

9/21/77

**Kappa**  
**LE**  
**filters**

**DUAL IN-LINE PACKAGE**

**LOW PASS**

**HIGH PASS**

**BAND PASS**

**BAND REJECT**

**LINEAR PHASE**

**CONSTANT GROUP DELAY**

**PHASE MATCHED**

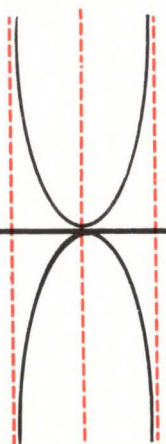
**ATTENUATION MATCHED**

**PHASE EQUALIZERS**

**DELAY EQUALIZERS**

**ATTENUATION EQUALIZERS**

**LOW TRANSIENT RESPONSE**



**K**APPA NETWORKS, INC.

DELAY LINE SPECIALISTS • ELECTRIC WAVE FILTERS • MANUFACTURING ENGINEERS  
DESIGN • PRODUCTION • DELIVERY

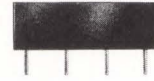
165 ROOSEVELT AVENUE • CARTERET, NEW JERSEY 07008 • TEL. (201) 541-1600  
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# DIP

## dual In-line LC filters

**UP TO 20 MHz  
ON SPECIAL REQUEST!**

Kappa's DIP-Filters are housed in a standard dual in-line package for PC board mounting.



DIP-Filters provide the design engineer with a variety of electrical characteristics compatible with high density assemblies on integrated circuit boards.

### how to order

- 1. Enter tables for required stop band.
- 2. Select standard part number from required cutoff frequency and impedance.
- 3. Add Suffix L (Lowpass) or H (Highpass).
- 4. Consult factory for items not shown.

20 db STOPBAND			SPECIFICATIONS			39 db STOPBAND		
LOWPASS (L)		HIGHPASS (H)		INSERTION LOSS	LOWPASS (L)		HIGHPASS (H)	
< .5 db at .1 Fc		< .5 db at 10 Fc			< .5 db at .1 Fc		< .5 db at 10 Fc	
< ±1 db to Fc		< ±1 db to Fc			< ±1 db to Fc		< ±1 db to Fc	
< 3 db to Fc		< 3 db to Fc			< 3 db to Fc		< 3 db to Fc	
> 20 db at 1.4 Fc & up		> 20 db at .715 Fc & lower		> 39 db at 2.5 Fc & up		> 39 db at .4 Fc & lower		

← IMPEDANCE (Ω) →							Cutoff Frequency Fc	← IMPEDANCE (Ω) →						
50	100	200	500	1K	2K	5K		50	100	200	500	1K	2K	5K
				1E202			1 KHZ				2D102			
			1D502	1E502	1F502		2 KHZ				2D202	2E202		
							5 KHZ			2C502	2D502	2E502	2F502	
		1C103	1D103	1E103	1F103	1G103	10 KHZ	2A103	2B103	2C103	2D103	2E103	2F103	2G103
		1C153	1D153	1E153	1F153	1G153	15 KHZ	2A153	2B153	2C153	2D153	2E153	2F153	2G153
	1B203	1C203	1D203	1E203	1F203	1G203	20 KHZ	2A203	2B203	2C203	2D203	2E203	2F203	2G203
1A503	1B503	1C503	1D503	1E503	1F503	1G503	50 KHZ	2A503	2B503	2C503	2D503	2E503	2F503	2G503
1A104	1B104	1C104	1D104	1E104	1F104	1G104	100 KHZ	2A104	2B104	2C104	2D104	2E104	2F104	2G104
1A154	1B154	1C154	1D154	1E154	1F154		150 KHZ	2A154	2B154	2C154	2D154	2E154	2F154	
1A204	1B204	1C204	1D204	1E204	1F204		200 KHZ	2A204	2B204	2C204	2D204	2E204	2F204	
1A504	1B504	1C504	1D504	1E504	1F504		500 KHZ	2A504	2B504	2C504	2D504	2E504	2F504	
1A105	1B105	1C105	1D105				1 MHZ	2A105	2B105	2C105	2D105			
1A205							2 MHZ	2A205						

STANDARD PART NUMBERS

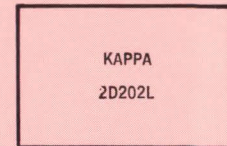
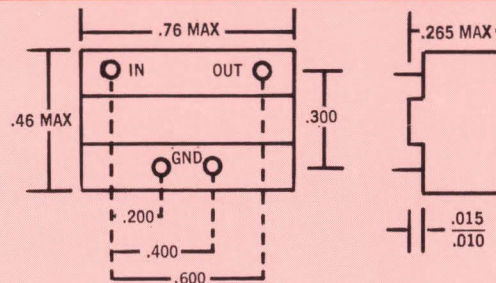
STANDARD PART NUMBERS

### Case drawing applies to all DIP-filters

Material: Black epoxy  
Pins: .020 Tinned copper  
.20 length, min.

Weight: ≈ 3 grams

Dip-Filters meet specification MIL-F18327C, Grade 5, Class R, -55°C to +105°C



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# KAPPA

the proven leader in computer-designed custom

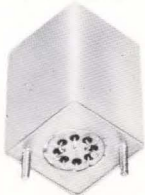
# LC filters

The following examples of **Kappa's** LC filter design capabilities are but a small representation of the broad range of our experience. Through our use of an IBM 360, level 60 computer, output data plotted against frequency including impedance, attenuation, phase, group delay and phase delay can be evaluated to supply an immediate quotation.

We can also computer-check your special filter requirements. Ask for details on our low-cost feasibility reports.

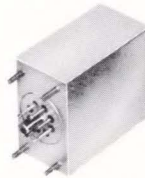
- Low Pass
- High Pass
- Band Pass
- Band Reject
- Linear Phase
- Constant Group Delay
- Phase Matched
- Attenuation Matched
- Phase Equalizers
- Delay Equalizers
- Attenuation Equalizers
- Low Transient Response

### LOW PASS FILTERS



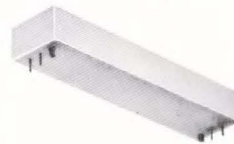
Frequency Range: DC to 50MHz  
Impedance Range: 1 ohm to  $\infty$   
Stop Bands: 10 to 80db

### BAND PASS FILTERS



Frequency Range: DC to 50MHz  
Bandwidth: 1% to >100%  
Stopband: 10 to 80db  
Impedance Range: 1 ohm to  $\infty$

### HIGH PASS FILTERS



Frequency Range: DC to 50MHz  
Impedance Range: 1 ohm to  $\infty$   
Stop Bands: 10 to 80db

### BAND REJECT FILTERS



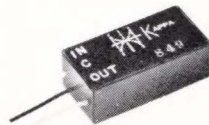
Frequency Range: DC to 50MHz  
Band Width: 1% to >100%  
Stop Band: 10 to 80db  
Impedance Range: 1 to  $\infty$

### MATCHED PHASE & ATTENUATION



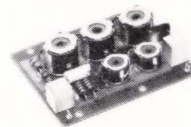
Typical Specifications:  
Phase Matched  $\pm 2\frac{1}{2}^\circ$  in Pass Band  
Attenuation Matched  $\pm .25$ db in Pass Band for use in Sonar & other multi channel systems.

### MAXIMUM FLAT DELAY (BESSEL) FILTER



Size (Typical): .75" x .75" x 1.5"  
Frequency Range: 1.5KHz to 1MHz  
Z Range: 50 to 10 K  
Overshoot: <1%  
Delay Flat: <2% to Fc

### LINEAR GROUP DELAY VIDEO FILTER



Typical Specifications:  
L.P. Cutoff: 4.5 MHz  
I.L.: <1db  
Passband Ripple: < $\pm .1$ db  
Pass Band Delay Distortion: <2% nsec.  
Stopband: >25db

### GROUP DELAY & ATTENUATION EQUALIZER NETWORK



To correct system introduced delay distortion & attenuation roll off.

## constant group delay filters

Computer-designed and checked to give equal ripple delay over the pass band insuring exact delay and attenuation characteristics.

Frequency Range: DC to 50 MHz  
Impedance Range: 1 ohm to  $\infty$   
Temperature Range:  $-55^\circ\text{C}$  to  $+125^\circ\text{C}$ .

Complete Encapsulation  
Hermetic Seal  
P.C. Board Construction

#### Case Configuration:

Stock or Custom Designed  
P.C. Card  
Dual In-Line  
Standard Hardware Program

All filters conform to applicable mil specifications.

### Phase & Attenuation Matching

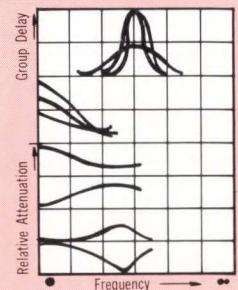
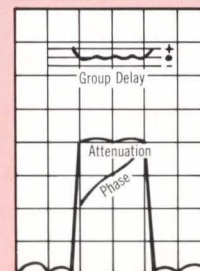
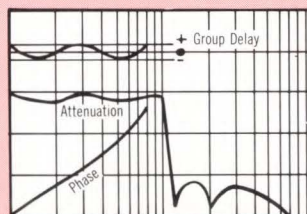
Differential phase and attenuation matched to eliminate the need for adjustments in multi-channelled systems.

### Linear Phase Filters

To reduce distortions and lower transient response in modulated systems.

### Equalizers

Phase/Delay/Attenuation Computer-designed correction networks derived from system error curves.



Send for our filter questionnaire.

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**SUPER- $\eta$**

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**delay lines**

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