Filters | Filter Products Group

- Lumped Elements filters
- Cavity / Combline / Interdigital filters
- Tubular filters
- Waveguide filters

- Ceramic filters
- Suspended substrate
- Diplexers & Multiplexers
- Rapid Cell Filters
• **LC Advantages**
  - 300 kHz to 10 GHz
  - Smallest and lightest
  - Versatile topologies and transfer functions
  - Ideal for moderate to very wide bandwidths
  - Connectorized or surface mount
  - Easily multiplexed
  - Temperature stable options

• **Applications and Technology Trends**
  - Lower profile designs
  - Higher frequency for surface mount applications
  - RoHS Compliance
Our custom package concepts provide additional shielding for better ultimate rejection
We use creative layouts which offer reduced package sizes when needed
• **Product Features**
  - 400 MHz to 40 GHz
  - Low insertion loss
  - High selectivity Chebyshev and pole-placed
  - Temperature stable options
  - High power handling capability
  - 0.1 to +60% bandwidth

• **Applications and Technology Trends**
  - Lower profile designs
  - Drop-in designs to 20 GHz
  - Low intermodulation products
We also use unique resonator designs to reduce overall size and increase peak power handling.
We also use innovative cross coupling techniques to achieve optimal rejection characteristics.

Bimetallic resonators are also used to achieve superior temperature stabilization.
For added environmental protection and reliability we laser weld select designs.
We can incorporate a unique low dielectric constant stabilizing structure to reduce overall sensitivity to shock and vibration.
• Tubular Advantages
  - 30 MHz to 5 GHz
  - Broad stopbands
  - Ideal for harmonic rejection
  - Moderate bandwidths (2% to 50%)
  - Chebyshev transfer functions
  - High power handling capability

• Applications and Technology Trends
  - Mature technology - most current military applications are better served through LC or cavity filters

We have experience in high power tubular designs up to 5000 watts
Precision centerless ground stock allows extremely tight tolerances and thereby yields consistent unit to unit performance
In addition to high Power handling, our Tubular filters offer Low Loss and...

...High Ultimate Rejection

S11: CH1  5 dB/REF 0 dB
S21: CH2  10 dB/REF -.273 dB

1: -.05 dB  110 MHz
2: -.45 dB  330 MHz
4: 87 dB    440 MHz
• **Product Features**
  - 2 to 40 GHz
  - Bandwidths 0.1% to 10%
  - Extremely low insertion loss
  - High power handling
To eliminate expensive adaptors, we can offer SMA, TNC and Type-N connectors on select waveguide designs.
We can provide **RX/TX waveguide diplexers** in custom configurations.
We offer higher power handling, diplexed waveguides through the use of integral heat dissipation methods.
Filters | Suspended Substrate

• **Suspended Substrate Advantages**
  - 2 to 18 GHz
  - Ideal for broadband multiplexing
  - Chebyshev and elliptic response
  - Well suited for high shock and vibration applications
  - Highly repeatable (ideal for matched filters)

• **Applications and Technology Trends**
  - Broadband receivers
  - Easily integrated with other components
We use gold plating on surface mount packages which offers better solderability and corrosion resistance than other finishes.
**Product Features**
- Frequency range - 400 MHz to 6 GHz
- Bandwidths - 1 to 10%
- Bandpass, bandreject and duplexer
- 2 to 6+ sections, custom packages available
- Low cost, small size
- Good I.L. relative to size
- Surface mount or leaded
- Open frame or sealed for hi-rel
- Typical applications are:
  - GPS
  - ISM
  - WLAN
  - IFF
  - ManPack
We also offer *immersion silver plating* for very low loss designs.
Spectrum Microwave designs and manufacturers Diplexers, Triplexers, and Multiplexers to 40 GHz, using proven design techniques
For broad frequency coverage, multiple topologies can be integrated within a single package.
Spectrum Microwave’s pseudo-elliptic designs incorporate cross coupling to create transmission zeros resulting in enhanced rejection performance.
Another approach we employ to reduce unit size is **Iris coupling**

We also use **cross coupling** to realize transmission zeros for better out of band rejection.
Alternative coupling structures offers design flexibility and superior performance

Capacitive coupling arrays also offer enhanced reliability and repeatability
For added protection and reliability, we laser weld select ceramic designs.
We can also utilize temperature stabilizing elastomers for harsh temperature environments.

This innovative technique also allows us to meet demanding shock and vibration specifications.
Spectrum Microwave’s Rapid Filter Centers have reduced delivery times on custom Bandpass, Lowpass, Highpass & Notch filters to as little as 1-2 weeks in most cases.
Our Rapid Filter Centers not only deliver custom filters in a few weeks, but supply simulations with each design.

Bandpass Filter: 311-307008-001, 2008-07-30

1) 13700 MHz  
   -38.225 dB
2) 14000 MHz  
   a) -1.575 dB  
   b) -23.509 dB
3) 14350 MHz  
   -1.009 dB
4) 14700 MHz  
   a) -1.51 dB  
   b) -26.533 dB
5) 15000 MHz  
   -39.591 dB
Our Rapid Filter Centers also supply mechanical outline drawings with every proposal.
ISO 9001:2000 Quality Operating System

**MIL-PRF-38534 Product Screening and qualification capability**
- Device screening and groups A, B, C, and D qualification (when required by order)
- Environment testing per MIL-STD-883 test methods

**Other specifications guidelines**
- J-STD-001 Class 3 and IPC-A-610, for eutectic attach and general soldering processes
- IPC-7711 and IPC-7721, for rework and authorized repair operations

**Quality assurance programs**
- Calibration recall program for test and measurement equipment
- Facility ESD program
- Failure analysis and corrective action system
- Internal ISO audit program
- Operator training program