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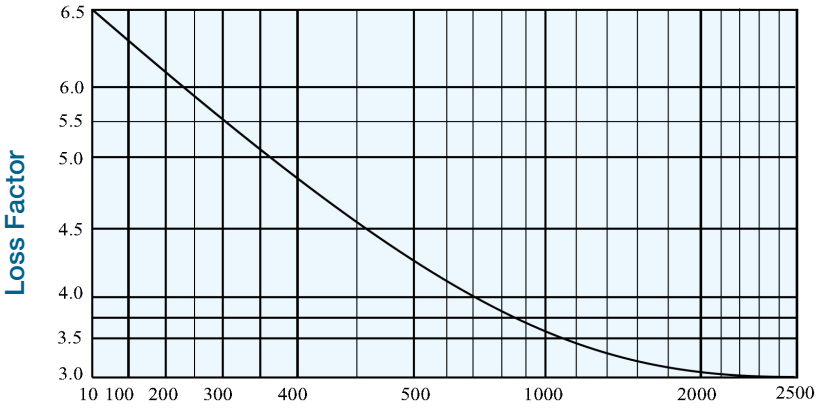
# BandPass
# MC Series
# 250-5000 MHz

| 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) | 1 to 5000 MHz | 0.1 to 5000 MHz |
| 3dB Relative Bandwidth (% of Fc) | 2 to 50 | 3 to 100 |
| Number of Sections Available | 3 to 6 | 2 to 10 |
| Nominal Impedance | 50Ω | 50 to 300Ω |
| Maximum Insertion Loss | See Curve | See Curve |
| Maximum VSWR | 1.5/1 | 1.3/1 |
| Attenuation in the Stopband | See Page 14 | See Page 14 |
| Maximum Input Power (Average) (Watts to 10,000 ft.) | 2 | 4 |
| Maximum Input Power (Peak) (Watts to 10,000 ft.) | 20 | 40 |
| **Environmental** | | |
| Shock | 20 G's | 75 G's |
| Vibration | 10 G's | 30 G's |
| Humidity | 95% relative | 100% relative |
| Altitude | Unlimited | Unlimited |
| Temperature Range (Operating) | -40°C to + 85°C | -55°C to + 125°C |
| Temperature (Non-Operating) | -65°C to + 125°C | -65°C to + 150°C |
| **Mechanical** | | |
| Approximate Weight in oz. | L + 10 | L + 10 |
| Mounting Provisions | See Next Page | See Next Page |
| Special Configurations | Consult Lark | Consult Lark |

*Contact Benchmark Lark Engineering for Special Configurations




## Insertion Loss:

The maximum Insertion Loss at center frequency is equal to:

$$\frac{\text{LF x (N=0.5)}}{\text{\% 3 dB BW}} + 0.2$$

Where:
LF = Loss Factor N = Number of Sections
% 3dB BW:

$$\frac{\text{3dB BW (MHz) x 100}}{\text{Center Frequency (MHz)}}$$

Example:
A 3 section MC with a center frequency of 700 MHz and a 3dB BW of 70 MHz would be:

$$\frac{4.0 \times 3.5}{10} \quad \frac{14}{10} = 1.4$$

1.4 + 0.2 = 1.6 dB

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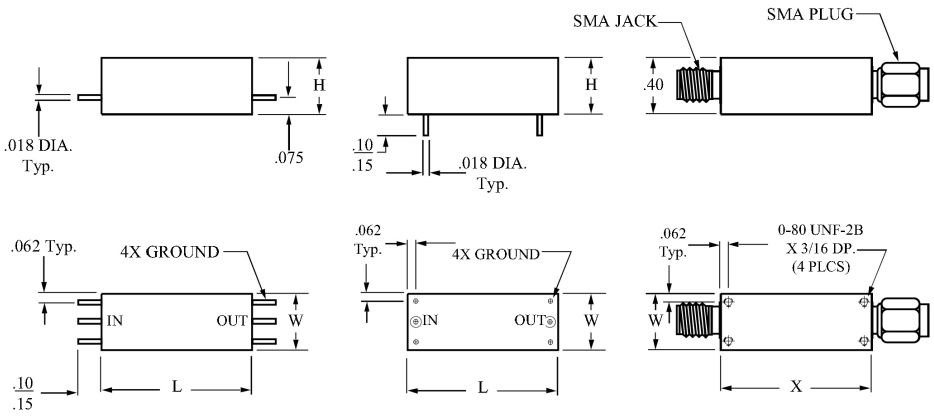
## Mechanical Specifications — MC Series




| Frequency Range | Number of Sections | W | H | L | X |
|---|---|---|---|---|---|
| 1 - 9.9 MHz | 2 to 3 | 0.75 | 0.50 | 1.50 | 1.75 |
| | 4 to 5 | 0.75 | 0.50 | 2.50 | 2.75 |
| | 6 to 7 | 0.75 | 0.50 | 3.50 | 3.75 |
| 10 - 100 MHz | 2 to 3 | 0.55 | 0.40 | 1.00 | 1.25 |
| | 4 to 5 | 0.55 | 0.40 | 1.50 | 1.75 |
| | 6 to 7 | 0.55 | 0.40 | 1.75 | 2.00 |
| 101 - 300 MHz | 2 to 3 | 0.44 | 0.40 | 0.75 | 1.00 |
| | 4 to 5 | 0.44 | 0.40 | 1.00 | 1.25 |
| | 6 to 7 | 0.44 | 0.40 | 1.50 | 1.75 |
| 10 - 100 MHz | 2 to 3 | 0.44 | 0.31 | 0.75 | 1.00 |
| | 4 to 5 | 0.44 | 0.31 | 0.75 | 1.00 |
| | 6 to 7 | 0.44 | 0.31 | 1.25 | 1.50 |

Over 7 sections- Consult Benchmark Lark Engineering
Note: All standard units with SMA Connectors are supplied H = 0.40”

### Connectors Available on MC Series

| Code | Type |
|---|---|
| A | SMA Jack |
| B | SMA Plug |
| C | Solder Pin Axial |

| Code | Type |
|---|---|
| M | Solder Pin Radial |
| S | Special |

The size shown is a standard used by Lark to facilitate low cost, easily reproduced units. Should you require another size, please submit all of your requirements, both electrical and mechanical, to Benchmark Lark Engineering. This will enable Lark to quote the optimum design for your application.

# Stopband Attenuation

The graphs on the following pages defi ne the normal specifi cation limits on attenuation for Lark's MC and MS bandpass fi lter series. The minimum level of attenuation in dB is shown as a "number of 3dB bandwidths from center frequency". Since the frequency characteristics vary for differing bandwidths, it is necessary to establish specifi cations for each bandwidth. The different graphs represent various 3dB percentage bandwidths. Intermediate values should be interpolated. The 3dB percentage bandwidth is defi ned as follows:

$$\frac{\text{3dB BW (MHz) x 100}}{\text{Center Frequency (MHz)}}$$

The exact relationship is as follows:

$$\text{3dB Bandwidths From Center Frequency} = \frac{\text{Rejection Frequency (MHz) - Center Frequency (MHz)}}{\text{3dB Bandwidth (MHz)}}$$

Example:

Given: Center Frequency = 500 MHz

Minimum 3dB Bandwidth = 50 MHz

Number of Sections = 5

Find: Minimum attenuation levels at 425 MHz and 585 MHz.

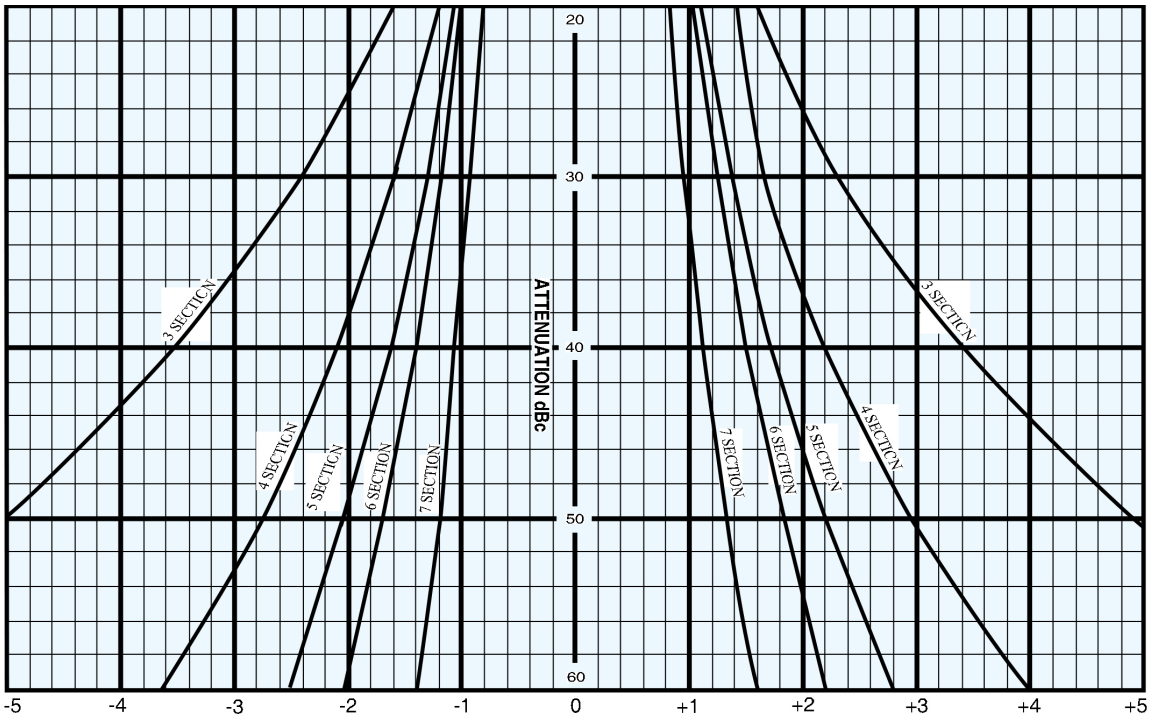
$$\text{3dB BW's from Fc} = \frac{425 - 500}{50} = -1.5$$

$$\text{and } \frac{585 - 500}{50} = +1.7$$

The answer can be read directly from the 10% graph. Using the 5 section curve at the point -1.5 (425 MHz) we fi nd the minimum level of attenuation is 40dB. At +1.7 (585 MHz) the minimum level of attenuation is 39dB.

NOTE: The attenuation curves shown for the "MC" and "MS" series are for our standard designs. Other topologies may be utilized yielding different attenuation characteristics.

For special requirements, please contact our Engineering Department.





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