

Product

Description

The MEMtronics Ka-Band miniature waveguide filter is designed to be a surface-mountable, high-performance fixed-frequency bandpass filter that will support a variety of Ka-band communications and radar applications.



The design utilizes dielectrically-loaded propagating waveguide cavities built with uni-body construction for the ultimate in low loss with a small form factor. The filter is constructed from quartz for ultra-stable operation over temperature.

The Ka-band filter provides a 4-pole filter function centered at 35.5GHz with 1.7% bandwidth, exhibiting a nominal 2.3 dB insertion loss and a minimum 14 dB return loss over the passband. Unloaded quality factor ranges from 600 – 800, depending on frequency and configuration. Performance over temperature is very stable, with Δf approx. -32 MHz from 25°C to 125°C.

This filter performance is provided as a demonstration of capabilities. Custom filters to meet specific user requirements are possible from 2 GHz through 50 GHz, with passband bandwidths ranging from 0.5% to 10%, in implementations with 2-12 poles of filtering.

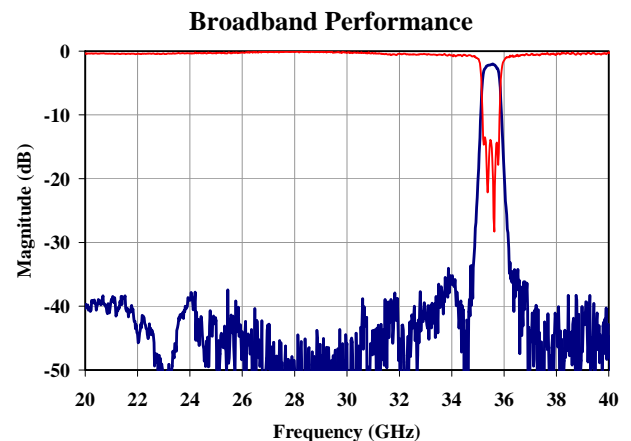
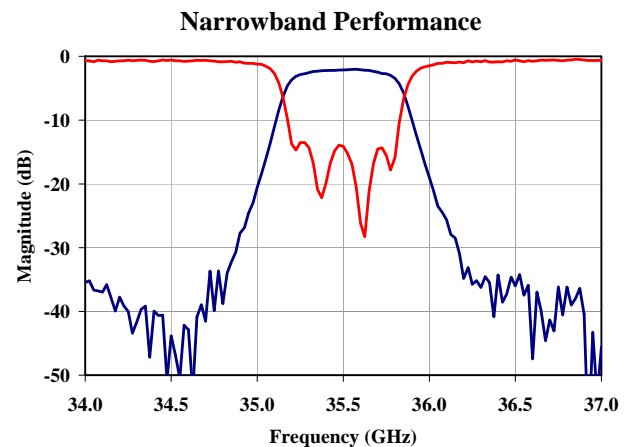
Primary Applications

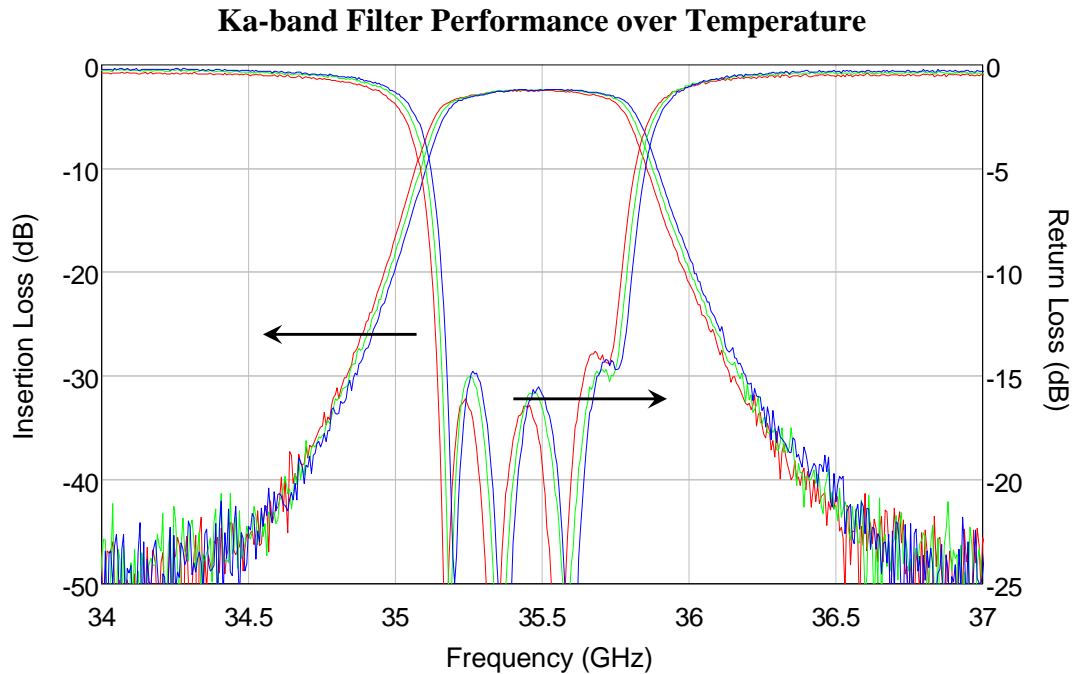
- Phased array antennas
- Military radar and communications
- Co-site interference suppression on unmanned air vehicles (UAVs)

Key Features and Performance

- Frequency range: 35.2-35.8 GHz
- Mid-band insertion loss < 2.5 dB
- Spurious rejection: > 35 dB
- Chip dimensions: 144 mm²
5.9 x 24.4 x 0.762 mm
(0.234 x 0.960 x 0.030 inches)
- Surface mountable for thin-film or module interconnect (CPW interfaces)

Ka-band Filter Performance





- Filter performance at **25°C (blue)**, **75°C (green)** and **125°C (red)**
- $\Delta f/\Delta T \sim -0.32 \text{ MHz} / ^\circ\text{C}$
- Filter demonstrates excellent temperature stability