

TTE

FILTER SPECIALIST SINCE 1956

a Gowanda Company



TTE Filters RF and Microwave Filters

Corporate Capabilities Brochure

www.tte.com



Established in 1956, TTE continues its pioneering leadership role in the design, development and manufacture of high quality RF and microwave filters. Initially, TTE manufactured LC filters in the frequency range of 5 Hz to 100 kHz. Today, TTE filters are available for any frequency from 100 Hz to 26 GHz – and to 40 GHz in some instances.

Passive filter products include bandpass, band rejection, highpass, lowpass, high power lowpass and cavity designs covering the RF and Microwave frequency spectrum. Diplexer and multiplexer designs are also available for applications requiring multi-functionality.

Design capabilities include LC, combline and microstrip; topologies include Bessel, Butterworth, Chebyshev, Elliptical Function and Gaussian.

Filters from TTE, most of which are **custom made** and built-to-order, are used by OEMs and other organizations around the world to enhance communication and signal processing in cellular, data acquisition, electronic support, radar, satellite, sonar, telecommunication, telemetry and wireless applications in commercial, industrial, medical and military/defense environments.

TTE is a leader in customer service. The company maintains a large inventory of standard materials to enable delivery of most TTE products within 2 weeks. **Expedited lead times as short as 3-5 days are available** on certain products. **All TTE products are made in the USA** and include a limited warranty.

An overview of TTE’s design capabilities and typical frequencies is presented in the table below. More information about each filter type appears on the next page. Please contact TTE for assistance at 310-478-8224 or tte@tte.com.

TTE Filters – Design Capabilities and Typical Frequencies*

	Bandpass Filters (Center Frequency)	Band Rejection Filters (Center Frequency)	Highpass Filters (-3dB Frequency)	Lowpass Filters (-3dB Frequency)
Bessel	500 Hz – 200 MHz			100 Hz – 200 MHz
Butterworth	500 Hz – 1 GHz	1 kHz – 20 MHz	100 Hz – 500 MHz	100 Hz – 2 GHz
Chebyshev	500 Hz – 1 GHz	1 kHz – 200 MHz	100 Hz – 1 GHz	100 Hz – 4 GHz**
Elliptical Function	1 kHz – 20 MHz	1 kHz – 20 MHz	1 kHz – 200 MHz	100 Hz – 200 MHz
Gaussian	500 Hz – 200 MHz			100 Hz – 200 MHz
Compline	400 MHz – 26 GHz			

* Other designs and frequencies are feasible; please contact TTE for assistance with your requirements

** High Power version is also available with power handling up to 300 Watts and frequency range from 600 kHz to 600 MHz

Additional Capabilities:

- **Comprehensive Testing Lab** – thermal shock, life and other testing performed in-house gives TTE control over testing and timing, helping customers meet project deadlines.
- **Professional Design & Engineering Support** – decades of filter expertise help TTE to deliver effective designs and efficient solutions for filter applications around the world.
- **Outstanding Customer Service** – speed quotes, rapid turnaround, inventory management and other tools enable TTE to be highly responsive to customer requests.

Bandpass Filters

Bessel Filters exhibit a constant time delay in the passband of the filter.

Butterworth Filters are more selective than Bessel Filters and offer both monotonic passbands and monotonic stopbands.

Chebyshev Filters have low ripple passbands and monotonic stopbands. The passband ripple is ± 0.25 dB typical.

Elliptical Function Filters offer better selectivity than Chebyshev Filters. The passband ripple is ± 0.25 dB typical. Elliptical Function Filters exhibit poles and zeros in the stopband that are below the specified rejection level.

Gaussian Filters are designed to pass a step function with zero overshoot and minimum rise. Similar to Bessel Filters they offer limited selectivity.



Band Rejection Filters

Butterworth Filters offer monotonic passbands.

Chebyshev Filters have a low ripple passband of ± 0.25 dB typical.

Elliptical Function Filters have a passband ripple of ± 0.25 dB typical. These filters are more selective than Butterworth or Chebyshev topologies.



Highpass Filters

Butterworth Filters offer both monotonic passbands and monotonic stopbands.

Chebyshev Filters have low ripple passbands and monotonic stopbands. The passband ripple is ± 0.25 dB typical.

Elliptical Function Filters offer better selectivity than Chebyshev Filters. The passband ripple is ± 0.25 dB typical. Elliptical Function Filters exhibit poles and zeros in the stopband that are below the specified rejection level.



Lowpass Filters

Bessel Filters exhibit a constant time delay in the passband of the filter.

Butterworth Filters are more selective than Bessel Filters and offer both monotonic passband and monotonic stopbands.

Chebyshev Filters have low ripple passbands and monotonic stopbands. The passband ripple is ± 0.25 dB typical.

High Power Chebyshev Filters offer power handling up to 300 Watts and frequency range from 600 kHz to 600 MHz.

Elliptical Function Filters offer better selectivity than Chebyshev Filters. The passband ripple is ± 0.25 dB typical. Elliptical Function Filters exhibit poles and zeros in the stopband that are below the specified rejection level.

Gaussian Filters are designed to pass a step function with zero overshoot and minimum rise. Similar to Bessel Filters they offer limited selectivity.



Coming Soon:

Standard series for off-the-shelf convenience:

- Lowpass Filters
- Tunable Bandpass Filters
- Connectorized Bias-T's



- Specialists in custom designs
- RF filters and microwave filters
- Bandpass, bandreject, highpass, lowpass, high power lowpass
- Bessel, Butterworth, Chebyshev, Elliptical Function, Gaussian
- Filters, diplexers, multiplexers and other networks
- Expedited lead times as short as 3-5 days are available on certain products

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MADE IN USA

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Serving the needs of the global electronics design community

Gowanda Holdings is a US-based manufacturer of high performance electronic components that address the needs of electronic design engineers around the world. Areas of expertise include magnetic devices, specialty filters and custom-designs. These products enhance the performance and reliability of electronic systems in aerospace, commercial, communications, defense and medical applications.

The individual business units that support Gowanda Holdings are Gowanda Electronics, TTE Filters, and Instec Filters. With a combined history of 100+ years in business these organizations have earned a well-respected and important presence within the global electronics industry.

The recent combination of these entities into a single organization has allowed significant progress in the cost-effective manufacturing of high-reliability solutions for customer applications by leveraging the group's cross-disciplinary expertise, design techniques and operation strengths. These strengths fortify existing products and enable new standard and custom-OEM designs to move rapidly from concept through the design and prototype phases and out onto the production floor. For new components, this speeds up the commercialization process for customers who are developing new products based on those components and delivers significant value in being first-to-market.

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