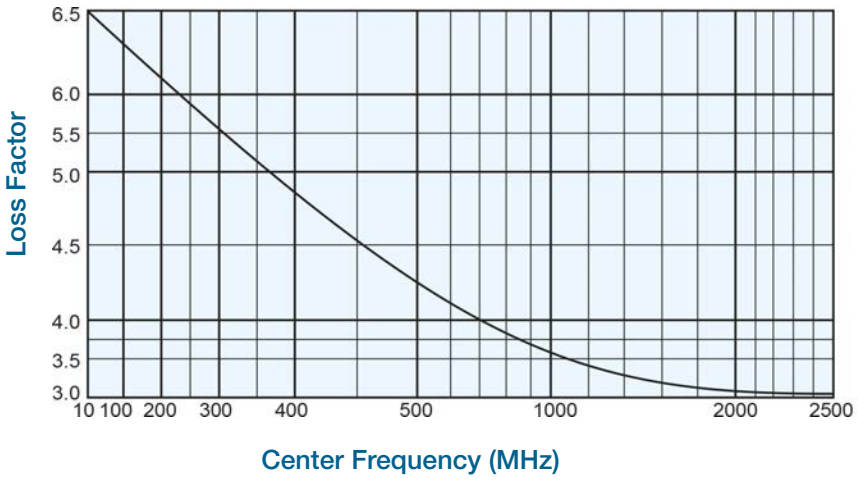
Benchmark
lark technology

# BANDPASS
# TC Series
# 20-2000 MHz

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


| Specification | Standard | *Special |
|---|---|---|
| **Electrical** | | |
| Center Frequency (Fc) | 20 to 2000 MHz | 10 to 3000 MHz |
| 3dB Relative Bandwidth (% of Fc) | 5 to 20 | 3 to 100 |
| Number of Sections Available | 3 | 2 to 5 |
| Nominal Impedance | 50Ω | 50Ω to 100Ω |
| 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 | 15 G's | 75 G's |
| Vibration | 5 G's | 30 G's |
| Humidity | 90% relative | 100% relative |
| Altitude | Unlimited | Unlimited |
| Temperature Range (Operating) | - 25°C to + 50°C | -54°C to + 100°C |
| Temperature (Non-Operating) | - 54°C to + 70°C | -62°C to + 150 °C |
| **Mechanical** | | |
| Approximate Weight in Grams | 3 | 3 |
| Mounting Provisions | See Next Page | See Next Page |
| Special Configurations | See Next Page | See Next Page |

*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:

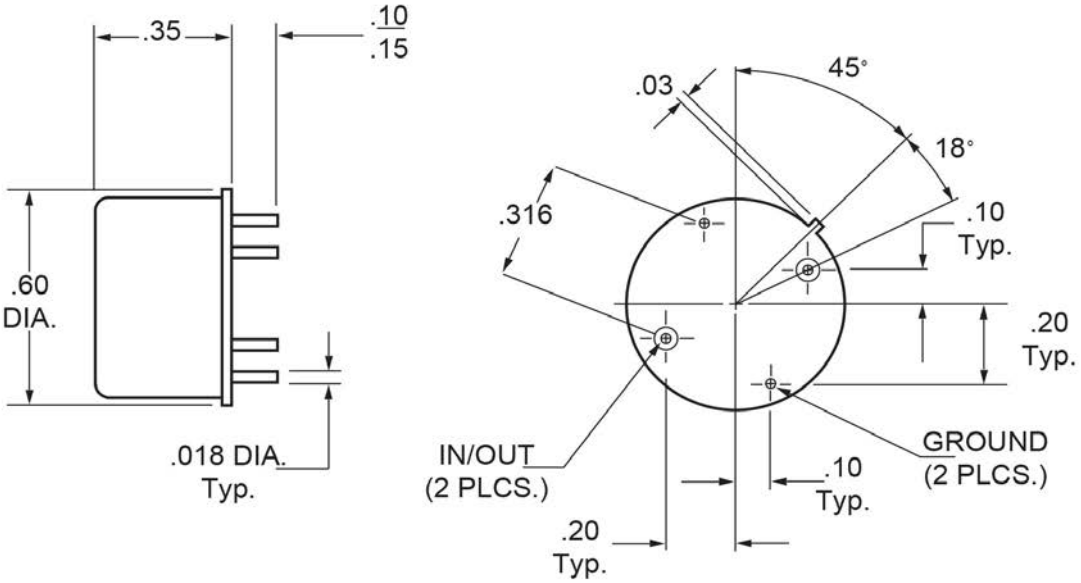
$$\frac{\text{3dB BW (MHz) x 100}}{\text{Center Frequency (MHz)}}$$

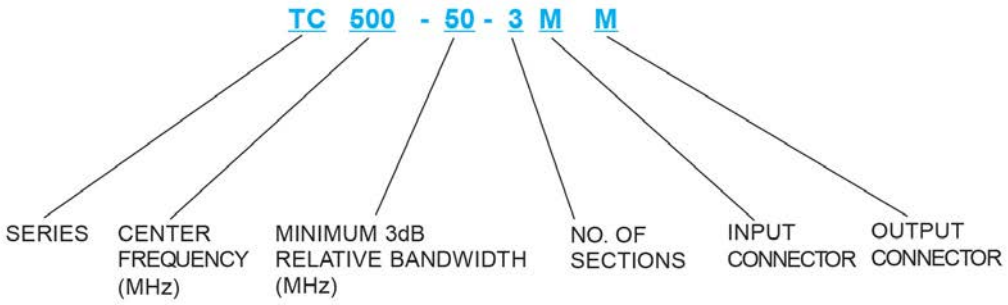
Example:
A 3 section TC with a center frequency of 700 MHz and a 3dB BW of 70 MHz would have,

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

1.4 + 0.2 = 1.6 dB

# Mechanical Specifications




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

# Stopband Attenuation

The graphs on the following pages define the normal specification limits on attenuation for Lark bandpass filter series MC, MS and TC. he 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 specifications for each bandwidth of filter. The different graphs represent various 3dB percentage bandwidths. Intermediate values should be interpolated. The 3dB percentage bandwidth is defined as follows:

$$\frac{\text{3dB Bandwidth (MHz)} \times 100}{\text{Center Frequency (MHz)}}$$

The exact relationship is as follows:

1. 3dB Bandwidths From Center Frequency =

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

Example:
Given:

2. Center Frequency = 500 MHz
   Minimum 3dB Bandwidth = 50 MHz
   Number of Sections = 5
   Find: Minimum attenuation levels at 425 MHz and 585 MHz.

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

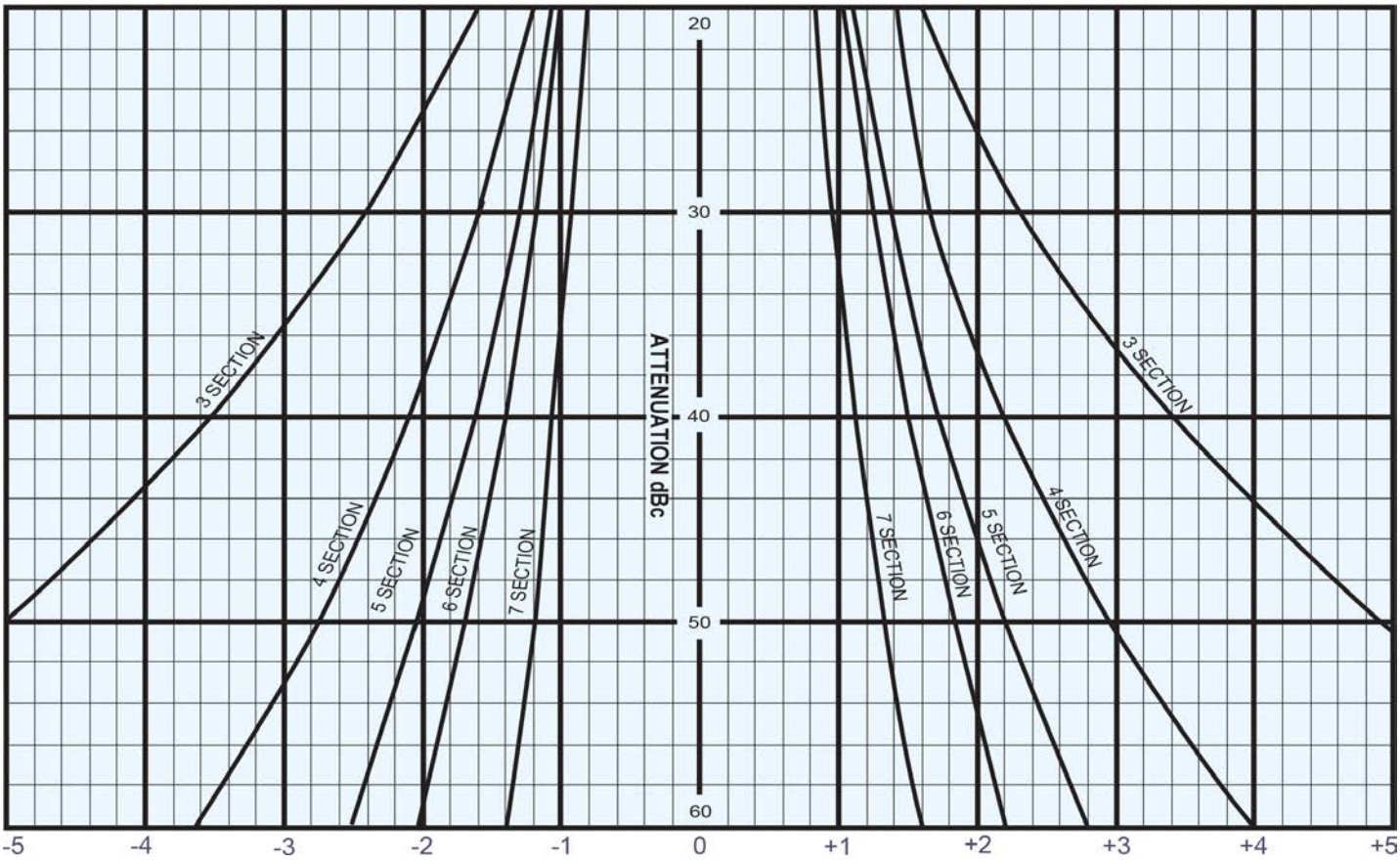
$$\text{and } \frac{585 - 500}{50} = +1.7$$

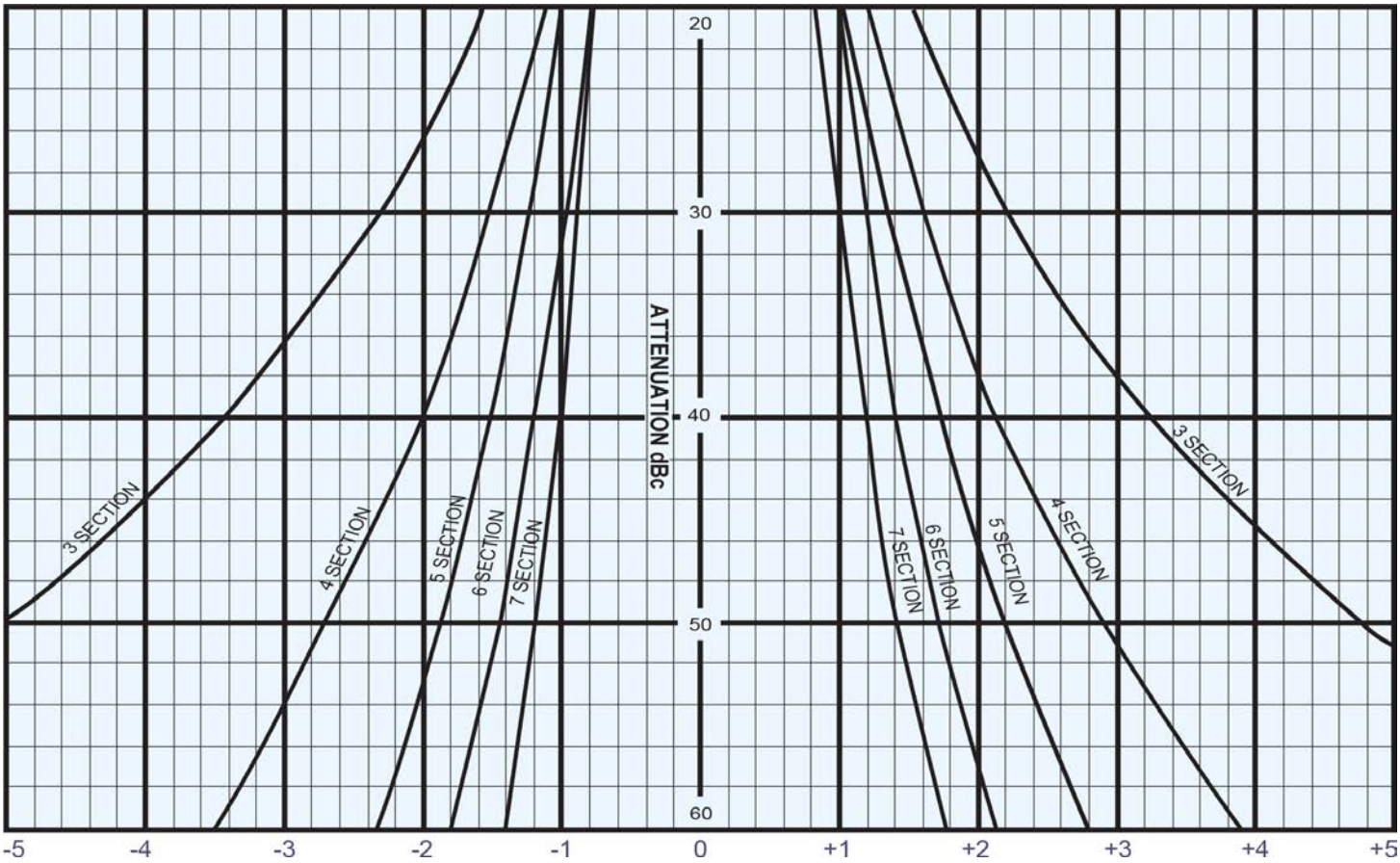
The answer can be read directly from the 10% graph. Using the 5 section curve at the point -1.5 (425 MHz) we find the minimum level of attenuation is 40dB. At +1.7 (585 MHz) the minimum level of attenuation is 39dB.

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

For special requirements, please contact our Application Engineering Department.

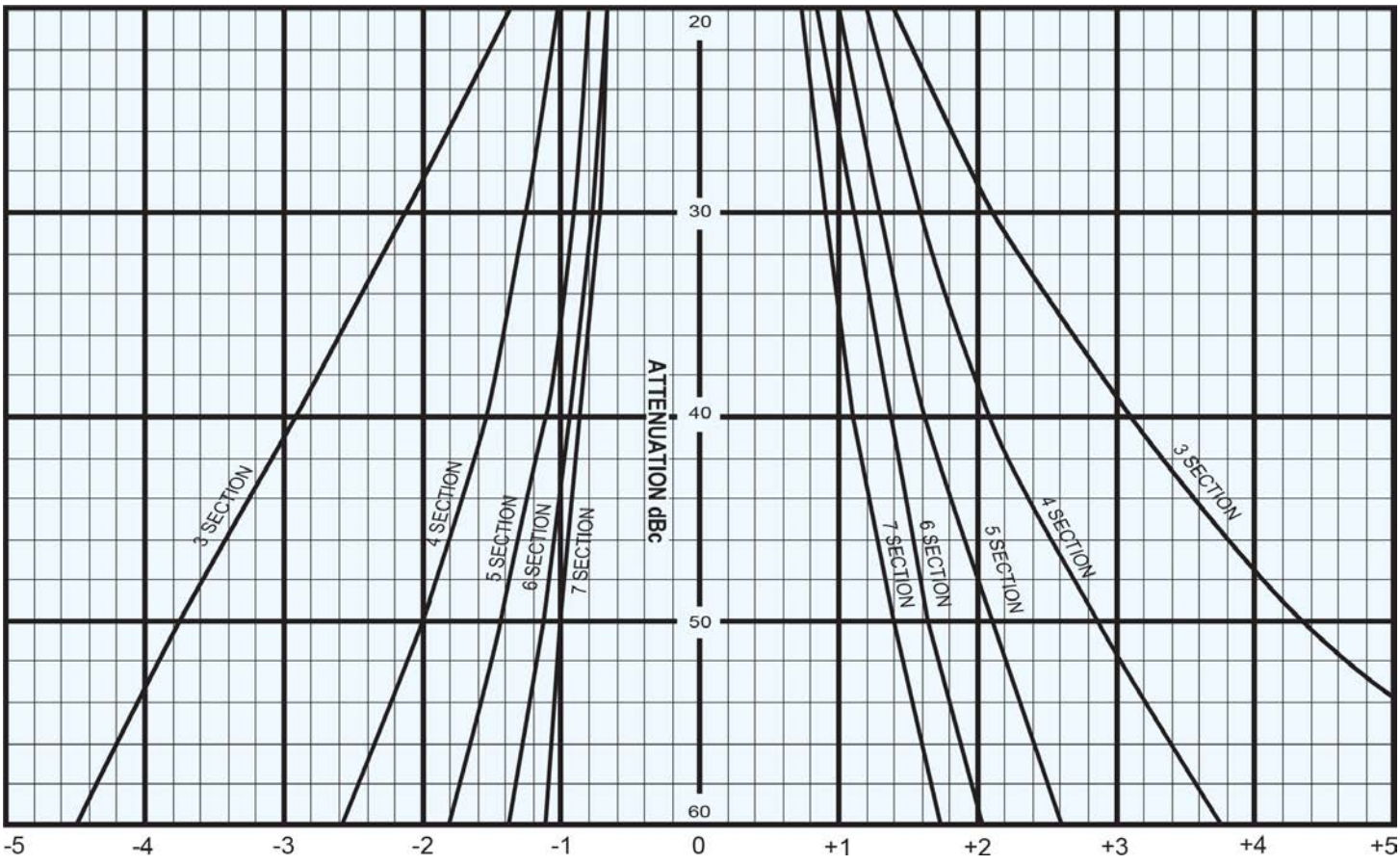
## MC, MS, and TC Series






NO. OF 3dB BANDWIDTHS

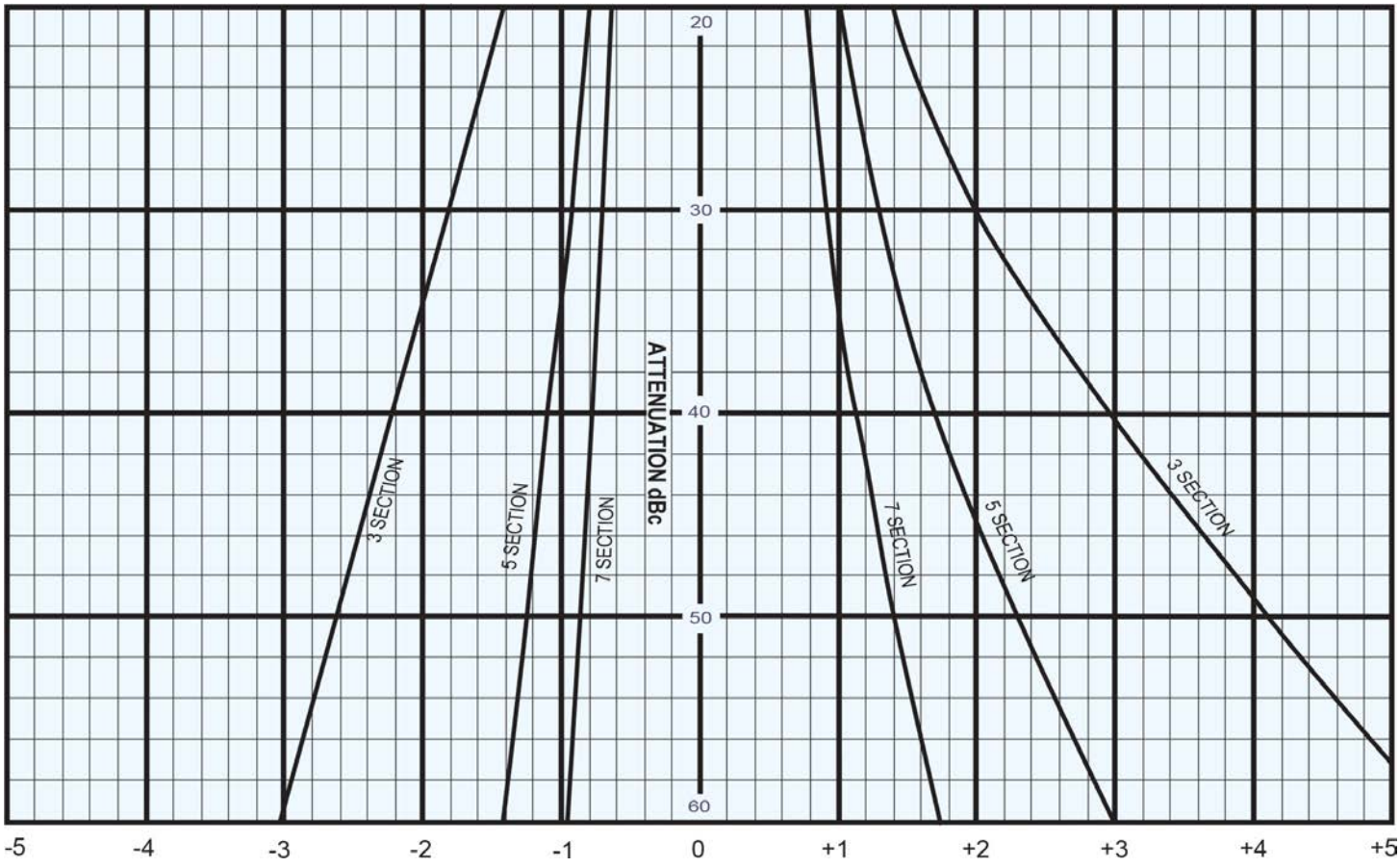
3dB BANDWIDTH APPROX. 10% OF Fc




NO. OF 3dB BANDWIDTHS

3dB BANDWIDTH APPROX. 20% OF Fc

## MC, MS, and TC Series




NO. OF 3dB BANDWIDTHS

3dB BANDWIDTH APPROX. 30% OF Fc

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