

SPECTRUM
Advanced Specialty
PRODUCTS
A Spectrum Control Business

Advanced Specialty Products Selection Guide

Spectrum Advanced Specialty Products

Since our founding in 1968, you've known us as Spectrum Control, the leading provider of custom application-specific EMI filter solutions. Now we've got a new name and lots of new products to help address the mechanical, electrical and/or power requirements of your next design. The NEW Spectrum Advanced

Specialty Products not only has the industry's most complete line of coaxial EMI components, but also an expanded offering of advanced ceramics, film modules, filtered and unfiltered interconnects, and antenna assemblies.

Innovative Solutions from Components to Complex Assemblies

Understanding how and where potential EMI and other problems exist in an electronic system can be a daunting challenge. Our solutions address all mechanical, electrical, and environmental concerns of your system while ensuring the project is kept on budget and schedule.

The Spectrum design process begins with our extensive library of standard components, which we frequently develop into custom assemblies offering a more complete, high performance solution... saving you time and money.

- ***Most Complete EMI Line***

We offer the flexibility to filter EMI at the power source, at the I/O connection, in a barrier wall or on the PCB. Our industry-leading line includes inductors, glass and resin seal filters, SMT filters, filter plates, filtered connectors, power entry and power line filters, and military/aerospace multisection filters... most available RoHS compliant.

- ***New Antennas, Specialty Connectors, Ceramics and Film Capacitors***

Part of our decision to adopt a new name followed our continued growth into new product areas serving new markets. New for this year are a greatly expanded line of antenna assemblies designed for critical data transmission, new unfiltered and filtered connectors and custom connector harnessing, advanced ceramics and ceramic capacitors, and our modular film capacitors engineered for military and commercial power applications.

- ***Low Cost Manufacturing***

Our commitment to be the world's most efficient EMI filter manufacturer has resulted in only using the best technology and people for our global network of design and manufacturing facilities. Our ability to achieve this goal is strengthened by our 75,000 sq. ft. manufacturing plant in Guang Dong, China and our state-of-the-art plant in Juarez, Mexico.

- ***MIL Qualified Products***

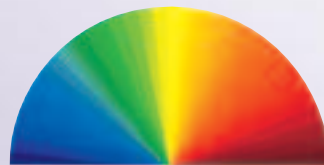
We offer over 800 standard QPL products & DSCC part numbers. Look to us for the largest number of MIL-PRF-15733, MIL-PRF-28861, DSCC 84084, MIL-PRF-49470 and MIL-C-11015 filters. Whether a COTS buy or engineered solution, we're the ideal source for your design.

- ***Design & Testing Support***

Integral to solving EMC problems is the ability to test for compliance. We conduct a wide range of EMC and environmental tests and use that data in our design process. The result is the most comprehensive EMI evaluation and design resource available.

- ***Meet Vendor Reduction Goals***

The breadth of products within the EMI Filter & Components Group alone can help you reduce your sourcing base. Combined with our sister divisions of Microwave, Power Management, and Sensors & Controls, you've got a real opportunity to reduce suppliers and lower overall costs.



SPECTRUM
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PRODUCTS

A Spectrum Control Business

www.SpecEMC.com

ISO 9001:2000

TS-16949
CERTIFIED

Optimized Designs

*for a wide range of
new applications and markets*



Defense

- *Specialty Connectors*
- *QPL'd Coaxial Filters*
- *Military Custom Power Filters*
- *Antenna Assemblies*
- *Advanced Ceramics*

Communications

- *Coaxial Interconnects*
- *Commercial Custom Power Filters*
- *Surface Mount Filters*
- *Antennas*

Avionics

- *Specialty Connectors*
- *Coaxial Filters & Interconnects*
- *Film Modules*
- *Custom Power Filters*

Alternate Energy

- *Film Modules*
- *Specialty Ceramics*

Medical

- *Coaxial Filters & Interconnects*
- *Antenna Assemblies*
- *Advanced Ceramics*
- *Power Filters*

Industrial

- *Advanced Ceramics*
- *Coaxial Filters & Interconnects*
- *Film Modules*
- *Specialty Connectors & Harnessing*

ADVANCED CERAMICS

COAX

Specialty Ceramic Components



Advanced Ceramics



Three Terminal & LC Chips, Power/Square & Mini Surface Mount Filters



Miniature & Solder-in Filters



Hermetic/Resin Sealed Filters & MLFT Filters



Applications

Medical implantable devices, EMI/RFI suppression filters, commercial and military applications, power supplies, converters

Chemical and fluid handling systems, microwave hybrid applications, HF/RF power amplifiers, computer, medical and network products, multi line designs, circular and D-sub connectors

Cellular telephones and base stations, telecommunication equipment, computer and peripheral equipment, digital AV equipment such as TV, VCR and DVD, power amplifiers, power supplies, and temperature and motor controls

Ideal for microwave applications such as attenuators and oscillators. Perform well in high impedance circuits where large capacitance values are not practical

Power supplies, signal lines, rocket igniters, aerospace, DC motors, telecom & military/secure communications, medical equipment, mining/oil drilling, transceivers, microwave filters, industrial control systems, multi-circuit filter assemblies

Features / Benefits

■ Discoidals

Low inductance, non-polar
Filtering and decoupling of high frequency applications
Reliable, low profile, multi-layered designs

■ Tubular Capacitors

Small, lightweight, reliable, high dielectric strength
Uniform insertion loss over a broad frequency range

■ Switch Mode Power Supplies

Ideal for DC-DC power supply applications
Capacitor assemblies with low ESR/ESL
Leaded configuration safeguards the device against thermal and mechanical stresses

■ Fed/MIL approvals

MIL-PRF-49470 approvals

■ Structural Ceramics

High wear and corrosion resistance
Temperature stability and strength
Superior thermal shock resistance
Custom solutions available

■ Thin/Thick Film Circuits

Product can be manufactured to customer designs
Various substrates available
Flexibility in design to include resistive, capacitive and conductive elements
Custom shapes easily produced

■ Capacitor Arrays

Variable mounting style selection
Decreased assembly time – one placement
Reduced component stress
Parallel and series configurations of chip capacitors

■ Planars

Custom geometry configurations available
Design flexibility with multiple capacitance values
Established circular, D-sub and mini connector designs available

Three Terminal Chips

Non-polar, surface mountable
Superior filtering characteristics
Available in 0805, 1205, and 1806 sizes

LC Type Chips

Ideally suited for high frequency signal lines

Monolithic construction of dielectric and ferrite materials

Non-polar, surface mountable
Available in 0805 and 1206 sizes

Power, Square & Mini Surface Mount Filters

PSM: 2 – 20 Amps (FT)
2 – 10 Amps (PI)

SSM & MSM: 10 Amps

High temperature construction

Small, square mechanical geometry enhances soldering to a PCB

Tape and reel and bulk packaging

Simple structure and high withstanding voltage

■ Small size options

Ideal for use when real estate is limited
Solder-in, Knurled press-in & 2-56 threaded Spanner

■ Design flexibility

Wide range of solder-in bushings with a variety of circuits: C, L, and Pi
Custom lead options available

■ Construction

High temperature construction

■ Plating

Suitable for gold bonding when specified

■ Coaxial

Feed-through filtering

■ FED/MIL approvals

Qualified to MIL-C-11015 and MIL-PRF-15733

Hermetic/Resin Sealed

■ **Cost-effective solutions**
Low cost filters provide protection in hostile environments

■ Design flexibility

Wide range of bushing sizes, lead configuration options and circuit types including C, L, Pi, transient suppression Pi, T, & TT

■ Reliability

Built in accordance with MIL-PRF-15733 or MIL-PRF-28861

■ FED/MIL approvals

Qualified to MIL-PRF-15733, MIL-PRF-28861 and DSCC 84084

■ Safety

Some select filters U.L. 1459 recognized and CSAC22.2 certified

MLFT - Motor Line Feed-Through Filters

■ **One component solution**
Eliminates the need for multiple capacitors, inductive coils, leads and PCB assemblies

■ **Easy installation**
Provides a connector interface for a space saving EMI solution

Performance Characteristics

■ Discoidals

.080 to 0.600 in. diameter
50 to 500 Volt

NPO, X7R and Z5U ceramic available

■ Tubular Capacitors

Feed-through and Pi circuit

0.081 to 0.122 in. diameter

50 to 200 Volt

■ Switch Mode Power Supplies

BP, BX, BR or BQ ceramic available
Lead options: in, out or straight

50 to 500 Volt

■ Structural Ceramics

Materials: Steatite, Cordierite and Alumina

Finishing methods: glazing, tumbling, plating

■ Thin/Thick Film Circuits

Substrates/Film: Alumina, Garnet, Quartz

Conductors Au, Ag, Ni

Resistors TaN, TiW, Au

■ Planar & Capacitor Arrays

Capacitance values up to 40 μ F depending on array

Voltage ratings up to 1500 VDC

Temperature rating -55°C to 125°C

Three Terminal

■ **Voltage** Up to 100 VDC

■ **Current** Up to 2 Amps

■ **Capacitance** Up to 220,000 pF

LC Type

■ **Cut-off frequency** Up to 220 MHz

■ **Voltage** 25 VDC

■ **Current** 100 mA

PSM/SSM/MSM

■ **Rated voltage**
50 – 200 VDC

■ **Capacitance** 47 pF to .01 μ F

■ **Temp range**
-55°C to +125°C

■ Insertion loss range

Effective filtering to 18 GHz in a shielded application

■ Capacitance

Up to 30,000 pF

■ Operating voltage

Up to 750 VDC

■ Temperature range

-55°C to +125°C

■ Insertion loss range

Effective filtering from 10 KHz to 18 GHz with proper installation

■ Capacitance and temperature characteristics

To 5.2 μ F NPO, X7R, Y5V, Z5U

■ Temperature range

-55°C to +125°C

■ Voltage ratings (max.)

To 2500 VDC
240 VAC @ 400 Hz

■ Current ratings (max.)

To 100 Amps

RoHS
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www.SpecEMC.com/ceramic

www.SpecEMC.com/ceramic

RoHS
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www.SpecEMC.com/smt

RoHS
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www.SpecEMC.com/lowpass

RoHS
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www.SpecEMC.com/lowpass

COAXIAL FILTERS & INTERCONNECTORS

Resin Filters & Assemblies



Automotive, rocket motors, turbine equipment, industrial control assemblies

Filter Plates & Shrouded Latch Plates & Assemblies



Telecommunications equipment, military, industrial, scientific, remote sensory and medical equipment

Filtered Terminal Blocks



Telecommunications equipment, industrial controls, power supplies, uninterruptible power supplies, military, instrumentation and power distribution equipment

Low Cost Ferrite & Feed-Through Filtered D-Sub Connectors



Personal computers, microcomputers-applied products, peripheral/terminal equipment, industrial process equipment, cellular base stations, PBX telecommunications equipment, graphics workstations, and medical electronics

High Performance Filtered D-Subminiature & Combo Connectors



Telecommunications equipment, cellular base stations, secure communications, medical electronics, industrial process equipment, microwave TX/RX, personal computers, graphics work-stations and aerospace applications

Filtered & ESD Protection Datacom Connectors



Data networking equipment, personal and industrial computers and peripherals, workstations, fax/modems, copy machines, original telephone manufacturing, medical equipment, broadband transmission equipment, bay connectorization and multiplexing

Shielded Connectors & Assemblies

Automotive, rocket motors, turbine equipment, industrial control assemblies

Telecommunications equipment, military, industrial, scientific, remote sensory and medical equipment

Telecommunications equipment, industrial controls, power supplies, uninterruptible power supplies, military, instrumentation and power distribution equipment

Personal computers, microcomputers-applied products, peripheral/terminal equipment, industrial process equipment, cellular base stations, PBX telecommunications equipment, graphics workstations, and medical electronics

Telecommunications equipment, cellular base stations, secure communications, medical electronics, industrial process equipment, microwave TX/RX, personal computers, graphics work-stations and aerospace applications

Data networking equipment, personal and industrial computers and peripherals, workstations, fax/modems, copy machines, original telephone manufacturing, medical equipment, broadband transmission equipment, bay connectorization and multiplexing

- **Total reduced costs**
Economical method of meeting EMC requirements
- **Excellent filtering**
Outperform surface mount filters at frequencies above 130 MHz; provide an EMI filtered signal line between electronic system modules
- **Reliability**
Every filter plate is tested 100% for key parameters
- **Standard centers**
0.100" and 2 mm centers allow for easy termination
- **Easy Mate™ filter plate**
Design provides for quick installation into predefined cutout
- **Microcircuit packages**
Custom designs available with a variety of materials, filtering and connectors
- **Rugged construction**
Shroud protects filter element from potential damage

- **Rugged construction**
Provides protection to filtering element; especially useful for repeated changes in field wiring
- **Design flexibility**
2 to 6 terminals available in "Barrier Strip" 2 to 12 terminals available in European variety
- **Performance**
Filter elements provide high insertion loss for EMI filtering of AC and DC power and control lines
- **Reliability**
Every terminal block is tested 100% for key parameters
- **European style blocks**
Available in English and metric spacing
- **FED/MIL approvals**
Barrier strips are recognized to U.L. 1059 file E133076 and approved by CSA Std 22.2 No. 158-1987 and ECN584B, LR92537; 52-160 series 100 VDC UL/CSA 52-257 series 250 VAC UL/CSA

- **Cost-effective solutions**
Low cost, high performance; replaces individual filters on PCB, saving cost and space
- **Design flexibility**
Available in 9, 15, 25 and 37 lines standard density
- **Compact design**
Short, space saving .318" footprint interchangeable with standard D-subminiature connectors
- **Performance**
Superior filtering of high frequency interference; ground plane design provides superior EMI shielding
- **Reliability**
Each connector position is tested 100% for critical electrical parameters to ensure consistent performance
- **FED/MIL approvals**
UL 94V-0, UL/CSA recognized

- **Excellent filtering**
Filter types include Pi or feed-through capacitors; signal, power & coax contacts; groundplane design provides superior EMI shielding.
- **Design flexibility**
9 through 50 line construction, standard, high density, mixed pin loading & selectively loaded lines
- **Reliability**
Each connector position is tested 100% for critical electrical parameters to ensure consistent performance
- **Numerous options**
Hardware, mounting, waved metal gaskets, hooded strain reliefs, combined filter types and plating
- **FED/MIL approvals**
UL 94V-0, UL/CSA recognized

- **Cost-effective solutions**
Modular jack connectors filtered with ferrites
Miniature ribbon connectors and adapters with chip capacitors
Mini din receptacles filtered with ferrites
USB connectors with inductors or chip capacitors for filtering and diodes for ESD protection
- **Design flexibility**
Modular jack receptacles available in single or multiport styles with various shielding options
Miniature ribbon connectors and adapters available in 50-line configurations with a variety of hardware options
Mini din receptacles available fully shielded with either straight or kink legs

- **Insertion loss range**
Effective insertion loss from 1 MHz to 18 GHz with proper installation
- **Capacitance**
Pi: 68 pF to 5000 pF
Feed-through: 10 pF to 4000 pF
- **Temperature characteristics**
NPO, X7R, Y5V, Z5U
- **Temperature range**
-55°C to +125°C
- **Voltage ratings (max.)**
To 250 VDC
- **Current ratings (max.)**
To 5 Amps standard

- **Insertion loss range**
Effective insertion loss from 1 MHz to 18 GHz with proper installation
- **Capacitance**
2500 pF
- **Temperature range**
-55°C to +105°C
- **Voltage ratings (max.)**
Barrier: to 250 VAC
European: to 100 VDC
- **Current ratings (max.)**
Barrier: 30 Amps
European: 12 Amps

- **Insertion loss range**
1 MHz to 18 GHz and beyond
- **Capacitance and temperature characteristics**
To 100 pF - .047 μF
NPO, X7R, Z5U
- **Temperature range**
-40°C to +105°C
- **Voltage ratings (max.)**
500 VDC
- **Current ratings (max.)**
5 Amps

- **Insertion loss range**
1 MHz to 18 GHz and beyond
- **Capacitance and temperature characteristics**
To 5600 pF
NPO, X7R, Y5V, Z5U
- **Temperature range**
-55°C to +125°C
- **Voltage ratings (max.)**
200 VDC
- **Current ratings (max.)**
5 Amps

- **Reliability**
Each connector position is tested 100% for critical electrical parameters
- **Insertion loss/ inductance range**
Effective insertion loss from 1 MHz to 18 GHz with proper installation
- **Capacitance**
Up to 820 pF
- **Temperature range**
-55°C to +125°C
- **Voltage ratings (max.)**
1000 VDC (miniature ribbon connectors)
500 VDC (modular jack connectors)
- **Current ratings (max.)**
5 Amps

CONNECTORS & HARNESSING

Custom Connectors



Commercial and military avionics, satellites, telecommunications, power supplies, electronic warfare, ground/air weapon systems and mining and oil drilling exploration

- **Excellent filtering**
Tubular and planar filtered arrays using Pi, LC, T, and C circuits; TVS protection available
- **Design flexibility**
Filtered MIL-DTL-38999, MIL-DTL-83723, MIL-DTL-26482, MIL-DTL-24308, MIL-DTL-55116 as well as custom filtered connectors
- **Reliability**
Each connector position is tested 100% for critical electrical parameters
- **Specialty Unfiltered Connectors**
Built to MIL specifications, custom shells to fit available space. Integral strain relief. Power, signal & coax line combinations

- **Insertion loss range**
Effective insertion loss from 1 MHz to 18 GHz with proper installation
- **Capacitance and temperature characteristics**
To 0.1 μ F
COG, X7R, Z5U
- **Temperature range**
-55°C to +125°C
- **Voltage ratings (max.)**
125 VAC @ 400 Hz
up to 1000 VDC

Harnessing Products & Services



Commercial avionics, telecommunications, industrial equipment, mining & oil exploration, medical equipment

- **Standard assured**
All harnessing built in accordance with IPC-A-610 & J-Std-001
- **Design flexibility**
Harnesses can include a wide range of interconnects both unfiltered or Spectrum Advanced Specialty Products filtered product
- **Manufacturing expertise**
Services include lead wire preparation, soldering & tinning, marking & ribbon cable processing
- **100% tested for continuity**

- **Temperature range**
-55 C to +200 C
- **Current ratings (max.)**
To 400 Amps

www.SpecEMC.com/harness

High Current Feed-Through Filters



Cellular base stations, telephone racks, high current switch mode power supplies, power amplifiers and servers, industrial equipment and laser welders

- **Easy installation**
Bolt-in style, surface mount
- **Design flexibility**
Available with single, dual, triple and quad configurations, different stud lengths, mounting brackets hardware and EMI gasketing available
- **Performance**
Ideally suited to help meet NEBS, GR1089, and EN55022
- **Agency approvals**
Designed to meet agency approvals, some selected filters UL 1950 recognized, CSA C22.2 certified and TÜV approved
- **Custom options**
Custom interfacing, contact pins, wire leads, multiple outputs
- **Environmental**
Can be used in both indoor and outdoor applications

- **Current ratings (max)**
To 500 Amps
- **Voltage ratings (max)**
To 1000 VDC and to 240 VAC
- **Insertion loss range**
AC: 1 MHz to 1 GHz
DC: 150 KHz to 10 GHz
High performance options available with IL up to 100 dB
- **Temperature range**
-55°C to +125°C
- **Capacitance**
4.7 μ F max
Class Y2 and Y4 available

www.SpecEMC.com/sifilter

RoHS
COMPLIANT

POWER FILTERS & FILM

Power Entry Modules



Digital equipment, personal computers and peripherals, measuring instruments, home appliances, monitor and display units

- **Rugged construction**
Designed to perform in industrial environments
- **Design flexibility**
Available in PCB mount, bolt-in, and snap-in configurations, fast-on tab, solder lug or flying leads, Fused and Switched and Fused options available
- **Performance**
Ideally suited for products that must conform to FCC part 15 regulations
Meets over voltage of IEC 664 category II and complies with IEC 950
Metal case provides high performance
- **Agency approvals**
UL recognized, CSA certified, TÜV approved (tested and found to be in accordance with VDE 0565 Part 3)
- **Custom options**
Value added connectors, wire leads, ring terminals

- **Current ratings (max)**
Up to 15 Amps
Switched/Fused 2, 4, and 6 Amps
- **Voltage ratings (max)**
From DC to 250 VAC, 60 Hz
- **Insertion loss range**
Effective filtering from 100 KHz to 30 MHz
- **Temperature range**
-25°C to +85°C
- **Leakage current**
0.35 mA to 0.50 mA max for general purpose filters
0.005 mA to 0.10 mA max for medical filters

www.SpecEMC.com/pem

RoHS
COMPLIANT

Power Line Filter & 3 Phase Power Line Filters



Digital equipment, personal computers and peripherals, measuring instruments, medical, industrial, telecommunications equipment, factory automation, UPS, vending machines, elevators, and switch mode power supplies, welder appliances, inverters and converters

- **Rugged construction**
Designed to perform in industrial environments
- **Design flexibility**
Available with fast-on or bolt-in terminals
Single and dual stage
Delta and Wye configurations
- **Performance**
Ideally suited for products that must conform to FCC part 15 regulations
Both metal and plastic cases provide high performance
Excellent attenuation for high voltage impulse
- **Agency approvals**
Several styles are UL recognized, CSA certified, TÜV approved (tested and found to be in accordance with VDE 0565 Part 3)

- **Current ratings (max)**
1 Amp to 100 Amps
3 Amps to 200 Amps (3 Phase)
- **Voltage ratings (max)**
From 48 VDC to 250 VAC, 60 Hz
250 VAC to 440 VAC (3 Phase)
- **Insertion loss range**
Effective filtering from 100 KHz to 30 MHz
- **Temperature range**
-25°C to +85°C
-40°C to +85°C (3 Phase)
- **Leakage current**
0.35 mA to 3.0 mA max

www.SpecEMC.com/pline

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www.SpecEMC.com/circular



SpecEMC.com

Check out our online tools to help you find the product or system that meets your needs.

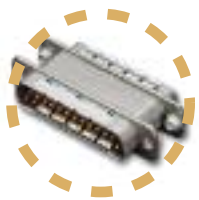


Instant Inventory Information

Check Stock will provide you with distributor names, part numbers, quantity on hand, online ordering capability and the last date inventory was updated for that particular component.

Project Starter

Design your product to meet the exact requirements of your application. Project Starter allows you to choose from multiple configurations to get a product that will best meet your application needs and you can even request a drawing, sample or quote of your custom product.



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SPECTRUM CONTROL, INC.

Our Family of Custom Solution Businesses

SpectrumControl.com



- Amplifiers & Mixers to 28 GHz
- Filters & Switch Filter Assemblies to 40 GHz
- DROs, PLOs, VCOs & Synthesizers
- Integrated Assemblies to 47 GHz
- Hybrids to 50 GHz
- Advanced Thin Film Products

SpectrumMicrowave.com



- EMI Filters, Components and Modules
- Filtered Interconnect Devices
- Antennas
- Advanced Ceramics and Assemblies
- Specialty Connectors

SpecEMC.com



- Position Sensors
- Temperature Sensors
- NTC and PTC Ceramic Components
- PTC Heater Assemblies
- Panel Input Controls

SpecSensors.com



- Power Management and Distribution Systems
- Remote Management Systems
- Monitoring Equipment Environmental, Electrical, Security, Mechanical

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