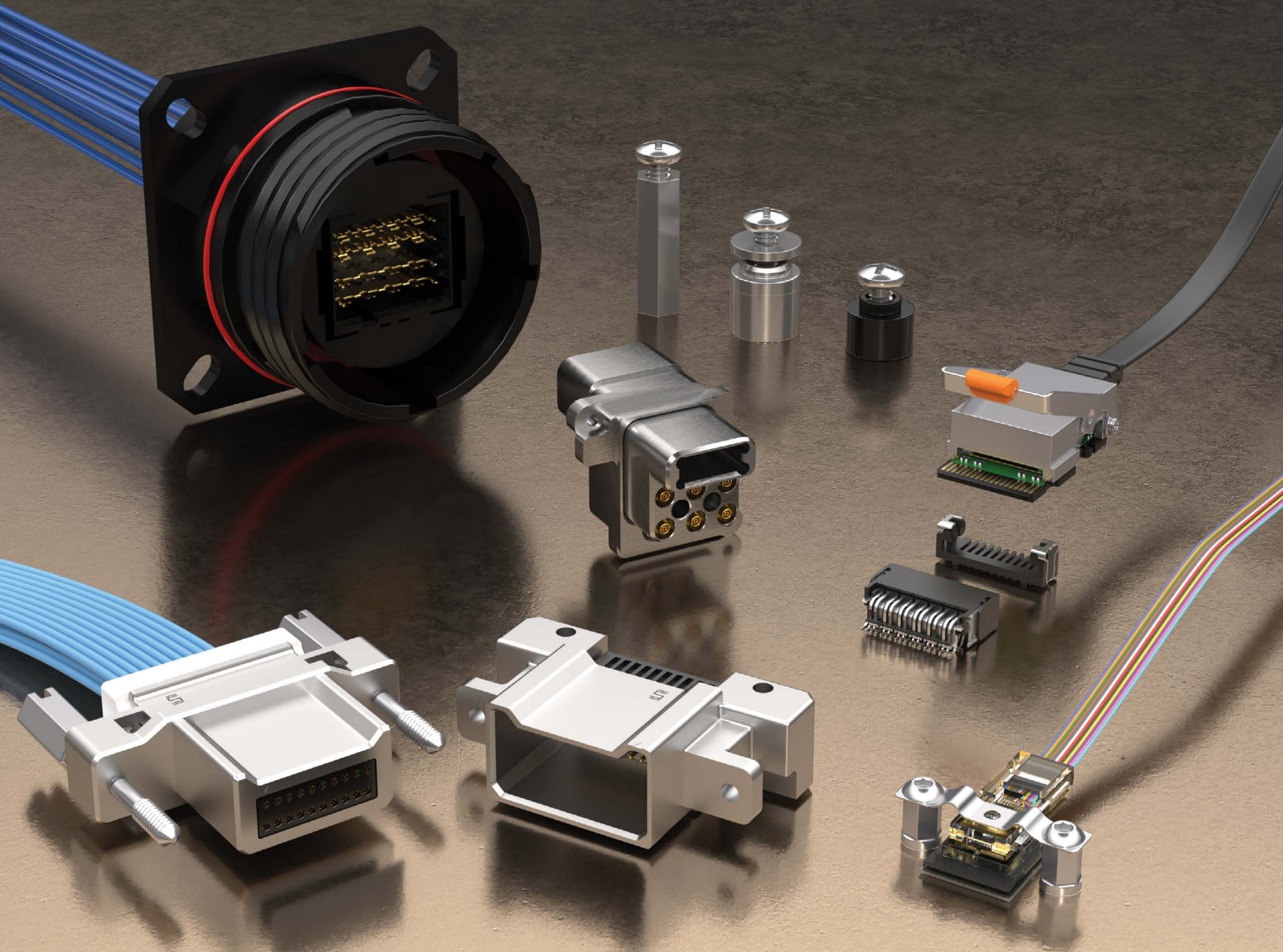


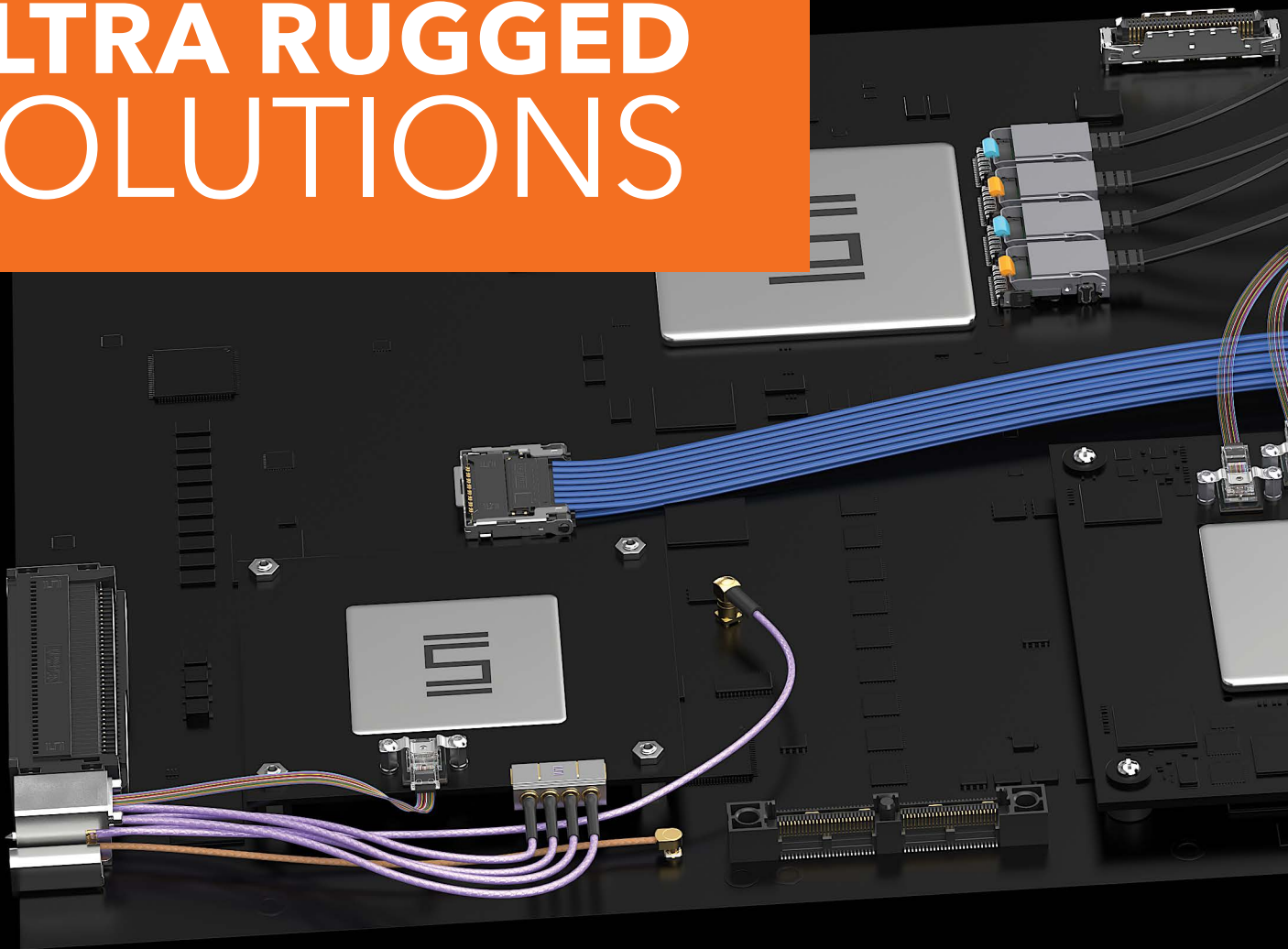


ULTRA RUGGED SOLUTIONS



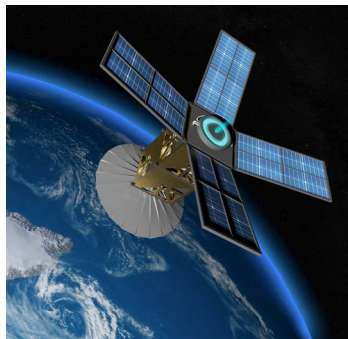
RuggedPower@samtec.com

ULTRA RUGGED SOLUTIONS

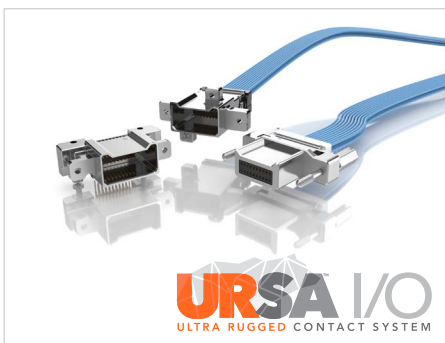
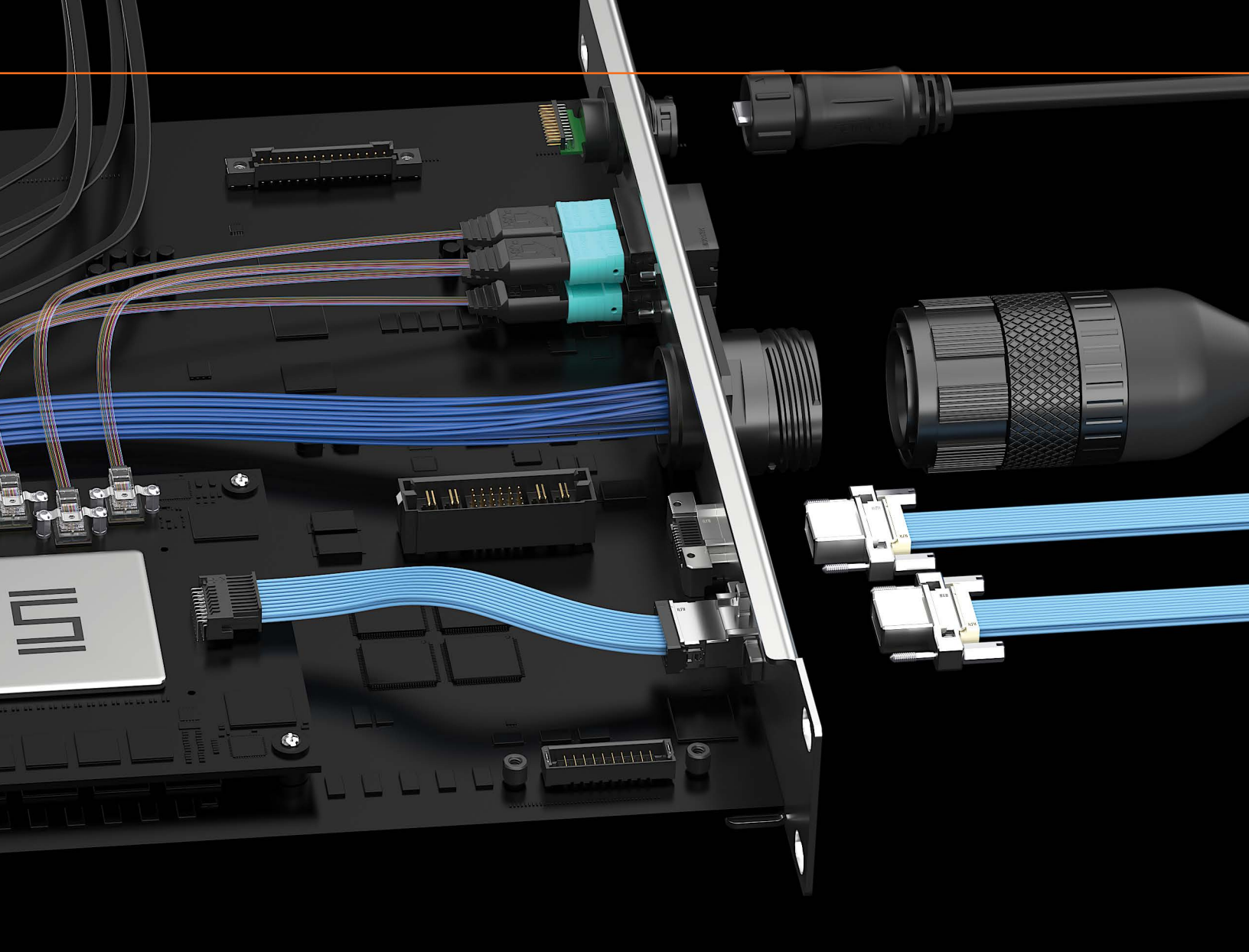


Samtec's ultra rugged solutions provide reliability and flexibility in small form factors for extreme/harsh environments. From rugged I/O cable assemblies, sealed & compact optics, and VITA™ VNX+™ modules to ultra rugged hardware and high-temp coatings, these solutions are ideal for military, aerospace, submersible and other harsh environment applications. Many ultra rugged offerings are available now with a robust roadmap to meet or exceed requirements for harsh environment applications and industries.

For design flexibility and cost optimization, Samtec's Severe Environment Testing (SET) qualified products are Commercial-Off-the-Shelf (COTS) and modified COTS to get solutions to market faster. Visit [samtec.com/set](https://www.samtec.com/set) for more information and test reports.

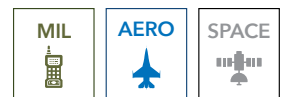


VITA and VNX+ are all respective trademarks of VITA



RUGGED POWER I/O SYSTEMS

- Four points of contact for a reliable connection
- Micro-hyperboloid contacts for extreme mating cycles
- Extreme density with up to 1,450 I/Os in a 1RU panel
- EMI shielding limits signal degradation and optimizes performance
- Series: B1SD(T)/P1PD(T)/P1M
- samtec.com/ursa



38999 RUGGED I/O SYSTEMS

- High data rate cable system in a rugged 38999 shell
- Salt fog resistant to 48 hours
- IP67 for dust and waterproof sealing
- Threaded cable-to-panel design
- High-density 16 pair; 32 on roadmap
- Series: NVA3E/NVA3P
- samtec.com/novaray-io





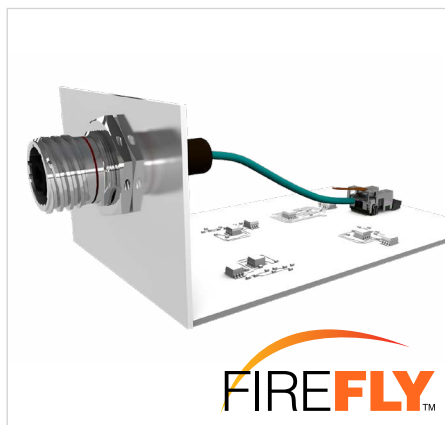
VITA 90™ VNX+™ SOLUTIONS

- RF backplane system to support 110 GHz with high-density size 20 contacts; size 16 on roadmap
- Rugged blind mate solution
- Configured with SEARAY™ right-angle array and rugged optics
- SWaP-C reductions make this ideal for military and aerospace applications
- COTS or modified COTS solution for cost and time flexibility
- samtec.com/vnx



EXTREME ENVIRONMENT OPTICAL SYSTEM

- Sealed and parylene-coated for exposed military, aerospace and submersible applications
- Ruggedized for tin whisker mitigation and fungal resistance; operates in harsh environments including salt fog, blowing sand and dust, jet fuel exposure, altitudes up to 65,000 feet
- Extended temp range of -40 °C to +85 °C
- Series: ETMO/UEC5/UCC8
- samtec.com/firefly



EXTENDED TEMP OPTICAL SYSTEMS

- Extended temperature range from -40 °C to +85 °C
- x4 and x12 designs to 25 Gbps per lane performance
- Samtec's Extended Temp FireFly™ optical with Amphenol® Aerospace bulkhead interconnects
- Micro footprint allows for increased density
- Series: ETUO/UEC5/UCC8
- samtec.com/firefly



IN DEVELOPMENT ULTRA RUGGED/COMPACT OPTICS

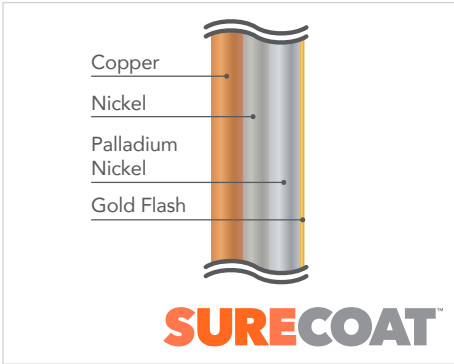
- FireHawk™ is the smallest optical transceiver in the industry - 10 x 7.7 x 4.4 mm (<0.4 grams)
- Extreme performance up to 40 Gbps aggregate transfer rates (10 Gbps x 4 channels)
- Rugged BGA attach withstands high shock and vibration
- Radiation tolerant design
- Series: CSPO, CSSO
- samtec.com/firehawk





ULTRA RUGGED HARDWARE

- Guide post standoffs (GPSO) allow for .035" of initial misalignment
- Assists with "blind mate" for ultra micro, fine-pitch mezzanine connectors
- 5 to 30 mm stack heights
- 303 stainless steel with MIL-C-13924 black oxide finish
- Jack screw precision standoffs (JSO) reduce the risk of component damage
- Standoffs (SO) with precision machined tolerances (+/- .002" (0.05 mm))
- samtec.com/hardware



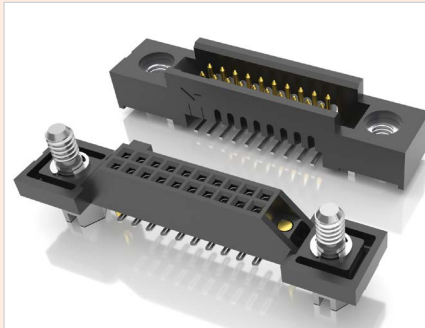
HIGH RELIABILITY PLATING

- Palladium nickel with gold flash plating
- Qualified up to 150 °C ambient
- Available on SEARAY™ 1.27 mm pitch high-density arrays to 5,000 cycles (SEAF/SEAM)
- Product Roadmap includes SEARAY™ 0.80 mm, AcceleRate® HP, LP Array™ and Generate™ 0.80 mm
- Ideal for high-temp, high-cycle applications such as ATE, military, aerospace and automotive

ROADMAP



High cycle "super lube" for extreme mating cycles



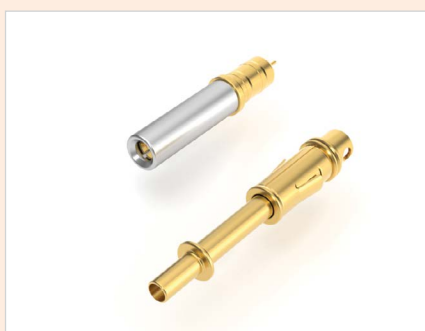
Expanded testing to MIL-DTL-55302 including salt spray and enhanced shock & vibration



URSA™ I/O configurations of power, signal, RF coax and high-speed contacts for high reliability in harsh environments



Rugged blind mate solution with RF and optical connectivity for backplane applications



Size 16 and 20 high frequency coax 38999 contacts for high-density, multi-position housings



Phase & amplitude stable microwave/millimeter wave cable assemblies - Orange is the new cable!

ULTRA RUGGED TESTING

SEVERE ENVIRONMENT TESTING (SET)

Severe Environment Testing (SET) is a Samtec initiative to test products beyond typical industry standards and specifications for performance confidence in rugged/harsh environment industries. These products undergo additional testing, inspired by military standards, to ensure they are more than suitable for military, space, automotive, industrial and other extreme applications.

SET qualified products are Commercial Off-the-Shelf (COTS) and modified COTS for incredible design flexibility to get solutions to market faster. Visit samtec.com/SET or contact SET@samtec.com for additional information and current available test results.



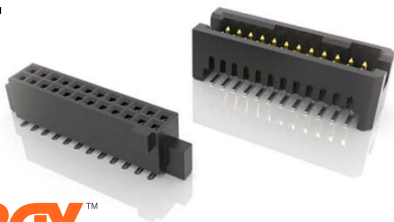
MEETS OR EXCEEDS:

- VITA™ 47.1 Module Insertions
- VITA™ 47.3 Humidity
- VITA™ 47.1 Operating Shock Class OS2
- VITA™ 47.1 Vibration Class VS3
- Exceeds VITA™ 47.1 Temperature Cycling Class C4
- Exceeds VITA™ 47.1 Non-Operating Temperature Class C4
- VITA™ 47.1 Electrostatic Discharge Resistance
- Exceeds VITA™ 47.1 Altitude for DWV

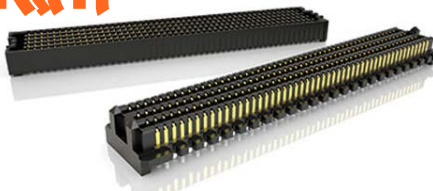
LOT SCREEN TESTING

Lot screen sample-size testing to MIL-DTL-55302 available to ensure product meets required specifications. Military/Aerospace Product (MAP) required; contact mapsales@samtec.com

TIGER EYE
SYSTEM



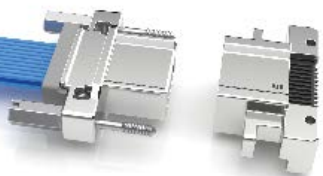
SEARAY



mPOWER



URSA I/O
ULTRA RUGGED CONTACT SYSTEM



SET QUALIFIED PRODUCTS

SFM / TFM / SFSD Tiger Eye™ 1.27 mm Pitch Rugged System

SEAF / SEAM SEARAY™ High-Density Arrays

LSHM Razor Beam™ Hermaphroditic Strips

SSM / TSM .100" Pitch Square Post Header & Socket

FTSH / CLP .050" Pitch Header & Socket

ERF8 / ERM8 Edge Rate® Rugged High-Speed Strips

S2M / T2M Tiger Eye™ 2.00 mm Pitch Micro Rugged System

UMPS / UMPT mPOWER® Ultra Micro Power Connectors

SEAF8 / SEAM8 SEARAY™ 0.80 mm Ultra-High Density Arrays

B1SD / B1SDT / P1M URSA™ I/O Ultra Rugged Power System

NASA

Samtec's SET products are approved for NASA Class D missions that require high-reliability, quick-turn and cost-effective solutions for LEO satellites, SmallSats, CubeSats and other space exploration applications.

Samtec also utilizes NASA outgassing data to determine if certain products meet NASA's ASTM E595-77/84/90 test requirements. Visit outgassing.nasa.gov for data.

EXTENDED LIFE PRODUCT™

E.L.P.™ products are tested to rigorous standards, which evaluate contact resistance in simulated storage and field conditions.

- 10 year Mixed Flowing Gas (MFG)
- High Mating Cycles (250 to 2,500)
- Certain plating and/or contact options will apply

For complete details about Samtec's E.L.P.™ program, a list of qualifying products and test results, please visit samtec.com/ELP or email the Customer Engineering Support Group at ASG@samtec.com



DESIGN QUALIFICATION TESTING

All Samtec series undergo Design Qualification Testing (DQT), which includes:

- Gas Tight
- Normal Force
- Thermal Aging
- Mating/Unmating/Durability
- IR/DWV
- Current Carrying Capacity (CCC)
- Mechanical Shock/Random Vibration/LLCR
- Mechanical Shock/Random Vibration/Event Detection



TESTING REFERENCE CHART

TEST	SET	E.L.P.™	DQT
Gas Tight	X*	X*	X
Normal Force	X*	X*	X
Thermal Aging	X*	X*	X
Mating / Unmating / Durability (240 Hrs)	X (100% RH, 250 Cycles)	X* (90-98% RH, 100 Cycles)	X (90-98% RH, 100 Cycles)
IR / DWV	X (At Altitude of 70,000 Feet)	X*	X
CCC	X*	X*	X
Mechanical Shock / Random Vibration / LLCR & Nanosecond Event Detection	X (40 G Peak, 11 ms, Half Sine & 12gRMS, 5 - 2,000 Hz, 1 Hr / Axis)	X* (100 G Peak, 6 ms, Half Sine & 7.56gRMS Avg, 2 Hr / Axis)	X (100 G Peak, 6 ms, Half Sine & 7.56gRMS Avg, 2 Hr / Axis)
Temperature Cycling (500 Cycles)	X	N/A	N/A
Non-Operating Class Temperature	X	N/A	N/A
Electrostatic Discharge (ESD)	X	N/A	N/A
10 Year MFG (Mixed Flowing Gas)	N/A	X	N/A
Mating Cycles (250 to 2,500)	N/A	X	N/A

* Completed as part of initial Design Qualification Testing (DQT). E.L.P.™ and SET testing are performed in addition to DQT.



samtec
SUDDEN SERVICE®

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GERMANY • FRANCE • ITALY • NORDIC/BALTIC • BENELUX • ISRAEL • INDIA • AUSTRALIA / NEW ZEALAND
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RuggedPower@samtec.com