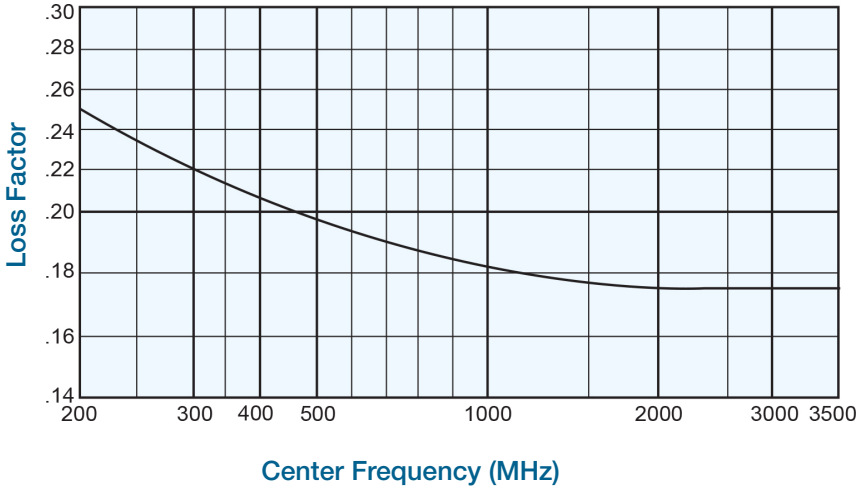
Benchmark
lark technology

LOWPASS
LSM Series
250-3000 MHz

No. of Sections	2	3	4	5	6 or more
1.5/1 VSWR BW	0.4	0.7	0.8	0.85	0.9
MIN 3 dB BW					

Specification	Standard	*Special
Electrical		
Center Frequency (Fc)	250 to 3000 MHz	200 to 3500 MHz
Number of Sections Available	3 to 8	2 to 12
Nominal Impedance	50Ω	50Ω to 100Ω
Maximum Insertion Loss	See Curve	See Curve
Maximum VSWR (Fco to 3 Fco)	1.5/1	1.3/1
Attenuation in the Stopband	See Page 88	See Page 88
Maximum Input Power (Average) (Watts to 10,000 ft.)	8/Loss Factor	10/Loss Factor
Maximum Input Power (Peak) (Watts to 10,000 ft.)	200	500
Environmental		
Shock	30 G's	50 G's
Vibration	10 G's	15 G's
Humidity	90% relative	100% relative
Altitude	Unlimited	Unlimited
Temperature Range (Operating)	-25°C to + 50°C	-54°C to + 85°C
Temperature (Non-Operating)	-54°C to + 70°C	-54°C to +100°C
Mechanical		
Approximate Weight	0.5 oz. per inch	0.375 oz. per inch
Mounting Provisions	See Page 53	See Page 53

*Contact Benchmark Lark Engineering for Special Configurations



Insertion Loss:

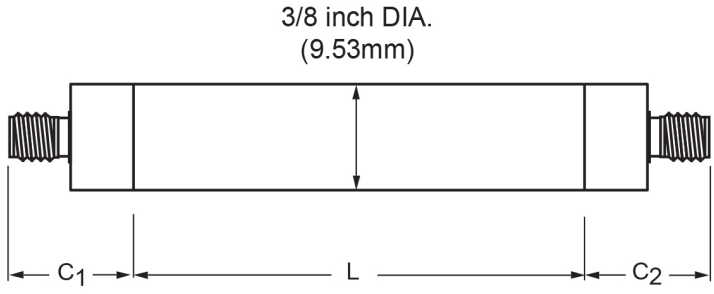
The maximum Insertion Loss at center frequency is equal to:

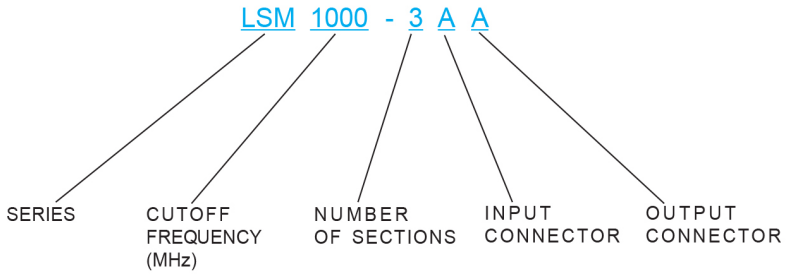
LF x N + 0.05dB

Where:
LF = Loss Factor N = Number of Sections

Example:
A 3 section LSM with a cutoff frequency of 400 MHz would have,

0.21 x 3 = 0.63 + 0.05 = 0.7dB

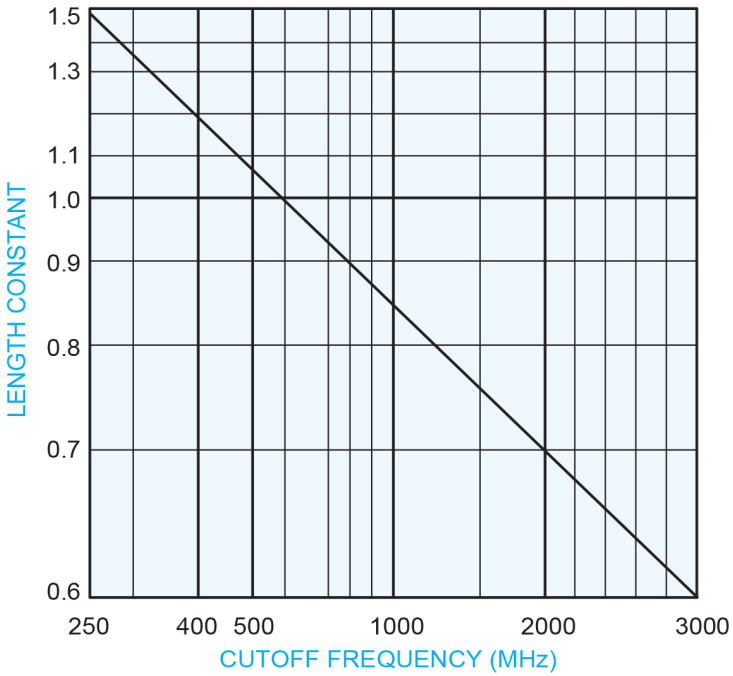




CONNECTORS AVAILABLE ON LSM SERIES:

LARK CODE	TYPE	C DIM. INCHES	C DIM. MM	LARK CODE	TYPE	C DIM. INCHES	C DIM. MM
A	SMA JACK	.800	20.3	*L	SOLDER PIN AXIAL	.625	15.9
B	SMA PLUG	.885	22.5	*M	SOLDER PIN RADIAL	.625	15.9
				S	SPECIAL		

*Not recommended for use with this series.



LENGTH:

The approximate length of a Lark LSM series filter can be determined by the formula:

$$(0.5\ N \times LC) = L$$

Where N is the number of sections used, LC is the length constant at the specified cutoff frequency, L is the dimension between the connectors; C_1 and C_2 are the connector lengths as shown above. All of the length information given here is approximate. Exact length specifications must be quoted by the factory. If a special length is needed, please submit all of your requirements - both electrical and mechanical. This will enable Lark Engineering to quote the optimum design for your application.

Example:

A 3 section LSM with a cutoff frequency of 400 MHz with SMA jack input and output connectors would be:

$$1.5 \times 1.2 = 1.8 + C_1 + C_2$$

In most cases, the L dimension is rounded to the nearest 1/4 inch which in this instance would be 1.75 inches and the O.A.L. is:

$$1.75 + 0.800 + 0.800 = 3.35 \text{ inches.}$$

To convert inches to millimeters multiply x 25.40.

Stopband Attenuation

The graph on the next page defines the normal specification limits on attenuation for Lark lowpass filter series LHP, LHQ, LSF, LSM, and LR. The minimum level of attenuation in dB is shown as a function of the relative frequency.

A. Relative frequency is defined as the frequency to be attenuated divided by the normal cutoff frequency.

B. Cutoff frequency is defined as the 1.5/1 VSWR cutoff frequency
(Below 1000 MHz +4%-0%; 1000 MHz and above +3%-0%).

Example:

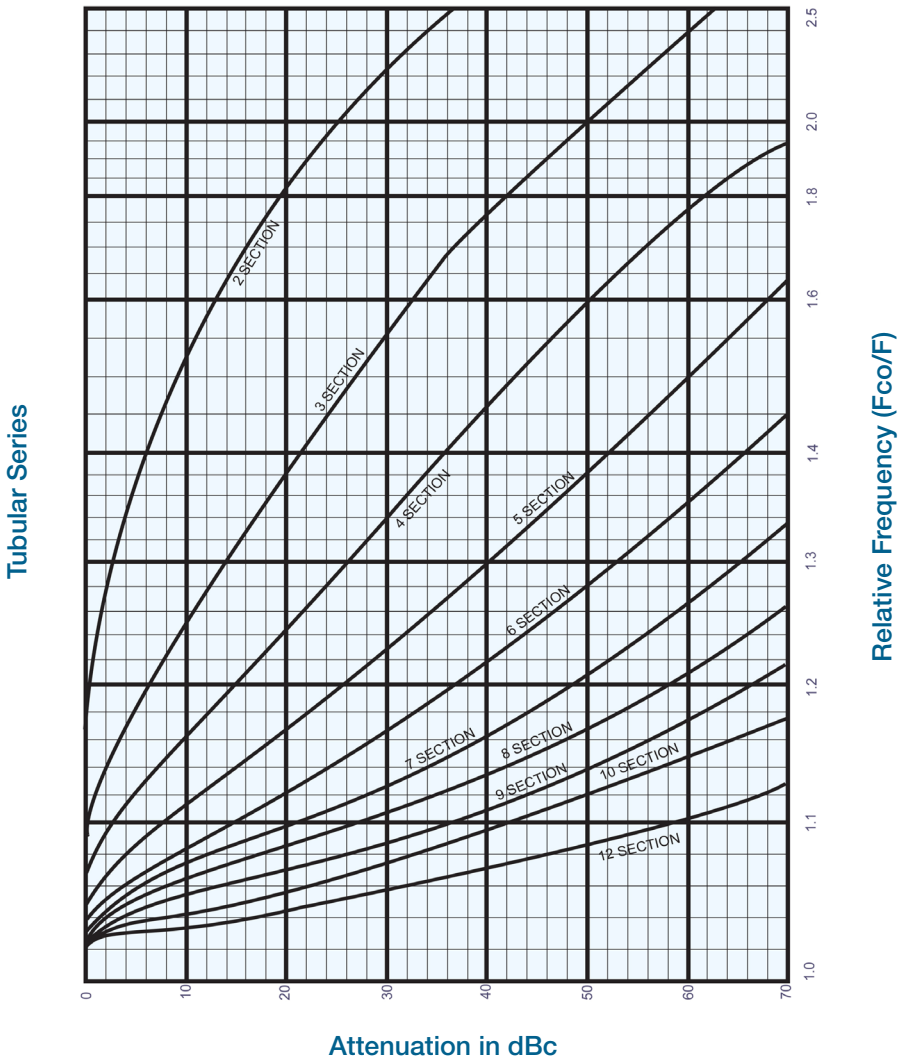
Specify a lowpass filter to pass 1500 MHz and attenuate 2100 MHz a minimum of 50dB.

1. 2100 MHz is a relative frequency of 1.4

$$\frac{2100}{1500} = 1.4$$

2. Reading from the curve at a relative frequency of 1.4, we find that a five section filter has a normal specification limit of 52dB. Therefore, a lowpass filter with five or more sections would be required to meet the 50dB attenuation specification.

Lark manufactures many other types of lowpass filters, from 100 KHz to 8 GHz. Please contact us directly, or through our local sales representative, with any of your filter requirements.



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