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TECHNOLOGY GROUP

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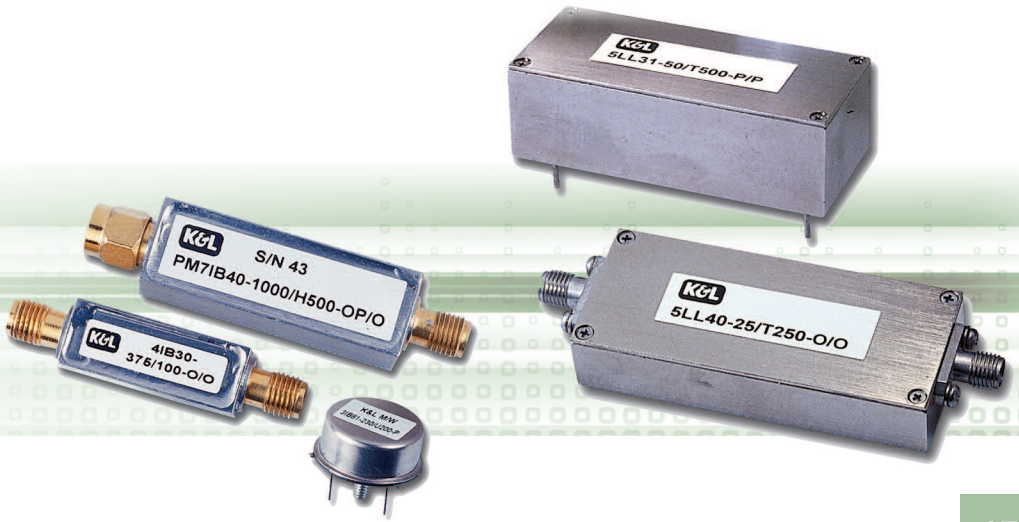
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Lumped Components

K&L Microwave offers Lumped Component filters with a broad selection of frequencies, topologies, and mechanical configurations. Use of standard packages has enabled K&L to provide custom units while keeping design time to a minimum. Packages available include the LB series, which cover the 0.5 to 200 MHz frequency range, as well as the IB series, which cover the 30 to 10,000 MHz frequency range. The topologies are offered in highpass, lowpass, bandpass, bandreject and multiplexer designs.

Special design capabilities include, but are not limited to, elliptical, pseudo-elliptical, amplitude equalization, group delay equalization, bessel, gaussian, and highpower requirements.

Each model can be packaged to withstand severe environmental stresses including temperature, humidity, shock, vibration, and acceleration.



LB Series

Features:

- Covers the 0.5 MHz to 200 MHz Frequency Range
- 3 dB BW Available from 1-200%
- Designs Available in 3-10 Sections
- Low Insertion Loss
- 0.05 dB Chebyshev Response
- Small, Ruggedized Package
- Custom Designs Available



Specifications:

Model	Frequency (MHz)	3 dB % BW	VSWR	Average Power (Watts)	Impedance (Ohms)*	No. of Sections	Shock	Vibration	Temperature	Relative Humidity
LB30	5-150	3-50 / 50-200	1.5:1 / 1.7:1	15	50	3-10	20 G's, 1/2 Sine, 11 Ms	10 G's, 10 Hz-2000 Hz	-55 to +85 °C	0-95%
LB40	15-200	3-50 / 50-200	1.5:1 / 1.7:1	10	50	3-10				
LB50	0.5-200	3-50 / 50-200	1.5:1 / 1.7:1	20	50	3-10				

* 75 ohms also available.

Attenuation:

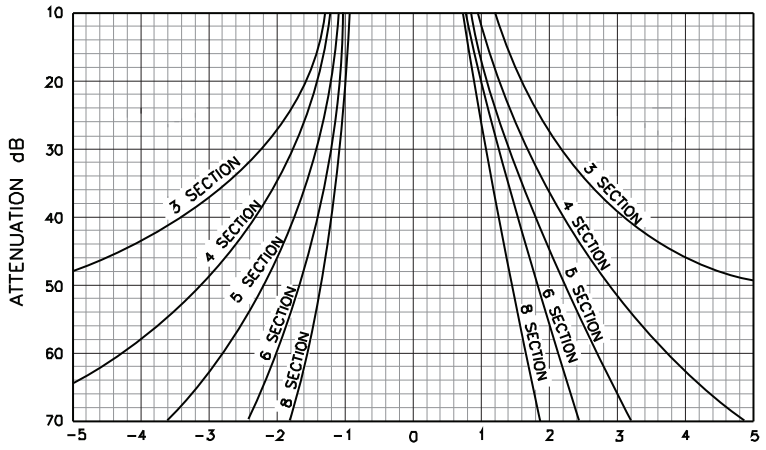
The adjacent curve shows the attenuation as multiples of the bandwidth for filters with 2-8 sections. The following formula is used:
3 dB bandwidths from center frequency=

$$\frac{\text{Reject Frequency - Center Frequency}}{\text{3 dB Bandwidth}}$$

Example:

Center Frequency = 21.4 MHz
3 db Bandwidth = 2
Number of Sections = 6

Find the attenuation at 17.4 and 25.4 MHz by substituting in the formula 3 dB bandwidth from center frequency = $\frac{17.4-21.4}{2}$ = -2 BW's and



3 dB bandwidth from center frequency= $\frac{25.4-21.4}{2}$ = +2 BW's

From the curve, we find the attenuation in dB for a 6-section response -2 bandwidths from center frequency to yield 60 dB, and +2 bandwidths from center frequency to yield 58 dB.

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Salisbury, MD 21801

To Order:

6 L B 30 — 21.4 / U 2 — O / O
1 2 3 4 5 6 7 8 9

Code	Description	Code	Description
1	Number of Sections	5	Center frequency (MHz)
2	Series (L-lumped)	6	Supplemental Codes (See Page 13)
3	B-Bandpass	7	Bandwidth (MHz)
4	Package Designator - Style 3	8	Input Connector
		9	Output Connector

Insertion Loss

The following formula is used to determine the maximum insertion loss at center frequency. For specification purposes, the result is always rounded up to the next tenth of a dB.

$$\text{Insertion Loss} = \left(\frac{(\text{Loss Constant})\ (\text{No. of Sections} + 0.5)}{\%\ 3\ \text{dB BW}}\right) + 0.4$$

Example:
Bandpass Model = 6LB30-30/T3-O/O

$$\text{Insertion Loss} = \left(\frac{(5.5)(6.5)}{10}\right) + 0.4 = 4.0\ \text{dB}$$

Model	Loss Constant
LB30	5.5
LB40	6
LB50	4.75

Connectors:

Connector Style	Connector Code	LH30	LH40	LH50
N Female	N	.75"/19.05mm	*NR	.75"/19.05mm
N Male	NP	*NR	*NR	.79"/20.06mm
BNC Female	B	.72"/18.29mm	*NR	.72"/18.29mm
BNC Male	BP	.88"/22.35mm	*NR	.88"/22.35mm
TNC Female	T	.75"/19.05mm	*NR	.75"/19.05mm
TNC Male	TP	.85"/21.59mm	*NR	.85"/21.59mm
SMA Female	O	.38"/9.65mm	.38"/9.65mm	.38"/9.65mm
SMA Male	OP	.50"/12.7mm	.50"/12.7mm	.50"/12.7mm
Cable	C	6" RG 188	6" RG 188	6" RG 188
PC Mounting	P	See pg. 24	See pg. 24	See pg. 24
Sealectro Female	S	.38"/9.65mm	.38"/9.65mm	.38"/9.65mm
Special	X	Contact Factory	Contact Factory	Contact Factory

*NR = Not Recommended

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