



# Military, Aerospace & Space

Line Card



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**TTI, Inc. – Never Short on Solutions**

# TTI, Inc. – Never Short on Solutions



## Military, Aerospace & Space Solutions

Specialist Technical Team

World Leading Authorised Suppliers for Passive, Discrete,  
Connector & Electromechanical Components

Circular Connector Assembly for Fast Delivery and Low Volume

Mil-Spec QPL, CECC, ESCC and Pb-Lead Components Stocked

Wide Range of COTS Products for Cost Reduction Requirements

Design and Prototype Quantity Support from Mouser Electronics

Document Handling, ITAR and Date Code Traceability

Advanced Logistics Solutions Tailored to your Requirements

One Global System Supporting your Supply Chain

ISO9001:2000, IECQ-CECC and EN9120 & EN9100, SC21

**Amphenol**

**API Delevan**

**AVX**  
A HYDERA GROUP COMPANY

**BOURNS®**

**C&K**

**COOPER Bussmann**

**CDE CORNELL DUBILIER**  
Your Source for Capacitor Solutions

**DELPHI**

**FCI**

**Honeywell**

Electronic Components  
**KEMET**  
CHARGED

**KOA**  
KOA SPEER ELECTRONICS, INC.

**Littelfuse**  
Expertise Applied | Answers Delivered

**molex**  
one company a world of innovation

**murata**  
Innovator in Electronics

**nichicon**

**OHMITE**

**Panasonic**

**PHENIX CONTACT**

**SPECTRUM**  
Advanced Spectraly  
PRODUCTS  
A Spectrum Global Business

**Lelon**

**SYFER**

**TE**  
connectivity

**TT electronics**

**UNITED**

**VISHAY**

**VISHAY**  
PRECISION

**WIMA**

**YAGEO**

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## TTI's Military Aerospace & Space business unit serves all customer needs providing:

- World leading authorised suppliers for:
  - Passives and Discretes
  - Connectors, Cable and Wire Management
  - Relays, Switches and Sensor products
- Circular connector assembly for fast delivery and low volume
- Specialist local technical team
- Engineering design-in support and technical seminars
- Engineering design and prototype quantity support from Mouser Electronics (a TTI Company)
- Mil-Spec QPL, CECC, ESCC and Pb-lead components stocked
- Wide range of COTS products for cost reduction requirements
- Document handling, ITAR licensed and date code traceability
- Safety and buffer stock inventory
- Advanced logistics solutions tailored to your requirements – direct line feed and consignment inventory
- One global system supporting your OEM and CEM supply chain internationally
- On-time delivery >98.5%, quality <1800ppm and we embrace the Total Quality Process
- ISO 9001:2008, IECQ-CECC, EN9120 & 9100 and SC21

## Why Buy from TTI?

### Product Knowledgeable Experts

TTI has a team of specialists with more product experience and knowledge than any other distributor. All TTI employees participate in company-wide training programs, plus every one of our sales branches has a team of product managers on-site to provide that extra support that customers need. Through the years these exceptional specialists have become, and remained, the most knowledgeable in the electronic component industry.

### Broader and Deeper Inventories

TTI maintains extensive inventories by stocking more than 500,000 parts with more than 80% available for immediate delivery. That's more interconnect, passive, electro-mechanical, and discrete parts than from any other source. We remain committed to breadth and depth of inventory, ensuring availability of C and D class parts as well as commodity parts.

### Leading Edge Technology Products

The manufacturers TTI partners with, are the companies that lead the industry into new component technologies. For customers, this means that TTI enlists the help of the manufacturers who can help solve any design challenge. Our product groups also focus on new product introductions to ensure we have the very latest and most technologically-advanced products readily available from stock.

### Value Added Logistic Services

From technical application advice to customized logistical solutions; TTI can add value throughout the supply chain by reducing acquisition costs, improving material flow through forecast analysis, provide safety stock and reduce receipt handling through consolidated shipments. These are just some areas that TTI can review with your company to streamline your internal supply chain and help reduce hidden material costs.

### Global Distribution Centers

TTI has more than 1.2 million square feet of automated warehousing in North America, Europe, and Asia. All are linked into a global warehouse management system that provides superior customer service and overall business efficiencies. Wherever you are in the world, TTI can support you.

### Quality and Reliability

TTI has a passion for excellence, and after 40 years experience our on-time delivery and quality levels are the best in class. TTI implemented Total Quality Management in 1989 and have been ISO9000 registered since 1993, we were the first distributor to have all of our global warehouse locations ISO registered and have since upgraded to ISO9001:2008. TTI has one global documentation system that ensures that every TTI branch and warehouse in the world follow the same processes. Year after year, customers rate our quality and management practices to be among the very best in the industry. This is especially important when the products are the typical high mix, low value parts on which we have built our reputation.

**Amphenol**

**API Delevan**

**AVX**  
A KYOCERA GROUP COMPANY

**BOURNS®**

**C&K**

**CDE** CORNELL  
DUBILIER  
Your Source for Capacitor Solutions

**DELPHI**  
Innovation for the Real World

**EATON**

**FCI**  
Proven Connections  
Innovative Solutions

**Honeywell**

Electronic Components  
**KEMET**  
CHARGED®

**KOA**®  
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**Littelfuse®**  
Expertise Applied | Answers Delivered

**molex®**  
one company > a world of innovation

**muRata**  
*Innovator in Electronics*

**nichicon**

**OHMITE**

**Panasonic**

**PHENIX CONTACT**

  
SPECTRUM CONTROL

**Lelon**

**SYFER**

**TE**

**TT electronics**

**UNITED  
CHEMI-CON**

**VISHAY®**

VISHAY  
PRECISION  
GROUP

**WIMA®**

**YAGEO**

## TTI's CONNECTOR ASSEMBLY

TTI has a major US-based connector assembly facility where the company can perform over 30,000 circular connector assemblies per day achieving very high quality levels with a defect rate of 25ppm.

Now the company has called upon over 40 years of connector assembly experience to mirror the US plant in Germany. The Munich facility has focused on MIL-DTL-38999 Series I & III, HE308, VG96912 and SJT circular connectors, offering all shell sizes, layout types in cadmium olive drab, electroless nickel

plated, composite and stainless steel finishes with QPL certification for both Amphenol and Souriau. In addition to the MIL-DTL 38999's Series we now assemble the MIL-DTL-26482 PT/451 Series for industrial and harsh environments.

Backshells and Connector accessories, such as adaptors, strain reliefs, heat-shrinkable tubing, protective covers, contacts and cable management components will also be available from TTI.

**Fast Delivery • High Quality • No MOQ**



# Aerospace Maintenance, Repair and Overhaul (MRO)

The aerospace maintenance, repair and overhaul (MRO) sector involves fixing any sort of mechanical or electrical device should it become out of order or broken. The sector is also known as repair, unscheduled or casualty maintenance.



## Key customer requirements:

- **Kits**  
Advanced solutions for diverse manufacturing, assembly, line feed aftermarket and MRO requirements
- **Custom kit**  
Solutions for vendor, reclaim and surplus stock re-utilisation – bespoke built to your specifications
- **FSLs**  
Forward stock locations supporting your facilities with stock where you need it when you need it
- **On site kit build**  
Immediate kit build capability to maximise your inventory
- **Reclaim & Recovery of parts**  
Remove, clean, inspect, dispose, supply
- **Fast turnaround**  
Items available for A, B, C, D check status



## Industrial supply companies can generally be sorted into two types:

- **The ones who cater to the MRO market**  
These generally carry a broad range of items such as fasteners, conveyors, cleaning goods, plumbing, and tools to keep a plant running
- **OEM supply**  
Companies that generally provide a smaller range of goods in much larger quantities with much lower prices, selling materials that will be regularly consumed in the manufacturing process to create the finished item



# Connectors

	3M	AMPHENOL	AVX	C&K	DELPHI	FCI	GLENAIR	HARWIN	MOLEX	PANDUIT	PHOENIX CONTACT	RADJALL	SOURIAU	SPECTRUM CONTROL	TE CONNECTIVITY	TRI-STAR
<b>Connectors</b>																
COTS PLUS		•		•	•		•	•	•	•		•	•	•	•	•
Automotive Specifications		•	•		•	•			•	•			•	•	•	
CECC		•						•					•			
DSCC Drawings		•			•		•		•				•			
Mil-Spec/QPL		•	•	•	•		•		•	•		•	•		•	•
ESCC/EPPL/NASA		•		•			•					•	•		•	
<b>Connectors for Military, Aerospace &amp; Space</b>																
Circular		•			•		•	•	•			•	•	•	•	
Hi-Rel Backshells & Adaptors		•					•						•		•	
TTI Assembled QPL Connectors		•											•			
Audio		•			•		•		•				•	•	•	
D-Subminiature		•		•		•	•	•	•				•	•	•	•
Micro Miniature/Nano		•		•			•		•				•	•	•	•
Filtered Hi-Rel Input/Output		•				•	•		•				•	•	•	•
Rack & Panel/ARINC/Rectangular		•	•		•		•	•	•			•	•	•	•	•
Fibre-Optic Connectors		•			•	•	•	•	•			•	•		•	•
Hermetic		•					•		•			•	•		•	•
Space Applications		•		•			•		•			•	•		•	•
Naval & Shipboard		•			•		•				•		•		•	•
<b>RF/Coaxial/Microwave</b>																
1.0/2.3, 1.6/5.6 & 7/16		•							•			•	•		•	•
BNC (50/75Ω/TNC)		•							•			•	•		•	•
MCX/MMCX		•						•	•			•	•		•	•
QMA		•							•			•	•		•	•
SMA, SMB, SMC, SSMA		•							•			•	•		•	•
Type F, G & N		•							•			•	•		•	•
<b>COTS Board-to-Board</b>																
1.25mm to 10.00mm pitch	•	•	•		•	•		•	•	•					•	•
Pin Headers & Sockets	•	•	•			•		•	•	•					•	•
High Speed Backplane	•	•	•			•			•	•					•	•
Mezzanine	•					•			•	•					•	•
<b>COTS Device-to-Board</b>																
IC & PLCC Sockets	•					•		•	•						•	•
Memory Card Connectors	•	•	•			•		•	•						•	•
Smart Card Connectors	•	•		•		•		•	•						•	•
<b>COTS Wire-to-Board/Wire-to-Wire</b>																
1.25mm to 10mm pitch	•	•	•			•		•	•	•					•	•
Discrete Wire	•	•	•			•		•	•	•	•				•	•
FFC/FPC	•	•	•			•		•	•	•	•				•	•
IDC/Mass Termination	•	•	•			•		•	•	•					•	•
Power	•	•	•			•		•	•	•					•	•
SCSI (I, II, III) SATA/SAS/mini SATA	•	•				•		•	•	•	•			•	•	•
<b>COTS Input/Output</b>																
Audio		•				•		•	•					•	•	•
Circular		•			•	•		•	•				•	•	•	•
D-Subminiature	•	•		•		•		•	•				•	•	•	•
DVI/HDMI		•				•		•	•						•	•
Micro D		•				•		•	•				•	•	•	•
Modular Plugs & Jacks		•				•		•	•				•	•	•	•
Power		•			•	•		•	•				•	•	•	•
SFP/XFP		•				•		•	•						•	•
RJ/Industrial Ethernet		•				•		•	•		•				•	•
USB/Mini USB/USB OTG		•	•			•		•	•				•	•	•	•
<b>Other</b>																
Battery Connectors		•	•			•		•	•						•	•
High Voltage Connectors		•			•	•	•	•	•		•		•		•	•
Contacts		•	•			•	•	•	•			•	•		•	•
<b>Terminal Blocks</b>																
PCB Mounted		•	•			•		•	•					•	•	•
DIN Rail Mounted		•						•	•						•	•
<b>Wire &amp; Cable</b>																
Cable Assemblies	•	•			•	•	•	•	•		•	•		•	•	•
Discrete Wire	•														•	•
Printed Wiring Flexible/Rigid Flex		•			•				•						•	•
FFC Jumpers									•						•	•
Flat Ribbon	•	•													•	•
<b>Cable &amp; Wire Management</b>																
Cable Management – Ties, Splices, Terminators	•									•					•	•
Backshells & Adaptors	•	•	•			•	•		•				•		•	•
Heat Shrink Moulded Parts & Tubing	•						•		•	•					•	•
Solderless Terminals Insulated/Non-Insulated	•							•	•	•					•	•
Labels, Cable Markers & Printers										•	•				•	•



# Passives

	API DELEVAN	AVX	BOURNS	BMI-BARKER MICROFARADS INC	CDE-CORNELL DUBILIER ELECTRONICS	DEARBORN	KEMET	LITTELFUSE	OHMITE	RADIAL	SPECTRUM CONTROL	SYFER, NOVACAP, DLI, VOLTRONICS - CMP GROUP	TE CONNECTIVITY	TT ELECTRONICS	TUSONIX	VISHAY	VISHAY PRECISION GROUP	WIMA	YAGEO/PHYCOMP
<b>Passives</b>																			
COTS PLUS		•					•				•	•	•	•		•	•		
AEC-Q200	•	•	•		•		•	•				•	•	•		•	•		•
CECC		•					•					•		•		•	•		
DSCC Drawings		•					•				•	•		•		•	•		
Mil-Spec/QPL	•	•	•	•	•	•	•	•	•		•			•	•	•	•		
ESCC/EPPL/NASA		•					•					•				•	•		
<b>Resistors</b>																			
Film			•						•				•	•		•			•
Foil			•						•					•			•		
Networks		•	•											•		•	•		•
Power/Wirewound			•						•				•	•		•			•
Carbon									•				•	•		•			•
Current Sense			•						•				•	•		•	•		•
<b>Potentiometers &amp; Trimmers</b>																			
Precision/Panel Control			•						•				•	•		•			
Sensor/Encoder			•										•	•		•			
Trimmer			•									•	•	•	•	•	•		
<b>Capacitors</b>																			
Wet Tantalum		•														•			
Solid Tantalum		•					•									•			
Ceramic		•					•				•	•			•	•			•
Aluminium Electrolytic				•	•		•									•		•	•
Film		•			•	•	•				•					•		•	
Silver Mica					•														
Polymer		•					•									•			
<b>Magnetics</b>																			
Ferrite Beads	•		•				•						•	•		•			•
Ferrite Cores	•																		
Chokes	•		•				•						•	•		•			•
Coils	•		•				•						•	•		•			•
Inductors	•	•	•				•						•	•		•			•
Transformers	•		•				•						•	•		•			•
<b>Filters/Antennas</b>																			
EMI/RFI	•	•				•	•				•	•	•		•				
RF/Microwave	•	•									•	•							•
Antenna										•	•								•
<b>Circuit Protection</b>																			
ESD Suppression	•	•	•					•					•						
Fuses		•	•					•					•	•		•			
Gas Discharge Tube (GDT)			•					•					•	•					
Resettable Fuses (PPTC)			•					•					•	•					
Thermistors (NTC)		•														•			
Thermistors (PTC)			•													•			
Thyristors			•					•					•	•					
Varistors		•	•					•				•	•			•			•
<b>Timing Devices</b>																			
Resonators		•													•				
Crystals		•														•			
Oscillators		•														•			

Discretes					
	BOURNS	HONEYWELL	LITTELFUSE	TT ELECTRONICS	VISHAY
<b>Discretes</b>					
COTS PLUS				●	●
AECQ101	●		●		●
CECC				●	
DSCC Drawings				●	
Mil-Spec/QPL					
ESCC/EPPL/NASA				●*	
<b>Diodes</b>					
Arrays	●		●	●	●
ESD Protection	●		●	●	●
Schottky	●			●	●
Switching	●			●	●
TVS	●		●	●	●
Zener	●			●	●
Hi-Rel Diodes				●	
<b>Rectifiers</b>					
Avalanche	●				●
Bridge	●				●
General Purpose	●			●	●
Standard Recovery	●			●	●
Fast Recovery	●				●
Ultrafast Recovery	●			●	●
Schottky	●			●	●
<b>Transistors</b>					
Bipolar/Small Signal	●			●	
FETs				●	●
MOSFETs				●	●
IGBTs				●	●
Hi-Rel Transistors				●	
RF Transistors				●	●
Diamond Performance FETS				●	
Radiation Tolerant MOSFETS				●	
<b>Thyristors</b>					
DIAC			●		
SCRs	●		●		●
SIDACs			●		
TRIAC	●		●		
<b>Optoelectronics</b>					
Couplers				●	●
LEDS				●	●
Infrared Emitters		●		●	●
Infrared Receivers		●		●	●
IRDA Transceivers		●			●
Optical Sensors		●		●	●
Photo Detectors		●		●	●
<b>Modules</b>					
Plastic Power Modules				●	●
Hermetic Power Modules				●	
IGBT Modules				●	●
Multi Chip Arrays (MCA)				●	
RF Modules				●	
<b>Others</b>					
Voltage Regulators				●	●
Hi-Rel Voltage Regulators				●	
Analog Switches					●
Motor Control ICs					●

\* Space level test procedures in accordance with MIL-PRF-19500 & ESCC5000

Electromechanical					
	BOURNS	C&K	HONEYWELL	MEDER ELECTRONIC	TE CONNECTIVITY
<b>Electromechanical</b>					
COTS PLUS		●	●		●
CECC					
DSCC Drawings			●		
Mil-Spec/QPL		●	●		
ESCC/EPPL/NASA					●
<b>Relays</b>					
Signal				●	●
Power					●
General Purpose					●
Solid State					●
High Frequency				●	●
Automotive					●
Reed				●	●
High Voltage				●	●
Sockets & Accessories					●
Sensors				●	●
<b>Switches</b>					
DIP/SIP		●	●		●
Slide		●			●
Pushbutton		●	●		●
Rocker/Paddle		●	●		●
Toggle		●	●		●
Thumb/Push Wheel		●			●
Tactile/Navigation	●	●	●		●
Limit/Detect/Snap Action		●	●		●
Switchlock/Key Operated		●	●		●
Rotary		●	●		●
Thermostatic			●		
Sealed		●	●		●
Explosion Proof/Hazardous			●		
<b>Sensors</b>					
Airflow, Force, Pressure			●		
Current			●		
Optical			●		
Speed			●		●
Position/Hall Effect			●		●
Thermal/Humidity			●		●

## Circular Connectors

		AMPHENOL	GLENAIR	SOURIAU
<b>MIL-22992</b>				
MS17342	QWLD	●		
MS17343	QWLD	●		
MS17344	QWLD	●		
MS17345	QWLD	●		
MS17346	QWLD	●		
MS17347	QWLD	●		
MS17348	QWLD	●	●	
MS17349	QWLD	●	●	
MS17350	QWLD	●		
MS18062	QWLD	●		
MS90555	Class L	●		
MS90556	Class L	●		
MS90557	Class L	●		
MS90558	Class L	●		
MS90562	Class L	●		
MS90563	Class L	●		
MS90564	Class L	●		
MS90569	Class L	●		
<b>MIL-26482 Series 1 Crimp</b>				
MS3120	PT00SE/L( )0NA/851-00R	●		●
MS3121	PT01SE/L( )1NA/851-01R	●		●
MS3122	PT02SE/L( )2NA/851-02R	●		●
MS3124	PT07SE/L( )4NA/851-07R	●		●
MS3126	PT06SE/L( )6NA/851-06R	●		●
MS3127	MF02SE/L( )7NA	●		
MS3128	MF00SE/L( )8NA	●		
MS3180	PROTECTIVE CAP		●	
MS3181	PROTECTIVE CAP	●	●	
<b>MIL-26482 Series 1 Solder</b>				
MS3110	PT00/851-00E	●		●
MS3111	PT01/851-01E	●		●
MS3112	PT02/851-02E	●		●
MS3113	PT1H	●		
MS3114	PT07/851-07E	●		●
MS3115	Dummy Storage Receptacle	●	●	
MS3116	PT06/851-06E	●		●
MS3180	Protective Cover Plug	●	●	
MS3181	Protective Cover Receptacle	●	●	
<b>HE301B-MIL-C-26482G</b>				
HE301B	PT00-PT09/851-00-851-08	●		●
<b>VG95328-MIL-C-26482</b>				
VG95328	PT00-PT07/851-00-851-07	●		●
<b>MIL-26482 Series 2</b>				
MS3440	8526-2	●		●
MS3443	8526-1	●		●
MS3449	8526-7	●		●
MS3470	MB10/8526-0	●		●
MS3471	MB13	●		
MS3472	MB11	●		
MS3474	MB14/8526-7	●		●
MS3475	MB18/8526-5	●		●
MS3476	MB16/8526-6	●		●

		AMPHENOL	GLENAIR	SOURIAU
<b>MIL-27599 Solder</b>				
MS20026	LJT00T	●		
MS20027	LJT01T	●		
MS20028	LJT067T	●		
MS20029	LJT07P	●		
MS27334	JT00C	●		
MS27335	JT02C	●		
MS27336	JT06C	●		
MS27337	JT07C	●		
MS27342	Adaptor	●		
<b>MIL-DTL-38999 Series I &amp; II</b>				
MS27466/HE308 00T	LJT00R, 8LT0	●		●
MS27467/HE308 01T	LJT06R, 8LT15	●		●
MS27468/HE308 07T	LJT07R, 8LT7	●		●
MS27469	LJT00Y, 231-001	●	●	
MS27470	LJT07Y, 230-001	●	●	
MS27471	LJTIY, 232-001	●	●	
MS27472/HE309 00T	JT00R, 8T0	●		●
MS27473/HE309 06T	JT06R, 8T6	●		●
MS27474/HE309 07T	JT07R, 8T7	●		●
MS27475	JT00Y, 231-002	●	●	
MS27476	JT02Y, 233-002	●	●	
MS27477	JT07Y, 230-002	●	●	
MS27478	JT1Y, 232-002	●	●	
MS27479/HE309 03T	JTS00R	●		
MS27480	JTS06R	●		
MS27481	JTS07R	●		
MS27484	JTG06R, 8T5	●		●
MS27487	10-44309	●		
MS27489	10-352425	●		
MS27496	LTJ02R	●		
MS27497	JTPQ00R, 8T3	●		●
MS27499	JT02R, 8T4	●		●
MS27500	JT08R	●		●
MS27501	10-463090, 660-012-Protective Cover	●	●	
MS27502	10-463092, 606-013, 8LTE01-Protective Cover	●	●	●
MS27504	JTS02R	●		
MS27505	LJTP02R, 8LT2	●		●
MS27508/HE309 05T	JTP02R, 8T2	●		●
MS27510	10-463096, G2469-Protective Cover	●	●	
MS27511	10-463096, G2469-Protective Cover	●	●	
MS27512	10-101917	●		
MS27513	JT02R	●		
MS27515	10-463094	●		
MS27652	LJT00R	●		
MS27653	LJT06R	●		
MS27654	LJTP00R	●		
MS27656	LJTPQ00R, 8LT3	●		●
MS27661	88-5560	●		
MS27662	LJTBS	●		
M38999/9	G9144		●	
M38999/10	G8449		●	

		AMPHENOL	SOURIAU
<b>HE308</b>			
HE308 00T (MS27466)	LJT00RT, 8LT0	●	●
HE308-01T	LJT01RT	●	
HE308-06T (MS27467)	LJT06RT, 8LT5	●	●
HE308 07T (MS27468)	LJT07RT, 8LT7	●	●
HE308-11T	LJT07CI, 8LST	●	●
HE308 12T	8LST		●
HE308 13T	8LST		●
HE308-B00, B07	8LTE Cap for Receptacle		●
HE308-B06, B16	8LTF Cap for Plug		●
<b>HE309</b>			
HE309 03T (MS27479)	8T3		●
HE309 05T (MS27508)	8T2		●
HE309 06T (MS27473)	JT06R, 8T6	●	●
HE309 07T (MS27474)	JT07R, 8T7	●	●
<b>VG96912</b>			
VG96912 Axxx	SJT00RT/8ST0	●	●
VG96912 xxxxx	SJTP00RT	●	
VG96912 D	8ST6		●
VG96912 xxxxx	SJTP02RE/8ST2	●	●
VG96912 Exxx	SJT06RT/8ST5	●	●
VG96912 Bxxx	SJT07RT/8DST7	●	●
<b>EN3645</b>			
EN3645/F0 (D38999/20F)	TVPS00, TVP00R, 8D0, 8DS00	●	●
EN3645/F7 (D38999/24F)	TVS07, TV07R, TVS07RF, 8D7, 8DS07	●	●
EN3645/F6 (D38999/26F)	TVS06, TV06R, TVS06RF, 8D5, 8DS06G	●	●
EN3645/W0 (D38999/20W)	TVP00, TVP00R, TVP00RW, 8D0, 8DS00	●	●
EN3645/W7 (D38999/24W)	TV07, TV07R, 8D7, 8DS07	●	●
EN3645/W6 (D38999/26W)	TV06, TV06RW, TV06R, 8D5, 8DS06G	●	●
EN3645/W4 (D38999/32W)	10-554885, ITV-32, G38999/32		●
EN3645/W3 (D38999/33W)	10-552943, ITV-33, G38999/33		●
EN3645/J0 (D38999/20J)	CTVP00RW, 8D0, 8DS00	●	●
EN3645/J7 (D38999/24J)	CTV07RW	●	
EN3645/J6 (D38999/26J)	CTV06RW, 8D5, 8DS06G	●	●
EN3645/M0 (D38999/20M)	CTVPS00RF, 8D0, 8DS00	●	●
EN3645/M7 (D38999/24M)	CTV07RF	●	
EN3645/M6 (D38999/26M)	CTVS06RF, 8D5, 8DS06G	●	●
EN3645/Y0 (D38999/21N,Y)	TVPS02Y, 233-003	●	
EN3645/Y7 (D38999/23N,Y)	TVS07Y, 230-003	●	
EN3645/Y1 (D38999/25N,Y)	TVS1Y, 232-003	●	
EN3645/K0 (D38999/20K,S)	TVPS00R K,S, 8D0, 8DS00	●	●
EN3645/K7 (D38999/24K,S)	TVS07RS, 8D7, 8DS07	●	●
EN3645/K6 (D38999/26K,S)	TVS06R K,S, 8D5, 8DS06G	●	●

## Circular Connectors

		AMPHENOL	GLENAIR	SOURIAU
<b>MIL-DTL-38999 Series III Aluminium</b>	<i>F = Electroless Nickel Plated Aluminium W = Olive Drab Cadmium Plated Aluminium</i>			
D38999/20F/EN3645/F0	TVPS00, TVP00R, 8D0, 8DS00	•		•
D38999/22F	GS38999/22		•	
D38999/24F/EN3645/F7	TVS07, TV07R, TVS07RF, 8D7, 8DS07	•		•
D38999/26F/EN3645/F6	TVS06, TV06R, TVS06RF, 8D5, 8DS06G	•		•
D38999/28F	GS38999/28, 200-00061		•	•
D38999/29F, 30F	91-5566	•		
D38999/32F	ITV-32, GS38999/32	•	•	
D38999/33F	ITV-33, GS38999/33	•	•	
D38999/20W/EN3645/W0	TVP00, TVP00R, TVP00RW, 8D0, 8DS00	•		•
D38999/22W	GS38999/22		•	
D38999/24W/EN3645/W7	TV07, TV07R, 8D7, 8DS07	•		•
D38999/26W/EN3645/W6	TV06, TV06RW, TV06R, 8D5, 8DS06G	•		•
D38999/28W	GS38999/28, 200-00061		•	•
D38999/29, 30W-Lanyard Release	88-5566	•		
D38999/31W Lanyard Release	88-553339, TVFBRW-25	•		
D38999/32W/EN3645/W4	10-554885, ITV-32, G38999/32	•	•	
D38999/33W/EN3645/W3	10-552943, ITV-33, G38999/33	•	•	
D38999/50W	GS38999/50		•	
<b>MIL-DTL-38999III Cadmium Replacement</b>	<i>Z = Zinc Nickel RoHS Compliant</i>			
D38999/20Z	8D0, 8DS00			•
D38999/24Z	8D7, 8DS07			•
D38999/26Z	8D5, 8DS06G			•
D38999/28Z	200-00061, GS38999/28Z		•	•
D38999/32Z	GS38999/32Z		•	
D38999/33Z	GS38999/33Z		•	
<b>MIL-DTL-38999 Series III Composite</b>	<i>M = Electroless Nickel Plated Composite J = Olive Drab Plated Composite</i>			
D38999/20J/EN3645/J0	CTVP00RW, 8D0, 8DS00	•		•
D38999/24J/EN3645/J7	CTV07RW	•		
D38999/26J/EN3645/J6	CTV06RW, 8D5, 8DS06G	•		•
D38999/28J	10-527273	•		
D38999/32J	GS38999/32		•	
D38999/33J	GS38999/33		•	
D38999/20M/EN3645/M0	CTVPS00RF, 8D0, 8DS00	•		•
D38999/24M/EN3645/M7	CTV07RF	•		
D38999/26M/EN3645/M6	XTVS06RF, 8D5, 8DS06G	•		•
D38999/28M	10-527273	•		
D38999/32M	GS38999/32		•	
D38999/33M	GS38999/33		•	

		AMPHENOL	GLENAIR	SOURIAU
<b>MIL-DTL-38999 Series III Hermetic</b>	<i>N = Hermetic, Nickel Plated Stainless Steel Y = Hermetic Seal Passivated Stainless Steel</i>			
D38999/21N,Y/EN3645/Y0	TVPS02Y/233-003/F3899921	•	•	•
D38999/23N,Y/EN3645/Y7	TVS07Y/230-003/F3899923	•	•	•
D38999/25N,Y/EN3645/Y1	TVS1Y/232-003/F3899925	•	•	•
D38999/27N,Y	TVSHIY, 234-003	•	•	
D38999/32N	GS39888/32		•	
D38999/33N	GS39888/33		•	
<b>MIL-DTL-38999 Series III Firewall/EMI Shielding</b>	<i>K = Corrosion Resistant Stainless Steel with Firewall S = Nickel Plated Stainless Steel with EMI Shielding</i>			
D38999/20K,S/EN3645/K0	TVPS00R K, S, 8D0, 8DS00	•		•
D38999/22K	GS38999/22		•	
D38999/24K,S/EN3645/K7	TVS07RS, 8D7, 8DS07	•		•
D38999/26K,S/EN3645/K6	TVS06R K, S, 8D5, 8DS06G	•		•
D38999/28K	GS38999/28		•	
D38999/32K	GS38999/32		•	
D38999/33K	GS38999/33		•	
<b>MIL-DTL-38999 Series IV Hermetic</b>	<i>N = Hermetic, Nickel Plated Stainless Steel Y = Hermetic Seal Passivated Stainless Steel</i>			
D38999/41	230-010		•	
D38999/43	230-011		•	
D38999/45	230-012		•	
D38999/48	230-013		•	
<b>MIL-DTL-38999 Space Grade</b>	<i>G = Space Grade, Electroless Nickel</i>			
ESCC 3401/052 ESA Qualified	8LTS Series I Removable Crimps			•
ESCC 3401/044 ESA Qualified	8TS Series II Removable Crimps			•
ESCC 3401/056 ESA Qualified	8DS Series III Removable Crimps			•
ESCC 3401/057 ESA Qualified	8DS-H Hermetic Receptacles Series III			•
D38999/22G	GS38999/22		•	
D38999/24G	TVS07ZG	•		
D38999/26G	TVS06ZG	•		
<b>Backshells &amp; Accessories</b>				
SCC 3401/058	8975-xxxx Crimp Contacts/052 &/056			•
SCC 3401/045	8975-xxxx Crimp Contacts/044			•
SCC 3401/062	Backshells for/052,/056,/044			•
SCC 3401/066	SN1767 Triax Crimp for/056			•
SCC 3401/070	8DS Straight Split Version			•
<b>MIL-DTL-5015</b>				
MS3100	SG3100/97-3100	•		
MS3101	SG3101/97-3101	•		
MS3102	SG3102/97-3102	•		
MS3105	Dummy Storage Receptacle MIL-DTL-5015	•	•	
MS3106	SG3106/97-3106	•		
MS3107	97-3107	•		
MS3108	SG3108/97-3108	•		

		AMPHENOL	TE CONNECTIVITY
<b>MIL-DTL-5015 Aluminium</b>	<i>L = Electroless Nickel Plated Aluminium W = Olive Drab Cadmium Plated Aluminium</i>		
MS3450 L/W	9440	•	
MS3451 L/W	9441	•	
MS3452 L/W	9442	•	
MS3454 L/W	9444	•	
MS3456 L/W	9446	•	
MS3459	9816	•	
<b>MIL-DTL-5015 Firewall</b>	<i>KS = Corrosion Resistant Stainless Steel with Firewall KT = Olive Drab Cadmium Plated Stainless Steel with Firewall LS = Stainless Steel Passivated</i>		
MS3450 KS/KT/LS	9440/891-00	•	•
MS3451 KS/KT/LS	9441	•	
MS3452 KS/KT/LS	9442	•	
MS3454 KS/KT/LS	9444	•	
MS3456 KS/KT/LS	9446/891-06	•	•
MS3459 KS/KT/LS	9816/891-26	•	•
<b>VG95234</b>			
VG95234		•	
<b>MIL-DTL-55302</b>			
M55302/23~27, 31			•
M55302/67~77		•	
M55302/110, 113, 117~130			•
M55302/156			•
M55302/166~172		•	
M55302/173~182			•
M55302/190~193		•	
<b>MIL-C-81511</b>			
M81511/01E	348-40E	•	
M81511/03E	348-43E	•	
M81511/05E	348-41E	•	
M81511/06E	348-46E	•	
M81511/18	348-140	•	
M81511/21E	348-30E	•	
M81511/23E	348-33E	•	
M81511/25E	348-31E	•	
M81511/26E	348-36E	•	
<b>Heavy Duty Circular Connectors • MIL-DTL-22992</b>			
MS17343~8	QWLD	•	
MS90555~8	Class L	•	
MS17349~50	QWLD Cover	•	•
MS90553~64	Class L Cover	•	
MS90569	QWLD Adaptor	•	

## Circular Connectors

		AMPHENOL	GLENAIR	TE CONNECTIVITY
<b>MIL-DTL-83723 Series II</b>				
M83723/27			•	•
M83723/35			•	
M83723/50			•	
<b>MIL-DTL-83723 Series III</b>				
M83723/16			•	•
M83723/59~61	Protective Cover/ Stowage Receptacle		•	
M83723/66~69		•		
M83723/70		•	•	
M83723/71~78		•		
M83723/82~92		•		
M83723/95~98		•		

		AMPHENOL	DELPHI	GLENAIR
<b>Circular Connectors High Shock &amp; Density • MIL-DTL-28840</b>				
M28840/1~6	For Navy Shipboard Applications			•
M28840/7	For Navy Shipboard Applications		•	•
M28840/8, 9	For Navy Shipboard Applications			•
M28840/10~12	For Navy Shipboard Applications		•	•
M28840/13	For Navy Shipboard Applications			•
M28840/14	For Navy Shipboard Applications		•	•
M28840/15	For Navy Shipboard Applications			•
M28840/16~21	For Navy Shipboard Applications		•	•
M28840/22~25	For Navy Shipboard Applications			•
M28840/26	For Navy Shipboard Applications		•	•
M28840/27	For Navy Shipboard Applications			•
M28840/28~29	For Navy Shipboard Applications		•	•
M28840/30	For Navy Shipboard Applications			•

		AMPHENOL	GLENAIR	TE CONNECTIVITY
<b>Backshells &amp; Assessories</b>				
<b>Various</b>				
MS3186	Jam Nut-Variou Circular Connectors		•	
MS3420	Bushing-Variou Circular Connectors	•	•	
MS3437 superseded by AS85049/10, 11, 25	Backshells Various Circular Connectors		•	
MS3480~2	Connector Wrench Various Circular Connectors		•	
M24758	Conduit, Fittings Conduit Adaptors	•	•	
MS27741	Tag Ring		•	
MS25042	Protective Cover MIL-DTL-5015	•	•	•
MS25043	Protective Cover MIL-DTL-5015	•	•	•
MS28840	Backshells & Accessories for MIL-C-28840		•	

		AMPHENOL	GLENAIR	TE CONNECTIVITY
<b>Backshells &amp; Assessories (continued)</b>				
D38999/5~8 superseded by AS85049/17, 29, 36, 37	Backshells for 38999 Series I & II	•	•	
D38999/9	Dummy Stowage Receptacle MIL-DTL-38999 Series I		•	
D38999/10	Dummy Stowage Receptacle MIL-DTL-38999 Series II		•	
D38999/22	Dummy Stowage Receptacle MIL-DTL-38999 Series III		•	
D38999/28	Jam Nut MIL-DTL-38999 Series III & IV		•	
D38999/32	Protective Cover Plug MIL-DTL-38999 Series III	•	•	
D38999/33	Protective Cover Receptacle MIL-DTL-38999 Series III	•	•	
D38999/50	Dummy Stowage Receptacle MIL-DTL-38999 Series IV		•	
M81511	Backshells & Accessories for MIL-C-81511		•	
M83538/9	Adaptor for MIL-DTL-83538/4		•	
M83723/35, 61, 70	Backshells, Adaptors & Accessories for MIL-DTL-83723	•	•	
M83723 superseded by AS85049	Various Backshells, Adaptors & Accessories	•	•	•
M85049 superseded by AS85049	Various Backshells, Adaptors & Accessories	•	•	•
<b>Strain Reliefs/Clamps</b>				
MS3057 superseded by AS85049/1, 2, 41, 42	Straight Strain Relief-97 Series	•	•	
MS3152~4 superseded by AS85049/53~55	Qwik-Ty Strain Relief Various Circular Connectors		•	
MS3415 superseded by AS85049/43	45° Strain Relief Various Circular Connectors		•	
MS3417 superseded by AS85049/52	Straight Strain Relief Various Circular Connectors		•	
MS3418 superseded by AS85049/51	90° Strain Relief Various Circular Connectors		•	
MS27507 superseded by AS85049/47	90° Strain Relief MIL-DTL-38999 I & II		•	
MS27506 superseded by AS85049/49	Straight Strain Relief MIL-DTL-38999 I & II		•	
MS27342 superseded by AS85049/49	Straight Strain Relief MIL-DTL-38999 I & II		•	
MS27291	Straight Strain Relief MIL-DTL-26500		•	
MS27558, 9	90° Strain Relief MIL-DTL-26500		•	
MS27668 superseded by AS85049/56	Qwik-Ty Strain Relief MIL-DTL-38999 I & II		•	
MS27669 superseded by AS85049/57	Qwik-Ty Strain Relief MIL-DTL-38999 I & II		•	
MS27670 superseded by AS85049/63	90° Qwik-Ty Strain Relief-MIL-DTL-38999 I & II		•	
MS83723/50	Qwik-Ty Strain Relief MIL-DTL-83723		•	

		AMPHENOL	GLENAIR	TE CONNECTIVITY
<b>Shrink Boot Adaptors</b>				
MS27485 superseded by AS85049/58	Potted Boot Adaptor for MIL-DTL-38999 Series I & II		•	
MS3416G superseded by AS85049/60	Shrink Boot Adaptor Various Circular Connectors		•	•
M83723 superseded by AS85049/60	Shrink Boot Adaptor Various Circular Connectors		•	•
M83723/27	Shrink Boot Adaptor for MIL-DTL-83723		•	•
D38999/2 superseded by AS85049/62	Shrink Boot Adaptor for MIL-DTL-38999 Series I & II		•	•
AS85049/69	Shrink Boot Adaptor for MIL-DTL-38999 Series III & IV		•	•

		AMPHENOL	DELPHI	GLENAIR
<b>Fibre Optic Circular Connectors • MIL-PRF-28876</b>				
M28876/1 ~15	For Navy Shipboard Applications	•	•	
M28876/27 ~29	For Navy Shipboard Applications	•		
<b>Fibre Optic Style Termini • MIL-29504</b>				
MS29504/1	For M28876 & M83526 Connectors		•	
MS29504/2	For M28876 & M83526 Connectors		•	
MS29504/3	For M28876 & M83526 Connectors	•	•	•
MS29504/4, 5	For 38999 Connectors	•		•
MS29504/12	For M28876 Connectors		•	
MS29504/13	For M28876 Connectors		•	
MS29504/14, 15	Compatible with M28876 Connectors	•	•	•
MS29504/18	Genderless Termini: NGConn M64266	•	•	•
MS29504/19	Dummy Termini: NG-Conn M64266	•	•	•
MS29504/20	Keyed Genderless Termini: NGConn M64266	•	•	•
<b>Fibre Optic Circular Connectors • MIL-64266</b>				
M64266	NGConn Connector Series in Development		•	

## Connectors

Coax/RF		AMPHENOL	RADJALL	SOURIAU	TE CONNECTIVITY
<b>Fixed Attenuators • MIL-DTL-3933</b>					
M3933/14, 16~19, 25	SV Microwave	●			
<b>RF Connectors • MIL-PRF-39012</b>					
M39012/1, 3~7, 21, 24		●			
M39012/19					●
M39012/25		●		●	●
M39012/26		●			●
M39012/27, 29		●			●
M39012/28, 30		●			●
M39012/31, 32		●		●	
M39012/33~40		●			
M39012/55~61		●	●		●
M39012/62		●			
M39012/67~74, 77		●	●		
M39012/75, 76			●		
M39012/79~83		●	●		●
M39012/92, 95		●	●		
M39012/93, 94					●
M39012/96			●		
<b>MIL-PRF-55339</b>					
M55339/2		●			●
M55339/3, 4, 7, 20		●			
M55339/28, 29		●			●
M55339/31, 32		●			●
M55339/30, 33~35, 37, 39~41		●			
M55339/44~47, 49, 53		●			
<b>MIL-DTL-83517</b>					
M83517/1-9		●			●
M83517/10					●
<b>M2254015</b>					
M2254015					●
<b>DSCC Drawings</b>					
84149, 85022, 85037	SMA Connectors				●
85071~4	BMA Connectors				●
86116~86120	SMMA Connectors				●
94007, 94008	OSMP Connectors				●
<b>ESA Qualified RF Coaxial Connectors</b>					
ESCC 3402/001~3	SMA Connectors		●		
ESCC 3402/021~23	SMA Connectors		●		

D-Type Connectors		AMPHENOL	C&K	GLENAIR	SOURIAU	TE CONNECTIVITY
<b>Micro D • MIL-DTL-83513</b>						
M83513/1~27	Micro Miniature MCK-Microdot	●		●		●
M83513/1, 2	MDM Series-Micro Miniature		●			
M83513/28~33				●		
<b>D-Sub-Miniature • MIL-DTL-24308</b>						
M24308/1~8				●	●	●
M24308/9				●		●
M24308/10~22				●		
M24308/23~27				●		●
M24308/28~40				●		
<b>Nano Miniature • MIL-DTL-32139</b>						
M32139/03				●		●
M32139/04				●		●
<b>Nano Miniature • DSCC Drawing</b>						
94031~46	NANONICS Nano Miniature Connector Range					●
<b>ESA Qualified and NASA Qualified D-Subminiature</b>						
ESCC 3401/001/002	D-Sub Miniature Connectors D*M, D*MA, D*MB		●		●	
ESCC 3401/031	Micro Miniature Connectors Type MTB1 Space		●			
ESCC 3401/029	Micro Miniature Connectors Type MDM		●			
8MC/01~04	Micro Miniature Connectors Type Micro Comp				●	
NASA S-311-P-10, 4	Amplimite Non-Magnetic Connector					●
NASA S-311-P-407	D-Sub Miniature Connectors				●	●
NASA S-311-P-409	D-Sub Miniature Connectors				●	●
S-331P-4/05, 06	D-Sub Miniature Connectors					●

		AMPHENOL	AVX	DELPHI	RADJALL	SOURIAU	TE CONNECTIVITY
<b>Rack &amp; Panel</b>							
M21097	AMPBLADE PCB Edge Connector						●
M55074	MIL-C-55074		●				
M81659	ARINC 404 Rectangular Style	●			●		●
M83527	Avionic Equipment Rack ARINC Style (R27, MPX, S700, Xetron)	●			●	●	●
M285028	C-21, Crimp & Removable Contacts			●			
M28748/9	Solder & Crimp Style Connectors			●			
M28748/10	Solder & Crimp Style Connectors			●			
M28804/1~11	High Density Polarised Central Jackscrew MRS Series			●			
<b>PCB Connectors – MIL-DTL-55302</b>							
M55302	Rectangular Brush Contact	●	●				●
M55302/23~27, 110, 113, 117~119, 129, 130, 156, 173~182	AMP-HDI, BOX & MINI-BOX Connectors						●
M55302/127, 128	AMPMODU Connectors						●
M55302/120, 124	MICRODOT MCEM Rectangular Connector						●

## Connectors

			AMPHENOL
<b>Filtered Audio Connectors</b>			
M55116/1~14	Nexus Products		●

			AMPHENOL	TE CONNECTIVITY
<b>Terminals Blocks</b>				
M81714	Terminal Junction Modules	●	●	

			AMPHENOL	HARWIN	SOURIAU
<b>IECQ-CECC- Connectors</b>					
CECC 75101-008	BS EN175100-Datamate M80 Series		●		
CECC 75201-001	602GB MIL-DTL- 26482 (Series II)	●			
CECC 75201-002	TVRB Series/JVS Series-Marine Bronze Screw-Type Circular Connector	●		●	
CECC 75201-003	62GB MIL-DTL-26482 (Series I)	●			

			AMPHENOL	TRI-STAR	TE CONNECTIVITY
<b>Contacts</b>					
M83502/2	MIL-PRF-83502				●
M83505/6	MIL-DTL-83505				●
M39029	MIL-39029	●	●		●
M81969	MIL-I-81969 – Contact Insertion/Extraction Tool				●

			TE CONNECTIVITY
<b>Sockets</b>			
M83505/6	MIL-DTL-83505 Augat HOLTITE Series		●

## Cable & Wire Management

			PANDUIT	TE CONNECTIVITY
<b>Heat Shrink Tubing &amp; Mouldings</b>				
M23053/1~18	Heat Shrink Insulation Sleeving	●	●	
MIL-PRF-46846	Heat Shrink Tubing			●
SAE-AS31091	Straight Boots			●
SAE-AS31171	Right Angle Boots			●
SAE-AS81765	Heat Shrinkable Cable Entry Seal			●

			PANDUIT	TE CONNECTIVITY
<b>Terminals and Splices</b>				

<b>Crimp</b>				
SAE AS7928 Class 1 & 2	Insulated/Uninsulated Terminals/AMP PIDG	●	●	
SAE AS17143	Insulated Terminals/AMP PIDG	●	●	
MS20659-165, 105, 106, 128 Class 1	Ring Terminals Non-Insulated	●	●	
MS25036-101~114 Class 1 & 2	Ring Terminals Nylon Insulated/REEL SMART™	●	●	
MS25036-148~157 Class 1 & 2	Ring Terminals Nylon Insulated/REEL SMART™	●	●	
MIL-S-81824/1	MiniSeal Splices			●
MIL-DTL-22520/37	Raychem Splice Tool			●
MIL-DTL-22520/39	Raychem Crimp Tool Calibration Gauge			●

<b>Solder</b>				
SAE-AS83519/1/2 and NSA 1747	Solder Sleeve Shield Terminators			●

<b>Cable Ties &amp; Identification</b>				
AMS-DTL-23053/5C	Heat Shrinkable Labels	●	●	
MIL-M-81531	Heat Shrinkable Labels	●	●	
MS3367--9	Cable Ties	●		
MS3367-11,14	Cable Ties	●		
MS3367-20~41	Cable Ties	●		
MS3368-1-A, -B	Marker Ties	●		
MS3368-2-A, -B	Marker Ties	●		
MS3368-3-C	Marker Ties	●		
MS3368-4-D	Marker Ties	●		
MS3368-5-E	Marker Ties	●		
MS90387-1~3	Installation Tools	●		
MS21266	Grommet Edging	●		
MS23190/3-1~9	Stainless Steel Cable Ties	●		

			MOLEX
<b>Printed Wiring Flexible/Rigid-Flex</b>			
M50884-1734	Copper Flex Single or Dual Sided		●

# Capacitors

Aluminium		BMI (BAKER MICROFARAD INC)	CORNELL-DUBILIER
<b>MIL-PRF-39018</b>			
M39018/01	CU12, CU13, CUR13	●	
M39018/02	CU14, CU15	●	
M39018/03	CU16, CU17, CUR17	●	
M39018/04	CU71, CUR71		●
M39018/06	CUR91		●
M39018/07	CUR19	●	
M39018/10	CUR92		●

Ceramics		AVX	KEMET	NOVACAP-CMP	SPECTRUM CONTROL	TUSONIX
<b>Disc Ceramic Capacitors – MIL-PRF-11015</b>						
M11015/2	CK22	●				●
M11015/4	CK27					●
M11015/9	CK60					●
M11015/10	CK61					●
M11015/11	CK62					●
M11015/12	CK63					●
M11015/13	CK70					●
M11015/18	CK05	●	●			
M11015/19	CK06	●	●			
M11015/20	CK12, CK13, CK14, CK15, CK16	●	●			
M11015/21	CK64, CK65, CK66, CK67					●
M11015/23	CK72					●
M11015/29	CK74, CK75, CK78, CK79					●
M11015/32	CK99				●	
<b>MIL-PRF-123</b>						
M123/1	CKS05	●	●			
M123/2	CKS06	●	●			
M123/3	CKS07		●			
M123/4	CKS11	●				
M123/5	CKS12	●				
M123/6	CKS14	●				
M123/7	CKS15	●				
M123/8	CKS16	●				
M123/16	CKS22	●				
M123/17	CKS23	●				
M123/18	CKS24	●				

Ceramics		AVX	KEMET	NOVACAP-CMP	SPECTRUM CONTROL	TUSONIX	VISHAY
<b>MIL-PRF-20</b>							
M20/27	CC75, CCR75	●	●				
M20/28	CC76, CCR76	●	●				
M20/29	CC77, CCR77	●	●				
M20/30	CC78, CCR78	●	●				
M20/31	CC79, CCR79	●	●				
M20/35	CC05, CCR05	●	●				
M20/35	CC09, CCR09	●	●				
M20/36	CC06, CCR06	●	●				
M20/37	CC07, CCR07	●	●				
M20/38	CC08, CCR08	●	●				
<b>MIL-PRF-39014</b>							
M39014/01	CKR05	●	●				
M39014/02	CKR06	●	●				
M39014/05	CKR11, CKR12, CKR14-16	●	●				
M39014/20	CKR08	●					
M39014/22	CKR22-24	●					
M39014/23	CKR04	●					
<b>MIL-PRF-55681</b>							
M55681/01	CDR01-04	●	●		●		●
M55681/02	CDR05	●	●				
M55681/03	CDR06	●	●		●		●
M55681/04	CDR11-14	●					
M55681/07	CDR31	●	●		●		●
M55681/08	CDR32	●	●		●		●
M55681/09	CDR33	●	●		●		●
M55681/10	CDR34	●	●		●		●
M55681/11	CDR35	●	●		●		●
<b>Fixed chip DSCC Drawing</b>							
03028		●	●				●
03029		●	●				●
05001		●					●
05002		●					●
05003		●					●
05006		●	●				●
05007		●	●				●
<b>Switch Mode Power Supply – MIL-PRF 49470</b>							
M49470/01	L1XN/SMPX, AVX:SM0 Series	●	●		●		
M49470/02	L2XN, AVX:SM0 Series	●	●				
<b>High Voltage – MIL-PRF 49467</b>							
M49467		●					
<b>High Voltage/Switch Mode Power Supply – DSCC Drawing</b>							
87040		●		●	●		
87043		●		●	●		
87046		●		●	●		
87047		●		●	●		
87070		●		●	●		
87076		●		●	●		
87077		●		●	●		
87081		●		●	●		
87114		●		●	●		
88011	AVX SM0 Series	●					
89044		●		●	●		
<b>Single in Line DSCC Drawing</b>							
87112		●					
87116		●					
87119		●					
87120		●					
87122		●					
88019		●					
88086		●					
<b>Thin Film – Fixed chip DSCC Drawing</b>							
09023		●					
09024		●					
09025		●					
09026		●					
09027		●					



# Capacitors

Film		DEARBORN
<b>MIL-C-25</b>		
M25/04	CP53 -CP55	●
<b>MIL-PRF-11693</b>		
M11693/07	CZ23, CZ24, CZR23, CZR24	●
<b>MIL-PRF-19978</b>		
M19978/01	CQ08, CQ09, CQ12, CQ13	●
M19978/02	CQ20	●
M19978/03	CQ72	●
M19978/09	CQR09	●
M19978/10	CQR12	●
M19978/11	CQR13	●
M19978/12	CQR19	●
M19978/13	CQR29	●
M19978/14	CQR32	●
M19978/15	CQR33	●
M19978/16	CQR39	●
M19978/17	CQR42	●
M19978/18	CQR43	●
M19978/19	CQ05	●
M19978/20	CQ10	●
M19978/21	CQ11	●
M19978/22	CQR44	●
<b>MIL-PRF-39022</b>		
M39022/01	CHR09	●
M39022/02	CHR19	●
M39022/08	CHR12	●
M39022/10	CHR10	●
M39022/12	CHR26	●
M39022/13	CHR27	●
<b>MIL-PRF-55514</b>		
M55514/07	CFR09	●
M55514/09	CFR13, CFR14	●
M55514/10	CFR15	●
M55514/13	CFR30	●
<b>MIL-PRF-83421</b>		
M83421/01	CRH00-CRH09	●
M83421/02	CRH11-CRH13	●
M83421/06	CRH31-CRH35	●
<b>MIL-C-188312</b>		
M18312/02	CH09	●
M18312/03	CH12	●

Mica		CORNELL-DUBILIER
<b>MIL-PRF-39001</b>		
39001/5	CMR03-CMR08	●

Tantalum		AVX	KEMET	VISHAY
<b>Wet Tantalum • MIL-PRF-3965</b>				
M3965/24	CL64, CL65			●
<b>Wet Tantalum • MIL-PRF-39006</b>				
M39006/09	CLR65			●
M39006/21	CLR69			●
M39006/22	CLR79			●
M39006/25	CLR81			●
M39006/30	CLR90			●
M39006/31	CLR91			●
M39006/33	*Available Q2 2013			●
<b>Solid Tantalum • MIL-PRF-39003</b>				
M39003/01	CSR13		●	●
M39003/02	CSR09		●	
M39003/03	CSR23		●	●
M39003/04	CSR91		●	
M39003/06	CSR33		●	
M39003/09	CSR21		●	●
M39003/10	CSS13, CSS33		●	
<b>Solid Tantalum • MIL-PRF-49137</b>				
M49137/01	CX01		●	
M49137/02	CX02, CX12		●	
M49137/05	CX05		●	
M49137/06	CX06		●	●
M49137/06	CX16			●
<b>Solid Tantalum • MIL-PRF-55365</b>				
M55365/04	CWR06			●
M55365/04	CWR09	●	●	
M55365/08	CWR11	●	●	●
M55365/11	CWR19, CWR29	●	●	
M55365/12	CWR15	●		
M55365/13	CWR16			●
<b>DSCC Drawing</b>				
02002	Fixed Tantalum-195D			●
04021	Wet Tantalum-202D			●
04033	Wet Tantalum-XT			●
04051	Polymer Tantalum-T525		●	
04052	Polymer Tantalum-T530		●	
04053	Fixed Fused Tantalum-TBW, T496, 893D	●	●	●
06013	Wet Tantalum-M39006/22			●
06014	Wet Tantalum-M39006/25			●
06015	Wet Tantalum-M39006/30			●
06016	Wet Tantalum-M39006/31			●
07016	Low ESR Tantalum-TBJ	●		
09009	Low ESR Tantalum-Chip Module	●		
10004	Wet Tantalum-STE			●
10011	Wet Tantalum-HE3			●
93026	Wet Tantalum-TWA, ST	●		●
95158	Low ESR Tantalum-TBJ, 593D, T495	●	●	●
954180				●

## Capacitors

Variable Capacitors		TUSONIX	VOLTRONICS-CMP
<b>MIL-PRF-81</b>			
M81/4		●	
M81/6		●	
<b>MIL-PRF-14409</b>			
M14409/4	TM		●
M14409/5	TM		●
M14409/6	TM		●
M14409/7	TP		●
M14409/8	TP, QP		●
M14409/9	TP		●
M14409/18	AP, AJ		●
M14409/19	AF, AT		●

ESCC Capacitors			AVX	KEMET	SYFER-CMP	VISHAY
Ceramics	Technology	Series				
ESCC 3001/030	Capacitor Ceramic Fixed Type II	BR/CV/CH	●			
ESCC 3001/034	Capacitor Ceramic Fixed Type II High Voltage	VR/CV/CH	●			
ESCC 3009/003, 4, 5, 6, 8, 9, 10, 11, 22, 23	Capacitor Ceramic Fixed Type I & II	0805-2220	●			
EPPL S02A 0100	Capacitor Ceramic Fixed Type I & II	0805-1812			●	
Tantalum	Technology	Series				
EPPL MIL-C-39003/1, 2, 3, 10	Capacitor Tantalum Surface Mount	CSR09, CSR13, CSR23, CSS33		●		
ESCC 3012/001	Capacitor Tantalum Surface Mount	TAJ	●			
ESCC 3012/004	Capacitor Tantalum Surface Mount	TES, Low ESR	●			

IECQ-CECC Capacitors			AVX	KEMET	SYFER-CMP	VISHAY
Ceramics	Technology	Series				
CECC 30601-008	Capacitor Leaded Ceramic Class I	81*1* C0G/NPO			●	
CECC 30601-009	Fixed Multilayer Ceramic Dielectric (Radial) Capacitors Class I	MR05, MR06/COG	●		●	
CECC 30601-801	Capacitor Leaded Ceramic Class I	BR40,50,84 (Issue1)/SR/SK/BR Issue2	●			
CECC 30701-007	Fixed Multilayer Ceramic Dielectric (Radial) Capacitors Class II	MR05, MR06/X7R	●		●	
CECC 30701-013	Fixed Multilayer Ceramic Dielectric (Radial) Capacitors Class II	X7R			●	
CECC 30701-016	Fixed Glass Ceramic Capacitors Class II				●	
CECC 30701-801	Capacitor Leaded Ceramic Class II	CN19/A, CN50/A, CN60/A	●			
CECC 30701-802	Capacitor Leaded Ceramic Class II	SR	●			
CECC 32101-801	Fixed Multilayer Ceramic Chip Capacitor Class I/II	TPC-AN/AC	●		●	
Tantalum	Technology	Series				
CECC 30201-001	Capacitor, Hermetically Sealed Tantalum	T110/T140/749DX		●		●
CECC 30201-005	Capacitor, Hermetically Sealed Tantalum	CTS13, CT13				●
CECC 30201-029	Capacitor, Hermetically Sealed Tantalum	749DX				●
CECC 30201-032	Capacitor, Hermetically Sealed Tantalum	TAP	●			
CECC 30202-001	Capacitor, WET Tantalum	CT79, 735D, 735DE				●
CECC 30202-004	Capacitor, WET Tantalum	CT9				●
CECC 30202-005	Capacitor, WET Tantalum	CT79				●
CECC 30202-013	Capacitor, WET Tantalum	769D				●
CECC 30202-801	Capacitor, WET Tantalum	CT79/40AW, 735D, 735DE				●
CECC 30801-005	Capacitor, WET Tantalum	TAJ, 793DX, T493	●	●		●
CECC 30801-009	Capacitor, WET Tantalum	CTC3				●
CECC 30801-011	Capacitor, WET Tantalum	TAJ, CTC4	●			●
CECC 30801-801	Capacitor, WET Tantalum	793DE				●

# Resistors

Metal Film		TT ELECTRONICS	VISHAY	VISHAY PRECISION GROUP
<b>MIL-R-10509</b>				
M10509/1	RN60	●	●	
M10509/2	RN65	●	●	
M10509/3	RN70		●	
M10509/7	RN55	●	●	
M10509/8	RN50	●	●	
<b>MIL-R-22684</b>				
M22684/1	RL07	●	●	
M22684/2	RL20	●	●	
M22684/3	RL32	●		
<b>MIL-R-39017</b>				
M39017/1	RLR07	●	●	
M39017/2	RLR20	●	●	
M39017/3	RLR32		●	
M39017/5	RLR05	●	●	
<b>MIL-R-55182</b>				
M55182/1	RNC55/RNR55		●	
M55182/3	RNC60/RNR60		●	
M55182/5	RNC65/RNR65		●	
M55182/6	RNC70/RNR70		●	
M55182/7	RNC50/RNR50		●	
M55182/9	RNC90Y/RNC90T/RNC90Z/RNC90S			●
M55182/11	RNC51/RNR51		●	
M55182/12	RNC56/RNR56		●	
<b>MIL-R-55342</b>				
M55342/01	RCWP/M/P0502E		●	
M55342/02	RCWP/M/P0505E		●	
M55342/03	RCWP/M/P1005E		●	
M55342/04	RCWP/M/P1505E		●	
M55342/05	RCWP/M/P2208E		●	
M55342/06	W0805R/RCWP/M/P0705E	●	●	
M55342/07	PCF/W1206/RCWP/M/P1206E	●	●	
M55342/08	TMC2010/RCWP/M/P2010E	●	●	
M55342/09	TMC2512/RCWP/M/P2512E	●	●	
M55342/10	RCWP/M/P1010E		●	
M55342/11	RCWP/M/P0402E		●	
M55342/12	RCWP/M/P0603E	●	●	
M55342/13	RWP/M0302		●	
<b>DSCC Drawing</b>				
94015	0805 Hi Rel Chip	●		
94016	1206 Hi Rel Chip	●		
01033	Film Chip Voltage Divider	●		
<b>BULK METAL FOIL DSCC Drawing</b>				
03010	VSMP1506/VSM1506 -MIL-PRF55342			●
06001	VSMP2010/VSM2010 -MIL-PRF55342			●
06002	VSMP2512/VSM2512 -MIL-PRF55342			●
07024	VSMP0805/VSM0805 -MIL-PRF55342			●
07025	VSMP1206/VSM1206/VFCP1206			●
08003	VCS1625Z/VCS1625 -MIL-PRF55342			●
06020	SMR1DZ/SMR1D -MIL-PRF-55182			●
06021	SMR3DZ/SMR3D -MIL-PRF-55182			●
07011	CSM2512 -MIL-PRF-49465			●
07012	CSM3637 -MIL-PRF-49465			●

Metal Film		TT ELECTRONICS	VISHAY	VISHAY PRECISION GROUP
<b>FILM PRECISION DSCC Drawing</b>				
89039	S102C/WAS Series			●
<b>MELF DSCC Drawing</b>				
94047		●		
94048		●		
95006		●		
95011		●		

Networks		TT ELECTRONICS	VISHAY	VISHAY PRECISION GROUP
<b>MIL-R-83401</b>				
M83401/01		●	●	●
M83401/02		●	●	●
M83401/03		●	●	
M83401/04			●	
M83401/05			●	
M83401/06			●	
M83401/07		●	●	
M83401/08		●	●	
M83401/09		●	●	
M83401/10		●		
M83401/13		●		
M83401/14		●		
M83401/15		●		
M83401/18		●	●	
M83401/19		●	●	
M83401/21		●		
M83401/22		●		
M83401/23		●		
M83401/24			●	
<b>DSCC Drawing</b>				
87026/1~14	300144/300144Z -MIL-PRF-55182			●
06018	SMT Voltage Divider	●		
87012	Resistor Network 16pin SOIC	●		
87013	Resistor Network 14pin SOIC	●		
87014	Resistor Network 16pin LCC	●		
87015	Resistor Network 28pin LCC	●		
87016	Resistor Network 20pin LCC	●		
87017	Resistor Network 20pin LCC Isolated	●		
87018	Resistor Network 16pin LCC Isolated	●		
87025	Resistor Network 8pin DIP	●		
87033	Resistor Network 10pin SIP	●		
87064	Resistor Network 16 Pad SON	●		
88016	Resistor Network 20pin LCC Tapped	●		
88020	Resistor Network 6 Pad SON	●		
88036	Resistor Network 10 Pad SON	●		
09011	Resistor Network 8 Pad BGA	●		
09012	Resistor Network 16 Pad BGA	●		
09013	Resistor Network 10 Pad BGA	●		
09014	Resistor Network 32Pad BGA	●		
09015	Resistor Network 40 Pad BGA	●		
09016	Resistor Network 27 Pad BGA	●		
09017	Resistor Network 36 Pad BGA	●		

# Resistors

Variable Resistors		BOURNS	OHMITE	VISHAY PRECISION GROUP
<b>MIL-R-22</b>				
M22/1	RP06		●	
M22/2	RP07		●	
M22/3	RP10		●	
M22/4	RP11		●	
M22/5	RP15		●	
M22/6	RP16		●	
M22/7	RP20		●	
M22/8	RP25		●	
M22/9	RP30		●	
M22/10	RP35		●	
M22/11	RP40		●	
M22/12	RP45		●	
M22/13	RP50		●	
M22/14	RP55		●	
M22/15	RP05		●	
<b>MIL-R-22097</b>				
M22097/2	RJ12	●		
M22097/3	RJ22	●		
M22097/4	RJ24	●		
M22097/5	RJ26	●		●
M22097/6	RJ50	●		
<b>MIL-R-27208</b>				
M27208/4	RT22	●		
M27208/8	RT12	●		
M27208/9	RT24	●		
M27208/10	RT26	●		
<b>MIL-R-39015</b>				
M39015/2	RTR22	●		
M39015/3	RTR24	●		
<b>MIL-R-39035</b>				
M39035/2	RJR24	●		
M39035/3	RJR26	●		
M39035/3	RJR50	●		
<b>DSCC Drawing</b>				
87126	1240P/W3/X3-MIL-PRF-39035			●

Thick Film Resistors		TT ELECTRONICS	VISHAY
<b>Thick Film Chip Resistor • MIL-PRF- 32159</b>			
M32159	Zero Ohm Jumper Type RCZ		●
<b>Thick Film High Voltage • MIL-PRF- 49462</b>			
M49462/3	RHV30-35	●	

Wirewound Resistors		TT ELECTRONICS	OHMITE	VISHAY
<b>MIL-PRF-26</b>				
M26/2	RW20-24		●	
M26/3	RW29-39, RW47		●	
M26/4	RW67-69		●	●
M26/5	RW70, RW74, RW78, RW79		●	●
M26/6	RW80, RW81			●
<b>MIL-R-93</b>				
M93/10	RB52	●		
M93/11	RB53	●		
M93/12	RB54	●		
M93/13	RB55	●		
M93/14	RB56	●		
M93/19	RB70	●		
M93/20	RB71	●		
<b>MIL-PRF-18546</b>				
M18546/1	RE60, RE65, RE70, RE75			●
M18546/2	RE77, RE80			●
<b>MIL-PRF-39005</b>				
M39005/1	RBR52	●		
M39005/2	RBR53	●		
M39005/3	RBR54	●		
M39005/4	RBR55	●		
M39005/5	RBR56	●		
M39005/6	RBR71	●		
M39005/11	RBR80	●		
<b>MIL-PRF-39007</b>				
M39007/5	RWR71			●
M39007/6	RWR74			●
M39007/7	RWR78			●
M39007/8	RWR80			●
M39007/9	RWR81			●
M39007/12	RWR82			●
M39007/10	RWR84			●
M39007/11	RWR89			●
<b>MIL-PRF-39009</b>				
M39009/1	RER60, RER65, RER70, RER75			●
M39009/2	RER40, RER45, RER50, RER55			●
<b>MIL-PRF-49465</b>				
M49465/1	RLV10 SPR1005-26			●
M49465/6	RLV30 LVR03-26			●
M49465/7	RLV31 LVR05-26			●
<b>DSCC Drawing</b>				
7002	WSC6927-15			●
93075	WSC1/2-15			●
93076	WSC0001-15/WSC2515-15			●
93077	WSC0002-15/WSC45275-15			●
97004	ERL-62-1/2			●
98020	ERL-05-36			●
98021	ERL-20-36			●
99011	ERL-07-100			●
<b>Wirewound Resistors &amp; Rheostats • MIL-DTL-15109</b>				
M15109	Power Resistors & Rheostats for Naval Shipboard		●	
<b>Fixed Glass Jacketed Resistors • MIL-PRF-29</b>				
M29/1-62	MFA, MFB, MFC-292E, 291E, 290E		●	

## Resistors

IECQ-CECC Resistors			TT ELECTRONICS	VISHAY	VISHAY PRECISION GROUP
Resistors Metal Film Leaded	Technology	Series			
CECC 40101-001	Resistor, Leaded Metal Film	Sfernice RCMM, NK4/5		●	
CECC 40101-002	Resistor, Leaded Metal Film	Sfernice RCMA, RCMS, NY, RS, NP		●	
CECC 40101-004	Resistor, Leaded Metal Film	Welwyn RC55, 65, 70	●		
CECC 40101-019	Resistor, Leaded Metal Film	Welwyn FA, MFR4/5	●		
CECC 40101-024	Resistor, Leaded Metal Film	Welwyn FA, MFR4/5	●		
CECC 40101-044	Resistor, Leaded Metal Film	Sfernice RCMT		●	
CECC 40101-802	Resistor, Leaded Metal Film	Sfernice RCMM		●	
CECC 40101-803	Resistor, Leaded Metal Film	Welwyn MFR4/5	●		
CECC 40101-804	Resistor, Leaded Metal Film	Welwyn RC55, 65, 70 Sfernice RCMA	●	●	
CECC 40302-002	Resistor, Bulk Metal Film	Welwyn 4802-4812	●		
EN 140101-806 (replaces CECC 40101-806)	Resistor, Leaded Metal Film	Beyschlag MB_/SMA Series		●	
	With Established Reliability	Beyschlag MB_/SMA VG06 Series		●	
Resistors Metal Foil	Technology	Series			
CECC 40302-001	Resistor, Bulk Metal Foil	VPG Foil Resistors RS/AN			●
CECC 40302-004	Resistor, Bulk Metal Foil	VPG Foil Resistors RS/AN			●
Resistors SMT	Technology	Series			
CECC 40401-003	Resistor, SMT Thick Film Chip	Welwyn CR0805F-1206F	●		
CECC 40401-008	Resistor, SMT Thick Film Chip	Welwyn CR0805F-2512F	●		
CECC 40401-010	Resistor, SMT Thick Film Chip	Sfernice RV0505-1206		●	
EN 140401-801 (replaces CECC 40401-801)	Resistor, SMT Thin Film Chip	Beyschlag MC_Series/ MC_AT Series		●	
	With Established Reliability	Beyschlag MC_VG01 Series		●	
EN 140401-802 (replaces CECC 40401-802)	Resistor, SMT Thick Film Chip	Draloric D/CRCW.EN802 E0 Series		●	
	Resistor, SMT Thick Film Chip	Welwyn CR0805 -RR1206	●		
	With Established Reliability	Draloric D/CRCW.EN802 E6 Series		●	
EN 140401-803 (replaces CECC 40401-803)	Resistor, MELF Thin Film	Draloric SMM0204..EN803 E0 Series		●	
		Beyschlag MM_Series, MM_HT Series, UM Series		●	
	With Established Reliability	Draloric SMM0204..EN803 E8, MS1 EN803 E8		●	
		Beyschlag MM_VG03 Series		●	
EN 140401-804 (replaces CECC 40401-010)	Resistor, SMT Thin Film Chip	Draloric SMM0204..EN803 E0 Series		●	
		Beyschlag MM_Series, MM_HT Series, UM Series		●	
	With Established Reliability	Draloric SMM0204..EN803 E8, MS1 EN803 E8		●	
		Beyschlag MM_VG03 Series		●	

IECQ-CECC Resistors			TT ELECTRONICS	VISHAY	VISHAY PRECISION GROUP
Resistors Wirewound	Technology	Series			
CECC 40201-001	Resistor, Wirewound	Sfernice RWM		●	
CECC 40201-005	Resistor, Wirewound	Sfernice RMBS		●	
CECC 40201-006	Resistor, Wirewound	Sfernice RLP		●	
CECC 40201-801	Resistor, Wirewound	Draloric G200 Series		●	
CECC 40202-002	Resistor, Wirewound RWM Series/W21-4 Series	Sfernice RH	●	●	
CECC 40203-003	Resistor, Wirewound	Sfernice RH		●	
CECC 40203-006	Resistor, Wirewound	Welwyn WH/ Sfernice RLP	●	●	
EN 140402-801	Resistor, SMT Wirewound	Sfernice MSP		●	

Space Qualified Resistors			VISHAY	VISHAY PRECISION GROUP
ESCC Resistors	Technology	Series		
ESCC 4001/011	Resistors Fixed Film	VPG Foil RCK HR02/02A		●
ESCC 4001/022	Resistors Smt Fixed Thin Film Mini MELF	Draloric MS1 ESCC	●	
ESCC 4001/023	Resistors SMT Fixed Thin Film Chip	Sfernice P_HR, PFRR	●	
ESCC 4001/025	Resistors SMT Fixed Thin Film Array	Sfernice PRA HR, CNWHR	●	
ESCC 4001/026	Resistors SMT Fixed Thick Film Chip	Sfernice CHP HR	●	
ESCC 4001/029	Resistors SMT Fixed Thin Film Chip	Draloric TNPS Series	●	
ESCC 4005/003	Resistor Network Thick Film SIL	Sfernice SIL	●	
EPPLMIL-PRF-55342	Resistor With Current Sensing	VPG Foil Resistors-VCS1625/Z		●
NASA EEE-INST-002 Resistors	Technology	Series		
303134~38*	Ultra High Precision Fixed SMT Resistor Z-Foil	VSMP Series MIL-PRF-55342		●
303143*	Ultra High Precision Fixed Radial Resistor Z-Foil	Z201 Series MIL-PRF-55182		●
303139~40*	Moulded Surface Mount Fixed Bulk Foil Resistors	SMRDZ Series MIL-PRF-55182		●
303144~45*	Bulk Foil Resistors-SMT Current Sense	CSM2512/CSM3637 MIL-PRF55342 & MIL-PRF49465		●
303143/L	Bulk Foil Resistors -Through Hole	CSM2512/CSM3637 MIL-PRF49465		●
303119*	Bulk Metal Foil Resistors -SMT Current Sense	VCS1625/VCS1625Z MIL-PRF-55342		●

\*Testing plan similar to NASA EEE-INST-002

## Filters

		AVX	SPECTRUM CONTROL	TUSONIX
<b>MIL-C-11015</b>				
M11015	CK99 Series		●	
<b>MIL-15733</b>				
M15733/23	SCI 51 Series		●	
M15733/24	SCI 51 Series		●	
M15733/25	SCI 51 Series		●	
M15733/26	SCI 51 Series		●	
M15733/27	SCI 51 Series		●	
M15733/28	Spectrum SCI 51 Series/Tusonix 42xx		●	●
M15733/33	Spectrum SCI 51 Series/Tusonix 41xx		●	●
M15733/34	SCI 51 Series		●	
M15733/38	Spectrum SCI 51 Series/Tusonix 46xx		●	●
M15733/39	SCI 51 Series		●	
M15733/40	SCI 51 Series		●	
M15733/43	Spectrum SCI 51 Series/Tusonix 42xx		●	●
M15733/44	Spectrum SCI 51 Series/Tusonix 42xx		●	●
M15733/46	Spectrum SCI 51 Series/Tusonix 42xx		●	●
M15733/48	SCI 51 Series		●	
M15733/49	Spectrum SCI 51 Series/Tusonix 46xx		●	●
M15733/51	Spectrum SCI 51 Series/Tusonix 41xx		●	●
M15733/54	SCI 51 Series		●	
M15733/56	SCI 51 Series		●	
M15733/57	SCI 51 Series		●	
M15733/58	SCI 51 Series		●	
M15733/61	Spectrum SCI 51 Series/Tusonix 42xx		●	●
M15733/62	Spectrum SCI 51 Series/Tusonix 42xx		●	●
M15733/66	Spectrum SCI 51 Series/Tusonix 41xx		●	●
M15733/67	SCI 51 Series		●	
<b>MIL-28861 (recommended replacement for M15733)</b>				
M28861/01	AVX AK Series/SC 51-359	●	●	
M28861/02	SC 51-311		●	
M28861/03	SC 51-390		●	
M28861/04	AVX HK Series	●		
M28861/05	AVX HK Series/SC 51-311	●	●	
M28861/12	AVX ZS/ZR Series	●		
<b>DSCC Drawing</b>				
84084			●	

## Inductors

		API DELEVAN	VISHAY
<b>MIL-PRF -15305</b>			
MS14046		●	●
MS14047		●	
MS14048		●	
MS14052		●	
MS18130		●	●
MS21367		●	
MS21422		●	
MS21426		●	●
MS21427		●	
MS75008		●	
MS75052		●	
MS75083		●	●
MS75084		●	●
MS75085		●	●
MS75087		●	●
MS75088		●	●
MS75089		●	
MS75101		●	●
MS75103		●	
MS90538		●	●
MS90539		●	
MS90540		●	
MS90541		●	
MS90542		●	
MS91189		●	
<b>MIL-PRF-83446</b>			
M83446/04		●	
M83446/20~35		●	
M83446/38~40		●	
<b>MIL-PRF-39010</b>			
M39010/01~10		●	
<b>MIL-PRF-27</b>			
M27/356		●	
M27/367		●	
M27/368		●	
M27/370		●	

## Circuit Protection

Fuses		LITTELFUSE
<b>MIL-PRF-15160</b>		
F01A		●
F02A/B		●
F03A/B		●
F09A/B		●
F60C		●
<b>MIL-PRF-23419</b>		
FM02A		●
FM04A		●
FM07A		●
FM08A		●
FM10A		●

Fuses		LITTELFUSE
<b>Fuse holders – MIL-PRF-19207</b>		
FHN20G		●
FHN26G2		●
FHN26W		●
FHN55W		●
Varistors		LITTELFUSE
<b>MIL-PRF-83530</b>		
M83530/1		●
<b>DSCC Drawings</b>		
87063-01~52		●
90065-12~22		●

**Discretetes**

MOSFETS		VISHAY SILICONIX
<b>N-Channel MOSFETs • MIL-PRF-19500</b>		
JAN2N6660	N-Channel MOSFET, 60V, 3Ω	●
JANTX2N6660	N-Channel MOSFET, 60V, 3Ω	●
JANTXV2N6660	N-Channel MOSFET, 60V, 3Ω	●
JAN2N6661	N-Channel MOSFET, 90V, 4Ω	●
JANTX2N6661	N-Channel MOSFET, 90V, 4Ω	●
JANTXV2N6661	N-Channel MOSFET, 90V, 4Ω	●
<b>Analog Multiplexers and Analog Switches • MIL-PRF-38535</b>		
5962-9204201MEA	DG408, 8-Ch High-Performance CMOS	●
5962-9204201M2A	DG408, 8-Ch High-Performance CMOS	●
5962-9204201MXA	DG408, 8-Ch High-Performance CMOS	●
5962-9204201MXC	DG408, 8-Ch High-Performance CMOS	●
5962-9204202MEA	DG409, Dual 4-Ch High-Performance CMOS	●
5962-9204202MEC	DG409, Dual 4-Ch High-Performance CMOS	●
5962-9204202M2A	DG409, Dual 4-Ch High-Performance CMOS	●
5962-9204202M2C	DG409, Dual 4-Ch High-Performance CMOS	●
5962-9204202MXA	DG409, Dual 4-Ch High-Performance CMOS	●
5962-9204202MXC	DG409, Dual 4-Ch High-Performance CMOS	●
5962-9073704MPA	DG417B, Precision Monolithic SPST (NC) CMOS	●
5962-9073705MPA	DG418B, Precision Monolithic SPST (NO) CMOS	●
5962-9073706MPA	DG419B, Precision Monolithic SPDT (NO/NC) CMOS	●

MOSFETS		TT ELECTRONICS
<b>Linear Regulators • DSCC Drawing</b>		
77034	TO3, TO39, TO257, TO66-Adjustable Volt Regulator	●
77040	IP120 TO3, TO39-Volt Regulator	●
5962-87775	IP123 TO3-Volt Regulator	●
5962-87675	IP150 TO3, TO257-Adjustable Volt Regulator	●
5962-87782	IP7805 TO3, TO39, TO257, TO66-Volt Regulator	●
5962-87776	IP7812 TO3, TO39, TO257, TO66-Volt Regulator	●
5962-88553	IP7815 TO3, TO39, TO257, TO66-Volt Regulator	●
5962-88746	IP7905 TO3, TO39, TO257, TO66-Volt Regulator	●
5962-88747	IP7912 TO3, TO39, TO257, TO66-Volt Regulator	●
5962-88748	IP7915 TO3, TO39, TO257, TO66-Volt Regulator	●
5962-87782	IP78M05J CERDIP-Volt Regulator	●

IECQ-CECC Discretetes			TT ELECTRONICS
Diodes	Technology	Series	
CECC 50009-041	Hermetically Sealed FR Rectifier	BYV32-200SMD SMD1 (TO276AB)	●
Transistors	Technology	Series	
CECC 50002-100	Bipolar NPN Hermetically Sealed	2N2218/A, 2N2219/A TO39 (TO205AD)	●
CECC 50002-001	Bipolar NPN Hermetically Sealed	2N2222/A TO18 (TO206AA)	●
CECC 50002-103	Planar PNP Transistor	2N2906/A, 2N2907/A TO18 (TO206AA)	●
CECC 50002-186	Dual NPN Planar Transistor	2N2913 ~20 TO77 (MO-002AF)	●
CECC 50002-189	High Voltage NPN Transistor	2N3439, 2N3440 TO39 (TO205AD)	●
CECC 50002-223	Bipolar NPN Hermetically Sealed	BFT32A~34 ATO39 (TO205AD)	●
CECC 50002-224	Bipolar PNP Hermetically Sealed	BFT35A ~37A TO39 (TO205AD)	●
CECC 50003-012	High Voltage NPN Transistor	2N3439, 2N3440 TO39 (TO205AD)	●
CECC 50003-013	PNP Hermetically Sealed	2N4898, 2N4899, 2N4900 TO66 (TO213AA)	●
CECC 50003-014	NPN Power Hermetically Sealed	2N4910, 2N4911, 2N4912 TO66 (TO213AA)	●
CECC 50003-016	Power Transistor	MJ2955 TO3 (TO204AA)	●
CECC 50003-017	Bipolar NPN Hermetically Sealed	2N3713~16 TO3 (TO204AA)	●
CECC 50003-020	Bipolar NPN Hermetically Sealed	2N3055 TO3 (TO204AA)	●
CECC 50003-021	Bipolar PNP Hermetically Sealed	2N3789~92 TO3 (TO204AA)	●
CECC 50003-029	PNP Planar Hermetically Sealed	2N5415, 2N5416 TO39 (TO205AD)	●
CECC 50003-033	Bipolar NPN Hermetically Sealed	2N5671, 2N5672 TO3 (TO204AA)	●
CECC 50003-034	Bipolar NPN Hermetically Sealed	2N6032, 2N6033 TO3 (TO204AE)	●
CECC 50003-057	Npn Darlington Transistor	BDS20, BDS21 TO257AB (TO220M)	●
CECC 50003-059	Bipolar NPN Hermetically Sealed	2N2222CISM, 2N2222ACISM LCC1, LCC2 (MO-041BB)	●
CECC 50004-001	Bipolar NPN Hermetically Sealed	BUX10~15 TO3 (TO204AA)	●
CECC 50004-025	High Current Transistor	BFX34 TO39 (TO205AD)	●
CECC 50004-025	Bipolar NPN Hermetically Sealed	BSX62, BSX63, BSX64 TO39 (TO205AD)	●
CECC 50004-037	Bipolar PNP Hermetically Sealed	BSS44 TO39 (TO205AD)	●
CECC 50004-038	High Voltage & Current Planar NPN	BUY47, BUY48 TO39 (TO205AD)	●
CECC 50004-040	Bipolar NPN Hermetically Sealed	BSW66/A, BSW67/A, BSW68/A TO39 (TO205AD)	●
CECC 50004-042	Bipolar NPN Hermetically Sealed	2N3055 TO3 (TO204AA)	●
CECC 50004-045	Multi Epitaxial NPN Transistor	BUX20~25 TO3 (TO204AE)	●
CECC 50004-065	Planar Epitaxial NPN Transistor	BUX77, BUX78 TO66 (TO213AA)	●
CECC 50004-107	Bipolar NPN Hermetically Sealed	2N5336~9 TO39 (TO205AD)	●
CECC 50004-109	Bipolar NPN Hermetically Sealed	BDX92, BDX96 TO3 (TO204AA)	●
CECC 50004-110	Bipolar NPN Hermetically Sealed	SML4005 TO3 (TO204AA)	●
CECC 50004-111	Bipolar NPN Hermetically Sealed	BDY90~92 TO3 (TO204AA)	●
CECC 50004-112	Bipolar NPN Hermetically Sealed	BDX91, BDX93, BDX95 TO3 (TO204AA)	●
CECC 50004-113	Darlington Power Transistor	BDX67/A/B TO3 (TO204AA)	●
CECC 50004-114	Bipolar NPN Hermetically Sealed	BDY57, BDY58 TO3 (TO204AA)	●
CECC 50004-133	Bipolar NPN Hermetically Sealed	2N3719, 2N3720 TO39 (TO205AD)	●
CECC 50004-134	Bipolar NPN Hermetically Sealed	BUR20, BUR21, BUR22 TO3 (TO204AE)	●
CECC 50004-135	Bipolar NPN Hermetically Sealed	BUS11/A, BUS12/A, BUS13/A TO3 (TO204AA)	●
CECC 50004-174	Silicon NPN Epitaxial	BDS10, BDS11, BDS12 TO257AB (TO220M)	●
CECC 50004-175	Planar Epitaxial PNP Transistor	BDS13, BDS14, BDS15 TO257AB (TO220M)	●
CECC 50004-176	Silicon NPN Epitaxial	BDS16, BDS17 TO257AB (TO220M)	●
CECC 50004-177	Planar Epitaxial PNP Transistor	BDS18, BDS19 TO257AB (TO220M)	●

# Electromechanical

Relays		TE CONNECTIVITY
<b>High Performance • MIL-R-5757</b>		
M5757/1, 7, 8	RD 02 03 (CII)	●
M39016/10	FW-Full Size Crystal Can (CII)	●
M39016/13	3SAT-Full Size (CII )	●
M39016/23	07-2 Pole High Performance (CII)	●
M39016/29	194HE (CII)	●
<b>Mid Range High Performance • MIL-PRF-6106</b>		
M6106/19, 56	FCA (CII)	●
MS27245	B07 Full Size Relay (CII)	●
MS27247	B07 Full Size Relay (CII)	●
MS24185	Contactors (HPG)	●
MS27750	Contactors (HPG)	●
<b>High Performance Solid State • MIL-PRF28750</b>		
MIL-PRF-28750/5~7, 9~10	JTS Bi-Directional Output TO-5 (CII)	●
<b>High Performance Solid State • MIL-PRF28776</b>		
MIL-PRF-28776/1, 3-7	Solid State Relay TO-5/Grid Array (CII)	●
<b>High Performance Solid State • DSCC Drawings</b>		
85092	Solid State Relay (CII)	●
86031	Solid State Relay (CII)	●
88062	Solid State Relay (CII)	●
89116	Solid State Relay (CII)	●
90091	Solid State Relay (CII)	●
<b>Low Signal High Performance • MIL-PRF-39016</b>		
M39016/6	HFW-Standard Half-Size (CII)	●
M39016/7, 9, 10, 11, 15~26, 41~44	J1M, JMA, JMS-TO-5 Relay (CII)	●
M39016/13, 14, 31, 35~38, 53	3SBC, 3SBH, 3SBM-Micro-Miniature (CII)	●
M39016/32	3SAM-Crystal Can (CII)	●
M39016/34	MFW-1/6 Size (CII)	●
M39016/40	SR-4 Pole Half-Size (CII)	●
<b>Mid Range High Performance • MIL-PRF-83536</b>		
M83536/1, 2,5,6	FCB Miniature Size (CII)	●
M83536/9,10, 15, 16, 32, 33, 36, 37	FCA Standard Size (CII)	●
<b>High Power• MIL-R-83725</b>		
M83725/1~4, 6, 10~11, 16~18, 21~24	MH, MK Series Vacuum Relays (Kilovac)	●
<b>Time Delay Relay • MIL-R-83726</b>		
M83726/13	6001 Series Time Delay Relay (CII)	●
<b>Space Qualified Relay</b>		
NASA S-311-P-754/8	Hermetically Sealed Relay	●
G311-P-754/03, 04, 07, 08, 09	Hermetically Sealed Relay	●

Relays		AMPHENOL
<b>Relay Socket • MIL-DTL-12883</b>		
M12883/40, 41	Relay Socket-Amphenol PCD	●
M12883/44~48	Relay Socket-Amphenol PCD	●
M12883/52, 54, 55	Relay Socket-Amphenol PCD	●
M12883/40	Relay Socket-Amphenol PCD	●

Switches		HONEYWELL
<b>MIL-DTL-3950</b>		
MS24523~25	TL Series Toggle Switch	●
MS24658~60	TL Series Toggle Switch	●
MS27406~09	TL Series Toggle Switch	●
MS27723~24, 34~39, 81~89	TL Series Toggle Switch	●
<b>MIL-PRF-5594</b>		
M5594/1, 2, 3, 6	ET Series Toggle Switch	●
<b>MIL-PRF-8805</b>		
M8805/1	BZ Series Basic Switches	●
M8805/2	SM Series Sub-Miniature Basic Switch	●
M8805/4	SX Sub-Miniature Switch	●
M8805/8	HM Hermetically Sealed Basic Switch	●
M8805/22	SM Series Sub-Miniature Basic Switch	●
M8805/23	PB Series Push Button Switch	●
M8805/26	AT Series Toggle Switch	●
M8805/27	V Series-Basic Switch	●
M8805/29	BZ Series Toggle Switch	●
M8805/31	DT Standard Basic Switch	●
M8805/32	XE Series Environmentally Sealed	●
M8805/39, 40, 48, 49	EN Series Environmentally Sealed	●
M8805/41	HR Hermetically Sealed High Temp Limit Switch	●
M8805/43	EN Series Environmentally Sealed	●
M8805/47	HS Hermetically Sealed Basic Switch	●
M8805/55	JS Series Enclosed Basic Switch	●
M8805/56	AC Series Door Switch	●
M8805/58	MC Series Basic Switch	●
M8805/59	AD Series Basic Switch	●
M8805/61	BZ Series Toggle Switch	●
M8805/65	EN Series Environmentally Sealed	●
M8805/80	HE Series Hermetically Sealed Limit Switch	●
M8805/90	V Series-Basic Switch	●
M8805/92, 98	AT Series Toggle Switch	●
M8805/106, 109	SX Sub-Miniature Switch	●
<b>MIL-S-24236</b>		
MIL-S-24236/1	3MS1 Series Military Thermostat	●
<b>MIL-S-83731</b>		
M83731/9, 10, 13~16	Hi-Rel Toggle Switch	●
MS27716~21	TW Series Toggle Switches	●
MS27753~54	TW Series Toggle Switches	●
MS27790	TW Series Toggle Switches	●



## MIL-DTL-38999 Series III/EN3645 (TV/CTV)



- Amphenol Tri-Start MIL-DTL-38999 Series III thread coupling connectors offer the highest performance capabilities for both general duty and severe environment applications
- Different versions are available: "TV" metal versions (aluminium, stainless steel or aluminium bronze) as well as "CTV" composite versions, which offer a lightweight, corrosion resistant connector

## PT451/VG95328



- PT451/VG95328 Series are robust subminiature cylindrical connectors ideally fitted to meet the most demanding requirements
- In accordance with the American MIL-DTL-26482 Series I standard, the PT/451 connectors can be delivered in crimp, solder, PCB versions, with different sealing levels which are well known in aeronautics, military and industrial applications
- Technical advantages: many versions available, sealed (IP67/68), hermetic, EMI shielded, resistant to many fluids, resistant to shocks and vibrations, operational from -55°C to +125°C, proven world standard
  - The PT/451/VG Series comprises a wide range of products: 9 shell sizes available, 35 insert arrangements and up to 61 contacts. Shell finishes: olive drab cadmium and nickel platings as standard
  - Plastic self closing caps are available for shell sized 8, 10, 12 and 18"

## 38999 Power Solutions



- These connectors derived from the MIL-DTL-38999 Series are equipped with ruggedised power inserts
- The power contacts are crimp contacts for 60A, 100A, 230A and 500A currents
- Available in different shell types:
  - MIL-DTL-38999 I (LJT)
  - MIL-DTL-38999 III (TV-CTV)
  - VG96912 (SJT)
  - RNJ
  - RNJLP
- The 4x60A and the 4x100A are HE308 qualified (bayonet and rackable versions)

## SC39



- The SC39 connectors offer a new connecting solution, particularly for applications which required a fast and easy connection/disconnection
- The innovation lays in the mating system
- It consists of a circular spring trapped in the receptacle which keeps the plug mated
- The SC39, without any rotating ring or moving part, insures a high reliability
- Receptacles with stand-off, integrated backshells and lanyard versions are available

## Amphenol RF



- Amphenol RF is a leader in the RF microwave industry. They design and manufacture RF connectors, cable assemblies and passive components. With over 40 years of proven performance, Amphenol manufactures one of the largest ranges of RF and microwave products available today. Their product range includes standard off-the-shelf catalogue items and custom designed products to meet specific customer requirements
- When it comes to the design and manufacture of special custom designed products, their SV Microwave division has set the standard in High Frequency and High Reliability RF and microwave connectors and components. Integrated state-of-the-art design and manufacturing resources and tools give it the capability of providing its customers with rapid turnaround, proven quality and a competitive price
- Precision N types capable of working up to 18GHz made from high strength stainless steel and standard SMAs feature heavily in the SV range along with the SVK which performs up to 46GHz
- Their RF and Microwave products are used in the military, satellite, aerospace and telecommunication and all other industries where performance, reliability, durability and competitive pricing matter

## RJField



- RJField allows you to use an ethernet class D/Cat. 5e connection for 10 BaseT, 100 BaseTX

## Rugged USB Keys



- Reinforced USB memory keys are available in several capacities up to 64GB
- They are sealed (IP68) and have a metallic shell with various plating
- Amphenol provide two versions:
  - USBFKey: 1/4 turn bayonet coupling, to be used with standard USB-A ports, non-protected connection (2 to 8GB)
  - USBFTVKey: based on MIL-DTL-38999 Series III shell, to be used with USBFTV receptacles, protected connection (2 to 64GB)

## USBField



- USB Field allows to use a standard USB2.0 connection in harsh environments:
  - Sealed against fluids and dusts (IP68)
  - Shock
  - Vibration and traction resistant
  - No cabling operation in field and no tools required
  - Mechanical coding/polarisation (2 positions)
  - Improved EMI protection

Amphenol Ltd is one of the largest manufacturers of interconnect products in the world. The company designs, manufactures and markets electrical, electronic and fibre optic connectors, coaxial and flat-ribbon cable, and interconnect systems.

Amphenol is proud of its long history of UK-based manufacturing, where full end-to-end capability has made it a leading supplier into the military, aerospace and rail mass-transit markets. Products traditional to these markets have appeared ever more frequently in high end Industrial applications; robust products being vital to harsh Industrial and Mil-Aero environments.

They offer a full design and manufacturing service for a large range of connectors and interconnect solutions, including cable assembly, over-moulding and electronic packaging. Products include circular Mil-DTL-38999, Mil-C-26482, 62GB, Mil-C-5015, Mil-C-83723 rectangular, rack and panel and PCB mounted product, fibre optic multimode and single mode solutions, hermetically sealed connectors and filter connectors.



## Miniature Rugged Connector Series

Intended for harsh environment applications Amphenol Terrapin is a miniature Series of push pull connectors. Within a rugged shell design Terrapin offers superior EMC performance and high environmental sealing to IP68. Resilient in severe battlefield situations the RoHS compliant black-silver plating is both low-lustre and corrosion resistant.

The customised design specification of Terrapin lends itself to a variety of applications. Originally designed for soldier mounted applications such as radios, headsets and GPS units, Terrapin is also suitable for gigabit ethernet and USB 2.0 and therefore widely used on computer systems, LAN switches and routers. The high degree of sealing offered by Terrapin makes it perfect for Unmanned Ground Sensors and Surveillance equipment. Whatever the application, Terrapin offers space savings and improved durability over traditional interconnect products.

Featuring an optional locking mechanism, multiple shell sizes with up to 37 contacts and suitability for overmoulding, Terrapin is the preferred choice for miniature connectors in military and other harsh environment applications.

### Features & Benefits

- Miniature footprint
- Quick release breakaway
- Latched version
- Common plug connector
- Sealed to IP68
- RoHS compliant
- 2000+ matings
- Multiple keying options
- Brass base metal
- Black silver plating
- Integral backshell
- Gigabit ethernet and USB 2.0 compatible
- Suitable for overmoulding



## TERRAPIN

## Hermetic Series

Amphenol Ltd hermetic connectors are designed for harsh environments where protection from pressure and temperature extremes, chemicals, water ingress and physical/thermal shock is vital. The company expertise can be found in a wide area of markets including aerospace, automotive, marine, industrial and high end military markets.

Glass to metal sealing technology provides exceptional mechanical performances in both pressure and temperature, whilst providing excellent hermeticity. Many of the hermetic connectors for these markets can be customised to match existing or new speciality mounting requirements, designed and manufactured to comply with the appropriate military and civil standards.

### Features & Benefits

- Sealed for pressure variants up to 6,000bar
- Fuel immersible
- Resistant at extreme temperatures -200°C to 600°C
- Hermeticity achieved exceeds  $10^{-9}\text{cm}^3\cdot\text{s}^{-1}@1\text{bar } \Delta P$
- Circular and rectangular formats
- Ultra High Vacuum (UHV) to high pressure feed throughs

### Compatible with

- MIL-DTL-38999 (LJT/JT/SJT/TV)
- MIL-C-26482 (62GB/602GB)
- MIL-C-5015 (172 Series)
- MIL-C-24308 (17D Type)
- MIL-C-83723 Series III
- MIL-C-26500D



## 62GB (Mil-C-26482)

Amphenol 62GB Series connectors are general purpose, environment resistant, miniature circular connectors with three-point bayonet coupling and five-key polarisation.

Designed to meet the requirements of MIL-C-26482 Series I solder type, these connectors are widely used in military and industrial applications.

### Features & Benefits

- Bayonet coupling
- Shell size: 8 – 24
- Styles include free plugs, jam nut and square flange receptacle
- Optional plating finishes

### Also available

- Power 62GB
- High density 62GB
- Hermetically sealed 62GB
- Filtered 62GB (482GB)



## Filter Connectors

Amphenol filter connectors offer the versatility of standard connectors with EMI/EMP/ESD protection for sensitive circuits.

Available in many sizes, styles and arrangements, Amphenol EMI/EMP/ESD protection connectors are intermountable and intermateable with the following Mil-Spec connectors; MIL-DTL-38999, MIL-C-26482, MIL-C-83723, MIL-C-5015, MIL-C-28840, MIL-C-27599, MIL-C-26500 and MIL-C-24308.

### Features & Benefits

- EMI/EMP/ESD protection
- Low profile
- Circular and rectangular formats
- Stress-isolated filter elements
- Provides excellent vibration and temperature performance
- Tailored design capability

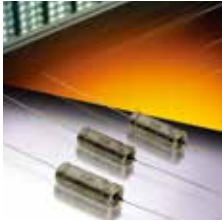


AVX Corporation is a leading international supplier of advanced passive components and interconnect solutions, offering the world's broadest selection of passive electronic components and connectors. The company has over 30 years experience in producing industry-leading, high-reliability passive components, offering an expanding range of products including capacitors, filters, timing devices, connectors and circuit protection devices which have been designed to provide industry-leading performance and quality.

AVX currently has 11 factories in Europe and USA qualified to AS9100, IECQCECC, TS16949-2002 and ISO9001-2000 standards. The company also has a number of products qualified to COTS +, ESCC, SRC, MIL and DSCC drawings, as well as optional custom screening and test service capabilities.

## Hermetically Sealed Caps

### TWA Series



#### Features & Benefits

- Wet electrolytic axial leaded tantalum capacitor
- Capable of higher voltage and higher capacitance (higher CV) than solid tantalum
- Only 20% derating required
- Hermetically sealed can, which provides long operating life
- Meets shock and vibration per Mil-Std-202, method 213 & 204
- Fully qualified to DSCC 93026 Rev. P

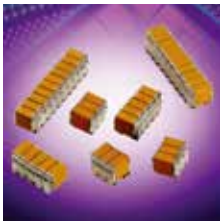
### TCH & THH Hermetic Series



#### Features & Benefits

- Hermetically sealed SMD tantalum capacitors
- TCH – Low ESR conductive polymer electrode
- THH – Rated temperature up to 230°C
- Stability under humidity and ambient atmosphere
- Large case sizes including CTC-21D provide high capacitance values
- Available in 2013

## TurboCap™



#### Features & Benefits

- Vertically stacked construction
- SMPS ceramic capacitor
- High CV values
- Offers ultra low ESR/ESL characteristics
- Very high current handling capability
- Wide operating temperature: -55°C – +125°C
- Automated lead frame attachment assembly process

## Tin/Pb Terminated Products

### LD Series



#### Features & Benefits

- Ceramic capacitor with termination consisting of 5% minimum lead
- Tin whisker protection
- Low temperature soldering profile
- Long time stability
- Wide range of dielectrics
- Low voltage and high voltage options
- Also available with Flexitem®

## High Temperature Products

### SMPS



#### Features & Benefits

- SMX-style, stacked SMPS capacitor utilising MLCC
- Ideally suited for hi-temp applications up to +200°C
- Much lower ESR and lower losses
- Excellent capacitance retention with frequency
- Excellent high frequency performance
- Low DC leakage current
- Much higher current handling capabilities

### THJ Series



#### Features & Benefits

- 1st SMD +175°C tantalum capacitor on the market
- 200°C option available as THJ+ Series
- SMD = small size, fast pick & place ready
- Negative temperature operation (unlike wet electrolytics)
- 3 x reflow +260°C and RoHS compliant
- Gold plated termination for hybrid assembly

## MH Series



#### Features & Benefits

- Lead free ceramic capacitor in moulded case
- Excellent ESR
- Voltage range: 25V – 100V
- Operating/storage temp: -55°C – +125°C
- Non-polar construction
- Excellent over voltage immunity
- Enhanced mechanical protection due to moulded case and lead frame

### ESCC Tantalum Capacitors



#### Features & Benefits

- SMD solid tantalum chip capacitors
- For use in ESCC space programs, according to ESCC generic specifications 3012
- TAJ – ESA ESCC 3012/001
- Low ESR and Hi-CV EPPL 3012/004
- Robust moulded construction and J lead terminations
- Advanced powder technology allows for higher CVs through all voltages
- Silicon barrier to protect capacitor from humidity

# Precision Potentiometers, Panel Controls & Rotary Encoders

Bourns® Sensors and Controls Product Line offers a wide portfolio of precision potentiometers, panel controls and rotary encoders suitable for use in military and aerospace applications. These products have a track record of service in applications such as:

## Aerospace/Avionics Applications

- Cockpit controls
- Wing flap position sensors
- Landing gear sensors
- Motorised seat sensors

## General Product Features

- Wide operating temperature range
- High rotational life
- High resolution
- Low noise
- Seal to IP65 (selected models)
- Various package sizes

## Military Applications

- Missile guidance systems
- Tank gun position sensors
- Aircraft communications
- Ground communications

## Product Custom Capabilities

- Tight TR tolerance & linearity
- Mechanical angle
- Electrical angle
- Brackets and adaptors
- Shaft and bushing lengths
- Cable/connectors

## Precision Potentiometers – Multiturn



- 3700/3701 & 3750/3751
- 3500/3501
- 3547/3548/3549
- 3540/3541
- 3590
- 3400

## Precision Potentiometers – Single-Turn



- 6674
- 6657
- 6638
- 6637
- 6534
- 6537/6538
- 6539/6639

## Industrial Grade Panel Controls



- 39
- 3851/3852/3856
- 3862
- 51/53
- 81/82-85/86
- 83/84
- 91/92/93/94/95/96/97/99

## Rotary Encoders



- ECW – Contact technology
- EAW – Contact technology
- EM14 – Optical technology
- EN – Optical technology
- EMS22 – Magnetic technology

# PWR220T, 221T, 263S, 163S Series Power Resistors

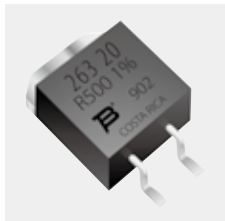
The PWR Series from Bourns are high performance COTS power resistors in industry standard TO housings. They are rated to high power and can withstand high amounts of energy within rated limits. The PWR Series comes in surface mount and through-hole versions. All parts are hot-tipped.

The PWR Series is used for current sense, current limiting or capacitor discharge functions in power supplies.

## Features & Benefits

- Copper backplane or ceramic backplane
- Low inductance
- High pulse capability

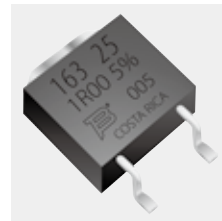
## PWR263S-20



### Features & Benefits

- D2PAK housing
- 20W power rating
- Resistor electrically isolated from backplane
- Compatible with LF reflow temperatures

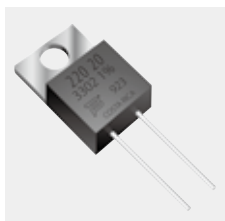
## PWR163S-25



### Features & Benefits

- DPAK style housing
- 25W power rating
- Resistor electrically isolated from backplane
- Compatible with LF reflow temperatures

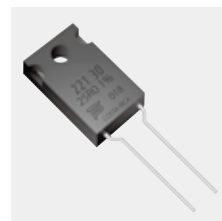
## PWR220T-20



### Features & Benefits

- TO220 housing
- 20W power rating
- Resistor electrically isolated from backplane

## PWR221T-30



### Features & Benefits

- TO220 style housing
- 30W power rating
- Ceramic backplane

# Designing Technology into Solutions

C&K Components is a leader in interface and switch technology as well as smart card and high reliability connector products. C&K Components offers more than 40,000 unique part numbers that are built, priced and delivered as standard catalog items. C&K products include: low profile tactile switches, navigation switches, detect switches, pushbutton switches, rotary, switchlock and key switches, slide switches, toggle switches, DIP, illuminated switches, and sealed switches.

## Sealed Pushbutton – AP Series



### Features & Benefits

- IP67 sealed
- 1,000,000 life cycle
- Illumination/non-illumination
- Threaded or snap-in mounting
- SPST, normally open

## Sealed Pushbutton – NP Series



### Features & Benefits

- IP68 sealed
- 1,000,000 life cycle
- Multiple housing styles
- Capable of up to 5A resistive load

## Illuminated Pushbutton – PBA Series



### Features & Benefits

- Illuminated display
- Small size
- Cold lighting
- Tactile feedback

## Domes – ED/EDM Series



### Features & Benefits

- Short travel
- Good tactile feedback
- Self cleaning
- 3 actuation forces

## Keyswitch – K12 Series



### Features & Benefits

- Excellent tactile feel
- Wide choice of LED colors, travel and actuator forces
- High reliability/long life
- Sealed version available
- Designed for low-level switching
- Double stroke version available
- Detector version available

## Sealed Keyswitch – K12S Series



### Features & Benefits

- Harsh environment applications – IP67
- Illuminated
- Excellent tactile feel
- High reliability/long life
- DPST and detect versions available

## Microminiature Key Switches – DIGITAST Series



### Features & Benefits

- High reliability/long life
- Designed for low level switching
- Ready to implement on PCB
- Latching function available
- Several button options

## Toggle Switches



### Features & Benefits

- Qualified to MIL-S-83731
- Epoxy sealed terminals for process compatibility
- Rated for logic level to 5A resistive loads and 2A inductive loads
- Flame retardant housing material

## Tactile Switches – KSA/KSL Series



### Features & Benefits

- Highest tact switch sealing performance
- Improved sealing through a modification of the crimping technique and to a double overmoulding of the terminal
- Up to 1,000,000 operations

## Mains/Power Switch – NE 18 Series



### Features & Benefits

- Chassis or panel mount
- Several button options available
- Various contact configurations

Delphi is a leading global supplier of electronics and technologies for automotive, commercial vehicle and other market segments. Operating major technical centers, manufacturing sites and customer support facilities in 30 countries, Delphi delivers real-world innovations that make products smarter and safer as well as more powerful and efficient.

## Mil-C-28876

### Features & Benefits

- Available in 2, 4, 6, 8, 18 and 31 channel configurations
- Qualified to MIL-C-28876 specification
- Singlemode and multimode capability
- Hybrid (electro-optic) versions available
- Point-to-point interconnection system
- Full environmental sealing
- In-line and wall mount receptacle
- Field maintainable

### Applications

- Navy shipboard
- Military and commercial
- Hybrid configurations for electro-optical signal transmission



DELPHI

## DFOCA

### Features & Benefits

- High performance/high quality designed to Mil Spec:
  - MIL-PRF-83526
  - MIL-PRF-29504/16
- Simplify "in-field" repair and assembly
- Reduced assembly complexity
- Few subcomponents
- Quicker access to termini
- Innovative one-piece terminus insertion/removal tool helps prevent fibre breakage

### Applications

- Tactical field communications
- Radar systems
- Missile defence systems
- Mobile launchers



## MIL-T-29504

### Features & Benefits

- Qualified to MIL-T-29504 and MIL-C-28876 specifications
- Free floating, self-aligning design, to minimise signal loss due to fibre misalignment
- Front-release system
- Individual seal and retaining clip
- Quality control for critical dimensions to provide optimum performance
- Easily polished PC endface

### Applications

- Military/aerospace
- Shipboard/pierside
- Broadcast industry
- Harsh environment
- Telecom/datacom
- Hybrid electronics



## RF Coax Cable Assemblies

### Connector type

- Coaxial cables

### Applications

- Ground position sensors and antenna applications

### Features & Benefits

- Flexible manufacturing cells allow high volume/low mix and low volume/high mix
- Fully certified testing/validation lab
- Full participation in global standards activities

### Markets

- Marine
- Radar communication



Honeywell Sensing and Control manufactures one of the broadest switching and sensing product portfolios in the industry, including products from: Clarostat, Data Instruments, Electro, Elmwood, Fenwal, Hobbs, Hycal, Micro Switch™, NEI and Sensym. Honeywell offers a breadth of solutions from an array of technology platforms designed to specific and essential requirements, integrated into application-specific packaging.

Honeywell Sensing and Control is a global leader in cost-effective, problem-solving sensor and switch solutions. Honeywell serves thousands of customers in four core industry segments: Industrial, Medical, Transportation and Aerospace/Military.

## MICRO SWITCH™ Sealed Switches



Military performance standard and most global approvals. Environmental and hermetic sealing to resist many severe environment conditions, changes in atmospheric pressures/temperatures. Potential applications include aircraft landing gear and flap/stabiliser controls, de-icers, doors/slides, engine thrust reversers, space vehicles, armoured personnel carriers, weapon systems and wing fold actuators.

### MICRO SWITCH™ SE/XE

Watertight and military standard construction per MIL-PRF-8805; corrosion-resistant aluminium housing

### MICRO SWITCH™ HS

Hermetically sealed per MIL-S-8805; high temperature construction; reduced sensitivity to changes in altitude or pressure

### MICRO SWITCH™ HE

Features true hermetic sealing (metal to-metal, glass-to-metal construction); meets sand and dust, explosion, icing, minimum current, and moisture resistance requirements; top and roller plunger actuators have internal ice scraper ring

### MICRO SWITCH™ HR

Meets moisture resistance, explosion and salt spray requirements; top plunger actuator has internal ice scraper ring

### MICRO SWITCH™ HM

Hermetically sealed per MIL-S-8805; high temperature construction; reduced sensitivity to changes in altitude or pressure

### MICRO SWITCH™ EN

Top and roller plunger actuators have internal ice scraper ring

### E1-217 Series

Small size and lightweight, without sacrificing performance or electrical capacity

## MICRO SWITCH™ Toggle Switches



Hermetic and environmentally sealed toggle switches offer reliable operations with MICRO SWITCH™ technology. Often used in applications where a panel-mount switch with an environment-proof rating is needed, including military and commercial aviation and process control.

### Approvals

- Qualified to MIL-S-8805/26/98UL
- Qualified to MIL-S-83781
- Qualified to MIL-S-5594 UL,CSA,CE
- Qualified to MIL-S-3950

### Features & Benefits

- Choice of sealed bushing
- Short behind panel depth saves space and weight
- Sealed bushing versions holding coil replaces mechanical holding mechanisms to maintain toggle in operate environment-proof sealing
- Qualified to MIL-DTL-3950

## MICRO SWITCH™ Limit Switches



Available with a variety of actuators, electrical specifications, terminations, circuitries and sealing ratings, Honeywell's MICRO SWITCH™ limit switches offer superior flexibility and performance. These precision snap-action switches sealed in rugged housings are used to detect presence or absence in areas where physical contact is allowed.

### Series: 914CE

- Rugged housing
- Miniature size
- Direct-acting contacts available
- Pre-leaded or various quick-connect terminations

### Series: LS

- Housing type: compact/non-plug-in, plug-in
- Rugged housing
- Miniature size
- Direct-acting contacts available
- Pre-leaded or various quick-connect terminations

### Series: BZE6/V6

- Housing type: split housing, side mount; split housing, flange mount
- Mode of operation is field adjustable
- Variety of operating characteristics rugged electrostatic
- Epoxy coated housing
- Booted versions sealed to IP66
- Unsealed actuators sealed to IP40
- Side or flange mount
- Low temperature options

### Series: GLA

- Housing type: EN 50041
- Direct-acting NC contacts

### Series: HDLS

- Housing type: plug in and non-plug-in
- Wide variety of actuators
- Circuitry options and connectivity



## MICRO SWITCH™ 1HP Series Pressure Switches



Honeywell's MICRO SWITCH™ 1HP Series pressure switches are designed for optimisation to each aerospace and defence application. The lightweight, compact pressure switches sense a change in gas or liquid pressure, opening or closing an electrical circuit when the designated pressure point is reached. The design modularity allows for configuration of the switch, facilitating rapid customisation to the precise, demanding requirements of aerospace and defence applications.

- Design modularisation allows for rapid prototyping and development
- Highly customisable for demanding military and aerospace applications
- High quality switch that meets military and DO-160 standards
- Vertically integrated production for faster lead-times
- Strong application support with MICRO SWITCH™ expertise

## Precision Thermostats



Hermetic/non-hermetic devices available. High reliability versions meet stringent requirements of military and aerospace industries for dielectric strength, moisture, resistance, vibration and shock. Often used in environmental and flight controls, aerospace engines, flight decks, cargo holds, landing gear and space craft.

### 3000 Custom packaged

- Hermetically sealed tight tolerance thermostat in stainless steel or brass

### 3100 Hermetic

- Hermetically sealed (glass to metal seal)
- Pre-set and tamper proof
- SPST contacts

### 3MS1 Series

- MIL-PFR-2436/1QPL military thermostats hi-rel hermetically sealed
- Tight tolerances and differentials

### 3200 Aerospace

- NASA certified
- Space qualified hermetically sealed (glass to metal seal)
- Pre-set and tamper proof
- SPST contacts

## Speed Sensors



Speed sensors use a magnetically biased Hall-effect IC (integrated circuit) to accurately sense movement of ferrous metal targets. The specially designed IC and a permanent magnet are sealed in rugged, probe-type packages. Often used in military vehicle wheels/suspension, RPM, speedometer/MPH sensing and in hydraulic pumps.

### Series: 1GT

- Fast operating speed
- Reverse polarity and transient protection
- EMI resistant

### Series: GTN

- Choice of barrel lengths with integrated diagnostics and enhanced operating speeds

### Series: LCZ

- Omni-directional sensor to target
- Low power consumption
- Zero speed
- Digital output

### Series: SNDH-H

- Rotationally insensitive versions available
- Zero speed sensing versions available
- Range of connector options

### Series: SNDJ

- Back biased Hall-effect
- Direct sensing of ferrous metal target
- Zero speed sensing
- Rotational orientation independent of sensor

## Honeywell Hawk™ Resolvers



Honeywell's Hawk™ Resolvers, 1-Inch Series, Fully-Housed Configuration are durable, reliable, non-contact absolute position sensors for potential use in defence and space applications.

### Features & Benefits

- Shock specification of 50g, 11ms
- Vibration specifications of 15g, 10Hz to 2000Hz
- Wide operating temperature range: -50.8°C to 93.3°C
- Wide excitation voltage range: 2V to 15V and excitation frequency range of 2000Hz to 5000Hz
- Fully housed configuration with bearing/shaft
- Small outer diameter of 1 inch allows for use in size-restricted applications
- Single speed operation (1 magnetic pole pair)
- Accuracy of ±7 arcmin enables precise motion control of weapon systems and space positioning devices
- Non-contact magnetic technology
- Military and aerospace specifications: DO-160D, MIL-STD-202G, MIL-STD-810G, MIL-STD-81963B, MIL-STD-461F; complies with space out gassing requirement SP-R0022

### Applications

#### Defence

- Electro-optical systems
- Fire control systems
- Gimbals position feedback
- Infrared systems
- Engines/transmissions
- Test equipment

#### Space

- Satellite, space station or space vehicle solar panel array
- Satellite antenna for signal transmission

## Ceramics

### DLA (Formerly DSCC) High Reliability MLCCs

DLA 05006/7, 03028/9 and 91019

#### Features & Benefits

- 05006/7 available in BP, BR and BX dielectrics
- 03028/9 available in BR and BX dielectrics
- 9109 available in BR dielectric
- High capacitance
- Voltage range: 6.3VDC – 200VDC
- Non-polar device, minimising installation concerns
- EIA case sizes 0402, 0603, 0805, 1206 and 2220



### Space Grade MLCCs

GR900, MIL-PRF-123

#### Features & Benefits

- For use in applications where the chance of failure must be reduced to the lowest possible level
- BP, BR and BX dielectrics
- Voltage range: 16VDC – 200VDC
- Numerous end metallisation options available including 100% pure matte tin, SnPb plated (70/30), SnPb coated (60/40) and gold plated
- Receive special attention in all phases of manufacture including raw materials selection, clean room production, individual batch testing, C-SAM (when applicable), maintenance of singular batch identity and destructive physical analysis



### Multilayer Ceramic Stacked Capacitors

KPS MIL

#### Features & Benefits

- Reliable and robust termination system
- Higher capacitance in the same footprint
- Advanced protection against thermal and mechanical stress
- Reduces audible microphonic noise
- Extremely low ESR and ESL
- T-Level reliability available (Space Grade)



### High Voltage Large Case MLCCs for Higher Reliability Applications

KPS HV SM Series

#### Features & Benefits

- “J” & “L” lead configurations available
- Reliable and robust termination system
- Advanced protection against thermal and mechanical stress
- Improved flex performance
- Reduces audible, microphonic noise
- Non-polar device, minimising installation concerns
- Available with screening to MIL-PRF-4946, Group A & B
- Several end metallisation options available



## Tantalum

### Polymer COTS

#### T540 and T541 Series

##### Features & Benefits

- Polymer cathode technology
- High frequency capacitance retention
- Benign failure mode
- Low ESR
- Surge current testing options
- High ripple current
- 10% derating for part types ≤10V
- 20% derating for part types >10V



### Polymer Hermetic Seal

#### T550 Series

##### Features & Benefits

- Low and stable ESR across temperature range and frequency
- Stable capacitance across temperature range and frequency
- Non-catastrophic failure mode
- Mechanical robustness (shock and vibration)
- Lighter weight (~25%) and same case sizes as wet tantalum
- Patented polymer slurry technology
- 20% derating



### Space Grade MnO<sub>2</sub> Tantalum

#### T493 COTS, T496 Fused, T497 High Grade COTS & T510 Multiple Anode Low ESR Series

##### Features & Benefits

- MIL-PRF-55365 and MIL-STD-1580
- Incorporates customisable intensive testing and screening protocol such as Weibull grading level (C = 0.01%/k hours), surge current level (10 cycles -55°C and +85°C before and/or after Weibull grading) and variety of additional performance testing level options
- Low and standard ESR options
- Variety of termination finishes
- Fused versions available for built-in circuit protection
- Multi-anode designs for very low ESR values



### High Volumetric Efficiency Facedown MnO<sub>2</sub>

#### T428 Series

##### Features & Benefits

- Taped and reeled per EIA 481-1
- SnPb termination finish
- Laser-marked case
- 100% surge current test available
- Halogen-free epoxy
- Capacitance values: 15µF – 470µF
- Tolerances: ±5%, ±10% and ±20%
- Voltage rating: 4VDC – 50 VDC
- Extended range values
- Pick-and-place friendly
- RoHS Compliant and lead-free terminations available
- Operating temperature range: -55°C – +125°C



# Formula 1 (F1) Technology and Simulated Breakdown Screening (SBDS)

Advancing Tantalum Technology to the Pinnacle Level of Reliability

## Formula 1 (F1) Technology

KEMET's Formula 1 (F1) Technology eliminates hidden defects in the dielectric which continue to grow in the field, causing capacitor failures. Based on the fundamental understanding of degradation mechanisms in tantalum and niobium capacitors, F1 Technology incorporates multiple process methodologies. Some minimise the oxygen and carbon content in the anodes which become contaminants and can lead to the crystallisation of the anodic oxide dielectric. This process methodology reduces the contaminants, improving quality of the dielectric. An additional technology provides a stronger mechanical connection point between the tantalum lead wire and tantalum anode, enhancing robustness and product reliability. The benefit of this F1 Technology is illustrated by a 2000 hour, 85°C, 1.32x rated voltage accelerated life test. The F1 Technology parts see no degradation while standard tantalums have 1.5 orders of magnitude degradation in leakage current. F1 Technology is currently available for T493 Series (select D and X case capacitance values in 20V and higher rated voltage) and T497 Series (select H case capacitance values in 20V and higher rated voltage).



## Simulated Breakdown Screening (SBDS)

KEMET's patented SBDS is a nondestructive testing technique that simulates the breakdown voltage (BDV) of a capacitor without damage to its dielectric or the general population of capacitors. This screening identifies hidden defects in the dielectric, providing the highest level of dielectric testing. SBDS is based on the simulation of breakdown voltage (BDV), the ultimate test of the dielectric in a capacitor. Low BDV indicates defects in the dielectric, and therefore a higher probability of failure in the field. High BDV indicates a stronger dielectric and high-reliability performance in the field. This new screening method allows KEMET to identify the breakdown voltage of each individual capacitor and provide only the strongest capacitors from each lot. The benefit of SBDS is illustrated by a minimum breakdown voltage greater than 2x rated voltage as compared to Weibull Graded parts with breakdown voltages as low as 1.25x rated voltage. Also, this is done without inducing wear out sometime associated with Weibull Grading. SBDS is currently available on part types in the T493 and T497 Series.



**KEMET offers these technologies in the following arrangements:**

- F1 Technology only
- SBDS only
- Combination of both F1 Technology and SBDS for the ultimate protection

# Ceramic Commercial Off-the-Shelf for Higher Reliability Applications

## C0G and X7R Dielectrics

KEMET's COTS program is an extension of KEMET knowledge of high reliability test regimes and requirements. KEMET regularly supplies up-screened products by working with customer drawings and imposing specified design and test requirements. The COTS program offers the same high quality and high reliability components as up-screened products, but at a lower cost to the customer. This is accomplished by eliminating the need for customer-specific drawings to achieve the reliability level required for customer applications. A series of tests and inspections have been selected to provide the accelerated conditioning and 100% screening necessary to eliminate infant mortal failures from the population.

All COTS testing includes voltage conditioning and post-electrical testing per MIL-PRF-55681. Additional testing options include Destructive Physical Analysis per EIA-469 and humidity, steady-state, low voltage (85/85) per MIL-STD-202, Method 103, Condition A. All COTS-tested products include a certificate of compliance (C of C).



# RF Connectors

## SMP-MAX Board-to-Board

SMP-MAX connectors are a cost effective three piece board-to-board, module-to-module and panel-to-panel RF connector system that handles up to 300W at 25°C, 2.7GHz. Ideal for high-power applications such as power amplifiers.

### Features & Benefits

- Frequency range DC to 6GHz enables wide operating frequency
- Rugged construction allows a minimum of 100 mating cycles
- Largest misalignment tolerance in the industry, for simple and reliable connections, even in blind-mate applications
- The patented impedance matching insulator facilitates a large operating gap between connectors
- Capable of handling a maximum board-to-board tilt (radial travel) of 4° and up to 2.00mm of distance (axial) misalignment without a spring – which is 300% more than the standard SMP connectors



## 48V Power Connector for RRH (Remote Radio Heads)



### Features & Benefits

- Standard 2-way 48V DC power configuration for base stations
- UL and IEC Certified
- Bayonet locking for secure cable retention
- 360° EMI shielding gives excellent electrical noise suppression
- Connector sealed to IP65
- Working temperature: -40°C – +85°C
- System is ISO/FDIS 21207 corrosion test compliant
- Connectors meet the requirements of the IEC 61 984 Connectors – Safety requirements and tests

## QMA RF Connectors



### Features & Benefits

- Push pull version of the threaded SMA RF connector system allowing for fast, secure mating and un-mating
- Push pull technology also allows for higher PCB/panel density when compared to threaded versions
- Snap-on coupling with >60 pounds retention giving superior axial retention when compared with intermateable competing products
- DC to 18GHz, ideal for wireless and GPS applications

# High-Speed Mezzanine

SEARAY\* high-speed board-to-board connectors are designed for high pin-count devices or memory modules mounted on mezzanine or module PCBs.

### Features & Benefits

- Features Molex patented Solder Charge Technology™ for better process yields and a lower applied cost versus equivalent BGA connector products
- Meets the VITA 57 FPGA Mezzanine Connector (FMC) standard
- Mated stack heights from 7.00mm – 15.00mm
- Supports multiple layers of flex cable that add shielding and ensure signal clarity
- Data rates up to 12.5Gbps and simple PCB routing



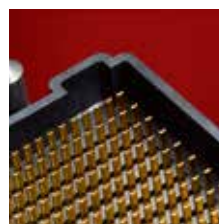
## SlimStack™



Ideal for tight packaging applications, the SlimStack™ family of stacking connectors offers the widest selection of low-profile interconnect systems in the industry.

- Long-term mating reliability and secure mating retention
- Stack heights as low as 0.70mm and as narrow as 2.60mm
- Double wall strength for resistance to shock and vibration

## HD Mezz™



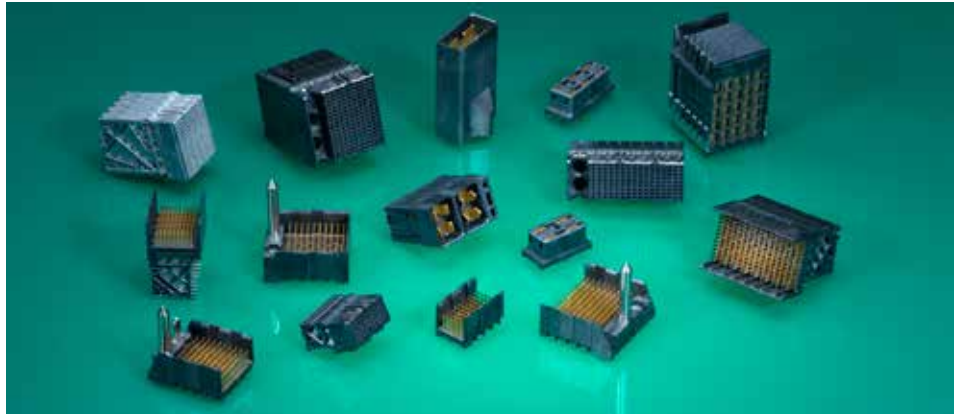
The High Density Mezzanine (HD Mezz) board-to-board connector provides a flexible tooling approach that allows for multiple stack heights and circuit-size extensions for applications with high pin-count devices on mezzanine or module PCBs.

- HD Mezz allows customers to simplify PCB routing without sacrificing performance, avoid the expense of large complex multi-layer boards and utilise space more efficiently within a given card slot area
- Option cards may be added or upgraded to increase flexibility in design, production and testing
- Features Molex patented Solder Charge Technology™ for better process yields and a lower applied cost versus equivalent BGA connector products

\*SEARAY is a registered trademark of Samtech, Inc.

# Impact™ Backplane Connector System

The Impact™ Backplane Connector System from Molex pushes the density envelope to meet next-generation high-speed application demands. Featuring data rates up to 25Gbps, superior signal integrity, electrical performance and modular design. The Impact™ product is available in 100Ω and 85Ω impedance and a wide range of configurations like conventional, coplanar, mezzanine, orthogonal midplane and orthogonal direct. It also includes power and cable solution options. Depending on configuration, it is available in 2- to 6-pair columns.



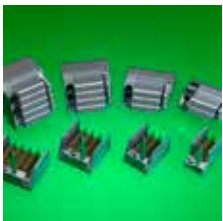
## Features & Benefits

- Data rates scalable up to 25Gb/s support future system performance upgrades
- Broad-edge-coupled, differential-pair system for superior density, low cross-talk, low-insertion loss and minimal performance variation across all high-speed channels
- Differential-pair density up to 80 pairs per inch supports high bandwidth needs while minimising board and system real-estate usage
- IEEE 10GBASE-KR and Optical Internetworking Forum (OIF) Stat Eye Compliant end-to-end channel performance
- Simple 1.90mm by 1.35mm grid on both backplane and daughtercard reduced PCB routing complexity and costs
- Two compliant-pin attach options provide customers ultimate flexibility to optimise their designs for superior mechanical and electrical performance
- Inline staggered, bifurcated contact beams in daughtercard interface for superior mating performance with two points of contact for long-term reliability and built-in ground-signal sequencing

## Applications

- Telecommunications equipment
  - Hubs, switches, routers
  - Central office, cellular infrastructure and multi-platform service (DSL, Cable Data) systems
- Data networking equipment
- Servers
- Storage
- Test and measurement equipment
- Medical diagnostic equipment

## GbX®\* Backplane Connector



### Features & Benefits

- Data rate options up to 10Gb/s, able to support future daughtercard speed upgrades of XAUI (10 Gigabit Attachment Unit Interface) and InfiniBand† based systems and of those based on ATCA (Advanced Telecom Computing Architecture) and OIF (Optical Internetworking Forum) chip protocols
- Available in 2- to 5-pair columns
- Bifurcated contact beams in daughtercard receptacle ensure greater reliability with 2 points of contact to header pin

## VHDM



### Features & Benefits

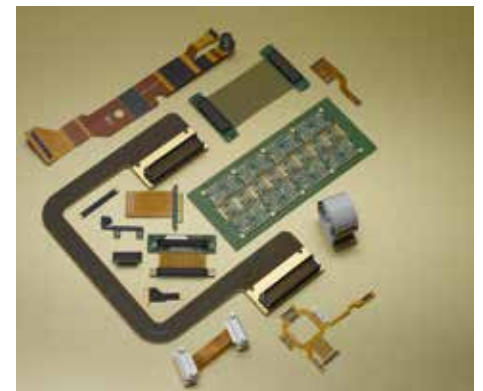
- 6- and 8-row versions offer 72 or 100 real signals per 25.00mm
- 3.125Gb/s performance
- Internal ground planes control impedance and minimise crosstalk
- Press-fit construction avoids solder-related defects
- Suitable for test equipment, routers, switches, hubs and servers

# Copper Flex Products

Molex has extensive expertise in flex circuit design and assembly, and a broad product offering that provides total optimal solutions for packaging challenges, from high-speed signals to power requirements.

## Features & Benefits

- Optimised designs for mechanical performance including flexibility, packaging solutions and weight reductions
- Significantly thinner and lighter than traditional PCBs
- Resistant to extreme heat or cold and can handle greater temperature fluctuations
- Constructed with high-performance materials to minimise signal loss and maintain high-speed signal integrity
- Ability to attach flex directly to PCB with interposer technology
- High-speed, multi-layer flex assemblies offer a wide range of performance and signal density; supporting signal speeds of over 10Gbps per second and signal densities down to 0.30mm per linear inch



\*GbX is a registered trademark of Teradyne, Inc. †InfiniBand is a trademark of the InfiniBand Trade Association

# EXTreme Power™ Products

## Extreme Guardian™

Exceed high-current and reliability requirements in top-end server and high-power applications with the compact, EXTreme Guardian™ 2- and 3-circuit Power Connector System, providing EMI/RFI shielding, overmoulding and discrete-wire options for design flexibility.

### Features & Benefits

- EXTreme Guardian™ header and cable assemblies feature a small centerline pitch of 11.00mm for reduced PCB footprint compared to legacy power products
- The system supports up to 80.0A per contact giving excellent high current density per inch (185.0A/inch) with UL safety features and hot-plugging capabilities
- Redundant contact design handles up to 600V, supports AC and DC high-voltage applications with the lowest feasible voltage drop and irreversible dissipative power (I<sup>2</sup>R) losses
- Headers available in 2-circuit, single-flanged and 3-circuit, dual-flanged versions. Through-hole solder retention design provides flexible manufacturing options, insert-moulded threaded nut for secure panel attachment
- Cable assemblies available in 2- and 3-circuit overmould shielded and unshielded versions, single – or double-ended in various standard lengths
- Right-angled left and right-entry 2-circuit cable assemblies provide space saving connections in confined spaces
- 2- and 3-circuit crimp receptacle housings, terminals, and TPA clips available for in-house cable assembly production



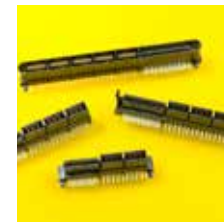
## EXTreme PowerEdge™



### Features & Benefits

- Hybrid card edge connector system handling currents up to 40.0A on power contacts and up to 3.0A on signal contacts
- Vertical mounting connector mates with standard 1.57mm PCB's or bus bar systems
- Available in 2, 3 and 4 segment versions, 2 isolated power or 8-signal contacts per segment with solder or press fit mounting options
- Segments are end-to-end stackable to provide design and application flexibility

## EXTreme LPHPower™



### Features & Benefits

- Low-profile, hybrid high power and signal connector system
- Can be used as a traditional two-piece board-to-board system or as single-piece connector in card edge and bus bar applications
- Low-profile design, 7.50mm height enhances system airflow and provides 127.0A per linear inch
- Two isolated power contacts per housing bay (top and bottom) allow power and return circuits in a single bay for a total of 60.0A per power bay
- Rugged power and signal terminals reduce the potential for stubbing or damage and are rated for current interruption hot-plugging requirements, first-mate-last-break options are also available on power contacts

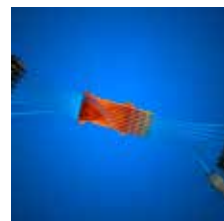
# Fiber Optic Products

Molex is a leading supplier of superior fiber optic solutions. From ruggedised assemblies and backplanes to optical FlexPlane™ circuitry and adaptors, Molex's line is varied and comprehensive.

As one of the most versatile fiber routing systems on the market, FlexPlane™ Optical Circuitry provides high-density routing on PCBs or backplanes and is compatible with mass (MT/MPO) and discrete-fiber terminations. It's available in almost any routing scheme – card-to-card, card-to-backplane or across the backplane. FlexPlane™ is now available in flame-retardant assemblies and 3D versions.

Molex's MXL38999™ all-optical version of the popular Mil-DTL-38999 Series III connector system uses LumaCore™ optical terminus technology to deliver dense optical connections with stable optical performance in harsh environments.

Metal housing LC2+ connectors are the ideal high-performance discrete-fiber solution for use in severe operating environments in military applications.



From its origin SOURIAU's strategy is based on innovative interconnect solutions. SOURIAU offers numerous product configurations designed for complex, integrated aerospace and defense systems, with the ability to provide customised solutions as required.

## Product Ranges

### EN3646/MIL-C26482 Series II – 852 Series



#### Features & Benefits

- High performance shielding
  - Metal housing
  - 360° teeth option
- High contact density – up to 61 contacts #20
- Quick mating – bayonet coupling
- Hermeticity – stainless steel hermetic version available

### 38999 Miniaturised – micro38999 Series



#### Features & Benefits

- Smaller and more compact than D38999 – Superior strength in vibration and high temperature
- Flexible solutions – threaded (8DA), break away (8BA), bayonet (8LTA)
- RoHS and cadmium-free – available plating: Zn Ni (RoHS), nickel and olive drab cadmium
- Integrated backshell – cost and space saving

### EN2997/ESC Qualified – 853 Series



#### Features & Benefits

- High temperature firewall connector
  - 260°C operating temperature
  - 20 minutes fire resistance
- Excellent corrosion performance
  - up to 500h salt spray
- Upgraded vibration performance
  - high vibration performance available
- EMI and lightning resistance
  - 65dB
  - 40kA lightning indirect peak
- Integrated backshell version available

### ARINC 600 & DOD 700 – ARINC & EN Qualified



#### Features & Benefits

- Rackable solution – blind mate, low insertion force
- High contact density
  - Up to 800 #22 signal contacts
  - Up to 56 #8 quadrax contacts
- Configurable solution – wide range of insulators, shells and type of contacts
- Many options available
  - Cost saving option: harpooned contacts
  - Flex circuit integration and cabling EMI/RFI

### 38999 Series I & VG96912 – 8LT & 8ST Series



#### Features & Benefits

- A large offer
  - 7 different shell types available
  - 8LT RoHS version available
- PCB contacts available – in standard or potted connector for high sealing level
- Rapid and secure – 1/3 turn mated and sealed

### Micro Rectangular/Composite – microComp® Series



#### Features & Benefits

- Miniature design – ideal for tight space applications
- Full composite – lightweight
- Removable contacts – easy reconfiguration
- Quick latch version – easy to handle

### 38999 Series II – 8T Series



#### Features & Benefits

- A wide range – 43 layouts available (from size 8 with 6 contacts up to size 24 with 128 contacts)
- Lower profile design
  - lightweight
  - space saving (30% shorter compared to 8LT)
- High reliability
  - EMI shielding
  - Excellent shock vibration and fluid resistance
- RoHS – cadmium-free alternative (QPL approved)

### Electrical Distribution – 208, 209, 8559 Series



#### Features & Benefits

- Easy to install
  - Screw mounting
  - Rail profile support
- Flight proven – used on major Airbus and Boeing programs
- Standards qualified – NSA/NFL/EN/ASNE

### 38999 Series III – 8D Series



#### Features & Benefits

- Metal contact retention clip – superior strength in vibration and high temperature
- Standardised insert for all series metal clip
  - better availability and flexibility
- Wide contact platform metal clip – a large array of different contact technologies available
- RoHS compliant finish – cadmium-free alternative (QPL approved)

### Backshells and Caps

Souriau offer a full range of aluminium backshells and caps. The best choice for a global solution provider



#### Features & Benefits

- Cost and time saving – one supplier for connector and accessories
- A wide range – available for 38999 Series
- A global RoHS solution – with Zn Ni accessories, Souriau offers a complete RoHS solution
- Caps – QPL approved



## Innovation & Technologies

### RoHS Black Zinc Nickel

#### The RoHS alternative to cadmium

Souriau Zinc Nickel – the best in terms of price and performance for aerospace and defence equipment.



#### Features & Benefits

- Souriau Black Zinc Nickel – a unique alternative plating process to cadmium
- RoHS compliant – a unique SOURIAU plating process compliant with RoHS regulations for cadmium and Cr6+
- The first QPL qualified – Souriau Zn Ni is the first product which has been qualified by US Defense standards organisation (DLA Land and Maritime)
- High corrosion resistance – 500h salt spray

### Composite Weight Saving

Souriau is a world leader in high performance 38999 Series III with composite shell, with in house mastery of plating adhesion for outstanding shielding effectiveness and lightning protection



#### Features & Benefits

- Lightweight – up to 25% weight saving compared to aluminium
- High performance
  - 2,000 hours salt spray
  - According to D38999 (QPL approved)
  - EN3645 Qualified
- Superior design – match the latest lightning strike and 230V requirements

### High Speed Networks

Quadrax contacts for full duplex ethernet link



#### Features & Benefits

- High speed
  - One Quadrax contact replaces two Twinax contacts
  - Data rate up to 1Gbit/sec
- A wide range – compatible with all Souriau inserts with at least one #8 cavity
- A flexible range – available in 100Ω and 150Ω (grounded or not)
- A versatile technology – Quadrax layouts compatible with all #8 contacts type: power, coax, triax, fibre optic

### Box Solutions

Double flange solution for PCB mount

Specially designed for PCB applications in harsh environments, isolating vibration from the board



#### Features & Benefits

- Excellent mechanical performance
  - Standoffs integrated into the connector
  - No risk of breaking contacts and no risk of micro-cuts
- Design flexibility
  - Square flange or jam nut versions available
  - Versatile contact length options
- A wide range – available in aluminium with a range of layouts from shell size 9 to 25
- User friendly – Easy to assemble and time saving

### Miniature

A full offer dedicated for space and weight saving



#### Micro38999 Series

#### Features & Benefits

- Superior strength in vibration & high temperature
- Flexible solutions: Threaded, bayonet and break away
- Integrated backshell

### Power Transmissions

Power contacts. High current supply in harsh environments



#### Features & Benefits

- A unique contact design with a braid socket
  - allowing 20% more current
  - excellent vibration withstanding
- A versatile individual sealing on the cable
  - same connector can accommodate a wide range of cable diameters
- A contact technology integrated standard MilAero connectors
  - up to 260°C service temperature
  - up to 60G vibration withstanding

38999 High Power (up to 850A)

Designed to meet the harshest military requirement where high power and shielding are needed.



#### Features & Benefits

- 3 aluminium shell sizes available – size 19 (450A max); size 23 (650A max); size 25 (850A max)
- Different finish – cadmium, zinc nickel, electroless nickel
- Threaded coupling
- Superior contact technology equipped with a silver plated braid
  - High contact endurance
  - Low contact resistance
  - No microcut under vibration
- Modular design for easy installation
  - Removable backshell: straight, right angle or bus bar
  - Backshell termination: for thread or shrink boot
  - Possible to crimp various cable

### Hermetic Technologies

Compact low profile connectors with high hermeticity performance  
Glass sealed connectors



#### Features & Benefits

- Perfect hermeticity – up to 100,000 times more hermetic than standard connectors
- Low profile – no rear accessory thread: 30% space saving
- Various ranges including EN2997, ESC10, MIL-DTL-38999, D Sub, EN3646, MIL26482 standards
- Large technology mix – 230V double voltage, fuel tank, filters, fibre optic, hermetic extensions

### ELIO® contact

Ruggedised and user friendly fibre optic technology. Easy mounting optical link for severe applications



#### Features & Benefits

- Flight proven – the only Airbus qualified fibre optic technology: ABS1379, ABS1213, ARINC 801 and EN4531 qualified
- Robust connection – withstanding the most severe vibrations with excellent optical performance (0.3 dB)
- User friendly contact
  - Easy cleaning: no part to remove
  - No tool needed for insertion/extraction of the contacts
- A wide range available – in all platforms with #8 cavities
- Up to 24 ELIO® contacts in 38999 size 25

Push Pull and Breakaway Connectors: JBX, JDX & JKX Series

#### Features & Benefits

- High reliability with quick connect/disconnect
- Ideal for limited space and where endurance is the priority

# Filtered Connectors & Cabling

## Product Specification

Capacitance Range: 500pF – 20,000pF  
Specials available

Configurations: C, CL, LC, PI & T

Insulation Resistance: 5GΩ minimum

DC Resistance: 30mΩ maximum

Harnessing to customer specification

Various MIL styles including new Mini-MIL designs available

## Features & Benefits

- Mechanical interchangeability with unfiltered connectors
- All lines 100% tested before shipment
- Reliability
- Design flexibility
- Excellent filtering
- Range of non-ITAR designs available

## Vertical Integration

- Speeds lead time: **SHORTEST IN THE INDUSTRY**
- Better cost control
- Better quality control



## Audio Connectors



### Features & Benefits

- Easy retro-fit or upgrade
- Reduced cost and lead time
- Design flexibility and quality assurance
- Custom designs
- Versatility
- Per MIL-DTL-55116
- Filtered and unfiltered versions available

## Rapid Mate Connectors



### Features & Benefits

- Hot shoe style
- Custom designs
- Rugged and reliable
- Resists sand, dust and water
- Low, flexible mating force
- Filtered and unfiltered versions available

## D-sub Connectors



### Features & Benefits

- Available in 9, 15, 25, 37 and 50 positions
- Variety of termination configurations
- Capacitive and PI filters
- RoHS compliant versions
- Product range from chip-on-board Series 100 to high performance Series 700

## Micro-D Connectors



### Features & Benefits

- Light weight
- Compact size
- Environmentally sealed when mated
- Corrosion resistant
- RoHS compliant
- Custom filtering

# Antennas & Antenna Assemblies

## Features & Benefits

- Product spectrum from frequencies: 100MHz – 6GHz
- Patch antenna elements: 13mm – 78mm square
- Low profile down to 4mm without ground plane
- Designed and 100% tested for optimal performance
- Dual frequency patches in 45mm square available
- Quick “tuned” prototype capabilities
- Various assembly stages offered (patch element, ground plane, cables, connectors, protective radomes – all variable to customer requirements)
- Wearable antennas in small design (<45mm square incl. radome) for various standard frequencies available (a.e. GPS, Globalstar, aso.)
- Fully customised antenna solutions can be designed
- Low VSWR
- High efficiency
- High gain/low return loss

## Applications

- Asset tracking
- Satellite communication
- Race monitoring
- Directional finders
- Targeting systems
- Portable defibrillators
- Survey and toll meter equipment
- Down-hole drilling



## Surface Mount, Glass & Resin Sealed Filters



### Features & Benefits

- Various styles of EMI Filters (solder in, bolt in, board mount, press in, spec spin aso.)
- Wide range of sizes: 4-40 thread through 5/16-24, metric threads M3 & M4
- UL/CSA approved parts available
- Multiple circuit configurations (C, L, Pi)
- Voltage ratings to 400VDC (glass sealed), 1250VDC (resin sealed)
- Current ratings to 20A (SMT), 100A (resin sealed)
- Custom lead options available (hooked, turret, flattened, notched)
- Many lead lengths offered
- Miniatures available in MIL-C-11015 versions
- Various plating options available
- Largest selection of MIL-F-15733, MIL-F-28861, MIL-PRF-28861 and DSCC84084 filters
- Performance from 10KHz up to 10GHz depending on filter style

## Multisection Filters



### Features & Benefits

- Rugged construction to withstand MIL-STD environmental conditions
- Design flexibility (transient protection, circuit breakers, voltage cut-off)
- Custom filtering
- High performance optimised through EMC verification
- Available to meet MIL-PRF-15733 and MIL-STD-461
- Military testing IAW MIL-STD-202, MIL-STD-105
- Designed to meet NEBS and safety agency approvals
- In-house test lab
- Current ratings up to 250A
- Voltage ratings 400VDC and 250VAC standard; custom voltage ratings available
- Insertion loss range effective filtering: 10KHz – 10GHz
- Temperature range: -55°C – +125°C
- Standard and low leakage designs available

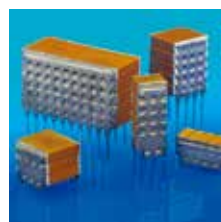
## Film Capacitors



### Features & Benefits

- Design flexibility
- Wide range of dielectrics (polypropylene, polyester, polyphenylene sulphide PPS)
- Variety of terminations (radial or axial leads, machined, stamped, threaded aso.)
- Multiple enclosures (metal case, pre-moulded plastic, wrap and fill)
- Hermetic or non-hermetic
- Various geometries (cylindrical, flat, modular, oval-wound)
- Sizes from less than 1 inch to several cubic feet
- High current, high pulse, high stability, low self-inductance and low ECR
- Compact size
- Voltage ratings up to 750VDC/20,000VAC
- Temperature range: -55°C – +150°C
- Ripple currents up to 400A rms
- Vertical integration including simulation software and in-house testing

## Switch Mode Power Supply (SMPS) Capacitors



### Features & Benefits

- MIL-PRF-49470 approved
- Style/size: SMP-3, SMP-4 and SMP-5
- Operating temperature range: -55°C – +125°C
- Dielectric: NPO, BX, X7R, Z5U and Y5U
- Capacity up to: 47µF
- Working voltage: 50VDC – 500VDC
- Lead configuration: Straight (N), J and L for surface mount

Syfer and its sister CMP companies are global leaders in mission-critical engineered electronic components and subsystems, providing program and design driven products to the Military, Aerospace, Space and other High reliability markets.

Comprising ten manufacturing locations globally, the full product range encompasses SMD and radial ceramic capacitors, EMI filters, power filters, microwave, thin film and RF filters, precision trimmers, switches, and a custom product capability.

- Product is available as COTS, COTS+, MIL Spec BP, BX, BZ classification, SCD, Tin-lead finish options or RoHS compliant, FlexiCap™
- Approvals include QPL, IECQ-CECC, MIL-PRF, AS9100B, DSCC, Space EPPL, IAW ESCC, AEC-Q200 and ISO9001

## ProtectiCap™ High Voltage MLCCs



### Features & Benefits

- High working voltage in small case sizes
- Minimises the risk of flashover
- No coating required
- Up to 3kV in 1206 size, 5kV in 2220
- For power supplies, inverters, general high voltage circuits

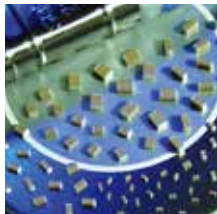
## 115V 400Hz MLCCs for Aerospace Applications



### Features & Benefits

- Ideal for aerospace power supply applications
- Meets voltage and frequency transients to MIL-STD-704
- Sizes 0805 to 2220
- Termination options include tin-lead and FlexiCap™
- Capacitance values up to 100nF

## High Voltage SMD and Radial Capacitors



### Features & Benefits

- SMD MLCCs up to 30kV
- Radial capacitors up to 10kV
- Available in C0G/NP0, X7R or X5R
- FlexiCap™ termination option
- Tin-lead terminations available, with or without FlexiCap™
- Highest voltage/capacitance combinations available in the world
- Approvals as listed above

## Speciality Capacitors



### Features & Benefits

- Custom capability across a range of products including:
- Detonator and pulse energy capacitors/pulse power capacitors. Offer exceptional discharge energy up to 7 joules/cc at elevated voltages
  - Stacked capacitors for switch mode power supplies
  - Thin film ceramic filters for GSM and KA band applications

## Hi Q MLC and Single Layer Capacitors



### Features & Benefits

- For high frequency RF, microwave and millimetre-wave applications including radar
- Ideal for comms, defence, aerospace and satellite markets up to 80GHz
- Sizes as small as 0101 in SLC and 0402 in MLC
- Low ESR, high Q performance

## High Temperature Capacitors



### Features & Benefits

- The broadest range of high temperature MLCCs available
- From X8R performance (150°C) up to 230°C
- For aerospace and other applications
- Products can be in SMD/radial forms or custom shaped

## Low Pass EMI Filters



### Features & Benefits

- Surface mount types include 3 terminal chips and X2Y filters, with AEC-Q200 and tin-lead options
- High current, high capacitance SMD pi-filters
- Panel mount filters for solder or screw mount, and for 115V 400Hz applications
- Highest capacitance/voltage combinations in the market

## Precision Trimmer (Variable) Capacitors



### Features & Benefits

- World leading precision trimmers capacitors
- Custom solutions available to meet specific tuning needs
- QPL products, approved for MIL-C-14409E
- Military applications include night vision goggles

## Capacitors for Space Applications



### Features & Benefits

- Track record in satellite and space station applications
- 0603 sized MLCCs now available as space grade
- EPPL listed company, offering testing in accordance with ESCC Generic Specification 3009
- Extensive and widely used range of space grade SLCs

## FlexiCap™ MLCCs



### Features & Benefits

- World's first flexible termination on MLCCs
- Proven technology reduces stress damage in MLCCs, caused during PCB assembly process, by shock or vibration, or by temperature cycling
- Available across almost all ranges of capacitors
- Also available with tin-lead finish

# Connectors

## CeeLok FAS-T Connectors

TE's CeeLok FAS-T connector is the most rugged, small form factor, 10 Gigabit Ethernet, field terminable I/O connector in the Aerospace, Defense and Marine marketplace. It has been designed to perform in some of the most extreme environments in the industry, while providing substantial size and weight savings via its small shell size 8 form factor.

### Features & Benefits

- 1 Gbit-Ethernet and 10Gbit-Ethernet when used with Cat 5e, Cat 6A or Cat 7 cables
- Crimp snap, 39029-style contacts for easy termination and field repairability
- Backshell integrated in plug body provides low profile, low cost, low weight strain relief and EMI protection
- T-shaped pin pattern improves SI through uniform crosstalk cancellation
- Compatible with multiple braid terminations, adaptor styles and seal boots
- Scoop-proof design
- Insert assembly mechanically retained for  $\leq 25$ lb. retention force
- Robust coupling ring mechanism
- Size 8 shell saves weight and space

### Applications

- Military**
  - Rotary and Fixed Wing
  - Space
  - Ground Vehicles
  - Shipboard
  - Soldier Systems
  - C4I
- Missiles and Smart Munitions**
  - Commercial and Civilian Aircraft
  - In Flight Entertainment & Connectivity
  - Avionics
  - Production Breaks



## AMPLIMITE – Subminiature D Connectors



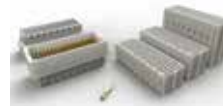
### Features & Benefits

- Military qualified connectors conform to MIL-DTL-24308
- Non-magnetic variants available per NASA specification
- Ultra-lite AMPLIMITE save 15-20% weight and improve EMI shielding
- Choice of sizes for Series 109 for standard and Series 90 for high density

### Applications

- Designed for environments having wide ranges of temperature, pressure and humidity ranges
- Used in airframes, avionics boxes, test equipment, computers & communications equipment
- Ruggedised I/O interconnect

## Mezalok Connectors



### Features & Benefits

- 60 and 114 positions
- Mini-Box contact system provides 4 points of contact for ultra reliability
- LCP plastic housings offer superior thermal stability and are low-outgassing
- Compliant BGA board attach supports standard surface mount processing and excellent thermal stability
- 114 position footprint compatible to XMC footprint and all dimensional constraints

### Applications

- Stacking or mezzanine applications
- 114 position is designed to support VITA 61 XMC architecture as rugged alternative to VITA 42 XMC
- 60 position designed for custom architecture stacking applications

## MULTIGIG RT Connector System

Rugged "pin-less" backplane connector

### Features & Benefits

- For use with VITA 41 and 46 standards
- Extreme flexibility available in modular or mono-block style
- MULTIGIG RT 2 connector supports data rates of 3.125Gb/s – 6.4+Gb/s and has been demonstrated to support 10Gb/s

### Applications

- Aerospace and defense
- Telecommunications equipment
- Midrange servers
- High end servers
- High-speed custom platforms
- Mass data storage
- Rugged, mission-critical applications
- Switches
- Servers/Blade Servers
- Routers
- Storage

## BOX & Mini-BOX – PCB Connectors

### Features & Benefits

- Two-piece receptacle and pin headers for board-to-board applications
- Wire-to-board and wire-to-wire capability with crimp contacts
- Centerline spacing selections of .050, .075 and .100 with contacts duplex plated military gold over nickel
- Housing made of high temperature thermoplastic material

## Fortis Zd Connectors



### Features & Benefits

- Allows 10Gb/s+ data rates
- Extreme mechanical and electrical performance for the most demanding applications
- Modular design allows for user configurability and modular evolution
- M55302 Mini-Box separable interface provides 4 points of contact on all sides of the pin
- Three shell varieties including plastic, shielded and machined metal shell
- 3-Pair and 2-Pair versions available to accommodate multiple slot pitches
- Proven compliant pin board attach facilitates manufacturing efficiency, repairability, and superior electrical performance
- Staggered daughtercard pin field supports 2 level maintenance
- Protected pin field on backplane for reliability and durability
- Durability: 500 mating cycles
- Operating temperature: -55 – +125°C

AMPLIMITE, CeeLok FAS-T, Fortis Zd, Mezalok, MULTIGIG RT, TE Connectivity and TE Connectivity (logo) are trademarks.

# Relays

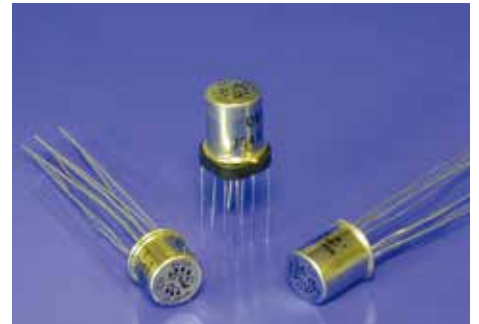
## CII: High Performance Signal Level and Mid-Range Relays

### Features & Benefits

- Hermetically-sealed Mil-Spec and COTS versions are available
- Many optional terminals and mounting styles, including surface mount
- Electromechanical models ranging from microwave-switching TO-5 types to multipole, 25A models
- Solid state relays including versions with built-in circuit protection and other intelligent functions
- Time delay relays offering various timing functions and delay times

### Applications

- Aircraft
- Missiles
- Power Distribution
- Fuel Pumps
- Avionics Main Power Feed
- Weapons Systems
- Ground Support Equipment



## HARTMAN: Aerospace Power Relays & Contactors



### Features & Benefits

- Lightweight 28VDC contactors to 1,000A
- Available with a variety of auxiliary contact arrangements
- Hermetically or gasket sealed models in conventional or bus bar mounting
- AC models also available

### Applications

- Aerospace and defence
- High current
- environmental control systems
- hydraulic pumps
- ground power
- main power
- cargo systems

## KILOVAC: Rugged, Small, Lightweight Relays & Contactors



### Features & Benefits

- Small size and weight for given power rating
- Low and stable contact resistance over relay life
- Ability to interrupt DC loads
- High resistance to shock, vibration and temperature extremes
- Fast operating times
- "Bounceless" operation in many applications
- Usable in RF devices

### Applications

- Electric Vehicles
- Aerospace and defence
- Hybrid Vehicles
- Fork Lifts
- Recreation Vehicles
- Winches on trucks, vehicles
- Maritime, Boats
- Electric Buses
- Electric Generators

# Cable & Wire Management

## Adaptors

TE Connectivity's range of adaptors are a metallic component designed to 'adapt' a connector overall shielding braid and, if necessary, anchor a heat-shrinkable boot for sealing and strain-relieving. Connector interfaces are available for most circular connectors for unscreened and screened termination systems. The choice is largely dependent upon the screening level required and the braid termination method.

### Spin Lock Adaptors



### Features & Benefits

- Style: Raychem Spin Lock Variable Angle Backshells
- Angle: 45°, 90°, Straight
- Finish: Cadmium over Nickel
- Material: Aluminum



### 2XX Cable Termination Adaptors

#### Features & Benefits

- Style: Solid (Fixed), Spin-Coupling or Shielded
- Material: Aluminium Alloy
- Finish: Cadmium or Unplated (Shotblast)

### TXR Cable Termination Adaptors

#### Features & Benefits

- Style: Tinel-Lock
- Material: Aluminium Alloy
- Finish: Cadmium

# Devices: Solder Sleeve & Crimp Product

Designed to ease termination of wire or cable to connect, insulate and shield using a single device adding the benefits of added strain relief, high resistance to vibration, low profile and lower installation costs. These products are ideal for harsh environment applications.

## Cold Applied Splices

The cold applied splice product line is designed as a single component in-line splice to provide high environmental protection to seal the termination from moisture and provide electrical isolation. If moisture is present, it can lead to insulation failure and breakdown of the electrical connection. In this product, sealing is achieved by replacing traditional methods, such as grommets, greases and tapes with a novel TE gel technology. The electrical isolation is provided by a polymer outer layer.

### Features & Benefits

- One-step termination and environmental protection
- No heating required for installation — safe for use on fueled aircraft
- Reliable in a wide variety of environmental conditions
- Achieve environmental performance while maintaining:
  - Small profile
  - Electrical performance
- Easy installation and application flexibility
- Prevents water ingress under permanent pressure/weight

### Applications

- Ideal for aerospace and defense application where performance and reliability is essential



# Heat Shrink Tubing & Moulded Parts

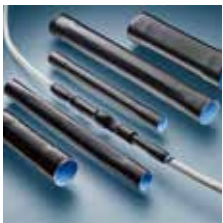
Heat shrink tubing and moulded parts from TE Connectivity offer superior abrasion and crush resistance, sealing and strain relief, and excellent performance at high and low temperatures. Our moulded parts include boots, cable breakouts, transitions, caps and feed-throughs, available in a variety of configurations and materials.

### Key Features

- Lipped moulded shapes available in straight and right angles
- -25°C fluid resistant elastic material
- Bottle shape provides straight relief mechanical protection and insulation
- Pre-coated adhesive option available
- Tubing-single or dual wall with 2:1, 3:1 and 4:1 shrink ratio available



## High Temperature Sealing Sleeves



High temperature fluoropolymer sealing sleeve provides a robust, lightweight cover which shrinks to environmentally seal in-line compression joints and terminal lugs.

### Features & Benefits

- Sealing material is pre-installed in high temperature heat shrink sleeve
- No oven curing equipment needed
- Available in four product sizes in two different lengths
- Labor saving preinstall sealing sleeves
- Temperature and fluid resistant fluoropolymer tubing rated to 200°C continuous with excursions to 260°C
- Thin, tough and lightweight with robust fluid resistance

### Applications

- High temperature circuit lug and splice covers
- Aerospace
- Ground Vehicles
- Commercial Aviation

## C-Wrap Side Repair Sleeve



TE Connectivity's C-Wrap side repair sleeve consists of two pieces; the outer tubing and an adhesive inner layer. It is a side-entry sleeve designed to repair and seal a damaged wire jacket that is either chafed or has a radial crack or cut on the insulation.

### Features & Benefits

- 150°C rated
- Easy to install: saves time, man power and cost
- Color-coded to ensure proper sizing for each application
- Long term performance provides a permanent repair
- Low profile (small diameter and short length)
- Side Entry for easy access to damaged wire
- Wrap-around design eliminates de-pinning of connector for repair

### Applications

- Used as a side-entry repair kit
- Repair of nicks, chafed and radial cracks on the wire in most Aerospace, Defense and Marine applications
- Prevents galvanic corrosion on center conductor

# Aerospace Tooling and Equipment

## Hand Tools

### CERTI-CRIMP II – Straight Action Hand Tool (SAHT)



CERTI-CRIMP hand tools are top-of-the-line, premium, hand operated tool for crimping a broad array of TE Connectivity terminals, contacts and special wiring devices.

#### Features & Benefits

- Dies close in a straight line
- Contact locator and support
- Wire stop
- Insulation crimp adjustment (4 positions)
- Ejects crimped contact
- Approximate weight 0.59kg

### Double Action Hand Tool (DAHT)



#### Features & Benefits

- Dies travel in arc-like path
- Locator on tools for FASTON, MATE-N-LOK, PIDG and PLASTI-GRIP terminals
- Insulation adjustment on tools for FASTON, MATE-N-LOK, PIDG and PLASTI-GRIP terminals
- Approximate weight 0.54kg

### BT 3500 Battery-Hydraulic Tool



#### Features & Benefits

- Different adaptors and tool heads available
- Light weight and fully mobile power assist option
- Compatible with all standard die sets

### Heavy Head Hand Tool (HHT)



#### Features & Benefits

- Designed to terminate most large coaxial cable and heavy-gauge wire
- Dies close in a straight line
- Locator and wire stop when applicable
- Insulation adjustment on tools for AMPLI-BOND, PIDG and PLASTI-GRIP terminals
- Approximate weight 0.95kg

### 626 and Micro Pneumatic Tool System



#### Features & Benefits

- Different adaptors and tool heads available such as C-head, heavy head and CERTI-CRIMP II
- Effortless crimping for a broad range of terminals
- Either bench-mounted or handheld for working in cramped quarters

## SDE Hand Tools

### SDE DA Hand Tool



This tool is specifically designed for closed barrel SDE dies. It incorporates all the convenient operational features of the SDE family.

#### Features & Benefits

- Excellent mechanical advantage, enhancing user comfort
- Adjustable ratchet with emergency release

### SDE PRO-CRIMPER III Hand Tool



The PRO-CRIMPER III hand tool combines the versatility of general purpose service tools with the reliability and ease of use of many premium grade tools.

#### Features & Benefits

- Accommodates dozens of interchangeable dies in an ever-expanding range
- Constructed of durable high-carbon steel with extra strength pivot pins, for maximum reliability and long-life precision
- Locators are included with pin-and-socket style tools
- User convenience and comfort less hand force than comparable tools
- The angled head provide comfortable operation

### SDE SA Hand Tool



The unique geometry of this tool results in a comfortable, easy-to-use handle design that is unmatched in the market.

#### Features & Benefits

- Easy accessibility for space-constrained applications
- Large crimp jaw arc, minimising “roll” in open barrel applications
- User-adjustable ratchet control and emergency ratchet release
- Compatible with over 100 interchangeable SDE dies

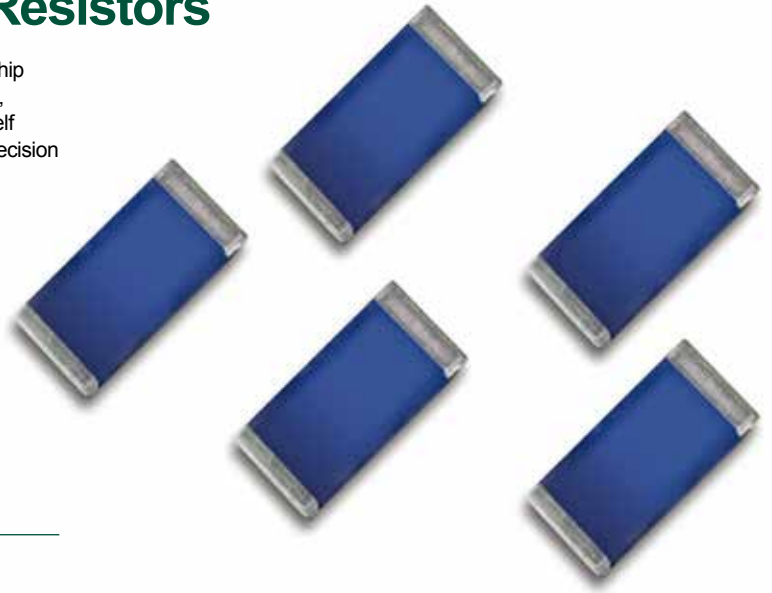


## Precision MIL/Space Chip Resistors

TT electronics IRC is the premier supplier of MIL-PRF-55342 qualified chip resistors in seven different industry standard sizes. IRC supplies in C, M, P, R, S, and space level T reliability levels. IRC's proprietary TaNFilm® self passivating resistive element technology is unsurpassed in long-term precision stability in the toughest environments.

### Features & Benefits

- Industry standard 0402, 0603, 0805, 1206 sizes
- Resistance ranges: 5R0 – 1M0
- Precision tolerances to ±0.1%
- Characteristics M, K, H, E to MIL-PRF-55342



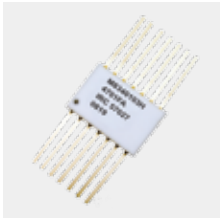
## MIL-PRF-83401 Qualified Resistor Networks



### Features & Benefits

- SIP, DIP and flat pack networks
- Characteristics M, K and H
- Self-passivating TaNFilm® element
- Precision tolerances to ±0.1%
- Rugged ceramic sandwich construction

## Space Level Surface Mount Flat Packs



### Features & Benefits

- NASA EEE-INST-002 screening
- Gold to gold bonded lead construction
- Self-passivating TaNFilm® element
- Precision tolerances to ±0.1%
- Pliable gold leads excellent for TCE mismatch

## MIL Qualified BGA Resistor Networks



### Features & Benefits

- Qualified to DSCC drawings 09011-09017
- TaNFilm® thin film technology
- Precision tolerances to ±1%
- Resistance ranges: 10W – 10KW
- Excellent high frequency performance
- Low propagation delay, built for speed

## High Temperature Resistors Suitable for Defence Applications



TT electronics Welwyn Components has introduced a new Series of thick-film chip resistors qualified for operation up to +250°C. The new HPCR Series is available in 0805, 1206, 2010 and 2512 formats and, with resistances from 1R0 to 10M, ensures high reliability for use in hybrid assemblies for defence and aerospace applications.

### Features & Benefits

- High temperature operation to +250°C
- For gold wire bond (G type)
- For conductive adhesive (G, P & EW types)
- For soldering (F type)
- Non-magnetic (G, P & EW types)
- Range 0805 to 2512 at 1R0 to 10M

## Proven Power Resistors are Impervious, Rugged and CECC Approved



TT electronics Welwyn Components W20-Series vitreous enamelled wirewound resistors deliver rugged, dependable power handling for defence applications in harsh or hostile environments.

### Features & Benefits

- CECC approved
- Suitable for harsh environments
- Impervious lead free vitreous enamel coating
- Overload characteristics ideal for protection circuits
- High stability and reliability
- High power dissipation for size

## Silicon Carbide Diodes (up to 230°C)

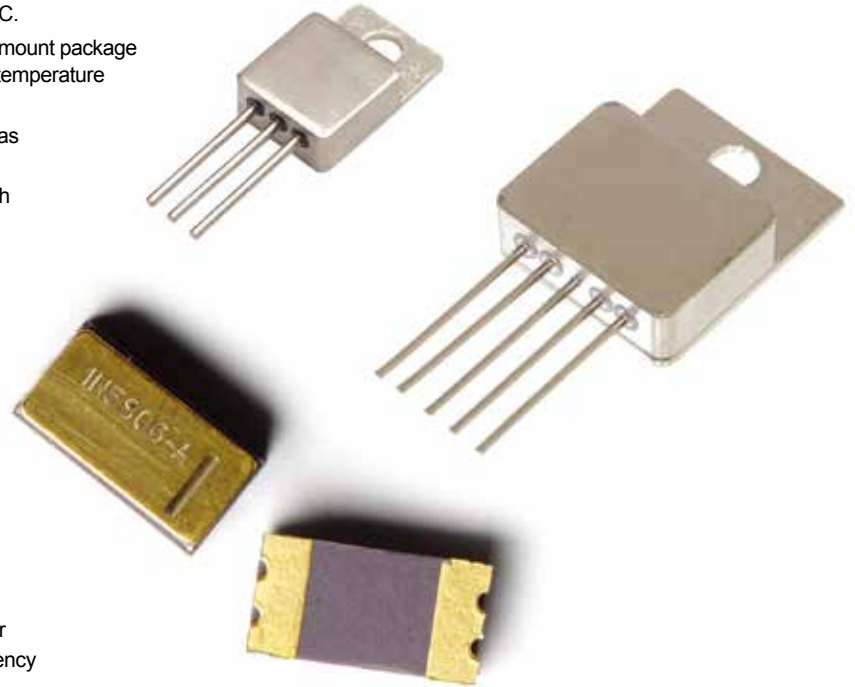
TT electronics Semelab present a range of power diodes for high reliability, high temperature applications rated for operation at up to +230°C.

The DLCC (Diode Leadless Chip Carrier) is a ceramic, surface mount package designed specifically for high reliability applications where high temperature and high reliability are of paramount importance.

A new 600V, 10A, 5-lead package has been developed for use as a Power Schottky Full Bridge Rectifier.

And there are several TO257 hermetic parts offering superb high temperature operation, ultra efficiency and extreme reliability.

All parts are available fully screened in accordance with international standards.



### Applications

- High reliability defence programmes
- Space exploration and satellite missions
- Aerospace engines, systems and nacelles
- Downhole drilling

### Features & Benefits

- Light weight packages for reduced weight
- High temperature operation to +230°C
- High performance design for smaller systems with more power
- Improved switching and high frequency die for improved efficiency
- Fully screened parts available

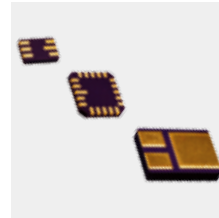
## Power Modules



### Features & Benefits

- Extended reliability
- Improved thermal performance
- Lighter weight
- Higher power density (smaller)
- Harsh environment capability
- High reliability screening
- Long term supply
- Hermetic or Plastic Hi-Rel

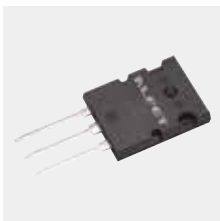
## Aerospace Discretes



### Features & Benefits

- More than 10,000 device types
- Wide range of modern and traditional packages
- Screening to international standards
- Custom designs – MCAs and Modules
- Assembly, test and qualification
- Parts can be screened in accordance to MIL-PRF-19,500 flows
- Long term supply policy

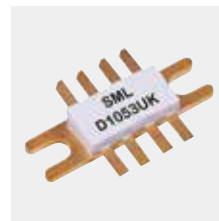
## ALFET Lateral MOSFETs for Audio



### Features & Benefits

- Specifically designed for audio amplifier power output stages
- Excellent sound quality
- Complementary N&P parts in wide range of packages
- Double-Die devices, replaces two standard parts

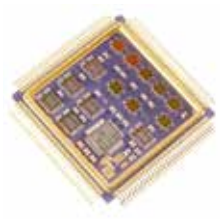
## RF VDMOS



### Features & Benefits

- Ultra wide band: 1MHz – 1GHz
- Gain of 20dB VHF, 16dB UHF
- Wide power range: 750mW – 400W
- Very low Rds (ON)
- High efficiency >50% broadband
- Low feedback capacitance
- Excellent thermal stability
- Diamond enhanced performance
- 12.5V devices in ranges to 500MHz and 1GHz
- 28V devices for frequencies to 1GHz
- 50V devices optimised for broadcast applications

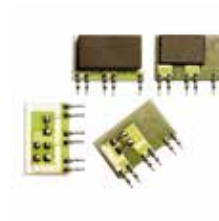
## Multi Chip Module



### Features & Benefits

- High temperature to-fired ceramic (HTCC)
- High density – reduced size and weight
- Hermetically sealed
- Qualified temperature: -55°C – +150°C
- Extended high temperature approval testing: -55°C – +205°C

## Software Controlled Fuse



### Features & Benefits

- Automatic activation of fuse if fault condition detected by control software
- Low weight, robust and reliable
- Consistent fusing at high altitude and at -40°C – +115°C

# Vishay Draloric Beyschlag Qualified Products

In 2002 the competitors Draloric and Beyschlag were merged into a new division of the globally operating Vishay Intertechnology, Inc. This step combined many decades of expert knowledge and wide experience. Draloric, having emerged from a former Rosenthal industrial ceramics activity established in 1900, enjoys the recognition as an approved manufacturer of various types of resistors within the CECC Quality Assessment System since 1974. Since 1994, thin film resistors qualified to high reliability specifications have been provided to the European space industry, leading to the 1999 qualification of the MS1 MINI-MELF resistor by the European Space Agency. Beyschlag was founded 1931 in Berlin to meet the growing needs of the new and upcoming radio industry. Also in 1974, Beyschlag had achieved the recognition "Approval of Manufacturer" within the CECC Quality Assessment System for their production of film resistors. In 1996 the next level of quality management has been attained by achieving the "Technology Approval", which is superior to the variety of individual "Qualification Approvals" to the individual detail specifications. Vishay Draloric Beyschlag has established an outstanding reputation for their products being used in demanding applications, under harsh environmental conditions, and where functional reliability is required for a long operating life.

## Thin Film Chip Resistors



### Features and Benefits

- Advanced thin film technology
- Excellent overall stability
- Superior moisture resistivity

### Draloric Brand TNPS Series

- **TNPS0603 ESCC; TNPS0805 ESCC; TNPS1206 ESCC**  
ESA approval to ESCC 4001/029, SnPb termination plating

### Beyschlag Brand MC\_Series

- **MCS 0402; MCT 0603; MCU 0805; MCA 1206**  
Industrial level IECQ-CECC approval to EN 140401-801, professional and precision specification, RoHS compliant
- **MCS 0402 AT; MCT 0603 AT; MCU 0805 AT; MCA 1206 AT**  
Industrial level IECQ-CECC approval to EN 140401-801, automotive grade, professional and precision specification, RoHS compliant
- **MCS 0402 VG01; MCT 0603 VG01; MCU 0805 VG01; MCA 1206 VG01**  
Military level IECQ-CECC approval to EN 140401-801 with established reliability, failure rate level E6, RoHS compliant

## Thick Film Chip Resistors



### Features and Benefits

- Metal glaze film
- High quality ceramic substrates
- Protective overglaze

### Draloric Brand CRCW Series

- **CRCW0805 EN802 E0; CRCW1206 EN802 E0**  
Industrial level IECQ-CECC approval to EN 140401-802, RoHS compliant
- **CRCW0805 EN802 E6; CRCW1206 EN802 E6**  
Military level IECQ-CECC approval to EN 140401-802 with established reliability, failure rate level E6, RoHS compliant

### Beyschlag Brand D Series

- **D12 EN802 E0 (Size 0805); D25 EN802 E0 (Size 1206)**  
Industrial level IECQ-CECC approval to EN 140401-802, SnPb termination plating
- **D12 EN802 E6 (Size 0805); D25 EN802 E6 0 (Size 1206)**  
Military level IECQ-CECC approval to EN 140401-802 with established reliability, failure rate level E6, SnPb termination plating

## Leaded Wirewound Resistors



### Features and Benefits

- All welded construction
- Vitreous coating
- Enhanced humidity protection

### Draloric Brand G200 Series

- **FDG (G202); FDK (G204); FDK (G206)**  
Industrial level IECQ-CECC approval to CECC 40201-801, RoHS compliant

## Thin Film MELF Resistors



### Features and Benefits

- Excellent overall stability
- Outstanding environmental robustness
- Superior pulse load capability

### Draloric Brand SMM0204

- **SMM0204 EN803 E0**  
Industrial level IECQ-CECC approval to EN 140401-803, automotive grade, RoHS compliant
- **SMM0204 EN803 E8**  
Military level IECQ-CECC approval to EN 140401-803 with established reliability, failure rate level E8, RoHS compliant

### Draloric Brand MS1

- **MS1 EN803 E8 (Size 0204, MINI-MELF)**  
Military level IECQ-CECC approval to EN 140401-803 with established reliability, failure rate level E8, SnPb termination plating
- **MS1 ESCC (Size 0204, MINI-MELF)**  
ESA approval to ESCC 4001/022, SnPb termination plating

### Beyschlag Brand MM\_Series

- **MMU 0102; MMA 0204; MMB 0207**  
Industrial level IECQ-CECC approval to EN 140401-803, automotive grade, professional and precision specification, RoHS compliant
- **MMA 0204 HT**  
Industrial level IECQ-CECC approval to EN 140401-803, high temperature, automotive grade, RoHS compliant
- **UMA 0204**  
Industrial level IECQ-CECC approval to EN 140401-803, high precision, RoHS compliant
- **MMU 0102 VG03; MMA 0204 VG03; MMB 0207 VG03**  
Military level IECQ-CECC approval to EN 140401-803 with established reliability, failure rate level E6, RoHS compliant

## Leaded Metal Film Resistors



### Features and Benefits

- Advanced thin film technology
- Excellent overall stability
- Controlled low TCR and tolerances

### Beyschlag brand MB\_/SMA Series

- **MBA/SMA 0204; MBB/SMA 0207; MBE/SMA 0414**  
Industrial level IECQ-CECC approval to EN 140401-803, professional and precision specification, RoHS compliant
- **MBA/SMA 0204 VG06; MBB/SMA 0207 VG06; MBE/SMA 0414 VG06**  
Military level IECQ-CECC approval to EN 140401-803 with established reliability, failure rate level E7, RoHS compliant

# Vishay Sfernice ESCC Space Qualified Range

Vishay Sfernice has been involved in space programs for more than 30 years. It is one of the last European manufacturers to be space qualified. The strategy of Vishay Sfernice Thin Film Division is to offer a wide range of qualified resistive products, chip resistors and chip arrays from 0Ω to 3 MΩ. Vishay Sfernice thin film is the first passive manufacturer to hold the ESCC/QMML Technology Flow Qualification. This qualification opens the door to a new concept at ESA: The failure rate option similar to the one offered in the MIL system. The former level C (enhanced performances) will still remain available and level B suppressed from the ESA specifications. New specifications describing this new concept have been released by the ESA: 2544001: Requirements for the Technology Flow Qualification of Film Resistors; 26000: Failure Rate Level Sampling Plans and Procedures; 21300: Terms, Definitions, Abbreviations, Symbols and Units; 21700: General Requirements for the Marking of the ESCC Components; 4001: Generic Specification Resistors Fixed Film; 4001023: Resistors, Fixed, Chip, Thin Film, Type PHR

## Thin Film SMT Chips ESCC4001/023

Space Qualified (ESA) PHR



### Features and Benefits

- 0402 to 2010
- Ohmic range: 10Ω – 6 MΩ
- Qualified ohmic range: 10Ω – 3 MΩ
- Tolerance down to 0.01%
- TCR down to 5ppm/°C (-55°C; +155°C)
- Operating temperature range: -65°C +155°C

Established reliability “R” failure Rate (ESA) PFRR



### Features and Benefits

- 0402 to 2010
- Ohmic range: 10Ω – 6MΩ
- Qualified ohmic range: 100Ω – 3 MΩ
- Tolerance down to 0.05%
- TCR down to 10ppm/°C (-55°C – +155°C)
- Operating temperature range: -65°C – +155°C

## Thick Film SMT Chips ESCC4001/026

Space Qualified (ESA) CHPHR



### Features and Benefits

- 0603 to 2512
- Ohmic range: 0.1Ω – 100MΩ
- Qualified ohmic range: 1Ω – 10MΩ
- Tolerance down to 1%
- TCR down to 100 ppm/°C (-55°C – +155°C)
- Operating temperature range: -65°C – +155°C

## Thin Film Chips CECC 40401-010

CECC Qualified: RV



### Features and Benefits

- 0505 to 1206
- Conform to EN 140401-804
- Qualified ohmic range: 100Ω – 1MΩ
- Tolerance down to 0.1%
- TCR down to 10ppm/°C (-55°C – +155°C)
- Operating temperature range: -55°C – +155°C

## Thin Film SMT Chips Arrays ESCC4001/025

Space Qualified (ESA) PRAHR/CNWHR



### Features and Benefits

- 3 sizes (PRAHR100, PRAHR135 or PRAHR182)
- Ohmic range: 10Ω – 3MΩ
- Qualified ohmic range: 100Ω – 1MΩ
- Tolerance ratio down to 0.05%
- TCR ratio down to 3ppm/°C (-55°C – +155°C)
- Operating temperature range: -65°C – +155°C
- 2 to 8 resistors in same network
- Same (PRAHR) or different ohmic value (CNWHR) in same network

## Qualification Ongoing

### Thin Film Low Value SMT Chips ESCC4001/xxx

Space Level (ESA) LHR



### Features and Benefits

- 0603 to 2512
- Ohmic range: 0.1Ω – 9.99Ω
- Future qualified ohmic range: 0.25Ω – 9.99Ω
- Tolerance down to 1%
- TCR down to 100ppm/°C (-55°C – +155°C)
- Operating temperature range: -65°C – +155°C

## Thin Film 0Ω Jumper SMT Chips ESCC4001/xxx

Space Level (ESA) PZHR



### Features and Benefits

- 0402 to 2512
- Operating temperature range: -65°C – +155°C
- Available now with option 0057 on PZR: PZRxxx0057

# Vishay Dale Qualified Products

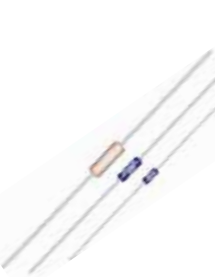
## Established Reliability Military Chip Resistors



### Features and Benefits

- QPL MIL-PRF-55342 qualified Thick and Thin film resistors
- Pre-tinned Nickel Barrier Wraparound termination
- Established reliability, “R” failure rate level standard
- Laser-trimmed tolerances down to ±1% at Thick film, down to ±0.1% at Thin film technology
- Complete MIL-testing available in house

## Established Reliability Metal Film Military Resistors



### Features and Benefits

- “S” Failure rate standard for most sizes
- MIL-PRF-39017, type RLR
- Available in MIL sheet sizes 05, 07, 20 & 32
- DSCC drawing (Non-QPL) available on multiple sizes to extended resistance ranges
- MIL-PRF-55182, type RNC, RNR/RNN
- Available in various MIL sheet sizes
- Characteristics J, H & K (Non-Hermetically-Sealed)
- Characteristics C & E (Hermetically-Sealed)

## Military/Established Thick Film Chip Resistors, 0Ω Jumper



### Features and Benefits

- New MIL-PRF-32159 replaces several MIL-drawings
- Reliability MIL-PRF-32159 qualified, type RCZ
- Pre-tinned Nickel Barrier Wraparound termination
- Established reliability, “M” failure rate level standard
- 100% group A screening per MIL-PRF-32159

# Wet Tantalum Capacitors

## SuperTan® Extended Capacitors, Wet Tantalum with Hermetic Seal STE/DSCC 10004

### Features and Benefits

- Temperature range: -55°C – +85°C, to +125°C with voltage derating
- Maximum ESR: 0.25Ω – 1.5Ω at 120Hz
- Capacitance range: 180μF – 10 000μF
- Capacitance tolerance of ±20 % standard at 120 Hz and +25°C, tolerance of ±10% available



### Applications

- Low/voltage filtering and energy storage applications
- High/stress military and aerospace systems including: Weapon systems, Radars, Transponders, Power supplies

## Wet Tantalum High-Energy Capacitor HE3/DSCC 10011

### Features and Benefits

- Capacitance range: 1,100μF – 72,000μF
- Low ESR: 0.035Ω
- Ripple current capability: up to 16A
- Utilises proven SuperTan® hybrid technology
- Withstands high stress and hazardous environments



### Applications

- Airborne radar
- Military
- Weapons systems
- Pulse power devices

## Wet Tantalum, Axial Leaded, Tantalum Case, Extended Capacitance, Enhanced Performance – T16

### Features and Benefits

- Higher capacitance
- Greater reverse voltage capability
- Extended thermal shock capability
- Greater vibration capability
- Temperature range: -55°C – +85°C, to +125°C with voltage derating
- Low ESR down to 0.70Ω at 120Hz and +25°C

### Applications

- Power supplies for space and avionics applications
- Timing
- Filtering
- Energy hold-up
- Pulse power



# Vishay Semiconductors

## N-Channel MOSFETs

DSCC NUMBER	SILICONIX PART NUMBER	DESCRIPTION
JAN2N6660	2N6660JAN02	N-Channel MOSFET, 60V, 3Ω
JANTX2N6660	2N6660JTX02	N-Channel MOSFET, 60V, 3Ω
JANTXV2N6660	2N6660JTXV02	N-Channel MOSFET, 60V, 3Ω
JAN2N6661	2N6661JAN02	N-Channel MOSFET, 90V, 4Ω
JANTX2N6661	2N6661JTX02	N-Channel MOSFET, 90V, 4Ω
JANTXV2N6661	2N6661JTXV02	N-Channel MOSFET, 90V, 4Ω



## Analog Multiplexers

DSCC NUMBER	SILICONIX PART NUMBER	DESCRIPTION
5962-9204201MEA	9204201EA	DG408, 8-Ch High-Performance CMOS
5962-9204201M2A	92042012A	DG408, 8-Ch High-Performance CMOS
5962-9204201MXA	9204201XA	DG408, 8-Ch High-Performance CMOS
5962-9204201MXC	9204201XC	DG408, 8-Ch High-Performance CMOS
5962-9204202MEA	9204202EA	DG409, Dual 4-Ch High-Performance CMOS
5962-9204202MEC	9204202EC	DG409, Dual 4-Ch High-Performance CMOS
5962-9204202M2A	92042022A	DG409, Dual 4-Ch High-Performance CMOS
5962-9204202M2C	92042022C	DG409, Dual 4-Ch High-Performance CMOS
5962-9204202MXA	9204202XA	DG409, Dual 4-Ch High-Performance CMOS
5962-9204202MXC	9204202XC	DG409, Dual 4-Ch High-Performance CMOS



## Analog Switches

DSCC NUMBER	SILICONIX PART NUMBER	DESCRIPTION
5962-9073704MPA	9073704PA	DG417B, Precision Monolithic SPST (NC) CMOS
5962-9073705MPA	9073705PA	DG418B, Precision Monolithic SPST (NO) CMOS
5962-9073706MPA	9073706PA	DG419B, Precision Monolithic SPDT (NO/NC) CMOS







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