

# SOSA ALIGNED INTERCONNECT SOLUTIONS

INCREASE POWER, SPEED AND BANDWIDTH WITH OPEN ARCHITECTURE SOLUTIONS





The Sensor Open Systems Architecture (SOSA) Consortium is developing a common framework for transitioning sensor systems to an open systems architecture, based on key interfaces and open standards established by industry-government consensus. These systems are targeted for platforms across all major U.S. military branches. Using OpenVPX as its basis, SOSA helps ensure interoperability, improved subsystem SWaP-C, and rapid technology upgrades.

**Setting the Standard**



TE Connectivity (TE) has been a leader in interconnect solutions for OpenVPX and an active member of the SOSA Consortium. The products in this brochure are aligned with the SOSA™ Technical Standard and targeted for design for next generation sensor systems and rugged embedded computing applications.

**SWaP: Reduce Size and Weight**

**Increase Power, Speed and Bandwidth with Open Architecture Solutions**

Next-generation processors need next-generation connectivity to keep pace with the growing demand for bandwidth even as space, weight, and power savings become critical.

TE has been pushing the bandwidth envelope by adapting high-speed technology and combining it with our expertise in rugged packaging. The results are board-level interconnects that give you more performance in harsh military and aerospace applications.

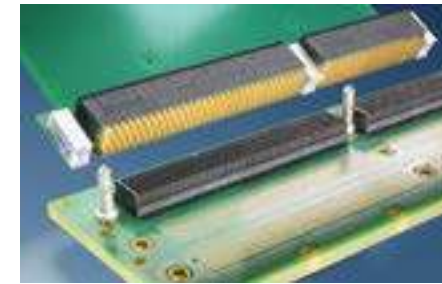
**Beyond Speed**

TE is also reducing size through higher contact densities and supporting RF and optical interconnects at the board level allowing compact, high-speed box-to-box connectivity. TE has a full range of copper and fiber I/O connectors supporting data rates up to 32+ Gb/s.

**Meeting the Needs of Battlespaces**

We are meeting the demanding needs of battlespaces with ruggedized copper and fiber interconnect and cable assemblies. And we are helping to protect systems with lightweight shielding and EMI-immune datapaths.

TE is focusing our technology to minimize size, weight and power consumption, to increase bandwidth, and to enable open architecture systems.



The MULTIGIG RT connector, the standard for VITA 46, represents a huge step forward in the world of rugged computing and C5ISR enabling technology. The connector series supports speeds to 32+ Gb/s, providing a comfortable performance margin in VPX applications. This modular connector system features a protected pinless backplane connector and wafer-based design in place of pin contacts. Wafers, available for differential, single-ended, and power needs, can be easily modified to support specific customer needs for characteristic impedance, propagation delay, and other electrical parameters. This lightweight connector system also offers built in ESD features, enabling field serviceability, and is fully qualified for VITA 47 environment classes.

**RUGGED**

- The standard for VITA 46 applications
- Modular connector system features a protected backplane connector

**FAST**

- Supports speeds up to 32+ Gb/s, providing a comfortable performance margin in VPX applications

**FLEXIBLE**

- Wafers are easily modified to support the need for propagation delay, characteristic impedance, and other electrical parameters
- Lightweight connector offers built-in ESD features enabling field serviceability

**VITA 46 MULTIGIG RT 2-R Connectors (Ultra Rugged)**



MULTIGIG RT 2-R connectors are an evolution of MULTIGIG RT 2 connectors, designed to offer even more ruggedness and reliability in demanding high-vibration environments. They go beyond VITA 47 environmental performance to meet the demanding vibration requirements of VITA 72. These connectors are specified for VITA 78 SpaceVPX fault-tolerant interoperable backplanes and modules. The lightweight connectors offer low outgassing and resist the growth of tin whiskers for high reliability in the challenging environment of space. Backward compatible to all existing VITA 46 daughtercards, rugged MULTIGIG RT 2-R connectors have a pinless interface tested to 10,000 mating/unmating cycles. The connector has been tested to extreme vibration levels, including a 6U VPX test unit by exposing a 6U VPX test unit to random vibration levels of 0.2 g<sup>2</sup>/Hz for 12 hours.

**EXTREME RUGGEDNESS**

- Passes extreme requirements of VITA 72 Study Group
- Features a quad-redundant contact system for greater reliability in a high vibration environment
- Specified for VITA 78 SpaceVPX applications

**ULTRA FLEXIBLE**

- Compatible with standard MULTIGIG RT-2 connectors for VITA 46
- Optimized footprints for signal integrity and ease of board design
- Low outgassing

## VITA 46 MULTIGIG RT 2-S and MULTIGIG RT 3 Connectors (Higher Speed)



TE Connectivity's (TE) MULTIGIG RT 2-S and MULTIGIG RT 3 connectors are the next generation lightweight, rugged, high speed backplane connectors and meet the interface dimensions for VITA 46 VPX connectors. They are backward compatible with legacy MULTIGIG RT products and offer the same reliable ruggedized interface as MULTIGIG RT 2-R connectors. The new contact and wafer designs optimize signal integrity, extending data rates to 16-32+ Gb/s - supporting protocols such as PCIe Gen 4, Gen 5 and 100GBASE-KR4 Ethernet.

### FAST

- Enhanced PCB wafer and contact design supports increased bandwidth up to 32+ Gb/s

### FLEXIBLE

- Meets interface requirements for VITA 46 connectors allowing backward compatibility with legacy VPX products
- Customizable to meet unique application requirements

### MODULAR

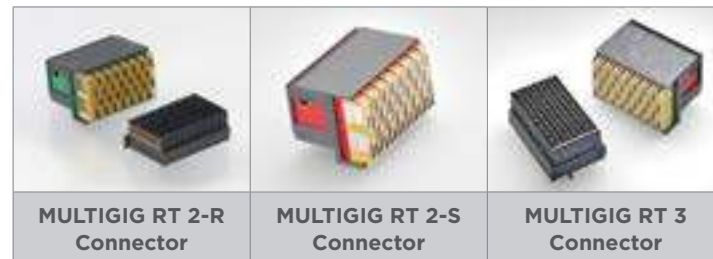
- Modular design enables numerous configurations by interchanging higher-speed MULTIGIG RT 3 connectors with the legacy MULTIGIG RT 2 and MULTIGIG RT 2-R connectors.

### RUGGED

- Contact design utilizes quad redundant contacts for optimum performance in shock and vibration

### DURABLE

- High durability tested for 10,000 mating/unmating cycle



MULTIGIG RT 2-R Connector      MULTIGIG RT 2-S Connector      MULTIGIG RT 3 Connector

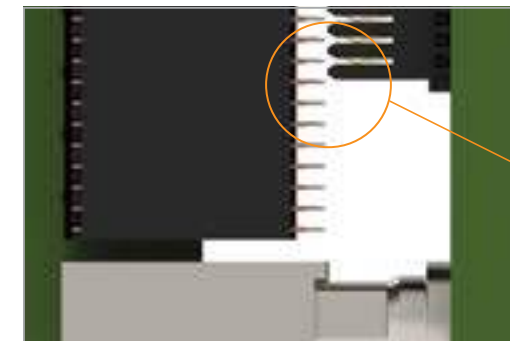
	MULTIGIG RT 2-R Connector	MULTIGIG RT 2-S Connector	MULTIGIG RT 3 Connector
<b>SPEEDS</b>	10+ Gb/s	16+ Gb/s	32+ Gb/s
<b>RUGGEDIZED</b>	✓	✓	✓
<b>MATING CYCLES</b>	500	500	500
<b>QUAD-REDUNDANT CONTACT SYSTEM</b>	✓	✓	✓
<b>FLEXIBILITY WITH WAFER CONFIGURATION</b>	✓	✓	✓
<b>VITA 46 INTERMATEABLE</b>	✓	✓	✓
<b>PCB HOLE DIAMETER BACKPLANE (in mm)</b>	0.56 (ref)	0.56 (ref)	0.37 (ref)
<b>PCB HOLE DIAMETER DAUGHTERCARD (in mm)</b>	0.46 (ref)	0.46 (ref)	0.32 (ref)
<b>RELEASE DATE</b>	2013	2019	2019
<b>OPEN VPX STANDARD</b>	VITA 46.0	VITA 46.0	VITA 46.30

## VITA 46 VPX PART NUMBERS

Position	RT 2		RT 2-R		RT 2-S	RT 3	RT 3 Highspeed with Power
	Differential	Single Ended	Differential	Single Ended	Differential	Differential	Differential
P0	1410189-3		2102772-1		2102772-1	2102772-1	2332816-1
P1, 2, 3, 4, 5, 6	1410187-3	1410190-3	2102771-1	2102847-1	2302317-1	2302785-1	
J0	1410186-1		2102735-1		2102735-1	2102735-1	2332817-1
J1, 3, 4, 5	1410140-1		2102736-1		2102736-1	2302789-1	
J2, 6	1410142-1		2102737-1		2102737-1	2302790-1	

See p. 6 for guide module and pin options.

MULTIGIG RT 2-S connectors are plug-in module only, and mate with RT 2, RT 2-R and RT 3 backplane connectors. Part numbers with tin-lead plated tails are listed above. See TE drawings for RoHS options.

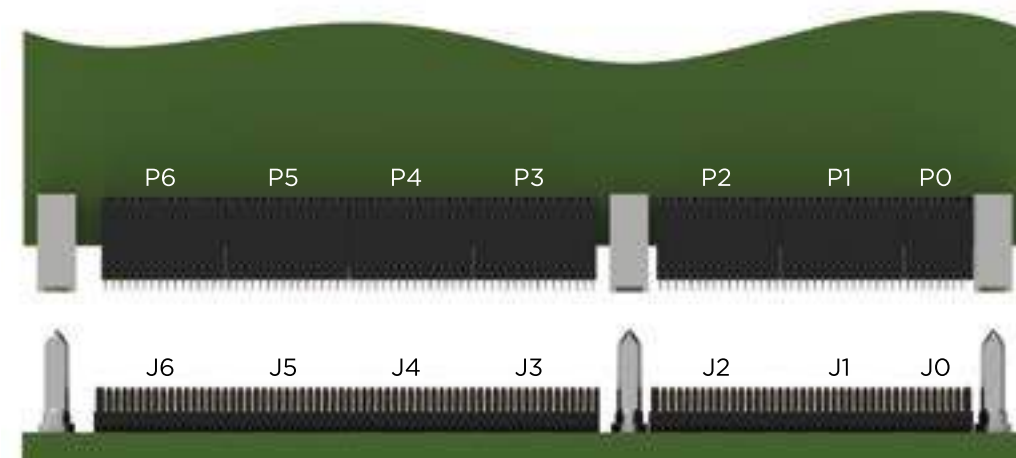


Thinner End Wall

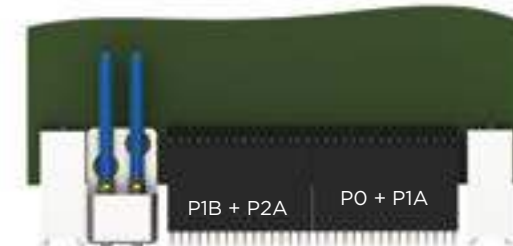
An alternate right end backplane connector module with a thinner end wall can be utilized to eliminate this risk of damage to the plug-in module

### THIN WALL RIGHT END BACKPLANE CONNECTORS

MULTIGIG Series	Part Number
RT 2-R	2371552-1
RT 3	2364030-1



## MODULES FOR VITA 66 AND 67 HALF MODULE 3U APPLICATIONS



VITA 66 or 67 Half Module

Position	RT 2 (10 Gb/s)	RT 2-R (Rugged 10 Gb/s)	RT 2-S (16+ Gb/s)	RT 3 (32+ Gb/s)
P0 + P1A	1410326-3	2286250-1	2345723-1	2313237-1
J0 + J1A	1410140-1	2102736-1	2102736-1 (RT 2-R)	2313238-1
P1B + P2A	1410187-3	2102771-1	2302317-1	2302785-1
J1B + J2A	1410142-1	2102737-1 (or thin wall 2371552-1)	2102737-1 (or thin wall 2371552-1)	2302790-1 (or thin wall 2364030-1)

See p. 6 for guide module and pin options.

MULTIGIG RT 2-S connectors are plug-in module only, and mate with RT 2, RT 2-R and RT 3 backplane connectors. Part numbers with tin-lead plated tails are listed above. See TE drawings for RoHS options.

## Guide Hardware

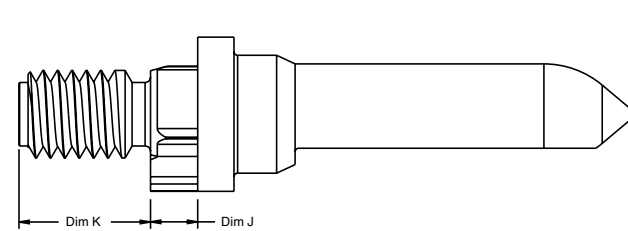
### VITA 46 GUIDE MODULES - KEYING OPTIONS

Key Orientation (Degrees)	Standard (Diecast)	Rugged (Machined Aluminum)	Rugged (Machined Stainless Steel)
0	1-1469492-1	2000713-1	2000713-7
45	1-1469492-2	2000713-2	2000713-8
90	1-1469492-3	2000713-3	2000713-9
135		1-2000713-4	—
180		1-2000713-5	—
225		1-2000713-6	—
270	1-1469492-7	2000713-4	1-2000713-0
315	1-1469492-8	2000713-5	1-2000713-3
Without Keying	1-1469492-9	2000713-6	1-2000713-2

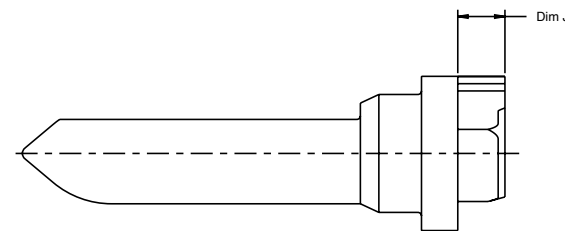


### VITA 46 GUIDE PINS

Shoulder Depth into Backplane (Dim J)	External Thread				Internal Thread		
	Thread Length (Dim K)	Thread Type (External)	Rugged (Stainless Steel)	Diecast	Internal Thread Max Depth	Thread Type (Internal)	Rugged (Stainless Steel)
1.32	7.25	10-32 UNF	2000676-1		5.67	8-36 UNF	2327906-2
2.60	7.25	10-32 UNF	2000676-2	1-1469491-2	6.95	8-36 UNF	2327906-4
4.20	7.25	10-32 UNF	2000676-3	1-1469491-3	8.55	8-36 UNF	2327906-6
5.70	7.25	10-32 UNF	2000676-4	1-1469491-4	10.05	8-36 UNF	2327906-8
7.30	7.25	10-32 UNF	2000676-5		11.65	8-36 UNF	1-2327906-0
5.70	10.35	10-32 UNF	2000676-6				
3.40	9.00	M5 x 0.8 - 6g	2000676-7		7.75	M2 .5X.45	1-2327906-4
2.40	6.30	M5 x 0.8 - 6g	2000676-9		6.75	M2 .5X.45	1-2327906-8



External Thread Guide Pins



Internal Thread Guide Pins

## VITA 66 (Optical) Connector Modules



TE Connectivity's (TE) Ruggedized Optical Backplane VITA 66 interconnect system provides a high-density, high-bandwidth, blind-mate optical interconnect in a backplane/daughtercard configuration. The fiber optic ribbon cable interconnect feeds through the backplane to removable system modules using MT ferrules. Designed for rugged embedded computing applications, the fiber optic connectors are compatible with VPX and other high-performance standards. Connector module designs support half and full size modules, with new, higher density variants now available.

### RUGGED RELIABILITY

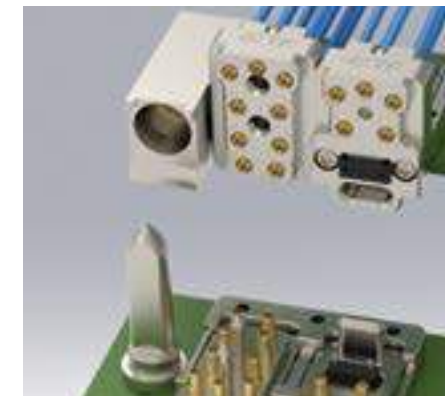
- Receptacle (backplane) connector includes two robust guide pins for blind mating

### VERSATILE

- Modules support VITA 66.1, 66.4, and 66.5 draft standard
- Locating post features help ensure proper positioning
- Ribbon cable feeds through backplane to removable system modules

TE's broad product line offers many possible configurations, including front panel MT connections to on board optical modules, direct attachment of transceivers to the bottom MT port, or to using a combination of optics and RF connections, all in a ruggedized blind mate structure.

## VITA 67 (RF) Connector Modules



VITA 67 RF modules from TE are modular systems designed for backplane/daughtercard multi-coax contact mating within a robust platform to withstand the mechanical rigors of military and aerospace applications. They are also fully compatible with VPX packaging to make it easy and convenient to achieve RF connectivity within an open architecture.

The contacts have radial and axial float for reliable blind mating and excellent RF performance. They are housed in robust stainless steel or aluminum modules, providing RFI/EMI shielding between the RF contacts with channel isolation of at least 100 dB up through 40-70 GHz.

TE offers SMPM contacts/modules and new higher density NanoRF modules, supporting 2-3 times the density of VITA 67 SMPM RF modules. The NanoRF interface features a floating insert to pre-align RF contacts before engagement. RF contact types are illustrated below.

### VERSATILE

- Modular design fully compatible with VPX packaging permits application specific configuration
- Available with SMPM contacts/modules and new higher density NanoRF modules

### RELIABLE

- Float mounted jack maintains positive RF ground
- Contacts tolerate generous misalignment to allow blind mating
- Contacts housed in robust stainless steel or aluminum modules



SMPM Front Washer Contacts and Modules

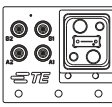
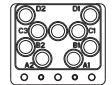
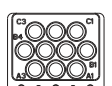
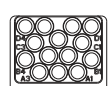
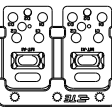
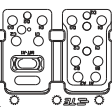
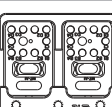
SMPM Snap-In Contacts and Modules



NanoRF


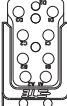

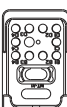

## RF and Optical Connector Modules

Full Module VITA 65 Aperture H Backplane per VITA 67.3C

VITA 65 Module Designation	Backplane Module Layout		Connector Module Part Number	RF Contact Part Number (.086" Cable)	RF Contact Part Number (.047" Cable)	MT Ferrule Kit Part Number	Optical Plug-In Card Interface	
6.4.5.6.1 (Legacy SOSA profiles)		VITA 67.1 and VITA 66.4 Hybrid	Plug-In Module	2157339-4 (P2A) 2226881-1 (P2B)	1996390-1	1996771-1	2102866-2 (Std Grade) 2313212-2 (Low Loss)	Cabled MT
		Backplane	2828423-1 (SMPM Rear Cable Attach) 2828775-1 (OSMM Rear Cable Attach)	—	—	2102866-1 (Std Grade) 2313212-1 (Low Loss)	—	
6.4.5.6.2		9 Pos SMPM	Plug-In Module	2332834-3	2101012-1	2157248-1	—	—
			Backplane (Snap-In Contacts)	2365211-1	2332676-1	2332676-2	—	—
			Backplane (Front Washer Contacts)	2332832-2	1996390-1	1996771-1	—	—
6.4.5.6.3		10 Pos SMPM	Plug-In Module	2323863-3	2101012-1	2157248-1	—	—
			Backplane (Snap-In Contacts)	2332706-1	2332676-1	2332676-2	—	—
			Backplane (Front Washer Contacts)	2323763-2	1996390-1	1996771-1	—	—
6.4.5.6.4		14 Pos SMPM	Plug-In Module	2332829-3	2101012-1	2157248-1	—	—
			Backplane (Snap-In Contacts)	2361107-1	2332676-1	2332676-2	—	—
			Backplane (Front Washer Contacts)	2332827-2	1996390-1	1996771-1	—	—
6.4.5.6.8		2 Style C 66.5 inserts with 10 NanoRF	Plug-In Module	2359407-1 (2 ea) 2358435-1 (2 ea)	—	2302339-1 (10 ea)	12-Fiber: 2355002-1 24-Fiber: 2355002-2	Cabled MT Transceiver
			Backplane	2358791-1	2332772-1 (8 ea)	2302345-1 (2 ea)	12-Fiber: 2332756-1 24-Fiber: 2332756-2	—
6.4.5.6.9		1 Style C 66.5 insert with 14 NanoRF	Plug-In Module	2359407-1 + 2357976-1 2358435-1 +	—	2302339-1 (14 ea)	12-Fiber: 2355002-1 24-Fiber: 2355002-2	Cabled MT Transceiver
			Backplane	2378047-1	2332772-1 (12 ea)	2302345-1 (2 ea)	12-Fiber: 2332756-1 24-Fiber: 2332756-2	—
6.4.5.6.10		2 Style C 66.5 inserts with 20 NanoRF	Plug-In Module	2359410-1 (2 ea) 2313388-1 (2 ea)	—	2302339-1 (20 ea)	12-Fiber: 2355002-1 24-Fiber: 2355002-2	Cabled MT Transceiver
			Backplane	2378048-1	—	2302345-1 (20 ea)	12-Fiber: 2332756-1 24-Fiber: 2332756-2	—
6.4.5.6.11		6 Optical	Plug-In Module	2388442-1 (2 ea)	—	—	12-Fiber: 2375154-1 24-Fiber: 2375154-2	2 Cabled MT per Insert
				2388440-1 (2 ea)	—	—	12-Fiber: 2375154-1 24-Fiber: 2375154-2	1 Cabled MT & 1 Transceiver per Insert
			Backplane	2388444-1	—	—	12-Fiber: 2375153-1 24-Fiber: 2375153-2	—

## RF and Optical Connector Modules

Half Module VITA 65 Aperture J Backplane per VITA 67.3D

VITA 65 Module Designation	Backplane Module Layout		Connector Module Part Number	RF Contact Part Number (.086" Cable)	RF Contact Part Number (.047" Cable)	MT Ferrule Kit Part Number	Optical Plug-In Card Interface	
6.4.5.7.1		VITA 66.4 (1 MT)	Plug-In Module	2226881-1	—	—	2102866-2 (Std Grade) 2313212-2 (Low Loss)	Cabled MT
			Backplane	2828736-1	—	—	2102866-1 (Std Grade) 2313212-1 (Low Loss)	—
6.4.5.7.2		9 Pos NanoRF	Plug-In Module	2357976-1	—	2302339-1 (9 ea)	—	—
			Backplane	2357971-1	2332772-1 (8 ea)	2302345-1 (1 ea)	—	—
6.4.5.7.3		Style C 66.5 Insert with 5 NanoRF	Plug-In Module	2359407-1 2358435-1	—	2302339-1 (5 ea) 2302339-1 (5 ea)	12-Fiber: 2355002-1 24-Fiber: 2355002-2	Cabled MT Transceiver
			Backplane	2358431-1	2332772-1 (4 ea)	2302345-1 (1 ea)	12-Fiber: 2332756-1 24-Fiber: 2332756-2	—
6.4.5.7.4		Style C 66.5 Insert with 10 NanoRF	Plug-In Module	2359410-1 2313388-1	—	2302339-1 (10 ea) 2302339-1 (10 ea)	12-Fiber: 2355002-1 24-Fiber: 2355002-2	Cabled MT Transceiver
			Backplane	2313391-1	—	2302345-1 (10 ea)	12-Fiber: 2332756-1 24-Fiber: 2332756-2	—
6.4.5.7.6		Style D 66.5 Insert (3 MT)	Plug-In Module	2388442-1 2388440-1	—	—	12-Fiber: 2375154-1 24-Fiber: 2375154-2	3 Cabled MT
				2388440-1 2388438-1	—	—	12-Fiber: 2375154-1 24-Fiber: 2375154-2	2 Cabled MT & 1 Transceiver
			Backplane	2388438-1	—	—	12-Fiber: 2375153-1 24-Fiber: 2375153-2	—

### VITA 66.5 TRANSCEIVER KITS

Transceiver Kit TE Part Number	Channel Count	Tx/Rx	Rx Sens (dBm)	Max Data Rate G	Application	Plug Kit Part Number: Included in Transceiver Kit Part Number	Mating Backplane Connector Part Number Half Width	Mating Backplane Connector Part Number Full Width	66.5 Style
2394052-4	12	Rx	-7.5	28	1 MT + 5 nanoRF	2358435-1	2358431-1	2358791-1	C-Hybrid
2393875-1	4	TxRx	-7.5	28	3 MT	2388440-1	2388438-1	2388444-1	D
2393875-3	12	Tx	—	28	3 MT	2388440-1	2388438-1	2388444-1	D
2393875-4	12	Rx	-7.5	28	3 MT	2388440-1	2388438-1	2388444-1	D
2394053-1	4	TxRx	-12	10	1 MT + 10 nanoRF	2313388-1	2313391-1	2363793-1	C-Hybrid
2394053-2	4	TxRx	-9	10	1 MT + 10 nanoRF	2313388-1	2313391-1	2363793-1	C-Hybrid
2394053-3	12	Tx	—	10	1 MT + 10 nanoRF	2313388-1	2313391-1	2363793-1	C-Hybrid
2394053-4	12	Rx	-12	10	1 MT + 10 nanoRF	2313388-1	2313391-1	2363793-1	C-Hybrid
2394054-1	4	TxRx	-12	10	1 MT + 5 nanoRF	2358435-1	2358431-1	2358791-1	C-Hybrid
2394054-2	4	TxRx	-9	10	1 MT + 5 nanoRF	2358435-1	2358431-1	2358791-1	C-Hybrid
2394054-3	12	Tx	—	10	1 MT + 5 nanoRF	2358435-1	2358431-1	2358791-1	C-Hybrid
2394054-4	12	Rx	-12	10	1 MT + 5 nanoRF	2358435-1	2358431-1	2358791-1	C-Hybrid
2394055-1	4	TxRx	-12	10	3 MT	2388440-1	2388438-1	2388444-1	D
2394055-2	4	TxRx	-9	10	3 MT	2388440-1	2388438-1	2388444-1	D
2394055-3	12	Tx	—	10	3 MT	2388440-1	2388438-1	2388444-1	D
2394055-4	12	Rx	-12	10	3 MT	2388440-1	2388438-1	2388444-1	D

## Rugged Mezalok VITA 61 XMC Connectors

### RUGGED

- Surface-mount mezzanine connector with 500 mating cycle durability
- Superior thermal cycling stability—2000 thermal shock cycles -55°C to +125°C
- Anti-stubbing design prevents mis-mating

### VERSATILE

- 114 position in 10, 12, 15, 17 and 18 mm stack heights
- Support single-width and double-width mezzanine cards

### HIGH PERFORMANCE

- Redundant box contact system provides four points of contact for ultra-reliability
- High-temperature polymer housings offer superior thermal stability and low outgassing
- Compliant BGA board-attach supports standard surface mount processing and thermal stability
- Supports data rates up to 32+ Gb/s
- HSLF products offer up to 50% lower extraction force

TE's Mezalok mezzanine connectors are designed for stacking or mezzanine applications for rugged embedded computing. The connectors incorporate a multi-point redundant box contact system for a separable interface, and the 114 position connectors are compliant with VITA 61.0 XMC standard. Stack height options are 10, 12, 15, 17 and 18 mm. Mezalok connectors are shock and vibration resistant per VITA 47 and 72 HALT test requirements. Featuring a wide operating temperature range, excellent thermal stability, and data rates to 32+ Gb/s, these rugged and highly versatile connectors are ideal for high-speed embedded computing applications. Installation of Mezalok connectors is easily accomplished using standard ball grid array (BGA) surface mount processes.



Position Size	Connector and Stack Height (mm)	High Speed Low Extraction Force (HSLF)		High Speed (HS)				
		50 Microinch Gold Mating		50 Microinch Gold Mating		30 Microinch Gold Mating		
		Tin-Lead BGA	Lead Free BGA	Tin-Lead BGA	Lead Free BGA	Tin-Lead BGA	Lead Free BGA	
60	Pin Connector	2102079-1	2102079-2	2102079-1	2102079-2			
	Socket Connector	10	2369022-1	2369022-2	2102080-1			
		12	2369022-3	2369022-4	2102080-3			
114	Pin Connector	2102060-1	2102060-2	2102060-1	2102060-2	2102060-3	2102060-4	
	Socket Connector	10	2355825-1	2355825-2	2102061-1	2102061-2	2102061-5	2102061-6
		12	2355825-3	2355825-4	2102061-3	2102061-4	2102061-7	2102061-8
		15			1-2102061-3	1-2102061-4	1-2102061-5	1-2102061-6
		17	1-2355825-7	1-2355825-8	1-2102061-7	1-2102061-8		
		18	2355825-9	1-2355825-0	2102061-9	1-2102061-0	1-2102061-1	1-2102061-2
320	Pin Connector	2102429-1		2102429-1			2102429-4	
Socket Connector	10	2355827-1	2355827-2	2102430-1			2102430-6	
	18	2355827-9	1-2355827-0	2102430-9			1-2102430-2	

## VITA 62 Power Supply Connectors

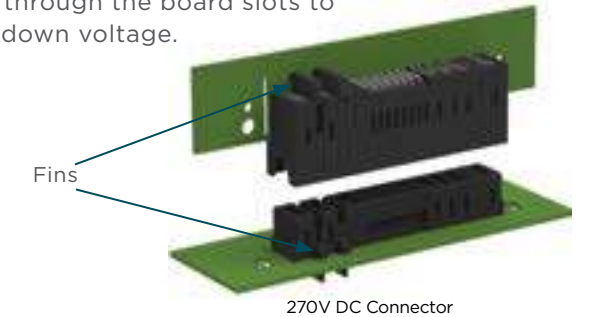


### HIGH PERFORMANCE

- 20 A and 50 A power contacts, plus signal contacts
- 3-beam high-conductivity-copper contact design
- Hot-plug capable
- 270VDC applications supported by connectors with isolating fins (VITA 62.2)
- 3-phase power configurations (VITA 62.1)

The MULTI-BEAM XLE power connector, specified for the VPX VITA 62 power supply standard, offers 50 A and 20 A power contacts as well as signal pins within the same connector assembly. The design is hot pluggable, tolerates mating misalignment, and supports VPX architecture.

Higher input voltage of 270V DC is required for select applications, including altitudes of 60-70k ft for military avionics. New VITA 62.1 (3-phase) and 62.2 (standard) connector variations meet creep/clearance distance requirements, with slots required in the boards between contacts. "Fins" are inserted between power contacts and penetrate through the board slots to increase breakdown voltage.



	Slot Size	Position	Part Type	Contact Tail	Part No	Fins for Higher Voltage Application
VITA 62.0	3U	PO	RA Header	Solder Tail	2317477-1	
	3U	PO	RA Header	Compliant Pin	2314578-2	
	3U	JO	Vert Recpt	Compliant Pin	2309390-1	
	6U	PO	RA Header	Solder Tail	2314579-1	
	6U	P1	RA Header	Solder Tail	2314580-1	
	6U	PO	RA Header	Compliant Pin	2314577-1	
	6U	P1	RA Header	Compliant Pin	2314578-1	
	6U	JO	Vert Recpt	Compliant Pin	2314581-1	
VITA 62.2 270VDC	6U	J1	Vert Recpt	Compliant Pin	2309390-2	
	3U	PO	RA Header	Solder Tail	2313443-1	2313445-1 (2 per)
	3U	PO	RA Header	Compliant Pin	2313442-1	2313445-1 (2 per)
	3U	JO	Vert Recpt	Compliant Pin	2313441-1	2313444-1 (2 per)
	6U	PO	RA Header	Solder Tail	2364867-1	2313445-1 (6 per)
	6U	PO	RA Header	Compliant Pin	2348886-1	2313445-1 (6 per)
VITA 62.1 3-phase	6U	JO	Vert Recpt	Compliant Pin	2348888-1	2313444-1 (6 per)
	3U	PO	RA Header	Solder Tail	2332791-1	2313445-1 (6 per)
	3U	PO	RA Header	Compliant Pin	2332793-1	2313445-1 (6 per)
	3U	JO	Vert Recpt	Compliant Pin	2332795-1	2313444-1 (6 per)

## SENSOR CLASSES

Class	Sensor Package Diameter
Class 1	>19 in.
Class 2	13 to <19 in.
Class 3	9 to <13 in.
Class 4	6 to <9 in.
Class 5	<6 in.



### RELIABLE

- Self-locking threaded coupling
- 100% scoop proof
- Contact retention system provides excellent contact retention under severe vibration

### EMI PROTECTED

- Grounding fingers for excellent EMI protection
- Metal-to-metal bottoming for maximum EMI grounding protection
- Connector is grounded when the shells meet, even before the contacts are engaged
- Trapezoidal thread for excellent shell-to-shell continuity

### VERSATILE

- Variety of shell materials and finishes
- Wide range of backshells and accessories

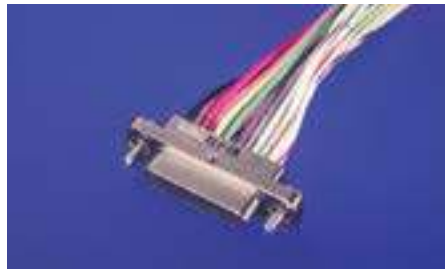
## CLASS 1 AND 2

Class 1 and 2	Type	Shell Size	Sensor LRU Gender
J1	DC Power	MIL-DTL-38999/Series III	21 Receptacle with Pin Inserts
J2	Signal	MIL-DTL-38999/Series III	25 Receptacle with Socket Inserts
J3	Video (Copper)	MIL-DTL-38999/Series III	21 Receptacle with Socket Inserts
J4	Fiber Optic	MIL-DTL-38999/Series III	19 Receptacle with Socket Inserts for Fiber Optics
J5	GPS Antenna	MIL-PRF-39012	TNC Receptacle
J6	Aux DC Power	MIL-DTL-38999/Series III	21 Receptacle with Pin Inserts
J7	High Speed Copper	VITA 76	17 Receptacle with Pin Inserts
J8	High Density RF	MIL-DTL-38999/Series III	25 Receptacle with Socket Inserts
J9	Low Loss RF	MIL-DTL-38999/Series III	25 Receptacle with Socket Inserts
J10	AC Power	MIL-DTL-38999/Series III	17 Receptacle with Pin Inserts
J11	High Voltage DC	MIL-DTL-38999/Series III	15 Receptacle with Pin Inserts
J12	Key Fill (non GPS)	MIL-DTL-55116	N/A NSA P/N 0N241775
J13	Key Fill (GPS)	MIL-DTL-55116	N/A NSA P/N 0N241775
J14	High Density Fiber	VITA 87	15 Receptacle with 4 Optical MT with Physical Contacts for 96 Optic Fibers
J15	High Density Fiber	VITA 87	11 Receptacle with 1 Optical MT with Physical Contacts for 24 Optic Fibers
J16	External Battery	MIL-DTL-38999/Series III	9 Receptacle with Pin Inserts

\* -x to be replaced by dash number, see TE product drawings for dash options.

Platform Umbilical Gender	Keying	Insert	Panel Interconnect			I/O Cable Interconnect		
			Connector Part Number	Contacts MIL Part Number	Contact Part Number	Connector Part Number	Contacts MIL Part Number	Contact Part Number
Plug with Socket Inserts	N	21-11	D38999/20*G11PN	M39029/58-365	Included with Connector	D38999/26*G11SN	M39029/56-353	Included with Connector
Plug with Pin Inserts	N	25-7	D38999/20*J7SN	M39029/56-348 (Sz 22) M39029/91-530 (Sz 8)	Included with Connector	D38999/26*J7PN	M39029/58-360(Sz 22) M39029/90-529 (Sz 8)	Included with Connector
Plug with Pin Inserts	N	21-11	D38999/20*G11BN	M39029/75-416	6162-217-1277	D38999/26*G11AN	M39029/28-211	6162-233-1277
Plug with Pin Inserts for Fiber Optics	N	19-11	D38999/20*F11BN	M29504/5-XXX	See p 15	D38999/26*F11AN	M29504/4-XXX	See p 15
Plug	—	—	See p 14	N/A	N/A	See p 14	N/A	N/A
Plug with Socket Inserts	A	21-11	D38999/20*G11PA	M39029/58-365	Included with Connector	D38999/26*G11SA	M39029/56-353	Included with Connector
Plug with Socket Inserts	N	Not supplied by TE						
Plug with Pin Inserts	N	25-19	D38999/20*J19BN		Not supplied by TE	D38999/26*J19AN		Not supplied by TE
Plug with Pin Inserts	N	25-8	D38999/20*J8BN		Not supplied by TE	D38999/26*J8AN		Not supplied by TE
Plug with Socket Inserts	N	17-6	D38999/20*E6PN	M39029/58-365	Included with Connector	D38999/26*E6SN	M39029/56-353	Included with Connector
Plug with Socket Inserts	N	15-5	D38999/20*D5PN	M39029/58-364	Included with Connector	D38999/26*D5SN	M39029/56-352	Included with Connector
NSA P/N 0N241774	N/A	N/A	Not supplied by TE					
NSA P/N 0N241774	N/A	N/A	Not supplied by TE					
Plug with Socket Inserts	N	4 MT	2358897-x * Flange Mt 2379812-x * Jam Nut		2375153-x *	2358899-x *		2375154-x *
Plug with Socket Inserts	N	1 MT	2358902-x * Flange Mt 2379928-x * Jam Nut		2375153-x *	2358904-x *		2375154-x *
Plug with Socket Inserts	N	9-35	D38999/20*A35PN	M39029/58-360	Included with Connector	D38999/26*A35SN	M39029/56-348	Included with Connector

# I/O Interconnect



## MICRO-D CONNECTORS

- Current rating – 3 amps max per contact
- Mating force maximum is 10 oz. (2.78N) times the number of contacts
- Low engaging force

### CLASS 3

Class 3	Type	Shell Size	Sensor LRU Gender	
J1	DC Power	MIL-DTL-38999/Series III	19	Receptacle with Pin Inserts
J2	Signal	MIL-DTL-38999/Series III	19	Receptacle with Socket Inserts
J3	Video (Copper)	MIL-DTL-38999/Series III	17	Receptacle with Socket Inserts
J4	Fiber Optic	MIL-DTL-38999/Series III	13	Receptacle with Socket Inserts for Fiber Optics
J5	GPS Antenna	MIL-PRF-39012	TNC	Receptacle
J6	Aux DC Power	MIL-DTL-38999/Series III	19	Receptacle with Pin Inserts
J7	High Speed Copper	VITA 76	17	Receptacle with Pin Inserts
J8	High Density RF	MIL-DTL-38999/Series III	21	Receptacle with Socket Inserts
J9	Low Loss RF	MIL-DTL-38999/Series III	21	Receptacle with Socket Inserts
J11	High Voltage DC	MIL-DTL-38999/Series III	11	Receptacle with Pin Inserts
J14	High Density Fiber	VITA 87	13	Receptacle with 2 Optical MT with Physical Contacts for 48 Optic Fibers
J15	High Density Fiber	VITA 87	11	Receptacle with 1 Optical MT with Physical Contacts for 24 Optic Fibers
J16	External Battery	MIL-DTL-38999/Series III	9	Receptacle with Pin Inserts

\* -x to be replaced by dash number, see TE product drawings for dash options.

### CLASS 5

Cabled Connectors	MCKS	N1	B	25
	MCKS Series	N1: Electroless Nickel C2: Yellow Chromate	B: No Hardware	25 Position

PCB Connectors (Straight and Right Angle)	MCKS	N1	B	25
	MCKS Series	N1: Electroless Nickel C2: Yellow Chromate	B: No Hardware P: Jackpost	25 Position

Example PNs: **Cabled Connector:** MCKS-N1-B-25P8F1-18.0  
**PCB Connector:** MCKS-N1-B-25PRT1

Platform Umbilical Gender	Keying	Insert	Panel Interconnect			I/O Cable Interconnect		
			Connector Part Number	Contacts MIL Part Number	Contact Part Number	Connector Part Number	Contacts MIL Part Number	Contact Part Number
Plug with Socket Inserts	N	19-11	D38999/20*F11PN	M39029/58-364	Included with Connector	D38999/26*F11SN	M39029/56-352	Included with Connector
Plug with Pin Inserts	N	19-35	D38999/20*F35SN	M39029/56-348	Included with Connector	D38999/26*F35PN	M39029/58-360	Included with Connector
Plug with Pin Inserts	N	17-6	D38999/20*E6SN	M39029/56-353	Included with Connector	D38999/26*E6PN	M39029/58-365	Included with Connector
Plug with Pin Inserts for Fiber Optics	N	13-4	D38999/20*C4BN	M29504/5-XXX	See p 15	D38999/26*C4AN	M29504/4-XXX	See p 15
Plug	—	—	See p 14	N/A	N/A	See p 14	N/A	N/A
Plug with Socket Inserts	A	19-11	D38999/20*F11PA	M39029/58-364	Included with Connector	D38999/26*F11SA	M39029/56-352	Included with Connector
Plug with Socket Inserts	N	Not supplied by TE						
Plug with Pin Inserts	N	21-11	D38999/20*G11BN		Not supplied by TE	D38999/26*G11AN		Not supplied by TE
Plug with Pin Inserts	N	21-75	D38999/20*G75BN		Not supplied by TE	D38999/26*G75AN		Not supplied by TE
Plug with Socket Inserts	N	11-5	D38999/20*B5PN	M39029/58-363	Included with Connector	D38999/26*B5SN	M39029/56-351	Included with Connector
Plug with Socket Inserts	N	2 MT	2358900-x * Flange Mt 2379927-x Jam Nut		2375153-x *	2358901-x *		2375154-x *
Plug with Socket Inserts	N	1 MT	2358902-x * Flange Mt 2379928-x * Jam Nut		2375153-x *	2358904-x *		2375154-x *
Plug with Socket Inserts	N	9-35	D38999/20*A35PN	M39029/58-360	Included with Connector	D38999/26*A35SN	M39029/56-348	Included with Connector

P	8F1	18.0
P: Pin S: Socket	8: 28 AWG F: 7 Strand per MIL-W-22759/11	1: All White Wire 9: Solid Color Repeating per MIL-DTL-83513 Lead Length (18 in Minimum)

S	RT1
P: Pin S: Socket	RT: Right Angle Termination ST: Straight Termination 1: .100" leads 1A: .140" leads 1B: .172" leads



## TNC Connectors (MIL-PRF-39012)



The TE Connectivity TNC RF connector family, with 7/16-28 threaded couplings, provides low noise levels and optimum stability, and can withstand the shock and vibration often present in harsh environments. Available in 50 ohm versions, these connectors feature cable plugs and jacks. These connectors accept a wide range of coaxial cables and are intermateable with industry standard connectors designed to MIL-PRF-39012 specifications.

\*See [www.te.com](http://www.te.com) for the full line of TNC Connectors

### HIGH PERFORMANCE




- Provides excellent performance at frequencies up to 11 GHz

### RUGGED

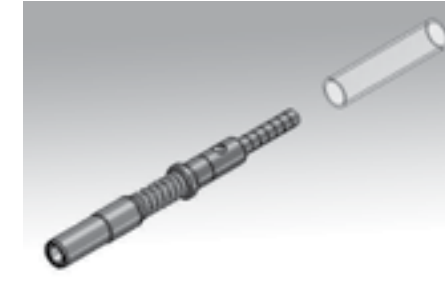
- Weatherproof versions available
- Plugs available for high temperature cable

### VERSATILE

- Commercial Off-the-Shelf equivalent parts available

		TE Part No.	Reference Part No.	Military PN M39012/26	Termination Style	Body Plating	Cable
		<b>Plugs MIL-PRF-39012/26</b>					
		225345-6	—	B0006	Crimp	Silver	RG-142, 142A, 142B, 400
		1057635-1	3101-7985-00	—	Solder	Passivate/Gold	405 (.086 Dia Semirigid or Flex)
		1057631-1	3101-7941-00	—	Solder	Passivate/Gold	402 (.141 Dia Semirigid or Flex)
<b>Bulkhead Jacks MIL-PRF-39012/27</b>							
		1057679-1	3104-7985-00	—	Solder	Passivate/Gold	405 (.086 Dia Semirigid or Flex)
		1057676-1	3104-7941-00	—	Solder	Passivate/Gold	402 (.141 Dia Semirigid or Flex)
<b>Panel Jack MIL-PRF-39012/29</b>							
		1057699-1	3106-7985-00	—	Solder	Passivate/Gold	405 (.086 Dia Semirigid or Flex)
		1057697-1	3106-7941-00	—	Solder	Passivate/Gold	402 (.141 Dia Semirigid or Flex)

## Multi-Mode Optical Termini



TE optical termini are designed to work with MIL-C-38999 SIII interconnects, and designed to MIL-T-29504/5 STYLE.

They use the most recent developments in precision ceramic ferrules and lightweight MIL-C-38999 Series III connector shell materials, designed to ensure the optical performance meets the requirements of high reliability optical systems. Compact spring loaded, precision optical contacts are individually insertable / removable for ease of assembly. Extensive testing has confirmed excellent performance under the most demanding environmental conditions.

### SINGLE-FIBER CERAMIC FERRULES

- MIL-PRF-29504/4 pin and /5 socket

### MULTIFIBER ARRAYS

- MT multifiber ferrules

### SINGLE FIBER CERAMIC FERRULES

	TE Part Number	Bore Size	Style	MIL-PRF for Reference Only	
				TICC Number	
<b>Socket Contacts</b>	457462-126-200	0.126 +0.001/-0	1	4311 4238	
	457462-127-200	0.127 +0.001/-0	1	4046	
	457462-232-150	0.232 +0.004/-0	1	N/A	
	457462-283-250	0.283 +0.004/-0	1	N/A	
<b>Pin Contacts</b>	457463-126-250	0.126 +0.001/-0	1	4302 4209	
	457463-127-200	0.127 +0.001/-0	1	4040	
	457463-232-200	0.232 +0.004/-0	1	N/A	
	457463-283-250	0.283 +0.004/-0	1	N/A	



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