 2N5410
	I_c= –100 mA, I_B= 0	–100	–	Volts	2N5409, 2N5411
I_{CEX}	V_{CE}= Rated BV_{CEO}, V_{BE}=1.5V	–	–10	μA	All
	V_{CE}= Rated BV_{CEO}, V_{BE}=1.5V, T_c= 150°C	–	–500	μA	All
I_{EBO}	V_{EB}= –4.0 V, I_c= 0	–	–1.0	μA	All
I_{CEO}	V_{CE}= –50 V, I_B= 0	–	–100	μA	All
h_{FE}	I_c= –2.0 A, V_{CE}= –5.0 V	20	60	–	2N5408, 2N5409
	I_c= –2.0 A, V_{CE}= –5.0 V	40	120	–	2N5410, 2N5411
V_{CE}(sat)	I_c= –2.0 A, I_B= –0.2 A	–	–0.6	Volts	All
V_{BE}(sat)	I_c= –2.0 A, I_B= –0.2 A	–	–1.2	Volts	All

Dynamic

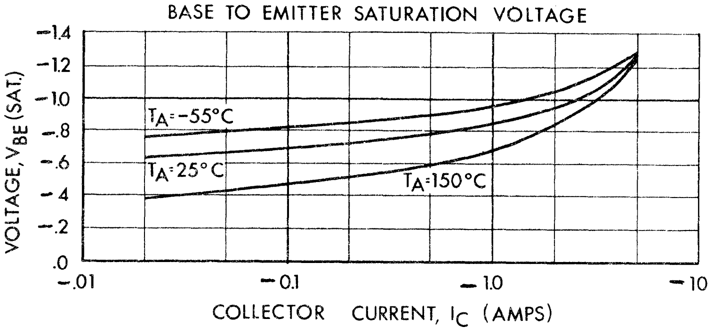
SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
C_{OBO}	V_{CB}= –10 V, f= 1.0 MHz	–	150	pf	All
f_t	V_{CE}= –10 V, I_c= –0.2 A	40	–	MHz	All
h_{fe}	V_{CE}=–10V, I_c=–0.2A, f=1 KHz	20	–	–	2N5408, 2N5409
	V_{CE}=–10V, I_c=–0.2A, f=1 KHz	40	–	–	2N5410, 2N5411
t_r	I_c= –2.0A, I_{B_1}=–I_{B_2}= 0.2A	–	0.5	μsec	All
t_s	I_c= –2.0A, I_{B_1}=–I_{B_2}= 0.2A	–	0.75	μsec	2N5408, 2N5409
	I_c= –2.0A , I_{B_1}=–I_{B_2}= 0.2A	–	1.0	μsec	2N5410, 2N5411
t_f	I_c= –2.0A, I_{B_1}=–I_{B_2}= 0.2A	–	0.2	μsec	2N5408, 2N5409
	I_c= –2.0A, I_{B_1}=–I_{B_2}= 0.2A	–	0.3	μsec	2N5410, 2N5411

CHARACTERISTIC CURVES (ALL TYPES)

NORMALIZED CURRENT GAIN



BASE TO EMITTER SATURATION VOLTAGE



COLLECTOR TO EMITTER SATURATION VOLTAGE

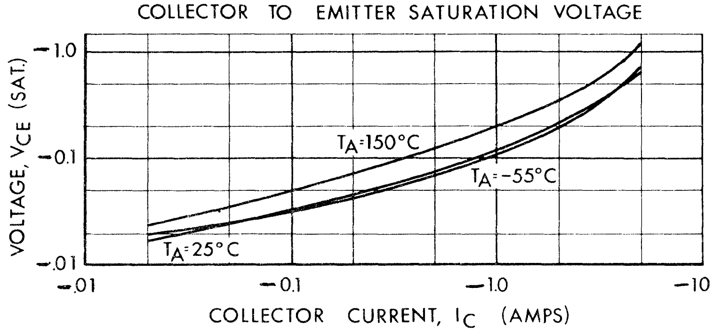
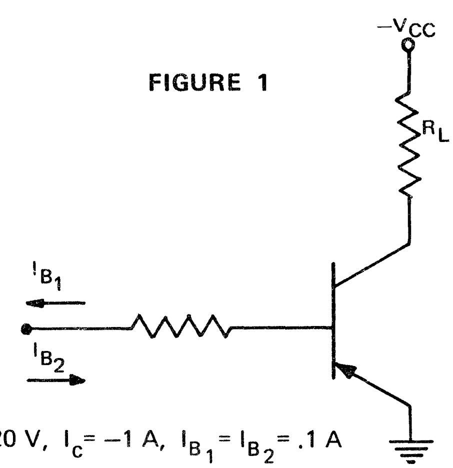
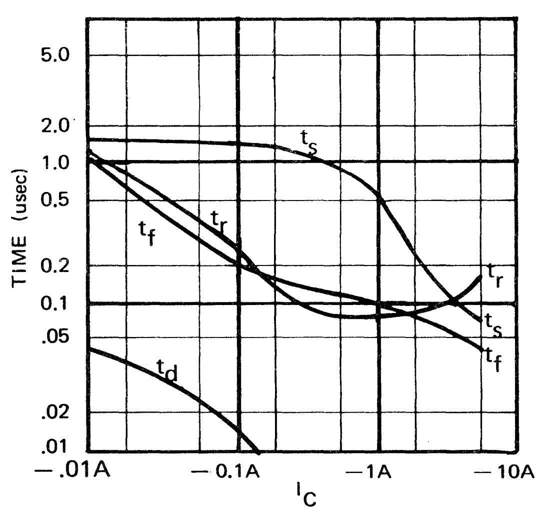


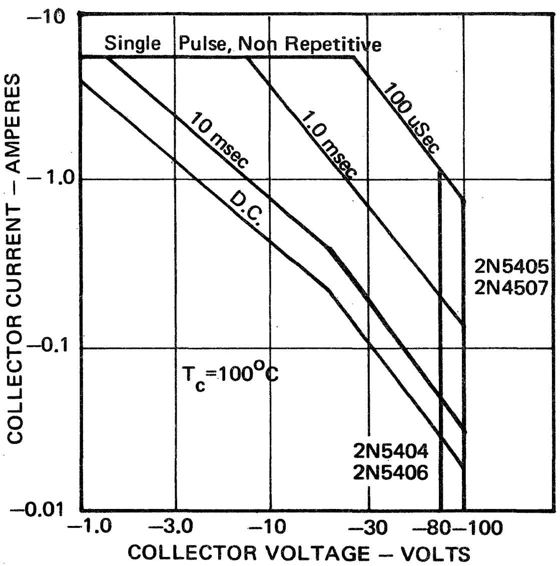
FIGURE 1

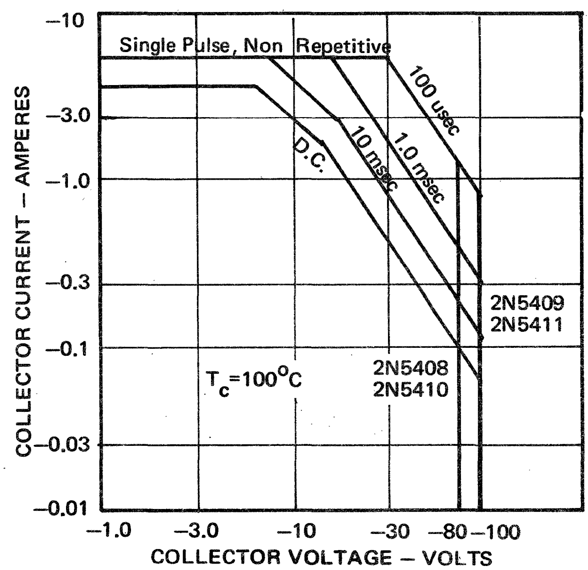


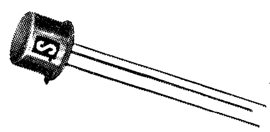
$-V_{cc} = 20$ V, $I_c = -1$ A, $I_{B_1} = I_{B_2} = .1$ A
$R_L = 20\,\Omega$



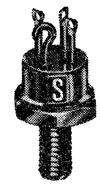
SWITCHING TIME vs I_C







TO–5



TO–111
(Isolated Collector)

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
20944 Sherman Way
Suite 112
Canoga Park, California
Telephone No. (213) 833-3822
TWX No. (910) 494-1238

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 363-7921

EUROPE
Solidev Ltd.
Tubs Hill House
Sixth Floor
London Road
Sevenoaks, Kent, England
Telephone (Sevenoaks) 57541/2/3
Cable – Solitron Svoaks
Telex. # 95378

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

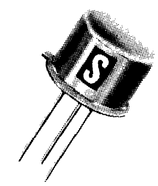
2N5415*
2N5416*

1 AMP HIGH VOLTAGE

NPN COMPLEMENTS:
2N3439, 2N3440

PNP SILICON POWER TRANSISTOR

HIGH SPEED SWITCHING AND
LINEAR AMPLIFIER APPLICATIONS
IN INDUSTRIAL, COMMERCIAL & MILITARY EQUIPMENT



TO-39*

*Exception

ABSOLUTE MAXIMUM RATINGS

@ 25°C (unless otherwise noted)

PARAMETER	2N5415	2N5416	UNITS
V_{CBO}	−200	−350	V
V_{CEO}	−200	−300	V
V_{CER} (sus)	–	−350	V
V_{EBO}	−4	−6	V
I_C	−1	−1	A
I_B	−0.5	−0.5	A
T_J	−55°C to 200°C		
T_S	−55°C to 200°C		
P_T @ T_C=25°C	10	10	W
PIN temperature (during soldering) at distance ≥ 1/32 in. (0.8mm) from seating plane for 10s max	255	255	°C

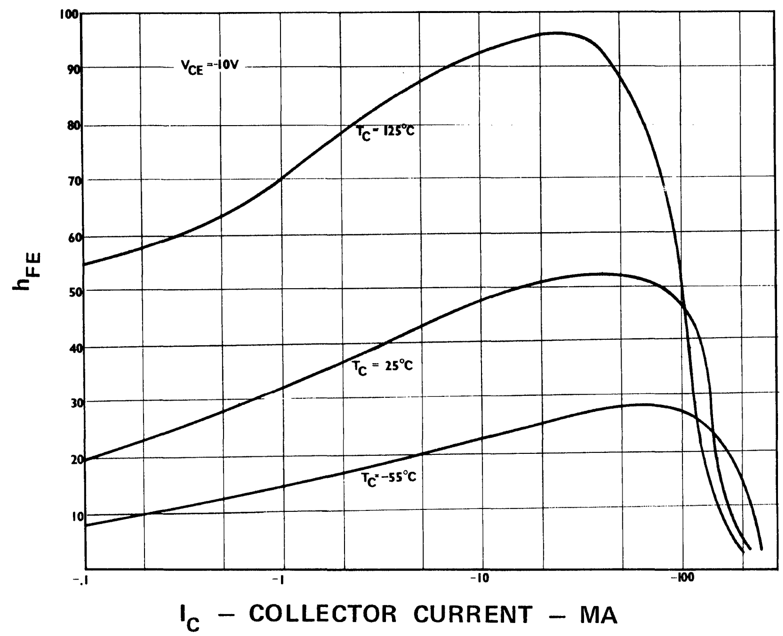
ELECTRICAL CHARACTERISTICS: T_C=25°C unless otherwise specified.

SYMBOL	TEST CONDITIONS							LIMITS				UNITS
	DC Collector Voltage (V)		DC Emitter or Base Voltage (V)		DC Current (mA)			Types 2N5415		Types 2N5416		
	V_{CB}	V_{CE}	V_{EB}	V_{BE}	I_C	I_E	I_B	MIN.	MAX.	MIN.	MAX.	
I_{CEO}		–250					0	–	–	–	–50	μA
		–150					0	–	–50	–	–	
I_{CBO}	–280						0	–	–	–	–50	μA
	–175						0	–	–50	–	–	
I_{CEV}		–300		1.5				–	–	–	–50	μA
		–200		1.5				–	–50	–	–	
I_{EBO}			–6		0			–	–	–	–20	μA
			–4		0			–	–20	–	–	
h_{FE}		–10			–50			–	–	30	120	
		–10			–50			30	150	–	–	
V_{CEO}(sus)					–50		0	–200	–	–300[a]	–	V
V_{CER}(sus) R=50 Ω					–50			–	–	–350[a]	–	V
V_{BE}(sat)		–10			–50			–	–1.5	–	–1.5	V
V_{CE}(sat)					–50		5	–	–2.5	–	–2	V
h_{fe} f=1kHz		–10			–5			25	–	25	–	
$\|h_{fe}\|$ f=5MHz		–10			–10			3	–	3	–	
Re(h_{ic}) f=1MHz		–10			–5			–	300	–	300	Ω
C_{ibo} f=1MHz			–5		0			–	75	–	75	pF
C_{obo} f=1MHz	–10					0		–	15	–	15	pF
$I_{S/b}$		–100						–100	–	–100	–	mA
$\Theta_{J\text{-}C}$								–	17.5	–	17.5	°C/W

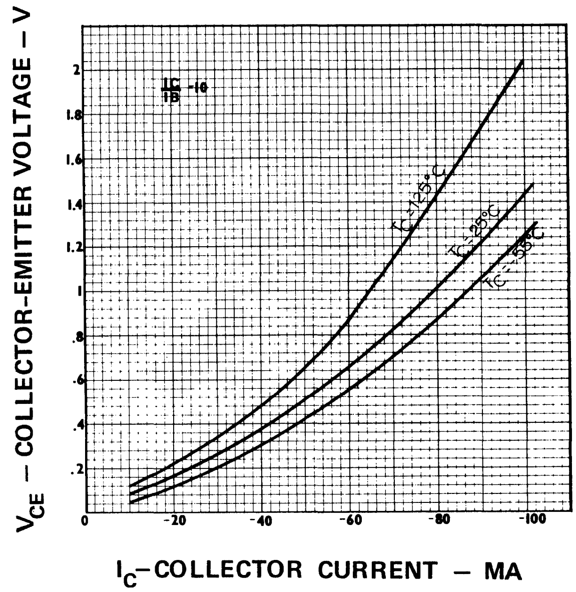
a) The sustaining voltages V_{CEO}(sus) and V_{CER}(sus) must not be measured on a curve tracer.

CHARACTERISTIC CURVES

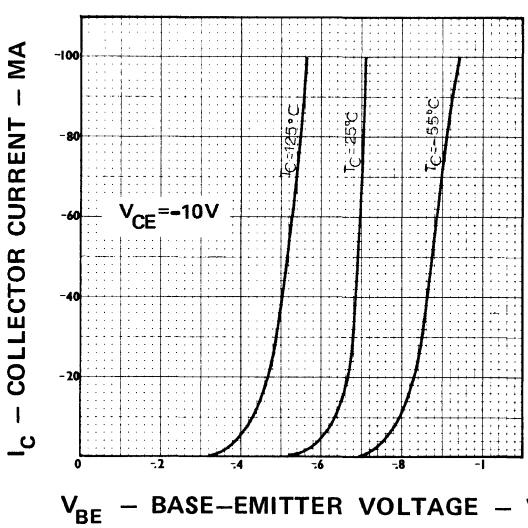
STATIC FORWARD CURRENT TRANSFER RATIO



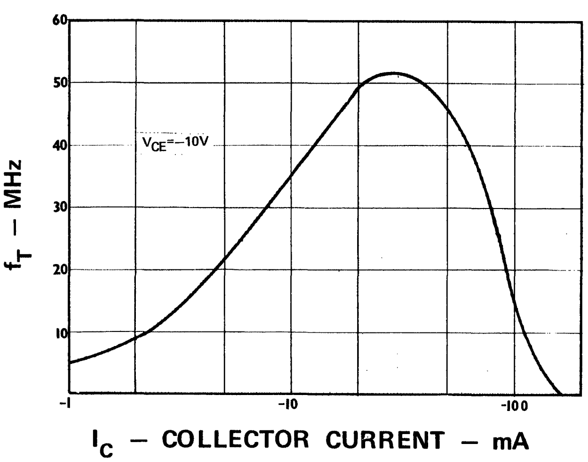
COLLECTOR-EMITTER SATURATION VOLTAGE



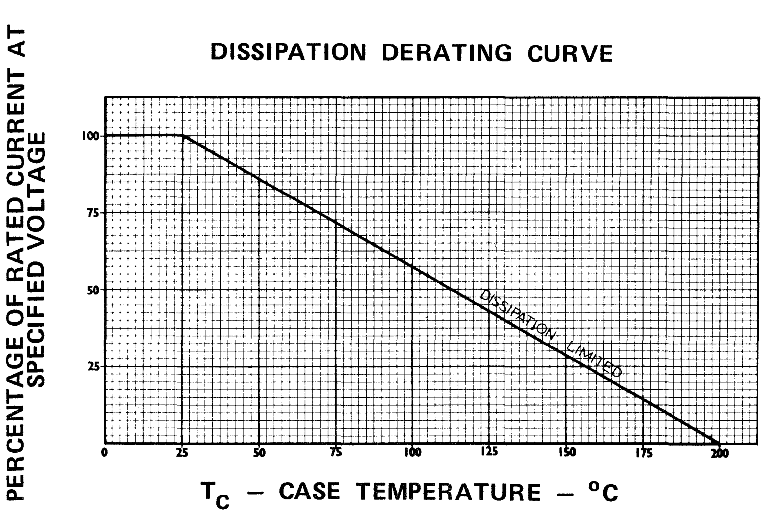
BASE–EMITTER VOLTAGE



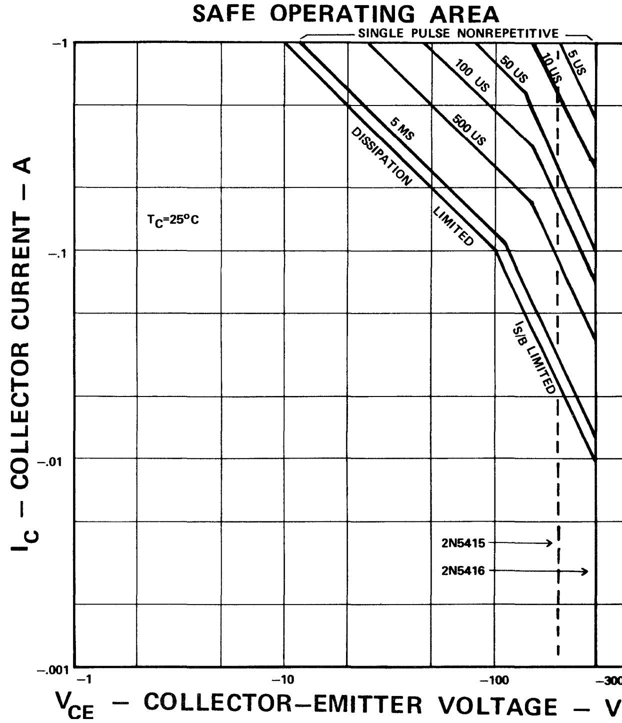
GAIN–BANDWIDTH PRODUCT



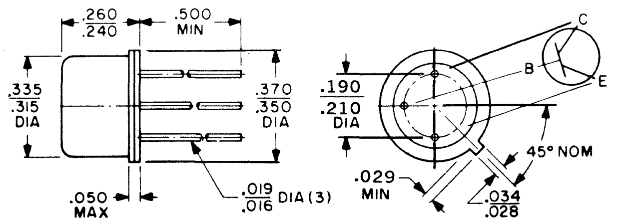
DISSIPATION DERATING CURVE



SAFE OPERATING AREA



OUTLINE DIMENSIONS (1) (2)



NOTES:

1. Collector is electrically common to case.
2. All dimensions in inches.

*Exception

TO-39*

SOLITRON FACILITIES

TAPPAN, N.Y. 10983
256 Oak Tree Road
Phone 914 / 359-5050
TWX 710 / 576-2654

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA. 33404
1177 Blue Heron Boulevard
Phone 305 / 848-4311
TWX 510 / 952-7610

Hi-rel Power Transistors (silicon)
Industrial/Commercial Power Transistors (silicon)
Power Hybrids (standard)
Custom Hybrids
Schottky & Planar Diodes
Semiconductor Die (silicon)

PORT SALERNO, FLA. 33492
Cove Road, P.O. Box 278
Phone 305 / 287-5000
TWX 510 / 953-7500

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies
Thin Film Microwave Products

SAN DIEGO, CALIF. 92100
8808 Balboa Avenue
Phone 714 / 278-8780
TWX 910 / 335-1221

CMOS Devices
FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Diodes/Rectifiers
Zeners
High Voltage Rectifier Stacks

JUPITER, FLA. 33458
1440 West Indiantown Road
Phone 305 / 746-8311

When you think of semiconductors . . . think Solitron!

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

(TO–3)	(TO–66)
2N3021	SDT3706
2N3022	SDT3707
2N3023	SDT3708
2N3024	SDT3709
2N3025	SDT3710
2N3026	SDT3711

5 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N3021 2N3024	2N3022 2N3025	2N3023 2N3026
BV_{CBO}	–30 V	–45 V	–60 V
BV_{CEO}	–30 V	–45 V	–60 V
BV_{EBO}	–4 V	–4 V	–4 V
I_c(Max.)	–3 A	–3 A	–3 A
I_B(Max.)	–0.5 A	–0.5 A	–0.5 A
P_T(25°C Case)	25 W	25 W	25 W
Operating Junction Temperature		200°C	
Storage Temperature Range		–65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
Static					
I_{CEX}	V_{CE} = 25 V, V_{BE} = 2 V	–	–0.2	mA	2N3021, 2N3024
	V_{CE} = 40 V, V_{BE} = 2 V	–	–0.2	mA	2N3022, 2N3025
	V_{CE} = 54 V, V_{BE} = 2 V	–	–0.2	mA	2N3023, 2N3026
I_{CEX}	V_{CE} = 15 V, V_{BE} = 2 V, T_c = 150°C	–	–2.0	mA	2N3021, 2N3024
	V_{CE} = 25 V, V_{BE} = 2 V, T_c = 150°C	–	–2.0	mA	2N3022, 2N3025
	V_{CE} = 35 V, V_{BE} = 2 V, T_c = 150°C	–	–2.0	mA	2N3023, 2N3026
I_{EBO}	V_{EB} = –4V	–	–1.0	mA	All
V_{CEO}(sus)	I_B = 0, I_c = –100 mA	–30	–	Volts	2N3021, 2N3024
	I_B = 0, I_c = –50 mA	–45	–	Volts	2N3022, 2N3025
	I_B = 0, I_c = –20 mA	–60	–	Volts	2N3023, 2N3026
h_{FE}	I_c = –1.0 A, V_{CE} = –2 V	20	60	–	2N3021, 2N3022, 2N3023
	I_c = –1.0 A, V_{CE} = –2 V	50	180	–	2N3024, 2N3025, 2N3026
V_{CE}(sat)	I_c = –3 A, I_B = –0.3 A	–	–1.5	Volts	2N3021, 2N3022, 2N3023
	I_c = –3 A, I_B = –0.3 A	–	–1.0	Volts	2N3024, 2N3025, 2N3026
V_{BE}(sat)	I_c = –3 A, I_B = –0.3 A	–	–1.5	Volts	All
Dynamic					
h_{fe}	V_{CE} = –15 V, I_c = –0.5 A, f= 30 MHz	2.0	–	–	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3706 SDT3709	SDT3707 SDT3710	SDT3708 SDT3711
BV_{CBO}	−30 V	−45 V	−60 V
BV_{CEO}	−30 V	−45 V	−60 V
BV_{EBO}	−4 V	−4 V	−4 V
I_c(Max.)	−5 A	−5 A	−5 A
I_B(Max.)	−1 A	−1 A	−1 A
P_T (100°C Case)	16 W	16 W	16 W
Operating Junction Temperature		200°C	
Storage Temperature Range		−65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

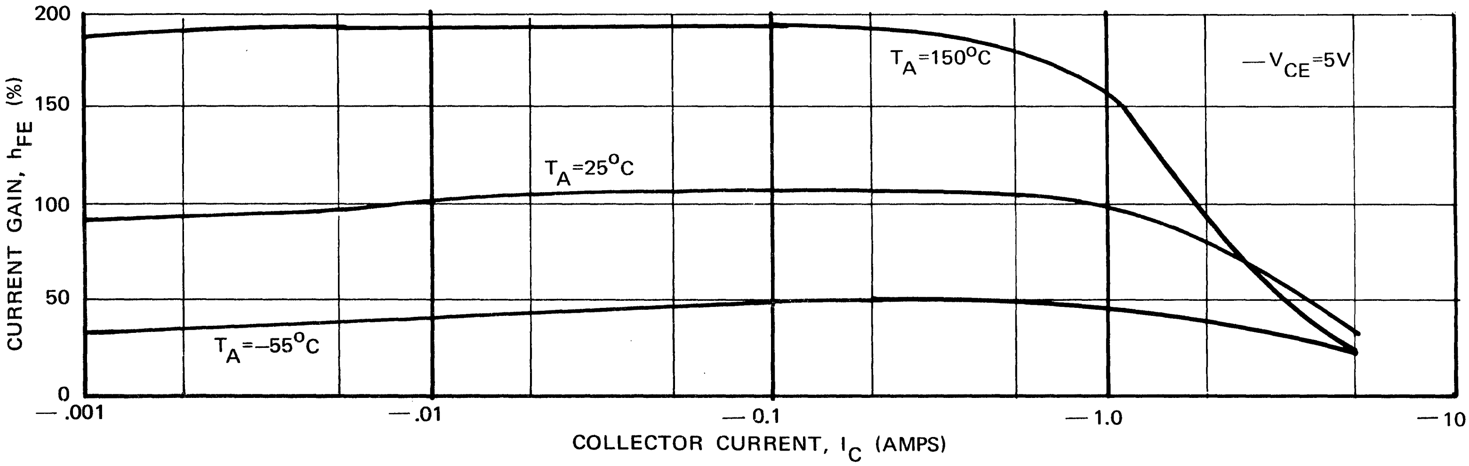
tatic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE} = 25 V, V_{BE} = 2 V	–	–	−0.2	mA	SDT3706, SDT3709
	V_{CE} = 40 V, V_{BE} = 2 V	–	–	−0.2	mA	SDT3707, SDT3710
	V_{CE} = 54 V, V_{BE} = 2 V	–	–	−0.2	mA	SDT3708, SDT3711
I_{CEX}	V_{CE} = 15 V, V_{BE} = 2 V, T_c = 150°C	–	–	−2.0	mA	SDT3706, SDT3709
	V_{CE} = 25 V, V_{BE} = 2 V, T_c = 150°C	–	–	−2.0	mA	SDT3707, SDT3710
	V_{CE} = 35 V, V_{BE} = 2 V, T_c = 150°C	–	–	−2.0	mA	SDT3708, SDT3711
I_{EBO}	V_{EB} = −4 V	–	–	−1.0	mA	All
V_{CEO}(sus)	I_B = 0, I_c = −100 mA	−30	–	–	Volts	SDT3706, SDT3709
	I_B = 0, I_c = −50 mA	−45	–	–	Volts	SDT3707, SDT3710
	I_B = 0, I_c = −20 mA	−60	–	–	Volts	SDT3708, SDT3711
h_{FE}	I_c = −1.0 A, V_{CE} = −2 V	20	–	60	–	SDT3706, SDT3707 SDT3708
	I_c = −1.0 A, V_{CE} = −2 V	50	–	180	–	SDT3709, SDT3710 SDT3711
V_{CE}(sat)	I_c = −3 A, I_B = −0.3 A	–	–	−1.0	Volts	All
V_{BE}(sat)	I_c = −3 A, I_B = −0.3 A	–	–	−1.4	Volts	All

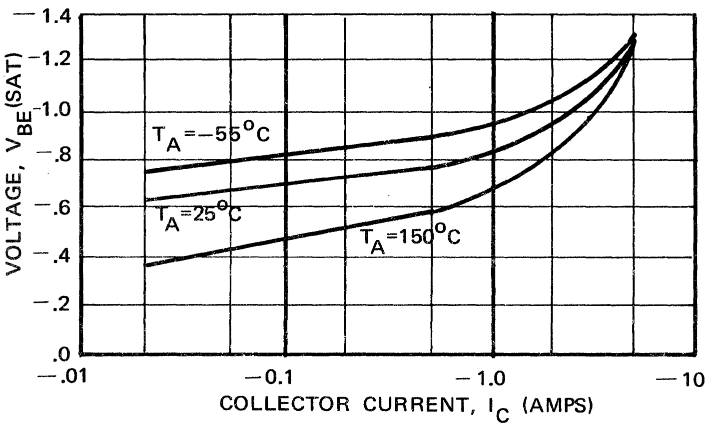
ynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
t_d	(See Figure No. 1)	–	1	–	Nsec	All
t_r	(See Figure No. 1)	–	120	–	Nsec	All
t_s	(See Figure No. 1)	–	130	–	Nsec	All
t_f	(See Figure No. 1)	–	70	–	Nsec	All
h_{fe}	V_{CE} = −15 V, I_c = −0.5 A, f= 30 MHz	–	2.0	–	–	All
C_{obo}	V_{CB} = −10 V, I_E = 0, f= 1 MHz	–	–	150	pf	All

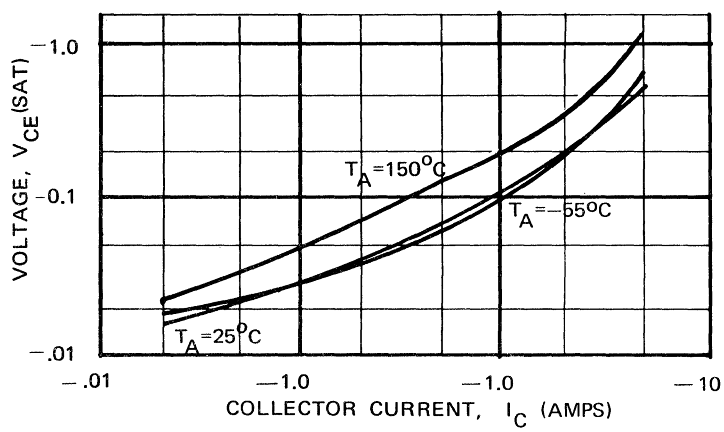
CHARACTERISTIC CURVES (ALL TYPES)



h_{FE} vs I_C

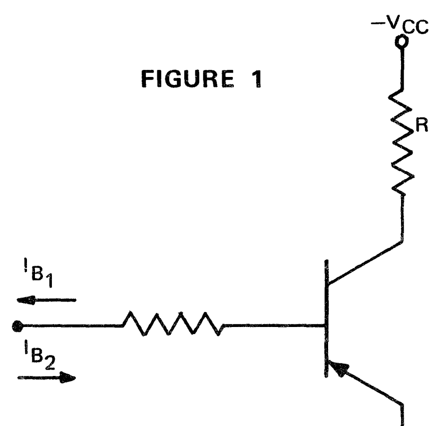


V_{BE}(sat) vs I_C

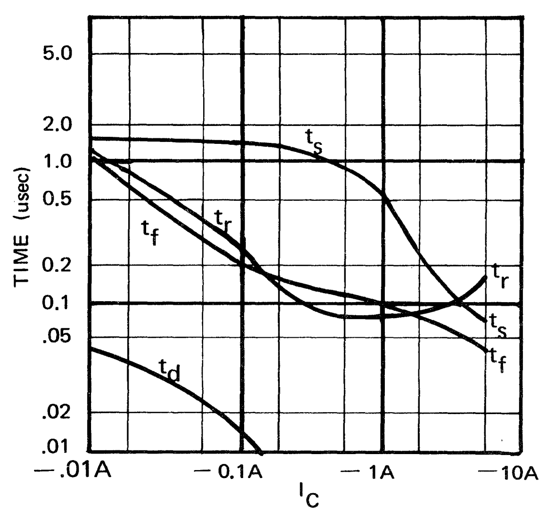


V_{CE}(sat) vs I_C

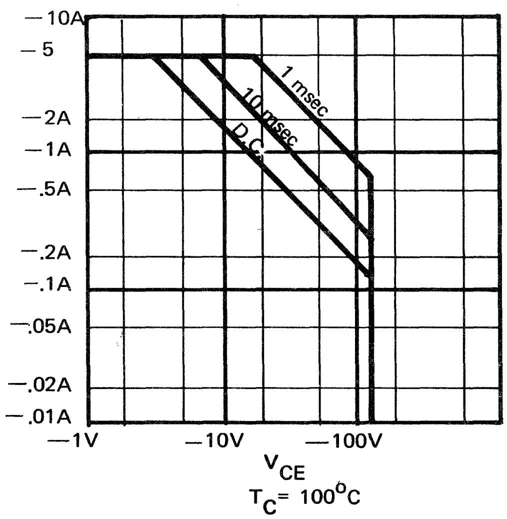
FIGURE 1

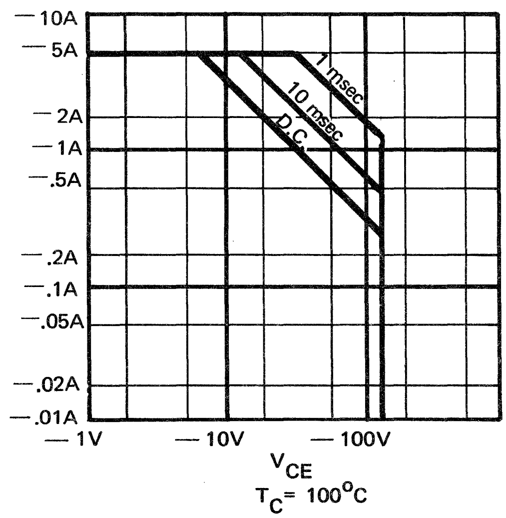


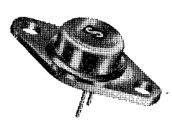
$-V_{cc}= 10$ V, I_c=-1 A, $I_{B_1} = I_{B_2} = .1$ A
$R_L = 10\,\Omega$



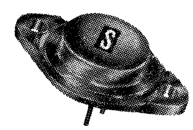
SWITCHING TIME vs I_C







TO–66



TO–3

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

(TO–3)	(TO–3)	(TO–66)
2N3171	SDT3752	SDT3716
2N3172	SDT3753	SDT3717
2N3173	SDT3754	SDT3718
2N3174	SDT3755	SDT3719
	SDT3756	SDT3720

5 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N3171	2N3172	2N3173	2N3174
BV_{CBO}	–40 V	–60 V	–80 V	–100 V
BV_{CEO}	–40 V	–60 V	–80 V	–100 V
BV_{EBO}	–10 V	–10 V	–10 V	–10 V
I_c(Max.)	–3 A	–3 A	–3 A	–3 A
I_B(Max.)	–1 A	–1 A	–1 A	–1 A
P_T(25°C Case)	75 W	75 W	75 W	75 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE} = Rated V_{CE}, V_{BE} = 1.5 V	–	–10	mA	All
	V_{CE} = ½ Rated V_{CE}, V_{BE} = 1.5V, T_c = 150°C	–	–1.0	mA	All
I_{CEO}	I_B = 0, V_{CE} = ½ Rated V_{CE}	–	–100	μA	All
I_{EBO}	V_{EB} = –10 V	–	–150	μA	All
V_{CEO}(sus)	I_B = 0, I_c = –100 mA	–40	–	Volts	2N3171
		–60	–	Volts	2N3172
		–80	–	Volts	2N3173
		–100	–	Volts	2N3174
h_{FE}	I_c = –1 A, V_{CE} = –3 V	12	36	–	All
	I_c = –200 mA, V_{CE} = –3 V	20	–	–	All
V_{CE}(sat)	I_c = –1 A, I_B = –140 mA	–	–.75	Volts	All
V_{BE}	I_c = –1 A, V_{CE} = –3 V	–	–1.8	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
h_{fe}	V_{CE} = –3 V, I_c = –1 A, f = 1 MHz	1.0	–	–	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3752 SDT3716	SDT3753 SDT3717	SDT3754 SDT3718	SDT3755 SDT3719	SDT3756 SDT3720
BV_{CBO}	−40 V	−60 V	−80 V	−100 V	−40 V
BV_{CEO}	−40 V	−60 V	−80 V	−100 V	−40 V
BV_{EBO}	−6 V	−6 V	−6 V	−6 V	−6 V
I_c(Max.)	−5 A	−5 A	−5 A	−5 A	−5 A
I_B(Max.)	−1 A	−1 A	−1 A	−1 A	−1 A
P_T(100°C Case) TO–66	16 W	16 W	16 W	16 W	16 W
P_T(100°C Case) TO–3	30 W	30 W	30 W	30 W	30 W
Operating Junction Temperature	200°C				
Storage Temperature Range	−65°C to +200°C				

ELECTRICAL CHARACTERISTICS (25°C Ambient)

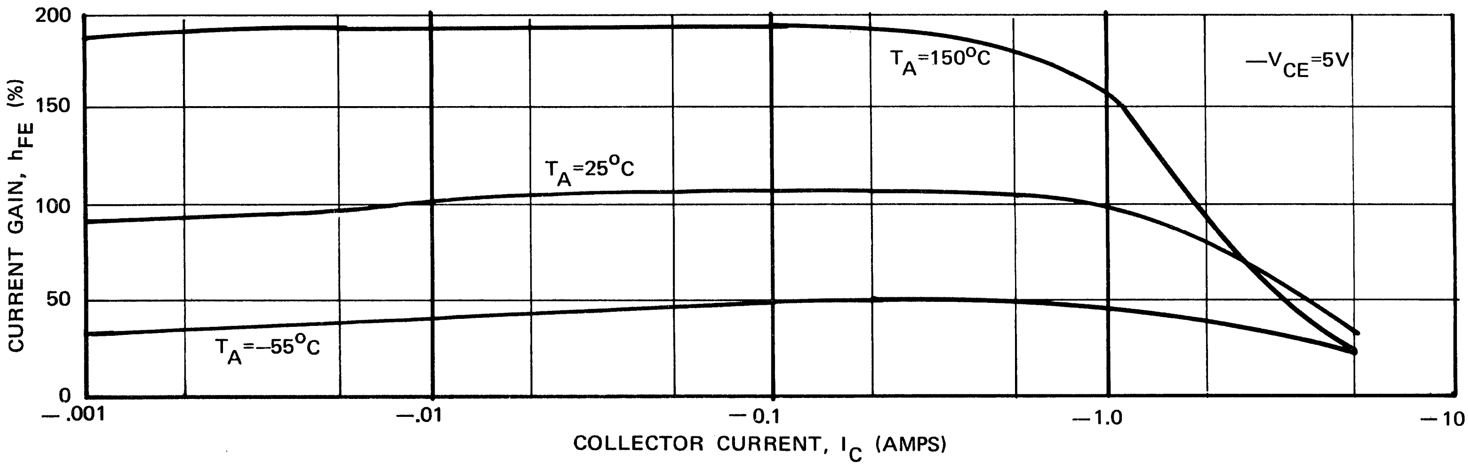
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE} = Rated V_{CB}, V_{BE} = 1.5 V	–	–	−1.0	mA	All
	V_{CE} = Rated V_{CB}, V_{BE} = 1.5V, T_c = 150°C	–	–	−10	mA	All
I_{CEO}	V_{CE} = ½ Rated V_{CE}, I_B = 0	–	–	−100	μA	All
I_{EBO}	V_{EB} [illegible] V	–	–	−100	μA	All
V_{CEO}(sus)	I_B = 0, I_c = −100 mA	−40	–	–	Volts	SDT3752, SDT3716 SDT3756, SDT3720
		−60	–	–	Volts	SDT3753, SDT3717
		−80	–	–	Volts	SDT3754, SDT3718
		−100	–	–	Volts	SDT3755, SDT3719
h_{FE}	I_c = −1 A, V_{CE} = −3 V	12	–	36	–	ALL BUT SDT3756, SDT3720
	I_c = −1 A, V_{CE} = −3 V	40	–	–	–	SDT3756, SDT3720
	I_c = −200 mA, V_{CE} = −3 V	20	–	–	–	All
V_{CE}(sat)	I_c = −1 A, I_B = −0.1 A	–	–	−0.4	Volts	All
V_{BE}(sat)	I_c = −1 A, I_B = −0.1 A	–	–	−1.0	Volts	All

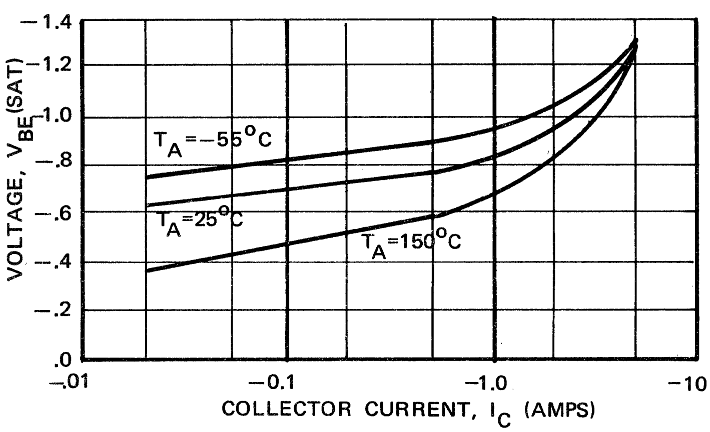
Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
t_d	(see Figure No. 1)	–	2.0	–	Nsec	All
t_r	(see Figure No. 1)	–	75	–	Nsec	All
t_s	(see Figure No. 1)	–	500	–	Nsec	All
t_f	(see Figure No. 1)	–	100	–	Nsec	All
h_{fe}	V_{CE} = −10 V, I_c = −.5 A, f= 1 MHz	10	–	–	–	All
C_{obo}	V_{CB} = −10 V, I_E = 0, f= 1 MHz	–	–	150	pf	All

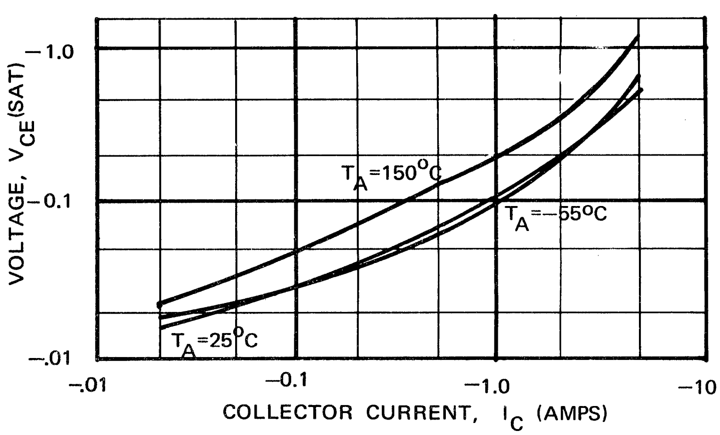
CHARACTERISTIC CURVES (ALL TYPES)



h_{FE} vs I_C

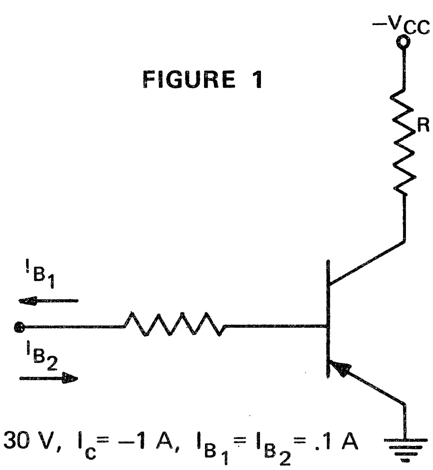


V_{BE}(sat) vs I_C

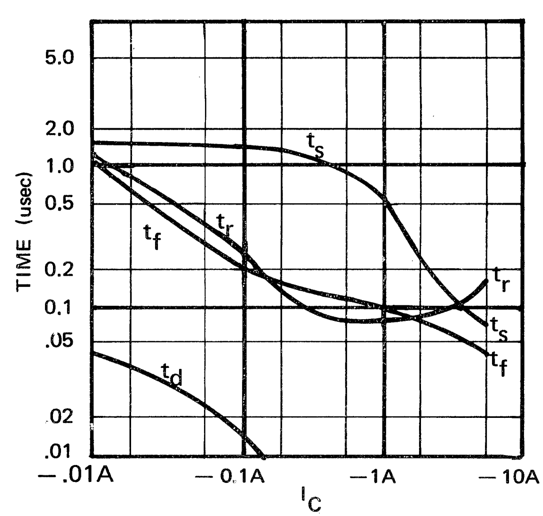


V_{CE}(sat) vs I_C

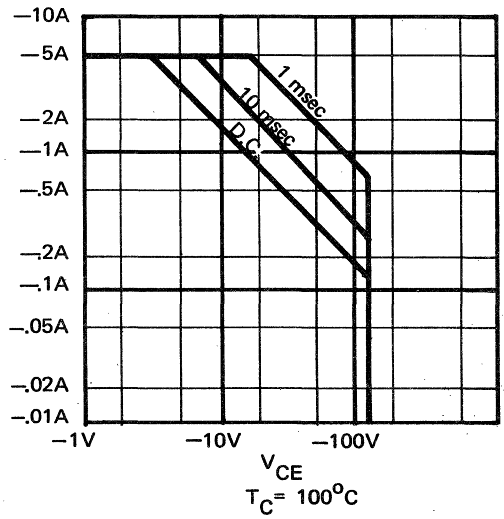
FIGURE 1

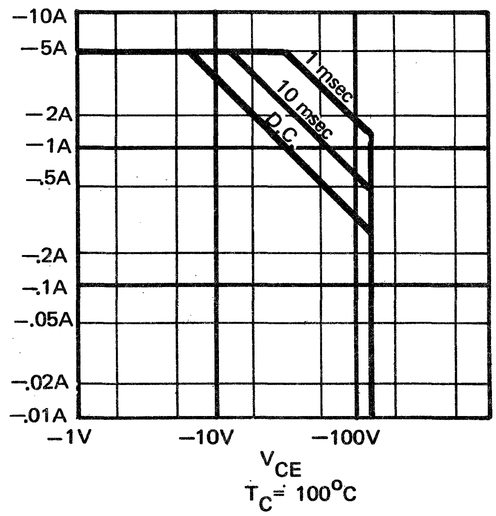


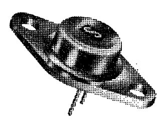
$-V_{cc}$= 30 V, I_c= −1 A, I_{B_1}= I_{B_2}= .1 A
R_L= 30 Ω



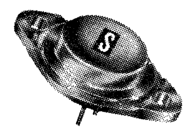
SWITCHING TIME vs I_C







TO–66



TO–3

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

(TO–3)	(TO–3)	(TO–66)
2N3183	SDT3757	SDT3721
2N3184	SDT3758	SDT3722
2N3185	SDT3759	SDT3723
2N3186	SDT3760	SDT3724
	SDT3761	SDT3725

5 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N3183	2N3184	2N3185	2N3186
BV_{CBO}	–40 V	–60 V	–80 V	–100 V
BV_{CEO}	–40 V	–60 V	–80 V	–100 V
BV_{EBO}	–10 V	–10 V	–10 V	– 10 V
I_c(Max.)	–5 A	–5 A	–5 A	–5 A
I_B (Max.)	–2 A	–2 A	–2 A	–2 A
P_T (25°C Case)	75 W	75 W	75 W	75 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE} = Rated V_{CE}, V_{BE} = 1.5 V	–	–10	mA	All
	V_{CE} = ½ Rated V_{CE}, V_{BE} = 1.5V, T_c = 150°C	–	–1.0	mA	All
I_{CEO}	I_B = 0, V_{CE} = ½ Rated V_{CE}	–	–100	μA	All
I_{EBO}	V_{EB} = –10 V	–	–150	μA	All
V_{CEO}(sus)	I_B = 0, I_c = –100 mA	–40	–	Volts	2N3183
		–60	–	Volts	2N3184
		–80	–	Volts	2N3185
		–100	–	Volts	2N3186
h_{FE}	I_c = –2 A, V_{CE} = –3 V	10	30	–	All
	I_c = –200 mA, V_{CE} = –3 V	20	–	–	All
V_{CE}(sat)	I_c = –2 A, I_B = –300 mA	–	–1.0	Volts	All
V_{BE}	I_c = –2 A, V_{CE} = – 3 V	–	–2.0	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
h_{fe}	V_{CE} = –3 V, I_c = –2 A, f= 1 MHz	1.0	–	–	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3757 SDT3721	SDT3758 SDT3722	SDT3759 SDT3723	SDT3760 SDT3724	SDT3761 SDT3725
BV_{CBO}	–40 V	–60 V	–80 V	–100 V	–40 V
BV_{CEO}	–40 V	–60 V	–80 V	–100 V	–40 V
BV_{EBO}	–6 V	–6 V	–6 V	–6 V	–6 V
I_c(Max.)	–5 A	–5 A	–5 A	–5 A	–5 A
I_B(Max.)	–2 A	–2 A	–2 A	–2 A	–2 A
P_T (100°C Case) TO–66	16 W	16 W	16 W	16 W	16 W
P_T (100°C Case) TO–3	30 W	30 W	30 W	30 W	30 W
Operating Junction Temperature	200°C				
Storage Temperature Range	–65°C to +200°C				

ELECTRICAL CHARACTERISTICS (25°C Ambient)

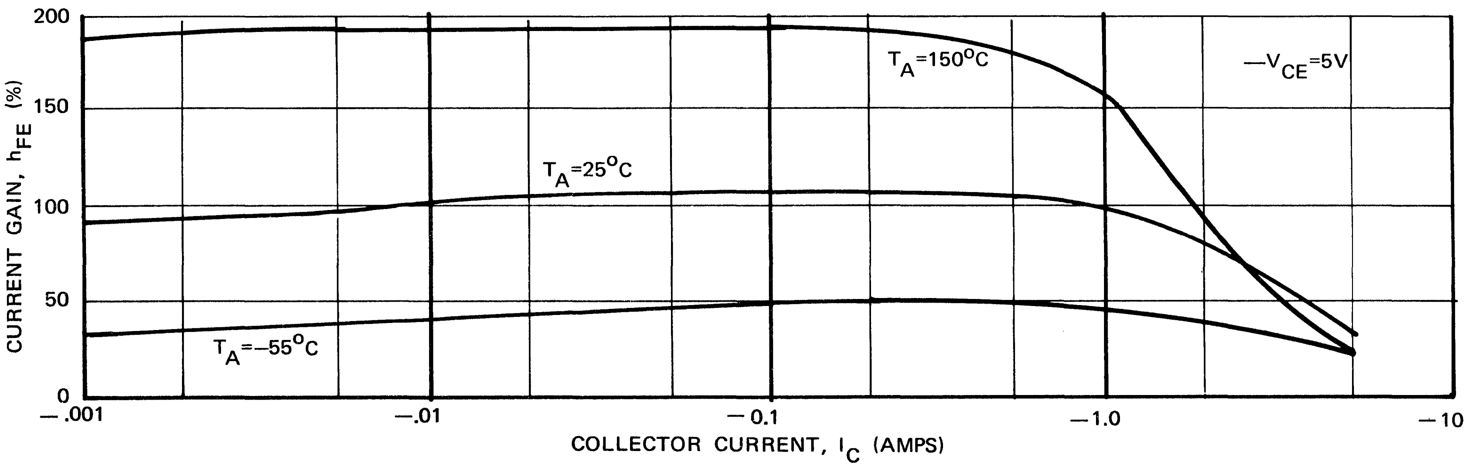
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE}= Rated V_{CB}, V_{BE}= 1.5 V	–	–	–1.0	mA	All
	V_{CE}= Rated V_{CB}, V_{BE}= 1.5V, T_c= 150°C	–	–	–10	mA	All
I_{CEO}	V_{CE}= ½ Rated V_{CE}, I_B= 0	–	–	–100	µA	All
I_{EBO}	V_{EB}= –6 V	–	–	–100	µA	All
V_{CEO}(sus)	I_B= 0, I_c= –100 mA	–40	–	–	Volts	SDT3757, SDT3721 SDT3761, SDT3725
		–60	–	–	Volts	SDT3758, SDT3722
		–80	–	–	Volts	SDT3759, SDT3723
		–100	–	–	Volts	SDT3760, SDT3724
h_{FE}	I_c= –2 A, V_{CE}= –3 V	10	–	30	–	ALL BUT SDT3761, SDT3725
	I_c= –2 A, V_{CE}= –3 V	40	–	–	–	SDT3761, SDT3725
	I_c= –200 mA, V_{CE}= –3 V	20	–	–	–	All
V_{CE}(sat)	I_c= –2 A, I_B= –0.2 A	–	–	–0.5	Volts	All
V_{BE}(sat)	I_c= –2 A, I_B= –0.2 A	–	–	–1.3	Volts	All

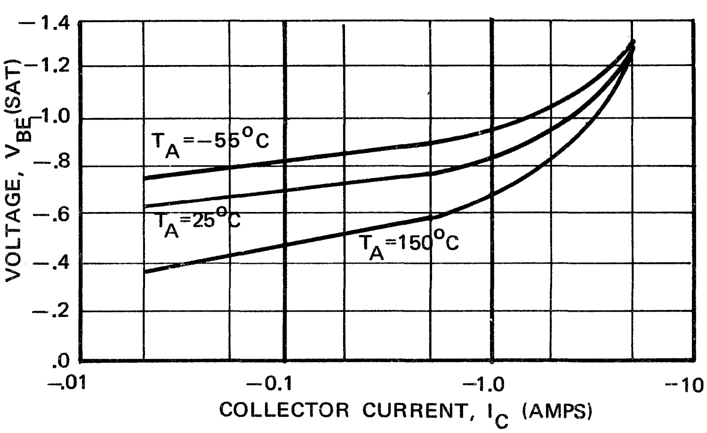
Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
t_d	(see Figure No. 1)	–	2	–	Nsec	All
t_r	(see Figure No. 1)	–	90	–	Nsec	All
t_s	(see Figure No. 1)	–	225	–	Nsec	All
t_f	(see Figure No. 1)	–	80	–	Nsec	All
h_{fe}	V_{CE}= –10 V, I_c= –.5 A, f= 1 MHz	10	–	–	–	All
C_{obo}	V_{CB}= –10 V, I_E= 0, f= 1 MHz	–	–	150	pf	All

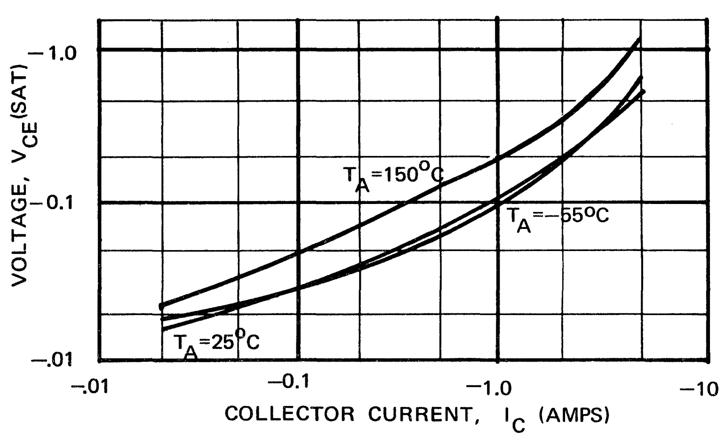
CHARACTERISTIC CURVES (ALL TYPES)



h_{FE} vs I_C

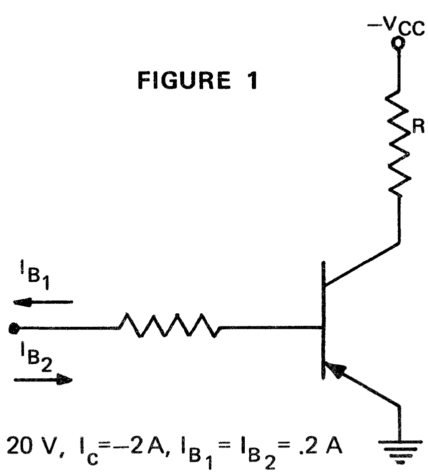


V_{BE}(sat) vs I_C

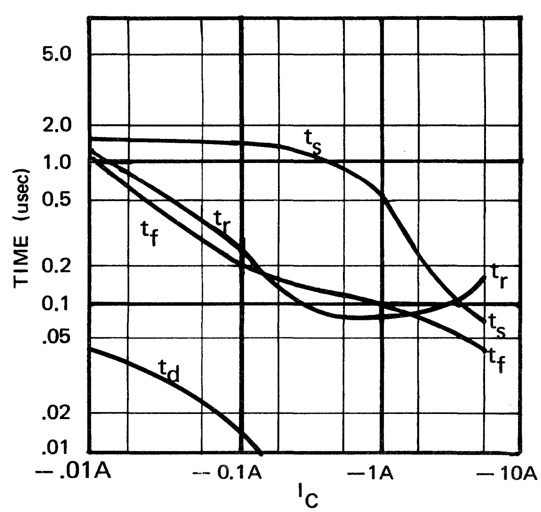


V_{CE}(sat) vs I_C

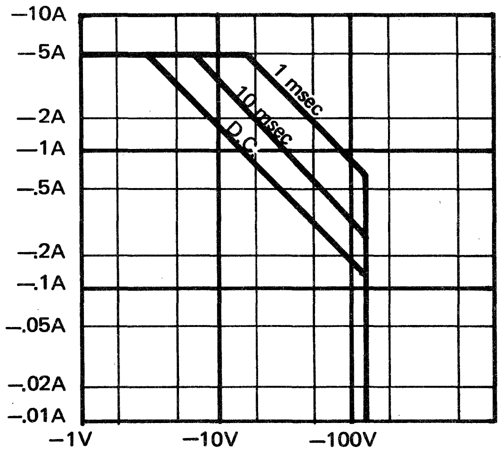
FIGURE 1



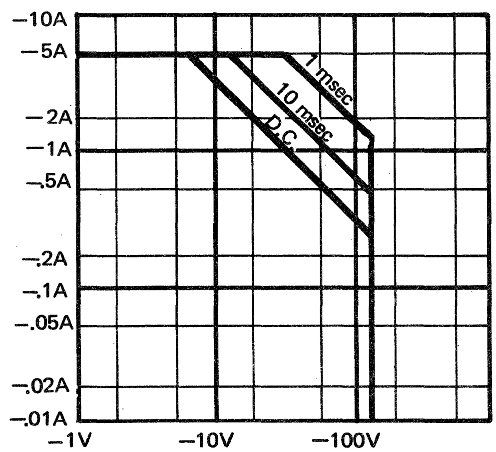
$-V_{cc}$= 20 V, I_c=−2A, I_{B_1} = I_{B_2}= .2 A
R_L= 10Ω



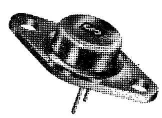
SWITCHING TIME vs I_C



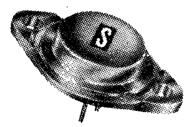
V_{CE}
$T_C = 100^oC$



V_{CE}
$T_C = 100^oC$



TO–66



TO–3

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

(TO–3)	(TO–3)	(TO–66)
2N3195	SDT3762	SDT3729
2N3196	SDT3763	SDT3730
2N3197	SDT3764	SDT3731
2N3198	SDT3765	SDT3732
	SDT3766	SDT3733

5 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N3195	2N3196	2N3197	2N3198
BV_{CBO}	–40 V	–60 V	–80 V	–100 V
BV_{CEO}	–40 V	–60 V	–80 V	–100 V
BV_{EBO}	–10 V	–10 V	–10 V	–10 V
I_c(Max.)	– 5 A	– 5 A	– 5 A	– 5 A
I_B(Max.)	– 2 A	– 2 A	– 2 A	– 2 A
P_T (25°C Case)	75 W	75 W	75 W	75 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE} = Rated V_{CE}, V_{BE} = 1.5 V	–	–10	mA	All
	V_{CE} = ½ Rated V_{CE}, V_{BE} = 1.5 V, T_c = 150°C	–	– 1.0	mA	All
I_{CEO}	V_{CE} = ½ Rated V_{CE}, I_B = 0	–	–100	µA	All
I_{EBO}	V_{EB} = –10 V	–	–150	µA	All
V_{CEO}(sus)	I_B = 0, I_c = –100 mA	–40	–	Volts	2N3195
		–60	–	Volts	2N3196
		–80	–	Volts	2N3197
		–100	–	Volts	2N3198
h_{FE}	I_c = –3 A, V_{CE} = –3 V	10	30	–	All
	I_c = –300 mA, V_{CE} = –3 V	20	–	–	All
V_{CE}(sat)	I_c = –3 A, I_B = –600 mA	–	–0.9	Volts	All
V_{BE}	I_c = –3 A, V_{CE} = –3 V	–	–1.9	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
h_{fe}	V_{CE} = –3 V, I_c = –3 A, f= 1 MHz	1.0	–	–	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3762 SDT3729	SDT3763 SDT3730	SDT3764 SDT3731	SDT3765 SDT3732	SDT3766 SDT3733
BV_{CBO}	–40 V	–60 V	–80 V	–100 V	–40 V
BV_{CEO}	–40 V	–60 V	–80 V	–100 V	–40 V
BV_{EBO}	–6 V	–6 V	–6 V	–6 V	–6 V
I_c(Max.)	–5 A	–5 A	–5 A	–5 A	–5 A
I_B(Max.)	–2 A	–2 A	–2 A	–2 A	–2 A
P_T(100°C Case) TO-66	16 W	16 W	16 W	16 W	16 W
P_T(100°C Case) TO-3	30 W	30 W	30 W	30 W	30 W
Operating Junction Temperature			200°C		
Storage Temperature Range			–65°C to +200°C		

ELECTRICAL CHARACTERISTICS (25°C Ambient)

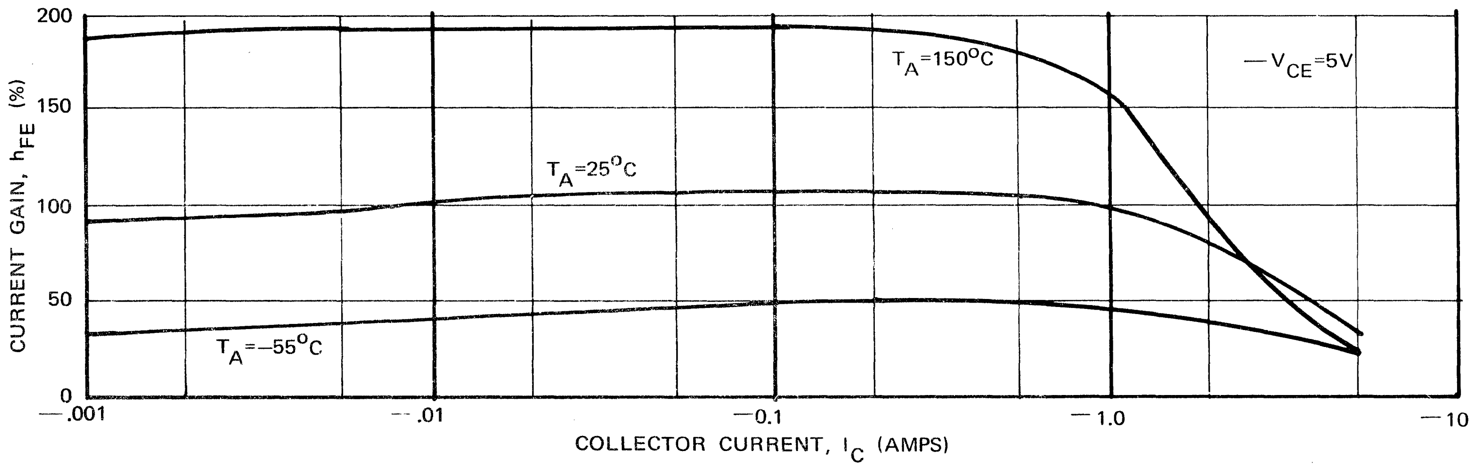
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE}= Rated V_{CB}, V_{BE}= 1.5 V	–	–	–1.0	mA	All
	V_{CE}= Rated V_{CB}, V_{BE}= 1.5 V, T_c= 150°C	–	–	–1.0	mA	All
I_{CEO}	V_{CE}= ½ Rated V_{CE}, I_B= 0	–	–	–100	μA	All
I_{EBO}	V_{EB}= –6 V	–	–	–100	μA	All
V_{CEO}(sus)	I_B= 0, I_c= –100 mA	–40	–	–	Volts	SDT3729, SDT3762 SDT3733, SDT3766
		–60	–	–	Volts	SDT3730, SDT3763
		–80	–	–	Volts	SDT3731, SDT3764
		–100	–	–	Volts	SDT3732, SDT3765
h_{FE}	I_c= –3 A, V_{CE}= –3 V	10	–	30	–	ALL EXCEPT SDT3733, SDT3766
	I_c= –300 mA, V_{CE}= –3 V	20	–	–	–	ALL EXCEPT SDT3733, SDT3766
	I_c= –3A, V_{CE}= –3 V	40	–	–	–	SDT3733, SDT3766
V_{CE}(sat)	I_c= –3 A, I_B= –.3 A	–	–	.75	Volts	All
V_{BE}(sat)	I_c= –3 A, I_B= –.3 A	–	–	1.5	Volts	All

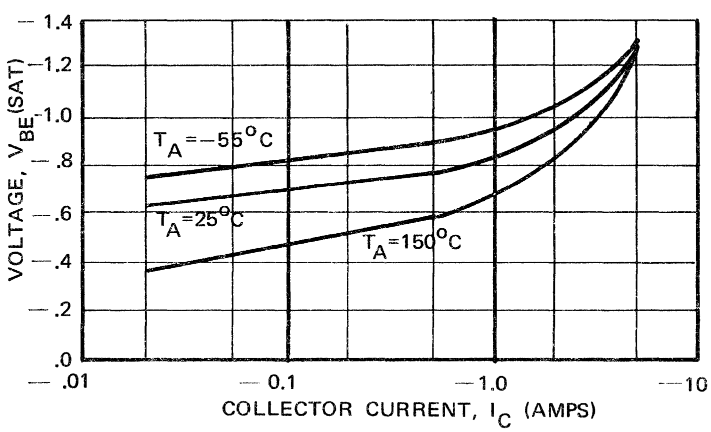
Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
t_d	(See Figure No. 1)	–	1	–	Nsec	All
t_r	(See Figure No. 1)	–	120	–	Nsec	All
t_s	(See Figure No. 1)	–	130	–	Nsec	All
t_f	(See Figure No. 1)	–	70	–	Nsec	All
h_{fe}	V_{CE}= –10 V, I_c= –.5 A, f= 1 MHz	10	–	–	–	All
C_{obo}	V_{CB}= –10 V, I_E= 0, f= 1 MHz	–	–	150	pf	All

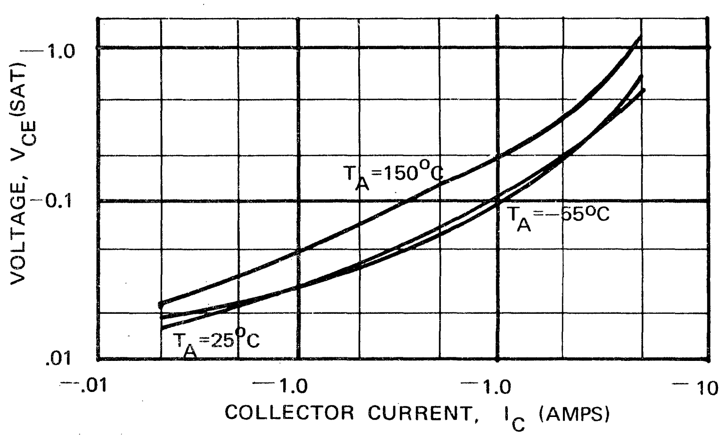
CHARACTERISTIC CURVES (ALL TYPES)



h_{FE} vs I_C

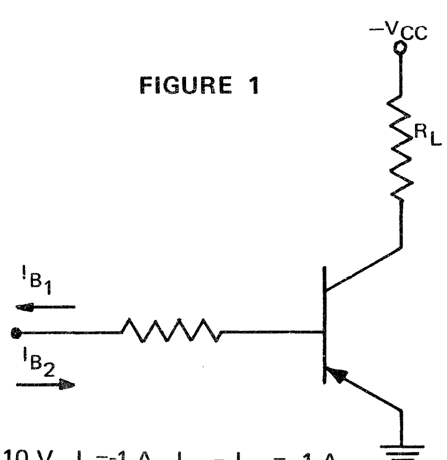


V_{BE}(sat) vs I_C

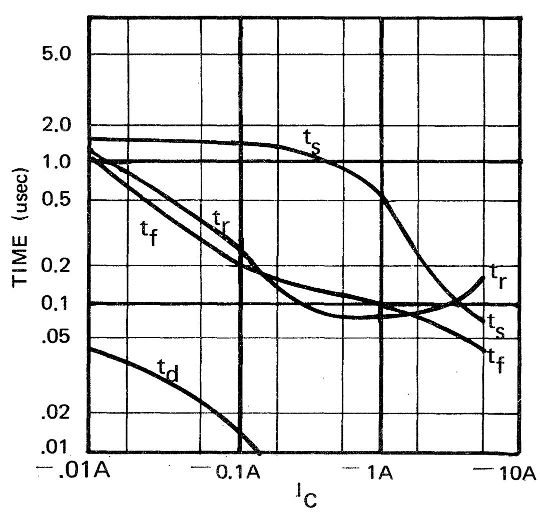


V_{CE}(sat) vs I_C

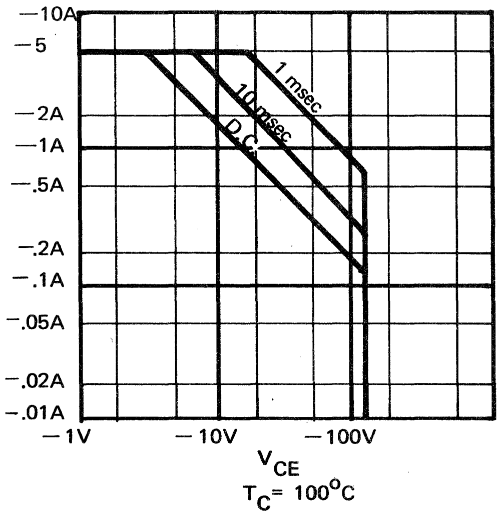
FIGURE 1

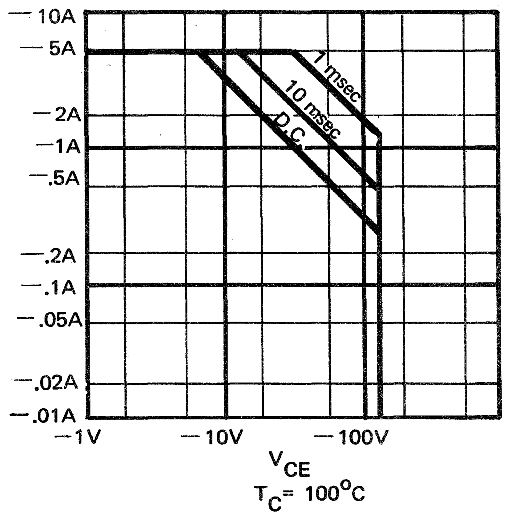


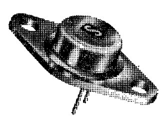
$-V_{cc}$= 10 V, I_c=-1 A, I_{B_1} = I_{B_2} = .1 A
R_L= 10 Ω



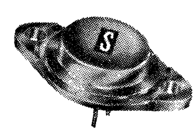
SWITCHING TIME vs I_C







TO–66



TO–3

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable — Solidev Bromley
Kent, England

When you think of semiconductors... think Solitron!

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

(TO–5)	(TO–5)	(TO–66)
2N3202	SDT3775	SDT3712
2N3203	SDT3776	SDT3713
2N3204	SDT3777	SDT3714
	SDT3778	SDT3715

5 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N3202	2N3203	2N3204
BV_{CBO}	–40 V	–60 V	–80 V
BV_{CEO}	–40 V	–60 V	–80 V
BV_{EBO}	–10 V	–10 V	–10 V
I_c(Max.)	–3 A	–3 A	–3 A
I_B(Max.)	–1.5 A	–1.5 A	–1.5 A
P_T(25°C Case)	8.75W	8.75W	8.75W
Operating Junction Temperature	200°C		
Storage Temperature Range	–65°C to +200°C		

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE}= Rated, V_{CE}, V_{BE}= 1.5 V	–	–75	μA	All
	V_{CE}= ½ Rated V_{CE}, V_{BE}= 1.5 V, T_c= 150°C	–	–250	μA	All
I_{CEO}	I_B= 0, V_{CE}= ½ Rated V_{CE}	–	–100	μA	All
I_{EBO}	V_{EB}= –10 V	–	–50	μA	All
V_{CEO}(sus)	I_B= 0, I_c= –50 mA	–40	–	Volts	2N3202
		–60	–	Volts	2N3203
		–80	–	Volts	2N3204
h_{FE}	I_c= –1 A, V_{CE}= – 2 V	20	60	–	All
	I_c= –0.5 A, V_{CE}= –2 V	30	–	–	All
V_{CE}(sat)	I_c= –1 A, V_{CE}= –0.1 A	–	–0.3	Volts	All
V_{BE}	I_c= –1 A, V_{CE}= –3 V	–	–1.3	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
h_{fe}	V_{CE}= –2 V, I_c= –1A, f= 1 MHz	1.0	–	–	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3712 SDT3775	SDT3713 SDT3776	SDT3714 SDT3777	SDT3715 SDT3778
V_{CBO}	–40 V	–60 V	–80 V	–40 V
V_{CEO}	–40 V	–60 V	–80 V	–40 V
V_{EBO}	–6 V	–6 V	–6 V	–6 V
I_c(Max.)	–5 A	–5 A	–5 A	–5 A
I_B(Max.)	–2 A	–2 A	–2 A	–2 A
P_T (100°C Case) TO-5	4 W	4 W	4 W	4 W
P_T (100°C Case) TO-66	16 W	16 W	16 W	16 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

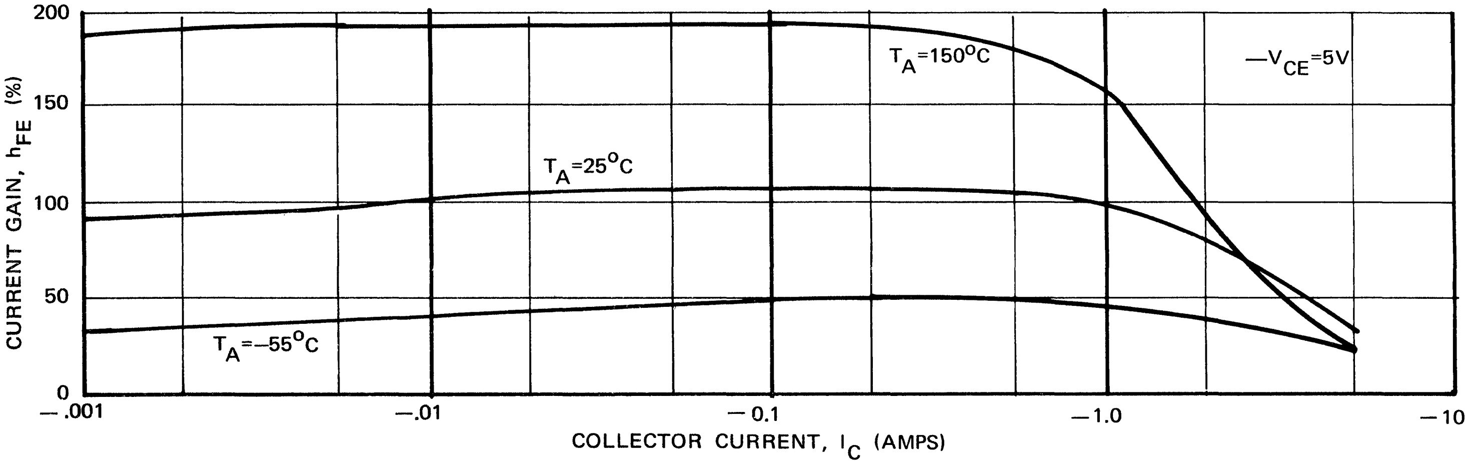
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE} = Rated V_{CE}, V_{BE} = 1.5 V	–	–	–75	μA	All
	V_{CE} = ½ Rated V_{CE}, T_c = 150°C	–	–	–250	μA	All
I_{CEO}	I_B = 0, V_{CE} = ½ Rated V_{CE}	–	–	–100	μA	All
I_{EBO}	V_{EB} = –6 V	–	–	–50	μA	All
V_{CEO}(sus)	I_B = 0, I_c = –50 mA	–40	–	–	Volts	SDT3775, SDT3712 SDT3778, SDT3715
		–60	–	–	Volts	SDT3776, SDT3713
		–80	–	–	Volts	SDT3777, SDT3714
h_{FE}	I_c = –2 A, V_{CE} = –2 V	20	–	60	–	All
	I_c = –0.5 A, V_{CE} = –2 V	30	–	–	–	All
V_{CE}(sat)	I_c = –1 A, I_B = –0.1 A	–	–	–0.3	Volts	All
V_{BE}(sat)	I_c = –1 A, I_B = –0.1 A	–	–	–1.1	Volts	All

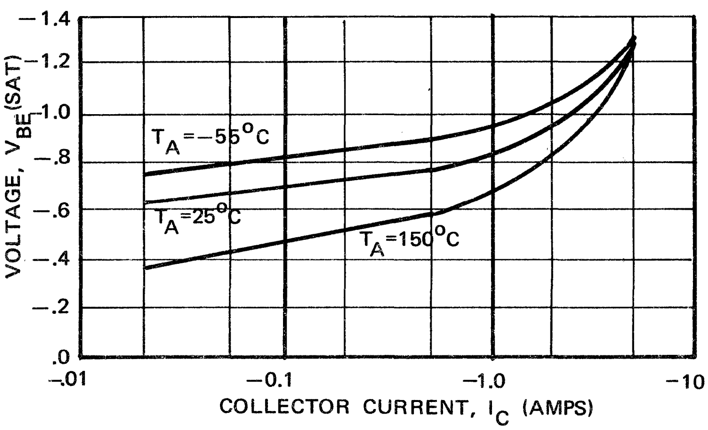
Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
t_d	(See Figure No. 1)	–	1	–	Nsec	All
t_r	(See Figure No. 1)	–	100	–	Nsec	All
t_s	(See Figure No. 1)	–	180	–	Nsec	All
t_f	(See Figure No. 1)	–	75	–	Nsec	All
h_{fe}	V_{CE} = –2 V, I_c = –1 A, f= 1 MHz	10	–	–	–	All
C_{obo}	V_{CB} = –10 V, I_E = 0, f- 1 MHz	–	–	150	pf	All

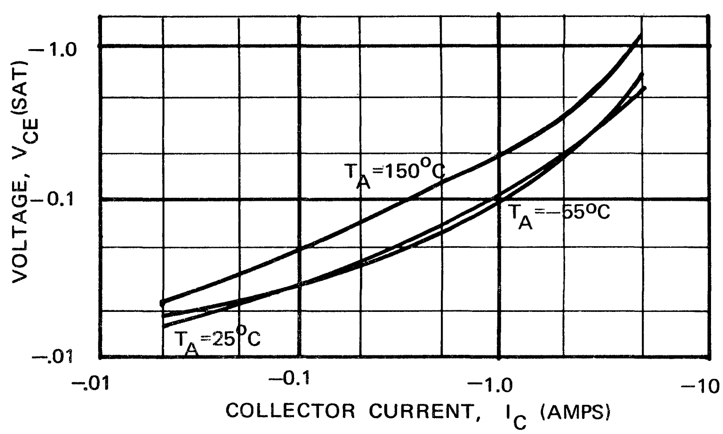
CHARACTERISTIC CURVES (ALL TYPES)



h_{FE} vs I_C

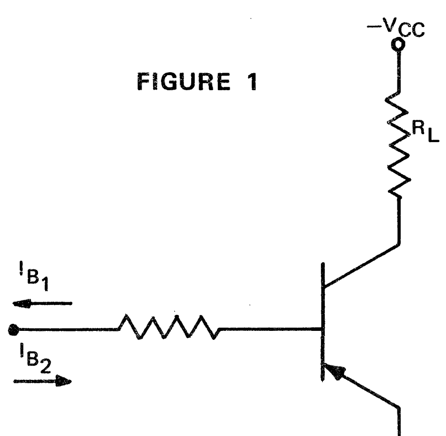


V_{BE}(sat) vs I_C

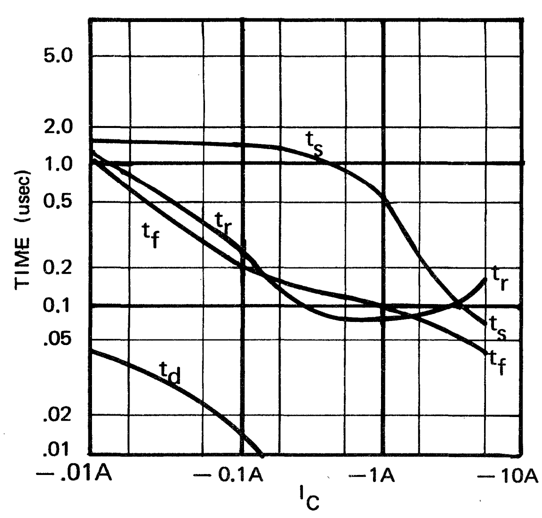


V_{CE}(sat) vs I_C

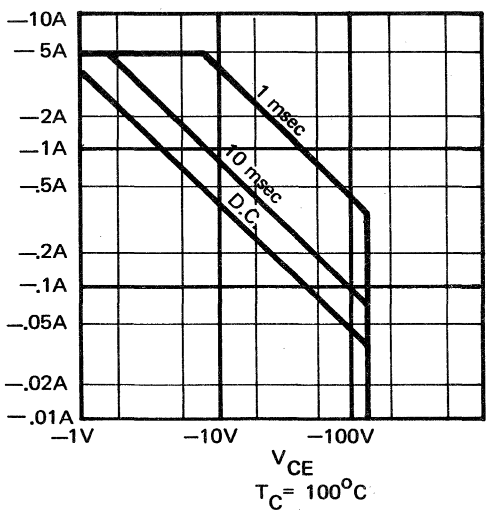
FIGURE 1

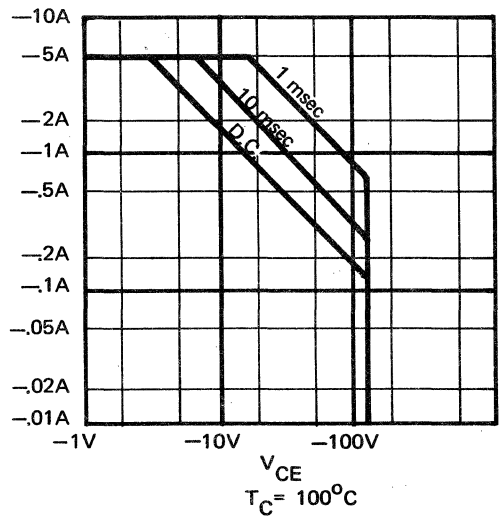


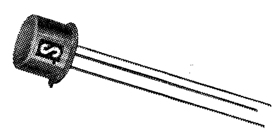
$-V_{cc}$= 10 V, I_c=−1 A, I_{B_1} = I_{B_2} = .1 A
R_L= 10 Ω



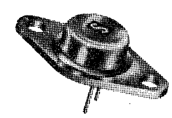
SWITCHING TIME vs I_C







TO—5



TO—66

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

(TO–5)	(TO–66)
2N3660	SDT3578
2N3661	SDT3579

2 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N3660	2N3661
BV_{CBO}	–40 V	–60 V
BV_{CEO}	–30 V	–50 V
BV_{EBO}	–5 V	–5 V
I_c(Max.)	–1.5 A	–1.5 A
I_B(Max.)	–0.5 A	–0.5 A
P_T(100^oC Case)	5 W	5 W
Operating Junction Temperature	200^oC	
Storage Temperature Range	-65^oC to $+200^oC$	

ELECTRICAL CHARACTERISTICS (25^oC Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
I_{CBO}	$V_{CB}= -20$ V	–	–100	NA	2N3660
	$V_{CB}= -30$ V	–	–100	NA	2N3661
	$V_{CB}= -20$ V, T= 150^oC	–	–100	μA	2N3660
	$V_{CB}= -30$ V, T= 150^oC	–	–100	μA	2N3661
I_{EBO}	$V_{EB}= -5$ V	–	–10	μA	Both
BV_{CBO}	$I_c= -10\,\mu A$, $I_E= 0$	–40	–	Volts	2N3660
	$I_c= -10\,\mu A$, $I_E= 0$	–60	–	Volts	2N3661
BV_{CEO}	$I_c= -50$ mA, $I_B= 0$	–30	–	Volts	2N3660
	$I_c= -50$ mA, $I_B= 0$	–50	–	Volts	2N3661
h_{FE}	$V_{CE}=-10$ V, $I_c= -500$ mA	25	100	–	Both
	$V_{CE}=-10$ V, $I_c= -1.5$ A	15	–	–	Both
	$V_{CE}=-10$ V, $I_c= -50$ mA	15	–	–	Both
V_{CE}(sat)	$I_c= -500$ mA, $I_B= -50$ mA	–	–1.2	Volts	Both
V_{BE}(sat)	$I_c= -500$ mA, $I_B= -50$ mA	–	–1.8	Volts	Both

Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
h_{fe}	$V_{CE}= -15$ V, $I_c= -50$ mA, f= 20 MHz	1.25	–	–	Both
C_{obo}	$V_{CB}= -10$ V, $I_E= 0$, f= 1 MHz	–	275	pf	Both

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3578	SDT3579
BV_{CBO}	−40 V	−60 V
BV_{CEO}	−30 V	−50 V
BV_{EBO}	−5 V	−5 V
I_c(Max.)	−2 A	−2 A
I_B(Max.)	−1 A	−1 A
P_T(100°C Case)	10 W	10 W
Operating Junction Temperature	200°C	
Storage Temperature Range	−65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

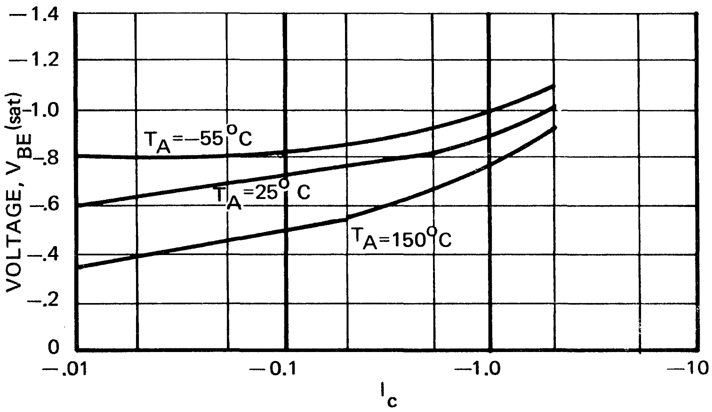
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
I_{CBO}	V_{CB}=−20 V	–	–	−100	nA	SDT3578
	V_{CB}=−30 V	–	–	−100	nA	SDT3579
	V_{CB}=−20 V, T= 150°C	–	–	−100	μA	SDT3578
	V_{CB}=−30 V, T= 150°C	–	–	−100	μA	SDT3579
I_{EBO}	V_{EB}=−5 V	–	–	−10	μA	Both
BV_{CBO}	I_c= −10 μA, I_E= 0	−40	–	–	Volts	SDT3578
	I_c= −10 μA, I_E= 0	−60	–	–	Volts	SDT3579
BV_{CEO}	I_c= −50 mA, I_B= 0	−30	–	–	Volts	SDT3578
	I_c= −50 mA, I_B= 0	−50	–	–	Volts	SDT3579
h_{FE}	V_{CE}= −10 V, I_c= −.5 A	25	–	100	–	Both
	V_{CE}= −10 V, I_c= −1.5 A	15	–	–	–	Both
V_{CE}(sat)	I_c= −.5 A, I_B= −.05 A	–	–	−0.5	Volts	Both
V_{BE}(sat)	I_c= −.5 A, I_B= −.05 A	–	–	−0.9	Volts	Both

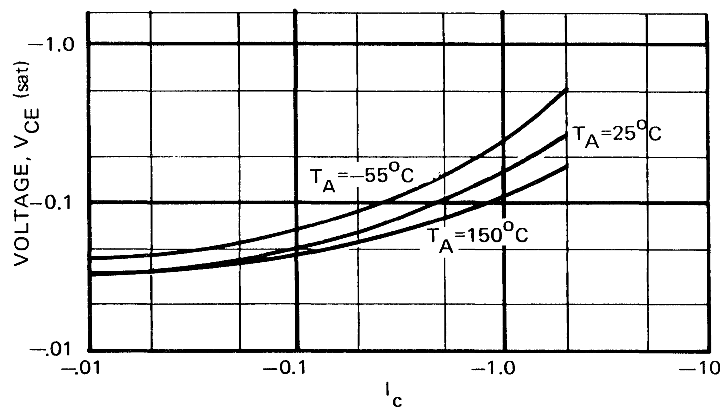
Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
t_d	(see Figure No. 1)	–	10	–	Nsec	Both
t_r	(see Figure No. 1)	–	150	–	Nsec	Both
t_s	(see Figure No. 1)	–	500	–	Nsec	Both
t_f	(see Figure No. 1)	–	200	–	Nsec	Both
h_{fe}	V_{CE}= −15 V, I_c= −50 mA, f= 20 MHz	2.0	–	–	–	Both
C_{obo}	V_{CB}= −10 V, I_E= 0, f= 1 MHz	–	–	100	pf	Both

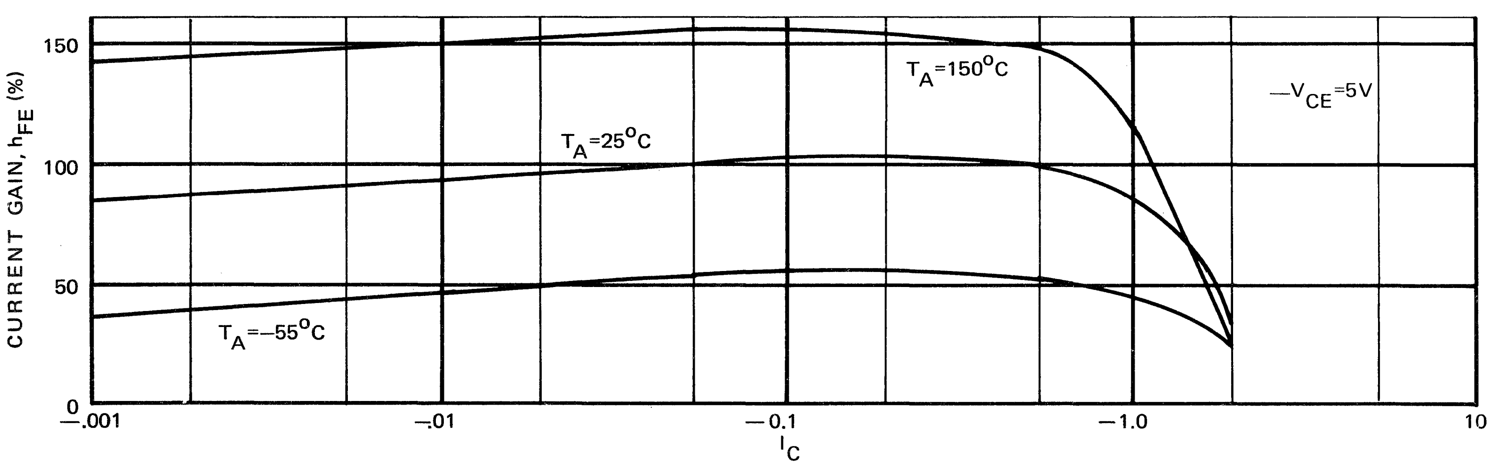
CHARACTERISTIC CURVES (ALL TYPES)



V_{BE}(sat) vs I_C

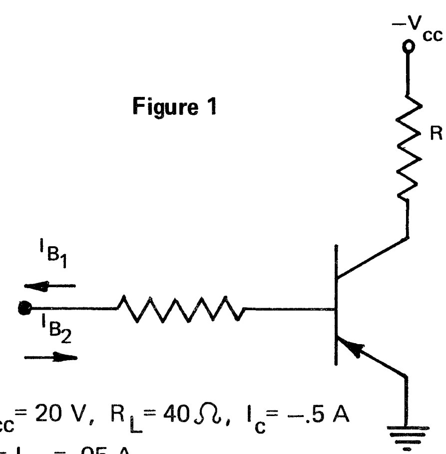


V_{CE}(sat) vs I_C

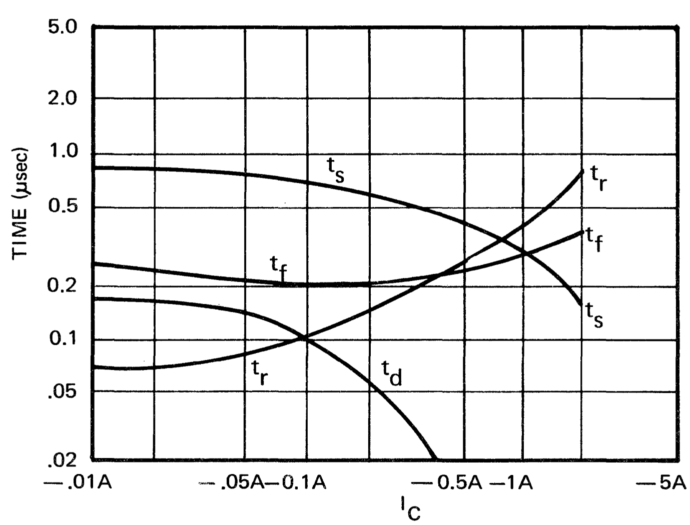


h_{FE} vs I_C

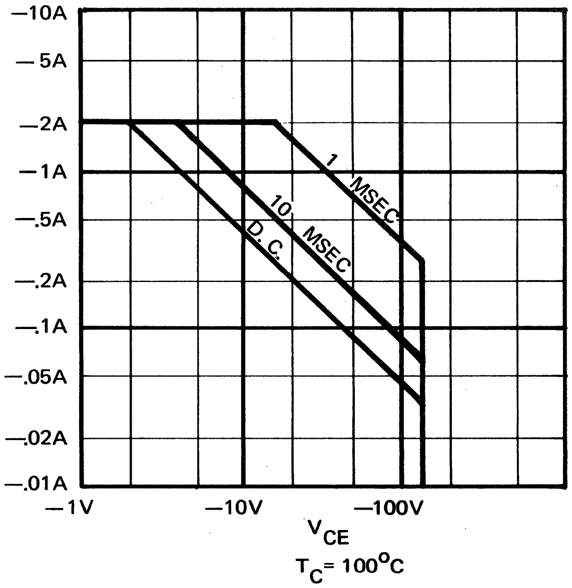
Figure 1

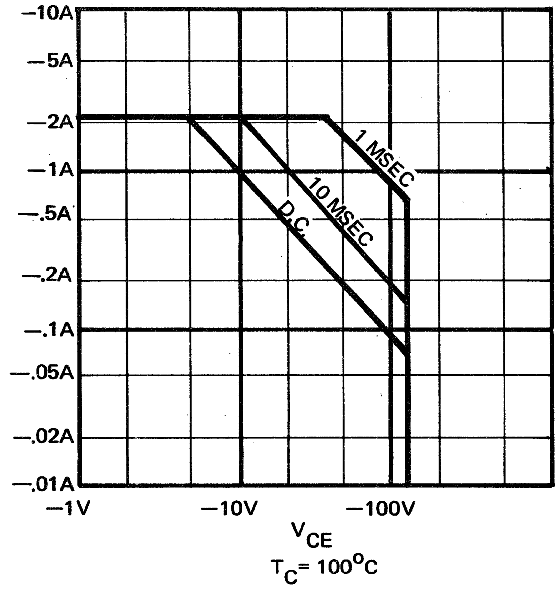


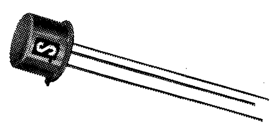
$-V_{cc}$= 20 V, R_L= 40Ω, I_c= −.5 A
$I_{B_1} = I_{B_2}$= .05 A



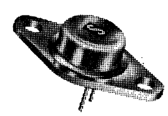
SWITCHING TIME vs I_C







TO—5



TO—66

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Officer Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable — Solidev Bromley
Kent, England

When you think of semiconductors... think Solitron!

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

2N3719 2N3720
(TO–5)

SDT3701 SDT3702
(TO–66)

SDT3750 SDT3751
(TO–3)

5 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N3719	2N3720
BV_{CBO}	–40 V	–60 V
BV_{CEO}	–40 V	–60 V
BV_{EBO}	–4 V	–4 V
I_c (Max.)	–3 A	–3 A
I_B (Max.)	–.5 A	–.5 A
P_T (25°C Case)	6 W	6 W
Operating Junction Temperature	200°C	
Storage Temperature Range	–65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE}= 40 V, V_{BE}= 2 V, T_c= 150°C	–	–1.0	mA	2N3719
	V_{CE}= 60 V, V_{BE}= 2 V, T_c= 150°C	–	–1.0	mA	2N3720
I_{CEX}	V_{CE}= 40 V, V_{BE}= 2 V	–	–10	µA	2N3719
	V_{CE}= 60 V, V_{BE}= 2 V	–	–10	µA	2N3720
I_{CBO}	V_{CB}= –40 V, I_E= 0	–	–10	µA	2N3719
	V_{CB}= –60 V, I_E= 0	–	–10	µA	2N3720
I_{EBO}	V_{EB}= –4 V	–	–1.0	mA	Both
V_{CEO} (sus)	I_B= 0, I_c= –20 mA	–40	–	Volts	2N3719
	I_B= 0, I_c= –20 mA	–60	–	Volts	2N3720
h_{FE}	V_{CE}= –1.5 V, I_c= –1 A	25	180	Volts	Both
	V_{CE}= –1.5 V, I_c= –1 A, T_c= –40°C	15	–	–	Both
V_{CE} (sat)	I_c= –3 A, I_B= –.3 A, T_c= –40°C to 100°C	–	–1.5	Volts	Both
	I_c= –1 A, I_B= –.1 A, T_c= –40°C to 100°C	–	–.75	Volts	Both
V_{BE} (sat)	I_c= –3 A, I_B= –.3 A, T_c= –40°C to 100°C	–	–2.3	Volts	Both
	I_c= –1 A, I_B= –.1 A, T_c= –40°C to 100°C	–	–1.5	Volts	Both

Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
h_{fe}	V_{CE}= –10 V, I_c= –.5 A, f= 30 MHz	2.0	–	–	Both
C_{obo}	I_E= 0, V_{CB}= –10 V, f= 100 KHz	–	120	pf	Both
C_{ib}	I_c= 0, V_{BE}= –.5 V, f= 100 KHz	–	1000	pf	Both

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3701	SDT3702	SDT3750	SDT3751
BV_{CBO}	−40 V	−60 V	−40 V	−60 V
BV_{CEO}	−40 V	−60 V	−40 V	−60 V
BV_{EBO}	−6 V	−6 V	−6 V	−6 V
I_C (Max.)	−5 A	−5 A	−5 A	−5 A
I_B (Max.)	−1 A	−1 A	−1 A	−1 A
P_T (100°C Case)	16 W	16 W	30 W	30 W
Operating Junction Temperature	200°C			
Storage Temperature Range	−65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

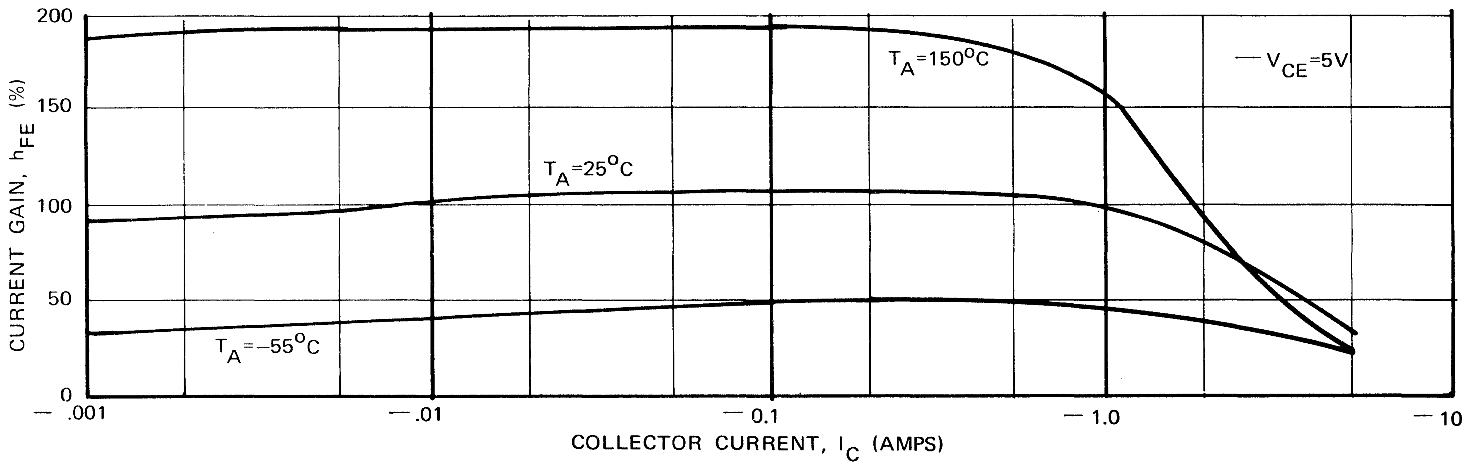
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
BV_{CEO} (sus)	$I_c = -100$ mA	−40	–	–	Volts	SDT3701, SDT3750
	$I_c = -100$ mA	−60	–	–	Volts	SDT3702, SDT3751
I_{CEX}	V_{CE} = Rated V_{CB}, $V_{BE} = 1.5$ V	–	–	−1.0	mA	All
I_{EBO}	$V_{EB} = -6$ V	–	–	−1.0	mA	All
h_{FE}	$V_{CE} = -1.5$ V, $I_c = -1$ A	25	–	180	–	All
	$V_{CE} = -1.5$ V, $I_c = -1$ A, $T_c = -40^{\circ}$C	15	–	–	–	All
V_{CE} (sat)	$I_c = -1$ A, $I_B = -.1$ A	–	–	−0.5	Volts	All
V_{BE} (sat)	$I_c = -1$ A, $I_B = -.1$ A	–	–	−1.2	Volts	All

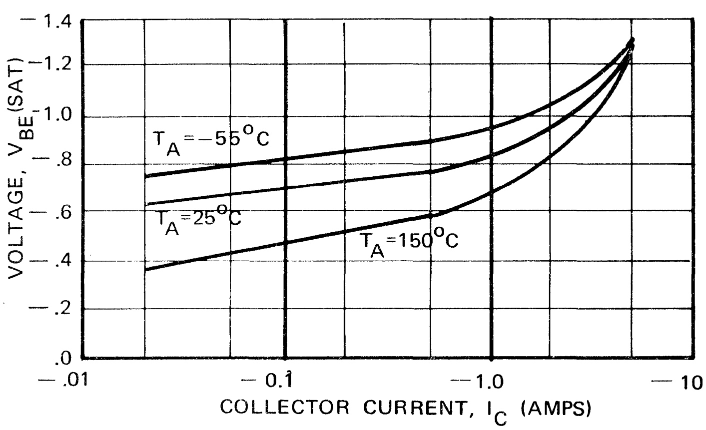
Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
t_d	(see Figure No. 1)	–	2	–	Nsec	All
t_r	(see Figure No. 1)	–	75	–	Nsec	All
t_s	(See Figure No. 1)	–	500	–	Nsec	All
t_f	(see Figure No. 1)	–	100	–	Nsec	All
h_{fe}	$V_{CE} = -10$ V, $I_c = -.5$ A, f= 30 MHz	2.0	–	–	–	All
C_{obo}	$V_{CB} = -10$ V, $I_E = 0$, f= 100 KHz	–	–	130	pf	All

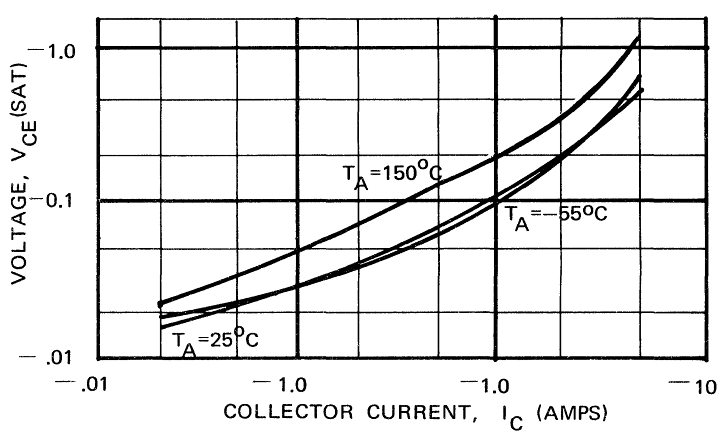
CHARACTERISTIC CURVES (ALL TYPES)



h_{FE} vs I_C

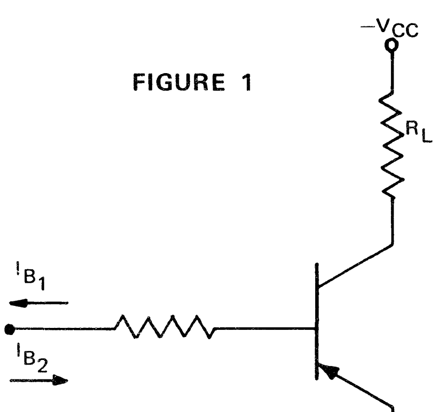


V_{BE}(sat) vs I_C

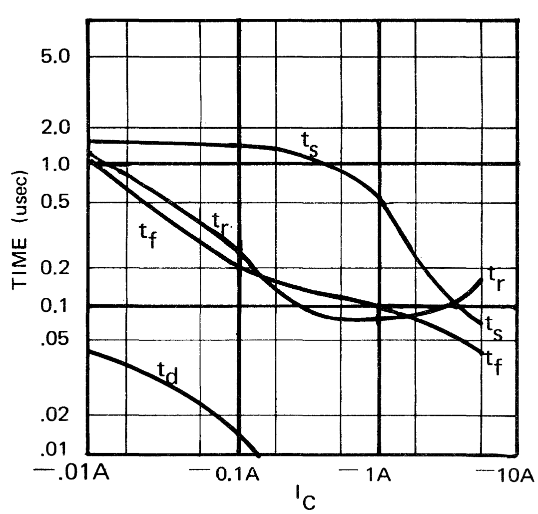


V_{CE}(sat) vs I_C

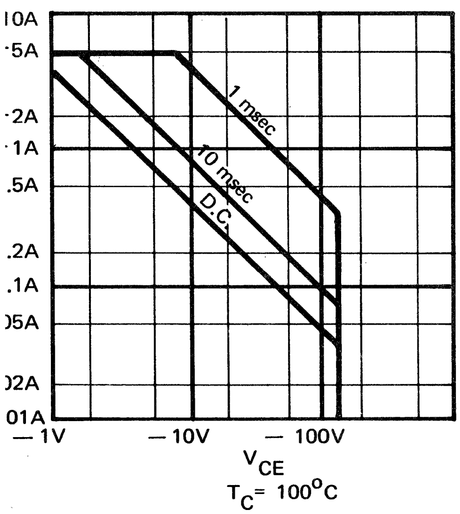
FIGURE 1

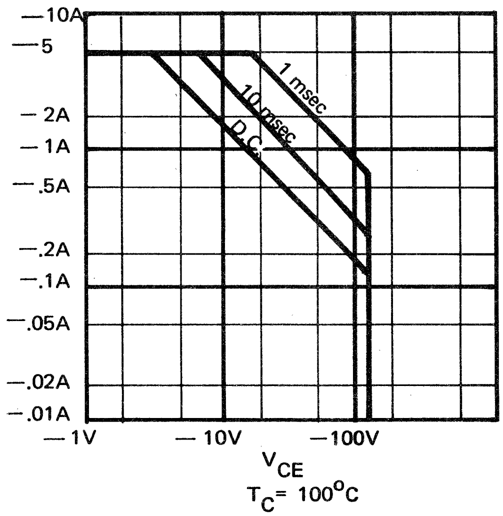


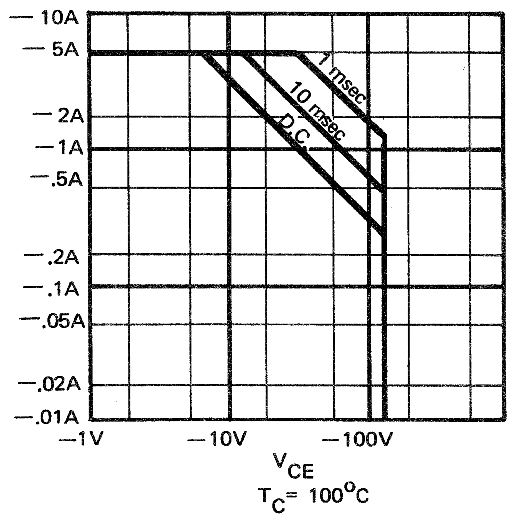
$-V_{cc}= 10$ V, $I_c=-1$ A, $I_{B_1} = I_{B_2} = .1$ A
$R_L= 10\,\Omega$

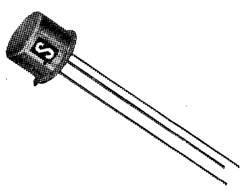


SWITCHING TIME vs I_C

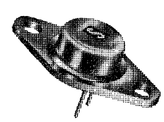




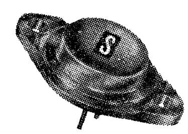




TO–5



TO–66



TO–3

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

When you think of semiconductors... think Solitron!

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

TO–66	TO–5
2N3740	**SDT3550**
2N3741	**SDT3551**

2 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N3740	2N3741
BV_{CBO}	–60 V	–80 V
BV_{CEO}	–60 V	–80 V
BV_{EBO}	–7 V	–7 V
I_c (Max.)	–2 A	–2 A
I_B (Max.)	–1 A	–1 A
P_T (25°C Case)	25 W	25 W
Operating Junction Temperature	200°C	
Storage Temperature Range	–65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE}= 40 V, V_{BE}= 1.5 V, T_c= 150°C	–	–1.0	mA	2N3740
	V_{CE}= 60 V, V_{BE}= 1.5 V, T_c= 150°C	–	–1.0	mA	2N3741
I_{CEX}	V_{CE}= 60 V, V_{BE}= 1.5 V	–	–0.1	mA	2N3740
	V_{CE}= 80 V, V_{BE}= 1.5 V	–	–0.1	mA	2N3741
I_{CBO}	Rated V_{CB}	–	–0.1	mA	Both
I_{EBO}	V_{EB}=–7 V	–	–0.5	mA	Both
V_{CEO}(sus)	I_B= 0, I_c= –100 mA	–60	–	Volts	2N3740
	(Pulse Test, P_W= 300 μsec, DC= 2%	–80	–	Volts	2N3741
h_{FE}	I_c= –1.0 A, V_{CE}= –1 V	10	–	–	Both
	I_c= –0.5 A, V_{CE}= –1 V	20	–	–	Both
	I_c= –.25 A, V_{CE}= –1 V	30	100	–	Both
	I_c= –0.1 A, V_{CE}= –1 V	40	–	–	Both
V_{CE}(sat)	I_c= –1 A, I_B= –.125 A	–	–0.6	Volts	Both
V_{BE}	I_c= –.25 A, V_{CE}= –1 V	–	–1.0	Volts	Both

Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
h_{fe}	V_{CE}=–10 V, I_c= –0.1 A, f= 1.0 MHz	30	–	–	Both
C_{obo}	V_{CB}=–10 V, I_c= 0, f= 1 MHz	–	100	pf	Both

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3550	SDT3551
BV_{CBO}	−60 V	−80 V
BV_{CEO}	−60 V	−80 V
BV_{EBO}	−6 V	−6 V
I_c(Max.)	−2 A	−2 A
I_B(Max.)	−1 A	−1 A
P_T (100°C Case)	4 W	4 W
Operating Junction Temperature	200°C	
Storage Temperature Range	−65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

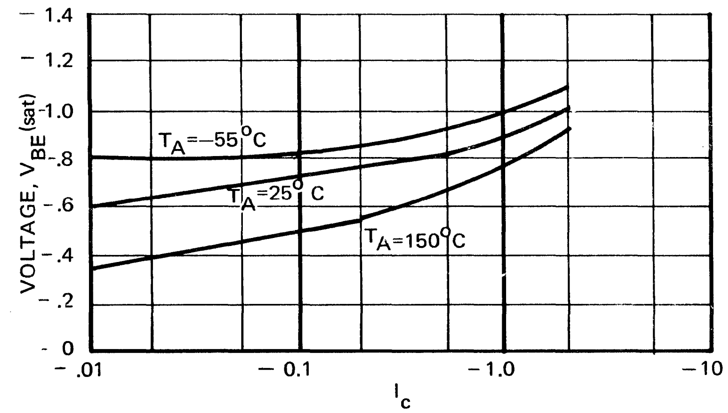
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
BV_{CEO}(sus)	$I_c = -100$ mA	−60	–	–	Volts	SDT3550
	$I_c = -100$ mA	−80	–	–	Volts	SDT3551
I_{CEX}	V_{CE} = Rated V_{CB}, $V_{BE} = 1.5$ V	–	–	−1.0	mA	Both
I_{EBO}	$V_{EB} = -6$ V	–	–	−0.5	mA	Both
h_{FE}	$V_{CE} = -1$ V, $I_c = -.25$ A	30	–	100	–	Both
	$V_{CE} = -1$ V, $I_c = -1$ A	10	–	–	–	Both
V_{CE}(sat)	$I_c = -.25$ A, $I_B = -.025$ A	–	–	−0.3	Volts	Both
V_{BE}(sat)	$I_c = -.25$ A, $I_B = -.025$ A	–	–	−0.8	Volts	Both
V_{CE}(sat)	$I_c = -1$ A, $I_B = -0.1$ A	–	–	−0.6	Volts	Both
V_{BE}(sat)	$I_c = -1$ A, $I_B = -0.1$ A	–	–	−1.0	Volts	Both

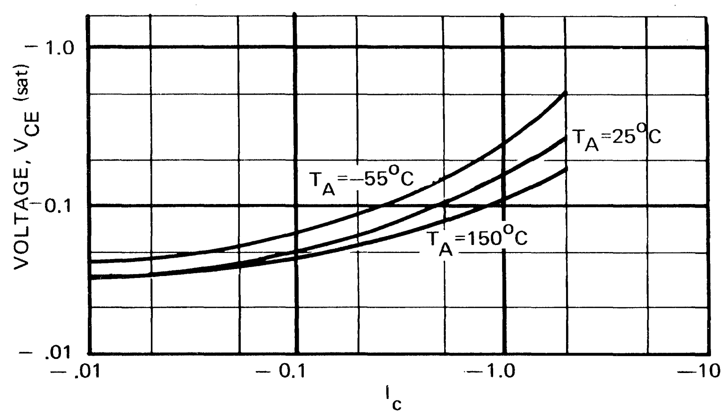
Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
t_d	(see Figure No. 1)	–	10	–	Nsec	Both
t_r	(see Figure No. 1)	–	150	–	Nsec	Both
t_s	(see Figure No. 1)	–	500	–	Nsec	Both
t_f	(see Figure No. 1)	–	200	–	Nsec	Both
h_{fe}	$V_{CE} = -10$ V, $I_c = -0.1$ A, f= 1 MHz	10	–	–	–	Both
C_{obo}	$V_{CB} = -10$ V, $I_c = 0$, f= 1 MHz	–	–	100	pf	Both

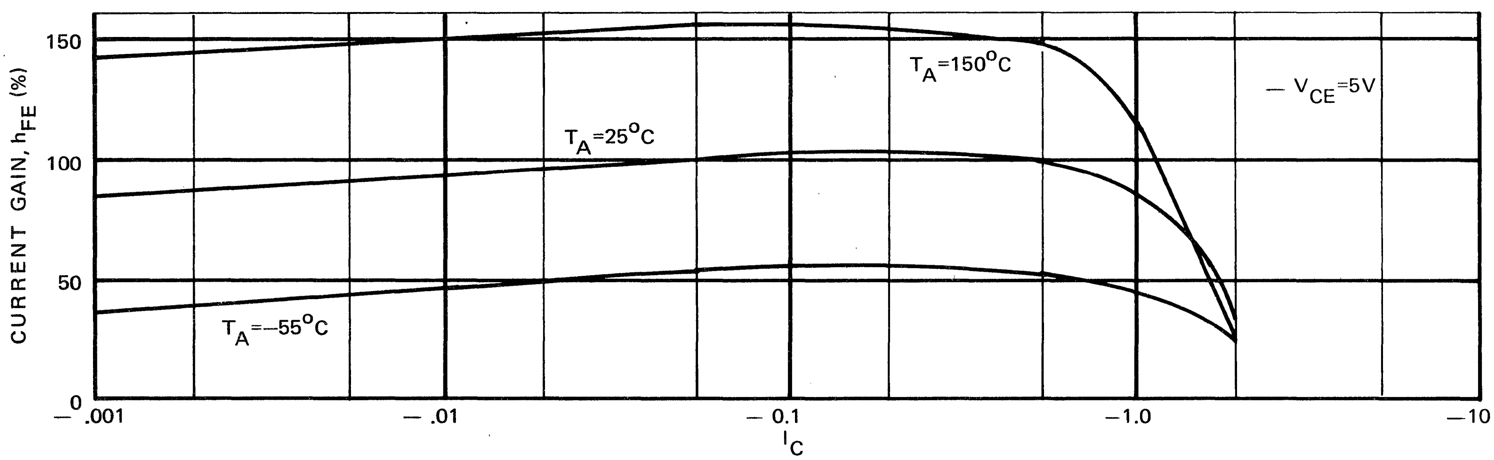
CHARACTERISTIC CURVES (ALL TYPES)



V_{BE}(sat) vs I_C



V_{CE}(sat) vs I_C



h_{FE} vs I_C

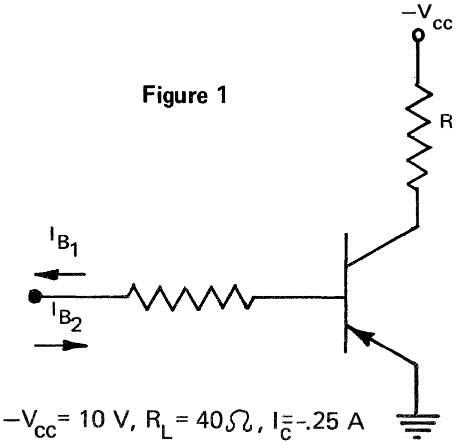
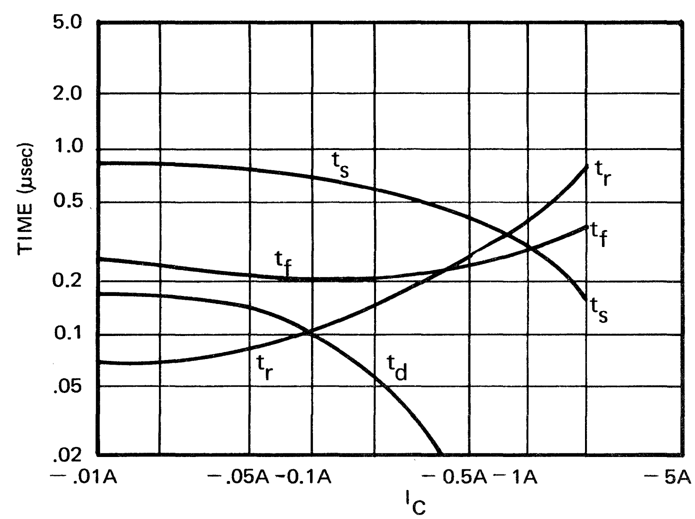
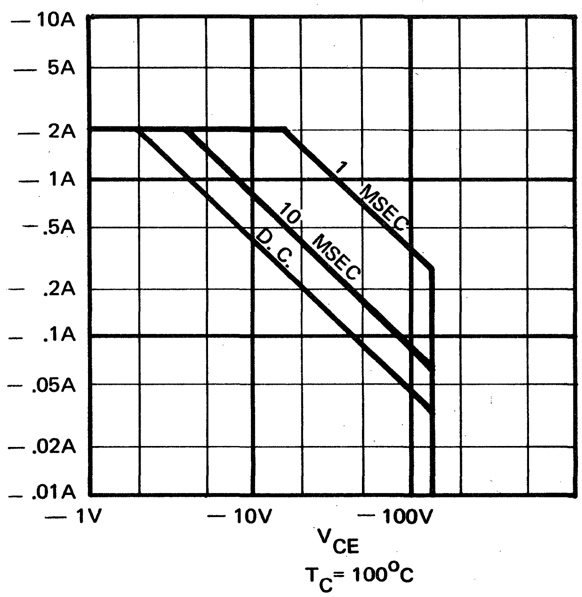


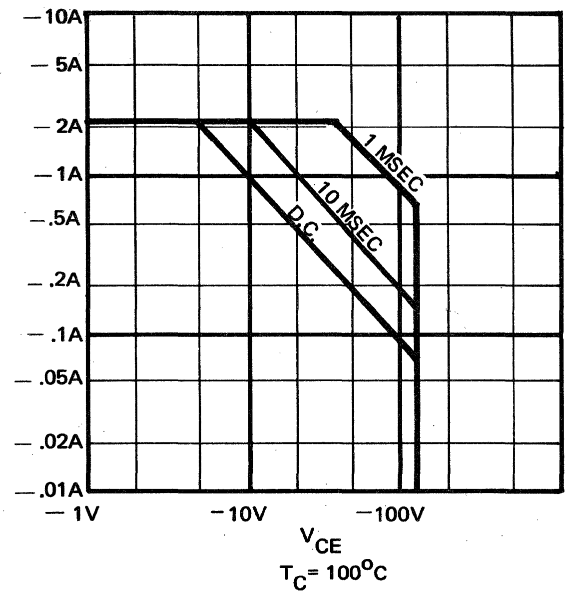
Figure 1

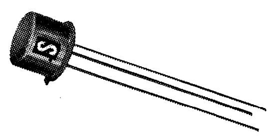
$-V_{cc}$= 10 V, R_L = 40Ω, I_c=-.25 A
$I_{B_1} = I_{B_2}$ = .025 A



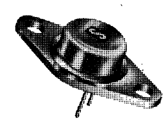
SWITCHING TIME vs I_C







TO–5



TO–66

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Officer Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable — Solidev Bromley
Kent, England

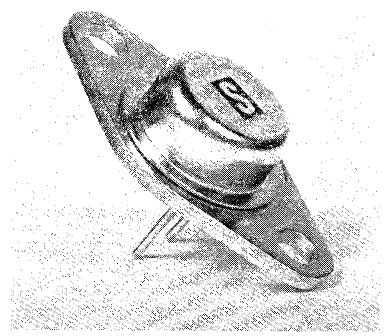
SDT 69601
SDT 69602
SDT 69603

PNP SILICON POWER TRANSISTORS

2 AMPERES - FAST SWITCHING

FEATURES:
HIGH RELIABILITY, MEDIUM POWER, PLANAR CONSTRUCTION

APPLICATIONS:
HIGH SPEED SWITCHING AND LINEAR AMPLIFIER APPLICATIONS



TO-66

ABSOLUTE MAXIMUM RATINGS

		SDT 69601	SDT 69602	SDT 69603
V_{CBO}	COLLECTOR-BASE VOLTAGE	−60 V	−80 V	−100 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	−40 V	−60 V	− 80 V
V_{EBO}	EMITTER-BASE VOLTAGE	− 8 V	− 8 V	− 8 V
I_C	CONTINUOUS COLLECTOR CURRENT	− 2 A	− 2 A	− 2 A
I_C (PK)	PEAK COLLECTOR CURRENT	− 5 A	− 5 A	− 5 A
I_B	CONTINUOUS BASE CURRENT	− 1 A	− 1 A	− 1 A
I_B (PK)	PEAK BASE CURRENT	− 2 A	− 2 A	− 2 A
T_J	OPERATING JUNCTION TEMPERATURE	-35°C to +200°C		
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C		
$R_{\Theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	5° C/W	5° C/W	5° C/W
P_D	POWER DISSIPATION (25°C)	35 W	35 W	35 W

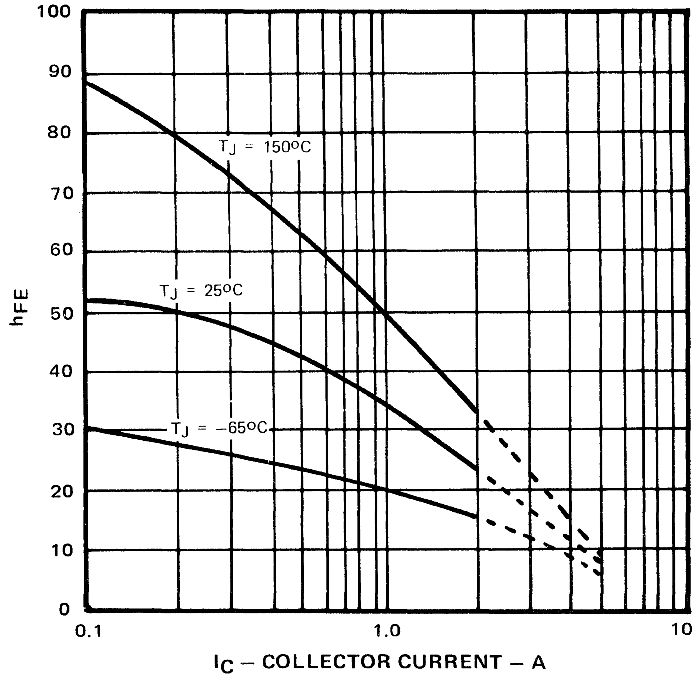
ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = -10 mA)* SDT 69601 SDT 69602 SDT 69603 *PULSED (INDUCTIVE SWEEP 60 Hz)	$V_{CEO(sus)}$	 -40 -60 -80		 V V V
COLLECTOR-BASE BREAKDOWN VOLTAGE (I_C = -10 μA) SDT 69601 SDT 69602 SDT 69603	V_{CBO}	 -60 -80 -100		 V V V
EMITTER-BASE VOLTAGE (I_E = 10 μA)	V_{EBO}	-8		V
COLLECTOR-CUTOFF CURRENT SDT 69601 V_{CB} = -30 V SDT 69602 V_{CB} = -40 V SDT 69603 V_{CB} = -60 V	I_{CBO}		 -0.1 -0.1 -0.1	 μA μA μA
COLLECTOR-CUTOFF CURRENT T_C = 150°C SDT 69601 V_{CB} = -30 V SDT 69602 V_{CB} = -40 V SDT 69603 V_{CB} = -60 V	I_{CBO}		 -10 -10 -10	 μA μA μA
DC CURRENT GAIN (I_C = -0.5 A V_{CE} = -5 V)**	h_{FE}	30		
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = -0.5 A I_B = -0.05 A)**	$V_{CE(sat)}$		-0.35	V V
BASE EMITTER SATURATION VOLTAGE (I_C = -0.5 A I_B = -0.05 A)**	$V_{BE(sat)}$		-1.2	V V
TRANSITION FREQUENCY (I_C = -0.1 A V_{CE} = -10 V, $f_{(TEST)}$ = 10 MHz)	f_T	25		MHz
OUTPUT CAPACITANCE (V_{BC} = -10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		80	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME V_{CC}=-80 V, I_C=-2.0 A, I_{B1}=$-I_{B2}$=-0.2 A, t_p=10μs	 t_{on} t_s t_f		 250 600 250	 ns ns ns
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1 sec NON REPETITIVE, V_{CE} = 35 V)	$I_{s/b}$	1.0		A

**PULSED-300 μs—2%

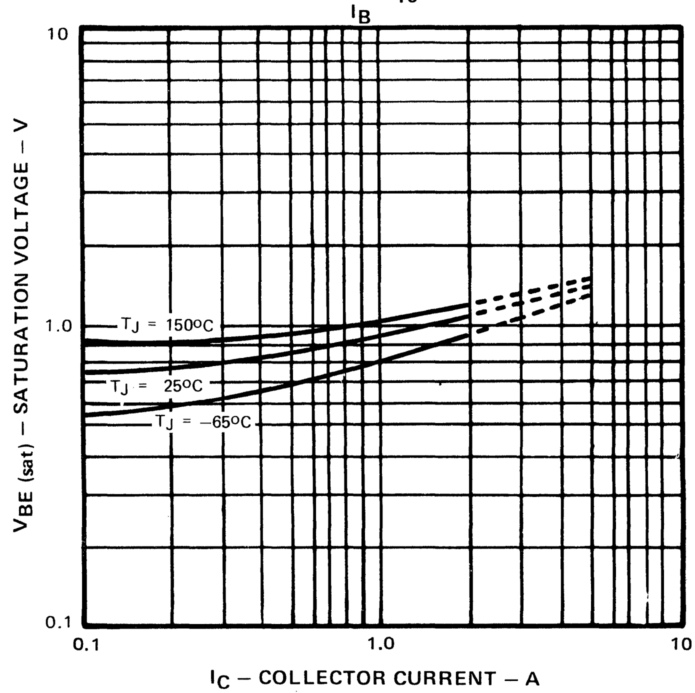
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO

$V_{CE} = 5\ V$



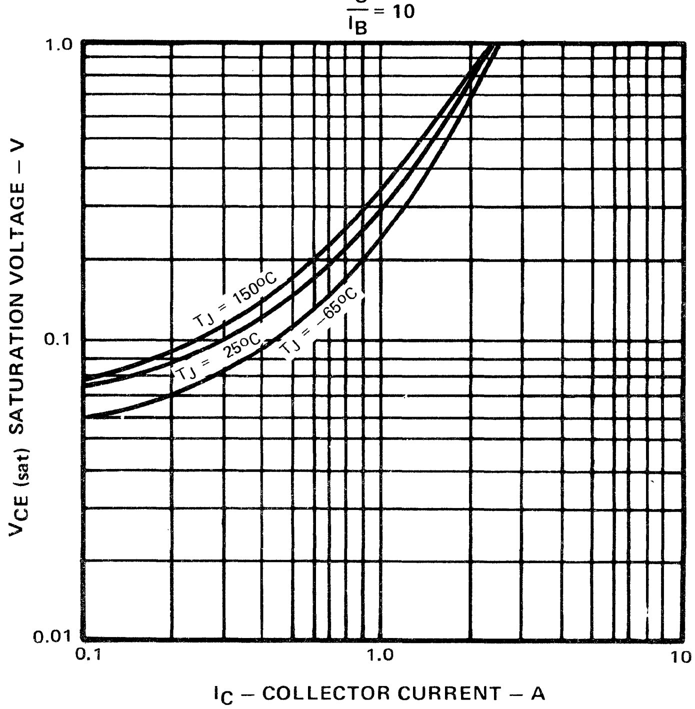
TYPICAL BASE EMITTER SATURATION VOLTAGE

$\frac{I_C}{I_B} = 10$



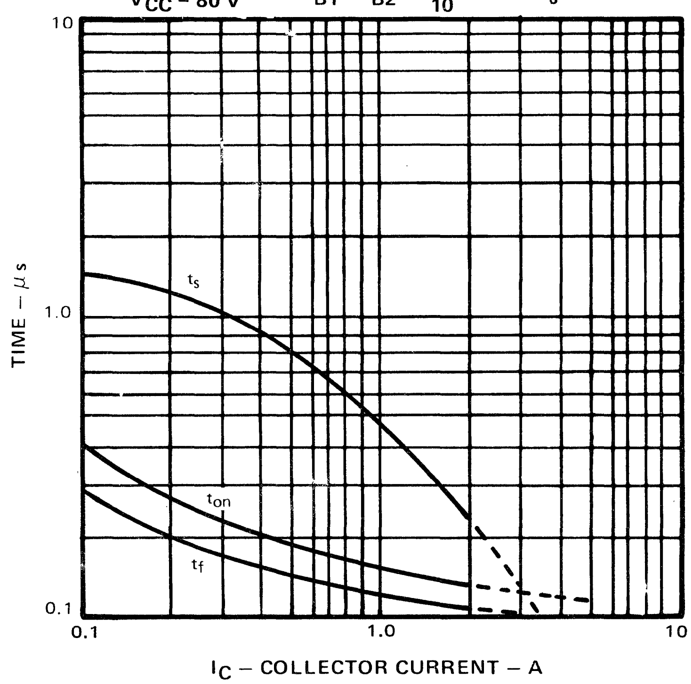
TYPICAL COLLECTOR–EMITTER SATURATION VOLTAGE

$\frac{I_C}{I_B} = 10$



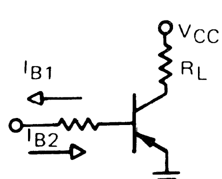
TYPICAL SWITCHING TIME

$V_{CC} = 80\ V$ $\quad I_{B1} = I_{B2} = \frac{I_C}{10}$ $\quad T_J = 25^oC$



TYPICAL
RESISTIVE SWITCHING CKT.

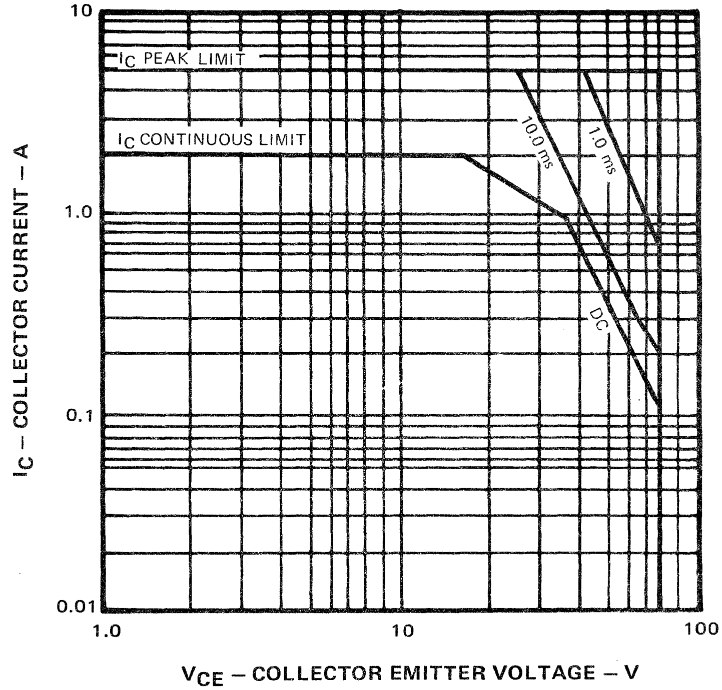
FIG. 1



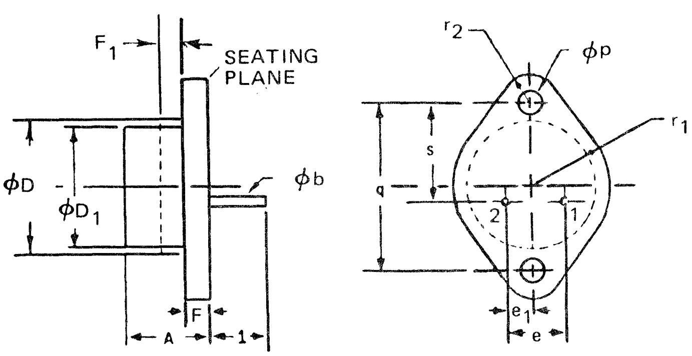
MAXIMUM OPERATING CONDITIONS

$T_C = 25^oC$

DERATE V_{CE} TO V_{CEO} MAX.



OUTLINE DRAWING FOR TO-66



SYMBOL	MILLIMETERS AA MIN.	MILLIMETERS AA MAX.	NOTE	INCHES AA MIN.	INCHES AA MAX.	NOTE
A	6.35	8.64		0.250	0.340	
ϕb	0.711	0.863		0.028	0.034	
ϕD		15.75			0.620	
ϕD_1	11.94	12.70		0.470	0.500	
e	4.83	5.33		0.190	0.210	
e_1	2.36	2.72		0.093	0.107	
F	1.27	1.91	2	0.050	0.075	2
F_1		1.27	1		0.050	1
1	9.14			0.360		
ϕp	3.61	3.86		0.142	0.152	
q	24.33	24.43		0.958	0.962	
r_1		8.89			0.350	
r_2		3.68			0.145	
s	14.48	14.99		0.570	0.590	
NOTE	3			3		

NOTES:

1. THE OUTLINE CONTOUR IS OPTIONAL WITHIN ZONE DEFINED BY ϕD AND F_1.
2. DIMENSION DOES NOT INCLUDE SEALING FLANGES.
3. CONTROLLING DIMENSIONS: INCH

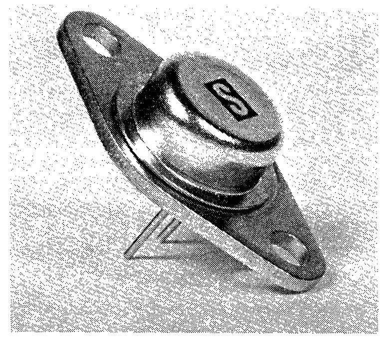
SDT 69604
SDT 69605

PNP SILICON POWER TRANSISTORS

2 AMPERES - FAST SWITCHING

FEATURES:
HIGH RELIABILITY, MEDIUM POWER, PLANAR CONSTRUCTION

APPLICATIONS:
HIGH SPEED SWITCHING AND LINEAR AMPLIFIER APPLICATIONS



TO-66

ABSOLUTE MAXIMUM RATINGS

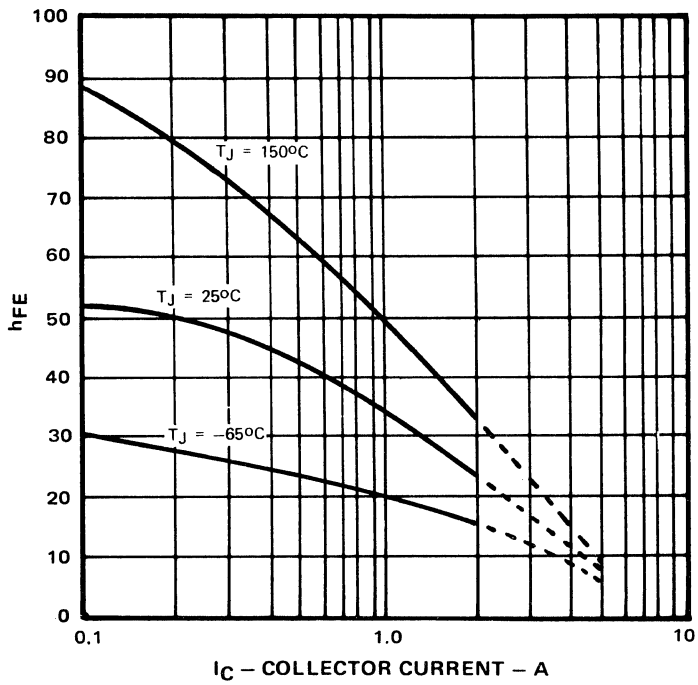
		SDT 69604	SDT 69605
V_{CBO}	COLLECTOR-BASE VOLTAGE	−120 V	−140 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	−100 V	−120 V
V_{EBO}	EMITTER-BASE VOLTAGE	− 8 V	− 8 V
I_C	CONTINUOUS COLLECTOR CURRENT	− 2 A	− 2 A
I_C (PK)	PEAK COLLECTOR CURRENT	− 5 A	− 5 A
I_B	CONTINUOUS BASE CURRENT	− 1 A	− 1 A
I_B (PK)	PEAK BASE CURRENT	− 2 A	− 2 A
T_J	OPERATING JUNCTION TEMPERATURE	-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C	
$R_{\Theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	5° C/W	5° C/W
P_D	POWER DISSIPATION (25°C)	35 W	35 W

ELECTRICAL CHARACTERISTICS (T_C = 25ºC UNLESS OTHERWISE NOTED)

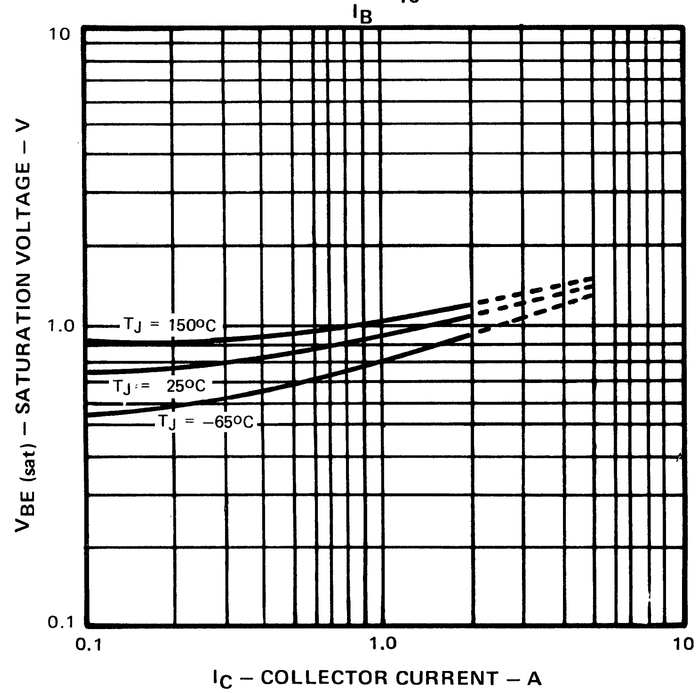
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = -10 mA)* SDT 69604 SDT 69605 *PULSED (INDUCTIVE SWEEP 60 Hz)	$V_{CEO(sus)}$	 -100 -120		 V V
COLLECTOR-BASE BREAKDOWN VOLTAGE (I_C = -10 μA) SDT 69604 SDT 69605	V_{CBO}	 -120 -140		 V V
EMITTER-BASE VOLTAGE (I_E = 10 μA)	V_{EBO}	-8		V
COLLECTOR-CUTOFF CURRENT SDT 69604 V_{CB} = -60 V SDT 69605 V_{CB} = -60 V	I_{CBO}		 -0.1 -0.1	 μA μA
COLLECTOR-CUTOFF CURRENT T_C = 150ºC SDT 69604 V_{CB} = -60 V SDT 69605 V_{CB} = -60 V	I_{CBO}		 -10 -10	 μA μA
DC CURRENT GAIN (I_C = -0.5 A V_{CE} = -5 V)**	h_{FE}	30		
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = -0.5 A I_B = -0.05 A)**	$V_{CE(sat)}$		-0.35	V
BASE EMITTER SATURATION VOLTAGE (I_C = -0.5 A I_B = -0.05 A)**	$V_{BE(sat)}$		-1.2	V
TRANSITION FREQUENCY (I_C = -0.1 A V_{CE} = -10 V, $f_{(TEST)}$ = 10 MHz)	f_T	25		MHz
OUTPUT CAPACITANCE (V_{BC} = -10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		80	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME STORAGE TIME FALL TIME V_{CC}=-80 V, I_C=-2.0 A, I_{B1}=-I_{B2}=-0.2 A, t_p=10μs	 t_{on} t_s t_f		 250 600 250	 ns ns ns
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1 sec NON REPETITIVE, V_{CE} = 32 V)	$I_{s/b}$	1.0		A

**PULSED-300 μs—2%

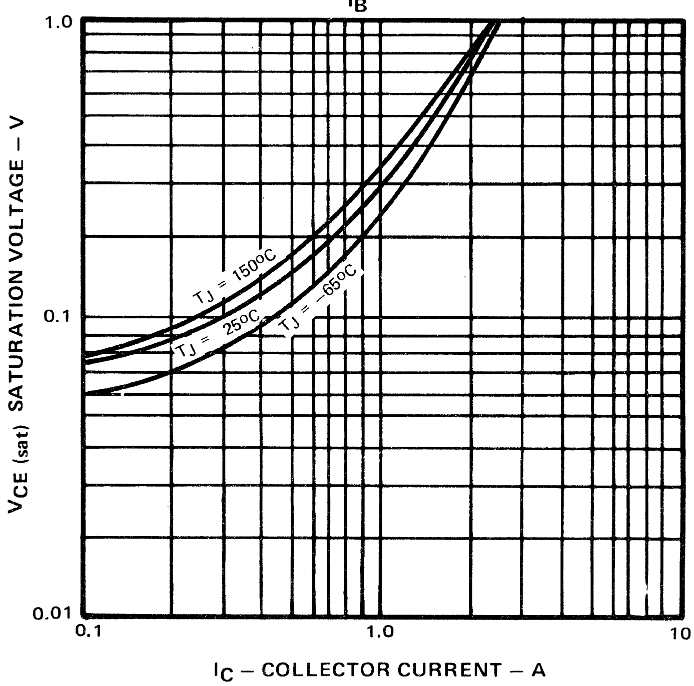
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5\ V$



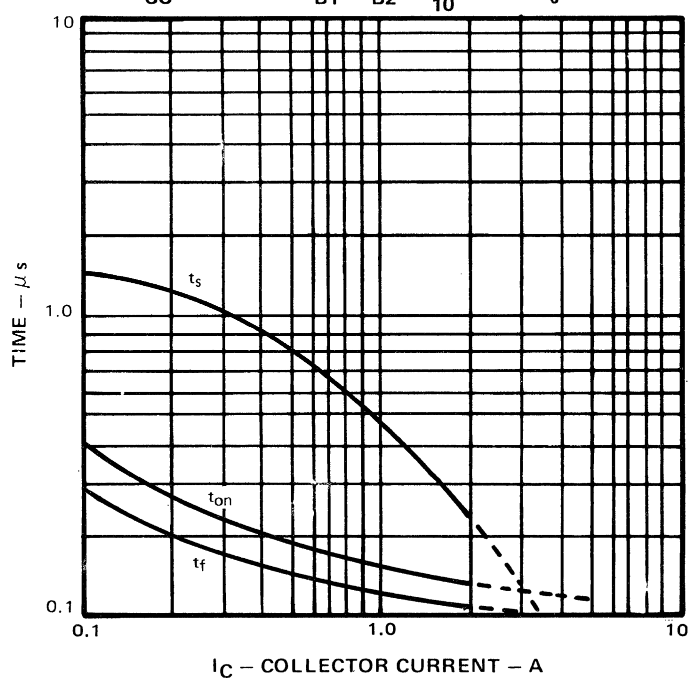
TYPICAL BASE EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



TYPICAL COLLECTOR–EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

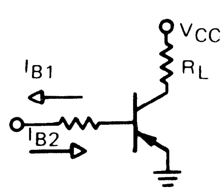


TYPICAL SWITCHING TIME
$V_{CC} = 80\ V$ $I_{B1} = I_{B2} = \frac{I_C}{10}$ $T_J = 25°C$

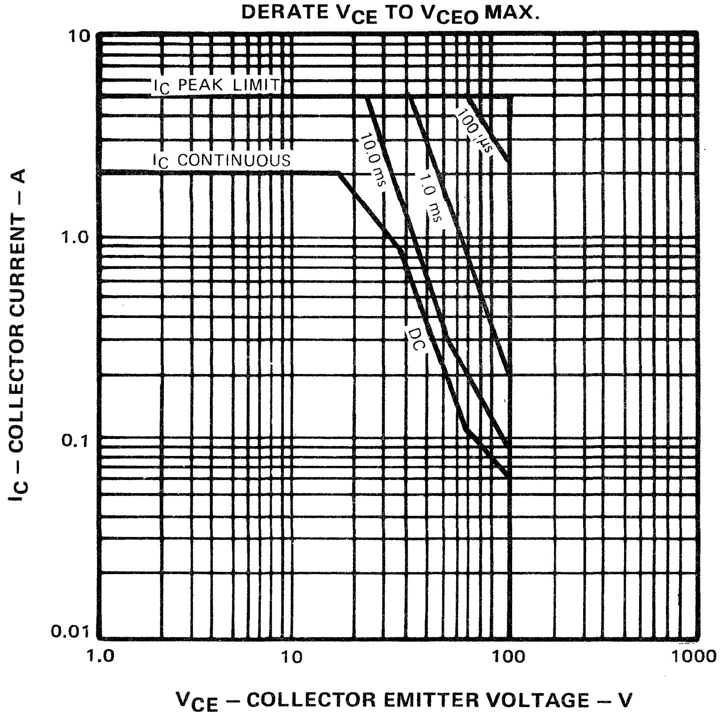


TYPICAL RESISTIVE SWITCHING CKT.

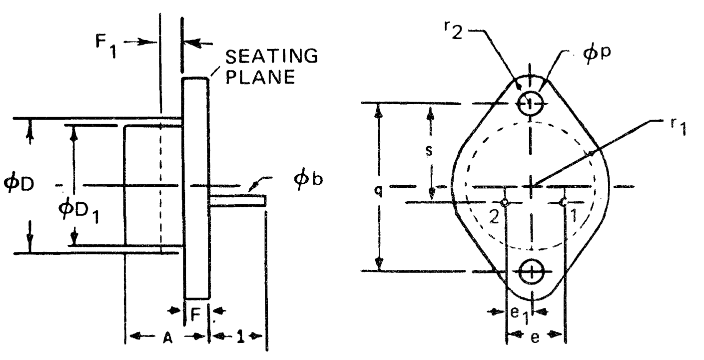
FIG. 1



MAXIMUM OPERATING CONDITIONS
$T_C = 25^oC$
DERATE V_{CE} TO V_{CEO} MAX.



OUTLINE DRAWING FOR TO-66



NOTES:

1. THE OUTLINE CONTOUR IS OPTIONAL WITHIN ZONE DEFINED BY ϕD AND F_1.
2. DIMENSION DOES NOT INCLUDE SEALING FLANGES.
3. CONTROLLING DIMENSIONS: INCH

SYMBOL	MILLIMETERS			INCHES		
	AA		NOTE	AA		NOTE
	MIN.	MAX.		MIN.	MAX.	
A	6.35	8.64		0.250	0.340	
ϕb	0.711	0.863		0.028	0.034	
ϕD		15.75			0.620	
ϕD_1	11.94	12.70		0.470	0.500	
e	4.83	5.33		0.190	0.210	
e_1	2.36	2.72		0.093	0.107	
F	1.27	1.91	2	0.050	0.075	2
F_1		1.27	1		0.050	1
1	9.14			0.360		
ϕp	3.61	3.86		0.142	0.152	
q	24.33	24.43		0.958	0.962	
r_1		8.89			0.350	
r_2		3.68			0.145	
s	14.48	14.99		0.570	0.590	
NOTE	3			3		

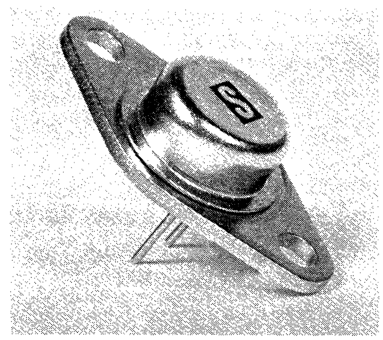
SDT 69609
SDT 69610
SDT 69611

PNP SILICON POWER TRANSISTORS

2 AMPERES - FAST SWITCHING

FEATURES:
HIGH RELIABILITY, MEDIUM POWER, PLANAR CONSTRUCTION

APPLICATIONS:
HIGH SPEED SWITCHING AND LINEAR AMPLIFIER APPLICATIONS



TO-66

ABSOLUTE MAXIMUM RATINGS

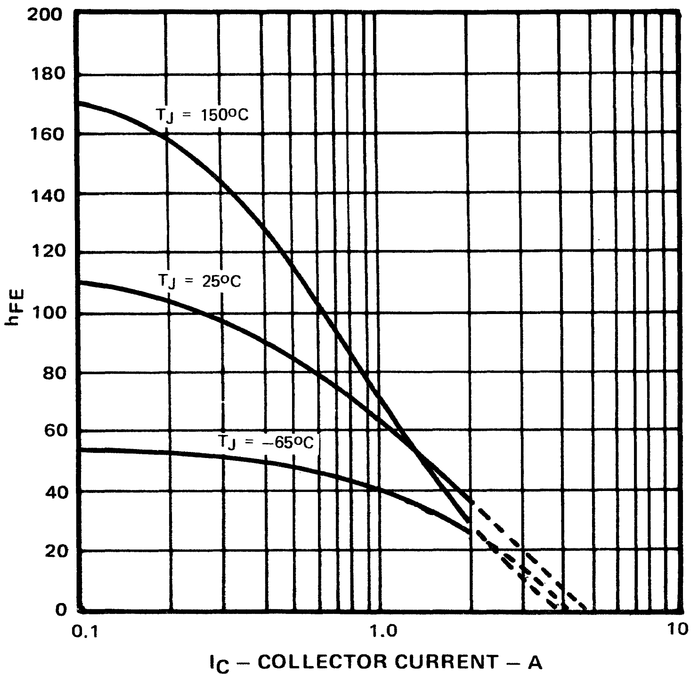
		SDT 69609	SDT 69610	SDT 69611
V_{CBO}	COLLECTOR-BASE VOLTAGE	−60 V	−80 V	−100 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	−40 V	−60 V	− 80 V
V_{EBO}	EMITTER-BASE VOLTAGE	− 8 V	− 8 V	− 8 V
I_C	CONTINUOUS COLLECTOR CURRENT	− 2 A	− 2 A	− 2 A
I_C (PK)	PEAK COLLECTOR CURRENT	− 5 A	− 5 A	− 5 A
I_B	CONTINUOUS BASE CURRENT	− 1 A	− 1 A	− 1 A
I_B (PK)	PEAK BASE CURRENT	− 2 A	− 2 A	− 2 A
T_J	OPERATING JUNCTION TEMPERATURE		-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE		-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	5° C/W	5° C/W	5° C/W
P_D	POWER DISSIPATION (25°C)	35 W	35 W	35 W

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

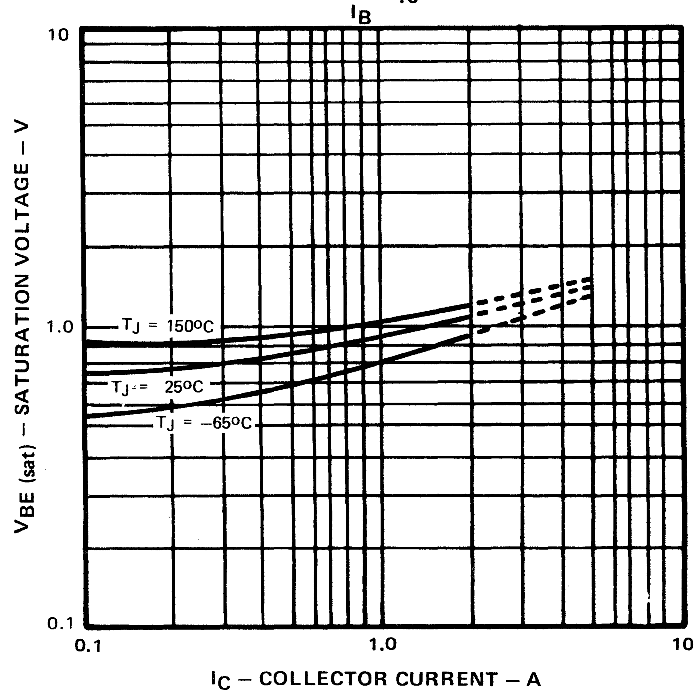
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = -10 mA)*	$V_{CEO(sus)}$			
SDT 69609		-40		V
SDT 69610		-60		V
SDT 69611		-80		V
*PULSED (INDUCTIVE SWEEP 60 Hz)				
COLLECTOR-BASE BREAKDOWN VOLTAGE (I_C = -10 μA)	V_{CBO}			
SDT 69609		-60		V
SDT 69610		-80		V
SDT 69611		-100		V
EMITTER-BASE VOLTAGE (I_E = 10 μA)	V_{EBO}	-8		V
COLLECTOR-CUTOFF CURRENT	I_{CBO}			
SDT 69609 V_{CB} = -30 V			-0.1	μA
SDT 69610 V_{CB} = -40 V			-0.1	μA
SDT 69611 V_{CB} = -60 V			-0.1	μA
COLLECTOR-CUTOFF CURRENT T_C = 150°C	I_{CBO}			
SDT 69609 V_{CB} = -30 V			-10	μA
SDT 69610 V_{CB} = -40 V			-10	μA
SDT 69611 V_{CB} = -60 V			-10	μA
DC CURRENT GAIN	h_{FE}			
(I_C = -0.5 A V_{CE} = -5 V)**		50	150	
(I_C = -2.0 A V_{CE} = -5 V)**		10		
COLLECTOR-EMITTER SATURATION VOLTAGE	$V_{CE(sat)}$			
(I_C = -0.5 A I_B = -0.05 A)**			-0.35	V
(I_C = -2.0 A I_B = -0.2 A)**			-1.2	V
BASE EMITTER SATURATION VOLTAGE	$V_{BE(sat)}$			
(I_C = -0.5 A I_B = -0.05 A)**			-1.2	V
(I_C = -2.0 A I_B = -0.2 A)**			-1.4	V
TRANSITION FREQUENCY (I_C = -0.1 A V_{CE} = -10 V, $f_{(TEST)}$ = 10 MHz)	f_T	25		MHz
OUTPUT CAPACITANCE (V_{BC} = -10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		80	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1)				
TURN-ON TIME	t_{on}		250	ns
STORAGE TIME	t_s		600	ns
FALL TIME	t_f		250	ns
V_{CC}=-80 V, I_C=-2.0 A, I_{B1}=-I_{B2}=-0.2 A, t_p=10μs				
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1 sec NON REPETITIVE, V_{CE} = 35 V)	$I_{s/b}$	1.0		A

**PULSED-300 μs—2%

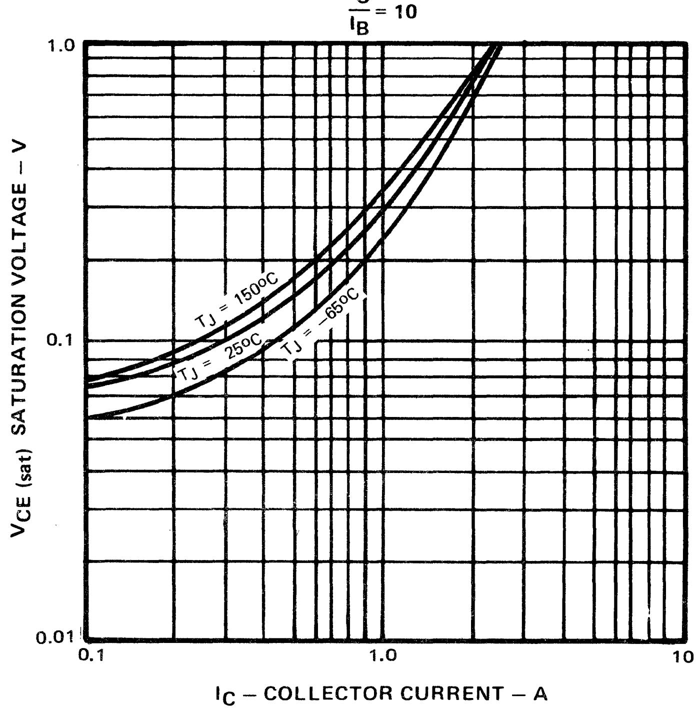
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5$ V



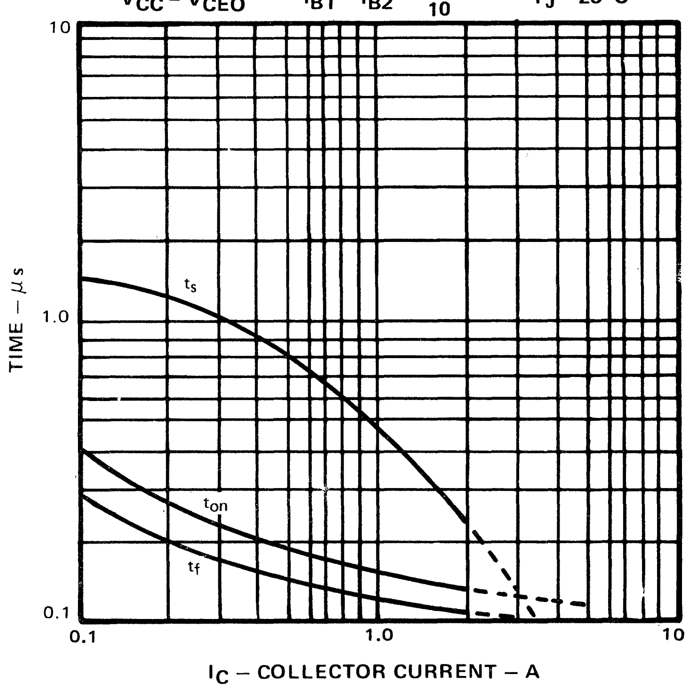
TYPICAL BASE EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



TYPICAL COLLECTOR–EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

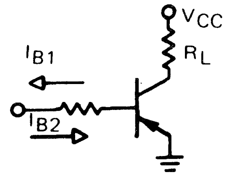


TYPICAL SWITCHING TIME
$V_{CC} = V_{CEO}$ $I_{B1} = I_{B2} = \frac{I_C}{10}$ $T_J = 25°C$

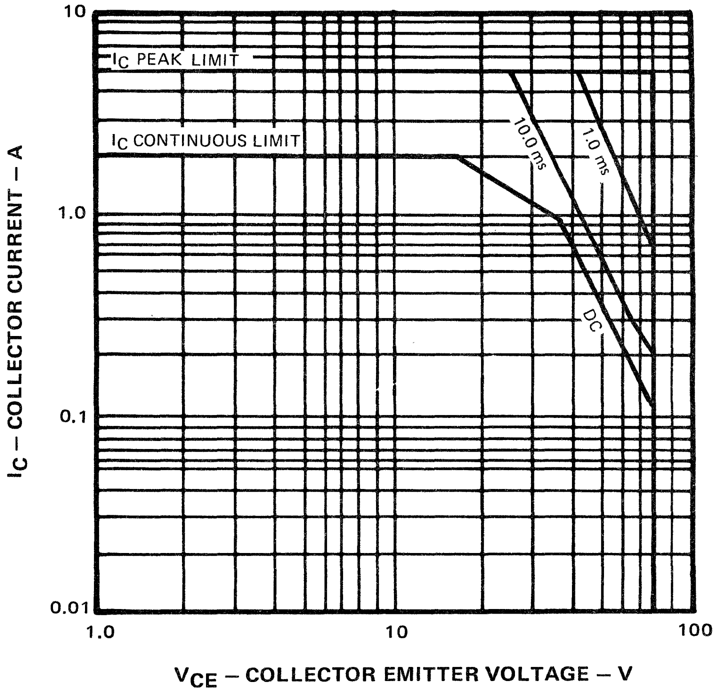


TYPICAL
RESISTIVE SWITCHING CKT.

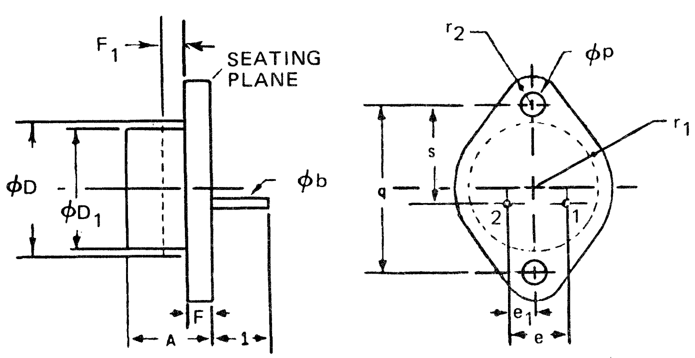
FIG. 1



MAXIMUM OPERATING CONDITIONS
T_C = 25°C
DERATE V_{CE} TO V_{CEO} MAX.



OUTLINE DRAWING FOR TO-66



SYMBOL	MILLIMETERS AA MIN.	MILLIMETERS AA MAX.	NOTE	INCHES AA MIN.	INCHES AA MAX.	NOTE
A	6.35	8.64		0.250	0.340	
φb	0.711	0.863		0.028	0.034	
φD		15.75			0.620	
$φD_1$	11.94	12.70		0.470	0.500	
e	4.83	5.33		0.190	0.210	
e_1	2.36	2.72		0.093	0.107	
F	1.27	1.91	2	0.050	0.075	2
F_1		1.27	1		0.050	1
1	9.14			0.360		
φp	3.61	3.86		0.142	0.152	
q	24.33	24.43		0.958	0.962	
r_1		8.89			0.350	
r_2		3.68			0.145	
s	14.48	14.99		0.570	0.590	
NOTE	3			3		

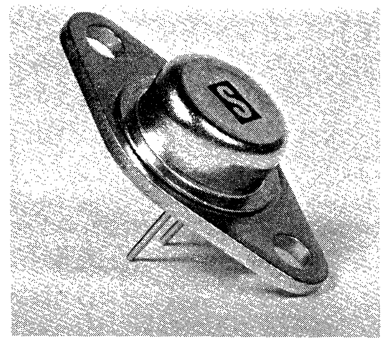
NOTES:

1. THE OUTLINE CONTOUR IS OPTIONAL WITHIN ZONE DEFINED BY φD AND F_1.
2. DIMENSION DOES NOT INCLUDE SEALING FLANGES.
3. CONTROLLING DIMENSIONS: INCH

SDT 69612
SDT 69613

PNP SILICON POWER TRANSISTORS

2 AMPERES - FAST SWITCHING



TO-66

FEATURES:
HIGH RELIABILITY, MEDIUM POWER, PLANAR CONSTRUCTION

APPLICATIONS:
HIGH SPEED SWITCHING AND LINEAR AMPLIFIER APPLICATIONS

ABSOLUTE MAXIMUM RATINGS

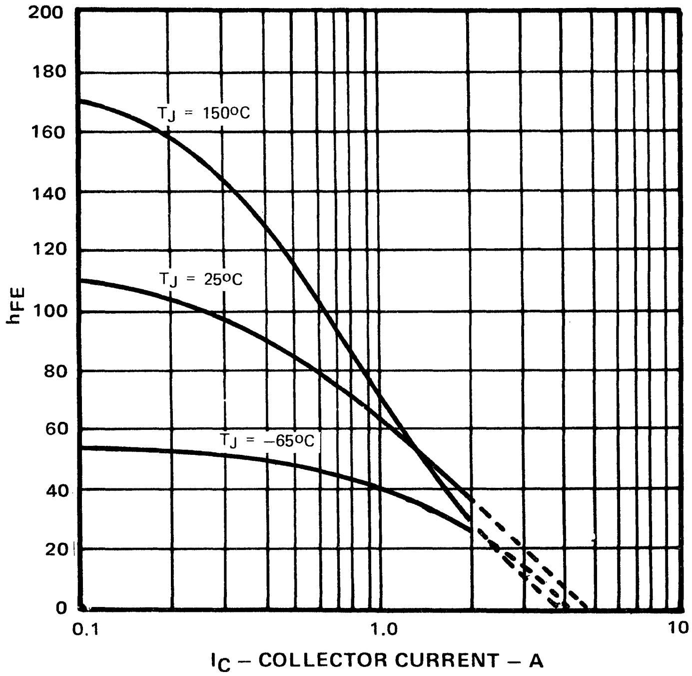
		SDT 69612	SDT 69613
V_{CBO}	COLLECTOR-BASE VOLTAGE	−120 V	−140 V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	−100 V	−120 V
V_{EBO}	EMITTER-BASE VOLTAGE	− 8 V	− 8 V
I_C	CONTINUOUS COLLECTOR CURRENT	− 2 A	− 2 A
I_C (PK)	PEAK COLLECTOR CURRENT	− 5 A	− 5 A
I_B	CONTINUOUS BASE CURRENT	− 1 A	− 1 A
I_B (PK)	PEAK BASE CURRENT	− 2 A	− 2 A
T_J	OPERATING JUNCTION TEMPERATURE	-65°C to +200°C	
T_{stg}	STORAGE TEMPERATURE	-65°C to +200°C	
$R_{\theta JC}$	THERMAL RESISTANCE, JUNCTION TO CASE	5° C/W	5° C/W
P_D	POWER DISSIPATION (25°C)	35 W	35 W

ELECTRICAL CHARACTERISTICS (T_C = 25°C UNLESS OTHERWISE NOTED)

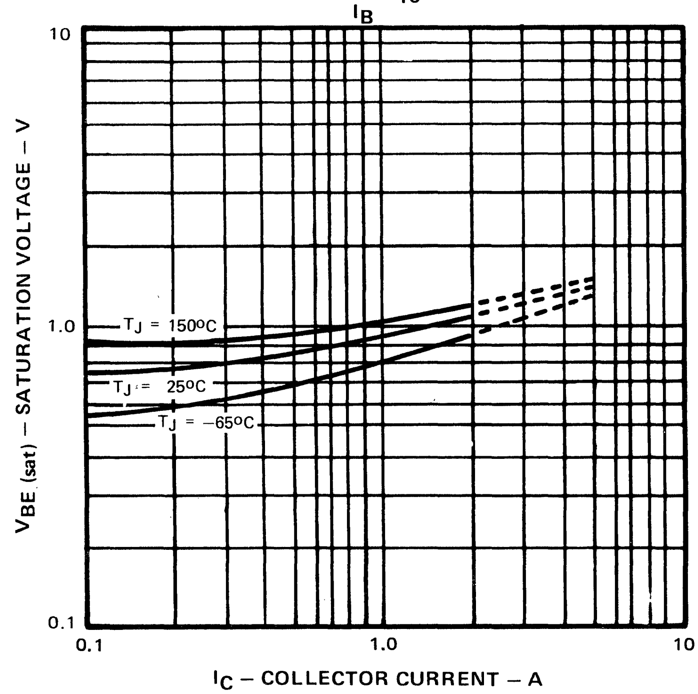
CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR-EMITTER SUSTAINING VOLTAGE (I_C = -10 mA)* SDT 69612	$V_{CEO(sus)}$	-100		V
SDT 69613		-120		V
*PULSED (INDUCTIVE SWEEP 60 Hz)				
COLLECTOR-BASE BREAKDOWN VOLTAGE (I_C = -10 μA) SDT 69612	V_{CBO}	-120		V
SDT 69613		-140		V
EMITTER-BASE VOLTAGE (I_E = 10 μA)	V_{EBO}	-8		V
COLLECTOR-CUTOFF CURRENT SDT 69612 V_{CB} = -60 V	I_{CBO}		-0.1	μA
SDT 69613 V_{CB} = -60 V			-0.1	μA
COLLECTOR-CUTOFF CURRENT T_C = 150°C SDT 69612 V_{CB} = -60 V	I_{CBO}		-10	μA
SDT 69613 V_{CB} = -60 V			-10	μA
DC CURRENT GAIN (I_C = -0.5 A V_{CE} = -5 V)**	h_{FE}	50	150	
(I_C = -2.0 A V_{CE} = -5 V)**		10		
COLLECTOR-EMITTER SATURATION VOLTAGE (I_C = -0.5 A I_B = -0.05 A)**	$V_{CE(sat)}$		-0.35	V
(I_C = -2.0 A I_B = -0.2 A)**			-1.2	V
BASE EMITTER SATURATION VOLTAGE (I_C = -0.5 A I_B = -0.05 A)**	$V_{BE(sat)}$		-1.2	V
(I_C = -2.0 A I_B = -0.2 A)**			-1.4	V
TRANSITION FREQUENCY (I_C = -0.1 A V_{CE} = -10 V, $f_{(TEST)}$ = 1 MHz)	f_T	25		MHz
OUTPUT CAPACITANCE (V_{BC} = -10 V, I_E = 0, $f_{(TEST)}$ = 1 MHz)	C_{obo}		80	pF
SWITCHING CHARACTERISTICS (RESISTIVE) (FIG. 1) TURN-ON TIME	t_{on}		250	ns
STORAGE TIME	t_s		600	ns
FALL TIME	t_f		250	ns
V_{CC}=-80 V, I_C=-2.0 A, I_{B1}=-I_{B2}=-0.2 A, t_p=10μs				
SECOND BREAKDOWN COLLECTOR CURRENT WITH BASE FORWARD BIASED (t = 1 sec NON REPETITIVE, V_{CE} = 32 V)	$I_{s/b}$	1.0		A

**PULSED-300 μs—2%

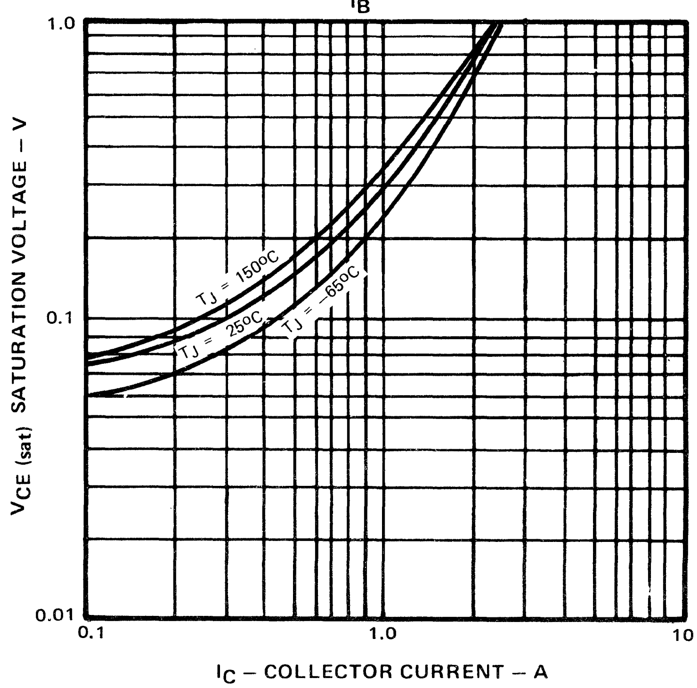
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO
$V_{CE} = 5\ V$



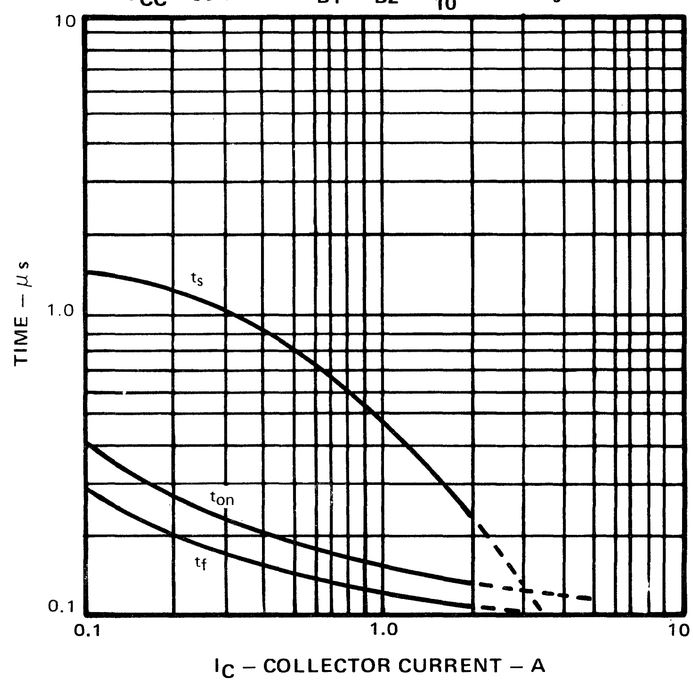
TYPICAL BASE EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$



TYPICAL COLLECTOR–EMITTER SATURATION VOLTAGE
$\frac{I_C}{I_B} = 10$

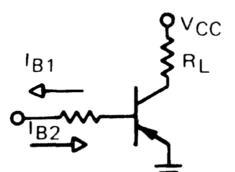


TYPICAL SWITCHING TIME
$V_{CC} = 80\ V$ $\quad I_{B1} = I_{B2} = \frac{I_C}{10}$ $\quad T_J = 25^oC$



TYPICAL
RESISTIVE SWITCHING CKT.

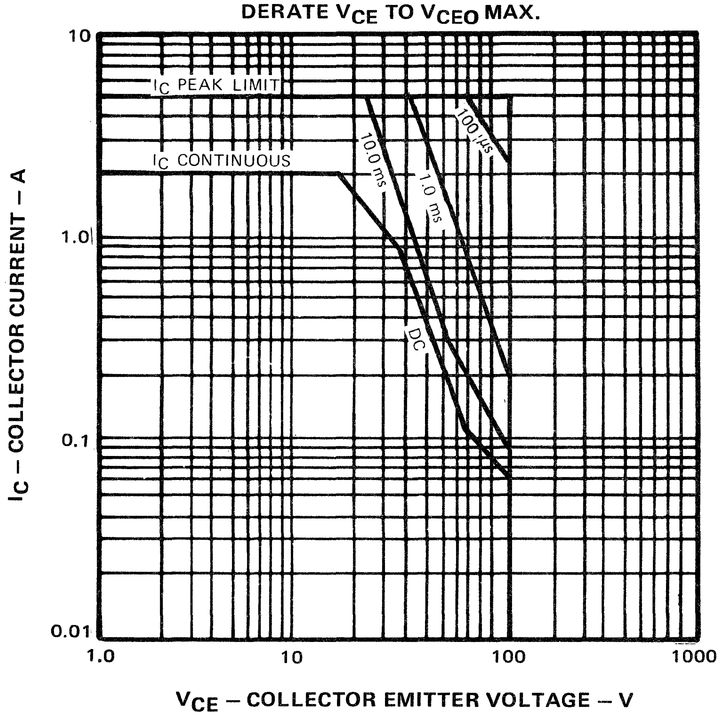
FIG. 1



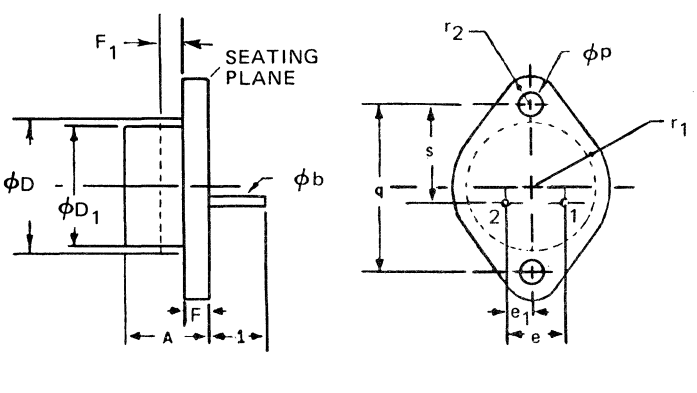
MAXIMUM OPERATING CONDITIONS

$T_C = 25^oC$

DERATE V_{CE} TO V_{CEO} MAX.



OUTLINE DRAWING FOR TO-66



SYMBOL	MILLIMETERS AA MIN.	MILLIMETERS AA MAX.	NOTE	INCHES AA MIN.	INCHES AA MAX.	NOTE
A	6.35	8.64		0.250	0.340	
ϕb	0.711	0.863		0.028	0.034	
ϕD		15.75			0.620	
ϕD_1	11.94	12.70		0.470	0.500	
e	4.83	5.33		0.190	0.210	
e_1	2.36	2.72		0.093	0.107	
F	1.27	1.91	2	0.050	0.075	2
F_1		1.27	1		0.050	1
1	9.14			0.360		
ϕp	3.61	3.86		0.142	0.152	
q	24.33	24.43		0.958	0.962	
r_1		8.89			0.350	
r_2		3.68			0.145	
s	14.48	14.99		0.570	0.590	
NOTE	3			3		

NOTES:

1. THE OUTLINE CONTOUR IS OPTIONAL WITHIN ZONE DEFINED BY ϕD AND F_1.
2. DIMENSION DOES NOT INCLUDE SEALING FLANGES.
3. CONTROLLING DIMENSIONS: INCH

SP 5415
SP 5416

PNP SILICON POWER TRANSISTORS

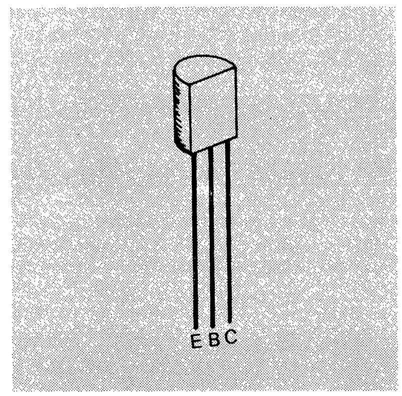
1 AMPERE

TO-92 CASE

SIMILAR TO:
JEDEC 2N 5415 AND 2N 5416

NPN COMPLIMENTS:

SP 3439
SP 3440



TO-92

ABSOLUTE MAXIMUM RATINGS

		SP 5415	SP 5416
V_{CBO}	COLLECTOR-BASE VOLTAGE	−200V	−350V
V_{CEO}	COLLECTOR-EMITTER VOLTAGE	−200V	−300V
V_{EBO}	EMITTER-BASE VOLTAGE	−4V	−6V
$V_{CER\,(sus)}$	COLLECTOR-EMITTER VOLTAGE		−350V
$I_C(PK)$	PEAK COLLECTOR CURRENT	−1A	−1A
I_B	BASE CURRENT	−0.5 A	−1.5 A
T_J	OPERATING JUNCTION TEMPERATURE	−55°C to +150°C	
T_{stg}	STORAGE TEMPERATURE	−55°C to +150°C	
P_D	POWER DISSIPATION (T_A=25°C)	900mW	900mW

ELECTRICAL CHARACTERISTICS ($T_C = 25^oC$)

CHARACTERISTICS	SYMBOL	MIN	MAX	UNIT
COLLECTOR CUTOFF CURRENT, BASE OPEN	I_{CEO}			
SP 5415 $V_{CE} = -150V$			–50	μ A
SP 5416 $V_{CE} = -250V$			–50	μ A
COLLECTOR CUTOFF CURRENT	I_{CBO}			
SP 5415 $V_{CB} = -175V$			–50	μ A
SP 5416 $V_{CB} = -280V$			–50	μ A
COLLECTOR CUTOFF CURRENT, BASE–EMITTER JUNCTION, REVERSE BIASED	I_{CEV}			
SP 5415 $V_{CE} = -200V$, $V_{BE} = 1.5V$			–50	μ A
SP 5416 $V_{CE} = -300V$, $V_{BE} = 1.5V$			–50	μ A
EMITTER CUTOFF CURRENT				
SP 5415 $V_{EB} = -4V$ SP 5416 $V_{EB} = -6V$	I_{EBO}		–20	μ A
DC CURRENT GAIN	h_{FE}			
SP 5415 $V_{CE} = -10V$, $I_C = -50mA$*		30	150	
SP 5416		30	120	
COLLECTOR EMITTER SUSTAINING VOLTAGE	$V_{CEO(sus)}$			
SP 5415 $I_C = -50mA$**		–200		V
SP 5416		–300		V
COLLECTOR CUTOFF CURRENT				
SP 5416 $I_C = -50mA$**, $R = 50\ \Omega$	$V_{CER(sus)}$	–350		V
BASE EMITTER SATURATION VOLTAGE				
$I_C = -50mA$, $V_{CE} = -10V$	$V_{BE(on)}$		–1.5	V
COLLECTOR EMITTER SATURATION VOLTAGE	$V_{CE(sat)}$			
SP 5415 $I_C = -50mA$, $I_B = -5mA$*			–2.5	V
SP 5416			–2.0	V
COMMON EMITTER, SMALL SIGNAL SHORT CIRCUIT, FOREWARD CURRENT TRANSFER RATIO				
$I_C = -5mA$, $V_{CE} = -10V$, $f = 1KHz$	h_{fe}	25		
TRANSITION FREQUENCY				
$I_C = -10mA$, $V_{CE} = -10V$, $f_{(test)} = 5MHz$	f_T	15		MHz
OUTPUT CAPACITANCE				
$V_{CB} = -10V$, $I_E = 0V$, $f_{(test)} = 1MHz$	C_{obo}		15	pF
THERMAL RESISTANCE JUNCTION–TO–AMBIENT				
(Above 25°C derate 7.25mW/°C)	Θ_{J-A}		0.140	°C/mW

* Pulsed — 300 μ s — 2%

** Pulsed — Inductive Sweep 60Hz

SECTION 4

PNP POWER TRANSISTORS

2N Devices

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

2N3774 2N3778 2N3775 2N3779 2N3776 2N3780 2N3777 2N3781 2N3782

2 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N3774	2N3775	2N3776	2N3777
BV_{CBO}	−40 V	−60 V	−80 V	−100 V
BV_{CEO}	−40 V	−60 V	−80 V	−100 V
BV_{EBO}	−8 V	−8 V	−8 V	−8 V
I_c(Max.)	−1 A	−1 A	−1 A	−1 A
I_B(Max.)	−.5 A	−.5 A	−.5 A	−.5 A
P_T (100°C Case)	5 W	5 W	5 W	5 W
Operating Junction Temperature	200°C			
Storage Temperature Range	−65°C to +200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
Static					
I_{CEX}	V_{CE} = Rated V_{CB}, V_{BE} = 1.5 V	–	−0.5	mA	All
	V_{CE} = Rated V_{CB}, V_{BE} = 1.5 V, T_c = 150°C	–	−5.0	mA	All
I_{EBO}	V_{EB} = −8 V	–	−0.5	mA	All
BV_{CEO} (sus)	I_B = 0, I_c = −50 mA	−40	–	Volts	2N3774
		−60	–	Volts	2N3775
		−80	–	Volts	2N3776
		−100	–	Volts	2N3777
h_{FE}	I_c = −200 mA, V_{CE} = −2 V	20	60	–	All
V_{CE} (sat)	I_c = −200 mA, I_B = −20 mA	–	−0.2	Volts	All
V_{BE} (sat)	I_c = −200 mA, I_B = −20 mA	–	−1.2	Volts	All
Dynamic					
T_{ON} ($t_r + t_d$)	I_c = −200 mA, I_{B_1} = −20 mA	–	3.0	µsec	All
T_{OFF} ($t_s + t_f$)	I_c = −200 mA, I_{B_2} = 20 mA	–	3.0	µsec	All
h_{fe}	V_{CE} = −10 V, I_c = −50 mA, f= 1 MHz	1.0	–	–	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	2N3778	2N3779	2N3780	2N3781	2N3782
BV_{CBO}	−40 V	−60 V	−80 V	−100 V	−40 V
BV_{CEO}	−40 V	−60 V	−80 V	−100 V	−40 V
BV_{EBO}	−8 V	−8 V	−8 V	−8 V	−8 V
I_C(Max.)	−1 A	−1 A	−1 A	−1 A	−3 A
I_B(Max.)	−.5 A	−.5 A	−.5 A	−.5 A	−1 A
P_T(100°C Case)	5 W	5 W	5 W	5 W	5 W
Operating Junction Temperature	200°C				
Storage Temperature Range	−65°C to +200°C				

ELECTRICAL CHARACTERISTICS (25°C Ambient)

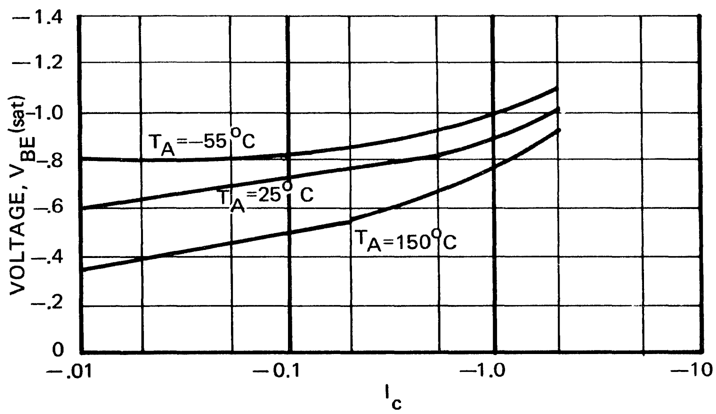
Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE} = Rated V_{CB}, V_{BE} = 1.5 V	–	−0.5	mA	All
	V_{CE} = Rated V_{CB}, V_{BE} = 1.5 V, T_c = 150°C	–	−5.0	mA	All
I_{EBO}	V_{EB} = −8 V	–	−0.5	mA	All
BV_{CEO}(sus)	I_B = 0, I_c = −50 mA	−40	–	Volts	2N3778, 2N3782
		−60	–	Volts	2N3779
		−80	–	Volts	2N3780
		−100	–	Volts	2N3781
h_{FE}	I_c = −200 mA, V_{CE} = −2 V	10	40	–	All
	I_c = −1 A, V_{CE} = −3 V	10	60	–	2N3782
V_{CE}(sat)	I_c = −200 mA, I_B = −40 mA	–	−0.2	Volts	All
	I_c = −1 A, I_B = −200 mA	–	−.75	Volts	All
V_{BE}(sat)	I_c = −200 mA, I_B = −40 mA	–	−1.2	Volts	All
	I_c = −1 A, I_B = −200 mA	–	−1.75	Volts	All

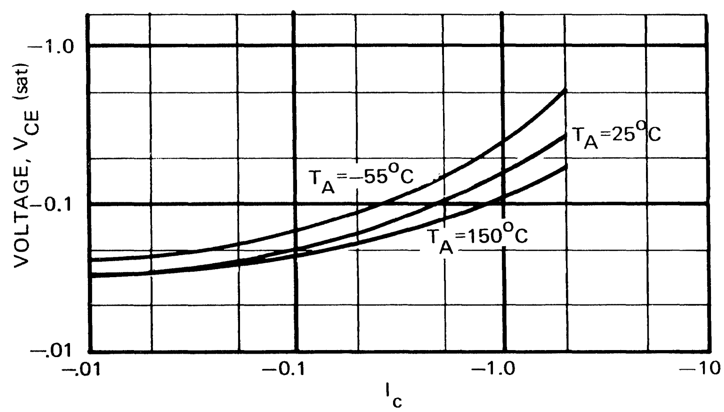
Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
T_{ON} ($t_r + t_d$)	I_c = −200 mA, I_{B_1} = −40 mA	–	3.0	µSec	All
	I_c = −1 A, I_{B_2} = 200 mA	–	3.0	µSec	All
T_{OFF} ($t_s + t_f$)	I_c = −200 mA, I_{B_2} = +40 mA	–	3.0	µSec	All
	I_c = −1 A, I_{B_2} = 200 mA	–	3.0	µSec	All
h_{fe}	V_{CE} = −10 V, I_c = −50 mA, f= 1 MHz	1.0	–	–	All

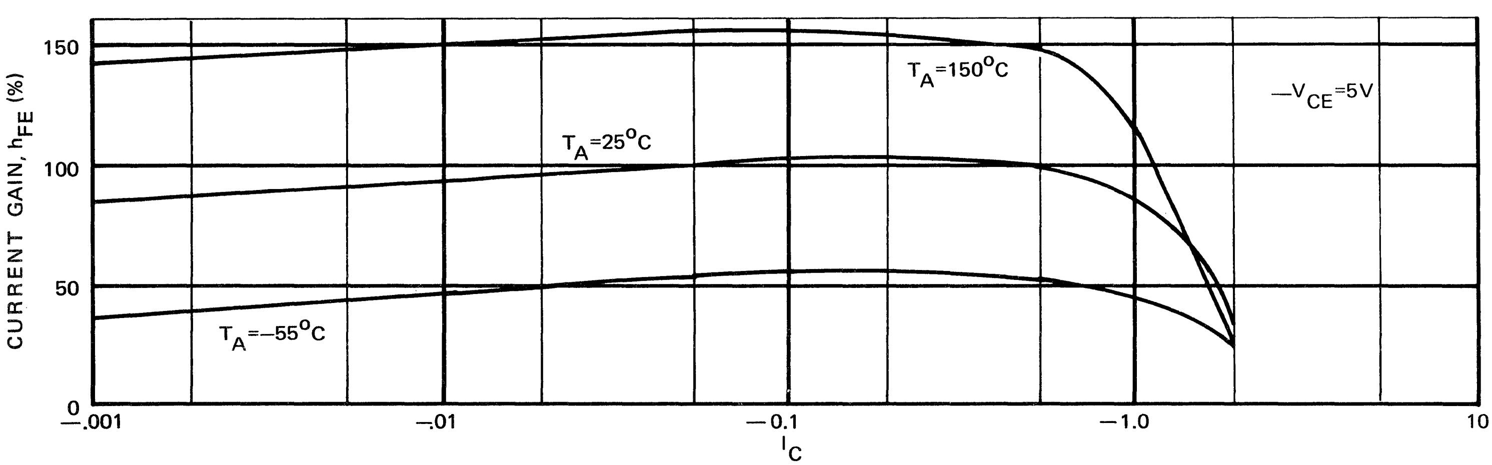
CHARACTERISTIC CURVES (ALL TYPES)



V_{BE}(sat) vs I_C

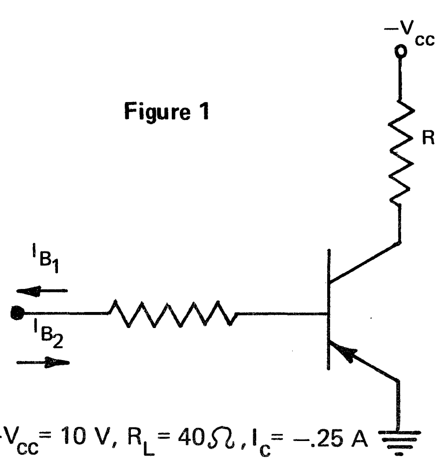


V_{CE}(sat) vs I_C

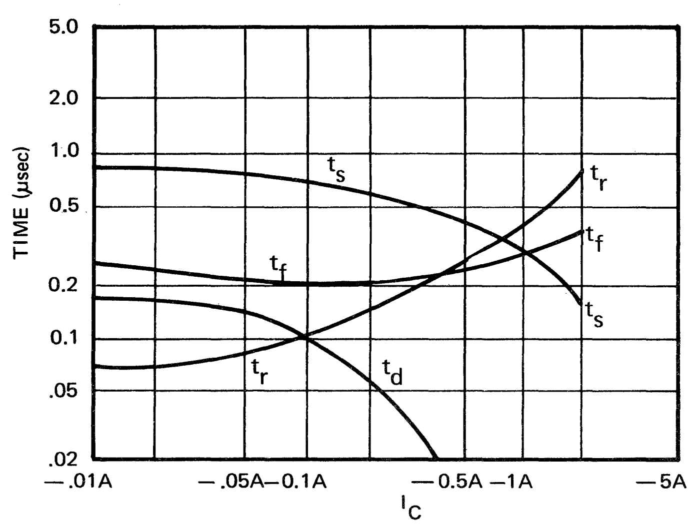


h_{FE} vs I_C

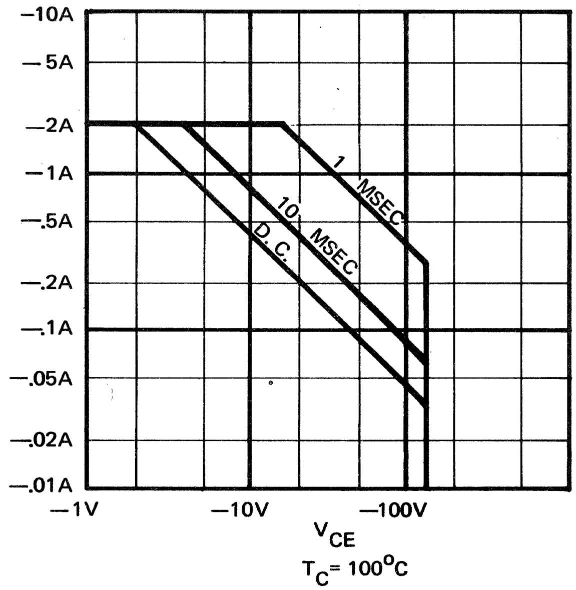
Figure 1

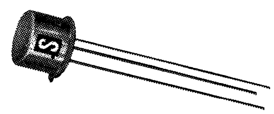


$-V_{cc}$= 10 V, R_L = 40Ω, I_c= −.25 A
$I_{B_1} = I_{B_2}$ = .025 A



SWITCHING TIME vs I_C





TO–5

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Officer Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

(TO – 3)	(TO – 66)
2N3789	SDT3801
2N3790	SDT3802
2N3791	SDT3803
2N3792	SDT3804

10 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N3789 2N3791	2N3790 2N3792
BV_{CBO}	−60 V	−80 V
BV_{CEO}	−60 V	−80 V
BV_{EBO}	−7 V	−7 V
I_C (Max.)	−10 A	−10 A
I_B (Max.)	−4 A	−4 A
P_T (25°C Case)	150 W	150 W
Operating Junction Temperature	200°C	
Storage Temperature Range	−65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
I_{CEX}	V_{CEO} = 60 V, V_{EB} = −1.5 V, T_c = 150°C	–	−5	mA	2N3789, 2N3791
	V_{CEO} = 80 V, V_{EB} = −1.5 V, T_c = 150°C	–	−5	mA	2N3790, 2N3792
I_{CEX}	V_{CE} = 60 V, V_{EB} = −1.5 V	–	−1	mA	2N3789, 2N3791
	V_{CE} = 80 V, V_{EB} = −1.5 V	–	−1	mA	2N3790, 2N3792
I_{EBO}	V_{EB} = −7 V	–	−5	mA	All
BV_{CEO} (sus)	I_B = 0, I_c = −200 mA	−60	–	Volts	2N3789, 2N3791
	I_B = 0, I_c = −200 mA	−80	–	Volts	2N3790, 2N3792
h_{FE}	V_{CE} = −2 V, I_c = −1 A	25	90	–	2N3789, 2N3790
	V_{CE} = −2 V, I_c = −1 A	50	180	–	2N3791, 2N3792
	V_{CE} = −2 V, I_c = −3 A	15	–	–	2N3789, 2N3790
	V_{CE} = −2 V, I_c = −3 A	30	–	–	2N3791, 2N3792
V_{CE} (sat)	I_c = −5 A, I_B = −.5 A	–	−1.0	Volts	All
	I_c = −10 A, I_B = −2 A	–	−4.0	Volts	All
V_{BE}	I_c = −5 A, V_{CE} = −2 V	–	−2.0	Volts	2N3789, 2N3790
	I_c = −5 A, V_{CE} = −2 V	–	−1.8	Volts	2N3791, 2N3792

Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
h_{fe}	V_{CE} = −10 V, I_c = −.5 A, f= 1 MHz	4.0	–	–	All
C_{obo}	V_{CB} = −10 V, I_E = 0, f= 100 KHz	–	250	pf	All

ADDITIONAL DEVICES

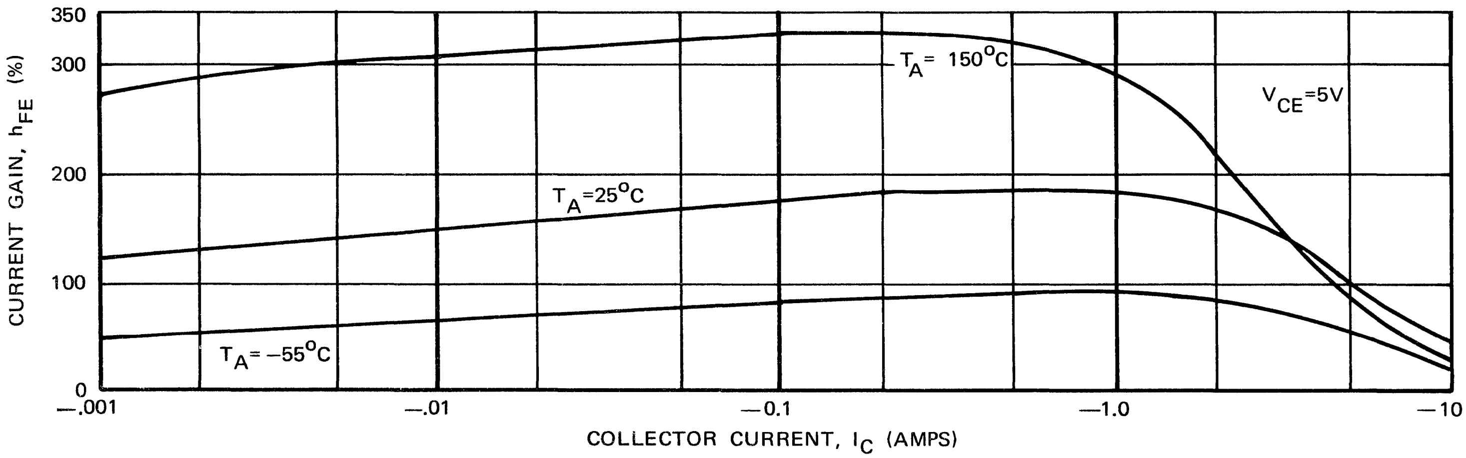
ABSOLUTE MAXIMUM RATINGS

	SDT 3801 SDT 3803	SDT 3802 SDT 3804
BV_{CBO}	–60 V	–80 V
BV_{CEO}	–60 V	–80 V
BV_{EBO}	–6 V	–6 V
I_c (Max.)	–10 A	–10 A
I_B (Max.)	–4 A	–4 A
P_T (100°C case)	20 W	20 W
Operating Junction Temperature	200°C	
Storage Temperature Range	–65°C to +200°C	

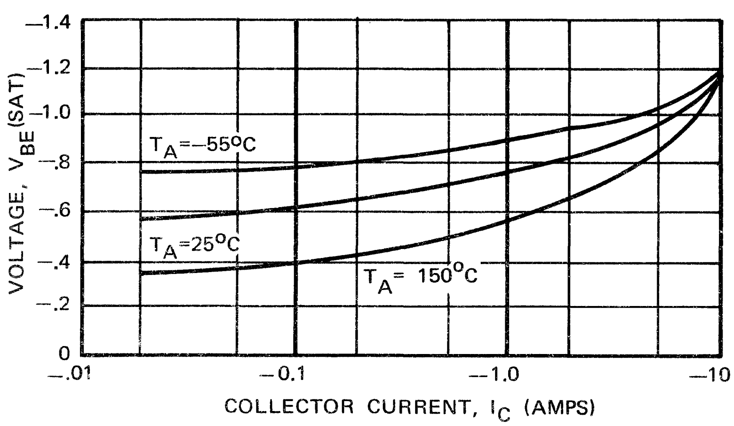
ELECTRICAL CHARACTERISTICS (25°C Ambient)

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
Static						
BV_{CEO} (sus)	I_c = –100 mA	–60	–	–	Volts	SDT 3801, SDT 3803
	I_c = –100 mA	–80	–	–	Volts	SDT 3802, SDT 3804
I_{CEX}	V_{CE} = Rated V_{CB}, V_{EB} = –1.5 V	–	–	–1.0	mA	All
I_{EBO}	V_{EB} = –6 V	–	–	–1.0	mA	All
h_{FE}	V_{CE} = –2 V, I_c = –1 A	25	–	90	–	SDT 3801, SDT 3802
	V_{CE} = –2 V, I_c = –1 A	50	–	180	–	SDT 3803, SDT 3804
	V_{CE} = –2 V, I_c = –3 A	15	–	–	–	SDT 3801, SDT 3802
	V_{CE} = –2 V, I_c = –3 A	30	–	–	–	SDT 3803, SDT 3804
V_{CE} (sat)	I_c = –1 A, I_B = –.1 A	–	–	–0.3	Volts	All
	I_c = –3 A, I_B = –.3 A	–	–	–0.7	Volts	All
V_{BE} (sat)	I_c = –1 A, I_B = –.1 A	–	–	–0.9	Volts	All
	I_c = –3 A, I_B = –.3 A	–	–	–1.1	Volts	All
Dynamic						
t_d	(see figure No. 1)	–	2	–	Nsec	All
t_r	(see figure No. 1)	–	80	–	Nsec	All
t_s	(see figure No. 1)	–	700	–	Nsec	All
t_f	(see figure No. 1)	–	80	–	Nsec	All
h_{fe}	V_{CE} = –5 V, I_c = –.5 A, f= 10 MHz	1.0	–	–	–	All
C_{obo}	V_{CB} = –10 V, I_E = 0, f= 100 KHz	–	–	250	pf	All

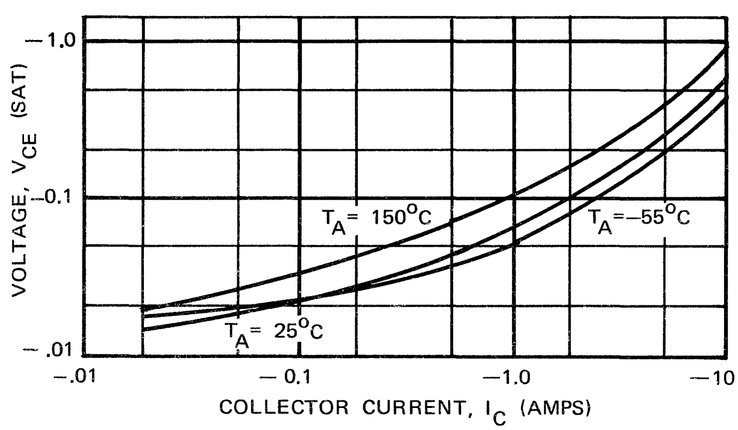
CHARACTERISTIC CURVES (ALL TYPES)



h_{FE} vs I_C

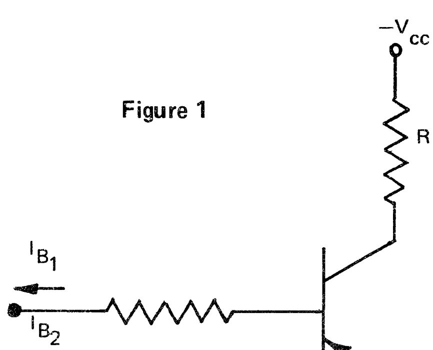


V_{BE}(sat) vs I_C

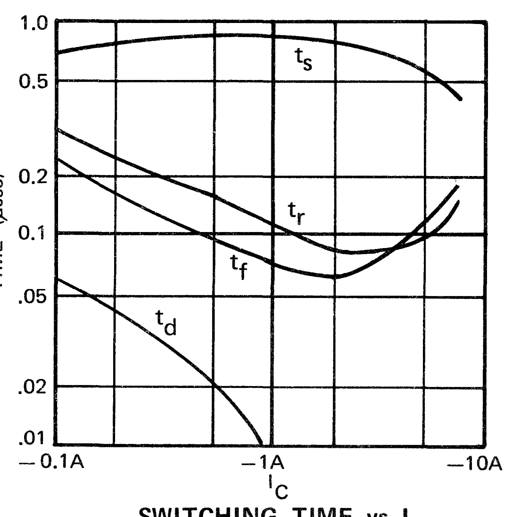


V_{CE}(sat) vs I_C

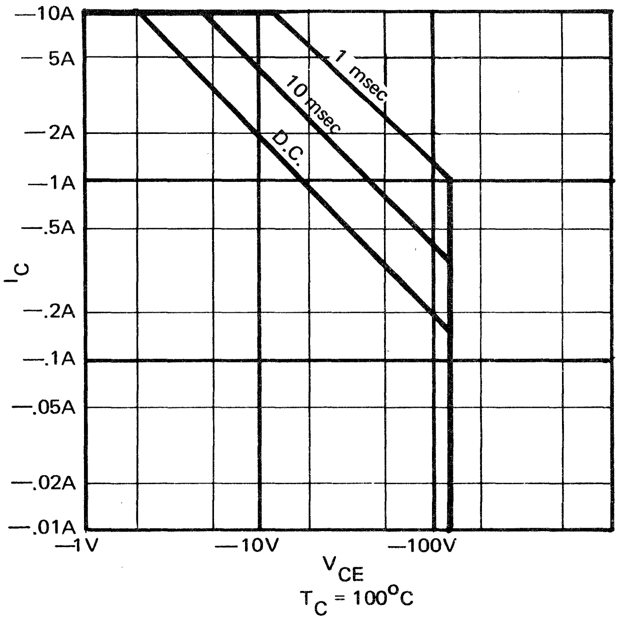
Figure 1

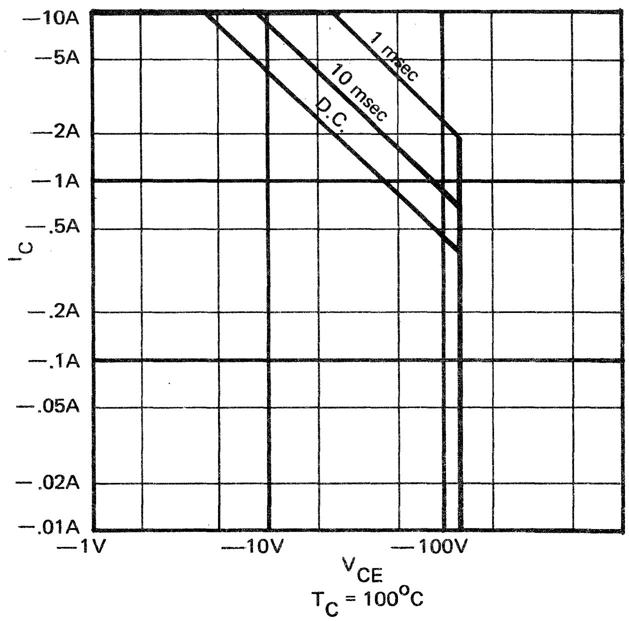


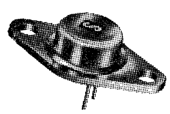
$-V_{cc}$= 30 V, R_L= 10Ω
I_c= −3A, I_{B1}= I_{B2}= .3 A



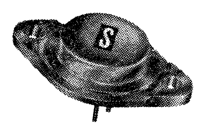
SWITCHING TIME vs I_C







TO-66



TO-3

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

When you think of semiconductors ... think Solitron!

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

TO–5	TO–66
2N4234	SDT3575
2N4235	SDT3576
2N4236	SDT3577

2 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N4234	2N4235	2N4236
BV_{CBO}	–40 V	–60 V	–80 V
BV_{CEO}	–40 V	–60 V	–80 V
BV_{EBO}	–7 V	–7 V	–7 V
I_c (Max.)	–1 A	–1 A	–1 A
I_B (Max.)	–.2 A	–.2 A	–.2 A
P_T (25°C Case)	6 W	6 W	6 W
Operating Junction Temperature	200°C		
Storage Temperature Range	–65°C to +200°C		

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
I_{CEX}	Rated V_{CE}, V_{BE} = 1.5 V	–	–100	µA	All
I_{CBO}	Rated V_{CB}, I_E = 0	–	–100	µA	All
I_{EBO}	V_{EB} = –7 V	–	–500	µA	All
V_{CEO} (sus)	I_B = 0, I_c = –100 mA	–40	–	Volts	2N4234
	I_B = 0, I_c = –100 mA	–60	–	Volts	2N4235
	I_B = 0, I_c = –100 mA	–80	–	Volts	2N4236
I_{CEO}	I_B = 0, V_{CE} = –30 V	–	–1.0	mA	2N4234
	I_B = 0, V_{CE} = –40 V	–	–1.0	mA	2N4235
	I_B = 0, V_{CE} = –60 V	–	–1.0	mA	2N4236
h_{FE}	I_c = –250 mA, V_{CE} = –1 V	30	150	–	All
	I_c = –1 A, V_{CE} = –1 V	10	–	–	All
V_{CE} (sat)	I_c = –1 A, I_B = –125 mA	–	–0.6	Volts	All
V_{BE} (sat)	I_c = –1 A, I_B = –100 mA	–	–1.5	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
h_{fe}	V_{CE} = –10 V, I_c = –.1 A, f= 1 MHz	3.0	–	–	All
C_{obo}	V_{CB} = –10 V, f= 100 KHz, I_E = 0	–	100	pf	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS	SDT3575	SDT3576	SDT3577
BV_{CBO}	−40 V	−60 V	−80 V
BV_{CEO}	−40 V	−60 V	−80 V
BV_{EBO}	−6 V	−6 V	−6 V
I_c (Max.)	−2 A	−2 A	−2 A
I_B (Max.)	−1 A	−1 A	−1 A
P_T (100°C Case)	10 W	10 W	10 W
Operating Junction Temperature		200°C	
Storage Temperature Range		−65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

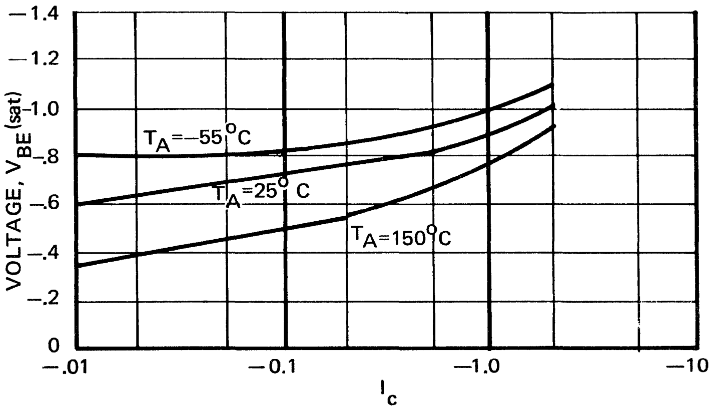
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
BV_{CEO} (sus)	I_c = −100 mA	−40	–	–	Volts	SDT3575
	I_c = −100 mA	−60	–	–	Volts	SDT3576
	I_c = −100 mA	−80	–	–	Volts	SDT3577
I_{CEX}	V_{CE} = Rated V_{CB}, V_{BE} = 1.5 V	–	–	−100	μA	All
I_{EBO}	V_{EB} = −6 V	–	–	−500	μA	All
h_{FE}	V_{CE} = −1 V, I_c = −250 mA	30	–	150	–	All
	V_{CE} = −1 V, I_c = −1 A	15	–	–	–	All
V_{CE} (sat)	I_c = −1 A, I_B = −100 mA	–	–	−0.6	Volts	All
V_{BE} (sat)	I_c = −1 A, I_B = −100 mA	–	–	−1.2	Volts	All

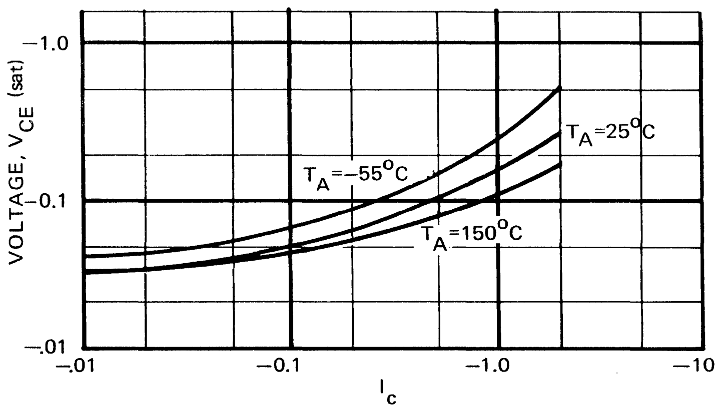
Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
t_d	(see Figure No. 1)	–	10	–	Nsec	All
t_r	(see Figure No. 1)	–	150	–	Nsec	All
t_s	(see Figure No. 1)	–	500	–	Nsec	All
t_f	(see Figure No. 1)	–	200	–	Nsec	All
h_{fe}	V_{CE} = −10 V, I_c = −.1 A, f= 1 MHz	10	–	–	–	All
C_{obo}	V_{CB} = −10 V, f= 100 KHz, I_E = 0	–	–	100	pf	All

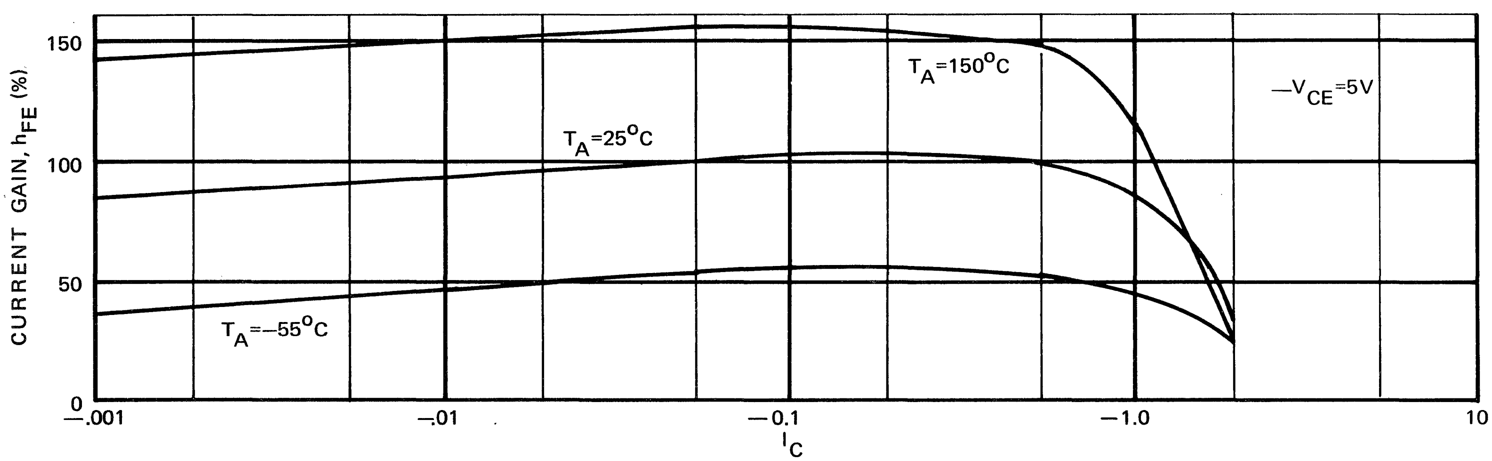
CHARACTERISTIC CURVES (ALL TYPES)



V_{BE}(sat) vs I_C

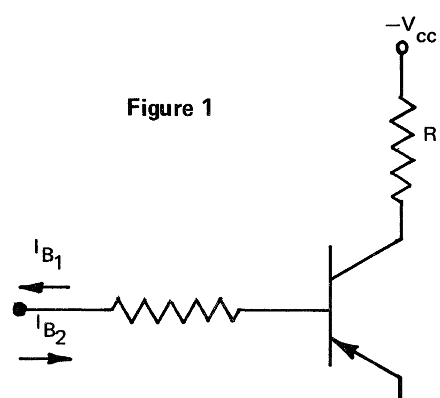


V_{CE}(sat) vs I_C

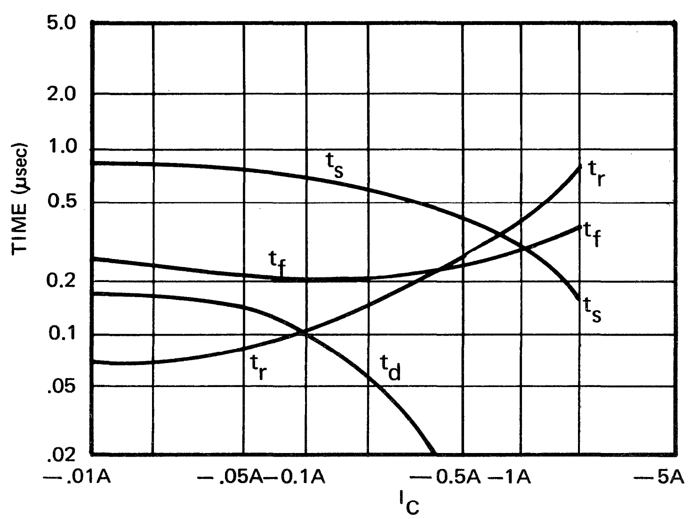


h_{FE} vs I_C

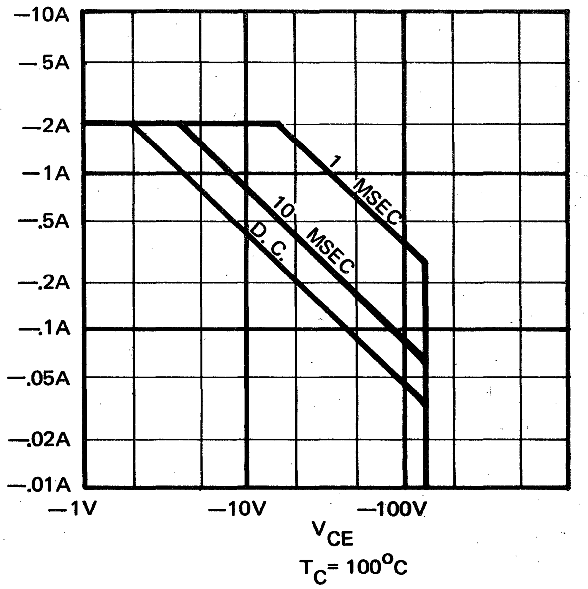
Figure 1

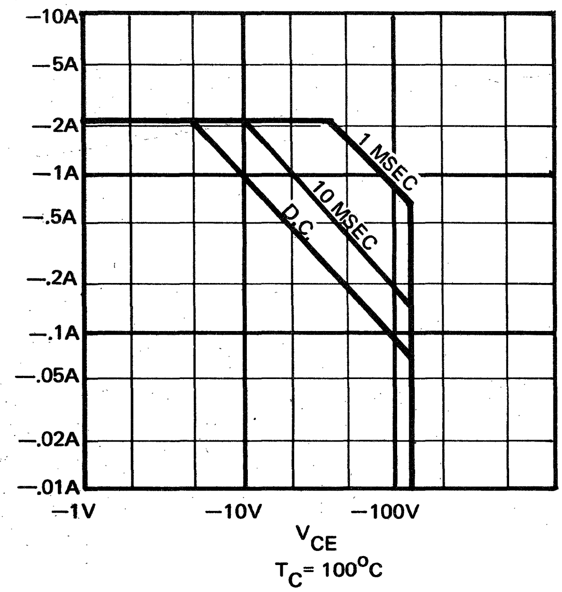


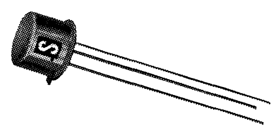
$-V_{cc}$= 10 V, R_L = 40Ω, I_c= –.25 A
$I_{B_1} = I_{B_2}$ = .025 A



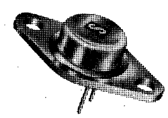
SWITCHING TIME vs I_C







TO–5



TO–66

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Officer Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

(TO–66)	(TO–5)
2N4898	SDT3552
2N4899	SDT3553
2N4900	SDT3554

2 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N4898	2N4899	2N4900
BV_{CBO}	–40 V	–60 V	–80 V
BV_{CEO}	–40 V	–60 V	–80 V
BV_{EBO}	–5 V	–5 V	–5 V
I_C(Max.)	–1 A	–1 A	–1 A
I_B(Max.)	1 A	1 A	1 A
P_T(25°C Case)	25 W	25 W	25 W
Operating Junction Temperature	200°C		
Storage Temperature Range	–65°C to +200°C		

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE}= Rated V_{CB}, V_{BE}= 1.5 V	–	–0.1	mA	All
	V_{CE}= Rated V_{CB}, V_{BE}= 1.5 V, T_C= 150°C	–	–1.0	mA	All
I_{CBO}	V_{CB}= Rated V_{CB}	–	–0.1	mA	All
I_{EBO}	V_{EB}=–5 V	–	–1.0	mA	All
V_{CEO}(sus)	I_B= 0, I_C= –100 mA	–40	–	Volts	2N4898
		–60	–	Volts	2N4899
		–80	–	Volts	2N4900
h_{FE}	I_C= –1 A, V_{CE}= –1.0 V	10	–	–	All
	I_C= –500 mA, V_{CE}= –1.0 V	20	100	–	All
	I_C= –50 mA, V_{CE}= –1.0 V	40	–	–	All
V_{CE}(sat)	I_C= –1 A, I_B= –0.1 A	–	–0.6	Volts	All
V_{BE}(sat)	I_C= –1 A, I_B= –0.1 A	–	–1.3	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
h_{fe}	V_{CE}= –10 V, I_C= –.25 A, f= 1 MHz	3.0	–	–	All
C_{obo}	V_{CB}= –10 V, I_E= 0, f= 100 KHz	–	100	pf	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3552	SDT3553	SDT3554
BV_{CBO}	−40 V	−60 V	−80 V
BV_{CEO}	−40 V	−60 V	−80 V
BV_{EBO}	−5 V	−5 V	−5 V
I_c(Max.)	−2 A	−2 A	−2 A
I_B(Max.)	−1 A	−1 A	−1 A
P_T(100°C Case)	4 W	4 W	4 W
Operating Junction Temperature		200°C	
Storage Temperature Range		−65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

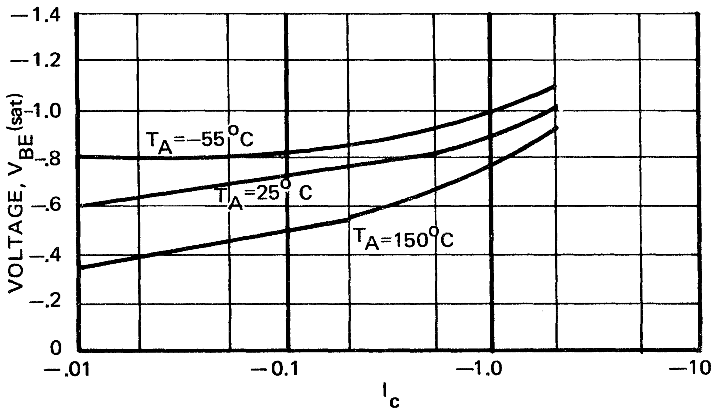
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE}= Rated,V_{CB}, V_{BE}= 1.5 V	–	–	−0.1	mA	All
	V_{CE}= Rated V_{CB}, V_{BE}= 1.5 V, T_c= 150°C	–	–	−1.0	mA	All
I_{CBO}	V_{CB}= Rated V_{CB}	–	–	−0.1	mA	All
I_{EBO}	V_{EB}=−5 V	–	–	−1.0	mA	All
V_{CEO}(sus)	I_B= 0, I_c=−100 mA	−40	–	–	Volts	SDT3552
		−60	–	–	Volts	SDT3553
		−80	–	–	Volts	SDT3554
h_{FE}	I_c= −1 A, V_{CE}= −1.0 V	10	–	–	–	All
	I_c= −500 mA, V_{CE}= −1.0 V	20	–	100	–	All
	I_c= −50 mA, V_{CE}= −1.0 V	40	–	–	–	All
V_{CE}(sat)	I_c= −1 A, I_B= −0.1 A	–	–	−0.6	Volts	All
V_{BE}(sat)	I_c= −1 A, I_B= −0.1 A	–	–	−1.3	Volts	All

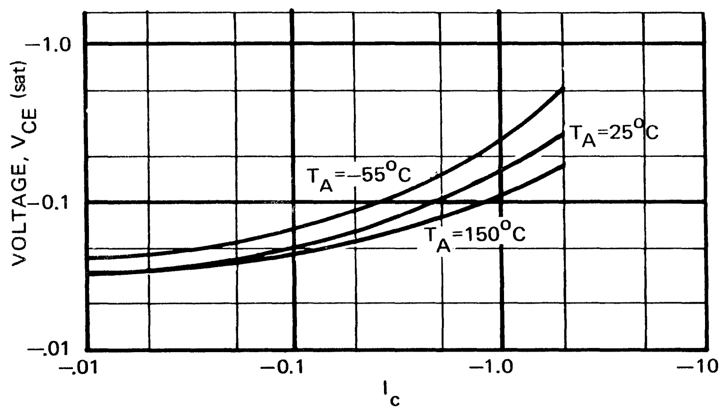
Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
t_d	(See Figure No. 1)	–	10	–	Nsec	All
t_r	(See Figure No. 1)	–	250	–	Nsec	All
t_s	(See Figure No. 1)	–	450	–	Nsec	All
t_f	(See Figure No. 1)	–	250	–	Nsec	All
h_{fe}	V_{CE}= −10 V, I_c= −.25 A, f = 1 MHz	10	–	–	–	All
C_{obo}	V_{CB}= −10 V, I_E= 0, f= 100 KHz	–	–	100	pf	All

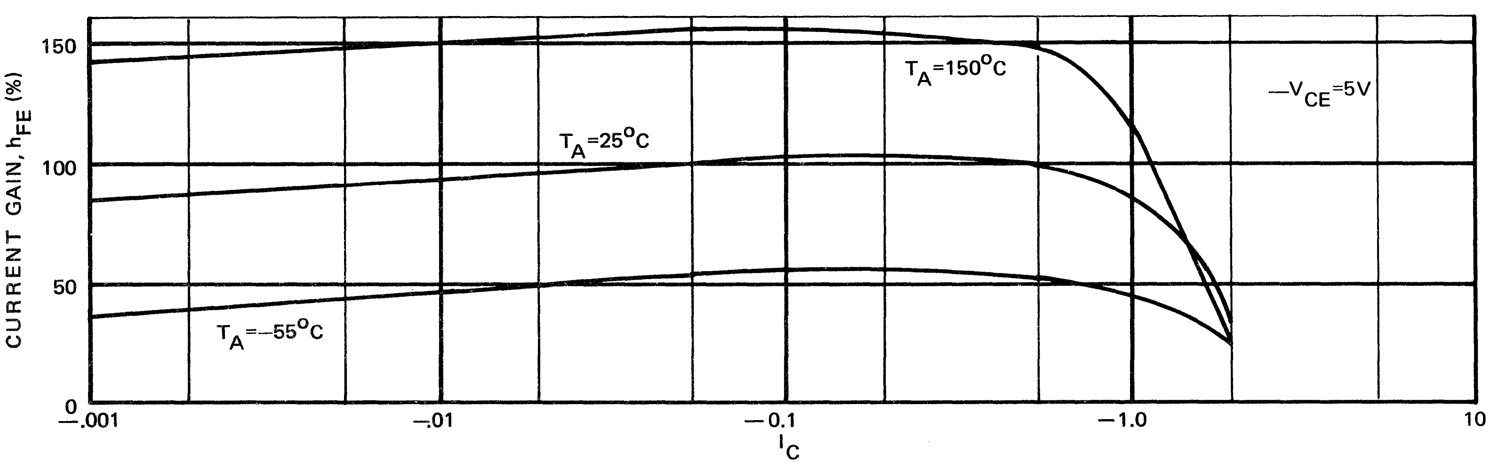
CHARACTERISTIC CURVES (ALL TYPES)



V_{BE}(sat) vs I_C

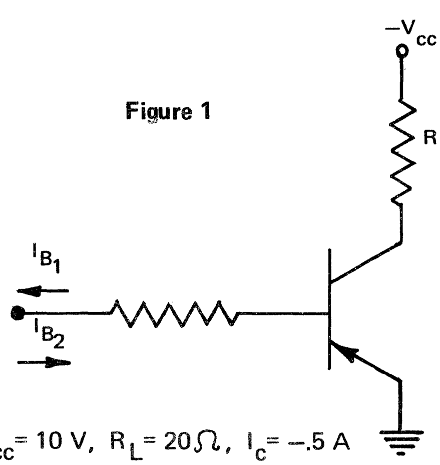


V_{CE}(sat) vs I_C

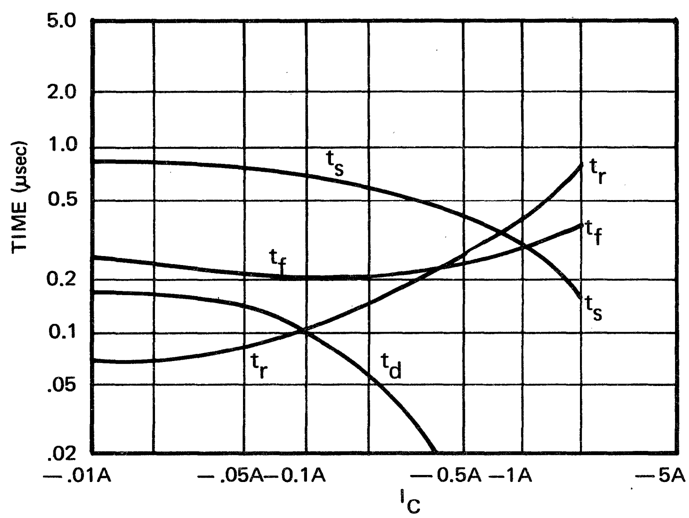


h_{FE} vs I_C

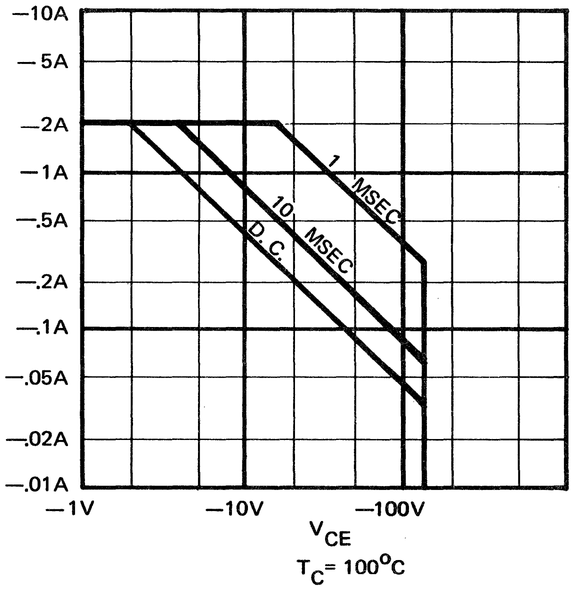
Figure 1

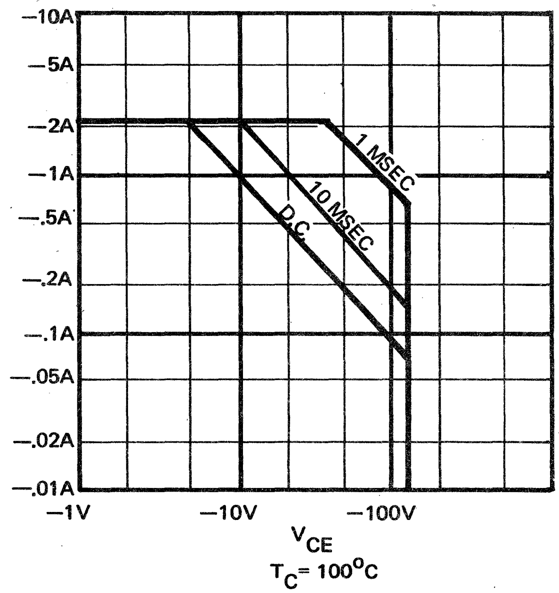


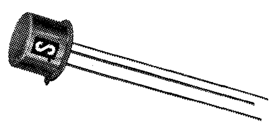
$-V_{cc}$ = 10 V, R_L = 20Ω, I_c = −.5 A
$I_{B_1} = I_{B_2}$ = .05 A



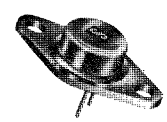
SWITCHING TIME vs I_C







TO–5



TO–66

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Officer Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

When you think of semiconductors... think Solitron!

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

(TO–3)	(TO–66)
2N4901	SDT3703
2N4902	SDT3704
2N4903	SDT3705

5 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N4901	2N4902	2N4903
BV_{CBO}	−40 V	−60 V	−80 V
BV_{CEO}	−40 V	−60 V	−80 V
BV_{EBO}	−5 V	−5 V	−5 V
I_c(Max.)	−5 A	−5 A	−5 A
I_B(Max.)	−1 A	−1 A	−1 A
P_T(25°C Case)	87.5 W	87.5 W	87.5 W
Operating Junction Temperature		200°C	
Storage Temperature Range		−65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE}= Rated V_{CB}, V_{BE}= 1.5 V	–	−0.1	mA	All
	V_{CE}= Rated V_{CB}, V_{BE}= 1.5 V, T_c= 150°C	–	−2.0	mA	All
I_{CEO}	V_{CE}= Rated V_{CE}	–	−1.0	mA	All
I_{EBO}	V_{EB}=−5 V	–	−1.0	mA	All
V_{CEO}(sus)	I_B= 0, I_c=−200 mA	−40	–	Volts	2N4901
		−60	–	Volts	2N4902
		−80	–	Volts	2N4903
h_{FE}	I_c= −5 A, V_{CE}= −2 V	7	–	–	All
	I_c= −1 A, V_{CE}= −2 V	20	80	–	All
V_{CE}(sat)	I_c= −5 A, I_B= −1 A	–	−1.5	Volts	All
	I_c= −1 A, I_B= −0.1 A	–	−0.4	Volts	All
V_{BE}	I_c= −1 A, V_{CE}= −2 V	–	−1.2	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
h_{fe}	V_{CE}= −10 V, I_c= −1 A, f= 1 MHz	4.0	–	–	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3703	SDT3704	SDT3705
BV_{CBO}	−40 V	−60 V	−80 V
BV_{CEO}	−40 V	−60 V	−80 V
BV_{EBO}	−5 V	−5 V	−5 V
I_c(Max.)	−5 A	−5 A	−5 A
I_B(Max.)	−1 A	−1 A	−1 A
P_T(100°C Case)	16 W	16 W	16 W
Operating Junction Temperature		200°C	
Storage Temperature Range		−65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

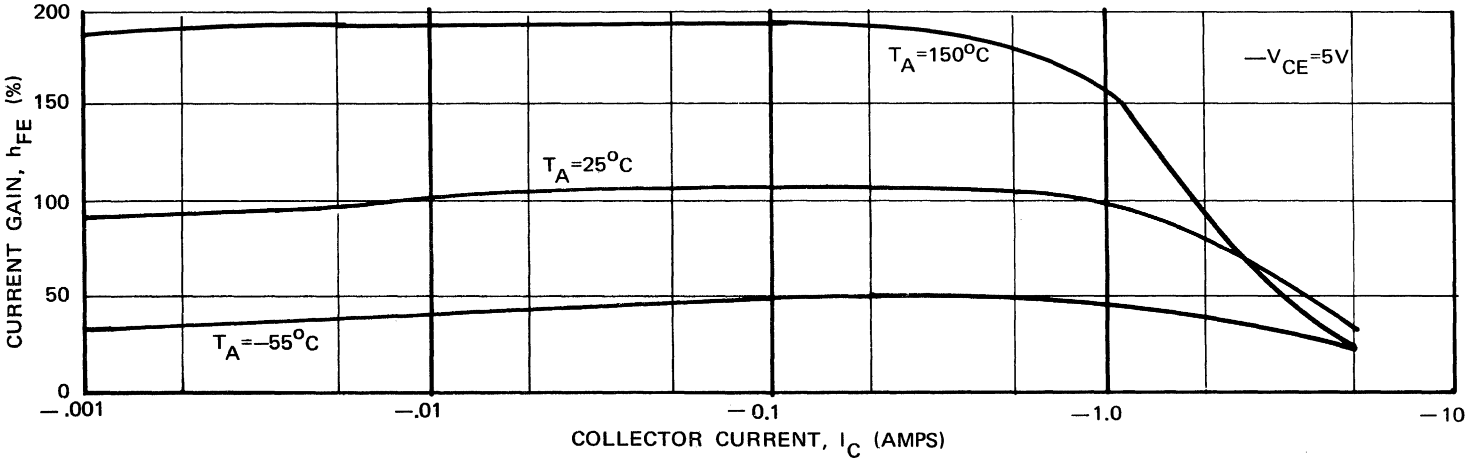
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE}= Rated V_{CB}, V_{BE}= 1.5 V	–	–	−0.1	mA	All
	V_{CE}= Rated V_{CB}, V_{BE}= 1.5 V, T_c= 150°C	–	–	−2.0	mA	All
I_{CEO}	V_{CE}= Rated V_{CE}	–	–	−1.0	mA	All
I_{EBO}	V_{EB}= −5 V	–	–	−1.0	mA	All
V_{CEO}(sus)	I_B= 0, I_c= −200 mA	−40	–	–	Volts	SDT3703
		−60	–	–	Volts	SDT3704
		−80	–	–	Volts	SDT3705
h_{FE}	I_c= −5 A, V_{CE}= −2 V	7	–	–	–	All
	I_c= −1 A, V_{CE}= −2 V	20	–	80	–	All
V_{CE}(sat)	I_c= −5 A, I_B= −1 A	–	–	−1.5	Volts	All
	I_c= −1 A, I_B= −0.1 A	–	–	−0.4	Volts	All
V_{BE}	I_c= −1 A, V_{CE}= −2 V	–	–	−1.2	Volts	All

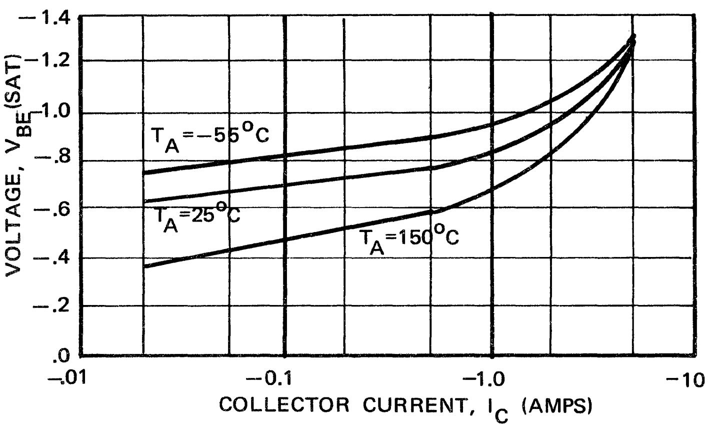
Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
t_d	(see Figure No. 1)	–	2	–	Nsec	All
t_r	(see Figure No. 1)	–	75	–	Nsec	All
t_s	(see Figure No. 1)	–	500	–	Nsec	All
t_f	(see Figure No. 1)	–	100	–	Nsec	All
h_{fe}	V_{CE}= −10 V, I_c= −1 A, f= 1 MHz	10	–	–	–	All
C_{obo}	V_{CB}= −10 V, I_E= 0, f= 1 MHz	–	–	150	pf	All

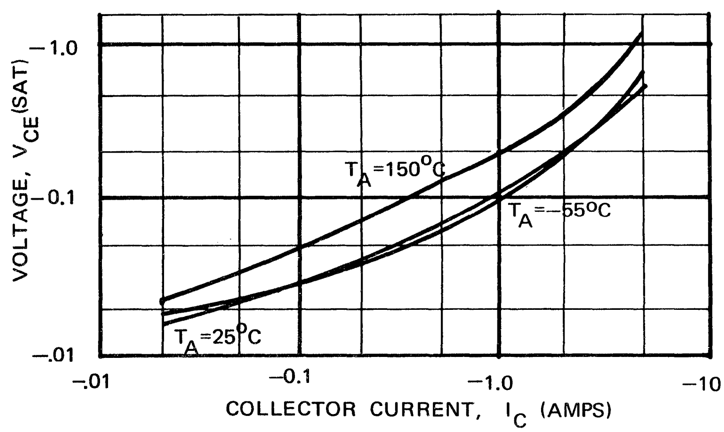
CHARACTERISTIC CURVES (ALL TYPES)



h_{FE} vs I_C

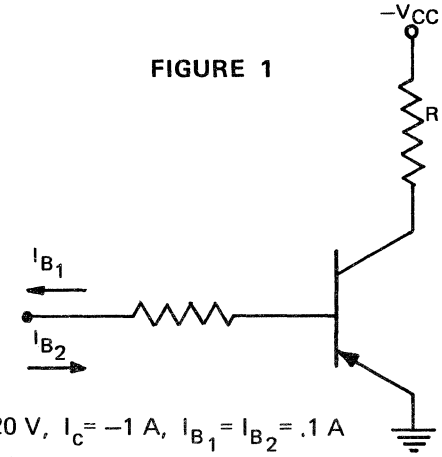


V_{BE}(sat) vs I_C

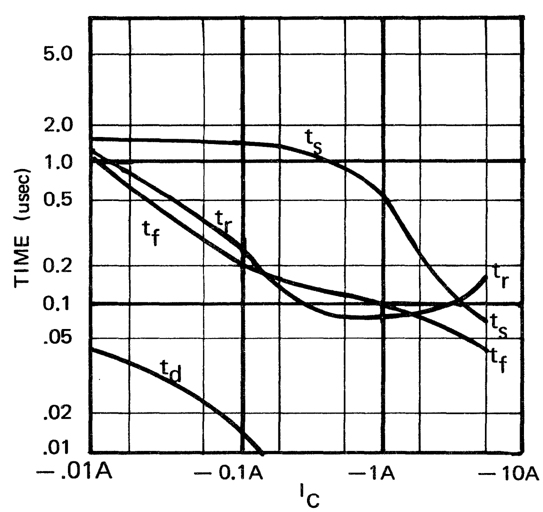


V_{CE}(sat) vs I_C

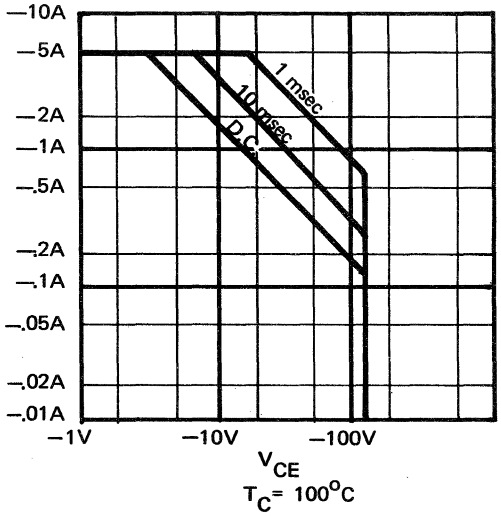
FIGURE 1

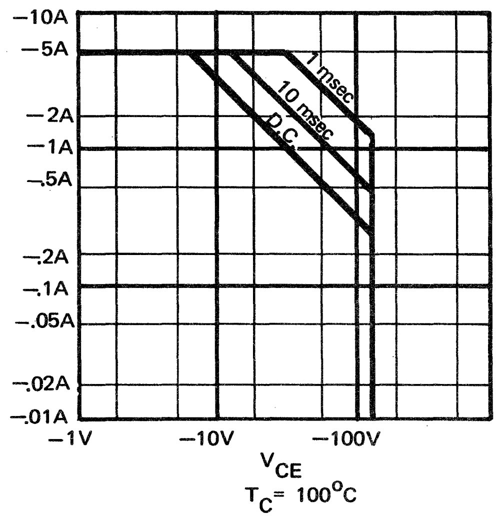


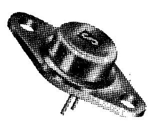
$-V_{cc} = 20$ V, $I_c = -1$ A, $I_{B_1} = I_{B_2} = .1$ A
$R_L = 20\,\Omega$



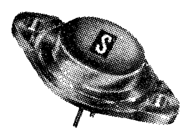
SWITCHING TIME vs I_C







TO—66



TO—3

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable — Solidev Bromley
Kent, England

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

(TO–3)	(TO–66)
2N4904	**SDT3726**
2N4905	**SDT3727**
2N4906	**SDT3728**

5 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM TEMPERATURES

	2N4904	2N4905	2N4906
BV_{CBO}	–40 V	–60 V	–80 V
BV_{CEO}	–40 V	–60 V	–80 V
BV_{EBO}	–5 V	–5 V	–5 V
I_c (Max.)	–5 A	–5 A	–5 A
I_B (Max.)	–1 A	–1 A	–1 A
P_T (25°C Case)	87.5 W	87.5 W	87.5 W
Operating Junction Temperature		200°C	
Storage Temperature Range		–65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

SYMBOL	CONDITIONS	MIN.	MAX.	UNITS	TYPE
Static					
I_{CEX}	V_{CE} = Rated V_{CB}, V_{BE} = 1.5 V	–	–0.1	mA	All
	V_{CE} = Rated V_{CB}, V_{BE} = 1.5 V, T_c = 150°C	–	–2.0	mA	All
I_{CEO}	V_{CE} = Rated V_{CE}	–	–1.0	mA	All
I_{EBO}	V_{EB} = –5 V	–	–1.0	mA	All
V_{CEO} (sus)	I_B = 0, I_c = –200 mA	–40	–	Volts	2N4904
		–60	–	Volts	2N4905
		–80	–	Volts	2N4906
h_{FE}	I_c = –5 A, V_{CE} = –2 V	7	–	–	All
	I_c = –2.5 A, V_{CE} = –2 V	25	100	–	All
V_{CE} (sat)	I_c = –5 A, I_B = –1 A	–	–1.5	Volts	All
	I_c = –2.5 A, I_B = –.25 A	–	–1.0	Volts	All
V_{BE}	I_c = –2.5 A, V_{CE} = –2 V	–	–1.4	Volts	All
Dynamic					
h_{fe}	V_{CE} = –10 V, I_c = –0.5 A, f = 1 MHz	4.0	–	–	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3726	SDT3727	SDT3728
BV_{CBO}	–40 V	–60 V	–80 V
BV_{CEO}	–40 V	–60 V	–80 V
BV_{EBO}	–5 V	–5 V	–5 V
I_C(Max.)	–5 A	–5 A	–5 A
I_B(Max.)	–1 A	–1 A	–1 A
P_T(100°C Case)	16 W	16 W	16 W
Operating Junction Temperature		200°C	
Storage Temperature Range		–65°C to +200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

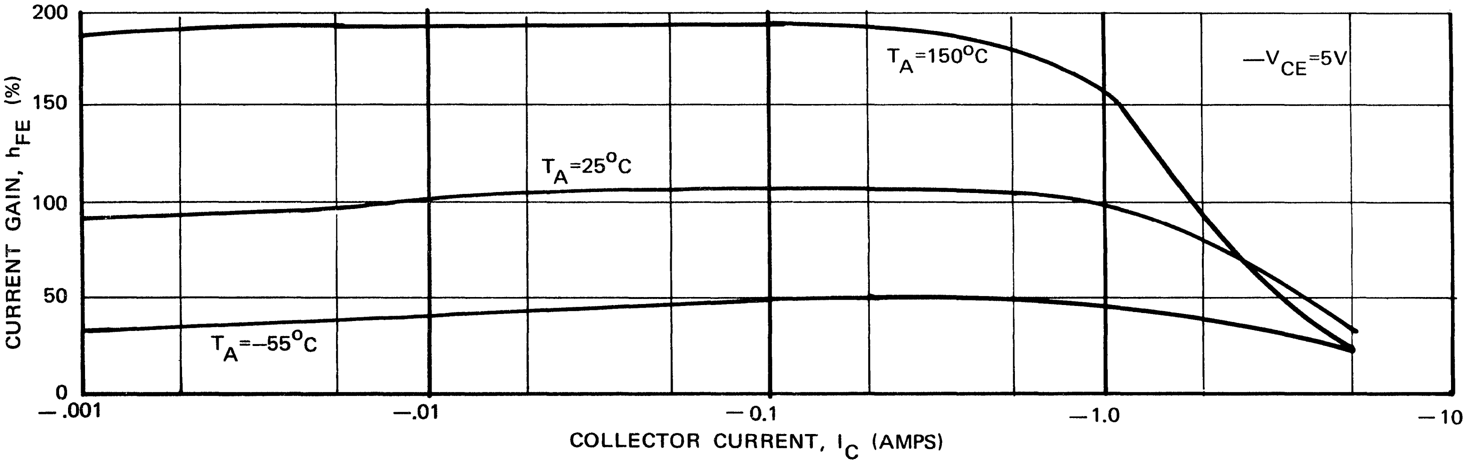
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
I_{CEX}	V_{CE}= Rated V_{CB}, V_{BE}= 1.5 V	–	–	–0.1	mA	All
	V_{CE}= Rated V_{CB}, V_{BE}= 1.5 V, T_c= 150°C	–	–	–2.0	mA	All
I_{CEO}	V_{CE}= Rated V_{CE}	–	–	–1.0	mA	All
I_{EBO}	V_{EB}= –5 V	–	–	–1.0	mA	All
V_{CEO}(sus)	I_B= 0, I_c= –200 mA	–40	–	–	Volts	SDT3726
		–60	–	–	Volts	SDT3727
		–80	–	–	Volts	SDT3728
h_{FE}	I_c= –5 A, V_{CE}= –2 V	7	–	–	–	All
	I_c= –2.5 A, V_{CE}= –2 V	25	–	100	–	All
V_{CE}(sat)	I_c= –5 A, I_B= –.5 A	–	–	–1.5	Volts	All
	I_c= –2.5 A, I_B= –.25 A	–	–	–1.0	Volts	All
V_{BE}	I_c= –2.5 A, V_{CE}= –2 V	–	–	–1.4	Volts	All

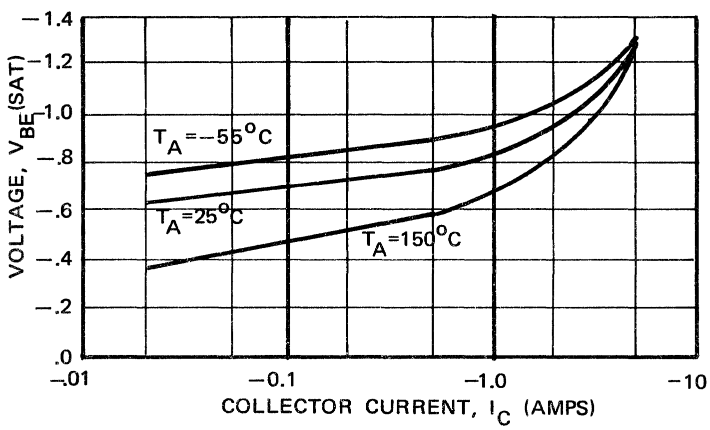
Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
t_d	(See Figure No. 1)	–	1.0	–	Nsec	All
t_r	(See Figure No. 1)	–	100	–	Nsec	All
t_s	(See Figure No. 1)	–	180	–	Nsec	All
t_f	(See Figure No. 1)	–	75	–	Nsec	All
h_{fe}	V_{CE}= –10 V, I_c= –0.5 A, f= 1 MHz	10	–	–	–	All
C_{obo}	V_{CB}= –10 V, I_E= 0, f= 1 MHz	–	–	150	pf	All

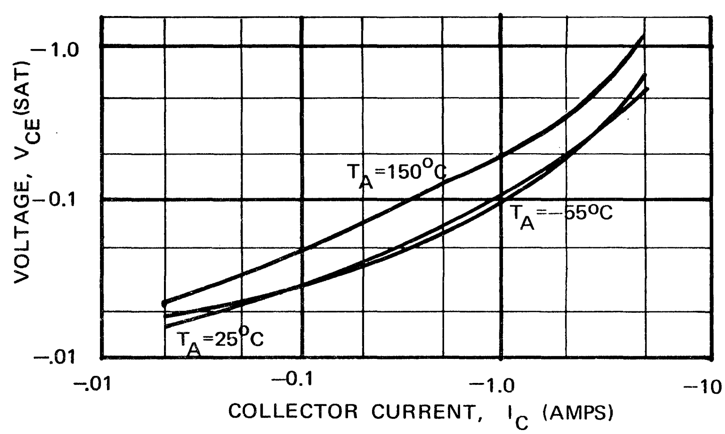
CHARACTERISTIC CURVES (ALL TYPES)



h_{FE} vs I_C

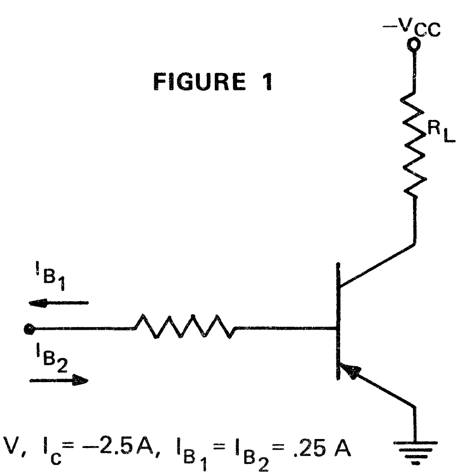


V_{BE}(sat) vs I_C

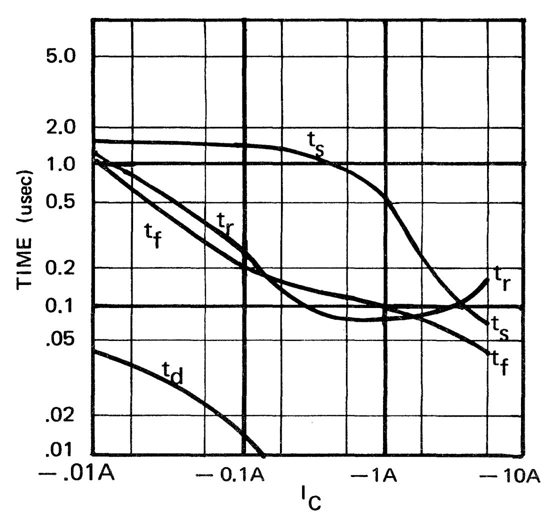


V_{CE}(sat) vs I_C

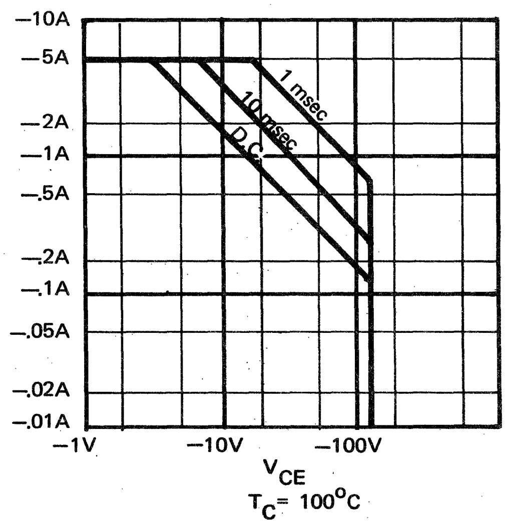
FIGURE 1

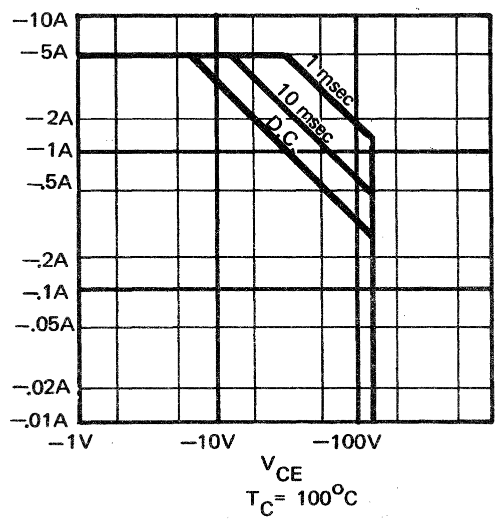


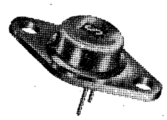
$-V_{cc}$= 25 V, I_c= −2.5A, $I_{B_1} = I_{B_2}$ = .25 A
R_L = 10Ω



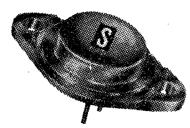
SWITCHING TIME vs I_C







TO—66



TO—3

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable — Solidev Bromley
Kent, England

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

TO–3	TO–66
2N5737	2N5739
2N5738	2N5740
SDT3825	SDT3805
SDT3826	SDT3806
SDT3827	SDT3807

10 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N5737	2N5738	2N5739	2N5740
BV_{CBO}	–60 V	–100 V	–60 V	–100 V
BV_{CEO}	–60 V	–100 V	–60 V	–100 V
BV_{EBO}	–5 V	–5 V	–5 V	–5 V
I_c(Max.)	–10 A	–10 A	–10 A	–10 A
I_B(Max.)	–2 A	–2 A	–2 A	–2 A
P_T(100°C Case)	45 W	45 W	20 W	20 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to 200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
V_{CEO}(sus)	I_B= 0, I_c= –100 mA	–60	–	–	Volts	2N5737, 2N5739
	I_B= 0, I_c= –100 mA	–100	–	–	Volts	2N5738, 2N5740
I_{CEX}	V_{CE}= Rated V_{CE}, V_{BE}= 1.5 V	–	–	–10	μA	All
	V_{CE}= Rated V_{CE}, V_{BE}= 1.5 V, T_c= 150°C	–	–	–500	μA	All
I_{EBO}	V_{EB}= –5 V	–	–	–100	μA	All
h_{FE}	I_c= –5 A, V_{CE}= –5 V	20	–	80	–	All
V_{CE}(sat)	I_c= –5 A, I_B= –0.5 A	–	–	–0.5	Volts	All
V_{BE}(sat)	I_c= –5 A, I_B= –0.5 A	–	–	–1.2	Volts	All

Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
t_d	(See Figure No. 1)	–	1	–	Nsec	All
t_r	(See Figure No. 1)	–	100	–	Nsec	All
t_s	(See Figure No. 1)	–	600	–	Nsec	All
t_f	(See Figure No. 1)	–	125	–	Nsec	All
h_{fe}	V_{CE}= –10 V, I_c= –1 A, f= 1 MH_Z	10	–	–	–	All
C_{obo}	V_{CB}= –10 V, I_E= 0, f= 1 MH_Z	–	–	250	pf	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3805 SDT3825	SDT3806 SDT3826	SDT3807 SDT3827
BV_{CBO}	−40 V	−80 V	−40 V
BV_{CEO}	−40 V	−80 V	−40 V
BV_{EBO}	−5 V	−80 V	−5 V
I_c(Max.)	−10 A	−10 A	−10 A
I_B(Max.)	−2 A	−2 A	−2 A
P_T (100°C Case) TO−3	45 W	45 W	45 W
P_T (100°C Case) TO−66	20 W	20 W	20 W
Operating Junction Temperature	200°C		
Storage Temperature Range	−65°C to 200°C		

ELECTRICAL CHARACTERISTICS (25°C Ambient)

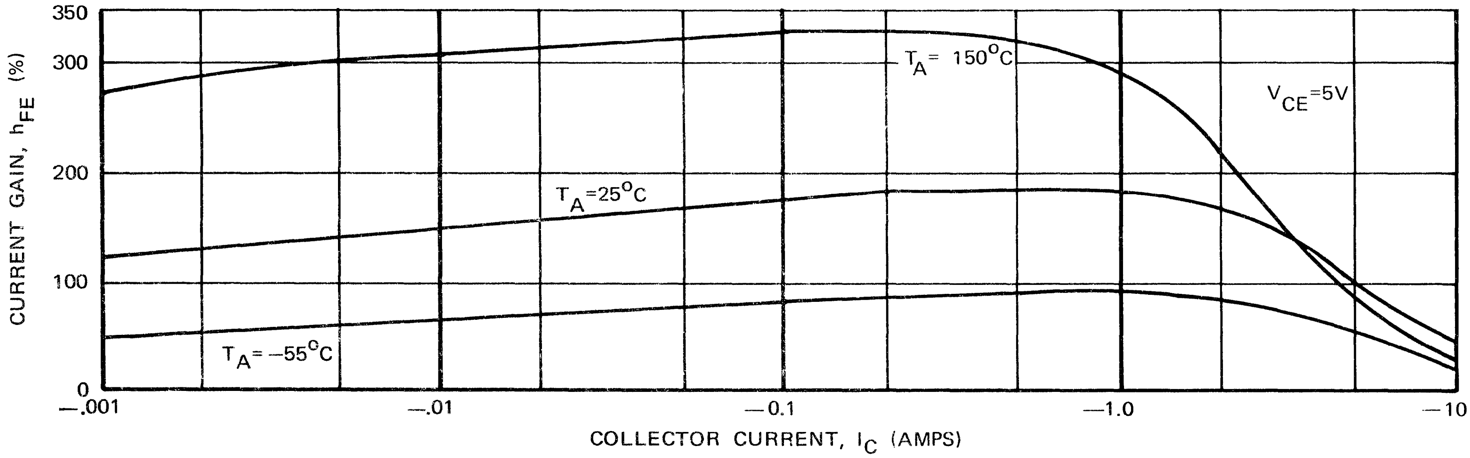
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
V_{CEO} (sus)	$I_B = 0$, $I_c = -100$ mA	−40	–	–	Volts	SDT3805, SDT3825
	$I_B = 0$, $I_c = -100$ mA	−40	–	–	Volts	SDT3807, SDT3827
	$I_B = 0$, $I_c = -100$ mA	−80	–	–	Volts	SDT3806, SDT3826
I_{CEX}	V_{CE} = Rated V_{CE}, $V_{BE} = 1.5$ V	–	–	−0.1	mA	All
	V_{CE} = Rated V_{CE}, $V_{BE} = 1.5$ V, $I_c = 150^{\circ}$C	–	–	−10	mA	All
I_{EBO}	$V_{EB} = -5$ V	–	–	−1.0	mA	All
h_{FE}	$I_c = -5$ A, $V_{CE} = -5$ V	20	–	80	–	SDT3805, SDT3806 SDT3825, SDT3826
	$I_c = -5$ A, $V_{CE} = -5$ V	40	–	–	–	SDT3807, SDT3827
V_{CE} (sat)	$I_c = -5$ A, $I_B = -0.5$ A	–	–	.75	Volts	All
V_{BE} (sat)	$I_c = -5$ A, $I_B = -0.5$ A	–	–	1.2	Volts	All

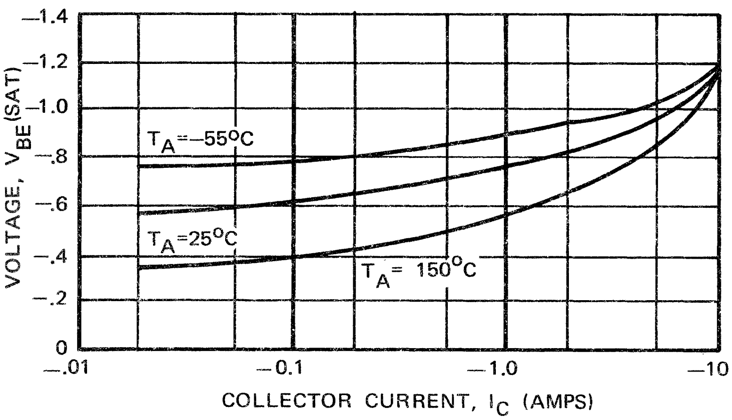
Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
t_d	(See Figure No. 1)	–	1	–	Nsec	All
t_r	(See Figure No. 1)	–	100	–	Nsec	All
t_s	(See Figure No. 1)	–	600	–	Nsec	All
t_f	(See Figure No. 1)	–	125	–	Nsec	All
h_{fe}	$V_{CE} = -10$ V, $I_c = -1$ A, f= 1 MH_Z	10	–	–	–	All
C_{obo}	$V_{CB} = -10$ V, $I_E = 0$, f= 1 MH_Z	–	–	250	pf	All

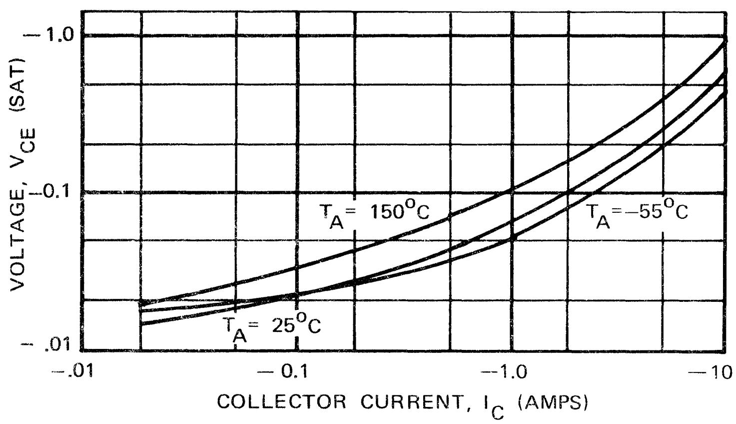
CHARACTERISTIC CURVES (ALL TYPES)



h_{FE} vs I_C

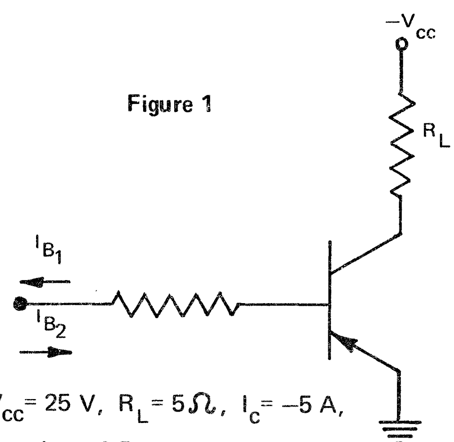


V_{BE}(sat) vs I_C

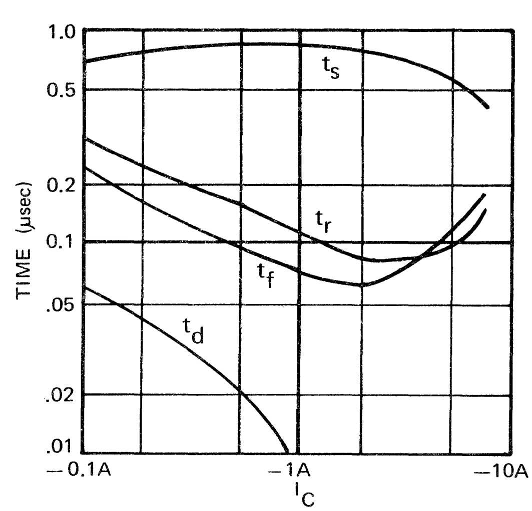


V_{CE}(sat) vs I_C

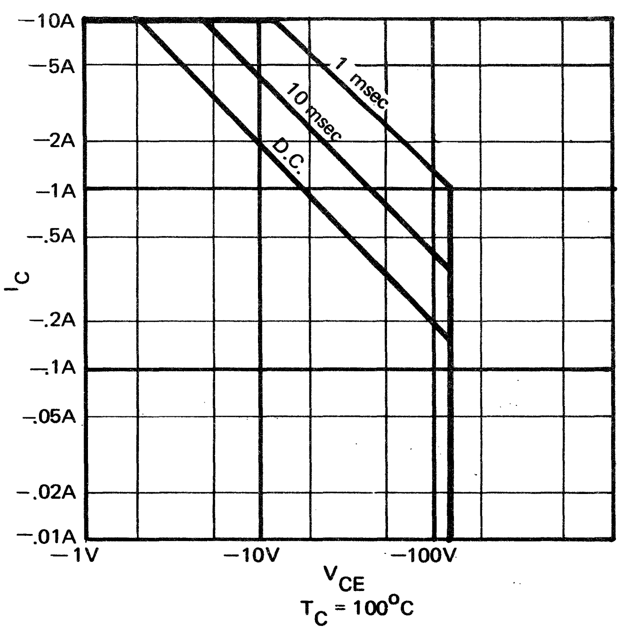
Figure 1

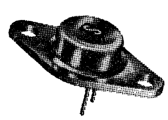


$-V_{cc}$= 25 V, R_L = 5Ω, I_c= –5 A,
I_{B1}= I_{B2}= 0.5 A

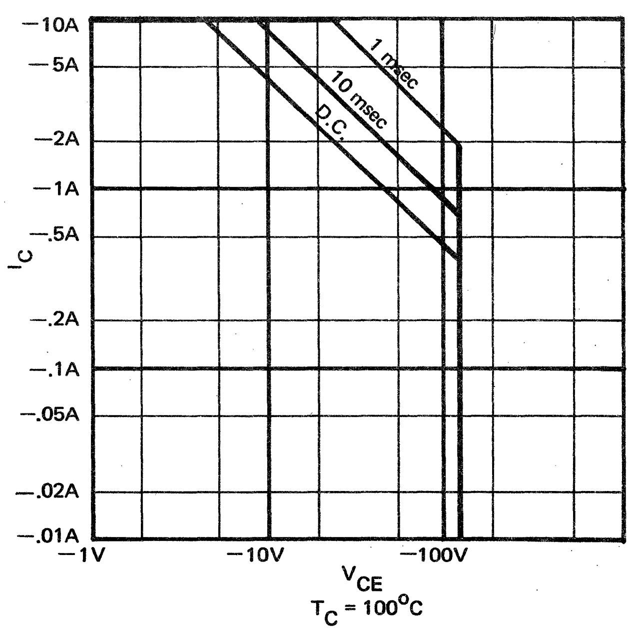


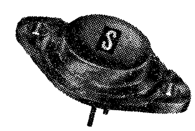
SWITCHING TIME vs I_C





TO–66





TO–3

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

Solitron DEVICES, INC.
TRANSISTOR DIVISION
1177 BLUE HERON BLVD. · RIVIERA BEACH, FLA. 33404 · (305) 848-4311

TO–3	TO–66
2N5741	2N5743
2N5742	2N5744
SDT3875	SDT3850
SDT3876	SDT3851
SDT3877	SDT3852

20 AMP

PNP INDUSTRIAL TRANSISTORS

ABSOLUTE MAXIMUM RATINGS

	2N5741	2N5742	2N5743	2N5744
V_{CBO}	–60 V	–100 V	–60 V	–100 V
V_{CEO}	–60 V	–100 V	–60 V	–100 V
V_{EBO}	–5 V	–5 V	–5 V	–5 V
I_c(Max.)	–20 A	–20 A	–20 A	–20 A
I_B(Max.)	–4 A	–4 A	–4 A	–4 A
P_T(100°C Case)	55 W	55 W	24 W	24 W
Operating Junction Temperature	200°C			
Storage Temperature Range	–65°C to 200°C			

ELECTRICAL CHARACTERISTICS (25°C Ambient)

Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
V_{CEO}(sus)	I_B= 0, I_c= –100 mA	–60	–	–	Volts	2N5741, 2N5743
	I_B= 0, I_c= –100 mA	–100	–	–	Volts	2N5742, 2N5744
I_{CEX}	V_{CE}= Rated V_{CE}, V_{BE}= 1.5 V	–	–	–10	μA	All
	V_{CE}= Rated V_{CE}, V_{BE}= 1.5 V, T_c= 150°C	–	–	–500	μA	All
I_{EBO}	V_{EB}= –5 V	–	–	–100	μA	All
h_{FE}	I_c= –10 A, V_{CE}= –5 V	20	–	80	–	All
V_{CE}(sat)	I_c= –10 A, I_B= –1 A	–	–	–1.5	Volts	All
V_{BE}(sat)	I_c= –10 A, I_B= –1 A	–	–	–1.5	Volts	All
Dynamic						
t_d	(See Figure No. 1)	–	1	–	Nsec	All
t_r	(See Figure No. 1)	–	200	–	Nsec	All
t_s	(See Figure No. 1)	–	250	–	Nsec	All
t_f	(See Figure No. 1)	–	250	–	Nsec	All
h_{fe}	V_{CE}= –10 V, I_c= –1 A, f= 1 MH_z	10	–	–	–	All
C_{obo}	V_{CB}= –10 V, I_E= 0, f= 1 MH_z	–	–	500	pf	All

ADDITIONAL DEVICES

ABSOLUTE MAXIMUM RATINGS

	SDT3850 SDT3875	SDT3851 SDT3876	SDT3852 SDT3877
V_{CBO}	–40 V	–80 V	–40 V
V_{CEO}	–40 V	–80 V	–40 V
V_{EBO}	–5 V	–5 V	–5 V
I_c(Max.)	–20 A	–20 A	–20 A
I_B(Max.)	–4 A	–4 A	–4 A
P_T(100°C Case) TO–3	55 W	55 W	55 W
P_T(100°C Case) TO–66	24 W	24 W	24 W
Operating Junction Temperature		200°C	
Storage Temperature Range		–65°C to 200°C	

ELECTRICAL CHARACTERISTICS (25°C Ambient)

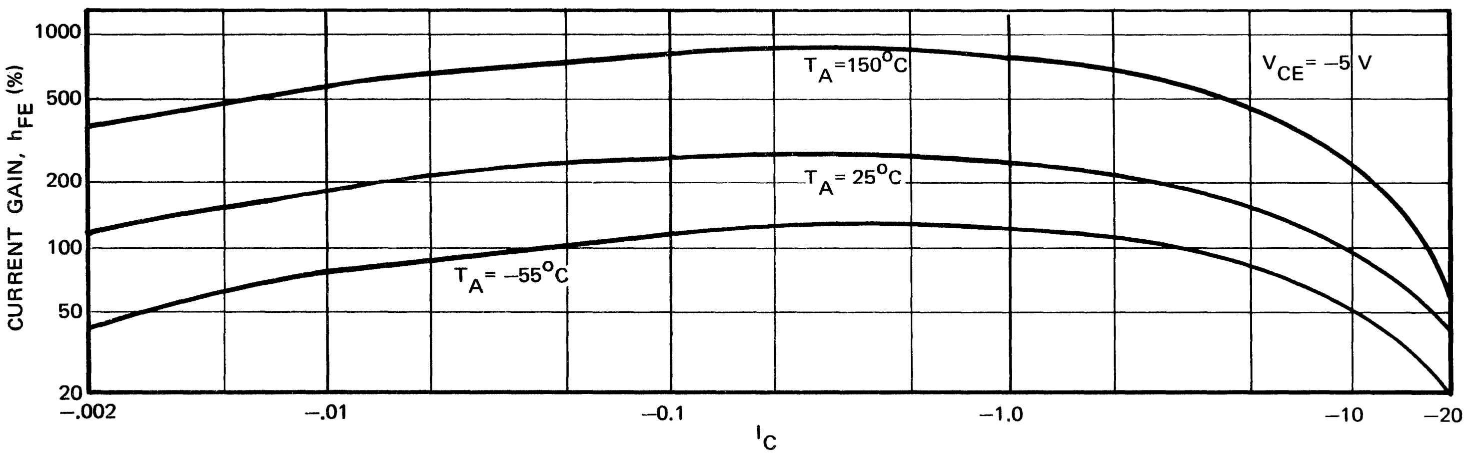
Static

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
V_{CEO}(sus)	$I_B = 0$, $I_c = -100$ mA	–40	–	–	Volts	SDT3850, SDT3875
	$I_B = 0$, $I_c = -100$ mA	–40	–	–	Volts	SDT3852, SDT3877
	$I_B = 0$, $I_c = -100$ mA	–80	–	–	Volts	SDT3851, SDT3876
I_{CEX}	V_{CE} = Rated V_{CE}, $V_{BE} = 1.5$ V	–	–	–0.1	mA	All
	V_{CE} = Rated V_{CE}, $V_{BE} = 1.5$ V, $T_c = 150°C$	–	–	–10	mA	All
I_{EBO}	$V_{EB} = -5$ V	–	–	–1.0	mA	All
h_{FE}	$I_c = -10$ A, $V_{CE} = -5$ V	20	–	80	–	SDT3850, SDT3851 SDT3875, SDT3876
	$I_c = -10$ A, $V_{CE} = -5$ V	40	–	–	–	SDT3852, SDT3877
V_{CE}(sat)	$I_c = -10$ A, $I_B = -1$ A	–	–	–1.8	Volts	All
V_{BE}(sat)	$I_c = -10$ A, $I_B = -1$ A	–	–	–2.0	Volts	All

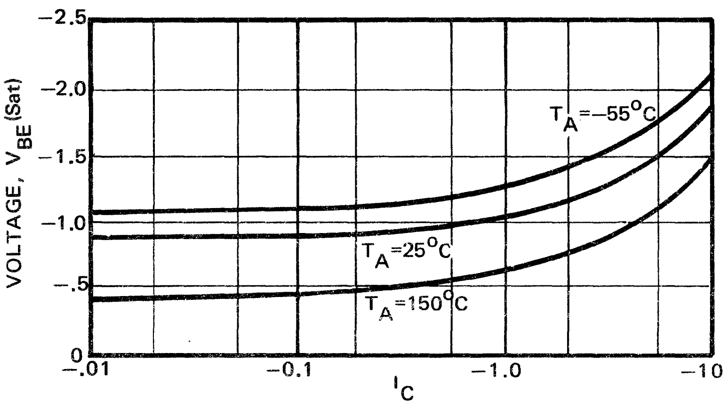
Dynamic

SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS	TYPE
t_d	(See Figure No. 1)	–	1	–	Nsec	All
t_r	(See Figure No. 1)	–	200	–	Nsec	All
t_s	(See Figure No. 1)	–	250	–	Nsec	All
t_f	(see Figure No. 1)	–	250	–	Nsec	All
h_{fe}	$V_{CB} = -10$ V, $I_c = -1$ A, f= 1 MH_z	10	–	–	–	All
C_{obo}	$V_{CB} = -10$ V, $I_E = 0$, f= 1 MH_z	–	–	500	pf	All

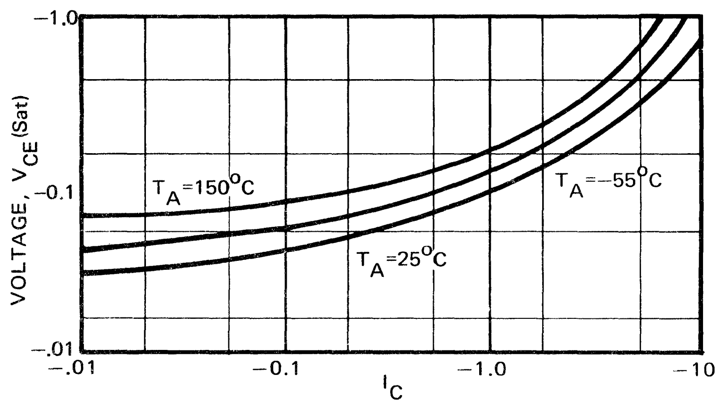
CHARACTERISTIC CURVES (ALL TYPES)



h_{FE} vs I_C

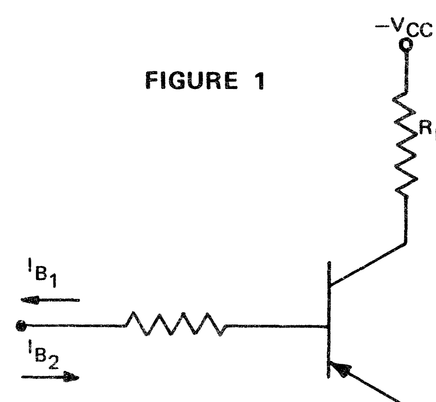


V_{BE}(SAT) vs I_C

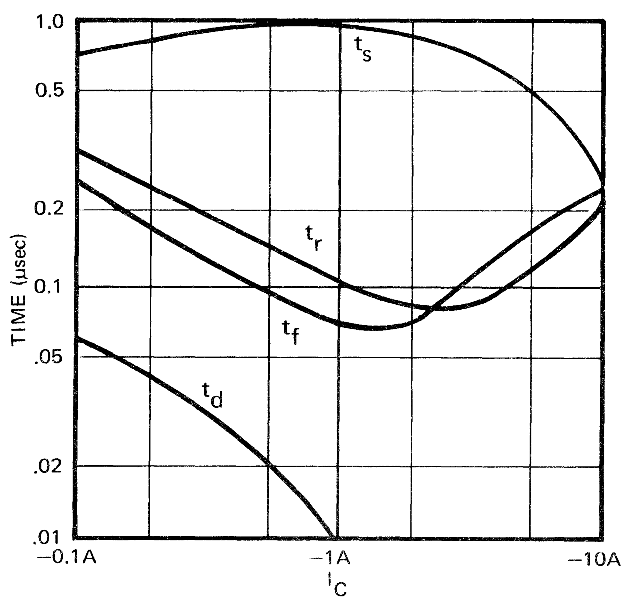


V_{CE}(SAT) vs I_C

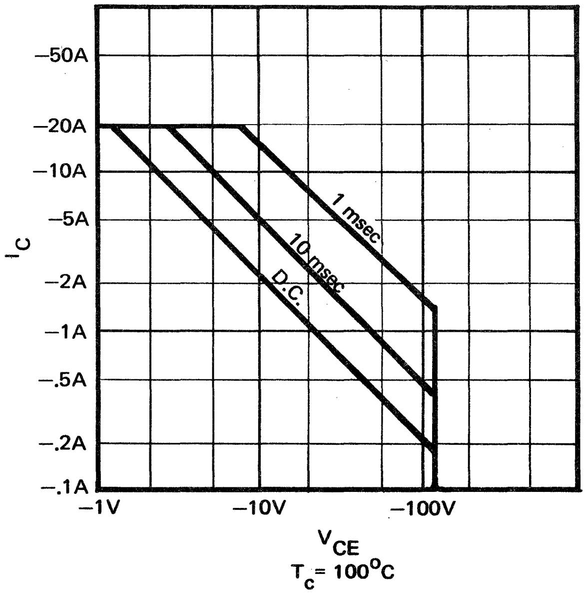
FIGURE 1

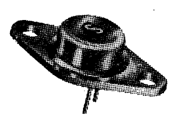


$-V_{cc}=30$ V, $R_L=3\Omega$, $I_c=-10$ A
$I_{B_1}=I_{B_2}=1$ A

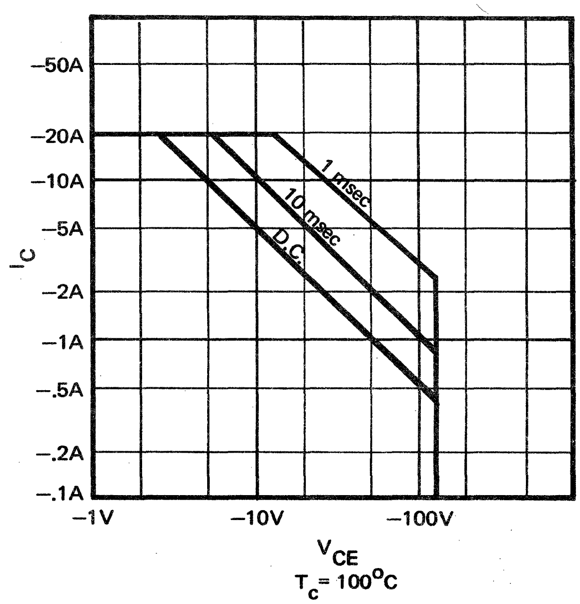


SWITCHING TIME vs I_C





TO–66



TO–3

SOLITRON REGIONAL OFFICES

NORTHEAST
256 Oak Tree Road
Tappan, New York 10983
Telephone No. (914) 359-5050
TWX No. (710) 576-2654

MIDWEST
Suite No. 218
O'Hare Office Center North
2720 Des Plaines Avenue
Des Plaines, Illinois 60018
Telephone No. (312) 824-8127
TWX No. (910) 233-2634

WESTERN
4014 Long Beach Blvd.
Long Beach, California 90807
Telephone No. (213) 426-0331
TWX No. (910) 341-6417

SOUTHEAST
1177 Blue Heron Blvd.
Riviera Beach, Florida 33404
Telephone No. (305) 848-4311
TWX No. (510) 952-6676

SOUTHWEST
13333 N. Central Expressway
Suite No. 220
Dallas, Texas 75080
Telephone No. (214) 231-8224

EUROPE
Solidev Ltd.
9A High Street
Bromley, Kent, England
Telephone No. (Bromley) 01-464-4588
Cable – Solidev Bromley
Kent, England

When you think of semiconductors... think Solitron!

SECTION 5

NPN AND PNP DARLINGTON TRANSISTORS

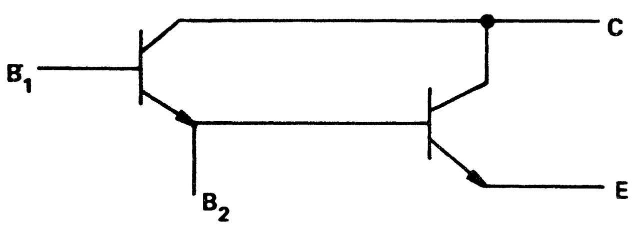
SDM DEVICES

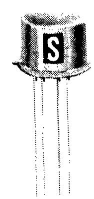
Solitron DEVICES, INC.
SEMICONDUCTOR GROUP
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

TO-33	SDM 3300 SDM 3301 SDM 3302	SDM 3303 SDM 3304 SDM 3305
TO-66(3)	SDM 3100 SDM 3101 SDM 3102	SDM 3103 SDM 3104 SDM 3105

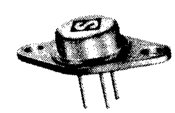
5 AMP

NPN DARLINGTON SILICON POWER TRANSISTORS





TO-33



TO-66 (3 leads)

ABSOLUTE MAXIMUM RATINGS
@ 25°C (unless otherwise noted)

PARAMETER	SDM 3300 SDM 3303 SDM 3100 SDM 3103	SDM 3301 SDM 3304 SDM 3101 SDM 3104	SDM 3302 SDM 3305 SDM 3102 SDM 3105	UNITS
V_{CBO}	60	80	100	V
V_{CEO}	40	60	80	V
V_{EBO}	10	10	10	V
I_C Cont.	5	5	5	A
I_C Pk.	10	10	10	A
I_B	0.5	0.5	0.5	A
$\theta_{J\text{-}C}$ TO-33	20	20	20	°C/W
P_T @ 100°C TO-33	5	5	5	W
$\theta_{J\text{-}C}$ TO-66-3	5	5	5	°C/W
P_T @ 100°C TO-66-3	20	20	20	W
T_J	−55°C to 200°C			
T_S	−55°C to 200°C			

NPN DARLINGTON SILICON POWER TRANSISTORS

Electrical Characteristics $T_C = 25°C$		SDM 3100 3103 3300 3303	SDM 3101 3104 3301 3304	SDM 3102 3105 3302 3305	
PARAMETER	TEST CONDITIONS	MIN MAX	MIN MAX	MIN MAX	UNITS
V_{CER}	$I_C = 100$ mA, $R_{BE} = 1$ K Ω	40	60	80	V
I_{CER}	$V_{CE} = 40$ V, R = 1 K Ω	5	5	5	μA
I_{CBO}	$V_{CB} = 40$ V	1	1	1	μA
I_{EBO}	$V_{EB} = 10$ V	10	10	10	μA
h_{FE} SDM 3103-5 SDM 3303-5	$I_C = 2.5$ A, $V_{CE} = 5$ V	1000	1000	1000	—
h_{FE} SDM 3100-2 SDM 3300-2	$I_C = 5$ A, $V_{CE} = 5$ V	1000	1000	1000	—
$V_{CE(S)}$ SDM 3103-5 SDM 3303-5	$I_C = 2.5$ A, $I_B = 25$ mA	2.0	2.0	2.0	V
$V_{CE(S)}$ SDM 3100-2 SDM 3300-2	$I_C = 5.0$ A, $I_B = 50$ mA	3.0	3.0	3.0	V
$V_{BE(S)}$ SDM 3103-5 SDM 3303-5	$I_C = 2.5$ A, $I_B = 25$ mA	2.4	2.4	2.4	V
$V_{BE(S)}$ SDM 3100-2 SDM 3300-2	$I_C = 5.0$ A, $I_B = 50$ mA	3.0	3.0	3.0	V

f_T	$I_C = .5$ A, $V_{CE} = 10$ V, f = 10 MH_z	TYP. 70	TYP. 70	TYP. 70	MH_z
C_{obo}	$V_{CB} = 30$ V, f = 1 MH_z	50	50	50	PF
t_{on}	$I_C = 5$ A, $V_{CE} = 30$ V, $I_{B1} = 10$ mA	.6	.6	.6	μs
t_{off}	$I_C = 5$ A, $V_{CE} = 30$ V, $I_{B1} = I_{B2} = 10$ mA	2.5	2.5	2.5	μs

$T_C = 100°C$

I_{CBO}	$V_{CB} = 40$ V	10	10	10	μA
I_{CER}	$V_{CE} = 40$ V, R = 1 K Ω	100	100	100	μA

TYPICAL
STATIC FORWARD CURRENT TRANSFER RATIO
VS
COLLECTOR CURRENT

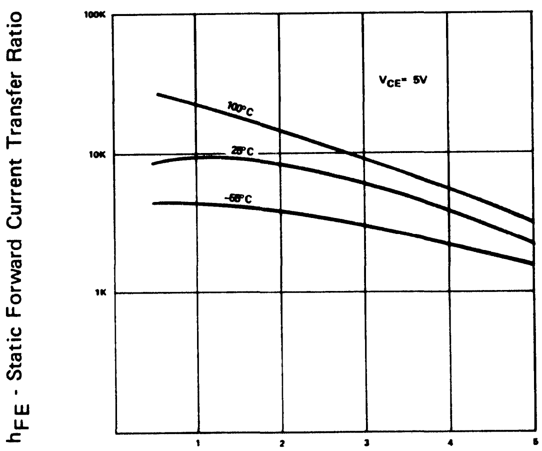


FIGURE 1

TYPICAL
BASE EMITTER VOLTAGE
VS
CASE TEMPERATURE

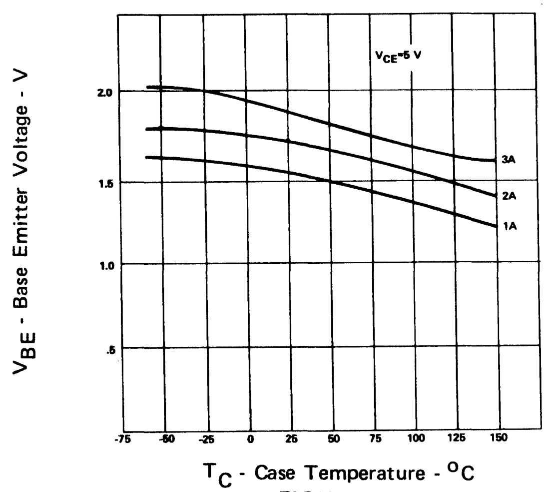


FIGURE 2

TYPICAL
COLLECTOR — EMITTER SATURATION VOLTAGE
VS
CASE TEMPERATURE

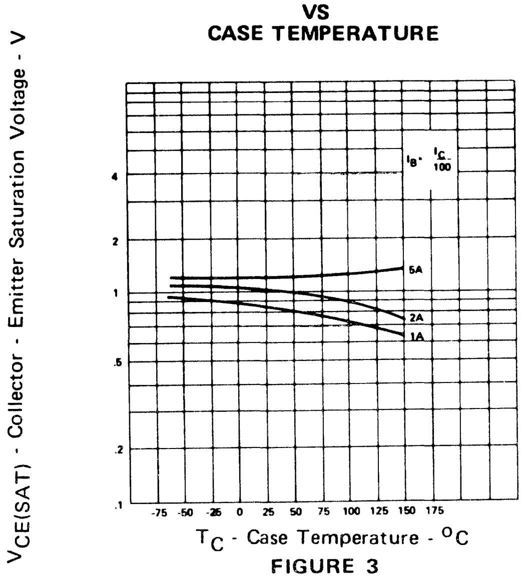


FIGURE 3

TYPICAL
BASE — EMITTER SATURATION VOLTAGE
VS
CASE TEMPERATURE

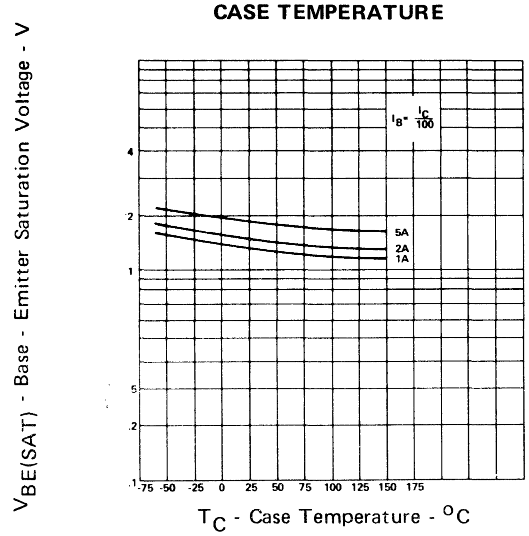


FIGURE 4

MAXIMUM COLLECTOR CURRENT
VS
COLLECTOR EMITTER VOLTAGE

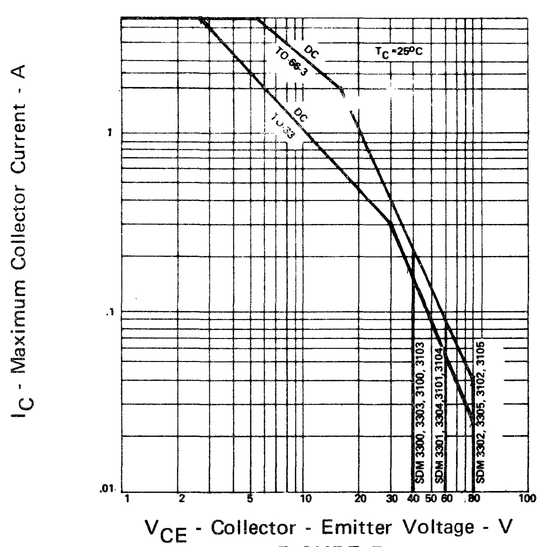


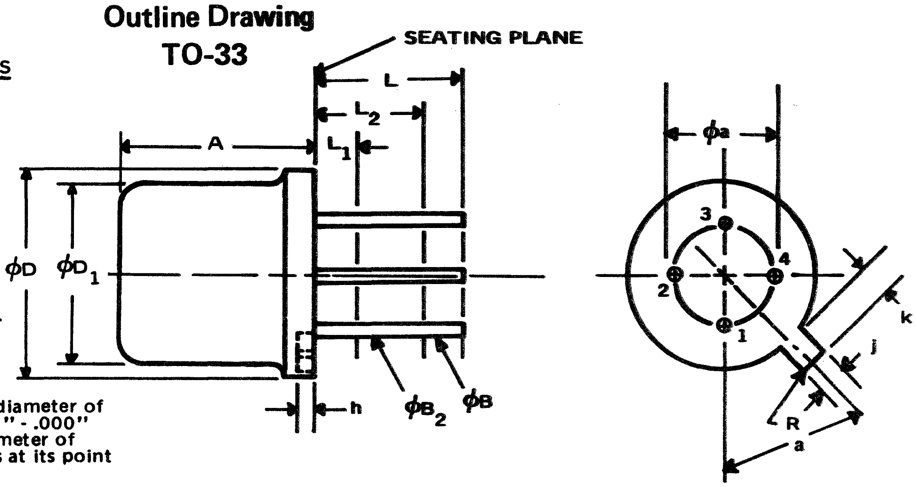
FIGURE 5

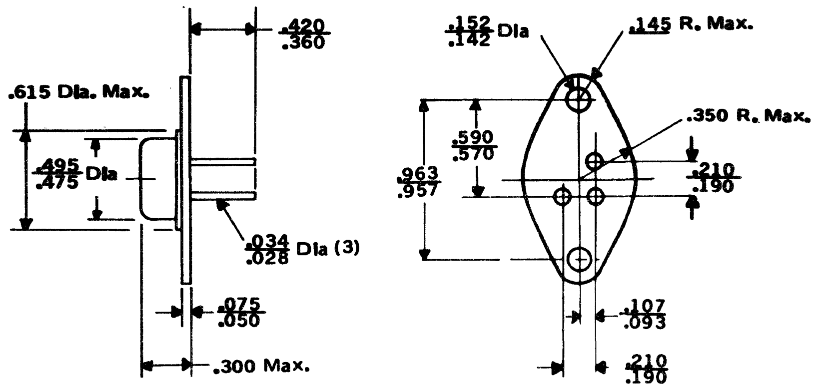
Millimeters Derived From Original Inch Dimensions

SYM.	INCHES MIN.	INCHES MAX.	MILLIMETERS MIN.	MILLIMETERS MAX.	NOTES
A	.240	.260	6.10	6.60	
φa	.200 T.P.		5.08 T.P.		2
φB	.016	.021	.407	.533	1
ϕB_2	.016	.019	.407	.482	1
φD	.340	.370	8.64	9.39	
ϕD_1	.315	.335	8.01	8.50	
h	.009	.070	.23	1.77	
j	.028	.034	.712	.863	
k	.029	.043	.74	1.09	
L	.500	–	12.70	–	1
L_1	–	.050	–	1.27	1
L_2	.250	–	6.35	–	1
R	–	.010	–	2.54	
a	45° T.P.		45° T.P.		

NOTES:
1. (All Leads) Diameter is not controlled in L_1 and beyond L. ϕB_2 applies between L_1 and L_2. φB applies between L_2 and L.
2. The cross section of each lead having a maximum diameter of .019" and measured in a gaging plane .054" + .001" - .000" below the seating plane lies in a circle having a diameter of .033" centered at the true position of the lead axis at its point of exit.

Outline Drawing
TO-33





Outline Drawing
TO-66(3)

SALES OFFICES AND MANUFACTURING FACILITIES

TAPPAN, N.Y.
256 Oak Tree Road
914 / 359-5050
TWX 710 / 576-2654

RIVIERA BEACH, FLA.
1177 Blue Heron Boulevard
305 / 848-4311
TWX 510 / 952-7610

Hi Rel Power Transistors
Si. & Ge. Power Transistors
PNP-NPN Industrial Transistors
Power Hybrids

PORT SALERNO, FLA.
Cove Road
305 / 287-5000
TWX 510 / 953-7500

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

SAN DIEGO, CALIF.
8808 Balboa Avenue
714 / 278-8780
TWX 910 / 335-1221

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits
FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

JUPITER, FLA.
1440 W. Indiantown Road
305 / 746-8311

Microwave Stripline
Microwave Semiconductors
RF Transistors
Microwave Integrated Circuits

EUROPE
Solidev Ltd.
Sevenoaks, Kent, England
Tel. (Sevenoaks) 57541/2/3
Cable-Solitron Svoaks, Telex. No. 95378

Solitron DEVICES, INC.

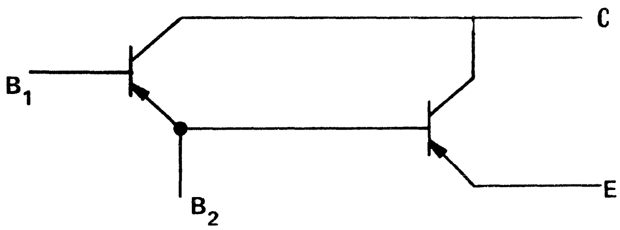
SEMICONDUCTOR GROUP

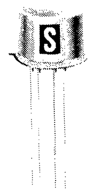
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

TO-33	SDM 3400 SDM 3401 SDM 3402	SDM 3403 SDM 3404 SDM 3405
TO-66(3)	SDM 3200 SDM 3201 SDM 3202	SDM 3203 SDM 3204 SDM 3205

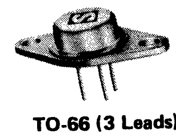
5 AMP

PNP DARLINGTON SILICON POWER TRANSISTORS





TO-33



TO-66 (3 leads)

ABSOLUTE MAXIMUM RATINGS
@ 25°C (unless otherwise noted)

PARAMETER	SDM 3400 SDM 3403 SDM 3200 SDM 3203	SDM 3401 SDM 3404 SDM 3201 SDM 3204	SDM 3402 SDM 3405 SDM 3202 SDM 3205	UNITS
V_{CBO}	60	80	100	— V
V_{CEO}	40	60	80	— V
V_{EBO}	10	10	10	— V
I_C Cont.	5	5	5	A
I_C Pk.	10	10	10	A
I_B	0.5	0.5	0.5	A
θ_{J-C} TO-33	20	20	20	°C/W
P_T @ 100°C TO-33	5	5	5	W
θ_{J-C} TO-66-3	5	5	5	°C/W
P_T @ 100°C TO-66-3	20	20	20	W
T_J	–55°C to 200°C			
T_S	–55°C to 200°C			

PNP DARLINGTON SILICON POWER TRANSISTORS

Electrical Characteristics $T_C = 25°C$		SDM 3200 3203 3400 3403	SDM 3201 3204 3401 3404	SDM 3202 3205 3402 3405	
PARAMETER	TEST CONDITIONS	MIN MAX	MIN MAX	MIN MAX	UNITS
V_{CER}	I_C = 100 mA, R_{BE} = 1 K Ω	40	60	80	–V
I_{CER}	V_{CE} = –40 V, R_{BE} = 1 K Ω	5	5	5	μA
I_{CBO}	V_{CB} = –40 V	1	1	1	μA
I_{EBO}	V_{EB} = –10 V	10	10	10	μA
h_{FE} SDM 3203-5 SDM 3403-5	I_C = 2.5 A, V_{CE} = –5 V	1000	1000	1000	—
h_{FE} SDM 3200-2 SDM 3400-2	I_C = 5 A, V_{CE} = –5 V	1000	1000	1000	—
$V_{CE(S)}$ SDM 3203-5 SDM 3403-5	I_C = 2.5 A, I_B = 25 mA	2.0	2.0	2.0	–V
$V_{CE(S)}$ SDM 3200-2 SDM 3400-2	I_C = 5.0 A, I_B = 50 mA	3.0	3.0	3.0	–V
$V_{BE(S)}$ SDM 3203-5 SDM 3403-5	I_C = 2.5 A, I_B = 25 mA	2.4	2.4	2.4	–V
$V_{BE(S)}$ SDM 3200-2 SDM 3400-2	I_C = 5 A, I_B = 50 mA	3.0	3.0	3.0	–V

f_T	I_C = .5 A, V_{CE} = –10 V, f = 10 MH_Z	TYP. 70	TYP. 70	TYP. 70	MH_Z
C_{obo}	V_{CB} = –30 V, f = 1 MH_Z	50	50	50	PF
t_{on}	I_C = 5 A, V_{CE} = 30 V I_{B1} = 50 mA	.6	.6	.6	μs
t_{off}	I_C = 5 A, V_{CE} = 30 V I_{B1} = I_{B2} = 50 mA	1.5	1.5	1.5	μs

T_C = 100°C

I_{CBO}	V_{CB} = –40 V	10	10	10	μA
I_{CER}	V_{CE} = –40 V, R = 1 K	100	100	100	μA

TYPICAL
STATIC FORWARD CURRENT TRANSFER RATIO
VS
COLLECTOR CURRENT

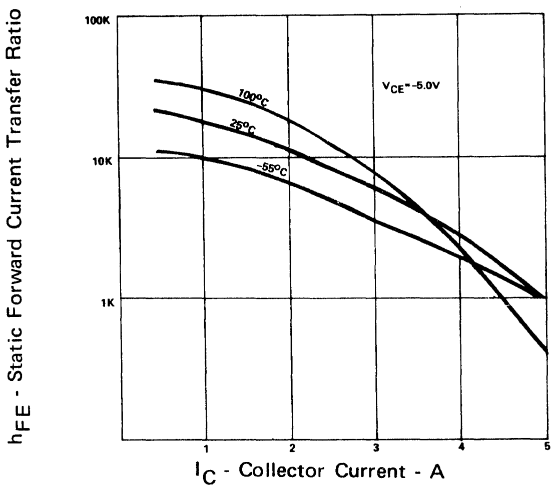


FIGURE 1

TYPICAL
BASE EMITTER VOLTAGE
VS
CASE TEMPERATURE

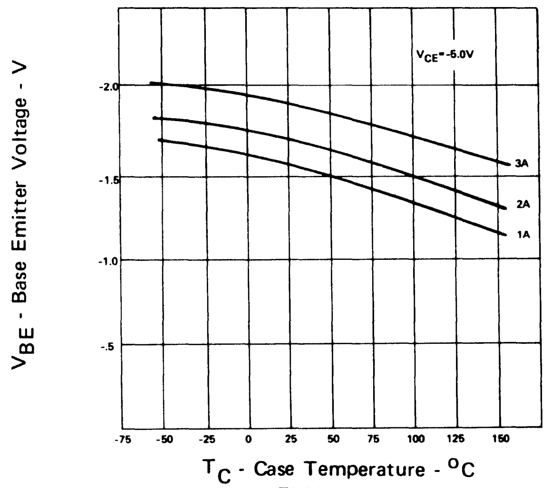


FIGURE 2

TYPICAL
COLLECTOR – EMITTER SATURATION VOLTAGE
VS
CASE TEMPERATURE

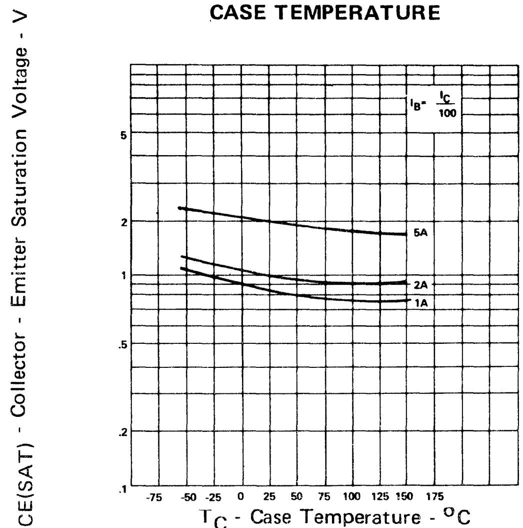


FIGURE 3

TYPICAL
BASE – EMITTER SATURATION VOLTAGE
VS
CASE TEMPERATURE

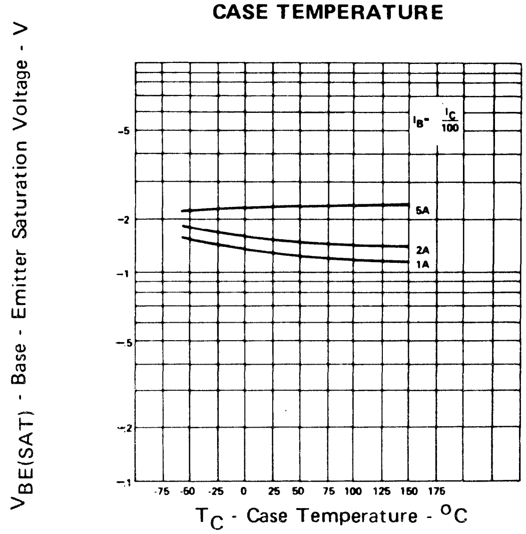


FIGURE 4

MAXIMUM COLLECTOR CURRENT
VS
COLLECTOR EMITTER VOLTAGE

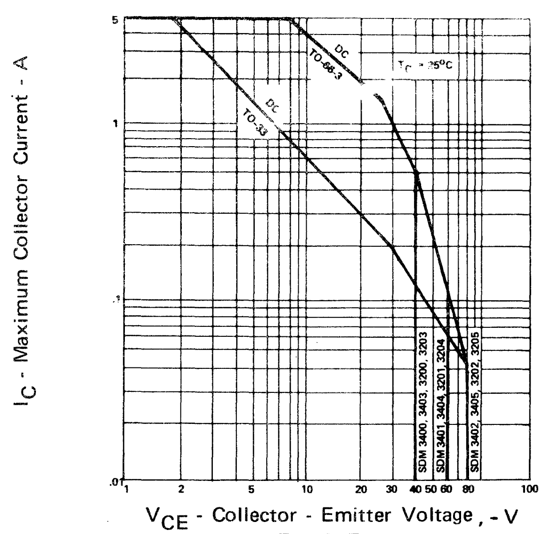


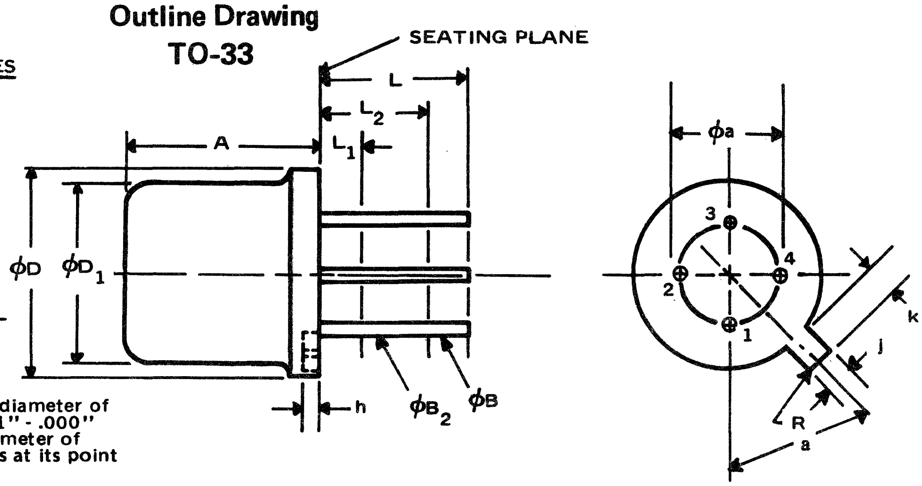
FIGURE 5

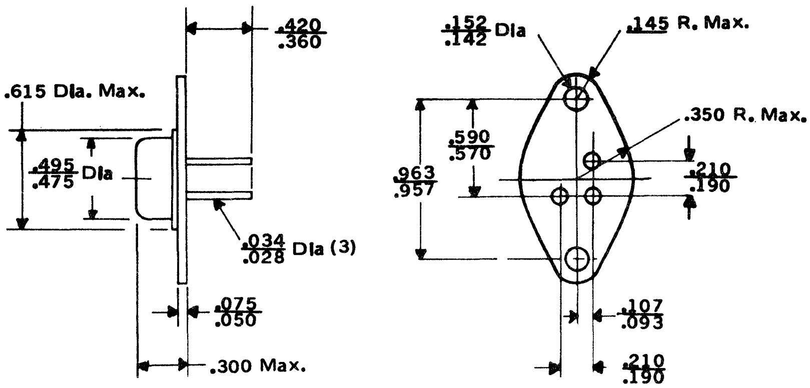
Millimeters Derived From Original Inch Dimensions

SYM.	INCHES MIN.	INCHES MAX.	MILLIMETERS MIN.	MILLIMETERS MAX.	NOTES
A	.240	.260	6.10	6.60	
φa	.200 T.P.		5.08 T.P.		2
φB	.016	.021	.407	.533	1
$φB_2$	.016	.019	.407	.482	1
φD	.340	.370	8.64	9.39	
$φD_1$	.315	.335	8.01	8.50	
h	.009	.070	.23	1.77	
j	.028	.034	.712	.863	
k	.029	.043	.74	1.09	
L	.500	--	12.70	--	1
L_1	--	.050	--	1.27	1
L_2	.250	--	6.35	--	1
R	--	.010	--	2.54	
a	45° T.P.		45° T.P.		

NOTES:
1. (All Leads) Diameter is not controlled in L_1 and beyond L. $φB_2$ applies between L_1 and L_2. φB applies between L_2 and L.
2. The cross section of each lead having a maximum diameter of .019" and measured in a gaging plane .054" + .001" - .000" below the seating plane lies in a circle having a diameter of .033" centered at the true position of the lead axis at its point of exit.

Outline Drawing TO-33





Outline Drawing TO-66(3)

SALES OFFICES AND MANUFACTURING FACILITIES

TAPPAN, N.Y.
256 Oak Tree Road
914 / 359-5050
TWX 710 / 576-2654

RIVIERA BEACH, FLA.
1177 Blue Heron Boulevard
305 / 848-4311
TWX 510 / 952-7610

Hi Rel Power Transistors
Si. & Ge. Power Transistors
PNP-NPN Industrial Transistors
Power Hybrids

PORT SALERNO, FLA.
Cove Road
305 / 287-5000
TWX 510 / 953-7500

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies

SAN DIEGO, CALIF.
8808 Balboa Avenue
714 / 278-8780
TWX 910 / 335-1221

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits
FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Monolithic IC's

JUPITER, FLA.
1440 W. Indiantown Road
305 / 746-8311

Microwave Stripline
Microwave Semiconductors
RF Transistors
Microwave Integrated Circuits

EUROPE
Solidev Ltd.
Sevenoaks, Kent, England
Tel. (Sevenoaks) 57541/2/3
Cable-Solitron Svoaks, Telex. No. 95378

Solitron Devices, Inc.

S P E C I F I C A T I O N S

NO.: SDM 6000
TYPE: NPN Silicon H. V. Darlington
CASE: TO-3

MAXIMUM RATINGS

Voltage, Collector to Base (V_{CBO})	400	V
Voltage, Collector to Emitter ($V_{CE\,r}$)	400	V
Voltage, Emitter to Base (V_{EBO})	8.0	V
Collector Current (I_c)	15	A
Base Current (I_B)	2.0	A
Maximum Thermal Resistance, Junction to Case	1.25	$^oC/W$
Maximum Junction Temperature	-55^oC to $+200$	^oC
Power of Transistor (P_T) $T_C = 100°C$	80	WATTS
Power of Transistor (P_T) TA = 25^oC (θ-JA = $35^oC/W$)	5.0	WATTS

PERFORMANCE CHARACTERISTICS					
NO.	SYMBOL	CONDITIONS	MIN.	MAX.	UNITS
1	I-CER 1	V-CE = 400V R-BE = 1.0K Ω		100	μA
2	I-CER 2	V-CE = 400V R-BE = 1.0K Ω T-C = $+125^oC$		5.0	mA
3	I-CEO	V-CE = 275V		1.0	mA
4	V-CEO (Sus)	I-C = 1.0A L = 1.0MH Figure #2	300		V
5	I-EBO	V-EB = 5.0V		100	μA
6	h-FE 1	I-C = 1.0A V-CE = 5.0V	200		
7	h-FE 2	I-C = 5.0A V-CE = 5.0V	300	3000	
8	h-FE 3	I-C = 10A V-CE = 5.0V	100		
9	V-CE(Sat) 1	I-C = 3.0A I-B = 30 mA		1.0	V
10	V-CE(Sat) 2	I-C = 5.0A I-B = 100 mA		1.1	V
11	V-CE(Sat) 3	I-C = 10A I-B = 500 mA		1.4	V
12	V-BE(Sat)	I-C = 10A I-B = 1.0A		2.2	V
13	V-CE(Sat) 4	I-C = 15A I-B = 1.5A		1.8	V
14	t-r	V-CC = 150V		0.4	μsec
15	t-s	I-C = 10A		3.0	μsec
16	t-f	$I\text{-}B_1 = I\text{-}B_2 = 1.0A$ Figure #1		1.0	μsec
17		ADDITIONAL CAPABILITY			
18	$I\text{-}S/B_1$	V-CE = 14V t = 1.0 sec.	10		A(Typ)
19	$I\text{-}S/B_2$	V-CE = 40V t = 1.0 sec.	3.5		A(Typ)
20	$I\text{-}S/B_3$	V-CE = 300V t = 1.0 sec.	40		mA(Typ)

NOTES:

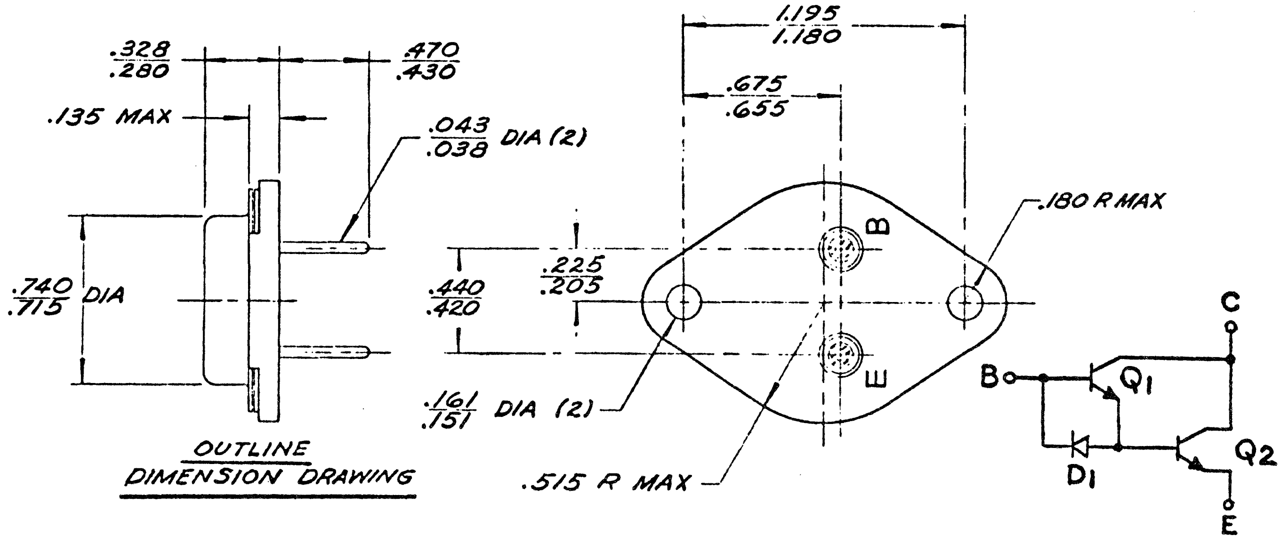
MARK:- -S-
SDM 6000
DATE CODE

General Purpose
2-10-76

SOLITRON DEVICES PRODUCT SPECIFICATION

CUSTOMER	General Purpose	**TYPE NO.**	SDM 6000

ADDITIONAL REQUIREMENTS



OUTLINE DIMENSION DRAWING

SCHEMATIC

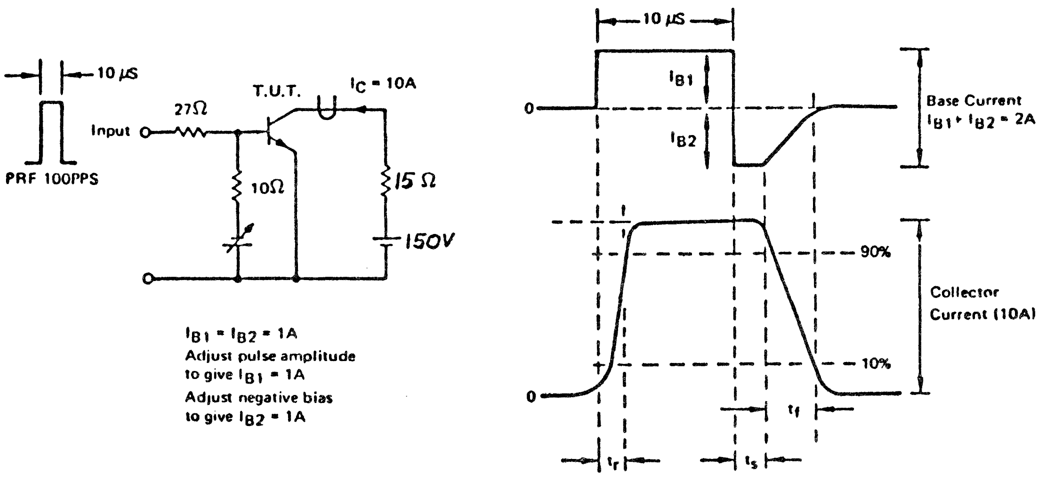


Figure 1. Switching Time Test Circuit

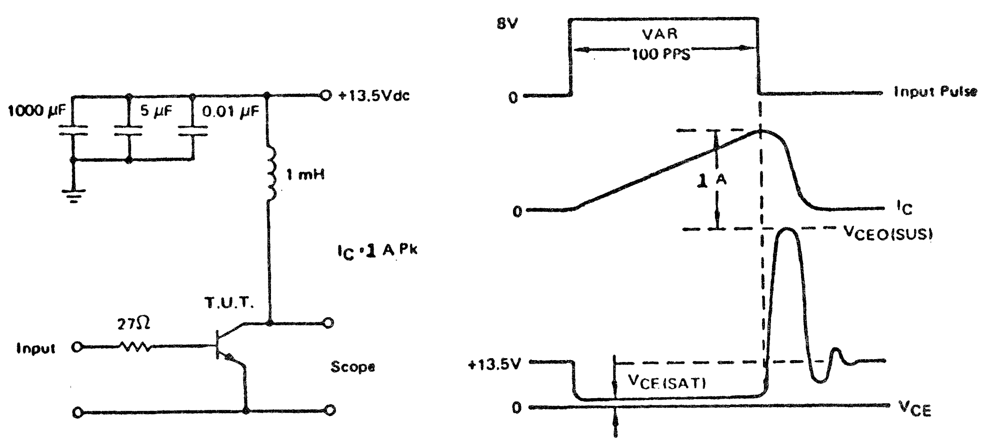


Figure 2. Sustaining Test Circuit

	# EXCEPTION:		
SOLITRON REVISION	APPROVED	2-10-76	PAGE 2 OF 2 PAGES

Solitron Devices, Inc.

SPECIFICATIONS

NO.: SDM 6001
TYPE: NPN Silicon H. V. Darlington
CASE: TO-3

MAXIMUM RATINGS

Voltage, Collector to Base (V_{CBO})	450	V
Voltage, Collector to Emitter ($V_{CE\,r}$)	450	V
Voltage, Emitter to Base (V_{EBO})	8.0	V
Collector Current (I_C)	15	A
Base Current (I_B)	2.0	A
Maximum Thermal Resistance, Junction to Case	1.25	$^oC/W$
Maximum Junction Temperature	-55^oC to $+200$	^oC
Power of Transistor (P_T) $T_C = 100°C$	80	WATTS
Power of Transistor (PT) TA = 25^oC (θ-JA = $35^oC/W$)	5.0	WATTS

PERFORMANCE CHARACTERISTICS					
NO.	SYMBOL	CONDITIONS	MIN.	MAX.	UNITS
1	I-CER 1	V-CE = 450V R-BE = 1.0K Ω		100	µA
2	I-CER 2	V-CE = 450V R-BE = 1.0 KΩ T-C = +125^{0}C		5.0	mA
3	I-CEO	V-CE = 325V		1.0	mA
4	V-CEO (Sus)	I-C = 1.0A L = 1.0 MH Figure #2	350		V
5	I-EBO	V-EB = 5.0V		100	µA
6	h-FE 1	I-C = 1.0A V-CE = 5.0V	200		
7	h-FE 2	I-C = 5.0A V-CE = 5.0V	300	3000	
8	h-FE 3	I-C = 10A V-CE = 5.0V	100		
9	V-CE(Sat) 1	I-C = 3.0A I-B = 30 mA		1.0	V
10	V-CE(Sat) 2	I-C = 5.0A I-B = 100 mA		1.1	V
11	V-CE(Sat) 3	I-C = 10A I-B = 500 mA		1.4	V
12	V-BE(Sat)	I-C = 10A I-B = 1.0A		2.2	V
13	V-CE(Sat) 4	I-C = 15A I-B = 1.5A		1.8	V
14	t-r	V-CC = 150V		0.4	µsec
15	t-s	I-C = 10A		3.0	µsec
16	t-f	$I\text{-}B_1 = I\text{-}B_2$ = 1.0A Figure #1		1.0	µsec
17		ADDITIONAL CAPABILITY			
18	$I\text{-}S/B_1$	V-CE = 14V t = 1.0 sec.	10		A(Typ)
19	$I\text{-}S/B_2$	V-CE = 40V t = 1.0 sec.	3.5		A(Typ)
20	$I\text{-}S/B_3$	V-CE = 350V t = 1.0 sec.	35		mA(Typ)

NOTES:

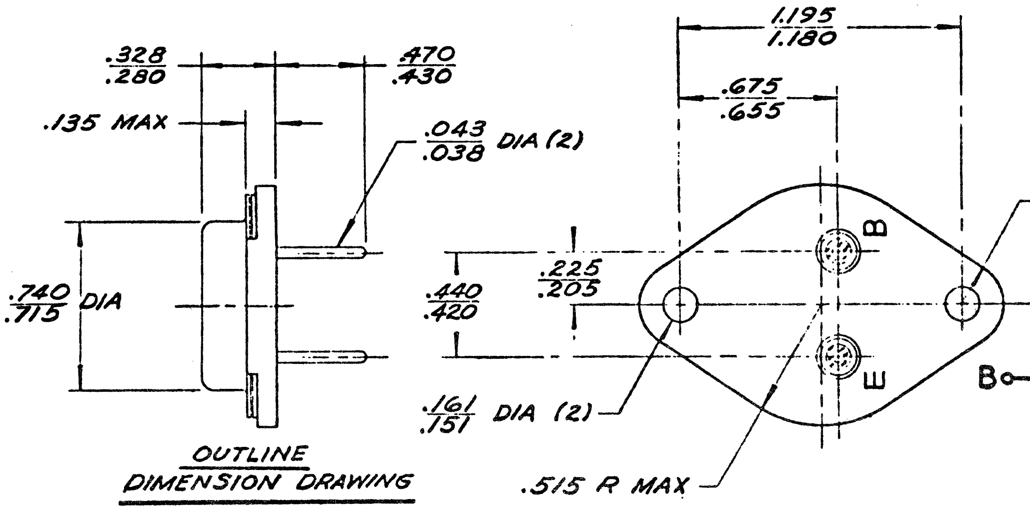
MARK:- -S-
SDM 6001
DATE CODE

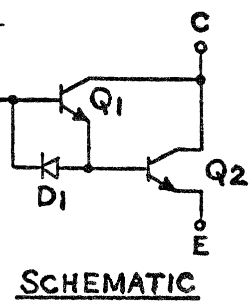
General Purpose
2-10-76

SOLITRON DEVICES PRODUCT SPECIFICATION

CUSTOMER · General Purpose	TYPE NO. SDM 6001

ADDITIONAL REQUIREMENTS





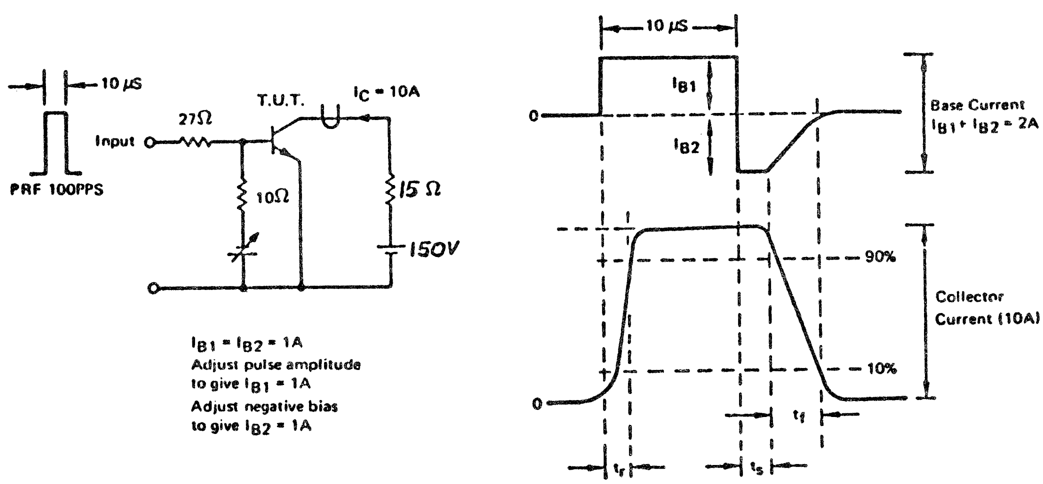


Figure 1. Switching Time Test Circuit

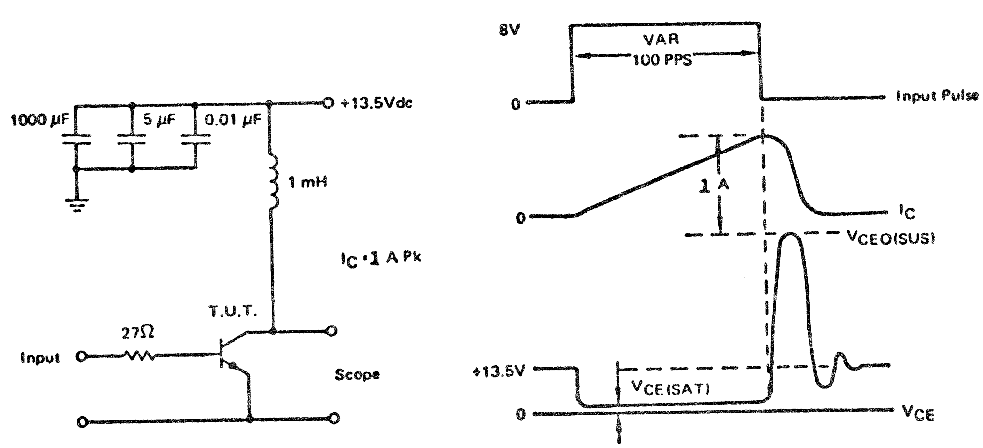


Figure 2. Sustaining Test Circuit

	# EXCEPTION:

SOLITRON REVISION						APPROVED	2-10-76	PAGE 2 OF 2 PAGES

Solitron Devices, Inc.

SPECIFICATIONS

NO.: SDM 6002
TYPE: NPN Silicon H. V. Darlington
CASE: TO-3

MAXIMUM RATINGS

Voltage, Collector to Base (V_{CBO})	500	V
Voltage, Collector to Emitter ($V_{CE\,r}$)	500	V
Voltage, Emitter to Base (V_{EBO})	8.0	V
Collector Current (I_C)	15	A
Base Current (I_B)	2.0	A
Maximum Thermal Resistance, Junction to Case	1.25	$^oC/W$
Maximum Junction Temperature	-55^oC to $+200$	^oC
Power of Transistor (P_T) $T_C = 100°C$	80	WATTS
Power of Transistor (P_T) TA - 25^oC (θ-JA = 35^oC/W)	5.0	WATTS

PERFORMANCE CHARACTERISTICS					
NO.	SYMBOL	CONDITIONS	MIN.	MAX.	UNITS
1	I-CER 1	V-CE = 500V R-BE = 1.0K Ω		100	μA
2	I-CER 2	V-CE = 500V R-BE = 1.0K Ω T-C = $+125^oC$		5.0	mA
3	I-CEO	V-CE = 375V		1.0	mA
4	V-CEO (Sus)	I-C = 1.0A L = 1.0 MH Figure #2	400		V
5	I-EBO	V-EB = 5.0V		100	μA
6	h-FE 1	I-C = 1.0A V-CE = 5.0V	200		
7	h-FE 2	I-C = 5.0A V-CE = 5.0V	300	3000	
8	h-FE 3	I-C = 10A V-CE = 5.0V	100		
9	V-CE(Sat) 1	I-C = 3.0A I-B = 30 mA		1.0	V
10	V-CE(Sat) 2	I-C = 5.0A I-B = 100 mA		1.1	V
11	V-CE(Sat) 3	I-C = 10A I-B = 500 mA		1.4	V
12	V-BE(Sat)	I-C = 10A I-B = 1.0A		2.2	V
13	V-CE(Sat) 4	I-C = 15A I-B = 1.5A		1.8	V
14	t-r	V-CC = 150V		0.4	μsec
15	t-s	I-C = 10A		3.0	μsec
16	t-f	$I\text{-}B_1 = I\text{-}B_2$ = 1.0A Figure #1		1.0	μsec
17		ADDITIONAL CAPABILITY			
18	$I\text{-}S/B_1$	V-CE = 14V t = 1.0 sec.	10		A(Typ)
19	$I\text{-}S/B_2$	V-CE = 40V t = 1.0 sec.	3.5		A(Typ)
20	$I\text{-}S/B_3$	V-CE = 400V t = 1.0 sec.	30		mA(Typ)

NOTES:

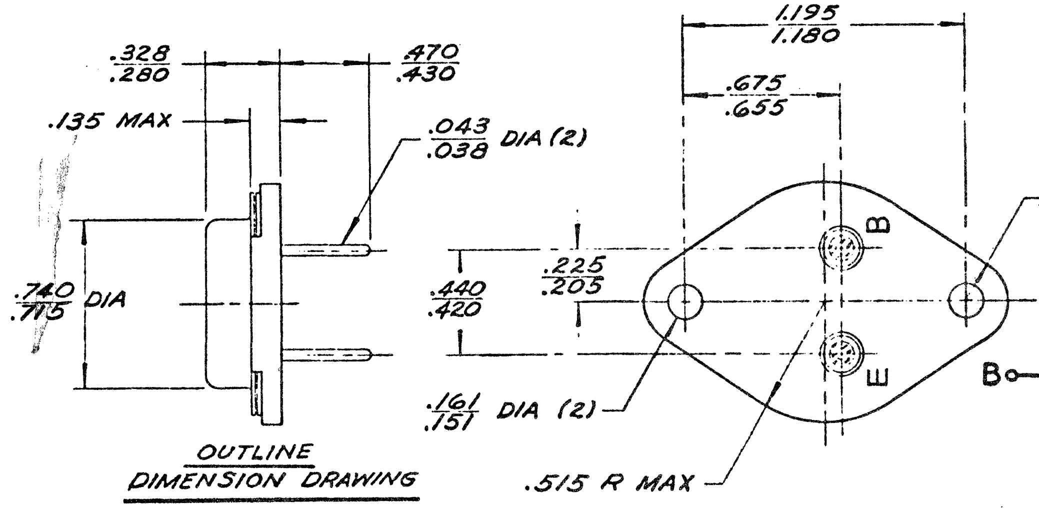
MARK:- -S-
SDM 6002
DATE CODE

General Purpose
2-10-76

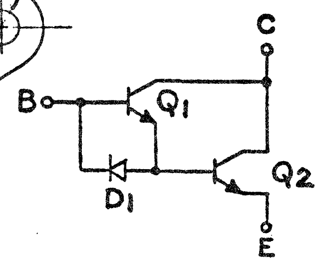
SOLITRON DEVICES PRODUCT SPECIFICATION

CUSTOMER	General Purpose	TYPE NO.	SDM 6002

ADDITIONAL REQUIREMENTS



OUTLINE DIMENSION DRAWING



SCHEMATIC

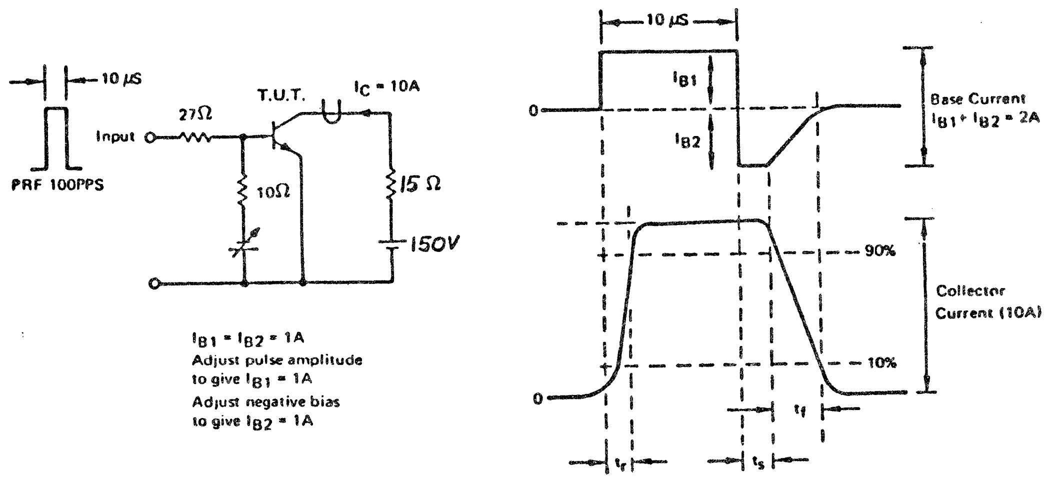


Figure 1. Switching Time Test Circuit

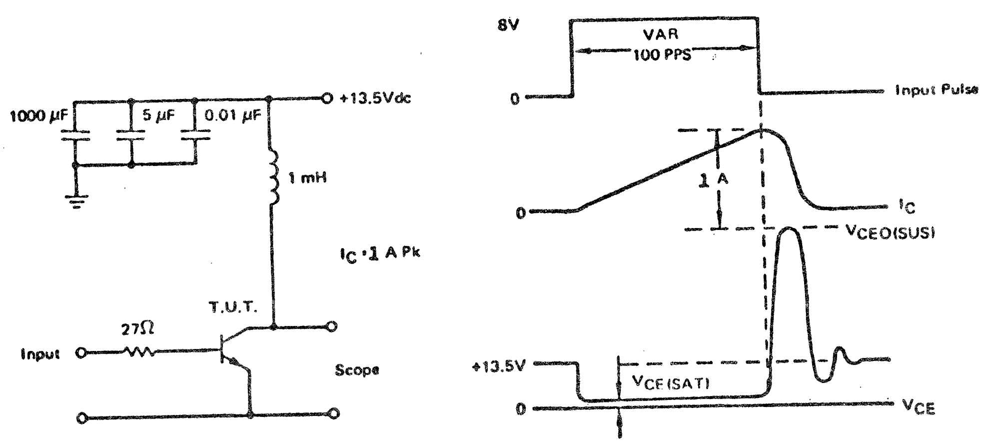


Figure 2. Sustaining Test Circuit

	# EXCEPTION:

SOLITRON REVISION						APPROVED	2-10-76	PAGE 2 OF 2 PAGES

Solitron Devices, Inc.
S P E C I F I C A T I O N S

NO.: SDM 6003
TYPE: NPN Silicon H. V. Darlingto[n]
CASE: TO-3

MAXIMUM RATINGS

Voltage, Collector to Base (V_{CBO})	550	V
Voltage, Collector to Emitter (V_{CEr})	550	V
Voltage, Emitter to Base (V_{EBO})	8.0	V
Collector Current (I_C)	15	A
Base Current (I_B)	2.0	A
Maximum Thermal Resistance, Junction to Case	1.25	$^oC/W$
Maximum Junction Temperature	-55^oC to $+200^oC$	
Power of Transistor (P_T) $T_C = 100°C$	80	WATTS
Power of Transistor (P_T) TA = 25^oC (θ-JA = $35^oC/W$)	5.0	WATTS

TA = 25°C — PERFORMANCE CHARACTERISTICS

NO.	SYMBOL	CONDITIONS	MIN.	MAX.	UNITS
1	I-CER 1	V-CE = 550V R-BE = 1.0K Ω		100	μA
2	I-CER 2	V-CE = 550V R-BE = 1.0K Ω T-C = +125°C		5.0	mA
3	I-CEO	V-CE = 425V		1.0	mA
4	V-CEO (Sus)	I-C = 1.0A L = 1.0 MH Figure #2	450		V
5	I-EBO	V-EB = 5.0V		100	μA
6	h-FE 1	I-C = 1.0A V-CE = 5.0V	200		
7	h-FE 2	I-C = 5.0A V-CE = 5.0V	300	3000	
8	h-FE 3	I-C = 10A V-CE = 5.0V	100		
9	V-CE(Sat) 1	I-C = 3.0A I-B = 30 mA		1.0	V
10	V-CE(Sat) 2	I-C = 5.0A I-B = 100 mA		1.1	V
11	V-CE(Sat) 3	I-C = 10A I-B = 500 mA		1.4	V
12	V-BE(Sat)	I-C = 10A I-B = 1.0A		2.2	V
13	V-CE(Sat) 4	I-C = 15A I-B = 1.5A		1.8	V
14	t-r	V-CC = 150V		0.4	μsec
15	t-s	I-C = 10A		3.0	μsec
16	t-f	$I\text{-}B_1$ = $I\text{-}B_2$ = 1.0A Figure #1		1.0	μsec
17		ADDITIONAL CAPABILITY			
18	$I\text{-}S/B_1$	V-CE = 14V t = 1.0 sec.	10		A(Typ)
19	$I\text{-}S/B_2$	V-CE = 40V t = 1.0 sec.	3.5		A(Typ)
20	$I\text{-}S/B_3$	V-CE = 450V t = 1.0 sec.	25		mA(Typ)

NOTES:

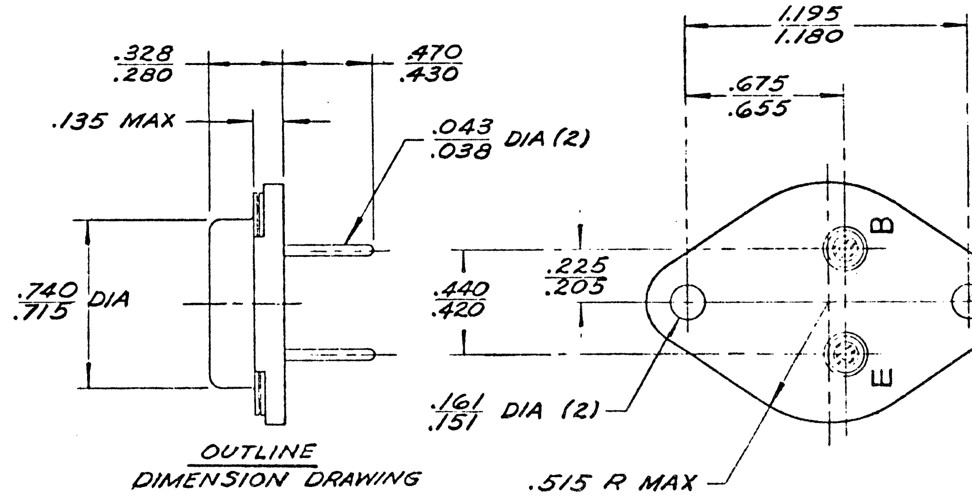
MARK:- -S-
SDM 6003
DATE CODE

General Purpose
2-10-76

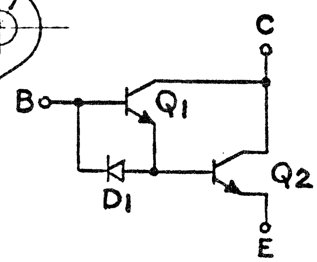
SOLITRON DEVICES PRODUCT SPECIFICATION

CUSTOMER	General Purpose	TYPE NO.	SDM 6003

ADDITIONAL REQUIREMENTS



OUTLINE DIMENSION DRAWING



SCHEMATIC

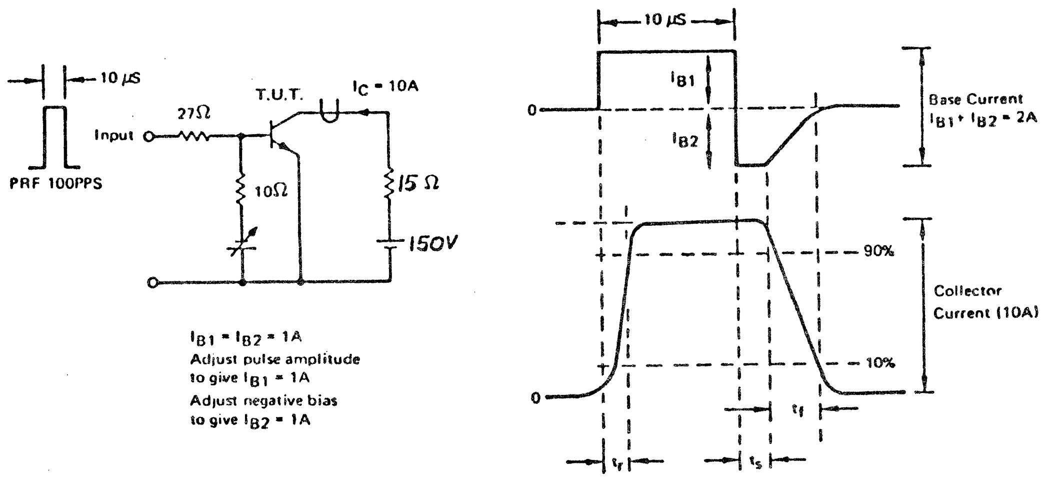


Figure 1. Switching Time Test Circuit

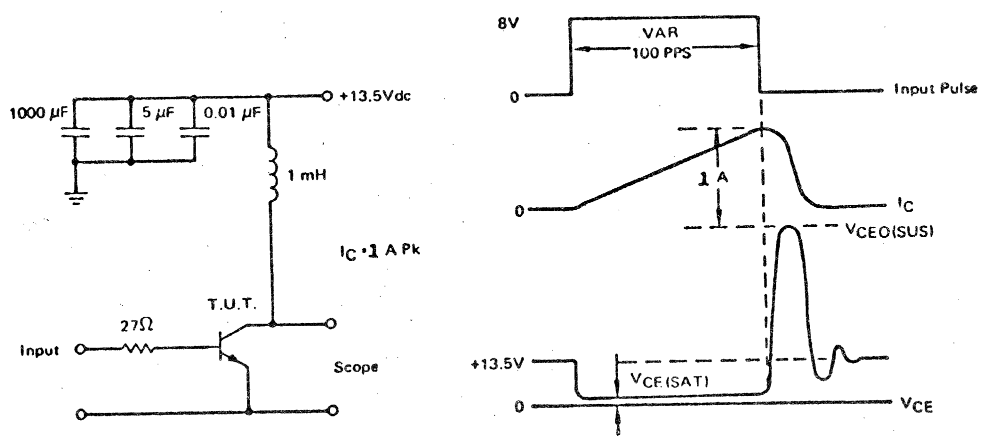


Figure 2. Sustaining Test Circuit

	# EXCEPTION:

SOLITRON REVISION						APPROVED	2-10-76	PAGE 2 OF 2 PAGES

Solitron Devices, Inc.

SPECIFICATIONS

NO.: SDM 6004
TYPE: NPN Silicon H. V. Darlington
CASE: TO-3

MAXIMUM RATINGS

Voltage, Collector to Base (V_{CBO})	600	V
Voltage, Collector to Emitter (V_{CEr})	600	V
Voltage, Emitter to Base (V_{EBO})	8.0	V
Collector Current (I_c)	15	A
Base Current (I_B)	2.0	A
Maximum Thermal Resistance, Junction to Case	1.25	$^oC/W$
Maximum Junction Temperature	-55^oC to $+200^oC$	
Power of Transistor (P_T) $T_C = 100°C$	80	WATTS
Power of Transistor (P_T) TA = 25^oC (θ-JA = $35^oC/W$)	5.0	WATTS

PERFORMANCE CHARACTERISTICS

NO.	SYMBOL	CONDITIONS	MIN.	MAX.	UNITS
1	I-CER 1	V-CE = 600V R-BE = 1.0K Ω		100	μA
2	I-CER 2	V-CE = 600V R-BE = 1.0K Ω T-C = $+125^oC$		5.0	mA
3	I-CEO	V-CE = 475V		1.0	mA
4	V-CEO (Sus)	I-C = 1.0A L = 1.0 MH Figure #2	500		V
5	I-EBO	V-EB = 5.0V		100	μA
6	h-FE 1	I-C = 1.0A V-CE = 5.0V	200		
7	h-FE 2	I-C = 5.0A V-CE = 5.0V	300	3000	
8	h-FE 3	I-C = 10A V-CE = 5.0V	100		
9	V-CE(Sat) 1	I-C = 3.0A I-B = 30 mA		1.0	V
10	V-CE(Sat) 2	I-C = 5.0A I-B = 100 mA		1.1	V
11	V-CE(Sat) 3	I-C = 10A I-B = 500 mA		1.4	V
12	V-BE(Sat)	I-C = 10A I-B = 1.0A		2.2	V
13	V-CE(Sat) 4	I-C = 15A I-B = 1.5A		1.8	V
14	t-r	V-CC = 150V		0.4	μsec
15	t-s	I-C = 10A		3.0	μsec
16	t-f	$I\text{-}B_1 = I\text{-}B_2 = 1.0A$ Figure #1		1.0	μsec
17		ADDITIONAL CAPABILITY			
18	$I\text{-}S/B_1$	V-CE = 14V t = 1.0 sec.	10		A(Typ)
19	$I\text{-}S/B_2$	V-CE = 40V t = 1.0 sec.	3.5		A(Typ)
20	$I\text{-}S/B_3$	V-CE = 500V t = 1.0 sec.	20		mA(Typ)

NOTES:

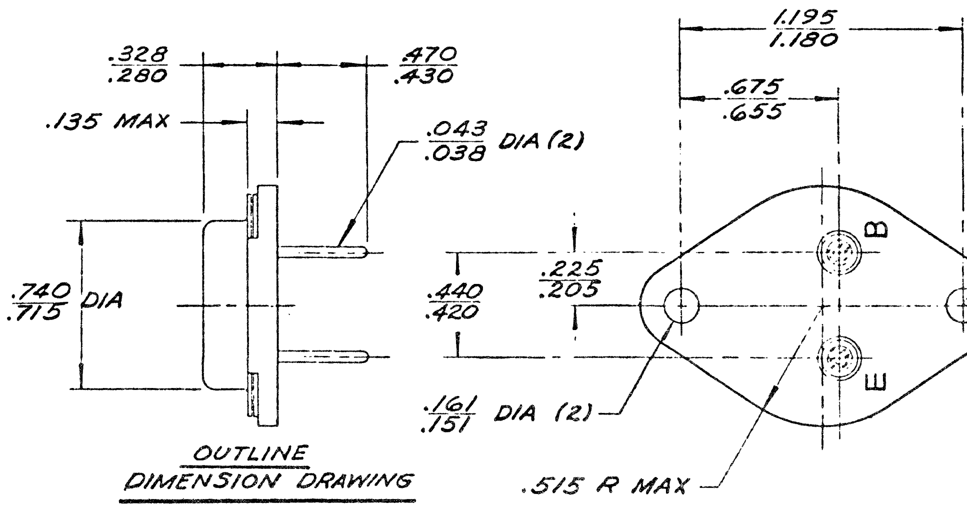
MARK:- -S-
SDM 6004
DATE CODE

General Purpose
2-10-76

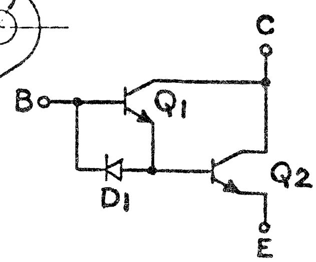
SOLITRON DEVICES PRODUCT SPECIFICATION

CUSTOMER	General Purpose	TYPE NO.	SDM 6004

ADDITIONAL REQUIREMENTS



OUTLINE DIMENSION DRAWING



SCHEMATIC

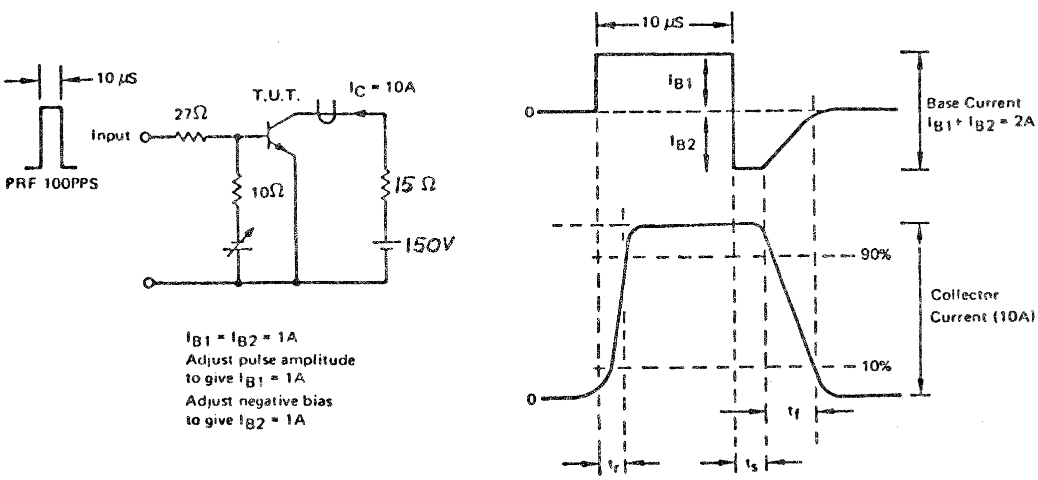


Figure 1. Switching Time Test Circuit

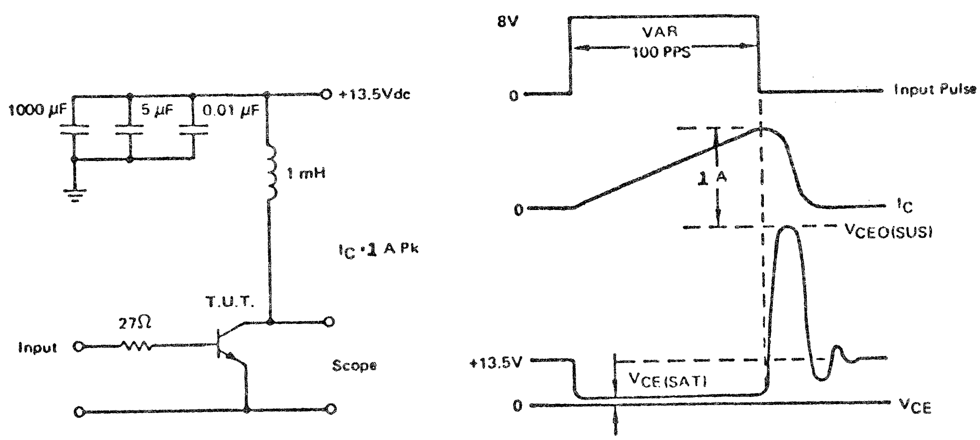
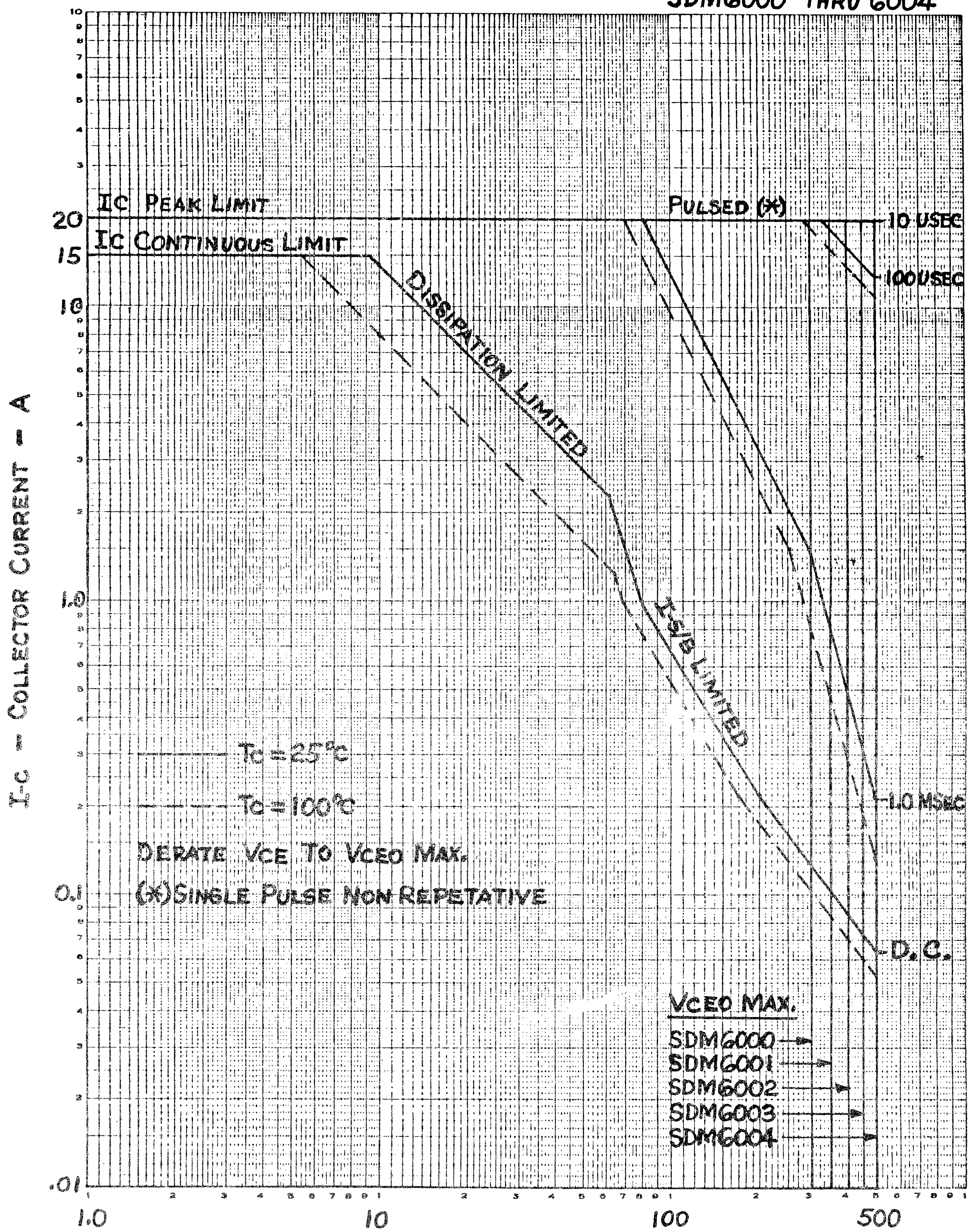


Figure 2. Sustaining Test Circuit

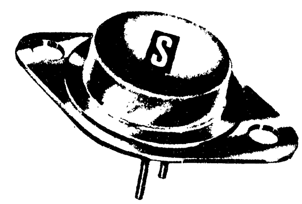
	# EXCEPTION:			
SOLITRON REVISION		APPROVED	2-10-76	PAGE 2 OF 2 PAGES


IC PEAK LIMIT
IC CONTINUOUS LIMIT
PULSED (X)
10 USEC
100 USEC
DISSIPATION LIMITED
I-S/B LIMITED
1.0 MSEC
D.C.
Tc = 25°C
Tc = 100°C
DERATE VCE TO VCEO MAX.
(X) SINGLE PULSE NON REPETATIVE
VCEO MAX.
SDM6000
SDM6001
SDM6002
SDM6003
SDM6004
IC - COLLECTOR CURRENT - A
20
15
10
1.0
0.1
.01
1.0
10
100
500

SDM 20301
SDM 20302
SDM 20303
SDM 20304

FAST SWITCHING 5 AMP
NPN DARLINGTON POWER TRANSISTORS

POWER SWITCHING
HAMMER DRIVERS
AUDIO AMPLIFIERS
SERIES AND SHUNT REGULATORS



TO-3

ABSOLUTE MAXIMUM RATINGS @ 25°C (unless otherwise noted)

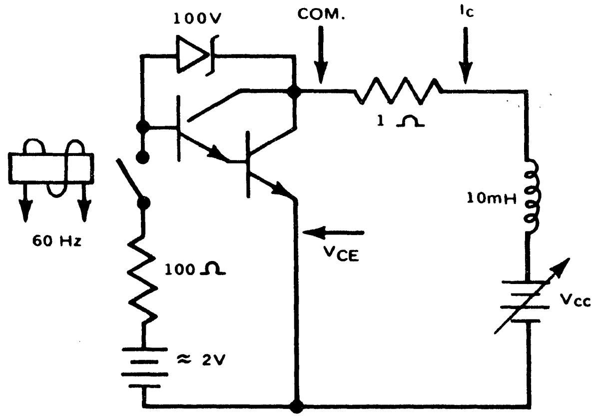
PARAMETER	SDM 20301	SDM 20302	SDM 20303	SDM 20304	UNITS
V_{CER}	60	80	100	120	Volts
V_{CEX}	60	80	100	120	Volts
V_{CEO}(sus)	40	60	80	100	Volts
V_{EBO}	5	5	5	5	Volts
I_C (pk)	15	15	15	15	Amps
I_C (cont.)	5	5	5	5	Amps
I_B	2	2	2	2	Amps
$\Theta_{J\text{-}C}$	1.75	1.75	1.75	1.75	°C/W
T_J	-65°C to 200°C				
T_S	-65°C to 200°C				
P_T	100	100	100		Watts

ELECTRICAL CHARACTERISTICS — $T_c = 25^oC$ unless otherwise noted

PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	DEVICE TYPE
V_{CER}	60		V	$I_c = 50$ mA R = 100 Ω	SDM 20301
	80		V	$I_c = 50$ mA R = 100 Ω	SDM 20302
	100		V	$I_c = 50$ mA R = 100 Ω	SDM 20303
	120		V	$I_c = 50$ mA R = 100 Ω	SDM 20304
V_{CEX}	60		V	$I_c = 50$ mA $V_{EB} = 1.5$ V	SDM 20301
	80		V	$I_c = 50$ mA $V_{EB} = 1.5$ V	SDM 20302
	100		V	$I_c = 50$ mA $V_{EB} = 1.5$ V	SDM 20303
	120		V	$I_c = 50$ mA $V_{EB} = 1.5$ V	SDM 20304
V_{CEO}*	40		V	$I_c = 100$ mA	SDM 20301
	60		V	$I_c = 100$ mA	SDM 20302
	80		V	$I_c = 100$ mA	SDM 20303
*See Fig. 1	100		V	$I_c = 100$ mA	SDM 20304
V_{EBO}	5		V	$I_E = 10$ mA	ALL
V_{BE}		1.6	V	$I_c = 1.0$ A $V_{CE} = 5$ V	ALL
I_{CER}		0.5	mA	V_{CER} = RATED R = 100 Ω	ALL
I_{CEX}		0.5	mA	V_{CEX} = RATED $V_{EB} = 1.5$ V	ALL
$V_{CE}(sat)$		1.7	V	$I_c = 5.0$ A $I_B = 50$ mA	ALL
$V_{CB}(sat)$		2.5	V	$I_c = 5.0$ A $I_B = 50$ mA	ALL
h_{FE}	1000			$I_c = 5.0$ A $V_{CE} = 5$ V	ALL

TYPICAL

f_T	20	MHz	I_c=1.0A V_{CE}=10V f=10MHz	ALL
C_{obo}	150	pF	$V_{CB} = 10$ V f = 1 MHz	ALL
t_d	0.175	µs	I_c=2.5A V_{CE}=20V I_{B1} = 5 mA	ALL
t_r	1.00	µs	I_c=2.5A V_{CE}=20V I_{B1} = 5 mA	ALL
t_s	1.10	µs	I_c=2.5A V_{CE}=20V I_{B1}=I_{B2}=5mA	ALL
t_f	0.80	µs	I_c=2.5A V_{CE}=20V I_{B1}=I_{B2}=5mA	ALL



TYPICAL V_{CEO} (sus) OSCILLOSCOPE DISPLAY

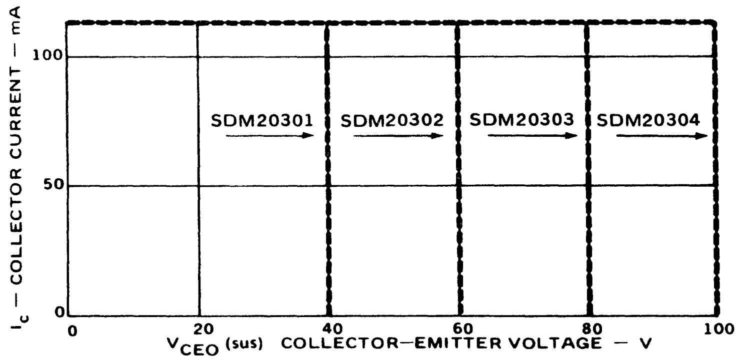
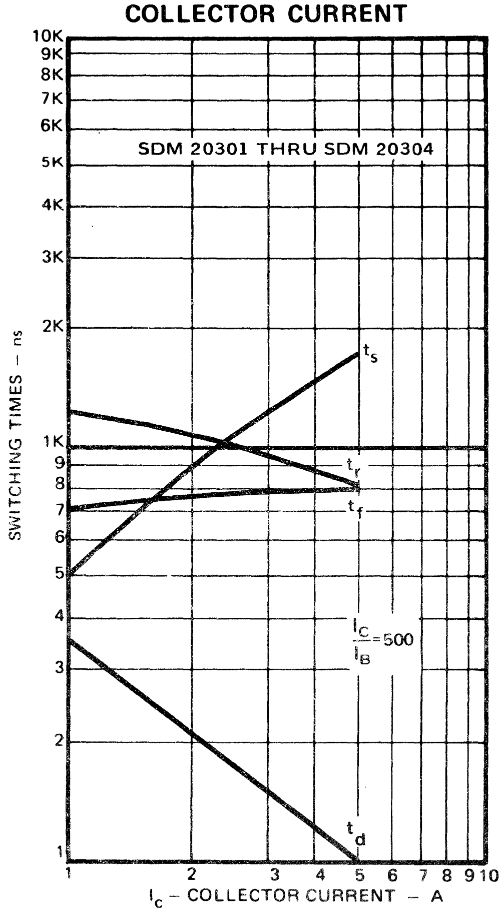
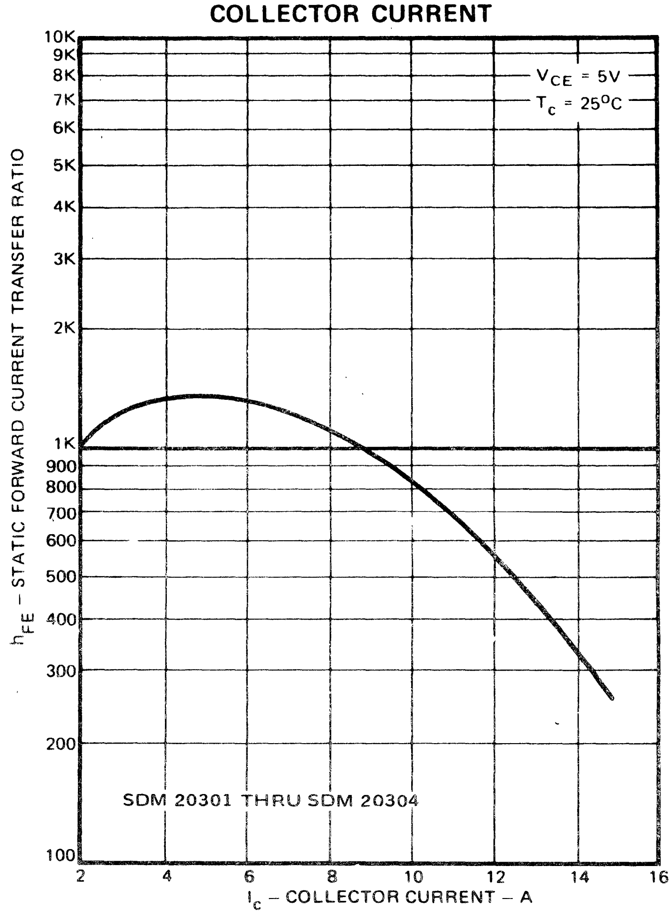


Fig. 1

TYPICAL SWITCHING TIME vs COLLECTOR CURRENT



TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO vs COLLECTOR CURRENT

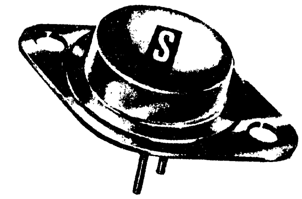


SDM 20311
SDM 20312
SDM 20313
SDM 20314

FAST SWITCHING 10 AMP

NPN DARLINGTON POWER TRANSISTORS

POWER SWITCHING
HAMMER DRIVERS
AUDIO AMPLIFIERS
SERIES AND SHUNT REGULATORS



TO-3

ABSOLUTE MAXIMUM RATINGS @ 25°C (unless otherwise noted)

PARAMETER	SDM 20311	SDM 20312	SDM 20313	SDM 20314	UNITS
V_{CER}	60	80	100	120	Volts
V_{CEX}	60	80	100	120	Volts
V_{CEO} (sus)	40	60	80	100	Volts
V_{EBO}	5	5	5	5	Volts
I_C (pk)	20	20	20	20	Amps
I_C (cont.)	10	10	10	10	Amps
I_B	2	2	2	2	Amps
$\Theta_{J\text{-}C}$	1.75	1.75	1.75	1.75	$^oC/W$
T_J	-65°C to 200°C				
T_S	-65°C to 200°C				
P_T	100	100	100		Watts

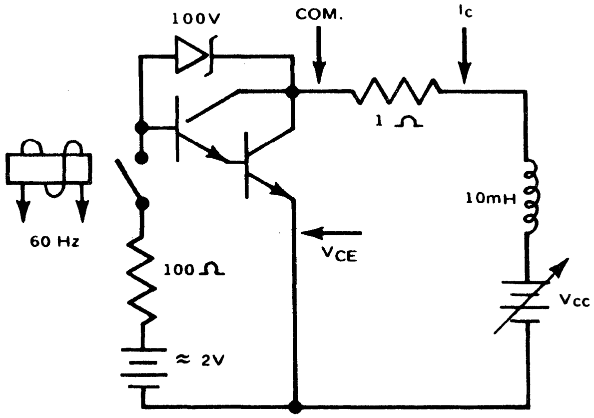
20-5-74

ELECTRICAL CHARACTERISTICS — $T_c = 25^oC$ unless otherwise noted

PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	DEVICE TYPE
V_{CER}	60		V	$I_c = 50$ mA R = 100 Ω	SDM 20311
	80		V	$I_c = 50$ mA R = 100 Ω	SDM 20312
	100		V	$I_c = 50$ mA R = 100 Ω	SDM 20313
	120		V	$I_c = 50$ mA R = 100 Ω	SDM 20314
V_{CEX}	60		V	$I_c = 50$ mA $V_{EB} = 1.5$ V	SDM 20311
	80		V	$I_c = 50$ mA $V_{EB} = 1.5$ V	SDM 20312
	100		V	$I_c = 50$ mA $V_{EB} = 1.5$ V	SDM 20313
	120		V	$I_c = 50$ mA $V_{EB} = 1.5$ V	SDM 20314
V_{CEO}*	40		V	$I_c = 100$ mA	SDM 20311
	60		V	$I_c = 100$ mA	SDM 20312
	80		V	$I_c = 100$ mA	SDM 20313
*See Fig. 1	100		V	$I_c = 100$ mA	SDM 20314
V_{EBO}	5		V	$I_E = 10$ mA	ALL
V_{BE}		1.6	V	$I_c = 1.0$ A $V_{CE} = 5$ V	ALL
I_{CER}		0.5	mA	V_{CER} = RATED R = 100 Ω	ALL
I_{CEX}		0.5	mA	V_{CEX} = RATED $V_{EB} = 1.5$ V	ALL
V_{CE}(sat)		1.7	V	$I_c = 5.0$ A $I_B = 50$ mA	ALL
V_{CB}(sat)		2.5	V	$I_c = 5.0$ A $I_B = 50$ mA	ALL
h_{FE}	1000			$I_c = 5.0$ A $V_{CE} = 5$ V	ALL

TYPICAL

f_T	20	MHz	I_c=1.0A V_{CE}=10V f=10MHz	ALL
C_{obo}	150	pF	$V_{CB} = 10$ V f = 1 MHz	ALL
t_d	0.175	µs	I_c=2.5A V_{CE}=20V I_{B1} = 5 mA	ALL
t_r	1.00	µs	I_c=2.5A V_{CE}=20V I_{B1} = 5 mA	ALL
t_s	1.10	µs	I_c=2.5A V_{CE}=20V I_{B1}=I_{B2}=5mA	ALL
t_f	0.80	µs	I_c=2.5A V_{CE}=20V I_{B1}=I_{B2}=5mA	ALL



TYPICAL V_{CEO} (sus) OSCILLOSCOPE DISPLAY

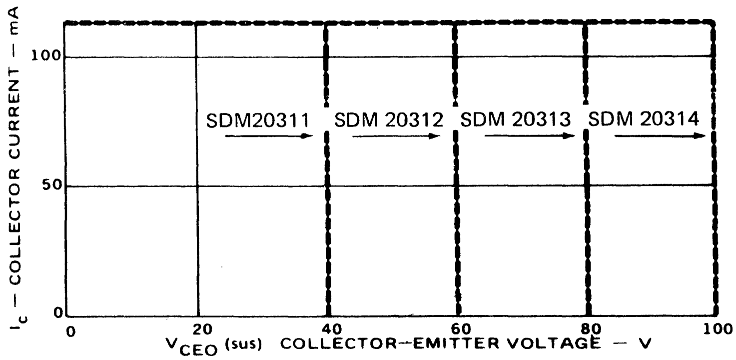
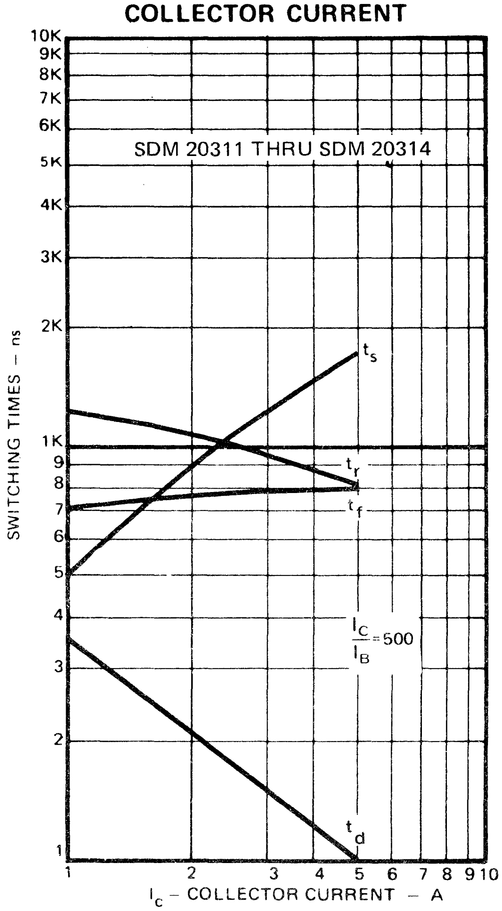
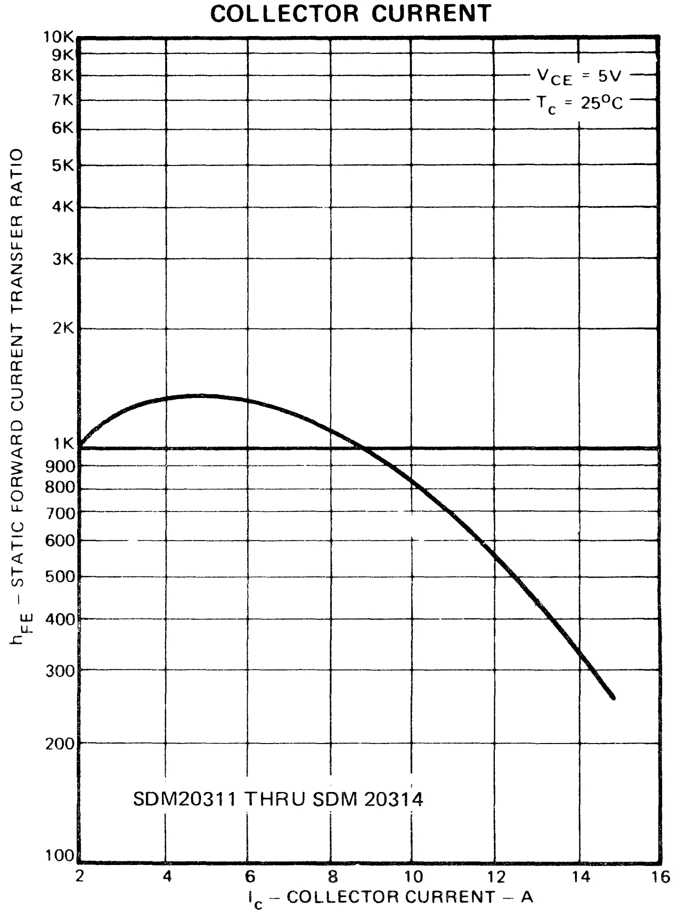


Fig. 1

TYPICAL SWITCHING TIME vs COLLECTOR CURRENT



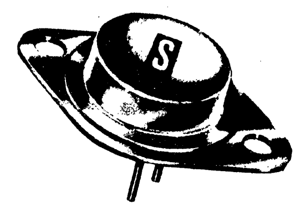
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO vs COLLECTOR CURRENT



SDM 20321
SDM 20322
SDM 20323
SDM 20324

FAST SWITCHING 15 AMP
NPN DARLINGTON POWER TRANSISTORS

POWER SWITCHING
HAMMER DRIVERS
AUDIO AMPLIFIERS
SERIES AND SHUNT REGULATORS



TO-3

ABSOLUTE MAXIMUM RATINGS @ 25°C (unless otherwise noted)

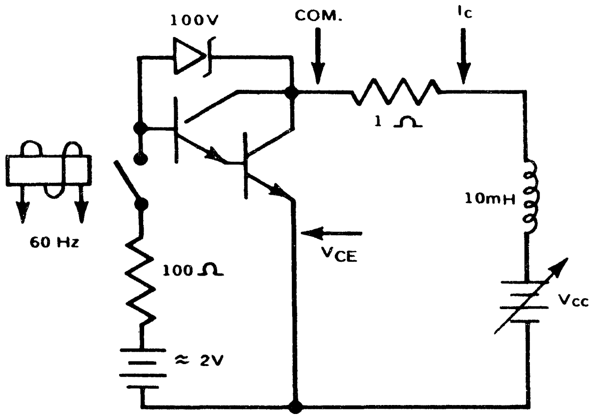
PARAMETER	SDM 20321	SDM 20322	SDM 20323	SDM 20324	UNITS
V_{CER}	60	80	100	120	Volts
V_{CEX}	60	80	100	120	Volts
V_{CEO} (sus)	40	60	80	100	Volts
V_{EBO}	5	5	5	5	Volts
I_C (pk)	20	20	20	20	Amps
I_C (cont.)	10	10	10	10	Amps
I_B	2	2	2	2	Amps
$\Theta_{J\text{-}C}$	1.75	1.75	1.75	1.75	°C/W
T_J	-65°C to 200°C				
T_S	-65°C to 200°C				
P_T	100	100	100		Watts

ELECTRICAL CHARACTERISTICS — $T_c = 25^oC$ unless otherwise noted

PARAMETER	MIN.	MAX.	UNIT	CONDITIONS	DEVICE TYPE
V_{CER}	60		V	$I_c = 50$ mA R = 100Ω	SDM 20321
	80		V	$I_c = 50$ mA R = 100Ω	SDM 20322
	100		V	$I_c = 50$ mA R = 100Ω	SDM 20323
	120		V	$I_c = 50$ mA R = 100Ω	SDM 20324
V_{CEX}	60		V	$I_c = 50$ mA $V_{EB} = 1.5$ V	SDM 20321
	80		V	$I_c = 50$ mA $V_{EB} = 1.5$ V	SDM 20322
	100		V	$I_c = 50$ mA $V_{EB} = 1.5$ V	SDM 20323
	120		V	$I_c = 50$ mA $V_{EB} = 1.5$ V	SDM 20324
V_{CEO}*	40		V	$I_c = 100$ mA	SDM 20321
	60		V	$I_c = 100$ mA	SDM 20322
	80		V	$I_c = 100$ mA	SDM 20323
*See Fig. 1	100		V	$I_c = 100$ mA	SDM 20324
V_{EBO}	5		V	$I_E = 10$ mA	ALL
V_{BE}		1.6	V	$I_c = 1.0$ A $V_{CE} = 5$ V	ALL
I_{CER}		0.5	mA	V_{CER} = RATED R = 100Ω	ALL
I_{CEX}		0.5	mA	V_{CEX} = RATED $V_{EB} = 1.5$V	ALL
V_{CE}(sat)		4.0	V	$I_c = 15.0$ A $I_B = 150$ mA	ALL
V_{BE}(sat)		5.0	V	$I_c = 15.0$ A $I_B = 150$ mA	ALL
h_{FE}	750			$I_c = 15.0$ A $V_{CE} = 5$ V	ALL

TYPICAL

f_T	20	MHz	I_c=1.0A V_{CE}=10V f=10MHz	ALL
Cobo	150	pF	$V_{CB} = 10$ V f = 1 MHz	ALL
t_d	0.08	μs	I_c=8.0A V_{CE}=20V I_{B1}=16mA	ALL
t_r	0.60	μs	I_c=8.0A V_{CE}=20V I_{B1}=16mA	ALL
t_s	1.50	μs	I_c=8.0A V_{CE}=20V I_{B1}=I_{B2}=16mA	ALL
t_f	0.75	μs	I_c=8.0A V_{CE}=20V I_{B1}=I_{B2}=16mA	ALL



TYPICAL V_{CEO} (sus) OSCILLOSCOPE DISPLAY

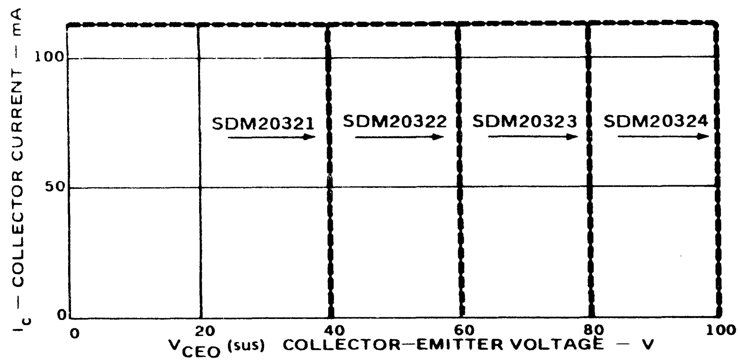
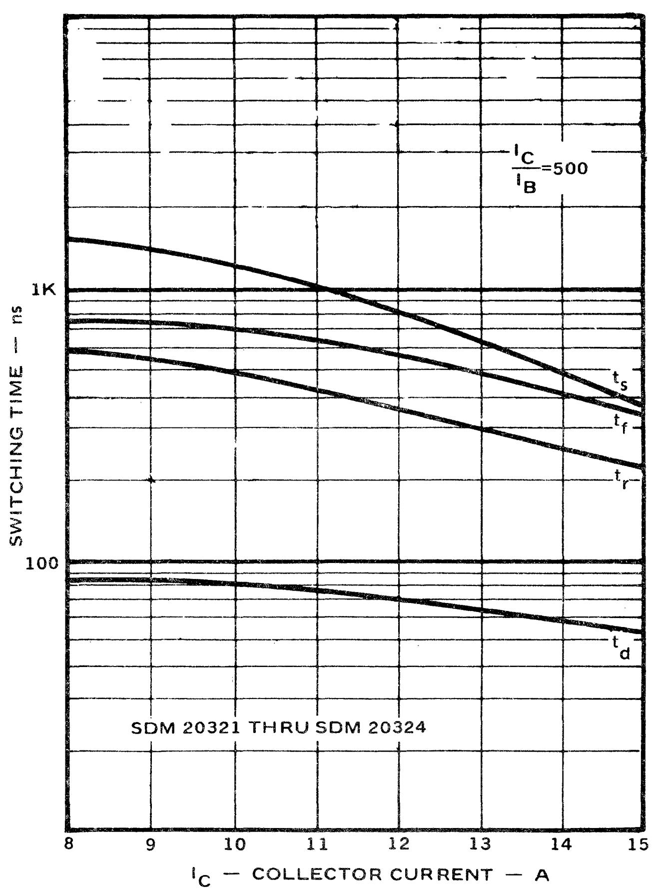
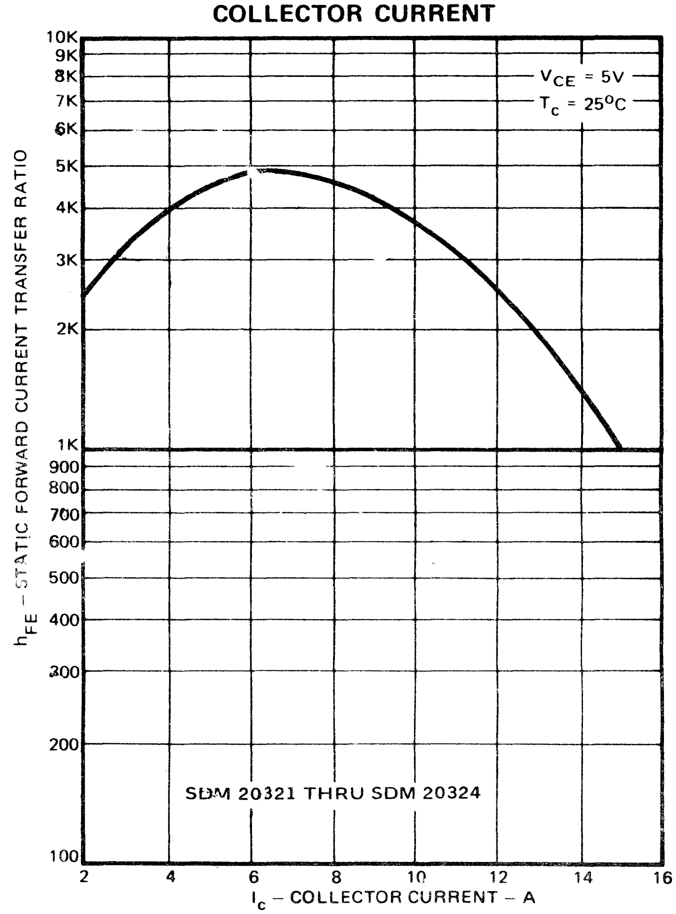


Fig. 1

TYPICAL SWITCHING TIME vs COLLECTOR CURRENT



TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO vs COLLECTOR CURRENT



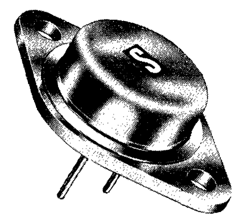
Solitron DEVICES, INC.
SEMICONDUCTOR GROUP
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

SDM 21301
SDM 21302
SDM 21303
SDM 21304

FAST SWITCHING 5 AMP

PNP DARLINGTON POWER TRANSISTORS

POWER SWITCHING
HAMMER DRIVERS
AUDIO AMPLIFIERS
SERIES AND SHUNT REGULATORS



TO-3

ABSOLUTE MAXIMUM RATINGS
@ 25 °C (unless otherwise noted)

PARAMETER	SDM 21301	SDM 21302	SDM 21303	SDM 21304	UNITS
V_{CER}	60	80	100	120	Volts
V_{CEX}	60	80	100	120	Volts
V_{CEO} (sus)	40	60	80	100	Volts
V_{EBO}	5	5	5	5	Volts
I_C (CONT.)	15	15	15	15	Amps
I_C	5	5	5	5	Amps
I_B	2	2	2	2	Amps
$\Theta_{J\text{-}C}$	1.75	1.75	1.75	1.75	°C/W
T_J	−55°C to 200°C				
T_S	−55°C to 200°C				
P_T	100	100	100	100	Watts

ELECTRICAL CHARACTERISTICS: $T_C = 25\,^{\circ}C$ unless otherwise specified

SYMBOL	TEST CONDITIONS						LIMITS								UNITS
	VOLTAGE (V)			CURRENT (A)			SDM 21301		SDM 21302		SDM 21303		SDM 21304		
	V_{CB}	V_{CE}	V_{BE}	I_C	I_E	I_B	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
$V^*_{CER}(sus)$ R=100Ω				0.05			60		80		100		120		–V
$V^*_{CEX}(sus)$			1.5	0.05			60		80		100		120		–V
$V^*_{CEO}(sus)$				0.1			40		60		80		100		–V
V_{EBO}					0.01		5		5		5		5		–V
V_{BE}		5.0		1.0				1.6		1.6		1.6		1.6	–V
I_{CER} R=100Ω		60					—	0.5	—	0.5	—	0.5	—	0.5	–mA
I_{CEX}		80					—	0.5	—	0.5	—	0.5	—	0.5	–mA
		100					—	0.5	—	0.5	—	0.5	—	0.5	–mA
		120					—	0.5	—	0.5	—	0.5	—	0.5	–mA
		60	1.5				—	0.5	—	0.5	—	0.5	—	0.5	–mA
		80	1.5				—	0.5	—	0.5	—	0.5	—	0.5	–mA
		100	1.5				—	0.5	—	0.5	—	0.5	—	0.5	–mA
		120	1.5				—	0.5	—	0.5	—	0.5	—	0.5	–mA
$V_{CE}(sat)$				5.0		0.05	—	1.75	—	1.75	—	1.75	—	1.75	–V
$V_{BE}(sat)$				5.0		0.05	—	2.5	—	2.5	—	2.5	—	2.5	–V
h_{FE}		5.0		5.0			1000	—	1000	—	1000	—	1000	—	
							TYPICAL VALUES								
f_T f=10 MHz		10		1.0			10		10		10		10		MHz
C_{OBO} f=1 MHz	10						300		300		300		300		pF
t_d		20^a		2.5		0.005^b	0.175		0.175		0.175		0.175		μS
t_r		20^a		2.5		0.005^b	1.0		1.0		1.0		1.0		μS
t_s		20^a		2.5		0.005^b $+0.005^c$	1.1		1.1		1.1		1.1		μS
t_f		20^a		2.5		0.005^b $+0.005^c$	0.8		0.8		0.8		0.8		μS

*SEE FIGURE 1.

a: V_{CC}

b: I_{B1}

c: I_{B2}

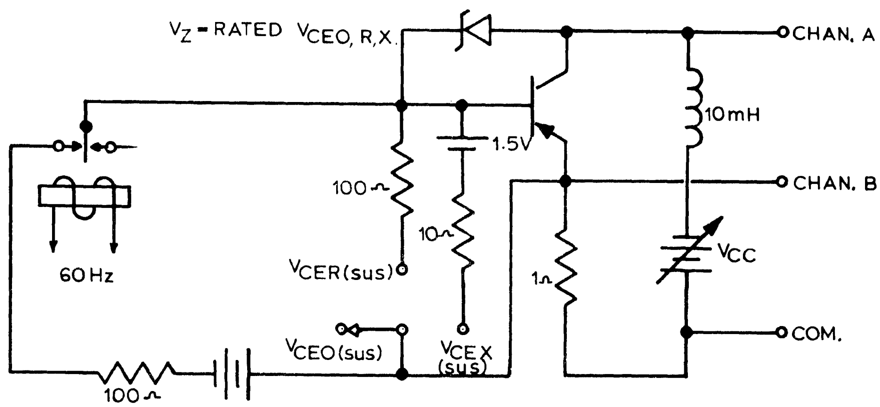
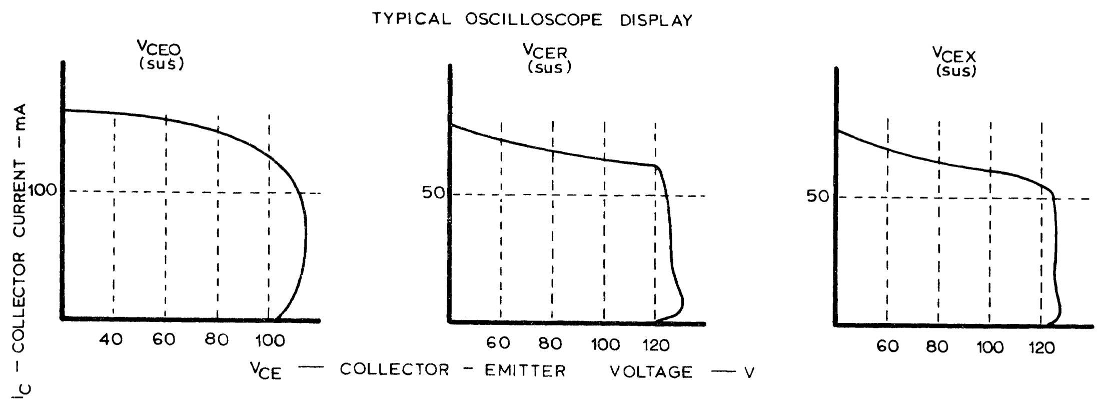
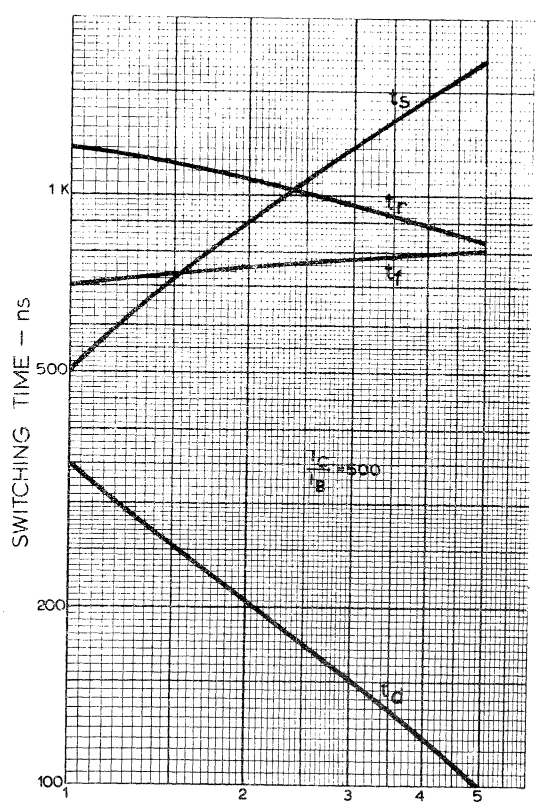


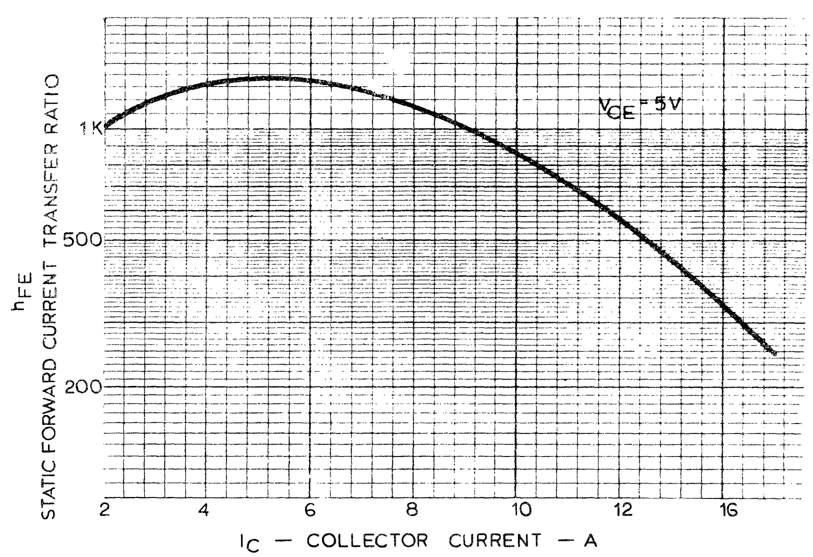
Fig. 1



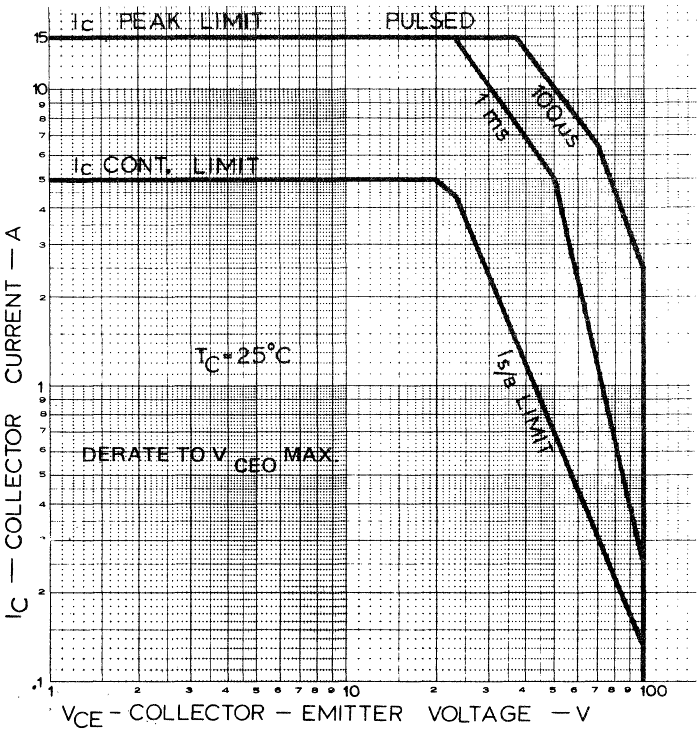
TYPICAL SWITCHING TIME vs COLLECTOR CURRENT



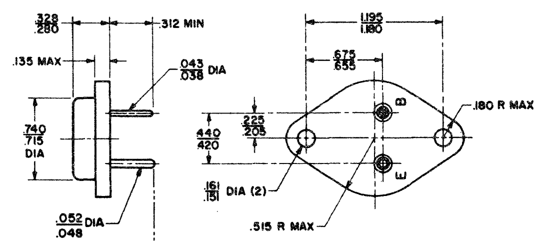
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO vs COLLECTOR CURRENT



MAXIMUM OPERATING CONDITIONS



TO-3 OUTLINE DRAWING



SOLITRON FACILITIES

TAPPAN, N.Y. 10983
256 Oak Tree Road
Phone 914 / 359-5050
TWX 710 / 576-2654

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA. 33404
1177 Blue Heron Boulevard
Phone 305 / 848-4311
TWX 510 / 952-7610

Hi-rel Power Transistors (silicon)
Industrial/Commercial Power Transistors (silicon)
Power Hybrids (standard)
Custom Hybrids
Schottky & Planar Diodes
Semiconductor Die (silicon)

PORT SALERNO, FLA. 33492
Cove Road, P.O. Box 278
Phone 305 / 287-5000
TWX 510 / 953-7500

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies
Thin Film Microwave Products

SAN DIEGO, CALIF. 92100
8808 Balboa Avenue
Phone 714 / 278-8780
TWX 910 / 335-1221

CMOS Devices
FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Diodes/Rectifiers
Zeners
High Voltage Rectifier Stacks

JUPITER, FLA. 33458
1440 West Indiantown Road
Phone 305 / 746-8311

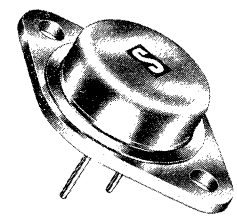
Solitron DEVICES, INC.
SEMICONDUCTOR GROUP
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

SDM 21311
SDM 21312
SDM 21313
SDM 21314

FAST SWITCHING 10 AMP

PNP DARLINGTON POWER TRANSISTORS

POWER SWITCHING
HAMMER DRIVERS
AUDIO AMPLIFIERS
SERIES AND SHUNT REGULATORS



TO-3

ABSOLUTE MAXIMUM RATINGS
@ 25 °C (unless otherwise noted)

PARAMETER	SDM 21311	SDM 21312	SDM 21313	SDM 21314	UNITS
V_{CER}	60	80	100	120	Volts
V_{CEX}	60	80	100	120	Volts
V_{CEO} (sus)	40	60	80	100	Volts
V_{EBO}	5	5	5	5	Volts
I_C (CONT.)	15	15	15	15	Amps
I_C	10	10	10	10	Amps
I_B	2	2	2	2	Amps
$\Theta_{J\text{-}C}$	1.75	1.75	1.75	1.75	°C/W
T_J	–55°C to 200°C				
T_S	–55°C to 200°C				
P_T	100	100	100	100	Watts

ELECTRICAL CHARACTERISTICS: T_C = 25 °C unless otherwise specified

SYMBOL	TEST CONDITIONS						LIMITS								UNITS
	VOLTAGE (V)			CURRENT (A)			SDM 21311		SDM 21312		SDM 21313		SDM 21314		
	V_{CB}	V_{CE}	V_{BE}	I_C	I_E	I_B	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	
$V^*_{CER}(sus)$ R=100Ω				0.05			60		80		100		120		–V
$V^*_{CEX}(sus)$			1.5	0.05			60		80		100		120		–V
$V^*_{CEO}(sus)$				0.1			40		60		80		100		–V
V_{EBO}					0.01		5		5		5		5		–V
V_{BE}		5.0		1.0				1.6		1.6		1.6		1.6	–V
I_{CER} R=100Ω		60					—	0.5	—	0.5	—	0.5	—	0.5	–mA
I_{CEX}		80					—	0.5	—	0.5	—	0.5	—	0.5	–mA
		100					—	0.5	—	0.5	—	0.5	—	0.5	–mA
		120					—	0.5	—	0.5	—	0.5	—	0.5	–mA
		60	1.5				—	0.5	—	0.5	—	0.5	—	0.5	–mA
		80	1.5				—	0.5	—	0.5	—	0.5	—	0.5	–mA
		100	1.5				—	0.5	—	0.5	—	0.5	—	0.5	–mA
		120	1.5				—	0.5	—	0.5	—	0.5	—	0.5	–mA
$V_{CE}(sat)$				10		0.1	—	2.7	—	2.7	—	2.7	—	2.7	–V
$V_{BE}(sat)$				10		0.1	—	2.7	—	3.5	—	3.5	—	3.5	–V
h_{FE}		5.0		10			1000	—	1000	—	1000	—	1000	—	
							TYPICAL VALUES								
f_T f=10 MHz		10		1.0			10		10		10		10		MHz
C_{OBO} f=1 MHz	10						300		300		300		300		pF
t_d		20[a]		5.0		0.01[b]	0.1		0.1		0.1		0.1		μS
t_r		20[a]		5.0		0.01[b]	0.8		0.8		0.8		0.8		μS
t_s		20[a]		5.0		0.01[b] +0.01[c]	1.7		1.7		1.7		1.7		μS
t_f		20[a]		5.0		0.01[b] +0.01[c]	0.8		0.8		0.8		0.8		μS

*SEE FIGURE 1.

a: V_{CC}
b: I_{B1}
c: I_{B2}

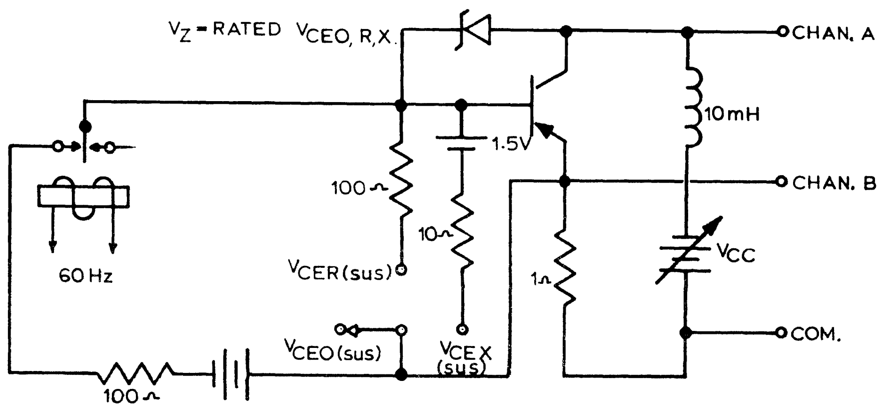
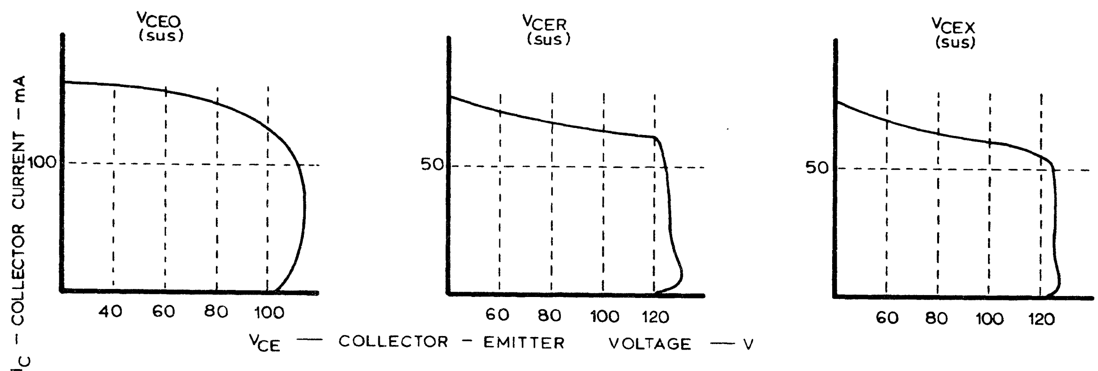
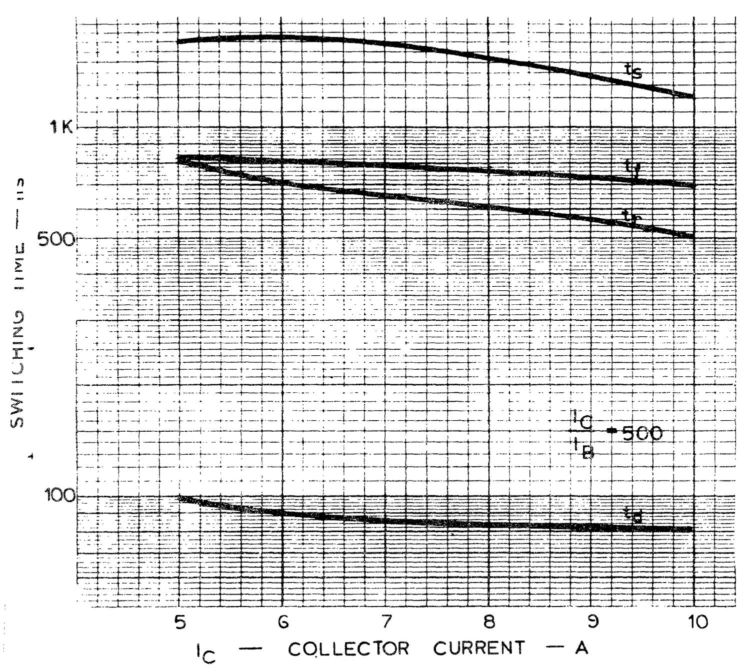


Fig. 1

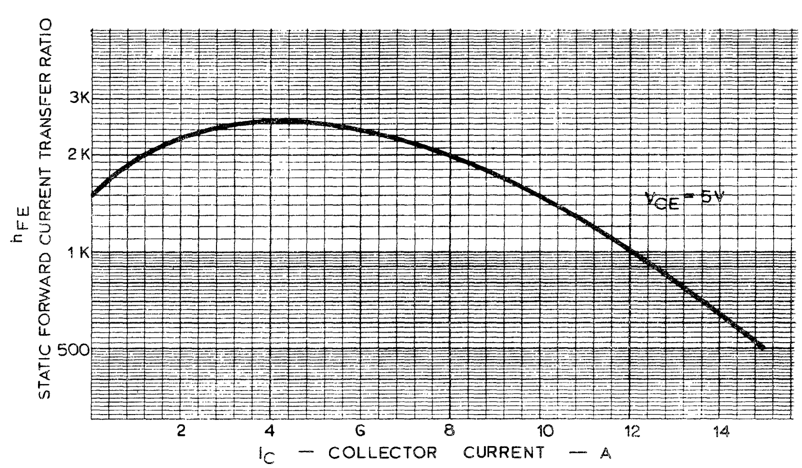
TYPICAL OSCILLOSCOPE DISPLAY



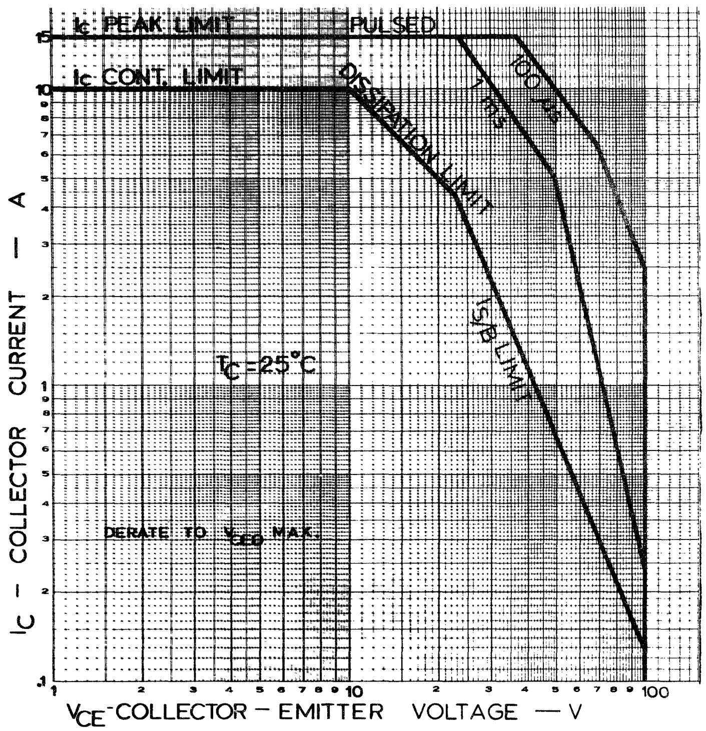
TYPICAL SWITCHING TIME vs COLLECTOR CURRENT



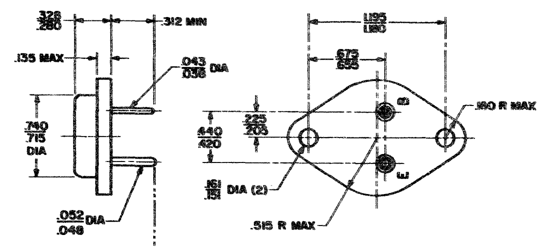
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO vs COLLECTOR CURRENT



MAXIMUM OPERATING CONDITIONS



TO-3
OUTLINE DRAWING



SOLITRON FACILITIES

TAPPAN, N.Y. 10983
256 Oak Tree Road
Phone 914 / 359-5050
TWX 710 / 576-2654

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA. 33404
1177 Blue Heron Boulevard
Phone 305 / 848-4311
TWX 510 / 952-7610

Hi-rel Power Transistors (silicon)
Industrial/Commercial Power Transistors (silicon)
Power Hybrids (standard)
Custom Hybrids
Schottky & Planar Diodes
Semiconductor Die (silicon)

PORT SALERNO, FLA. 33492
Cove Road, P.O. Box 278
Phone 305 / 287-5000
TWX 510 / 953-7500

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies
Thin Film Microwave Products

SAN DIEGO, CALIF. 92100
8808 Balboa Avenue
Phone 714 / 278-8780
TWX 910 / 335-1221

CMOS Devices
FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Diodes/Rectifiers
Zeners
High Voltage Rectifier Stacks

JUPITER, FLA. 33458
1440 West Indiantown Road
Phone 305 / 746-8311

When you think of semiconductors . . . think Solitron!

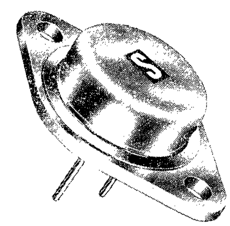
Solitron DEVICES, INC.
SEMICONDUCTOR GROUP
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

SDM 22301
SDM 22302
SDM 22303

HIGH VOLTAGE FAST SWITCHING 5 AMP

NPN DARLINGTON POWER TRANSISTORS

POWER SWITCHING
HAMMER DRIVERS
AUDIO AMPLIFIERS
SERIES AND SHUNT REGULATORS



TO-3

ABSOLUTE MAXIMUM RATINGS

@ 25°C (unless otherwise noted)

PARAMETER	SDM 22301	SDM 22302	SDM 22303	UNITS
V_{CER}	200	300	400	V
V_{CEX}	200	300	400	V
V_{CEO}(SUS)	150	250	350	V
V_{EBO}	5	5	5	V
I_C(PK)	10	10	10	A
I_C(CONT.)	5	5	5	A
I_B	2	2	2	A
$\Theta_{J\text{-}C}$	1.75	1.75	1.75	°C/W
T_J	–55°C to 200°C			
T_S	–55°C to 200°C			
P_T	100	100	100	W

ELECTRICAL CHARACTERISTICS: T_C=25°C unless otherwise specified.

SYMBOL	TEST CONDITIONS							LIMITS						UNITS
	DC Collector Voltage (V)		DC Emitter or Base Voltage (V)		DC Current (A)			SDM 22301		SDM 22302		SDM 22303		
	V_{CB}	V_{CE}	V_{EB}	V_{BE}	I_C	I_E	I_B	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
V_{CER} R=100Ω, Fig. 1					0.05			200	–	300	–	400	–	V
V_{CEX} Fig. 1			1.5		0.05			200	–	300	–	400	–	V
V_{CEO} Fig. 1					0.10			150	–	250	–	350	–	V
V_{EBO}						0.01		5	–	5	–	5	–	V
V_{BE}		5.0			1.0			–	2	–	2	–	2	V
I_{CER} R=100Ω		100						–	1.0	–	1.0	–	1.0	mA
I_{CEX}		100	1.5					–	1.0	–	1.0	–	1.0	mA
V_{CE}(sat)					2.0		0.02	–	1.6	–	1.6	–	1.6	V
V_{BE}(sat)					2.0		0.02	–	2.4	–	2.4	–	2.4	V
h_{FE}		5.0			2.0			150	–	150	–	150	–	
								Typical Values						
h_{fe} f=1[illegible] MHz		10			1.0			10		10		10		
C_{obo} f=1MHz	10							150		150		150		pF
t_d		20[a]			1.0		0.01	0.06		0.06		0.06		μs
t_r		20[a]			1.0		0.01	0.22		0.22		0.22		μs
t_s		20[a]			1.0		0.01[b] −0.01[c]	4.2		4.2		4.2		μs
t_f		20[a]			1.0		0.01[b] −0.01[c]	2.4		2.4		2.4		μs

a V_{CC} VALUE

b I_{B1} VALUE

c I_{B2} VALUE

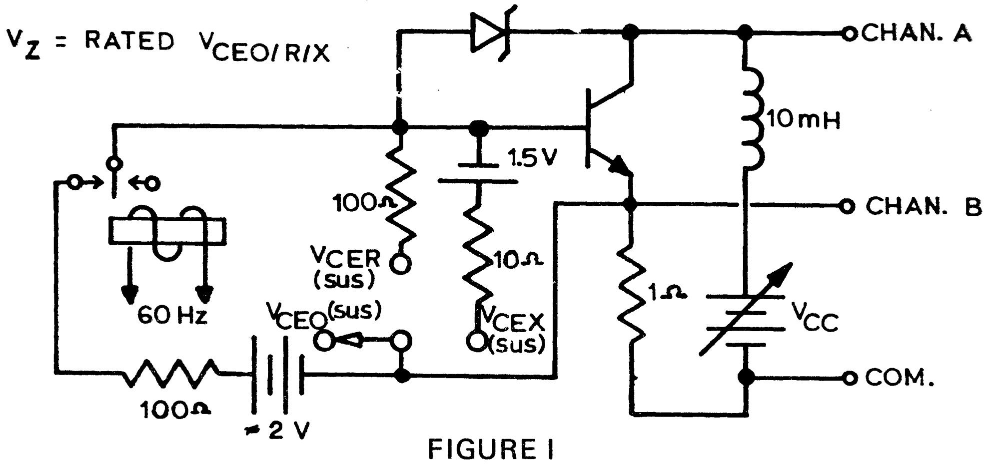
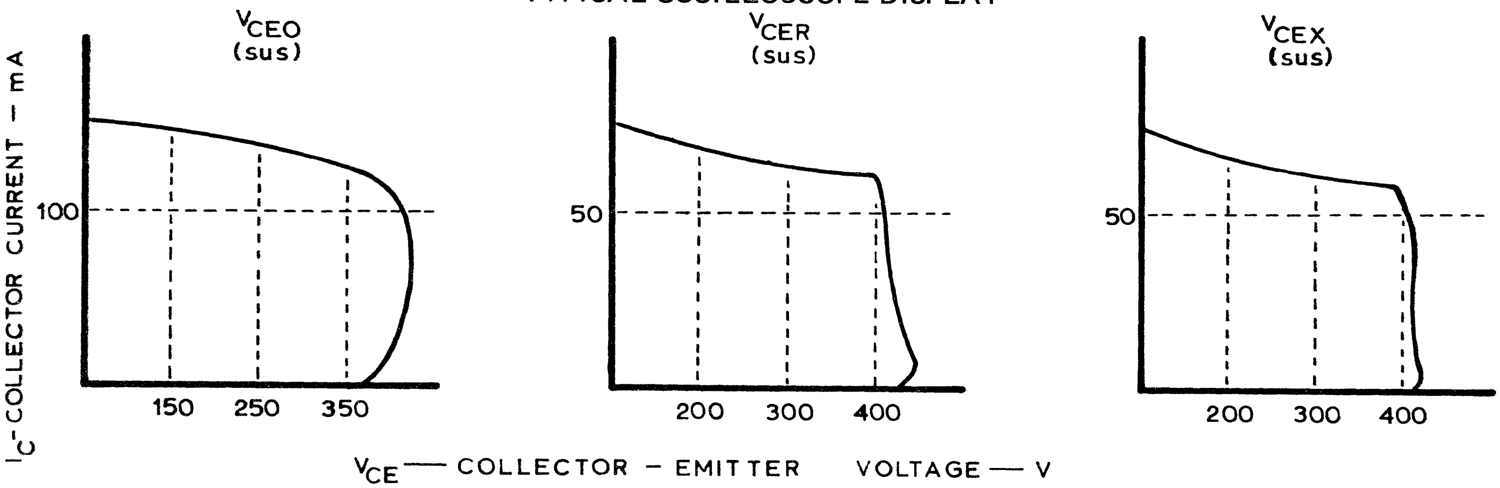
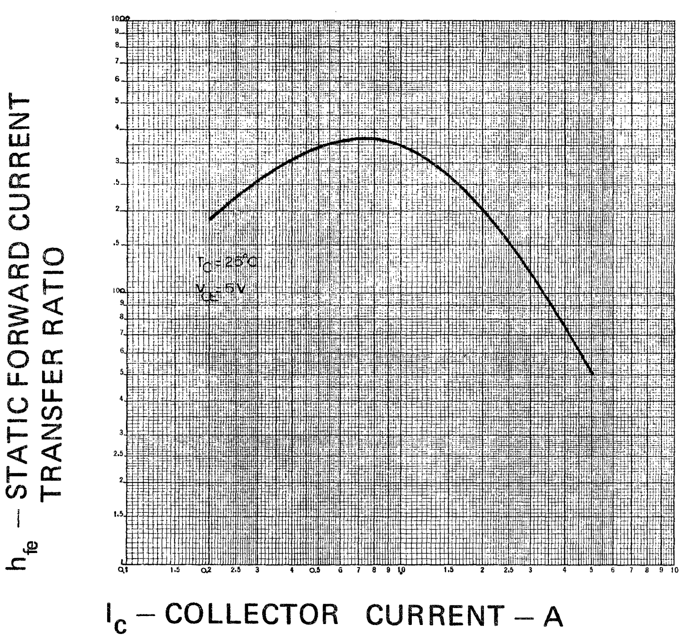


FIGURE I

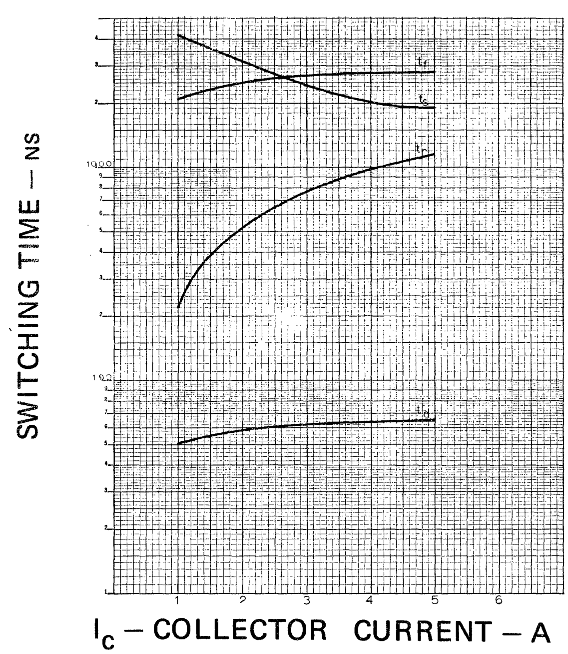
TYPICAL OSCILLOSCOPE DISPLAY



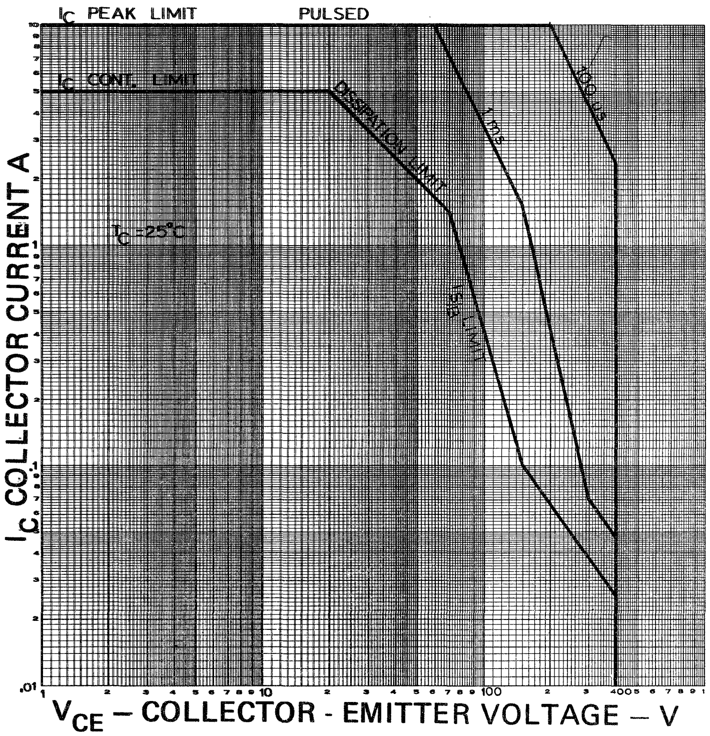
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO vs COLLECTOR CURRENT



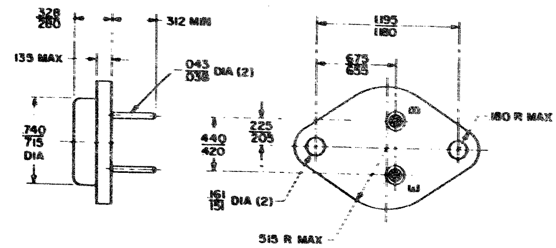
TYPICAL SWITCHING TIME vs COLLECTOR CURRENT



MAXIMUM OPERATING CONDITIONS



TO–3 OUTLINE DRAWING



SOLITRON FACILITIES

TAPPAN, N.Y. 10983
256 Oak Tree Road
Phone 914 / 359-5050
TWX 710 / 576-2654

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA. 33404
1177 Blue Heron Boulevard
Phone 305 / 848-4311
TWX 510 / 952-7610

Hi-rel Power Transistors (silicon)
Industrial/Commercial Power Transistors (silicon)
Power Hybrids (standard)
Custom Hybrids
Schottky & Planar Diodes
Semiconductor Die (silicon)

PORT SALERNO, FLA. 33492
Cove Road, P.O. Box 278
Phone 305 / 287-5000
TWX 510 / 953-7500

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies
Thin Film Microwave Products

SAN DIEGO, CALIF. 92100
8808 Balboa Avenue
Phone 714 / 278-8780
TWX 910 / 335-1221

CMOS Devices
FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Diodes/Rectifiers
Zeners
High Voltage Rectifier Stacks

JUPITER, FLA. 33458
1440 West Indiantown Road
Phone 305 / 746-8311

When you think of semiconductors . . . think Solitron!

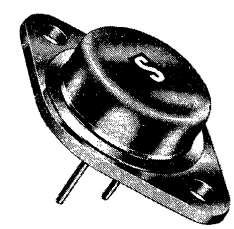
Solitron DEVICES, INC.
SEMICONDUCTOR GROUP
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

SDM 22311
SDM 22312
SDM 22313

HIGH VOLTAGE
FAST SWITCHING 5 AMP

NPN DARLINGTON POWER TRANSISTORS

POWER SWITCHING
HAMMER DRIVERS
AUDIO AMPLIFIERS
SERIES AND SHUNT REGULATORS



TO-3

ABSOLUTE MAXIMUM RATINGS

@ 25°C (unless otherwise noted)

PARAMETER	SDM 22311	SDM 22312	SDM 22313	UNITS
V_{CER}	200	300	400	V
V_{CEX}	200	300	400	V
V_{CEO}(SUS)	150	250	350	V
V_{EBO}	5	5	5	V
I_C(PK)	10	10	10	A
I_C(CONT.)	5	5	5	A
I_B	2	2	2	A
Θ_{J-C}	1.75	1.75	1.75	°C/W
T_J	–55°C to 200°C			
T_S	–55°C to 200°C			
P_T	100	100	100	W

ELECTRICAL CHARACTERISTICS: T_C=25°C unless otherwise specified.

SYMBOL	TEST CONDITIONS							LIMITS						UNITS
	DC Collector Voltage (V)		DC Emitter or Base Voltage (V)		DC Current (A)			SDM 22311		SDM 22312		SDM 22313		
	V_{CB}	V_{CE}	V_{EB}	V_{BE}	I_C	I_E	I_B	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
V_{CER} R=100Ω, Fig. 1					0.05			200	–	300	–	400	–	V
V_{CEX} Fig. 1			1.5		0.05			200	–	300	–	400	–	V
V_{CEO} Fig. 1					0.10			150	–	250	–	350	–	V
V_{EBO}						0.01		5	–	5	–	5	–	V
V_{BE}		5.0			1.0			–	2	–	2	–	2	V
I_{CER} R=100Ω		100						–	1.0	–	1.0	–	1.0	mA
I_{CEX}		100	1.5					–	1.0	–	1.0	–	1.0	mA
V_{CE}(sat)					5.0		0.2	–	2.6	–	2.6	–	2.6	V
V_{BE}(sat)					5.0		0.2	–	3.5	–	3.5	–	3.5	V
h_{FE}		5.0			5.0			70	–	70	–	70	–	
								Typical Values						
h_{fe} f=1 MHz		10			1.0			10		10		10		
C_{obo} f=1MHz	10							150		150		150		pF
t_d		20[a]			1.0		0.01	0.06		0.06		0.06		μs
t_r		20[a]			1.0		0.01	0.22		0.22		0.22		μs
t_s		20[a]			1.0		0.01[b] −0.01[c]	4.2		4.2		4.2		μs
t_f		20[a]			1.0		0.01[b] −0.01[c]	2.4		2.4		2.4		μs

a V_{CC} VALUE

b I_{B1} VALUE

c I_{B2} VALUE

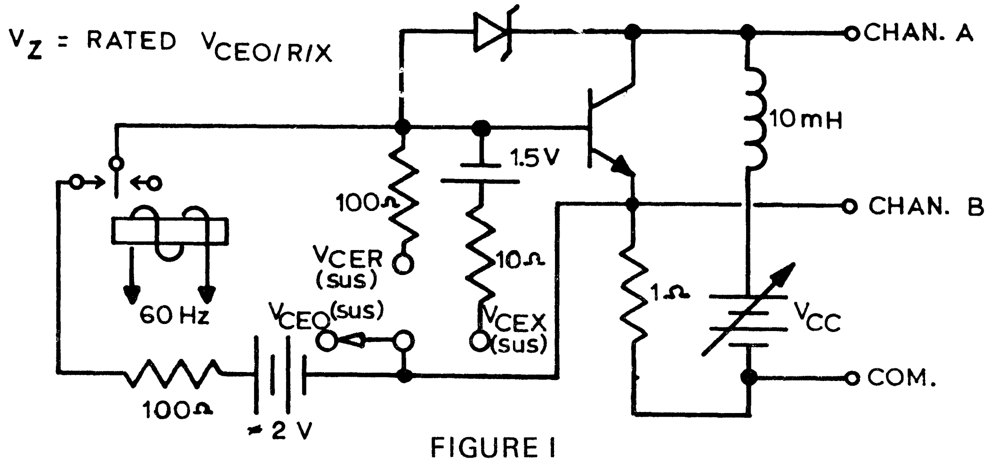
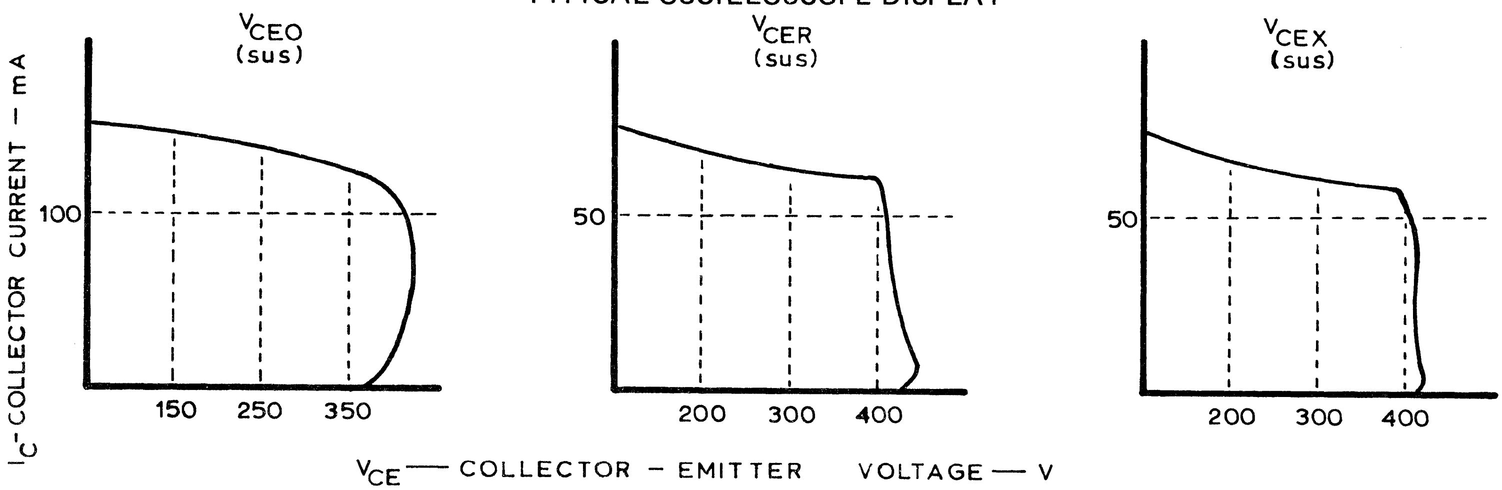
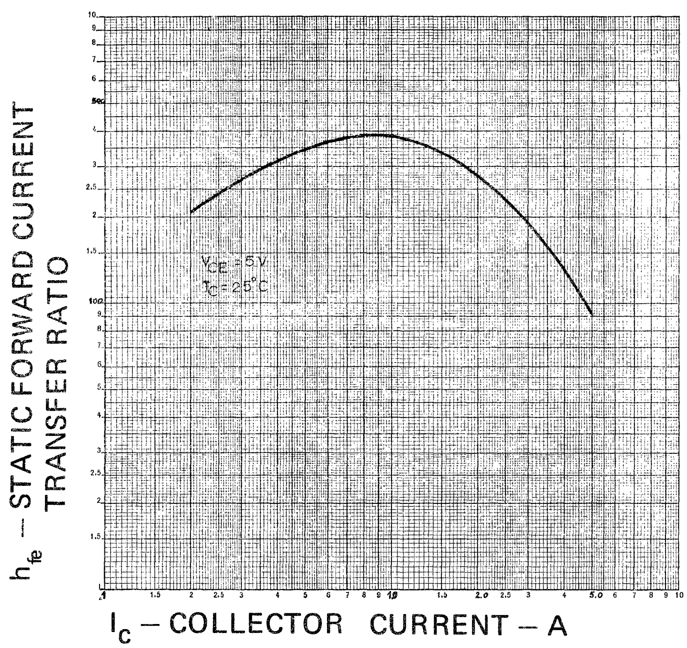


FIGURE I

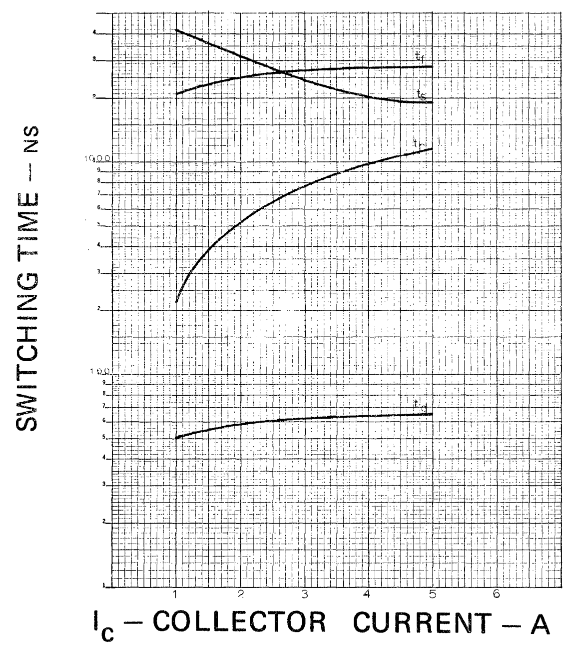
TYPICAL OSCILLOSCOPE DISPLAY



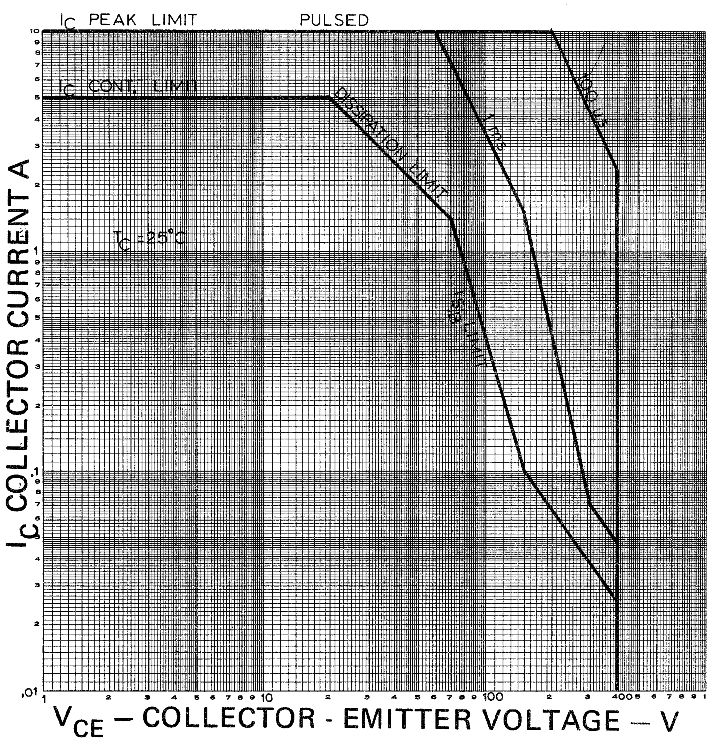
TYPICAL STATIC FORWARD CURRENT TRANSFER RATIO vs COLLECTOR CURRENT



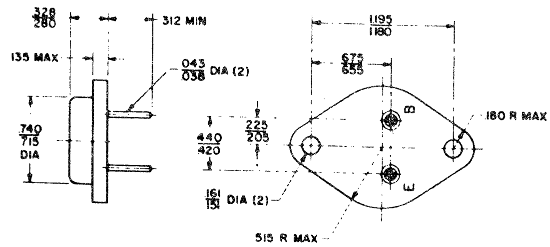
TYPICAL SWITCHING TIME vs COLLECTOR CURRENT



MAXIMUM OPERATING CONDITIONS



TO–3 OUTLINE DRAWING



SOLITRON FACILITIES

TAPPAN, N.Y. 10983
256 Oak Tree Road
Phone 914 / 359-5050
TWX 710 / 576-2654

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA. 33404
1177 Blue Heron Boulevard
Phone 305 / 848-4311
TWX 510 / 952-7610

Hi-rel Power Transistors (silicon)
Industrial/Commercial Power Transistors (silicon)
Power Hybrids (standard)
Custom Hybrids
Schottky & Planar Diodes
Semiconductor Die (silicon)

PORT SALERNO, FLA. 33492
Cove Road, P.O. Box 278
Phone 305 / 287-5000
TWX 510 / 953-7500

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies
Thin Film Microwave Products

SAN DIEGO, CALIF. 92100
8808 Balboa Avenue
Phone 714 / 278-8780
TWX 910 / 335-1221

CMOS Devices
FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Diodes/Rectifiers
Zeners
High Voltage Rectifier Stacks

JUPITER, FLA. 33458
1440 West Indiantown Road
Phone 305 / 746-8311

SECTION 6

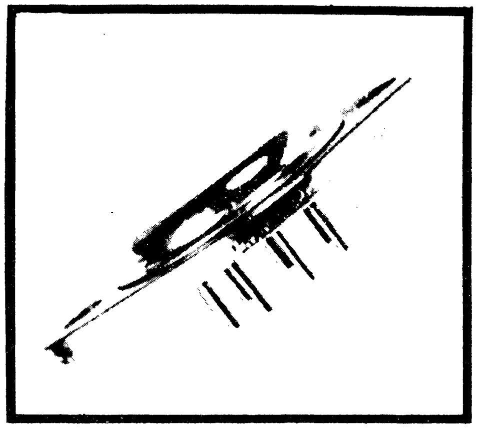
HYBRID VOLTAGE REGULATORS

CJCA and CJSE Devices

CJCA 001 CJCA 002
CJCA 007 CJCA 008

5 AMP ±8v TO ±56v
HYBRID VOLTAGE REGULATORS

These series regulators owe their outstanding performance characteristics to very select components. The output voltage is easily adjusted from 8 to 56 volts by a resistor divider network. These regulators are high reliability assemblies without the temperature limitations and contamination problems found in soldered hybrids.
Lead attach is exclusively ultrasonically bonded aluminum wire. All devices are planar oxide passivated. The high level of thermal conductivity is due to the beryllia ceramic isolation pads.


8 LEAD TO-3

FEATURES

- **Positive, Negative Supply Operation**
- **5A Current Rating**
- **60v Line Voltage Capability**
- **Line and Load Regulation**

APPLICATIONS

- **Military Equipment, Space and Telecommunications**
- **Distributed Power Systems**
- **DC Motor Supplies**
- **Industrial Controls**
- **Medical Electronics**
- **Computers, Data Terminals**
- **Instrumentation**

REGULATORS CJCA	001	002	007	008	UNITS
Output Voltage Range	+8 to +56	−8 to −56	—	—	V_{dc}
with FET Internal Current Source	—	—	+8 to +56	−8 to −56	V_{dc}

CJCA 007 and 008 incorporate a FET constant current source, which provides current mode regulation automatically. A minimum input-output voltage differential of 4 volts is recommended to bias the FET into its constant current region. At lower voltages the FET becomes resistive, and regulation reverts back to basic mode.

Maximum Ratings (T_C = +25 °C unless otherwise noted)

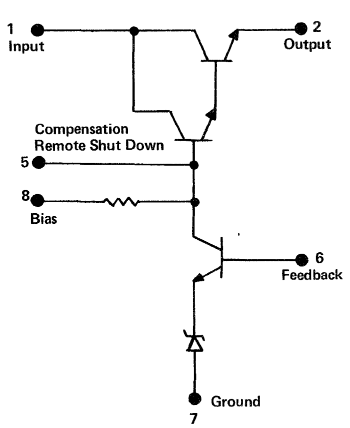
RATINGS	SYMBOL	FIG.	PINS	VALUE	UNIT
Input Voltage	$\lvert \pm V_{in} \rvert$	2, 3	1 - 7	60	V_{dc}
Peak Load Current	I_{OPK}	2, 3	2	5	A
Power Dissipation and Thermal Characteristics T_C = +25 °C	P_D			50	Watts
Thermal Resistance, Junction to Case	θ_{JC}			3	°C/W
Operating and Storage Temperature Range	T_A			−55 to +150	°C

Electrical Characteristics ($\lvert \pm V_{in} \rvert$ = 28v, $\lvert \pm V_O \rvert$ = 20v, $\lvert \pm I_O \rvert$ = 1A, T_C = +25 °C unless otherwise noted)

CHARACTERISTIC	SYMBOL	CONDITIONS	CJCA001		CJCA002		CJCA007		CJCA008		UNIT
			Min	Max	Min	Max	Min	Max	Min	Max	
Input Voltage	$\lvert \pm V_{in} \rvert$		10	60	10	60	12	60	12	60	V_{dc}
Output Voltage Range	$\lvert \pm V_O \rvert$		8	56	8	56	8	56	8	56	V_{dc}
Input - Output Differential	$\lvert \pm \Delta V \rvert$		2	50	2	50	4	50	4	50	V_{dc}
Regulation Load	$\frac{\Delta V_O}{V_O}$	I_O = 0 - 5 A	–	.5	–	.5	–	.5	–	.5	%
Regulation Line	$\frac{\Delta V_O}{V_O}$	$\lvert V_{in} \rvert$ ±20% I_O = 1A	–	2	–	2	–	.5	–	.5	%
Ripple Attenuation		Ref. Figs. 11, 12	32	–	32	–	62	–	62	–	db
Temperature Coeff.	$\frac{\Delta V_O}{V_O \Delta T}$	−55°C to +125°C	–	±.02	–	±.02	–	±.02	–	±.02	%/°C

SCHEMATIC

POSITIVE REGULATOR



CJCA 001

FIGURE 1

BASIC MODE

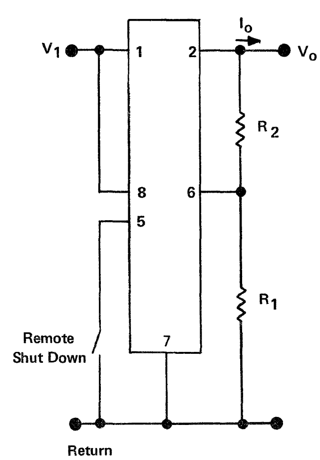


FIGURE 2

CURRENT MODE

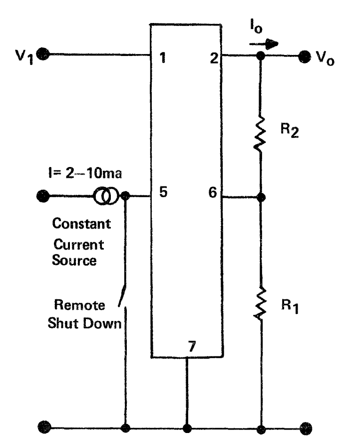
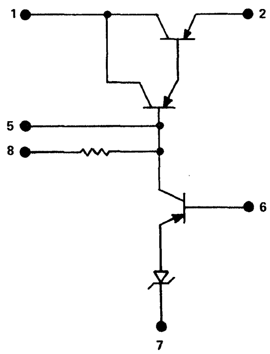


FIGURE 3

REGULATORS WITH FET INTERNAL CURRENT SOURCE AND LIMIT

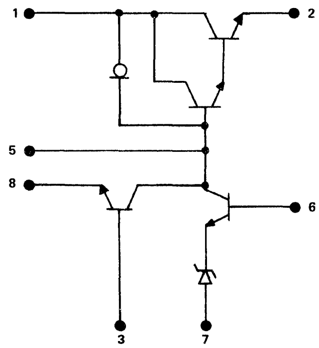
NEGATIVE REGULATOR



CJCA 002

FIGURE 4

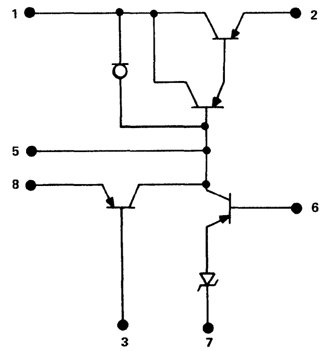
POSITIVE



CJCA 007

FIGURE 5

NEGATIVE



CJCA 008

FIGURE 6

Hook up per Fig. 2 and 3, but V_1 and V_O are negative voltage

LOAD REGULATION

TYPICAL CURVES

BASIC MODE

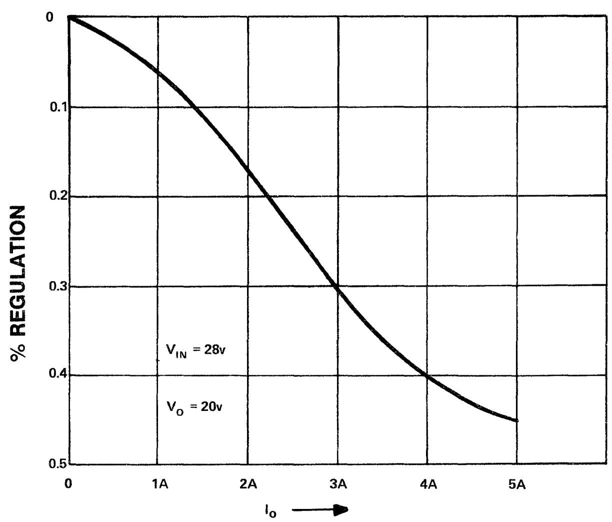


FIGURE 7

CURRENT MODE

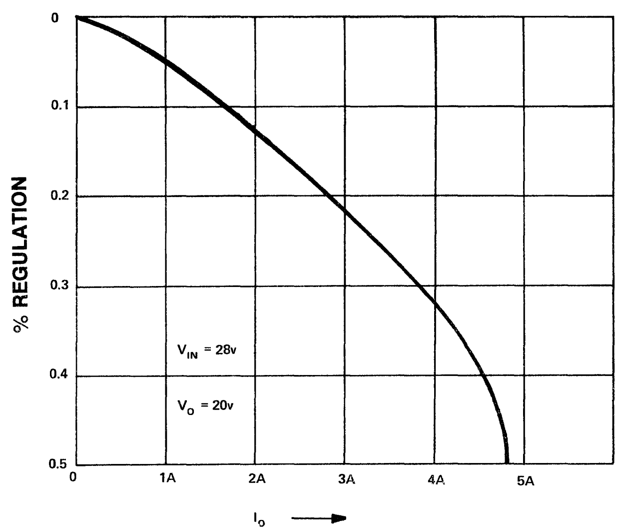


FIGURE 8

LINE REGULATION

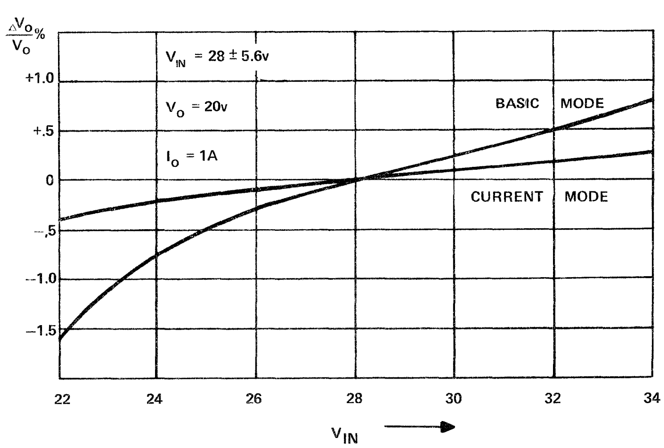


FIGURE 9

POWER DERATING

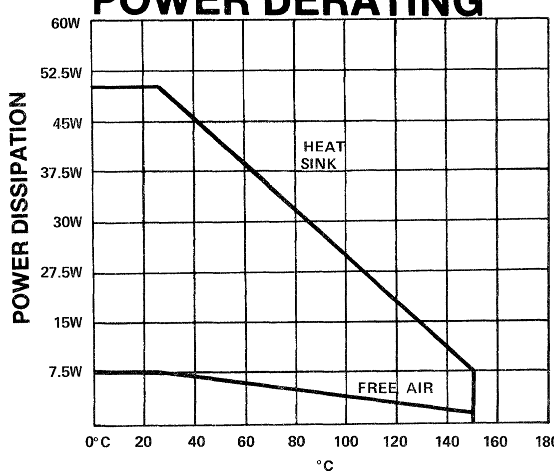


FIGURE 10

RIPPLE ATTENUATION

BASIC MODE

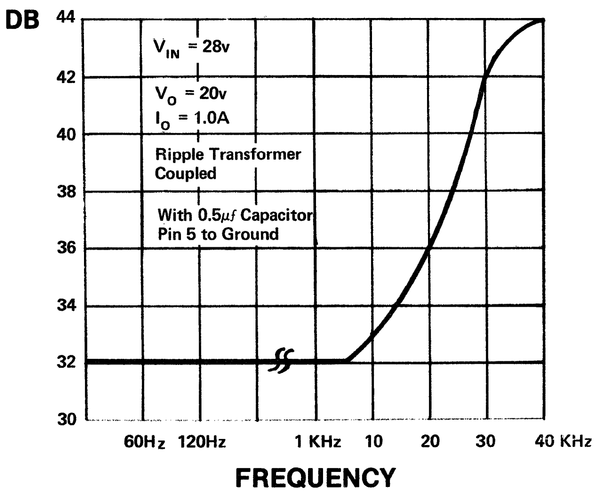


FIGURE 11

CURRENT MODE

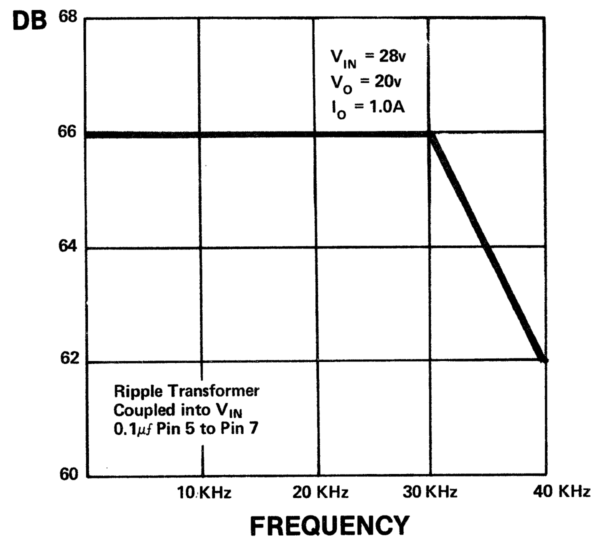


FIGURE 12

HOOK UP FOR CJCA 007 and CJCA 008

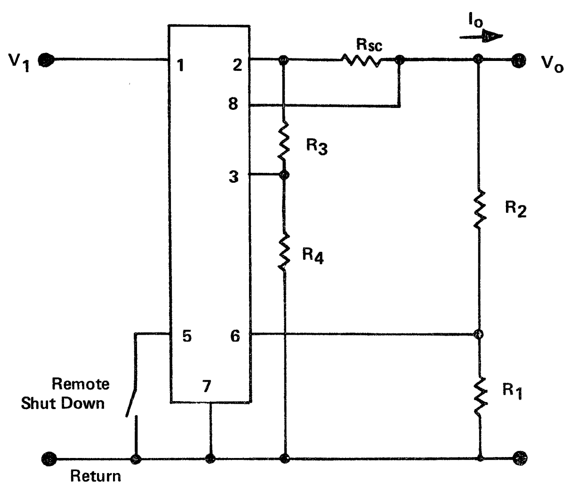


FIGURE 13

See note 2 for above application

D.C. SAFE OPERATING AREA FOR PASS TRANSISTORS

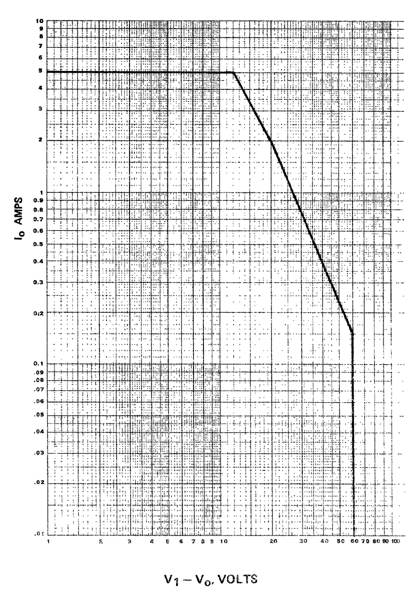


FIGURE 14

NOTES:

1. Reference diode is 6.2 ± .3 volts, and the V_{BE} of the feedback transistor is 0.6 ± .1 volt, giving $V_{6\text{-}7}$ = 6.4 to 7.2 volts, temperature compensated. External divider R_1 and R_2 in Figs. 2, 3 and 13 determines the output voltage V_O.

$$V_O = V_{6\text{-}7}\left(\frac{R_1 + R_2}{R_1}\right) \approx 7\text{v}\left(\frac{R_1 + R_2}{R_1}\right)$$

1. (cont'd.) Recommended maximum value for R_1 is $7K\Omega$ (I_{min} = 1ma), typical usage being $1K\Omega$ to $5K\Omega$. R_2 must be determined experimentally for each regulator for a particular value of V_O, due to the variations in V_{6-7}.

2. Current limiting capability is provided on the CJCA 007 and CJCA 008. Rsc may be selected to limit I_o and I_{sc} as shown in Fig. 13. The user must be sure that the dissipation rating is not exceeded in worst-case operation (see Fig. 10). Also, for $V_1 - V_o$ ($= V_1$ for a shorted load) greater than 20 volts, a further limitation is second breakdown of the pass transistor (see Fig. 14).

Example:

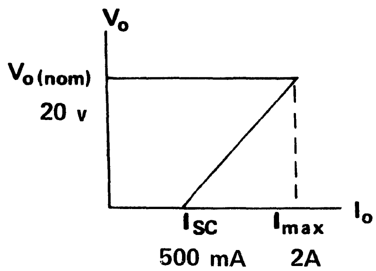


FIGURE 15

assumptions

I_{MAX} = 2A

I_{SC} = 500ma

V_O (nom) = 20v

$$\alpha = \frac{V_{BE}}{V_O}\left[\frac{I_{MAX}}{I_{SC}} - 1\right]$$

$$\alpha = \frac{.6}{20}\left[\frac{2000}{500} - 1\right] = .09$$

$$R_{SC} = \frac{V_{BE}}{(1-\alpha)\, I_{SC}} = \frac{.6}{(1-.09)\ 500 \times 10^{-3}} = 1.32\Omega$$

$$R_3 = \frac{\alpha}{1-\alpha}\, 10K = \frac{.09}{1-.09}\, 10K = 989\Omega$$

$$R_4 = 10K\Omega$$

Resistors R_1 and R_2 are found from note 1.

3. Current limiting for CJCA 001 and CJCA 002 can be provided by adding a NPN(PNP) transistor and resistors hooked-up as shown in Figs. 5, 6 and 13. Resistor values are found in notes 1 and 2.

4. Oscillation suppression may be best obtained if needed by connecting a capacitor from pin 5 to pin 7. .01uf is usually sufficient. A capacitor at the input (pin 1 to 7) or output (pin 2 to 7) may also be helpful. When using a capacitor on the output, and not current limiting, care must be taken that the capacitance is not so large that an excessive turn-on surge current develops, damaging the pass transistor.

5. Inductive surges on the output may be suppressed by adding a reverse-biased diode on the output returned to ground.

6. Output current and power capability may be increased by driving an external power pass transistor. Figure 16 below illustrates for the regulator CJCA 007. For the negative regulators, reverse the polarities and use external pnp pass transistor. Be sure to maintain safe operating area conditions for both the regulator and the external transistors. All resistor values are found in notes 1 and 2 and Figs. 5, 6 and 13.

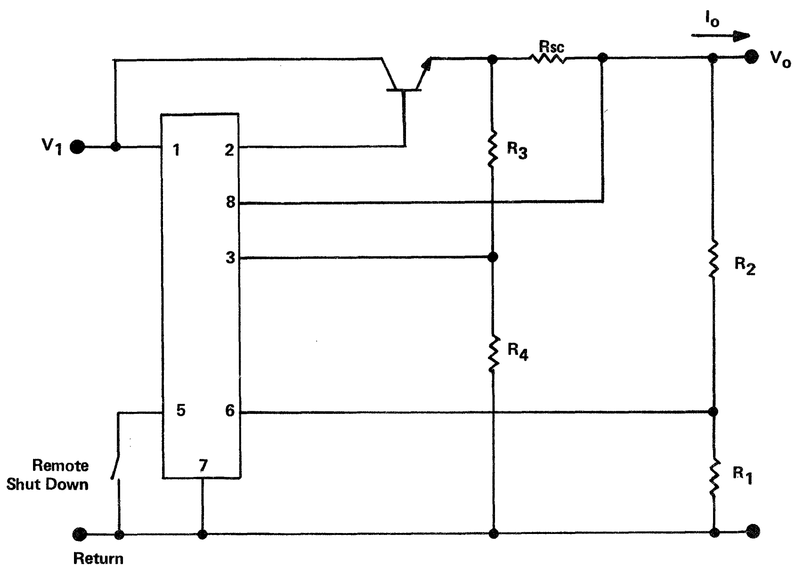


FIGURE 16

7. Output current and power may be increased, and input-output voltage differential reduced, by the use of one or more external pnp pass transistors for the positive regulators, or npn pass transistors in a complementary circuit for the negative regulators. Figure 17 below illustrates for CJCA 001.

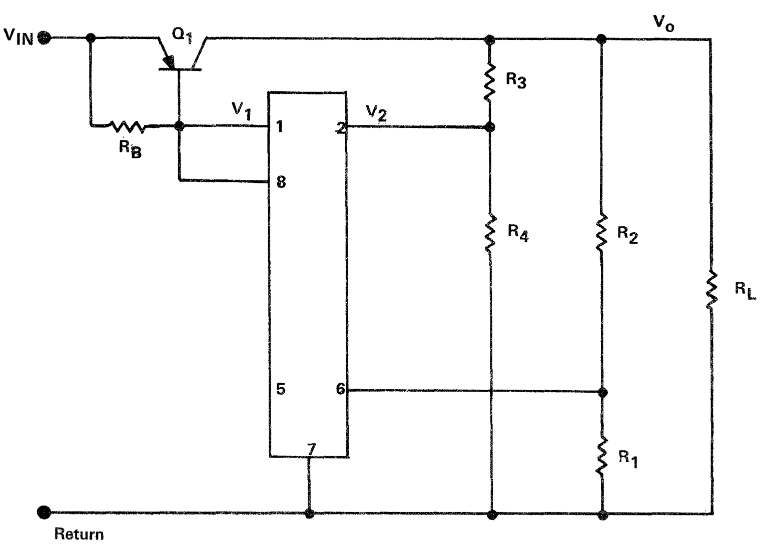


FIGURE 17

$$(V_{IN} - V_o)\ \text{min} = V_{CE}\ \text{sat}\ (Q_1)$$

$$V_1 = V_{IN} - V_{BE}\ (Q_1)$$

$$V_2 = V_o \left(\frac{R_4}{R_3+R_4}\right)$$

$$V_2\ \text{min} \approx 8\ \text{volts}$$

Thus, Vo is not restricted by the input-output differential of the regulator, which is $V_1 - V_2$.

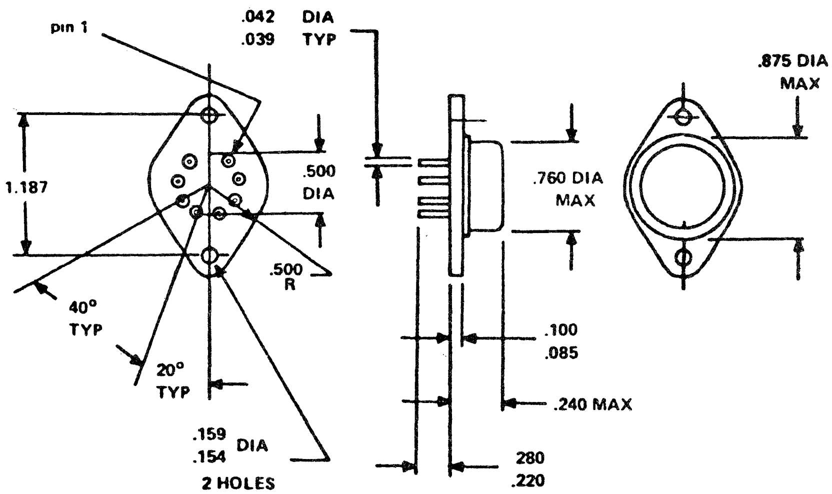
8. Regulator Failures

   a. Regulator failures are caused by overdissipating the series pass transistor. Excessive heating in the pass transistor causes it to short out. A good heat sink must be used. Highest power dissipation occurs when the regulator output is shorted. Foldback current limiting should be used giving less power dissipation than at full load.

   b. Use conservatively voltage rated capacitors on the input to the regulator in order to minimize ripple. If the input capacitor is operated with excessive ripple and near the maximum dc voltage rating, the capacitor will sputter (short momentarily) causing the output capacitor of the regulator to discharge back through the reverse-biased pass transistor or the control circuitry with destructive effects.

   c. Avoid severe voltage transients on the unregulated input. Subsequent transients can destroy the regulator because of load failures due to previous transients.

OUTLINE DIMENSIONS



TO-3 (8 PINS)

All dimensions are in inches

Solitron DEVICES, INC.
SEMICONDUCTOR GROUP
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

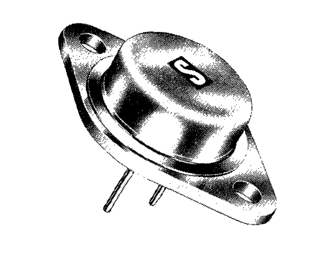
CJSE 001 CJSE 002 CJSE 003 CJSE 004 CJSE 005 CJSE 006

3 AMP ±15v

HYBRID VOLTAGE REGULATORS

These series regulators owe their outstanding performance characteristics to very select components. These regulators are high reliability assemblies without the temperature limitations and contamination problems found in soldered hybrids.

Lead attach is exclusively ultrasonically bonded aluminum wire. All devices are planar oxide passivated.



2 LEAD TO-3

NOTE: Output voltage values can be internally adjusted between | ±10v | and | ±30v | to meet your application requirements.

FEATURES

- Positive, Negative Supply Operation
- 3A Current Rating
- 50v Line Voltage Capability
- Three-Terminal Simplicity
- Line and Load Regulation ≤ ± 0.5%

APPLICATIONS

- Military Equipment, Space and Telecommunications
- Distributed Power Systems
- DC Motor Supplies • Computers
- Industrial Controls • Data Terminals
- Medical Electronics • Instrumentation

15 V REGULATORS	CJSE	001	002	003	004	005	006
Regulation, Line and Load	T_C = 25 °C	+15 ±.5%	−15 ±.5%	+15 ± .5%	−15 ±.5%	+15 ±.5%	−15 ±.5%
	−55 °C ≤ T_A ≤ +125°C	±3%	±3%	±2%	±2%	±1%	±1%

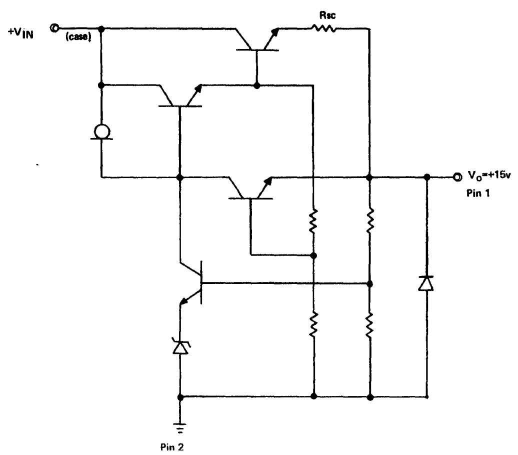
Figure 1. Basic Regulator

Maximum Ratings (T_C = +25 °C unless otherwise noted)

Rating	Symbol	Value	Unit
Input Voltage	$\lvert \pm V_{in} \rvert$	50	V_{dc}
Peak Load Current	I_{OPK}	3	A
Power Dissipation and Thermal Characteristics T_C = +25 °C Thermal Resistance, Junction to Case	 P_D θ_{jc}	 90 1.67	 Watts °C/W
Operating and Storage Temp. Range	T_A	–55 to +150	°C

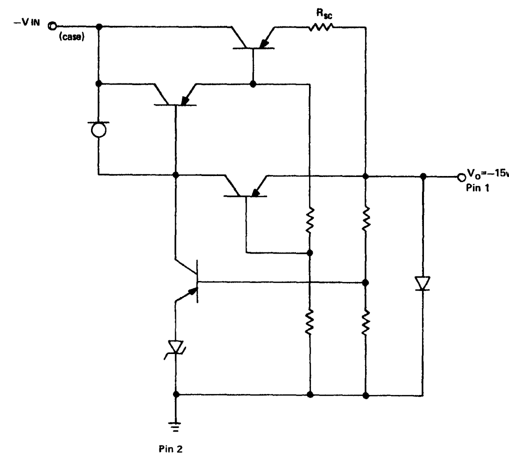
Electrical Characteristics ($\lvert \pm V_{in} \rvert$ = 25 Vdc, $\lvert \pm I_o \rvert$ = 2A, R_{SC} = .4Ω, T_C = +25 °C unless otherwise noted)

CHARACTERISTIC	SYMBOL	CONDITIONS	CJSE001		CJSE002		CJSE003		CJSE004		CJSE005		CJSE006		UNIT
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
Input Voltage	$\lvert \pm V_{in} \rvert$		20	50	20	50	20	50	20	50	20	50	20	50	V_{dc}
Output Voltage Range	$\lvert \pm V_o \rvert$		14.85	15.15	14.85	15.15	14.85	15.15	14.85	15.15	14.85	15.15	14.85	15.15	V_{dc}
		–55°C ≤ T_A ≤ +125°C	14.55	15.45	14.55	15.45	14.70	15.30	14.70	15.30	14.85	15.15	14.85	15.15	V_{dc}
Input-Output Voltage Diff	$\lvert \pm \Delta V \rvert$		5	–	5	–	5	–	5	–	5	–	5	–	V_{dc}
Standby Current	$I_{in} - I_o$		–	50	–	50	–	50	–	50	–	50	–	50	mAdc
Short Circuit Current	I_{sc}	V_o = 0v (short-ckt)	–	500	–	500	–	500	–	500	–	500	–	500	mAdc
Ripple Attenuation		$\lvert \pm V_{in} \rvert$ = 25v I_o = 1A f = 120 Hz	60	–	60	–	60	–	60	–	60	–	60	–	db
Temperature Coeff	$\frac{\Delta V_o}{V_o \Delta T}$	–55°C to +125°C	–	±.02	–	±.02	–	±.01	–	±.01	–	±.005	–	±.005	%/°C



CJSE 001, 003, 005

Figure 2



CJSE 002, 004, 006

Figure 3

POWER DERATING

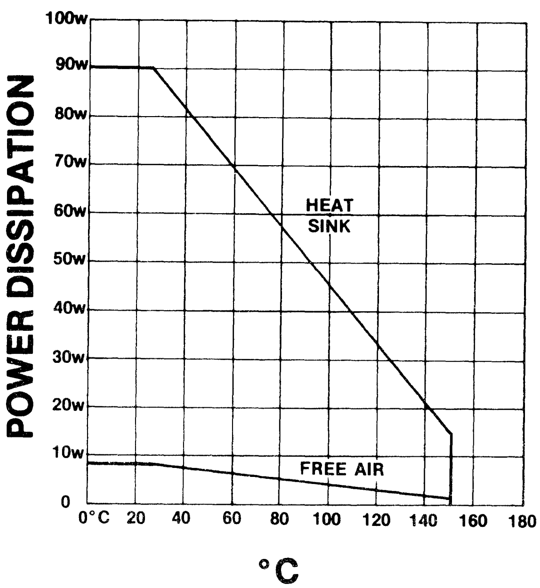


Figure 4

D.C. SAFE OPERATING AREA FOR PASS TRANSISTORS

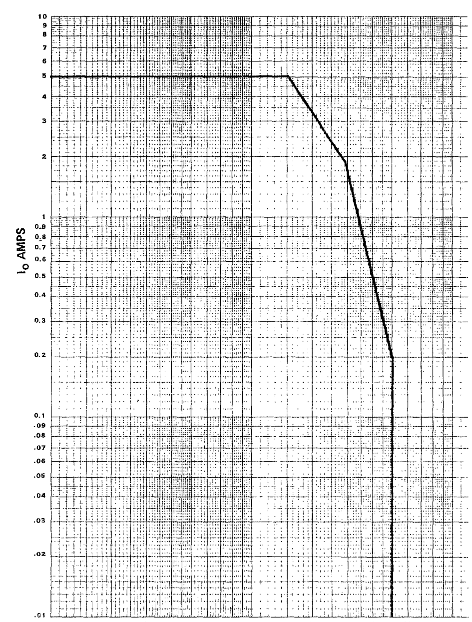


Figure 5

NOTES:

1. Regulators incorporate a FET constant current source, which provides current mode regulation. A minimum input-output voltage differential of 5 volts is recommended to bias the FET into its constant current region. At lower voltages the FET becomes resistive, and regulation reverts to the basic mode.
2. Foldback current limiting is accomplished in the regulators as shown in Fig. 6.
3. Output current and power capability may be increased by driving one or more external power transistors. Maintain safe operating conditions for both regulator and the external transistor.

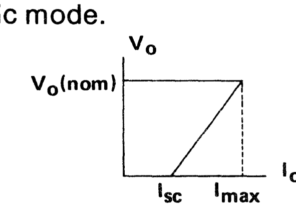
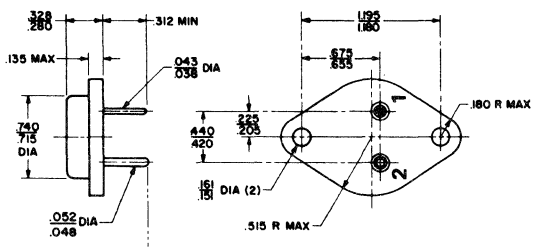


Figure 6

OUTLINE DIMENSIONS



TO-3 (2 Pins)

NOTES:

1) Case is V_{in}
2) Pin 2 is Ground
3) Pin 1 is Vout
4) All dimensions in inches

SOLITRON FACILITIES

TAPPAN, N.Y. 10983
256 Oak Tree Road
Phone 914 / 359-5050
TWX 710 / 576-2654

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA. 33404
1177 Blue Heron Boulevard
Phone 305 / 848-4311
TWX 510 / 952-7610

Hi-rel Power Transistors (silicon)
Industrial/Commercial Power Transistors (silicon)
Power Hybrids (standard)
Custom Hybrids
Schottky & Planar Diodes
Semiconductor Die (silicon)

PORT SALERNO, FLA. 33492
Cove Road, P.O. Box 278
Phone 305 / 287-5000
TWX 510 / 953-7500

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies
Thin Film Microwave Products

SAN DIEGO, CALIF. 92100
8808 Balboa Avenue
Phone 714 / 278-8780
TWX 910 / 335-1221

CMOS Devices
FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Diodes/Rectifiers
Zeners
High Voltage Rectifier Stacks

JUPITER, FLA. 33458
1440 West Indiantown Road
Phone 305 / 746-8311

When you think of semiconductors . . . think Solitron!

Solitron DEVICES, INC.
SEMICONDUCTOR GROUP
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

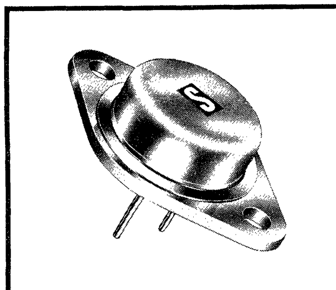
CJSE 009 CJSE 010 CJSE 011 CJSE 012 CJSE 013 CJSE 014

3 AMP ±20v

HYBRID VOLTAGE REGULATORS

These series regulators owe their outstanding performance characteristics to very select components. These regulators are high reliability assemblies without the temperature limitations and contamination problems found in soldered hybrids.

Lead attach is exclusively ultrasonically bonded aluminum wire. All devices are planar oxide passivated.



2 LEAD TO-3

NOTE: Output voltage values can be internally adjusted between | ±10v | and | ±30v | to meet your application requirements.

FEATURES

- Positive, Negative Supply Operation
- 3A Current Rating
- 50v Line Voltage Capability
- Three-Terminal Simplicity
- Line and Load Regulation ≤ + 0.5%

APPLICATIONS

- Military Equipment, Space and Telecommunications
- Distributed Power Systems
- DC Motor Supplies • Computers
- Industrial Controls • Data Terminals
- Medical Electronics • Instrumentation

20 V REGULATORS	CJSE	009	010	011	012	013	014
Regulation, Line and Load	$T_C = 25\ °C$	+20 ±.5%	−20 ±.5%	+20 ± .5%	−20 ±.5%	+20 ±.5%	−20 ±.5%
	$-55\ °C \le T_A \le +125°C$	±3%	±3%	±2%	±2%	±1%	±1%

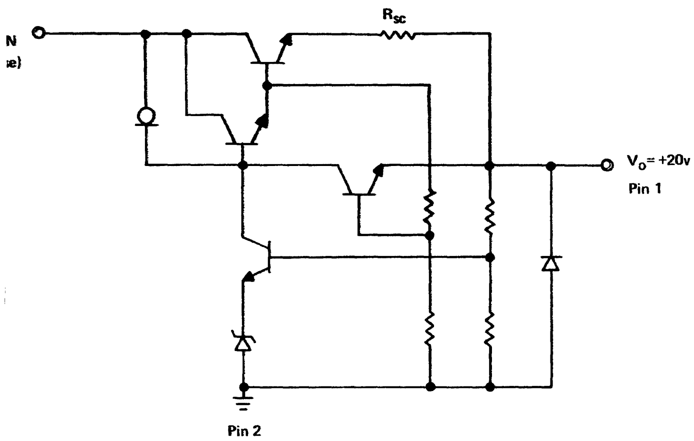
Figure 1. Basic Regulator

Maximum Ratings (T_C = +25 °C unless otherwise noted)

Rating	Symbol	Value	Unit
Input Voltage	$\lvert \pm V_{in} \rvert$	50	V_{dc}
Peak Load Current	I_{OPK}	3	A
Power Dissipation and Thermal Characteristics T_C = +25 °C Thermal Resistance, Junction to Case	 P_D θ_{jc}	 90 1.67	 Watts °C/W
Operating and Storage Temp. Range	T_A	–55 to +150	°C

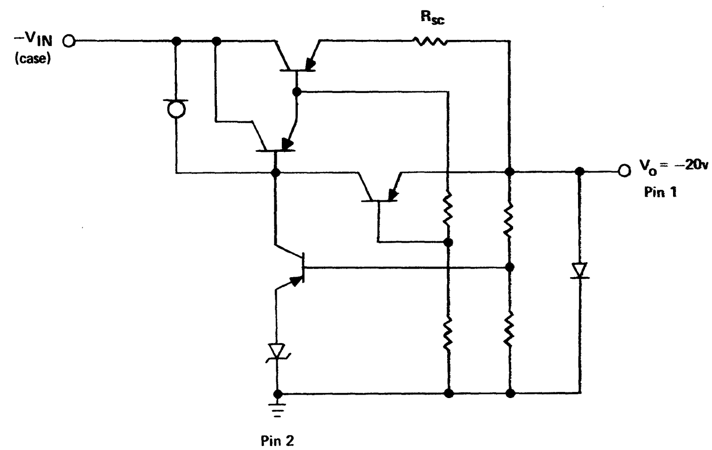
Electrical Characteristics ($\lvert \pm V_{in} \rvert$ = 30 Vdc, $\lvert \pm I_O \rvert$ = 2A, R_{SC} = .4Ω, T_C = +25 °C unless otherwise noted)

CHARACTERISTIC	SYMBOL	CONDITIONS	CJSE 009		CJSE 010		CJSE 011		CJSE 012		CJSE 013		CJSE 014		UNIT
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
Input Voltage	$\lvert \pm V_{in} \rvert$		25	50	25	50	25	50	25	50	25	50	25	50	V_{dc}
Output Voltage Range	$\lvert \pm V_O \rvert$		19.8	20.2	19.8	20.2	19.8	20.2	19.8	20.2	19.8	20.2	19.8	20.2	V_{dc}
		–55°C ≤ T_A ≤ +125°C	19.4	20.6	19.4	20.6	19.6	20.4	19.6	20.4	19.8	20.2	19.8	20.2	V_{dc}
Input-Output Voltage Diff	$\lvert \pm \Delta V \rvert$		5	–	5	–	5	–	5	–	5	–	5	–	V_{dc}
Standby Current	$I_{in} - I_o$		–	50	–	50	–	50	–	50	–	50	–	50	mAdc
Short Circuit Current	I_{SC}	V_O = 0v (short-ckt)	–	500	–	500	–	500	–	500	–	500	–	500	mAdc
Ripple Attenuation		$\lvert \pm V_{in} \rvert$ = 30v I_O = 1A f = 120 Hz	60	–	60	–	60	–	60	–	60	–	60	–	db
Temperature Coeff	$\frac{\Delta V_O}{V_O \Delta T}$	–55°C to +125°C	–	±.02	–	±.02	–	±.01	–	±.01	–	±.005	–	±.005	%/°C



CJSE 009, 011, 013

Figure 2



CJSE 010, 012, 014

Figure 3

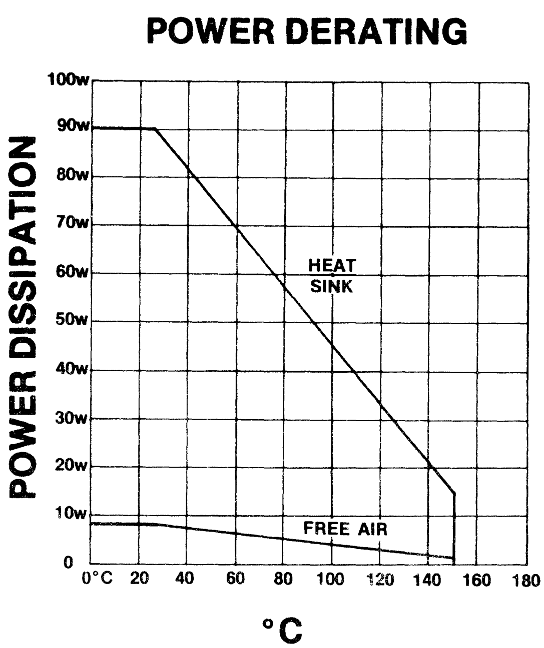


Figure 4

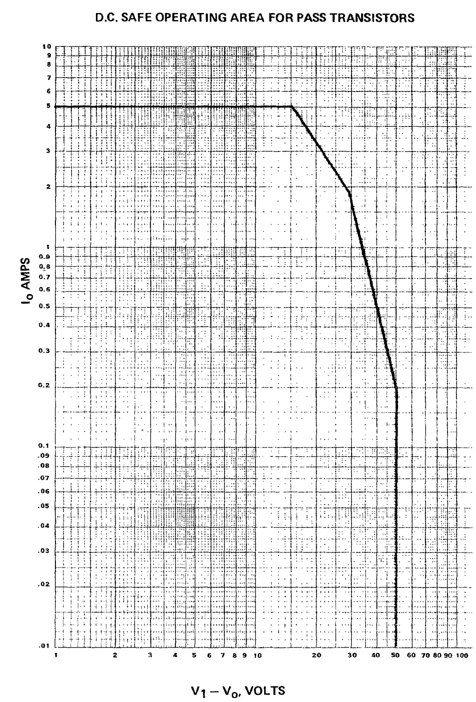


Figure 5

NOTES:

1. Regulators incorporate a FET constant current source, which provides current mode regulation. A minimum input-output voltage differential of 5 volts is recommended to bias the FET into its constant current region. At lower voltages the FET becomes resistive, and regulation reverts to the basic mode.
2. Foldback current limiting is accomplished in the regulators as shown in Fig. 6.
3. Output current and power capability may be increased by driving one or more external power transistors. Maintain safe operating conditions for both regulator and the external transistor.

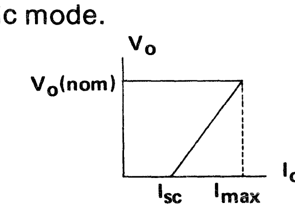
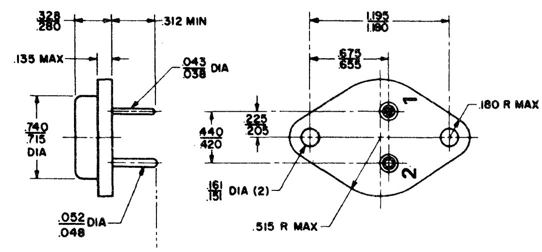


Figure 6

OUTLINE DIMENSIONS



TO-3 (2 Pins)

NOTES:

1) Case is V_{in}
2) Pin 2 is Ground
3) Pin 1 is Vout
4) All dimensions in inches

SOLITRON FACILITIES

TAPPAN, N.Y. 10983
256 Oak Tree Road
Phone 914 / 359-5050
TWX 710 / 576-2654

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA. 33404
1177 Blue Heron Boulevard
Phone 305 / 848-4311
TWX 510 / 952-7610

Hi-rel Power Transistors (silicon)
Industrial/Commercial Power Transistors (silicon)
Power Hybrids (standard)
Custom Hybrids
Schottky & Planar Diodes
Semiconductor Die (silicon)

PORT SALERNO, FLA. 33492
Cove Road, P.O. Box 278
Phone 305 / 287-5000
TWX 510 / 953-7500

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies
Thin Film Microwave Products

SAN DIEGO, CALIF. 92100
8808 Balboa Avenue
Phone 714 / 278-8780
TWX 910 / 335-1221

CMOS Devices
FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Diodes/Rectifiers
Zeners
High Voltage Rectifier Stacks

JUPITER, FLA. 33458
1440 West Indiantown Road
Phone 305 / 746-8311

When you think of semiconductors . . . think Solitron!

Solitron DEVICES, INC.
SEMICONDUCTOR GROUP
1177 BLUE HERON BLVD. • RIVIERA BEACH, FLA. 33404 • (305) 848-4311

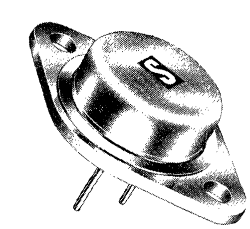
CJSE 017 CJSE 018 CJSE 019 CJSE 020 CJSE 021 CJSE 022

3 AMP ± 6v

HYBRID VOLTAGE REGULATORS

These series regulators owe their outstanding performance characteristics to very select components. These regulators are high reliability assemblies without the temperature limitations and contamination problems found in soldered hybrids.

Lead attach is exclusively ultrasonically bonded aluminum wire. All devices are planar oxide passivated.



2 LEAD TO-3

NOTE: Output voltage values can be internally adjusted between | ± 4v | and | ±10v | to meet your application requirements.

FEATURES

- Positive, Negative Supply Operation
- 3A Current Rating
- 40v Line Voltage Capability
- Three Terminal Simplicity
- Line and Load Regulation ≤ ± 0.5%

APPLICATIONS

- Military Equipment, Space and Telecommunications
- Distributed Power Systems
- DC Motor Supplies • Computers
- Industrial Controls • Data Terminals
- Medical Electronics • Instrumentation

6 V REGULATORS	CJSE	017	018	019	020	021	022
Regulation, Line and Load	$T_C = 25\,°C$	+6 ±.5%	−6 ±.5%	+6 ± .5%	−6 ±.5%	+6 ±.5%	−6 ±.5%
	$-55\,°C \le T_A \le +125°C$	±3%	±3%	±2%	±2%	±1%	±1%

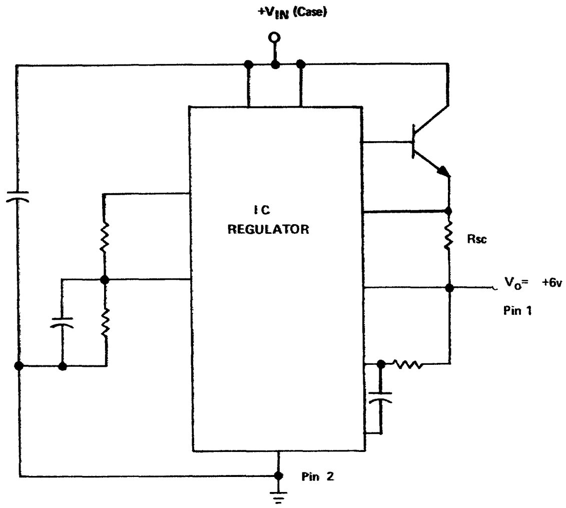
Figure 1. Basic Regulator

Maximum Ratings (T_C = +25 °C unless otherwise noted)

Rating	Symbol	Value	Unit
Input Voltage	$\lvert \pm V_{in} \rvert$	40	V_{dc}
Peak Load Current	I_{OPK}	3	A
Power Dissipation and Thermal Characteristics T_C = +25 °C Thermal Resistance, Junction to Case	 P_D θ_{jc}	 90 1.67	 Watts °C/W
Operating and Storage Temp. Range	T_A	−55 to +150	°C

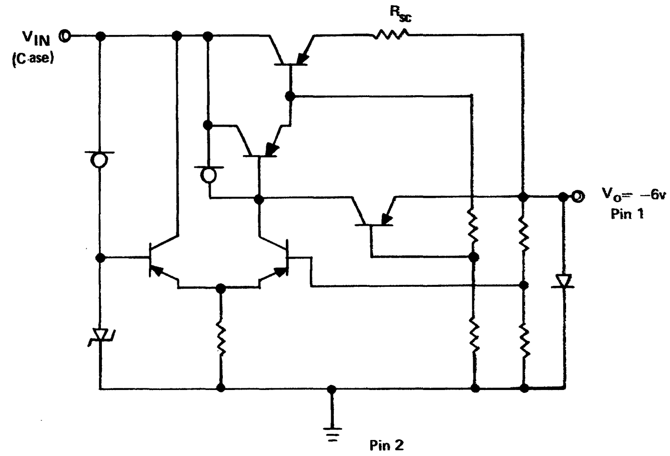
Electrical Characteristics ($\lvert \pm V_{in} \rvert$ = 16 Vdc, $\lvert \pm I_O \rvert$ = 2A, R_{SC} = .4Ω, T_C = +25 °C unless otherwise noted)

CHARACTERISTIC	SYMBOL	CONDITIONS	CJSE017		CJSE018		CJSE019		CJSE020		CJSE021		CJSE022		UNIT
			Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	
Input Voltage	$\lvert \pm V_{in} \rvert$		11	40	11	40	11	40	11	40	11	40	11	40	V_{dc}
Output Voltage Range	$\lvert \pm V_O \rvert$		5.94	6.06	5.94	6.06	5.94	6.06	5.94	6.06	5.94	6.06	5.94	6.06	V_{dc}
		−55°C ≤ T_A ≤ +125°C	5.82	6.18	5.82	6.18	5.88	6.12	5.88	6.12	5.94	6.06	5.94	6.06	V_{dc}
Input-Output Voltage Diff	$\lvert \pm \Delta V \rvert$		5	–	5	–	5	–	5	–	5	–	5	–	V_{dc}
Standby Current	$I_{in} - I_o$		–	50	–	50	–	50	–	50	–	50	–	50	mAdc
Short Circuit Current	I_{SC}	V_O = 0v (short-ckt)	–	500	–	500	–	500	–	500	–	500	–	500	mAdc
Ripple Attenuation		$\lvert \pm V_{in} \rvert$ = 16v I_O = 1A f = 120 Hz	60	–	60	–	60	–	60	–	60	–	60	–	db
Temperature Coeff	$\frac{\Delta V_O}{V_O \Delta T}$	−55°C to +125°C	–	±.02	–	±.02	–	±.01	–	±.01	–	±.005	–	±.005	%/°C



CJSE 017, 019, 021

Figure 2



CJSE 018, 020, 022

Figure 3

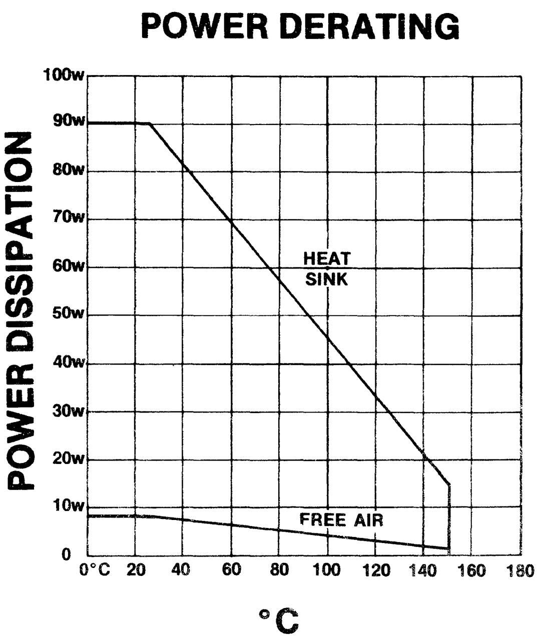


Figure 4

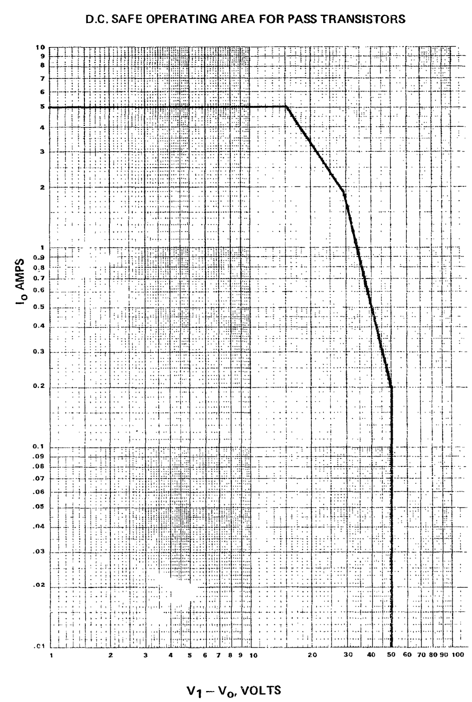


Figure 5

NOTES:

1. -6v Reg. incorporate a FET constant current source, which provides current mode regulation. A minimum input-output voltage differential of 5 volts is recommended to bias the FET into its constant current region. At lower voltages the FET becomes resistive, and regulation reverts to the basic mode.
2. Foldback current limiting is accomplished in the regulators as shown in Fig. 6.
3. Output current and power capability may be increased by driving one or more external power transistors. Maintain safe operating conditions for both regulator and the external transistor.

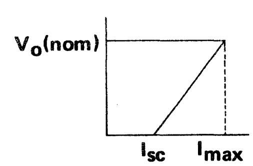
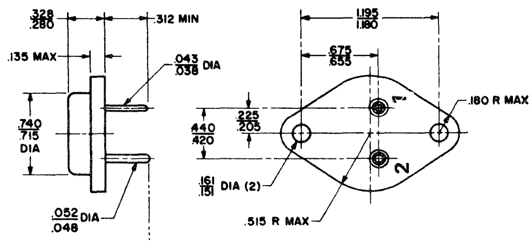


Figure 6

OUTLINE DIMENSIONS



TO-3 (2 Pins)

NOTES:
1) Case is V_{in}
2) Pin 2 is Ground
3) Pin 1 is V_{out}
4) All dimensions in inches

S O L I T R O N   F A C I L I T I E S

TAPPAN, N.Y. 10983
256 Oak Tree Road
Phone 914 / 359-5050
TWX 710 / 576-2654

Diodes & Rectifiers
Zeners
High Voltage Assemblies
Power Rectifiers
Thick Film Hybrid Circuits

RIVIERA BEACH, FLA. 33404
1177 Blue Heron Boulevard
Phone 305 / 848-4311
TWX 510 / 952-7610

Hi-rel Power Transistors (silicon)
Industrial/Commercial Power Transistors (silicon)
Power Hybrids (standard)
Custom Hybrids
Schottky & Planar Diodes
Semiconductor Die (silicon)

PORT SALERNO, FLA. 33492
Cove Road, P.O. Box 278
Phone 305 / 287-5000
TWX 510 / 953-7500

Precision RF Connectors
Cable Assemblies
Loads & Terminations
Strip Line Launchers
Couplers
Custom Strip Line Assemblies
Thin Film Microwave Products

SAN DIEGO, CALIF. 92100
8808 Balboa Avenue
Phone 714 / 278-8780
TWX 910 / 335-1221

CMOS Devices
FET & Dual FET Transistors
MOS Devices
MOS/FET Memory Arrays
Shift Registers
Diodes/Rectifiers
Zeners
High Voltage Rectifier Stacks

JUPITER, FLA. 33458
1440 West Indiantown Road
Phone 305 / 746-8311

When you think of semiconductors . . . think Solitron!

SECTION 7

PLANAR AND SCHOTTKY DEVICES

SPD, SPDA and MS Devices

SILICON PLANAR FAST RECOVERY DIODES

6 AMP — DO-4 & TO-3

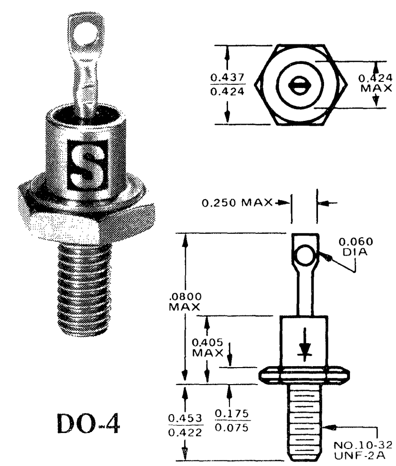
TYPES SPD 605 thru SPD 640

HIGH FREQUENCY, FAST RECOVERY

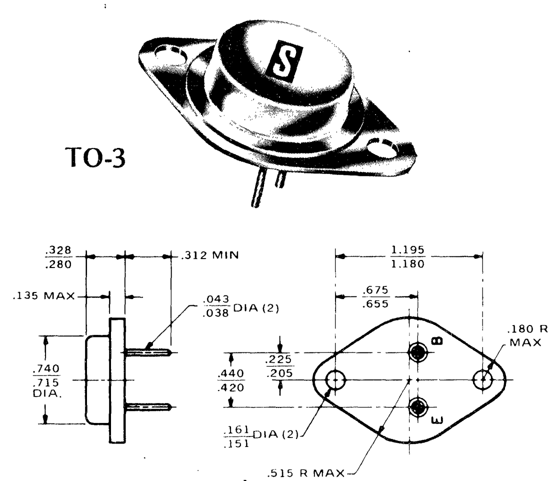
- 50 - 400 Volts, 6 Amps
- 125 nsec typical recovery time
- Designed to meet stringent environmental requirements
- Typical dissipation, $2^{o}C$/Watt — DO-4
- Exceptional efficiency at high frequency
- Applications: high frequency power supplies, high-speed power switches and multiphase rectifier operation
- Hermetic DO-4 and TO-3 construction

This Solitron Planar Diode Series utilizes epitaxial planar chip construction for low reverse, low forward and fast switching characteristics.

Available in DO-4 for chassis mounting or TO-3 for P.C. board mounting.



DO-4



TO-3

*ABSOLUTE MAXIMUM RATINGS AT SPECIFIED CASE TEMPERATURE

	SOLITRON PART NUMBER	SPD 605	SPD 610	SPD 620	SPD 630	SPD 640	UNIT
V_{BR}	Peak Reverse Voltage Temp. range from $-65^{o}C$ to $150^{o}C$	60	120	240	360	480	V
V_R	Rated Peak Reverse Voltage Temp. range from $-65^{o}C$ to $150^{o}C$	50	100	200	300	400	V
V_{RMS}	Sinusoidal rated voltage Temp. range from $-65^{o}C$ to $150^{o}C$	35	70	140	210	280	V
I_o	Peak rectified forward current Temp. range from $-65^{o}C$ to $100^{o}C$	6					A
t_{rr}	Reverse recovery time	200					ns
T_{STG}	Storage temperature Non-Operating	−65 to +200					^{o}C
T_{OP}	Operating Temperature	−65 to +150					^{o}C
$\Theta_{J\text{-}C}$	Thermal Resistance (Junction to Case)	$2^{o}C$/Watt (DO-4) $1.2^{o}C$/Watt (TO-3)					

*NOTE: For TO-3 package, designate using 'T' suffix as SPD 605T

6-74-ZB

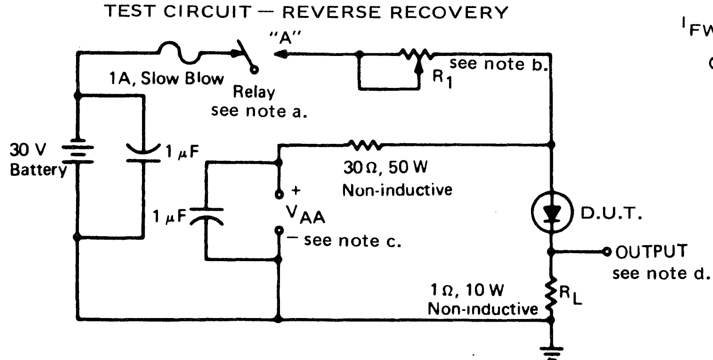
Solitron DEVICES, INC.
1177 Blue Heron Blvd., Riviera Beach, Florida 33404, Tel. 305 / 848-4311

ELECTRICAL CHARACTERISTICS AT 25°C CASE TEMPERATURE
unless otherwise specified

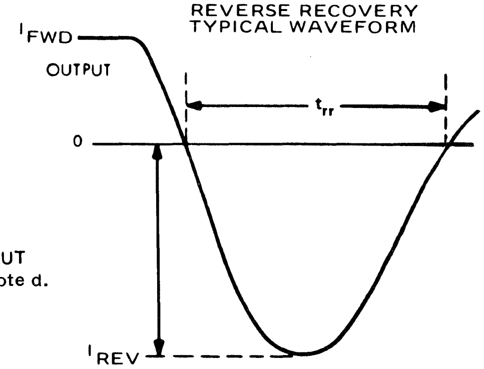
PARAMETER		TEST CONDITIONS	TYPICAL	MAX	UNIT
I_R	Reverse Current	At Rated V_{BR} At Rated V_R	 .1	1 .5	μA
I_R	Reverse Current	At 80% V_R	.05	.250	μA
		At 80% V_R 100°C At 80% V_R 150°C	3 25	10 50	μA
V_F	Forward Voltage	At I_F (Max. 6 Amp)	.9	1.2	V
V_{FM}	Peak Forward Voltage	At I_F (Max. 6 Amp) Pulse tested	1.2	1.4	V
I_s I_s	Max. Surge Capability	Operating at I_{RMS}=4 Amp, V_{RMS}= Rated Pulsed at 60 CPS half-sine wave Repeated after return to thermal equilibrium		150 (Min.)	A
I_{rr} t_{rr}	Reverse Recovery	At $I_R = I_F = 1$ Amp	1.5 125	2.0 200	A ns
C_T	Capacitance	At V_R = 1V, f = 1 MHz	100	150	pF

PARAMETER MEASUREMENT INFORMATION

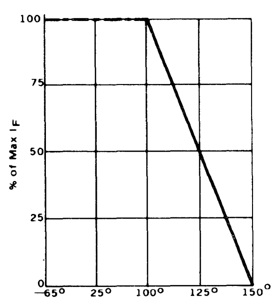
TEST CIRCUIT — REVERSE RECOVERY



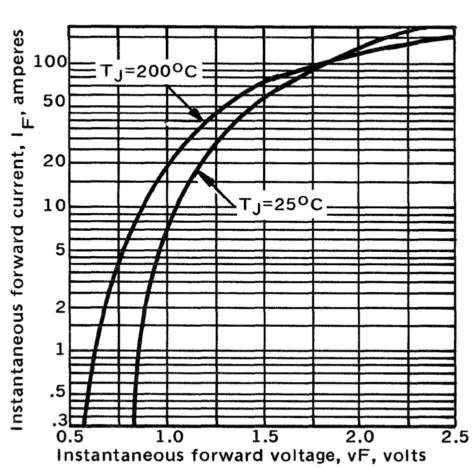
REVERSE RECOVERY TYPICAL WAVEFORM



FORWARD CURRENT DERATING vs CASE TEMPERATURE



MAXIMUM FORWARD CHARACTERISTICS



NOTES:

a. Relay is a make-before-break, mercury-wetted contact type (C.P. Clare relay type HGP 1004, or equivalent) driven by 60 -cps sine wave. The relay conducts for approximately 640μsec and is open for approximately 7.7 msec.

b. Resistor R_1 is a 3Ω, 25 W rheostat adjusted for a total resistance value of 1.4Ω from anode to relay contact A. Measured inductance between these points is $\simeq$0.9 μh.

c. V_{AA} supply has an output impedance $Z_O \leq 0.5\Omega$ from 0 to 2 kc, and is adjusted for I_F = 1 A.

d. Output waveform is monitored on an oscilloscope with the following characteristics. $t_r \leq 14$ nsec, R_{in} = 9 MΩ, $C_{in} \leq 12$ pf, $L_{in(series)} \leq 0.5$ μh.

SILICON PLANAR FAST RECOVERY DIODES

12 AMP — DO-4 & TO-3

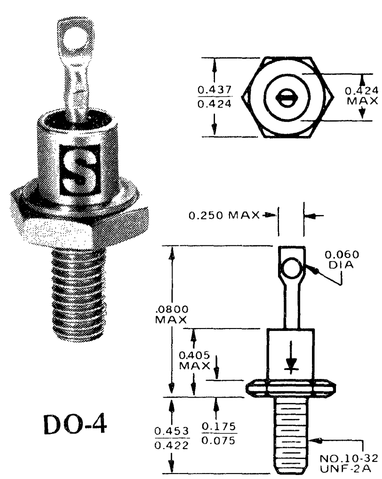
TYPES SPD 1205 thru SPD 1240

HIGH FREQUENCY, FAST RECOVERY

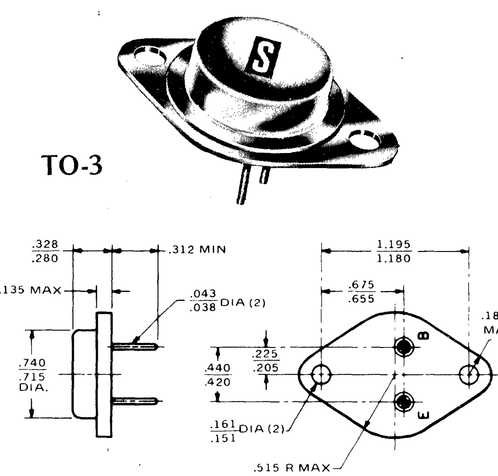
- 50 - 400 Volts, 12 Amps
- 150 nsec typical recovery time
- Designed to meet stringent environmental requirements
- Typical dissipation, 2^oC/Watt — DO-4
- Exceptional efficiency at high frequency
- Applications: high frequency power supplies, high-speed power switches and multiphase rectifier operation
- Hermetic DO-4 and TO-3 construction

This Solitron Planar Diode Series utilizes epitaxial planar chip construction for low reverse, low forward and fast switching characteristics.

Available in DO-4 for chassis mounting or TO-3 for P.C. board mounting.



DO-4



*ABSOLUTE MAXIMUM RATINGS AT SPECIFIED CASE TEMPERATURE

	SOLITRON PART NUMBER	SPD 1205	SPD 1210	SPD 1220	SPD 1230	SPD 1240	UNIT
V_{BR}	Peak reverse voltage Temp range from -65^oC to 150^oC	60	120	240	360	480	V
V_R	Rated Peak Reverse Voltage Temp range from -65^oC to 150^oC	50	100	200	300	400	V
V_{RMS}	Sinusoidal rated voltage Temp. range from -65^oC to 150^oC	35	70	140	210	280	V
I_o	Peak rectified forward current Temp. range from -65^oC to 100^oC	12					A
T_{rr}	Reverse Recovery Time	200					ns
T_{STG}	Storage Temperature Non-Operating	−65 to +200					^oC
T_{OP}	Operating Temperature	−65 to +150					^oC
$\Theta_{J\text{-}C}$	Thermal Resistance (Junction to Case)	2^oC/Watt (DO-4) 1.2^oC/Watt (TO-3)					

*NOTE: For TO-3 package, designate using 'T' suffix as SPD 1205T

6-74-ZC

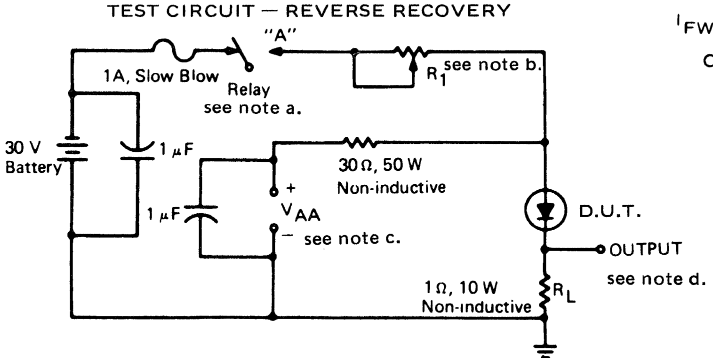
Solitron DEVICES, INC. 1177 Blue Heron Blvd., Riviera Beach, Florida 33404, Tel. 305 / 848-4311

ELECTRICAL CHARACTERISTICS AT 25°C CASE TEMPERATURE
unless otherwise specified

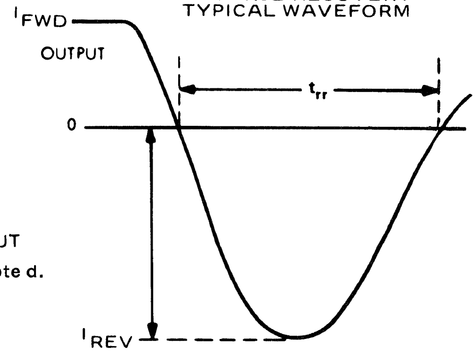
PARAMETER	TEST CONDITIONS	TYPICAL	MAX	UNIT
I_R Reverse Current	At Rated V_{BR} At Rated V_R	 .1	1 .5	μA
I_R Reverse Current	At 80% V_R At 80% V_R – 100°C At 80% V_R – 150°C	.100 5 10	.250 10 50	μA
V_F Forward Voltage	At I_F (Max. 12 Amp)	.9	1.2	V
V_{FM} Peak Forward Voltage	At I_F (Max. 12 Amp) Pulse Tested	1.2	1.4	V
I_s Max. Surge Capability	Operating at I_{RMS}= 4 Amp, V_{RMS}= Rated Pulsed with 60 CPS half-sine wave. Repeated after return to thermal equilibrium		200 (Min.)	
I_{rr} / t_{rr} Reverse Recovery	At $I_R = I_F = 1$ Amp	1.5 125	2.0 200	A ns
C_T Capacitance	At V_B= 1V, f = 1 MHz	200	300	pF

PARAMETER MEASUREMENT INFORMATION

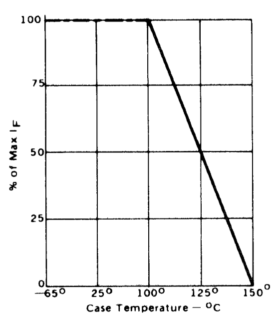
TEST CIRCUIT — REVERSE RECOVERY



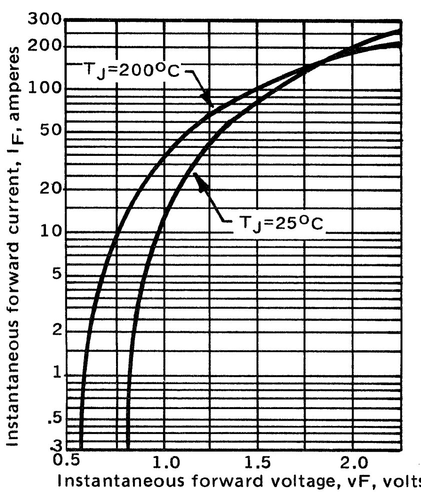
REVERSE RECOVERY
TYPICAL WAVEFORM



FORWARD CURRENT DERATING
vs CASE TEMPERATURE



MAXIMUM FORWARD CHARACTERISTICS



NOTES:

a. Relay is a make-before-break, mercury-wetted contact type (C.P. Clare relay type HGP 1004, or equivalent) driven by 60 -cps sine wave. The relay conducts for approximately 640μsec and is open for approximately 7.7 msec.

b. Resistor R_1 is a 3Ω, 25 W rheostat adjusted for a total resistance value of 1.4Ω from anode to relay contact A. Measured inductance between these points is ≃0.9 μh.

c. V_{AA} supply has an output impedance $Z_O \leq 0.5\Omega$ from 0 to 2 kc, and is adjusted for I_F = 1 A.

d. Output waveform is monitored on an oscilloscope with the following characteristics: $t_r \leq 14$ nsec, R_{in} = 9 MΩ, $C_{in} \leq 12$ pf, $L_{in(series)} \leq 0.5$ μh.

SILICON PLANAR FAST RECOVERY DIODES

20 AMP — DO-5 & TO-3

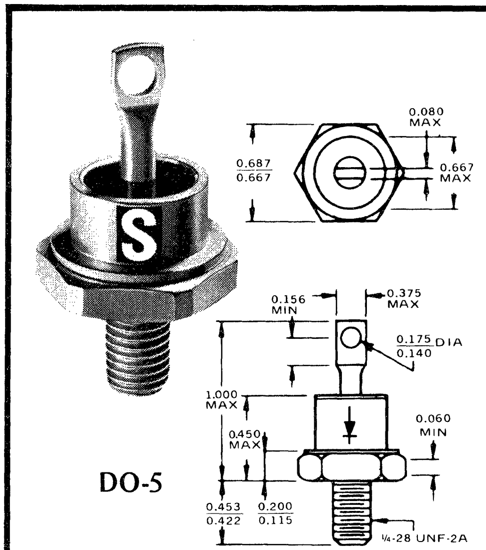
TYPES SPD 2005 thru SPD 2040

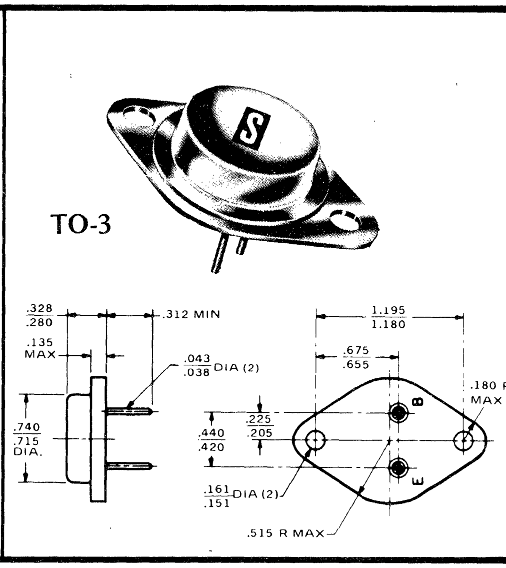
HIGH FREQUENCY, FAST RECOVERY

- 50 - 400 Volts, 20 Amps
- 150 nsec typical recovery time
- Designed to meet stringent environmental requirements
- Typical dissipation, 1°C/Watt — DO-5
- Exceptional efficiency at high frequency
- Applications: high frequency power supplies, high-speed power switches and multiphase rectifier operation
- Hermetic DO-5 and TO-3 construction

This Solitron Planar Diode Series utilizes epitaxial planar chip construction for low reverse, low forward and fast switching characteristics.

Available in DO-4 for chassis mounting or TO-3 for P.C. board mounting.





*ABSOLUTE MAXIMUM RATINGS AT SPECIFIED CASE TEMPERATURE

	SOLITRON PART NUMBER	SPD 2005	SPD 2010	SPD 2020	SPD 2030	SPD 2040	UNIT
V_{BR}	Peak reverse voltage Temp. range from –65°C to +150°C	60	120	240	360	480	V
V_R	Rated Peak Reverse Voltage Temp. range from –65°C to +150°C	50	100	200	300	400	V
V_{RMS}	Sinusoidal rated voltage Temp. range from –65°C to +150°C	35	70	140	210	280	V
I_O	Peak rectified forward current Temp. range from –65°C to +100°C	20					A
t_{rr}	Reverse recovery time	200					ns
T_{STG}	Storage temperature Non-Operating	–65 to +200					°C
T_{OP}	Operating temperature	–65 to +200					°C
θ_{J-C}	Thermal Resistance (Junction to Case)	1°C/Watt (DO-5) 1.2°C/Watt (TO-3)					°C

*NOTE: For TO-3 package designate using 'T' suffix as SPD 2005T

6-74-ZE

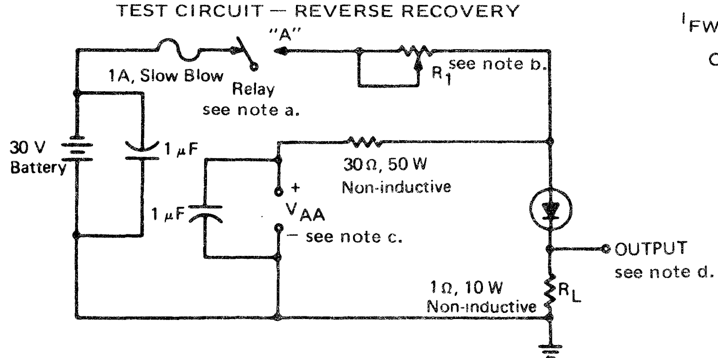
Solitron DEVICES, INC. 1177 Blue Heron Blvd., Riviera Beach, Florida 33404, Tel. 305 / 848-4311

ELECTRICAL CHARACTERISTICS AT 25°C CASE TEMPERATURE
unless otherwise specified

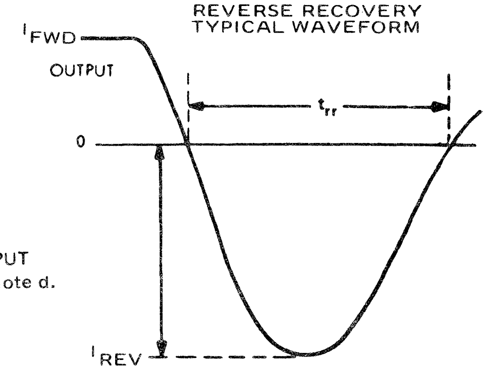
PARAMETER		TEST CONDITIONS	TYPICAL	MAX	UNIT
I_R	Reverse Current	At Rated V_{BR} At Rated V_R	 .5	5 1	µA µA
I_R	Reverse Current	At 80% V_R At 80% V_R – 100°C At 80% V_R – 150°C	.250 10 25	.750 20 50	µA
V_F	Forward Voltage	At I_F (Max. 20 Amp)	1.2	1.4	V
V_F	Peak Forward Voltage	At I_F (Max. 20 Amp) Pulse Tested	1.4	1.6	V
I_s	Max. Surge Capability	Operating at I_{RMS} = 14A, V_{RMS}= Rated Pulsed with 60 CPS half-sine wave. Repeated after return to thermal equilibrium		250 (Min.)	A
I_{rr} t_{rr}	Reverse Recovery	At $I_R = I_F$ = 3 AMP	1.5 150	2.0 200	A ns
C_T	Capacitance	At V_R= 1 V, f = 1 MHz	250	400	pF

PARAMETER MEASUREMENT INFORMATION

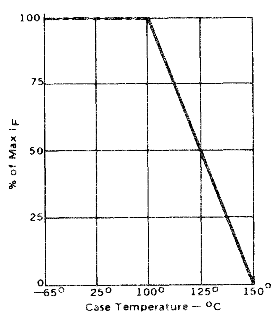
TEST CIRCUIT — REVERSE RECOVERY



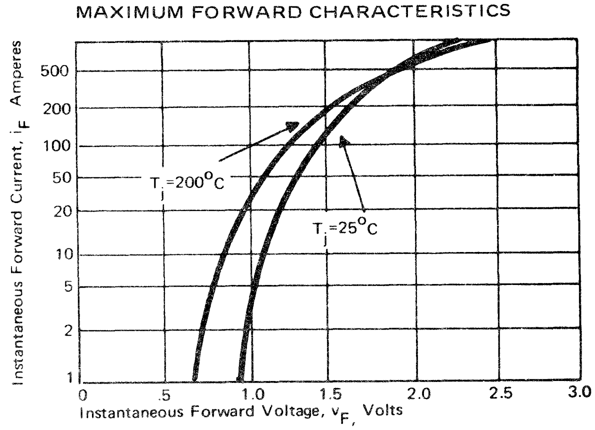
REVERSE RECOVERY TYPICAL WAVEFORM



FORWARD CURRENT DERATING vs CASE TEMPERATURE



MAXIMUM FORWARD CHARACTERISTICS



NOTES:

a. Relay is a make-before-break, mercury-wetted contact type (C.P. Clare relay type HGP 1004, or equivalent) driven by 60 -cps sine wave. The relay conducts for approximately 640µsec and is open for approximately 7.7 msec.

b. Resistor R_1 is a 3 Ω, 25 W rheostat adjusted for a total resistance value of 1.4 Ω from anode to relay contact A. Measured inductance between these points is ≃0.9 µh.

c. V_{AA} supply has an output impedance $Z_O \leq 0.5\,\Omega$ from 0 to 2 kc, and is adjusted for I_F = 1 A.

d. Output waveform is monitored on an oscilloscope with the following characteristics: $t_r \leq 14$ nsec, R_{in} = 9 MΩ, $C_{in} \leq 12$ pf, $L_{in(series)} \leq 0.5$ µh.

SILICON PLANAR INTEGRATED POWER RECTIFIERS

FAST SWITCHING

12 AMPS – 6 AMPS PER CHIP

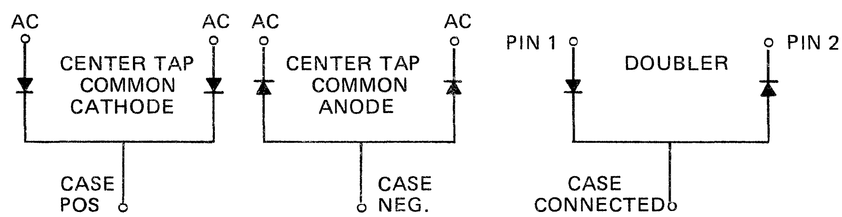
TYPES SPDA 6205 thru SPDA 6230

HIGH FREQUENCY, FAST RECOVERY

- 50–300 Volts, 6 Amps Per Chip
- 125 nsec typical recovery time
- Designed to meet stringent environmental requirements
- Typical dissipation, 0.5°C per watt
- Exceptional efficiency at high frequency
- Applications: high frequency power supplies, high-speed power switches and multiphase rectifier operation
- Hermetic TO-3 construction

This Solitron Planar Series utilizes ultrasonic bonding and eutetic die mounting with thermal matching for hi-rel applications. Standard low cost TO-3 package and fast switching for circuit efficiency makes it ideal for commercial applications.

CIRCUIT CONFIGURATIONS AVAILABLE



NOTE: PLEASE SPECIFY AS COMMON ANODE (CA), COMMON CATHODE (CC) OR DOUBLER (DR) – EX: SPDA 6205 CA

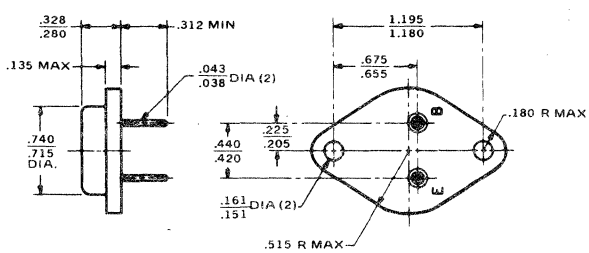
***ABSOLUTE MAXIMUM RATINGS AT SPECIFIED CAST TEMPERATURE PER CHIP**

	SOLITRON PART NUMBER	SPDA 6205	SPDA 6210	SPDA 6220	SPDA 6230	UNIT
V_{BR}	Peak Reverse Voltage Temp. range from –65°C to 150°C	60	120	240	360	V
V_R	Rated Peak Reverse Voltage Temp. range from –65°C to 150°C	50	100	200	300	V
V_{RMS}	Sinusoidal rated voltage Temp. range from –65°C to 150°C	35	70	140	210	V
I_O	Peak rectified forward current Temp. range from –65°C to 100°C	6				A
t_{rr}	Reverse Recovery time	200				ns
T_{STG}	Storage temperature Non-Operating	–65 to +200				°C
T_{OP}	Operating Temperature	–65 to +150				°C
$\Theta_{J\text{-}C}$	Thermal Resistance (Junction to Case)	1.25°C/Watt				

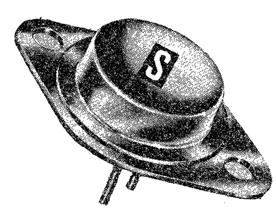
Solitron DEVICES, INC. 1177 Blue Heron Blvd., Riviera Beach, Florida 33404, Tel 305 / 848-4311

ELECTRICAL CHARACTERISTICS AT 25°C CASE TEMPERATURE PER CHIP
unless otherwise specified

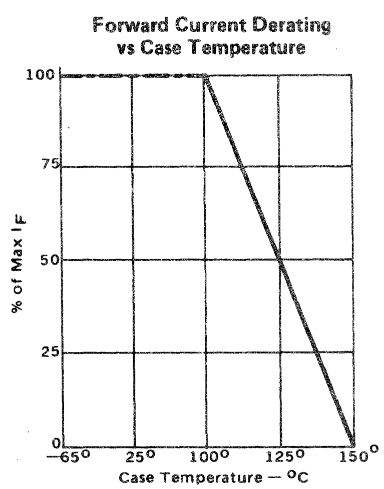
PARAMETER	TEST CONDITIONS	TYPICAL	MAX	UNIT
I_R Reverse Current	At Rated V_{BR} At Rated V_R	 .1	1 .5	μA μA
I_R Reverse Current	At 80% V_R At 80% V_R – 100°C At 80% V_R – 150°C	.05 3 25	.250 10 50	μA μA
V_F Forward Voltage	At I_F (Max. 6 Amp)	.9	1.2	V
V_{FM} Peak Forward Voltage	At I_F (Max. 6 Amp) Pulse tested	1.2	1.4	V
I_s Max. Surge	Operating at I_{RMS}=4 Amp, V_{RMS}=Rated V_{RMS} Pulsed at 60 CPS half-sine wave Repeated after return to thermal equilibrium		150 (Min.)	A
I_{rr} Reverse t_{rr} Recovery	At I_R = I_F = 1 Amp	1.5 125	2.0 200	A ns
C_T Capacitance	At V_R = 1 V, f = 1 MHz	100	150	pF

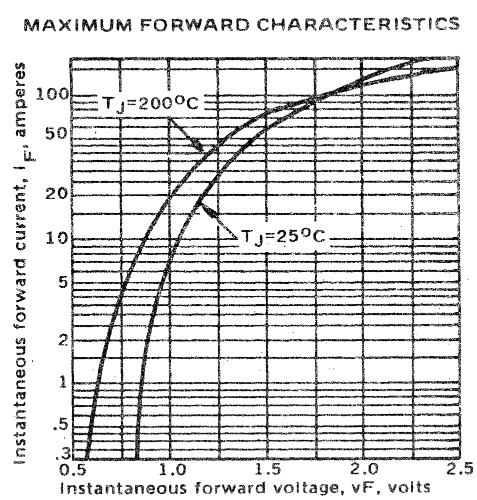


NOTE PIN CONFIGURATION



TO-3





SILICON PLANAR INTEGRATED POWER RECTIFIERS

FAST SWITCHING

24 AMPS – 12 AMPS PER CHIP

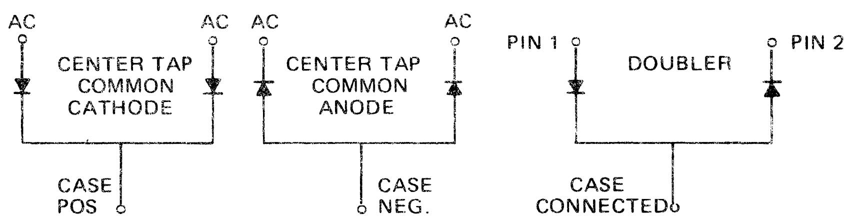
TYPES SPDA 12205 thru SPDA 12230

HIGH FREQUENCY, FAST RECOVERY

- 50–300 Volts, 12 Amps Per Chip
- 150 nsec typical recovery time
- Designed to meet stringent environmental requirements
- Typical dissipation, 0.5°C per watt
- Exceptional efficiency at high frequency
- Applications: high frequency power supplies, high-speed power switches and multiphase rectifier operation
- Hermetic TO-3 construction

This Solitron Planar Series utilizes ultrasonic bonding and eutetic die mounting with thermal matching for hi-rel applications. Standard low cost TO-3 package and fast switching for circuit efficiency makes it ideal for commercial applications.

CIRCUIT CONFIGURATIONS AVAILABLE



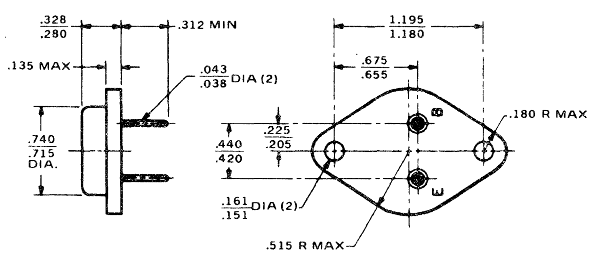
NOTE: PLEASE SPECIFY AS COMMON ANODE (CA), COMMON CATHODE (CC) OR DOUBLER (DR) – EX: SPDA 6205 CA

ABSOLUTE MAXIMUM RATINGS AT SPECIFIED CASE TEMPERATURE PER CHIP						
	SOLITRON PART NUMBER	SPDA 12205	SPDA 12210	SPDA 12220	SPDA 12230	UNIT
V_{BR}	Peak Reverse Voltage Temp. range from –65°C to 150°C	60	120	240	360	V
V_R	Rated Peak Reverse Voltage Temp range from –65°C to 150°C	50	100	200	300	V
V_{RMS}	Sinusoidal rated voltage Temp. range from –65° to 150°C	35	70	140	210	V
I_o	Peak rectified forward current Temp. range from –65°C to 100°C	12				A
T_{rr}	Reverse Recovery Time	200				ns
T_{STG}	Storage Temperature Non-Operating	–65 to +200				°C
T_{OP}	Operating Temperature	–65 to +150				°C
$\Theta_{J\text{-}C}$	Thermal Resistance (Junction to Case)	1.25°C/Watt				

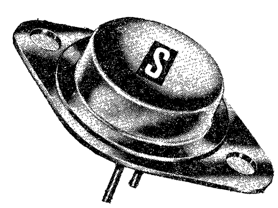
Solitron DEVICES, INC. 1177 Blue Heron Blvd. Riviera Beach, Florida 33404, Tel 305 / 848-4311

ELECTRICAL CHARACTERISTICS AT 25°C CASE TEMPERATURE PER CHIP
unless otherwise specified

PARAMETER	TEST CONDITIONS	TYPICAL	MAX	UNIT
I_R Reverse Current	At Rated V_{BR} At Rated V_{BR}	 .1	1 .5	μA
I_R Reverse Current	At 80% V_R At 80% V_R – 100°C At 80% V_R – 150°C	.100 5 10	.250 10 50	μA
V_F Forward Voltage	At I_F (Max. 12 Amp)	.9	1.2	V
V_{FM} Peak Forward Voltage	At I_F (Max 12 Amp) Pulse Tested	1.2	1.4	V
I_S Max. Surge Capability	Operating at I_{RMS}=4 Amp, V_{RMS}=Rated V_{RMS} Pulsed with 60 CPS half-sine wave. Repeated after return to thermal equilibrium		200 (Min.)	
I_{rr} Reverse t_{rr} Recovery	At I_R = I_F = 1 Amp	1.5 125	2.0 200	A ns
C_T Capacitance	At V_B= 1V, f= 1 MHz	200	300	pF

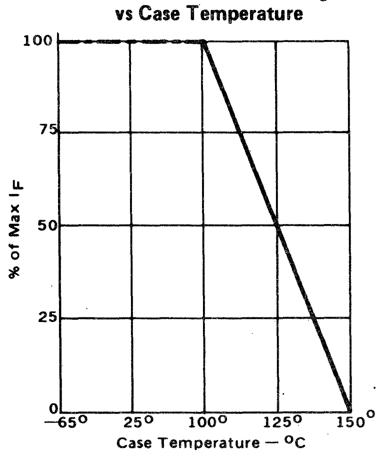


NOTE PIN CONFIGURATION

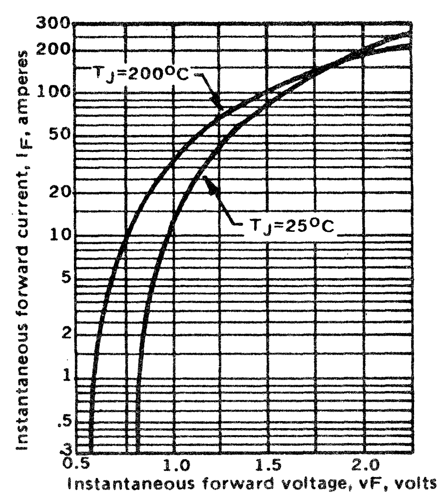


TO-3

Forward Current Derating
vs Case Temperature



MAXIMUM FORWARD CHARACTERISTICS



SCHOTTKY BARRIER DIODES

MICROWAVE MIXER DIODES

PART NUMBER	NF (db) [4]	Z_{IF} (Ω)	VSWR	TEST FREQUENCY
MS5111	8.0	150 - 300	2.3:1	1.0 GHz
MS5121	7.5	150 - 300	2.3:1	
MS5131	7.0	150 - 300	2.0:1	
MS5141	6.5	150 - 300	1.8:1	
MS5151	6.0	150 - 300	1.5:1	
MS5211	8.0	150 - 300	2.3:1	2.0 GHz
MS5221	7.5	150 - 300	2.3:1	
MS5231	7.0	150 - 300	2.0:1	
MS5241	6.5	150 - 300	1.8:1	
MS5251	6.0	150 - 300	1.5:1	
MS5311	8.0	150 - 350	2.0:1	
MS5321	7.5	150 - 350	1.8:1	
MS5331	7.0	150 - 350	1.6:1	
MS5341	6.5	150 - 350	1.4:1	
MS5351	6.0	150 - 350	1.2:1	
MS5411	8.0	200 - 400	2.0:1	8.0 GHz
MS5421	7.5	200 - 400	1.7:1	
MS5431	7.0	200 - 400	1.4:1	
MS5441	6.5	200 - 400	1.3:1	
MS5511	8.0	200 - 400	1.7:1	12.0 GHz
MS5521	7.5	200 - 400	1.6:1	
MS5531	7.0	200 - 400	1.4:1	
MS5541	6.5	200 - 400	1.3:1	

NOTES:
1. Prefix MS indicates single diode.
2. Matched pair and quads available. Use prefix MSP and MSQ respectively.
3. Matching parameters; $\Delta L_C \leq 0.3$ db
   $\Delta Z_{IF} \leq 25\ \Omega$
4. Test Conditions; 1.0mw LO power — 1.5 db 30 MHz IF amplifier

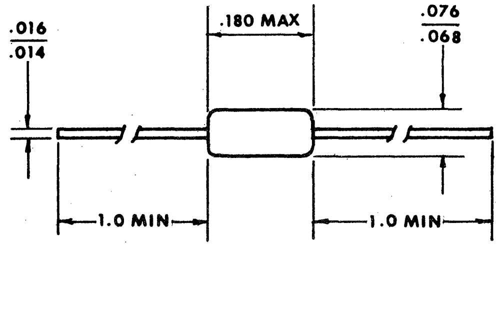
MICROWAVE DETECTOR DIODES

PART NUMBER	TSS (dbm) [1]	VIDEO RESISTANCE	VOLTAGE SENSITIVITY mv/ µw [2]	CW DISSIPATION [3]
MS6111	—52	1350 Ω	6.0	1.0 watt [4]
MS6211	—52	1350 Ω	4.5	200 mw
MS6311	—52	1350 Ω	4.5	200 mw
MS6411	—50	1350 Ω	4.5	200 mw
MS6511	—50	1350 Ω	3.5	200 mw
MS6611	—50	1200 Ω	3.5	200 mw

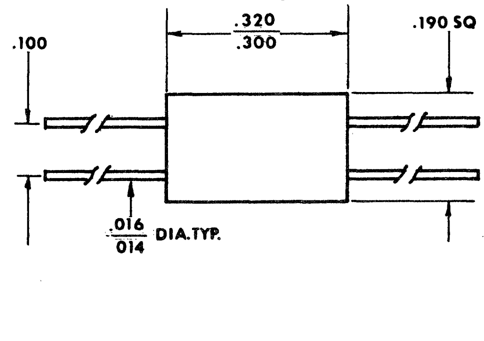
NOTES:
1. Test frequency = 10GHz. Video bandwidth = 2MHz. DC bias is 25 µamps.
2. RF power level = —40 dbm.
3. Diode mounted with an infinite heat sink at cathode end. Test time = 1 minute @ 10GHz
4. Test frequency; 4GHz for 1 minute.

PACKAGE OUTLINES

001



011



ULTRA FAST SWITCHING DIODES

PART NUMBER	V_{BR} (V) [2]	I_F (ma) [3]	C_T (pF) [4]	R_s (Ω) [5]
MS7111	5	10	1.0	—
MS7121	5	20	1.0	—
MS7131	5	35	1.0	—
MS7141	5	50	1.0	—
MS7151	5	100	1.0	—
MS7211	10	10	1.0	20
MS7221	10	20	1.0	15
MS7231	10	35	1.0	15
MS7241	10	50	1.0	10
MS7251	10	100	1.0	8
MS7311	20	10	1.0	20
MS7321	20	20	1.0	20
MS7331	15	35	1.3	15
MS7341	20	50	1.0	15
MS7351	20	100	1.0	8
MS7411	30	10	1.0	30
MS7421	30	20	1.0	20
MS7431	30	35	1.0	10
MS7441	30	50	1.0	10
MS7451	30	100	1.0	8
MS7511	40	10	1.2	30
MS7521	40	20	1.2	20
MS7531	40	35	1.2	10
MS7611	50	10	1.3	35
MS7621	50	20	1.3	25
MS7631	50	35	1.3	20

LOW THRESHOLD SWITCHING DIODES[1]

PART NUMBER	V_{BR}(V) [2]	C_T (pF) [4]	V_F max (VDC) @ I_F — 1.0 ma	I_F min (ma) @V_F — 1.0VDC	I_R max (na) @ 60% V_{BR}
MS8111	5	1.2	0.40	20	200
MS8121	5	1.2	0.40	35	200
MS8131	5	1.0	0.40	50	200
MS8141	5	1.0	0.40	75	200
MS8151	5	1.0	0.40	100	200
MS8211	10	1.2	0.40	20	200
MS8221	10	1.2	0.40	35	200
MS8231	10	1.0	0.40	50	200
MS8241	10	1.0	0.40	75	200
MS8251	10	1.2	0.40	100	200
MS8311	20	1.2	0.40	20	200
MS8321	20	1.2	0.40	35	200
MS8331	20	1.0	0.40	50	200
MS8341	20	1.0	0.40	75	200
MS8411	30	1.0	0.40	20	300
MS8421	30	1.0	0.40	35	300
MS8431	30	1.0	0.40	50	300
MS8441	30	1.0	0.40	75	300
MS8511	40	1.2	0.40	20	300
MS8521	40	1.2	0.40	35	300
MS8611	50	1.2	0.42	20	300
MS8711	70	2.0	0.41	15	200

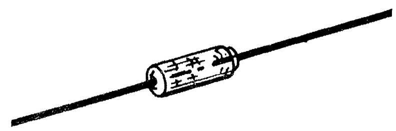
NOTES:
1. Specify prefix MSP for matched pair and MSQ for matched quad
2. @ I_R = 10 micro amps
3. I_F measured @ V_F = 1.0VDC
4. Total capacitance (C_T) measured at f = 1.0 MHz, V=0
5. Series resistance (Rs) measured at I_F = 20 ma
6. Minority carrier lifetime: MS7000 series 200 psec max.
   MS8000 series 100 psec max.
7. Standard matching parameters for pairs and quads: $\Delta V_F \leq$ 20mv and $\Delta C_T \leq$ 0.2 pF from 1—10 ma.

MS 9005 MS 9040
MS 9010 MS 9050
MS 9020 MS 9060
MS 9030 MS 9070

P-N MEDIUM POWER SCHOTTKY DIODES

500 MILLIAMPERES

FEATURES:
HIGH EFFICIENCY – NANOSECOND SWITCHING
LOW CAPACITANCE, HERMETICALLY SEALED GLASS CASE
VERY LOW FORWARD VOLTAGE DROP



APPLICATIONS:
HIGH FREQUENCY SWITCHING,
SWITCHING POWER SUPPLIES

DO-204 AA (DO-7)

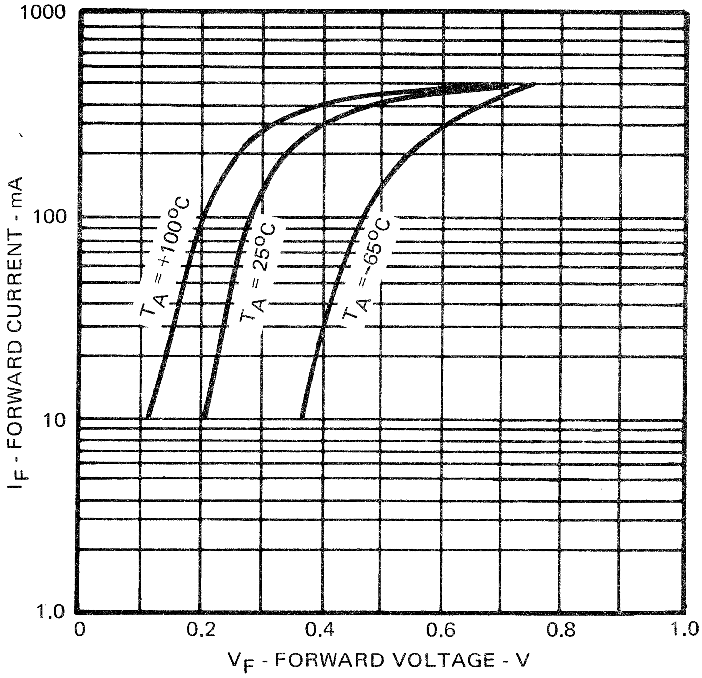
ABSOLUTE MAXIMUM RATINGS

		MS 9005	MS 9010	MS 9020	MS 9030	MS 9040	MS 9050	MS 9060	MS 9070
I_F	FORWARD CURRENT	500 mA	500 mA	500 mA	500 mA	500 mA	500 mA	500 mA	500 mA
I_F (surge)	FORWARD SURGE CURRENT (8.3 ms NON REPETITIVE SINE WAVE)	3.0 A	3.0 A	3.0 A	3.0 A	3.0 A	3.0 A	3.0 A	3.0 A
V_{BR}	REVERSE BREAKDOWN VOLTAGE AT 1.0 mA	5.0 V	10 V	20 V	30 V	40 V	50 V	60 V	70 V
P_D	POWER DISSIPATION	400 mW	400 mW	400 mW	400 mW	400 mW	400 mW	400 mW	400 mW
T (oper.)	OPERATING TEMPERATURE	–65°C to +135°C							
T (stor.)	STORAGE TEMPERATURE	–65°C to +165°C							

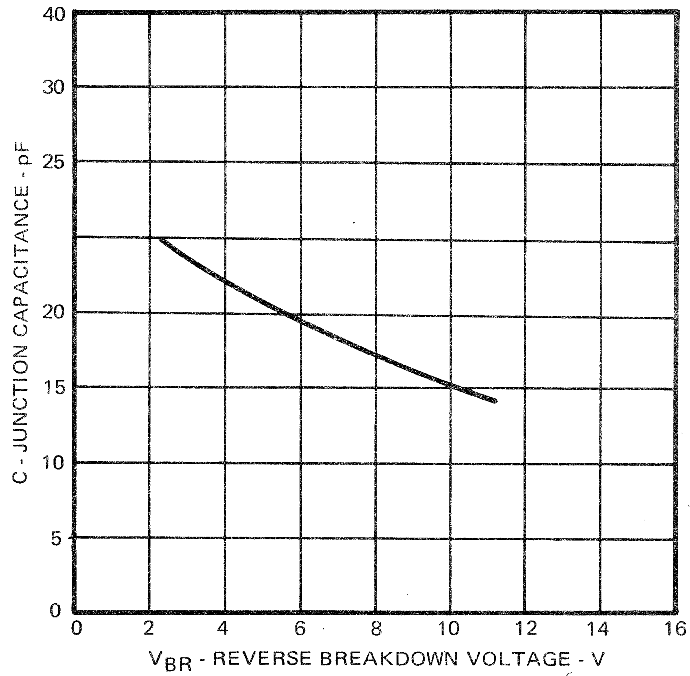
ELECTRICAL CHARACTERISTICS
(T_C = 25°C UNLESS OTHERWISE NOTED)

CHARACTERISTICS	SYMBOL	MAX	UNIT
FORWARD VOLTAGE DROP @ 10 mA	V_F	0.3	V
@ 100 mA		0.5	V
@ 500 mA		0.95	V
REVERSE CURRENT @ 50% of V_{BR}	I_R	400	μA
CAPACITANCE @ 10V	C	20	pF
REVERSE RECOVERY TIME @ $I_F = I_R$ = 0.5A	t_{rr}	2.0	ns

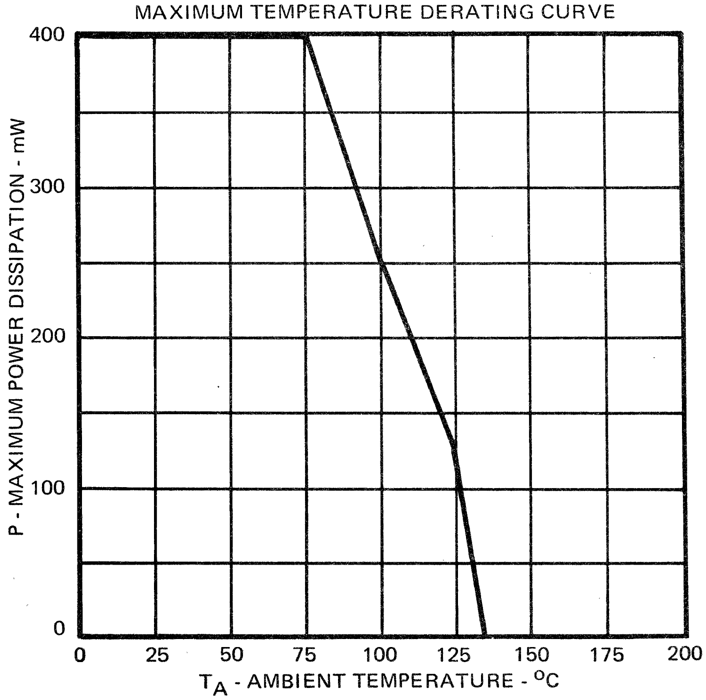
TYPICAL FORWARD CHARACTERISTICS



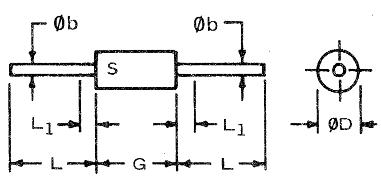
TYPICAL JUNCTION CAPACITANCE



MAXIMUM TEMPERATURE DERATING CURVE



OUTLINE DRAWING FOR DO-204AA (DO-7)



NOTE: Solitron Logo "S" denotes cathode.

NOTES:
1. Dimensioning and tolerancing per ANSI Y14.5, 1973.
2. Package contour optional within ØD and length G. Heat slugs, if any, shall be included within this cylinder, but shall not be subject to the minimum limit of ØD.
3. Lead diameter not controlled in zones L_1 to allow for flash, lead finish build-up and minor irregularities other than heat slugs.
4. Controlling dimensions: inch.

SYMBOL	IN INCHES		IN MILLIMETERS		NOTE
	MIN	MAX	MIN	MAX	
Øb	0.018	0.022	0.46	0.55	2
ØD	0.085	0.107	2.16	2.71	
G	0.230	0.300	5.85	7.62	2
L	1.000	1.500	25.40	38.10	
L_1	--	0.050	--	1.27	3
NOTE	1,4		1,4		
REF.	DO-7		DO-7		

Important
Please fill in the correct information on the top reply card and return it to us immediately. This information is necessary to add you to our mailing list for new and revised catalog pages. Please insert the new and revised pages as soon as they are received to be sure that your catalog is up to date at all times.

If you move
This lower cards are provided as a means to notify us of a change of address or change of ownership of the catalog.

Solitron Devices, Inc.
Transistor Division

SC

Add my name to your mailing list for additions and revisions to the Solitron Catalog of Semiconductor Products.

FIRM NAME ____________________

DEPT/MAIL STOP NO: ____________________

ADDRESS ____________________

CITY __________ STATE __________ ZIP CODE. __________

ATTENTION ____________________

PLEASE SEND SPECIFIC INFORMATION ON:

TYPE: __________ QTY: __________

SC—correction Correct your mailing list for revisions to the Solitron Catalog of Semiconductor Products

New Information: FIRM NAME ____________________

DEPT/MAIL STOP NO: ____________________

ADDRESS ____________________

Add CITY __________ STATE __________ ZIP CODE __________

ATTENTION ____________________

Old Information: FIRM NAME ____________________

ADDRESS ____________________

REMOVE CITY __________ STATE __________

ATTENTION ____________________

Please fill in both the top and bottom portions of this card

SC—correction Correct your mailing list for revisions to the Solitron Catalog of Semiconductor Products

New Information: FIRM NAME ____________________

DEPT/MAIL STOP NO: ____________________

ADDRESS ____________________

ADD CITY __________ STATE __________ ZIP CODE __________

ATTENTION ____________________

Old Information: FIRM NAME ____________________

ADDRESS ____________________

REMOVE FIRM __________ STATE __________

ATTENTION ____________________

Please fill in both the top and bottom portions of this card

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
First Class Permit No. 479, West Palm Beach, Fla.

SOLITRON DEVICES, INC.

1177 BLUE HERON BLVD.

RIVIERA BEACH, FLORIDA 33404

Attention: Catalog Department

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
First Class Permit No. 479, West Palm Beach, Fla.

SOLITRON DEVICES, INC.

1177 BLUE HERON BLVD.

RIVIERA BEACH, FLORIDA 33404

Attention: Catalog Department

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
First Class Permit No. 479, West Palm Beach, Fla.

SOLITRON DEVICES, INC.

1177 BLUE HERON BLVD.

RIVIERA BEACH, FLORIDA 33404

Attention: Catalog Department

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
First Class Permit No. 479, West Palm Beach, Fla.

SOLITRON DEVICES, INC.

1177 BLUE HERON BLVD.

RIVIERA BEACH, FLORIDA 33404

Attention: Catalog Department

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
First Class Permit No. 479, West Palm Beach, Fla.

SOLITRON DEVICES, INC.

1177 BLUE HERON BLVD.

RIVIERA BEACH, FLORIDA 33404

Attention: Catalog Department

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
First Class Permit No. 479, West Palm Beach, Fla.

SOLITRON DEVICES, INC.

1177 BLUE HERON BLVD.

RIVIERA BEACH, FLORIDA 33404

Attention: Catalog Department

SC Add my name to your mailing list for additions and revisions to the Solitron Catalog of Semiconductor Products.

FIRM NAME ______

DEPT/MAIL STOP NO: ______

ADDRESS ______

CITY ______ STATE ______ ZIP CODE. ______

ATTENTION ______

PLEASE SEND SPECIFIC INFORMATION ON:

TYPE: ______ QTY: ______

______

______

Important

Please fill in the correct information on the top reply card and return it to us immediately. This information is necessary to add you to our mailing list for new and revised catalog pages. Please insert the new and revised pages as soon as they are received to be sure that your catalog is up to date at all times.

If you move

This lower cards are provided as a means to notify us of a change of address or change of ownership of the catalog.

SC—correction Correct your mailing list for revisions to the Solitron Catalog of Semiconductor Products

New Information: FIRM NAME ______

DEPT/MAIL STOP NO: ______

ADDRESS ______

Add CITY ______ STATE ______ ZIP CODE ______

ATTENTION ______

Old Information: FIRM NAME ______

ADDRESS ______

REMOVE CITY ______ STATE ______

ATTENTION ______

Please fill in both the top and bottom portions of this card

SC—correction Correct your mailing list for revisions to the Solitron Catalog of Semiconductor Products

New Information: FIRM NAME ______

DEPT/MAIL STOP NO: ______

ADDRESS ______

ADD CITY ______ STATE ______ ZIP CODE ______

ATTENTION ______

Old Information: FIRM NAME ______

ADDRESS ______

REMOVE FIRM ______ STATE ______

ATTENTION ______

Please fill in both the top and bottom portions of this card

Solitron Devices, Inc.
Transistor Division

Solitron
DEVICES, INC.

SEMICONDUCTOR GROUP
FLORIDA OPERATIONS

1177 BLUE HERON BLVD • RIVIERA BEACH, FLORIDA 33404
TELEPHONE: (305) 848-4311   WATS (800) 327-8462
TWX: (510) 952-7610   TELEX: 51-3435