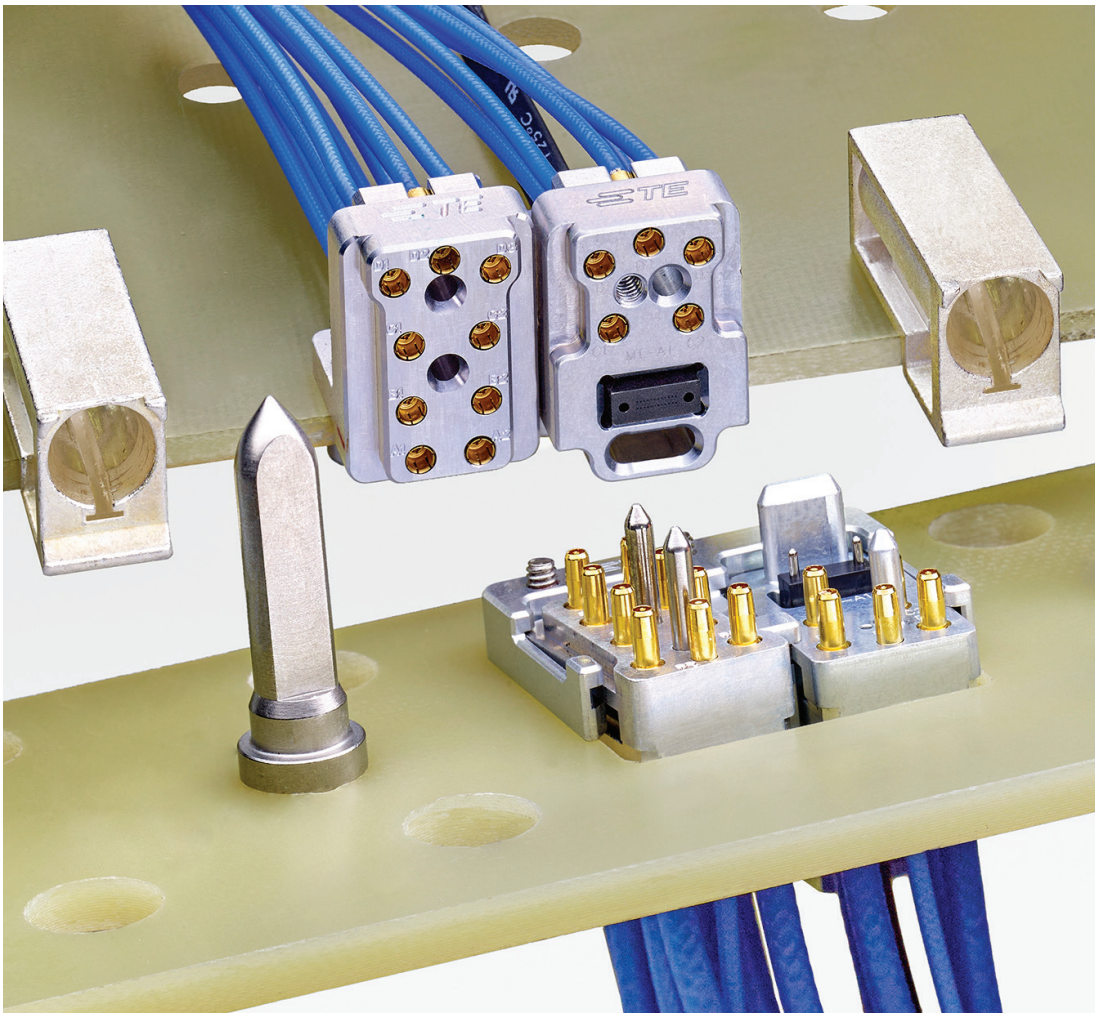
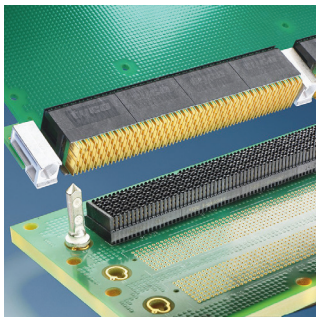
AEROSPACE, DEFENSE & MARINE
OPEN ARCHITECTURE SOLUTIONS

EMBEDDED COMPUTING BOARD-LEVEL INTERCONNECTS

Rugged High-Speed Solutions that Save Weight and Space









EMBEDDED COMPUTING

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More Performance for Land, Sea, Air, and Space

- Avionics and Vetronics
- Communications Hubs and Processing
- Electronic Warfare and Countermeasure Management
- Two-Level Maintenance and ESD Sensitive Applications
- Mobile and Fixed Satellite Terminals and Ground Base Stations
- Power Supply and Distribution
- Radar Interface and Processing – RF and Digital
- Sensor Array Hubs and Data Processing
- Vehicle Mission Computers and Navigation
- Weapons Control and Targeting
- Space

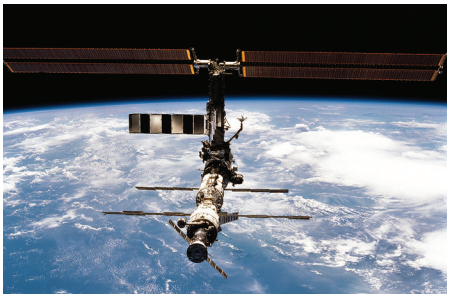
EMBEDDED COMPUTING

Rugged, weight- and space-saving high-speed solutions









SWaP: Reduce Size and Weight

Increase Power, Data and Bandwidth Speed Design 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 Connectivity (TE) has been pushing the bandwidth envelope by adapting high-speed commercial 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 densities and supporting RF and optical interconnects at the board level allowing high-speed box-to-box connectivity. TE has a full range of I/O connectors supporting 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.

SOSA Aligned Interconnect 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 is an active member of the SOSA Consortium. The products in this brochure are targeted for design for next generation sensor systems and rugged embedded computing applications, with many products aligned with the SOSA™ Technical Standard.

EMBEDDED COMPUTING

VPX Compliant Solutions

As the latest standard architecture evolving from VMEbus, the VPX standard meets the needs for data-intensive processing in the aerospace and defense industries, where both ruggedness and high-speed performance are crucial. Supporting switched fabric architecture, VPX systems are designed for flexible application of demanding high-speed protocols, such as 10G and 100G Ethernet, PCIe Gen4, RapidIO, InfiniBand, and HyperTransport, in ground, aerospace, and marine applications.

Scalable

VPX systems are highly scalable and flexible, supporting both 3U and 6U formats to meet the widest range of needs. The VPX backplane interconnect uses the TE MULTIGIG RT connector system to support both single-ended and differential signals.

Open Architecture

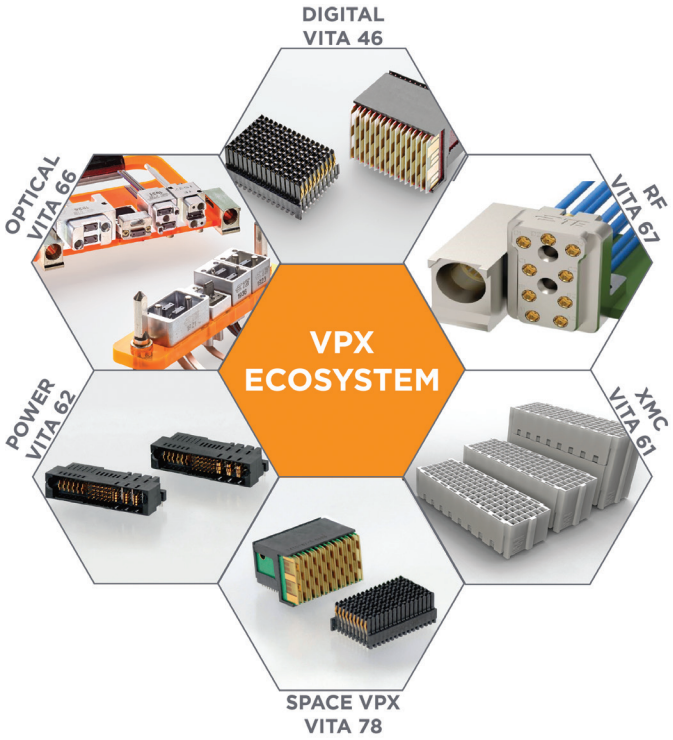
As a widely used standard, VPX promotes interoperability, a healthy choice of suppliers, and economies of scale that result from higher board volumes. TE Connectivity is an active participant and standards driver for organizations like VITA and SOSA and has a portfolio of products aligned to their standards.

Ruggedness

MULTIGIG RT connectors are built for extreme environments on and beyond the earth's atmosphere. TE knows that system critical connections in aerospace and defense systems can often mean life or death, for this reason TE has tested and proven the MULTIGIG RT connector system for shock, vibration, humidity, corrosion, durability, and all in extreme temperatures. This extreme ruggedness is designed into MULTIGIG RT to ensure successful missions and to extended life spans in critical environments where repair is impossible, or overly expensive.

Flexible

Not only does VPX accommodate new technologies, it has expanded beyond backplane/daughterboard signaling to embrace mezzanine application, power modules, and optical and RF connectivity—all with the goal of providing unmatched flexibility and capabilities for embedded computing.





OpenVPX™

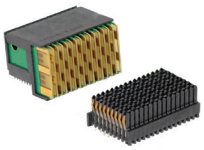
SOSA™ Sensor Open Systems Architecture
Sensor Integration Simplified™

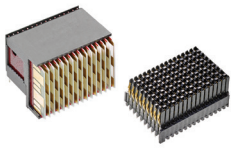
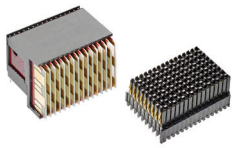
High Speeds, Multimedia, Maximum Flexibility

TE's portfolio of VPX systems gives you a complete array for high-speed data, optical, RF, power, and mezzanine connectivity. More choice means more flexibility in achieving specific system architectures with standards-based solutions. Get the high-speed signal integrity advanced applications require in rugged, reliable connectors.

EMBEDDED COMPUTING

VITA 46 MULTIGIG Connectors



	MULTIGIG RT 2 Connector	MULTIGIG RT 2-R Connector	MULTIGIG RT 2-S Connector	MULTIGIG RT 3 Connector
SPEEDS	10+ Gb/s	10+ Gb/s	16+ Gb/s	32+ Gb/s
RUGGEDIZED	—	√	√	√
MATING CYCLES	200	500	500	500
QUAD-REDUNDANT CONTACT SYSTEM	—	√	√	√
FLEXIBILITY WITH WAFER CONFIGURATION	√	√	√	√
VITA 46 INTERMATEABLE	√	√	√	√
PCB HOLE DIMENSION (mm) BACKPLANE	0.56 (ref)	0.56 (ref)	0.56 (ref)	0.37 (ref)
PCB HOLE DIMENSION (mm) DAUGHTER-CARD	0.46 (ref)	0.46 (ref)	0.46 (ref)	0.32 (ref)
RELEASE DATE	2003	2013	2019	2019
OPEN VPX STANDARD	VITA 46.0	VITA 46.0	VITA 46.0	VITA 46.30

VITA 46 MULTIGIG RT 2 AND MULTIGIG RT 2-R CONNECTORS

MULTIGIG RT 2
RUGGED

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

FAST

- Supports speeds up to 10+ Gb/s, providing a comfortable performance margin in VPX applications

FLEXIBLE

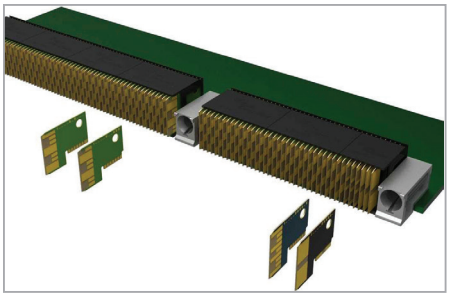
- Wafers are easily modified to support the need for propagation delay, characteristic impedance, and other electrical parameters
- Lightweight connector offers built-in ESD features enabling field serviceability

MULTIGIG RT 2-R
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



MULTIGIG RT 2

Modular MULTIGIG RT 2 Connector System with Data Rates to 10+ Gb/s

The MULTIGIG RT 2 connector, the standard for VITA 46, represents a huge step forward in the world of rugged computing and C4ISR enabling technology. The connectors support speeds to 10+ 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 qualifies for VITA 47 environments.

Ultra-Rugged MULTIGIG RT 2-R Connectors

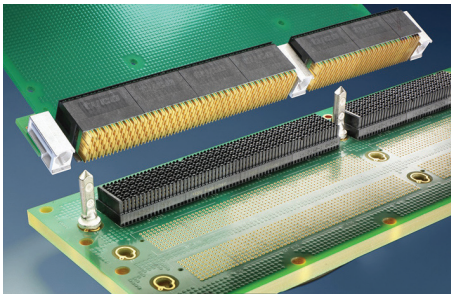
MULTIGIG RT 2-R connectors are an evolution of MULTIGIG RT 2 connectors, designed to offer even more ruggedness and reliability in demanding high-vibration environments. They go beyond VITA 47 environmental performance to meet the demanding requirements of VITA 72.

The 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 to 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 torture tested by exposing a 6U VPX test unit to random vibration levels of 0.2 g^2/Hz for 12 hours.

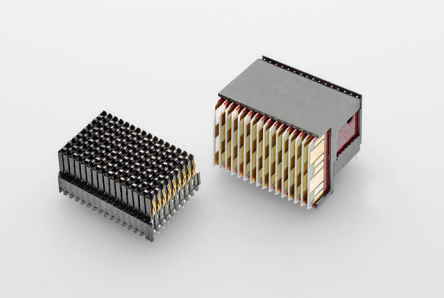
STANDARDS AND SPECIFICATIONS

- **Application Specification:** 114-163004
- **Product Specification:**
  108-2072 (RT 2 and 2-R)
  108-2072-3 (RT 3)
- **Qualification Test Report:**
  501-544 (RT 2 and 2-R)
  501-134091 (RT 3)
- **Electrical Performance Report:**
  505-2 (RT 2 and 2-R)
  505-163005 (RT 3)
- **Backplane Connector Removal:**
  408-10127 (all series)
- **Daughtercard Connector Removal:**
  408-10454 (all series)
- **Standards and Test Reports:** #204690 (VITA 72 VPX Connector Report)



MULTIGIG RT 2-R

VITA 46 MULTIGIG RT 2-S AND MULTIGIG RT 3 CONNECTORS



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

TE Connectivity's (TE) MULTIGIG RT 2-S and MULTIGIG RT 3 next generation lightweight, rugged, high speed backplane connectors meet the interface dimensions for VITA 46 VPX connectors.

They are backward compatible with legacy MULTIGIG RT products and offer the same reliable interface.

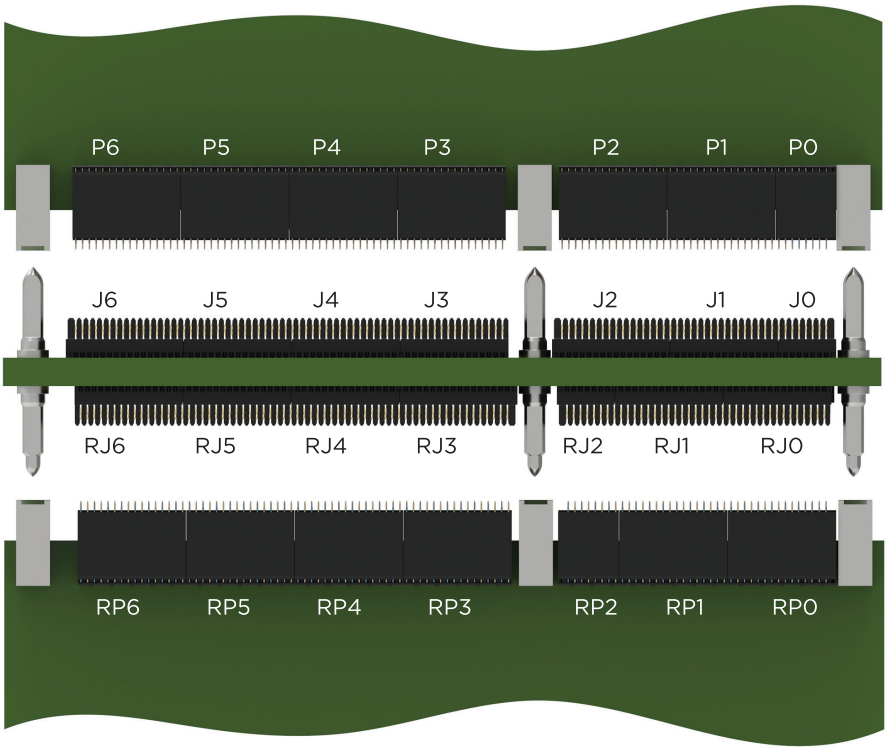
The new contact and wafer designs optimize signal integrity, extending data rates to 16-32+ Gb/s.

MULTIGIG RT 2-S is a change only to the plug-in card connector with higher speed wafers and is drop-in compatible with RT 2 and RT 2-R per VITA 46.0. MULTIGIG RT 3 has smaller compliant pins/board holes for both backplane and plug-in card connectors and are intermateable with RT 2 and RT 2-R but require a different footprint, per VITA 46.30.

STANDARDS AND SPECIFICATIONS

- **Application Specification:** 114-163004
- **Product Specification:**
  108-2072 (RT 2 and 2-R)
  108-2072-3 (RT 3)
- **Qualification Test Report:**
  501-544 (RT 2 and 2-R)
  501-134091 (RT 3)
- **Electrical Performance Report:**
  505-2 (RT 2 and 2-R)
  505-163005 (RT 3)
- **Backplane Connector Removal:** 408-10127 (all series)
- **Daughtercard Connector Removal:** 408-10454 (all series)
- **Standards and Test Reports:**
  #204690 (VITA 72 VPX Connector Report)

VITA 46 MULTIGIG RT 2-S AND MULTIGIG RT 3 CONNECTORS



VITA 46 VPX PART NUMBERS

	RT 2		RT 2-R		RT 2-S	RT 3	RT 3 Highspeed with Power
Position	**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	
JO	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	

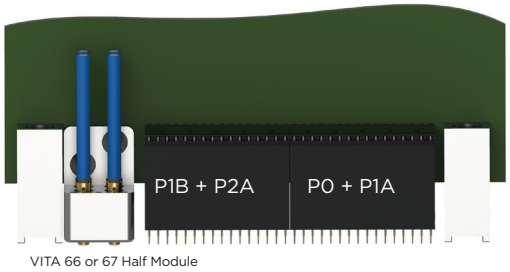
VITA 46.10 REAR TRANSITION MODULE (RTM) PART NUMBERS

Daughtercard	**RT 2**		**RT 2-R**		**RT 2-S**		**RT 3**	
Position	**Differential**	**Single Ended**	**Differential**	**Single Ended**	**Differential**	**Single Ended**	**Differential**	**Single Ended**
RP0	1410968-3		2102773-1		2302319-1		2302794-1	
RP1, 3, 4, 5, 6	1410975-3	1410970-3	2102774-1	2102849-1	2302320-1	2102849-1	2302795-1	2102849-1
RP2	1410971-3	1410972-3	2102775-1	2102848-1	2302321-1	2102848-1	2302796-1	2102848-1
Backplane	**RT 2**		**RT 2-R**		**RT 2-S**		**RT 3**	
Position	**Full Load**	**Select Load**	**Full Load**	**Select Load**	**Full Load**	**Select Load**	**Full Load**	**Select Load**
RJ0	1410964-1	1410965-1	2102768-1	2102850-1	2102768-1	2102850-	2302791-1	2302792-1
RJ1	1410140-1	1410966-1	2102736-1	2102851-1	2102736-1	2102851-1	2302789-1	2302793-1
RJ2	1410186-1		2102735-1		2102735-1		2302788-1	
RJ3	1410142-1	N/A	2102737-1	N/A	2102737-1	N/A	2302790-1	N/A
RJ4, 5, 6	1410140-1		2102736-1		2102736-1		2302789-1	

See page 10 for all hardware/guide pin part numbers

VITA 46 MULTIGIG RT 2-S AND MULTIGIG RT 3 CONNECTORS

MODULES FOR VITA 66 AND 67 HALF MODULE 3U APPLICATIONS

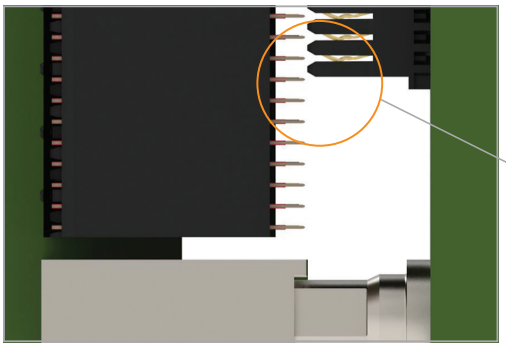


VITA 66 or 67 Half Module

Position	RT 2 (10Gb/s)	RT 2-R (Rugged 10Gb/s)	RT 2-S (16+Gb/s)	RT 3 (25+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)

SpaceVPX: PLUG-IN CONNECTOR MODULES DEFINED IN VITA 78

Plug-In Module Connector Designation	Part Number
Module 8	2286123-3
Module 8A	2378581-3
Module 16A	2286117-3
Module 16B	2286118-3
Module 16C	2286119-3
Module 16D	2286120-3
Module 16E	2286121-3
Module 16F	2378582-3
Module 16G	2378583-3
Module 16H	2384817-3
Module 16J	2384818-3
Full Module (16 Power Wafers)	2286663-3



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

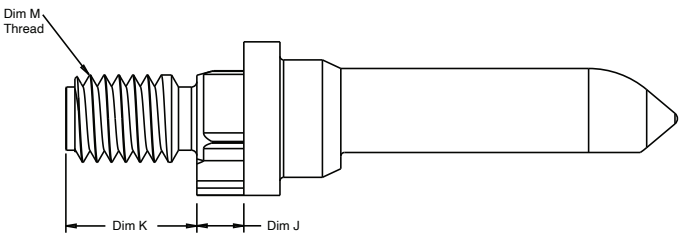
GUIDE HARDWARE

GUIDE MODULES

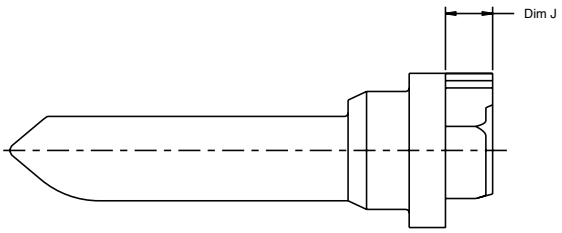
Key Orientation (Degrees)	Standard (Diecast)	Rugged (Machined)
0	1-1469492-1	2000713-1
45	1-1469492-2	2000713-2
90	1-1469492-3	2000713-3
135		1-2000713-4
180		1-2000713-5
225		1-2000713-6
270	1-1469492-7	2000713-4
315	1-1469492-8	2000713-5
No Key	1-1469492-9	2000713-6

GUIDE PINS

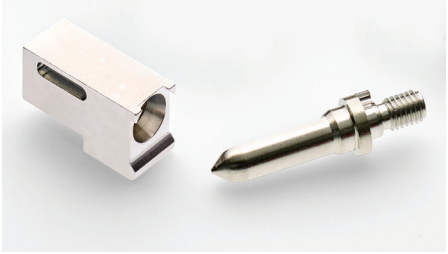
Length L	Dim J	Dim K (Ext Thd Only)	Thread M	Rugged (Ext Thd)	Rugged (Int Thd)	Diecast (Ext Thd)	Diecast (Int Thd)
24	1.32	7.25	10-32 UNF	2000676-1	2327906-2		1410955-2
24	2.60	7.25	10-32 UNF	2000676-2	2327906-4	1-1469491-2	
24	4.20	7.25	10-32 UNF	2000676-3	2327906-6	1-1469491-2	
24	5.70	7.25	10-32 UNF	2000676-4	2327906-8	1-1469491-4	
24	5.70	10.35	10-32 UNF	2000676-6			
24	7.30	7.25	10-32 UNF	2000676-5	1-2327906-0		
24	3.40	9.00	M5 x 0.8 - 6g	2000676-7	1-2327906-4		
19	3.40	9.00	M5 x 0.8 - 6g	2000676-8	1-2327906-6		
24	2.40	6.30	M5 x 0.8 - 6g	2000676-9	1-2327906-8		
19	1.32		10-32 UNF		2-2327906-0		
19	4.20		10-32 UNF		2-2327906-2		
19	5.70		10-32 UNF		2-2327906-4		



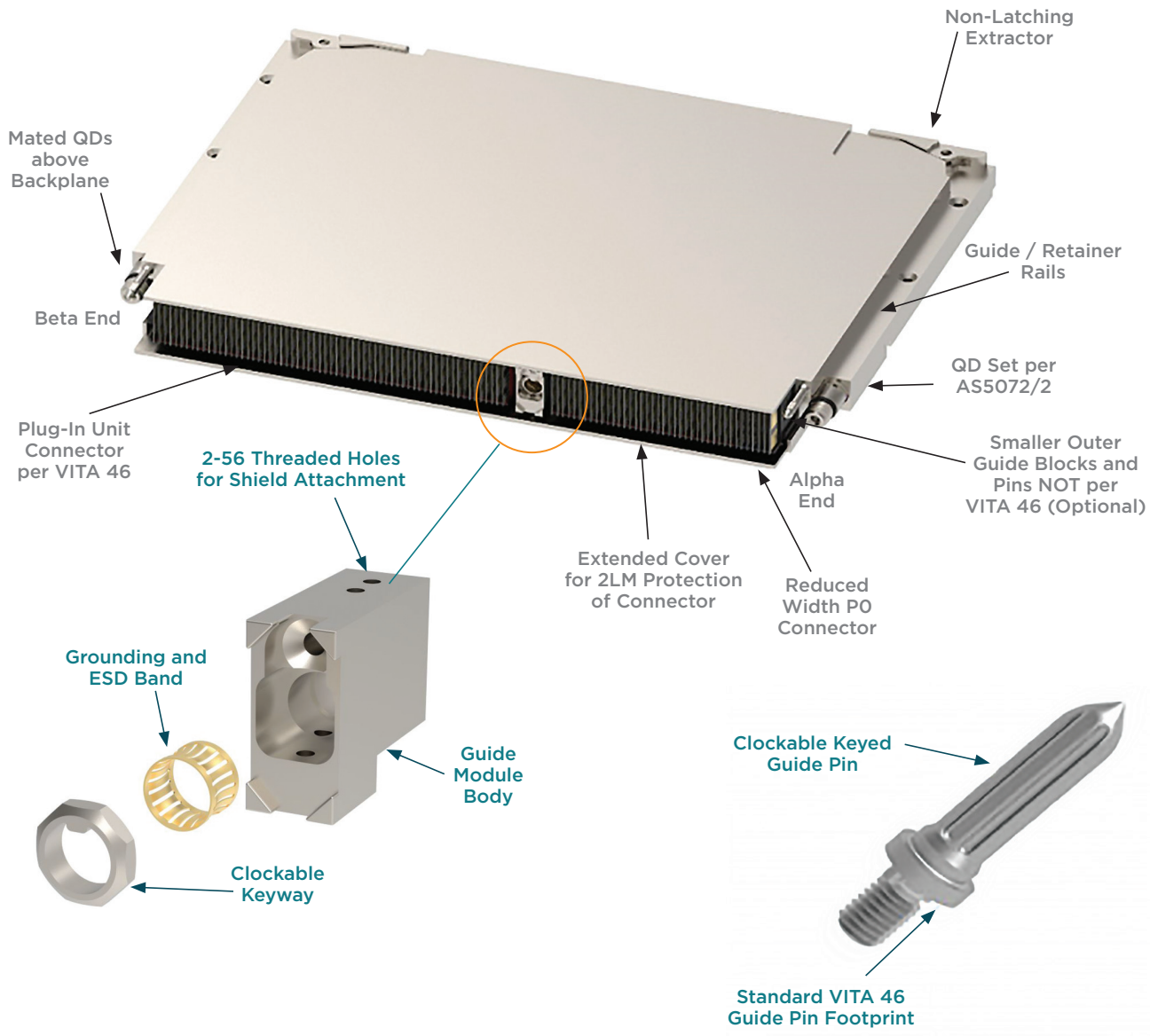
External Thread Guide Pins



Internal Thread Guide Pins



VITA 48.4 LIQUID COOLED MODULES

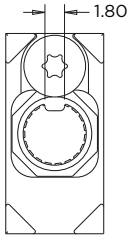


Description	Part Number
Guide Module (Daughtercard)	2828454-x
Guide Pin (Backplane)	2828999-x
P0 Connector (Reduced Width), MULTIGIG RT 2-R	2226996-1

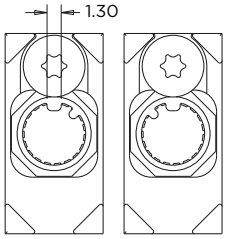
For P1-P6 Connectors, refer to table on p 8.
For J0-J6 Connectors, refer to table on p 8.

VITA 48.4 LIQUID COOLED MODULES – GUIDE HARDWARE

Part Number	Secondary Key Angle
2828454-1	None
2828454-2	45°
2828454-3	90°
2828454-4	135°
2828454-5	180°
2828454-6	225°
2828454-7	270°
2828454-8	315°

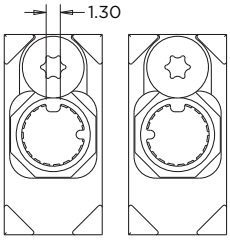


2828454-1
(Mates with
x-2828999-1)



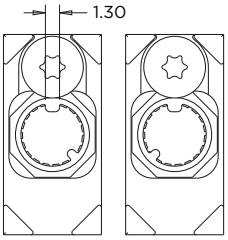
2828454-2
(Mates with
x-2828999-2)

2828454-8
(Mates with
x-2828999-8)



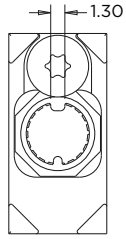
2828454-3
(Mates with
x-2828999-3)

2828454-7
(Mates with
x-2828999-7)



2828454-4
(Mates with
x-2828999-4)

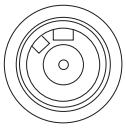
2828454-6
(Mates with
x-2828999-6)



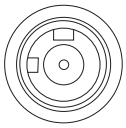
2828454-5
(Mates with
x-2828999-5)



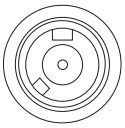
X-2828999-1



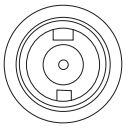
X-2828999-2



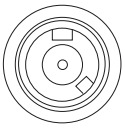
X-2828999-3



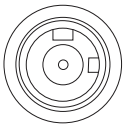
X-2828999-4



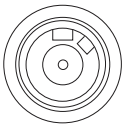
X-2828999-5



X-2828999-6

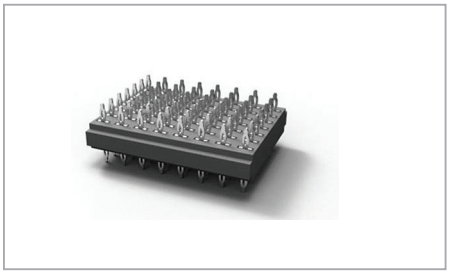


X-2828999-7



X-2828999-8

ADDITIONAL VPX COMPATIBLE PRODUCTS

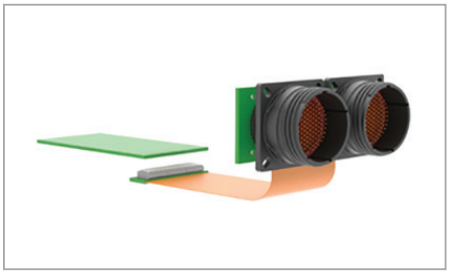


Stacking Compliant Pin Connector

Permanent Stacking

- Compliant pin termination on both sides
- Well suited for rigid flex or board-to-board stacking where a separable interface is not required

Convenient

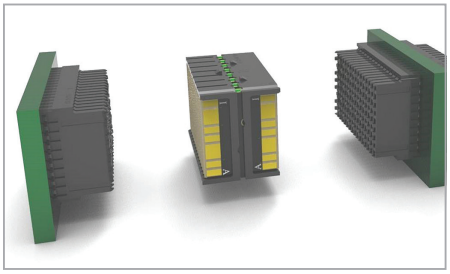


- Simple press-fit application
- Connector footprint matches the MULTIGIG RT 2 and 2-R connector pattern for low noise and low loss
- Fits VITA 46 half module spaces, end-to-end stackable to build the pin count required with standard components

Low Profile

- 4 mm stack height

Fits VITA 46.0 Footprint	Position Size	Stack Height	Tin-lead Plated Tails	Tin Plated Tails (RoHS)
Plug-In Board	56 pos (8x7)	4.0 mm	2102785-1	2102785-2
Backplane	72 pos (8x9)	4.4 mm	2352497-1	2352497-2

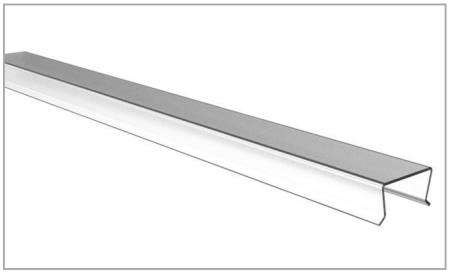


VITA 46 Interposer

Part No. 2226027-1 - Full Module
2375971-1 - Half Module

Parallel Backplanes

- Stacking connector to enable parallel backplanes in a VPX chassis.
- Mates to backplane VITA 46 connectors, maintaining VITA 46 pinout
- 25 mm stack height



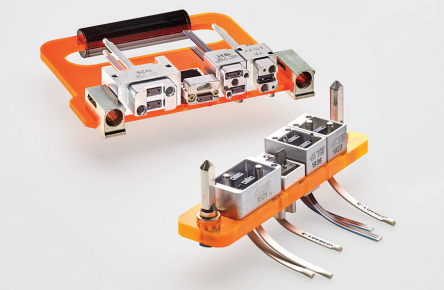
VPX Daughtercard (Plug-In Module) Covers

Part No. 2226808-1 6U
Part No. 2226808-2 3U

Rugged Protection

- Durable polycarbonate protective cover applied to a plug-in card
- Prevents connector damage in handling

VITA 66 OPTICAL MODULES



EASY TO USE

- Common mounting interface requirements for the various fiber-optic interconnects within 3U and 6U VPX applications
- Quickly and confidently implement the best solution for specific applications

RUGGED

- The module varieties are based upon proven optical termini for military and aerospace applications

VERSATILE

- **Full-Size Connectors**
  VITA 66.1
  VITA 66.5, Style C Hybrid
  VITA 66.5, Style D
- **Half-Size Connectors**
  VITA 66.4 and Derivatives
  VITA 66.5, Style A
  VITA 66.5, Style C Hybrid
  VITA 66.5, Style D
- Plug (daughtercard) connector housing contains a slot feature to facilitate cleaning the MT interfaces
- Locating post features help ensure proper position on the backplane and daughtercard

HIGH PERFORMANCE

- Connectors designed to maximize optical performance, accommodating up to three MT ferrules per insert
- Receptacle connector insert floats relative to the shell, providing ±0.25 mm planar floating alignment capability

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.

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.

MECHANICAL/ENVIRONMENTAL

- **Mating Force**

Per 12-Fiber MT Ferrule:	**Per 24-Fiber MT Ferrule:**
Min: 7.8 N (1.75 lb)	Min: 18.0 N (4.05 lb)
Max: 11.8 N (2.65 lb)	Max: 22.0 N (4.95 lb)

- **Durability:** 100 cycles, tested per EIA-455-21
- **Shock:** 50 g, sawtooth, 11 ms pulse duration, tested per TIA/EIA-455-14, condition E
- **Random Vibration:** 11.95 g_{rms}, 50 to 2000 Hz, 15 minutes per plane. Tested per TIA/EIA-455-11, test condition VI-D
- **Storage Temperature:** -55˚C to +85˚C
- **Operating Temperature:** -40˚C to +85˚C
- **Thermal Aging:** 168 hrs at +85˚C
- **Humidity, Steady-State:** 168 hours at 95% RH, 60˚C
- **Temperature Cycling:** 21 cycles between -40˚C to +85˚C

MATERIALS

- **Connector Shell and Housing:** Aluminum alloy 6061, clear-chromate conversion-coated (RoHS compliant)
- **Alignment Posts and Screws:** Stainless steel, 300 series, passivated (RoHS-compliant)

OPERATING TEMPERATURE RANGE

- **Standard-Grade MT Ferrule Kits:** -20°C to +85°C
- **Low-Loss-Grade MT Ferrule Kits:** -40°C to +85°C

STANDARDS AND SPECIFICATIONS

• **Application Specification:**	114-32050 (VITA 66.1)
	114-32144 (VITA 66.4)
	114-163005 (HD VITA 66.4 Derivative)
• **Product Specification:**	108-2467 (VITA 66.1)
	108-2467-1 (VITA 66.4)
	108-163007 (HD VITA 66.4 Derivative)
	108-163027 (VITA 66.5, Style A)
• **Qualification Test Report:**	501-134012 (VITA 66.1)
	501-134012-1 (VITA 66.4)
	501-163003 (HD VITA 66.4 Derivative)
	501-163035 (VITA 66.5, Style A)

APPLICATIONS

- Embedded Computing
- Avionics and Vetronics
- Processing
- Radar
- Secure Communications
- Imaging and Targeting

VITA 66 OPTICAL MODULES

Interface	Part Number	
	Backplane	Daughtercard
High-Density, Half-Size, VITA 66.4 Derivative	2828383-1	2828384-1
VITA 66.1	2000973-1	2000974-1
VITA 66.4	2226880-1	2226881-1
VITA 66.5	Per Transceiver Kit Table Below	

Contact TE about availability and additional fiber assemblies.

MT FERRULE KITS

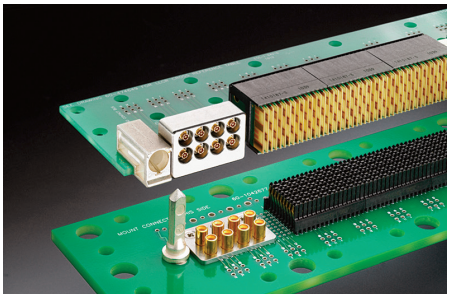
VITA 66.1 and VITA 66.4 Connectors	Backplane	Daughtercard
12 Fiber, multi-mode, standard-grade	2102866-1	2101866-2
12 Fiber, multi-mode, low-loss-grade	2313212-1	2313212-2
HD VITA 66.4 Derivative Connectors	**Backplane**	**Daughtercard**
12 Fiber, multi-mode, low-loss-grade	2828413-1	2828412-1
24 Fiber, multi-mode, low-loss-grade	2828413-2	2828412-2
VITA 66.5, Style A Connectors	**Backplane**	**Daughtercard**
12 Fiber, multi-mode, low-loss-grade	2332756-1	2355002-1
24 Fiber, multi-mode, low-loss-grade	2332756-2	2355002-2
VITA 66.5, Style C Hybrid and Style D	**See Pages 24-25**	

VITA 66.5 TRANSCEIVER KITS

Transceiver Kit TE Part Number	Channel Count	Tx/Rx	Rx Sens (dBm)	Max Data Rate G	Application	VITA 66.5			66.5 Style	TE Interposer Kit Part Number
						Plug Kit Part Number: Included in Transceiver Kit Part Number	Mating Backplane Connector Part Number Half Width	Mating Backplane Connector Part Number Full Width		
2330895-1	4	TxRx	-12	10	1 MT	—	2332700-1	—	A	2332699-1
2330895-2	4	TxRx	-9	10	1 MT	—	2332700-1	—	A	2332699-1
2330895-3	12	Tx	—	10	`1 MT	—	2332700-1	—	A	2332699-1
2330895-4	12	Rx	-12	10	1 MT	—	2332700-1	—	A	2332699-1
2352113-2	12	TxRx	-9	10	1 MT	—	2332700-1	—	A	2352110-2
2373521-1	4	TxRx	-7.5	28	1 MT + 10 nanoRF	2313388-1	2313391-1	2378048-1	C-Hybrid	2373526-1
2373521-3	12	Tx	—	28	1 MT + 10 nanoRF	2313388-1	2313391-1	2378048-1	C-Hybrid	2373526-1
2373521-4	12	Rx	-7.5	28	1 MT + 10 nanoRF	2313388-1	2313391-1	2378048-1	C-Hybrid	2373526-1
2394052-1	4	TxRx	-7.5	28	1 MT + 5 nanoRF	2358435-1	2358431-1	2358791-1	C-Hybrid	2373526-1
2394052-3	12	Tx	—	28	1 MT + 5 nanoRF	2358435-1	2358431-1	2358791-1	C-Hybrid	2373526-1
2394052-4	12	Rx	-7.5	28	1 MT + 5 nanoRF	2358435-1	2358431-1	2358791-1	C-Hybrid	2373526-1
2393875-1	4	TxRx	-7.5	28	3 MT	2388440-1	2388438-1	2388444-1	D	2373526-1
2393875-3	12	Tx	—	28	3 MT	2388440-1	2388438-1	2388444-1	D	2373526-1
2393875-4	12	Rx	-7.5	28	3 MT	2388440-1	2388438-1	2388444-1	D	2373526-1
2394053-1	4	TxRx	-12	10	1 MT + 10 nanoRF	2313388-1	2313391-1	2378048-1	C-Hybrid	2343893-1
2394053-2	4	TxRx	-9	10	1 MT + 10 nanoRF	2313388-1	2313391-1	2378048-1	C-Hybrid	2343893-1
2394053-3	12	Tx	—	10	1 MT + 10 nanoRF	2313388-1	2313391-1	2378048-1	C-Hybrid	2343893-1
2394053-4	12	Rx	-12	10	1 MT + 10 nanoRF	2313388-1	2313391-1	2378048-1	C-Hybrid	2343893-1
2394054-1	4	TxRx	-12	10	1 MT + 5 nanoRF	2358435-1	2358431-1	2358791-1	C-Hybrid	2343893-1
2394054-2	4	TxRx	-9	10	1 MT + 5 nanoRF	2358435-1	2358431-1	2358791-1	C-Hybrid	2343893-1
2394054-3	12	Tx	—	10	1 MT + 5 nanoRF	2358435-1	2358431-1	2358791-1	C-Hybrid	2343893-1
2394054-4	12	Rx	-12	10	1 MT + 5 nanoRF	2358435-1	2358431-1	2358791-1	C-Hybrid	2343893-1
2394055-1	4	TxRx	-12	10	3 MT	2388440-1	2388438-1	2388444-1	D	2343893-1
2394055-2	4	TxRx	-9	10	3 MT	2388440-1	2388438-1	2388444-1	D	2343893-1
2394055-3	12	Tx	—	10	3 MT	2388440-1	2388438-1	2388444-1	D	2343893-1
2394055-4	12	Rx	-12	10	3 MT	2388440-1	2388438-1	2388444-1	D	2343893-1

See pages 24-25 for connector module layouts.

VITA 67 RF SMPM MODULES



VITA 67 RF modules from TE are modular systems designed specifically to allow backplane/daughtercard multi-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 a well-established architecture.

The contacts tolerate generous misalignment to allow blind mating and be configured to eliminate the possibility of stubbing. The contacts are housed in robust stainless steel or aluminum modules that hold multiple contacts. The modules are configured to provide RFI/EMI shielding between the RF contacts and provide a high level of adjacent channel isolation of at least 100 dB up through 40 GHz.

MORE CHOICE

- Modular design for application-specific configuration
- Modules available in stainless steel and aluminum
- Float-mounted jack maintains positive RF connection

VERSATILE

- Will support 0.8″ or 1.0″ VPX slot pitches
- .240″ center-to-center contact spacing
- RF contacts are available for a variety of cables

ROBUST

- SMPM-based contact performance to 40 GHz
- Excellent channel-to-channel isolation
- Packaging density saves space and weight

STANDARDS AND SPECIFICATIONS

- **Application Specification:** 114-32004
- **Instruction Sheet:** 408-10373 (float mt jack contacts)
- **Instruction Sheet:** 408-10364 (direct attach plug contacts)
- **Product Specification:** 108-2443
- **Qualification Test Report:** 501-748



SMPM Front Washer
Contacts and Modules



SMPM Snap-In
Contacts and Modules

VITA 67.1 AND 67.2 SMPM CONTACTS AND MODULES

VITA 67.1 AND 67.2 MODULES

Interface Side		Part Number			
	Accepts Contact Type	4-position (67.1)	8-position (67.2)	Mounting Flange	Module Material
Plug-In Module	Spring/Washer	1996883-4	1996705-4	C'sink Thru-Holes to Accept 2-56 UNC	Stainless Steel
		2157338-4	2157350-4	C'sink Thru-Holes to Accept 2-56 UNC	Aluminum
		2101925-3	2101924-3	2-56 UNC Mtg Holes	Stainless Steel
		2157339-4	2157340-4	2-56 UNC Mtg Holes	Aluminum
	Snap-In	2332707-1	2332708-1	2-56 UNC Mtg Holes	Stainless Steel

Interface Side	Part Number			
	4-position (67.1)	8-position (67.2)	Contact Interface to Rear of Backplane	Module Material
Backplane	1996884-1	1996706-1	SMPM Plug	Stainless Steel
	2101510-2	1996777-2	OSMM Jack*	Stainless Steel
		2157553-1	Direct Attach Cable	Aluminum

* Use OSMM low profile wrench PN 2119704-1 to mate OSMM connectors to backplane modules

VITA 67.1 AND 67.2 RF CONTACTS

Interface Side	Contact Type	Cable Type*	Part Number	Contact Extraction Tool
Plug-In Module (SMPM Jack)	Spring/Washer	.047" Dia	1996771-1	2101595-1
		.086" Dia	1996390-1	
		.086" Low Loss Cable	2101814-1	
	Snap-In	.047" Dia	2332684-2	2161640-1
		.086" Dia	2332684-1	
Backplane (SMPM Plug)	Snap-In	.047" Dia (for Direct Attach Cable)	2157248-1	2161640-1
		.086" Dia (for Direct Attach Cable)	2101012-1	
		.086" Low Loss Cable (Dia (for Direct Attach Cable)	2157022-1	
	Press-Fit	NA - Pressfit Directly into Backplane	1996318-1	

*Semirigid cable or flex equivalent

TOOLING

Part Number	Use
2119704-1	OSMM low profile wrench (use for OSMM connectors mating to backplane modules)
2101595-1	SMPM jack insertion/extraction tool (use on 1996390-1, 1996771-1)
2161640-1	SMPM plug extraction tool (use on 2101012-1, 2157248-1)

VITA 67.3 SMPM CONTACTS AND MODULES

VITA 67.3 SMPM MODULES

Interface Side	Accepts Contact Type	Part Number			Module Material	Notes
		9-position (VITA 65.1 Connector Module 6.4.5.6.2)	10-position (VITA 65.1 Connector Module 6.4.5.6.3)	14-position (VITA 65.1 Connector Module 6.4.5.6.4)		
Plug-In Module	Snap-In	2332834-1	2323863-1	2332829-1	Stainless Steel	
		2332834-2	2323863-2	2332829-2	Stainless Steel	Alignment Pin Seated by Customer
		2332834-3	2323863-3	2332829-3	Aluminum	
		2332834-4	2323863-4	2332829-4	Aluminum	Alignment Pin Seated by Customer
Backplane	Spring/ Washer (VITA 67.3 Type B)	2332832-1	2323763-1	2332827-1	Stainless Steel	
		2332832-2	2323763-2	2332827-2	Aluminum	
	Snap-In (VITA 67.3 Type A)	2365211-1	2332706-1	2361107-1	Stainless Steel	

VITA 67.3 SMPM RF CONTACTS

Interface Side	Contact Type	Cable Type*	Part Number	Contact Extraction Tool
Backplane (SMPM Plug)	Spring/Washer (VITA 67.3 Type B)	.047" Dia	1996771-1	2101595-1
		.086" Dia	1996390-1	
		.086" Low Loss Cable	2101814-1	
	Snap-In (VITA 67.3 Type A)	.047" Dia	2332676-2	2161640-1
		.086" Dia	2332676-1	
Plug-In Module (SMPM Jack)	Snap-In	.047" Dia (for Direct Attach Cable)	2157248-1	2161640-1
		.086" Dia (for Direct Attach Cable)	2101012-1	
		.086" Low Loss Cable (for Direct Attach Cable)	2157022-1	

*Semirigid cable or flex equivalent

VITA 67.3 NANORF MODULES AND CONTACTS

LIGHTER WEIGHT

- Small contact size with higher RF contact density enables smaller packaging
- Aluminum modules available for weight reduction

MODULAR

- Blind-mateable float-mounted backplane contacts for module-to-module or box-to-box architecture
- Multiple cable types to fit application requirements – .047" coaxial cable and .086" option for backplane cabling

RELIABLE

- Low loss and excellent isolation – optimized design for signal integrity
- TE tested to vibration requirements per VITA 72

INDUSTRIES

- Military Electronics
- C4ISR
- Electronic Warfare (EW)

APPLICATIONS

- Embedded Computing – VPX modules and Radar processing

A higher density RF coax module, twice the density of VITA 67 SMPM RF modules used in VPX embedded computing applications. Half and full size module sizes can retain up to 12 or 18+ RF contacts, with options for customizing contact count and position. The daughtercard modules are mounted to the card in the VPX Plug-In module, and the backplane module into the chassis backplane.

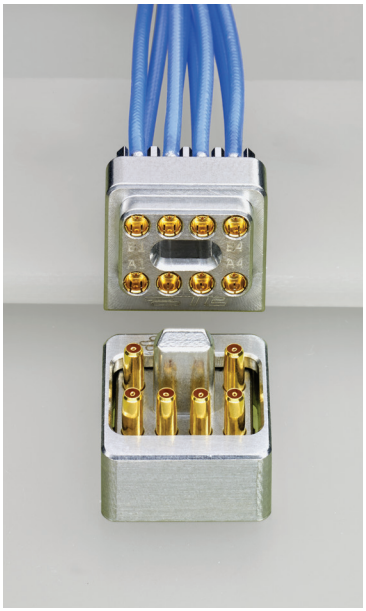
The interface features a floating insert to pre-align RF contacts before engagement. Radial and axial contact float assures final alignment of the contacts and keeps the contacts fully engaged for excellent RF performance under harsh environments.

The contact design supports frequencies up to 70 GHz, and is designed to terminate to standard .047" and .086" semi-rigid and flexible cables.

STANDARDS AND SPECIFICATIONS

- **Instruction Sheet:** 408-163016
- **Product Specification:** 108-163016
- **Qualification Test Report:** 501-134076
- VITA 67.3





VITA 67.3 NANORF MODULES AND CONTACTS

MATERIALS

- Aluminum and stainless steel options for modules
- Copper alloy, 50 µin gold plating, PTFE dielectrics

ELECTRICAL

- Excellent RF performance through 60 GHz
- Isolation minimum 100 dB up through 27 GHz

MECHANICAL

- Supports as low as 0.110 inch contact pitch
- Fits in VPX systems packaging requirements
- 500 mating cycles durability
- Meets high vibration requirements of VITA 72

APPLICATION TOOLING

- No special tooling required

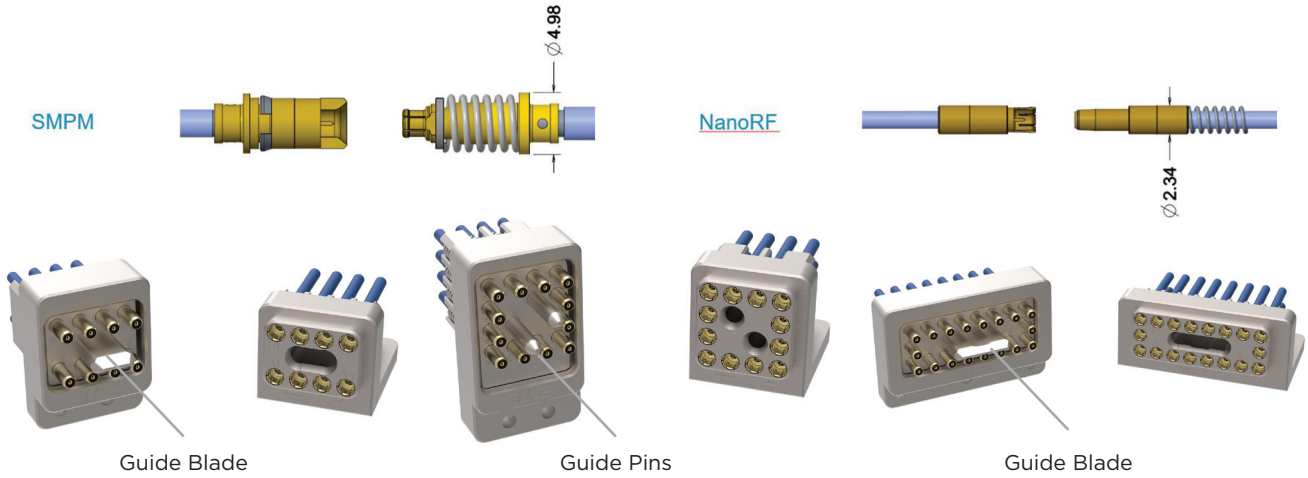
PRODUCT INFORMATION

Module Size	# Positions (Total)	# Positions Supporting .047" Cable (Backplane Side)	# Positions Supporting .086" Cable (Backplane Side)	Plug-in Card Module Part Number (St Steel)	Plug-in Card Module Part Number (Aluminum)	Backplane Module Part Number (St Steel)	Backplane Module Part Number (Aluminum)	Backplane Cutout
Half Module	8	8	—	2828431-1	2828431-2	2828434-1	2828434-2	Non-Standard 0.8" Slot Pitch
						2332627-1	2332627-2	VITA 67.3D
	9	1	8		2357976-1		2357971-1	VITA 67.3D
	10	6	4		2332769-1		2332764-1	Non-Standard 0.8" Slot Pitch
	12	12	—	2313225-1	2313225-2	2313228-1	2313228-2	Non-Standard 0.8" Slot Pitch
						2313376-1	2313376-2	VITA 67.3D
Full Module	16	16	—	2828392-1	2828392-2	2828395-1	2828395-2	Non-Standard 0.8" Slot Pitch
						2341106-1	2341106-2	VITA 67.3C
	18	18	—	2322335-1	2322335-2	2322337-1	2322337-2	Non-Standard 0.8" Slot Pitch
						2343040-1	2343040-2	VITA 67.3C
	19	—	19		2357159-1		2357154-1	VITA 67.3C
	21	6	15		2355542-1		2355536-1	VITA 67.3C
	26	26	—		2313381-1		2313373-1	VITA 67.3C

Plug-In Card Contact Kit	.047" Cable	2302339-1
Backplane Contact Kit	.047" Cable	2302345-1
	.086" Cable	2332772-1
	.047" cable with adapter to fit .086" module cavities	2373609-1 (does not include contact)

For NanoRF / optical hybrid connector modules see table on pages xx-xx

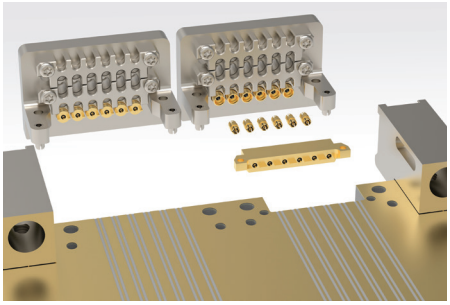
VITA 67.3 NANORF MODULES AND CONTACTS





VITA 67.3 NANORF EDGE LAUNCH CONNECTORS

High frequency contacts support high performance up to 70 Ghz



ROBUST AND SPACE SAVING

- NanoRF contact plug in module is terminated to the pc board, eliminating the need for cables

EASIER TERMINATION

- Bullet adapter takes up tolerance between edge launch termination and mating face and decreases the mating force required for stacked boards

VERSATILE

- Contact and module design is configurable for different sizes and contact counts

INDUSTRY STANDARDS

- Supports VITA 67.3 interface for VPX industry standard implementations with SOSA compliance to support plug-in computing modules

MARKETS SERVED

- Military
- Radar

Description

TE Connectivity (TE) has introduced the NanoRF Edge Launch connector. This product offers higher density and ruggedness over SMPM and SMPS edge launch options, and integrates the RF above an optical interconnect (with TE's hybrid RF/optical modules). This product offers higher density and ruggedness over SMPM and SMPS edge launch options, and the technology can be leveraged to support SOSA aligned NanoRF connector modules.

APPLICATIONS

- RF switches
- Tuners
- Software defined radios (RF devices for use in embedded computing systems)

ELECTRICAL

- **Frequency range** of 2 MHz to 40 GHz and 1.5:1 over the frequency range of 40 GHz to 85 GHz.
- VSWR of 1.4:1 over the frequency range of 2 MHz to 40 GHz and 1.5:1 over the frequency range of 40 GHz to 67 GHz.
- **Crosstalk:** Frequency Range 3 GHz to 27 GHz and can achieve 100 db of crosstalk
- **Insertion Loss:** Not be greater than 0.12 * sqrt (f) dB, where f is in GHz. Maximum insertion loss at 20 GHz = 0.5367 dB.
- Meets VITA 72 Shock and Vibration
- Meets VITA 67 Environmental Requirement

Test report to 108-163-006-1 Spec

STANDARDS AND SPECIFICATIONS

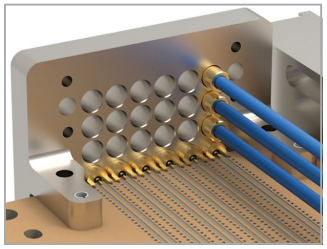
- **EIA-364:** Electrical Connector/Socket Test Procedures Including Environmental Classifications
- **ANSI/VITA 67.3:** Coaxial Interconnect on VPX, Spring-Loaded Contact on Backplane
- **ANSI/VITA 48.1:** Mechanical Specification for Microcomputers Using REDI Air Cooling
- **ANSI/VITA 46.0:** VPX Baseline Standard
- **ANSI/VITA 65.0-2019:** OpenVPX System Standard
- **ANSI/VITA 65.1-2019:** OpenVPX System Standard – Profile Tables
- **MIL-STD-810H:** Environmental Engineering Considerations and Laboratory Tests, Jan 2019

VITA 67.3 NANORF EDGE LAUNCH CONNECTORS

Eliminates cables in the plug-in module

Direct Board Termination

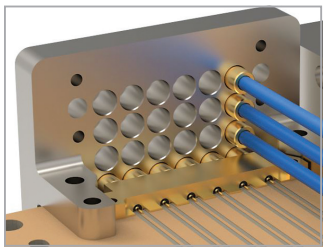
- NanoRF contact on plug-in module directly terminated to the board
- Contacts fixed in module frame mounted to board
- Upper rows (if needed) use cabling

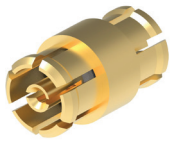


	Part Number	Description
	2332714-2	Daughtercard Assembly, Edge Launch, 67.3 (for separable solution w/bullet)
	2332709-2	Backplane Module, RF, 67.3C, Edge Launch

With Bullet Adapter

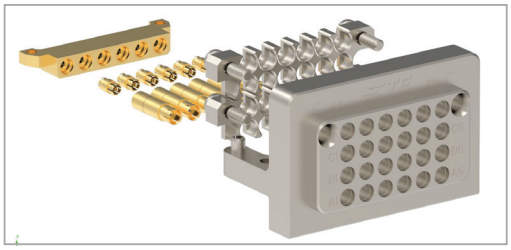
- NanoRF contacts tightly positioned in module
- Bullets take up tolerance between edge launch terminations and NanoRF mating face
- Ideal for stacked boards. Contact row heights in VITA 65.1 support stacked boards
- This approach is implemented today with 67.3 SMPM



	Part Number	Description
	2332714-2	Daughtercard Assembly, Edge Launch, 67.3
	2337098-1	SMPS Edge Launch: 6 Position
	2331630-1	Adapter, SMPS, Bullet
	2332709-2	Backplane Module, RF, 67.3C, Edge Launch

NanoRF Edge Launch Kit

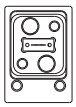
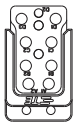
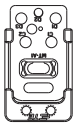
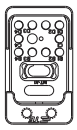
- 6 bullets
- SMPS solder bar
- 6 SMPS to NanoRF adapters
- Daughtercard module



Part Number	Description
2393429-1	Stainless Steel Kit
2393429-2	Aluminum Kit

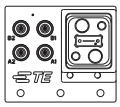
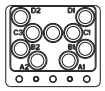
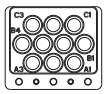
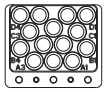
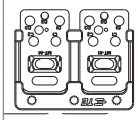
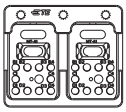
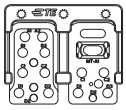
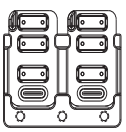
RF AND OPTICAL CONNECTOR MODULES

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	—	2302339-1 (5 ea)	12-Fiber: 2355002-1 24-Fiber: 2355002-2	Cabled MT
				2358435-1	—	2302339-1 (5 ea)	—	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	—	2302339-1 (10 ea)	12-Fiber: 2355002-1 24-Fiber: 2355002-2	Cabled MT
				2313388-1	—	2302339-1 (10 ea)	—	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	—	—	12-Fiber: 2375154-1 24-Fiber: 2375154-2	3 Cabled MT
				2388440-1	—	—	12-Fiber: 2375154-1 24-Fiber: 2375154-2	2 Cabled MT & 1 Transceiver
			Backplane	2388438-1	—	—	12-Fiber: 2375153-1 24-Fiber: 2375153-2	—

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)	—	2302339-1 (10 ea)	12-Fiber: 2355002-1 24-Fiber: 2355002-2	Cabled MT
				2358435-1 (2 ea)			—	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	—	2302339-1 (14 ea)	12-Fiber: 2355002-1 24-Fiber: 2355002-2	Cabled MT
				2358435-1 +			—	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)	—	2302339-1 (20 ea)	12-Fiber: 2355002-1 24-Fiber: 2355002-2	Cabled MT
				2313388-1 (2 ea)			—	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	3 Cabled MT per Insert
				2388440-1 (2 ea)			12-Fiber: 2375154-1 24-Fiber: 2375154-2	2 Cabled MT & 1 Transceiver per Insert
			Backplane	2388444-1	—	—	12-Fiber: 2375153-1 24-Fiber: 2375153-2	—

VITA 61 MEZALOK (XMC 2.0) CONNECTORS

VERSATILE

- 114-position connector is VITA 61 compliant
- 60, 114, and 320 positions
- 10, 12, 15, 17 and 18 mm stack heights

ROBUST

- Rugged surface-mount mezzanine connector with 500 mating cycle durability
- Improved thermal cycling stability compared to VITA 42 connectors—2000 thermal shock cycles -55°C to +125°C
- Supports data rates up to 32+ Gb/s
- Anti-stubbing design during mating

HIGH PERFORMANCE

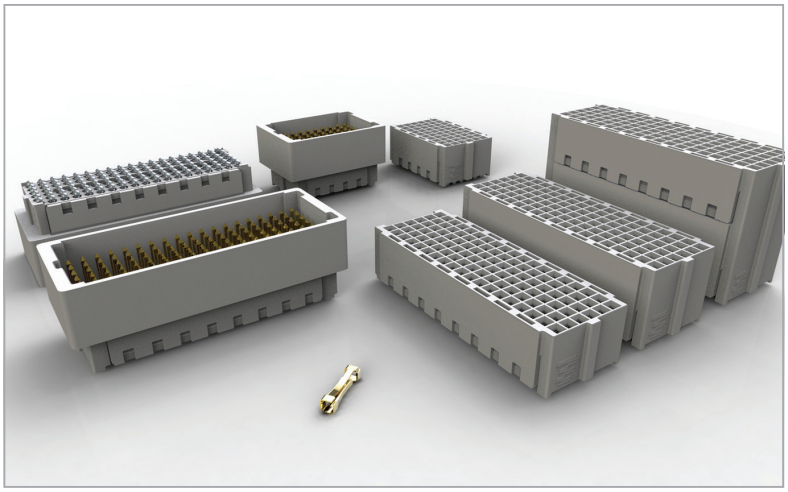
- Multi-point redundant contact systems for ultra-reliability
- LCP plastic housings offer superior thermal stability and low outgassing
- Compliant BGA board-attach supports standard surface mount processing and excellent thermal stability

TE's Mezalok mezzanine connectors are designed for stacking or mezzanine applications for rugged embedded computing. The connectors incorporate a multi-point pin/socket contact system for a separable interface, and are available in 60, 114, and 320 positions with stack height options of 10, 12, 15, 17 and 18 mm. The HS version uses a quad-redundant Mini-Box contact system, while the HSLF version uses a two-beam socket contact, and provides unmating force reduction of ~50%.

Mezalok connectors are shock and vibration resistant per VITA 47 and 72 HALT test requirements. The 114-position connector is compliant to VITA 61. 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 BGA surface mount processes.

STANDARDS AND SPECIFICATIONS

- **Application Specification:** 114-13279
- **Product Specification:** 108-2411
- **Qualification Test Report:** 501-736
- **Electrical Performance Report:** 505-4



VITA 61 MEZALOK (XMC 2.0) CONNECTORS

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 MULTI-BEAM XLE POWER CONNECTORS



The MULTI-BEAM XLE power connector, specified for the VPX VITA 62 power supply standard, offers 50 A and 20 A contacts.

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 and 62.2 variations meet creep/clearance distance requirements, slots are required in the boards between contacts. “Fins” are inserted between power contacts and penetrate through the board slots to increase breakdown voltage.

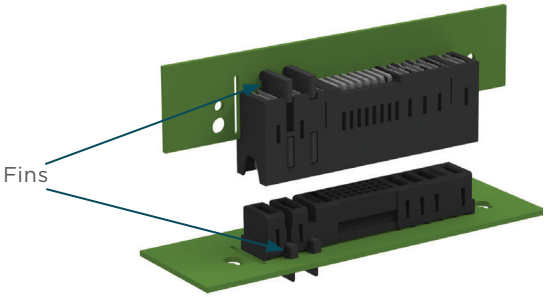
HIGH PERFORMANCE

- 20 A and 50 A power contacts, plus signal contacts
- 3-beam high-conductivity-copper contact design allows for a greater angular misalignment between mating connectors and offers a lower mating force
- Hot-plug capable

STANDARDS AND SPECIFICATIONS

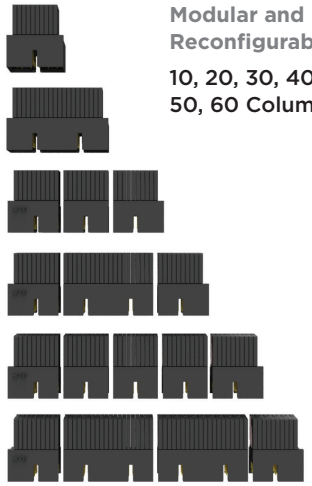
- **Application Specification:** 114-13251
- **Instruction Sheet:** 408-163017 (270V connectors)
- **Product Specification:** 108-2292
- **Qualification Test Report:** 501-115016

	Slot Size	Position	Part Type	PCB Termination	Part No (50 Au Interface, Au Flash Tails)	Part No (30 Au Interface, Tin Pl Tails)	Notes
VITA 62.0	3U	P0	RA Header	Solder Tail	2317477-1	6450839-7	
	3U	P0	RA Header	Compliant Pin	2314578-2	6450849-7	
	3U	J0	Vert Recpt	Compliant Pin	2309390-1	1-6450869-4	
	6U	P0	RA Header	Solder Tail	2314579-1	6450833-7	
	6U	P1	RA Header	Solder Tail	2314580-1	6450839-6	
	6U	P0	RA Header	Compliant Pin	2314577-1	6450843-6	
	6U	P1	RA Header	Compliant Pin	2314578-1	6450849-6	
	6U	J0	Vert Recpt	Compliant Pin	2314581-1	6450863-5	
	6U	J1	Vert Recpt	Compliant Pin	2309390-2	1-6450869-0	
VITA 62.2 270VDC	3U	P0	RA Header	Solder Tail	2313443-1		Use Fins 2313445-1 (2 per)
	3U	P0	RA Header	Compliant Pin	2313442-1		Use Fins 2313445-1 (2 per)
	3U	J0	Vert Recpt	Compliant Pin	2313441-1		Use Fins 2313444-1 (2 per)
	6U	P0	RA Header	Solder Tail	2364867-1		Use Fins 2313445-1 (6 per)
	6U	P0	RA Header	Compliant Pin	2348886-1		Use Fins 2313445-1 (6 per)
	6U	J0	Vert Recpt	Compliant Pin	2348888-1		Use Fins 2313444-1 (6 per)
VITA 62.1 3-Phase	3U	P0	RA Header	Solder Tail	2332791-1		Use Fins 2313445-1 (6 per)
	3U	P0	RA Header	Compliant Pin	2332793-1		Use Fins 2313445-1 (6 per)
	3U	J0	Vert Recpt	Compliant Pin	2332795-1		Use Fins 2313444-1 (6 per)



270V DC Connector

FORTIS ZD CONNECTORS



Modular and Reconfigurable

10, 20, 30, 40, 50, 60 Columns

Extreme Mechanical and Electrical Performance for the Most Demanding Bandwidth Applications

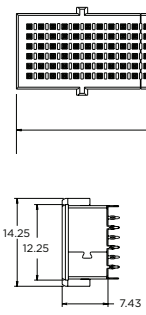
With high speeds and high reliability in demanding applications, the Fortis Zd connector family is designed to meet processing-intensive applications. The connectors support speeds of 12+ Gb/s in a design that saves weight and space.

MECHANICAL/ENVIRONMENTAL

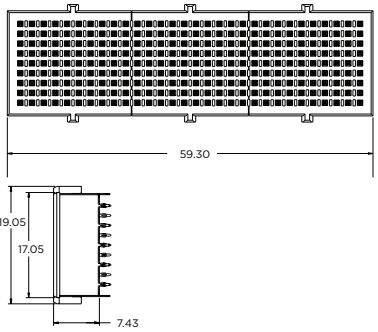
- **Durability:** 500 mating cycles min
- **Operating Temperatures:** -65°C to +125°C
- **Contact Mating Force:** 4.0 oz max per contact; 3 oz typical
- **Contact Unmating Force:** 1.44 oz min
- **Voltage:** 250 volts AC
- **Current:** 1.5 amperes (single circuit, free air)
- **Characteristic Impedance:** 100 ohms

Receptacle Modules

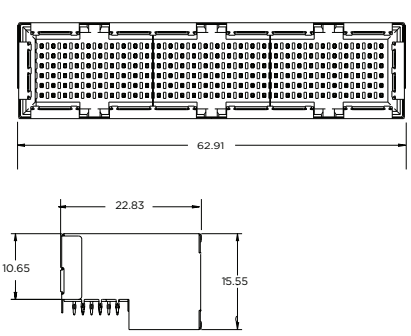
Six-Row Connectors

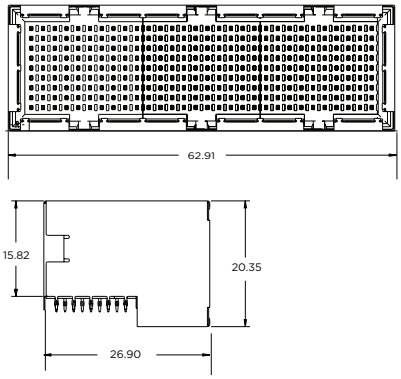


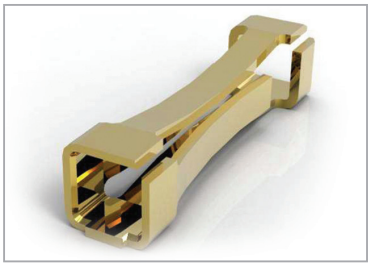
Nine-Row Connectors



Plug-in Modules







The Mini-Box contact, with spring contact on all four of the mating posts, has years of proven reliability in rugged applications.

FAST

- Allows 12+ Gb/s data rates in a design that saves weight and space

RUGGED

- Extreme mechanical and electrical performance for the most demanding applications
- Space-compatible materials
- Proven compliant pin board attach facilitates manufacturing efficiency, repairability, and superior electrical performance
- Protected pin field on backplane for reliability and durability

FLEXIBLE

- Modular design allows for user configurability and modular evolution
- M55302-heritage Mini-Box separable interface provides four points of contact on all sides of the pin
- Staggered daughtercard pin field supports two-level maintenance

HIGH PERFORMANCE

- 3-pair (9-row) and 2-pair (6-row) versions available to accommodate multiple slot pitches
- Shielded versions for EMI protection

FORTIS ZD CONNECTORS

PHYSICAL OR OTHER PROPERTIES

- 10 and 20 column modules
- 3-pair (9-row) and 2-pair (6-row) modules
- 6U configuration offers 300 differential pairs
- Multi-bay shielded and rugged shell options
- 6-row modules enable 0.6" reduced form factor card pitch
- Modularity enables scalability for various card sizes

MATERIALS

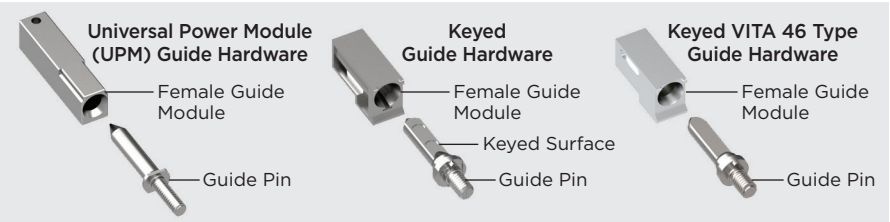
- **Contacts:** High-performance copper alloy, plated 50 µin gold over 50 µin nickel in mated contact area, tin/lead or tin on compliant tails
- **Housings:** High-temperature thermoplastic
- **EMI Shield:** Copper alloy
- **Rugged Shell:** 6061 aluminum with trivalent chromate conversion coating

STANDARDS AND SPECIFICATIONS

- **Application Specification:** 114-13267
- **Product Specification:** 108-2409
- **Qualification Test Report:** 501-752
- **Electrical Performance Report:** 505-1

APPLICATION TOOLING

- **Flat rock tooling**
  Commercially available bar stock (flat rock tooling) with a flat surface large enough must be used with the application tooling to seat and remove these modules.



STANDARD FORTIS Zd MODULES

		Part Number					
		Left	Center		Right	Full Shroud	
		10 Col.	10 Col.	20 Col.	10 Col.	10 Col.	20 Col.
6-Row (2-Pair) Connector Modules							
Right-Angle	Differential	2102086-1	2102087-1	2102096-1	2102088-1	2102081-1	2102232-1
Vertical	—	2102092-1	2102093-1	2102098-1	2102092-1	2102094-1	2102234-1
9-Row (3-Pair) Connector Modules							
Right-Angle	Differential	2000890-1	2000891-1	2000903-1	2000892-1	2102155-1	2102159-1
	Single Ended	2102314-1	2102315-1	2102316-1	2102317-1	2102318-1	2102319-1
Vertical	—	2000895-1	2000896-1	2000905-1	2000895-1	2102157-1	2102161-1

-1 parts have tin-lead plated contact tails; for lead-free tin order -2.

SHIELDED FORTIS Zd MODULES

		Part Number					
		10 Col.	20 Col.	30 Col.	40 Col.	50 Col.	60 Col.
6-Row (2-Pair) Connector Modules							
Right-Angle	Differential	2102515-1	2102515-2	—	—	—	—
Vertical	—	2102516-1	2102516-2	—	—	—	—
9-Row (3-Pair) Connector Modules							
Right-Angle	Differential	2102247-1	2102247-2	2102247-3	2102247-4	2102247-5	2102247-6
	Single Ended	2102320-1	2102320-2	2102320-3	2102320-4	2102320-5	2102320-6
Vertical	—	2102248-1	2102248-2	2102248-3	2102248-4	2102248-5	2102248-6

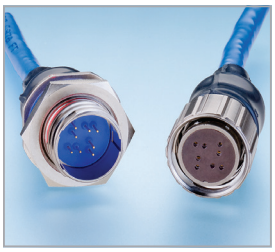
GUIDE HARDWARE

	Part Number		
	UPM Guide Hardware	Die Cast VITA 46 Guide Hardware	Machined VPX Guide Hardware
Guide Pin	223969-X	1-1469491-X	2000676-X
Guide Module	223979-X	1-1469492-X	2000713-X (with ESD contact)

See TE drawings for guide module and pin options.

COMPLETE SOLUTIONS FOR EMBEDDED COMPUTING

Count on TE for complete end-to-end solutions to enable high-performance computing. Our I/O solutions give you one of the widest ranges of choices for helping to increase speeds speeds, going longer distances, and eliminating bandwidth bottlenecks.



CeeLok FAS-T Connectors

- Small, field terminable, 10 Gigabit Ethernet, rugged I/O connector
- Compact size 8 shell saves weight and space
- Ruggedized for excellent shock, vibration, temperature, and sealing performance, with integral backshell that provides low cost, low-weight strain relief, and EMI protection



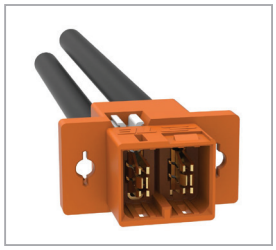
CeeLok FAS-X Connectors

- One of the highest speed I/O connectors available
- Single-channel size 11 or four-channel size 25 38999 shells or ARINC 809
- Fast, easy assembly
- Composite or metal shell
- Lanyard-release option



DEUTSCH Wildcat Connectors

- Full range of sizes and configurations, with wide choice of materials and finishes
- 38999 and micro sizes
- Close to double density compared to standard 38999



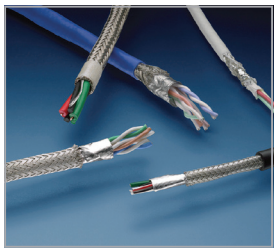
Unmanned Power Connectors

- 8 AWG to 14 AWG Power / 22 AWG to 24 AWG Signal
- 2 and 3 position wire-to-wire and wire-to-board configurations in power only
- Mixed signal and power available in 3 positions (2 power, 1 bank of 8 signal contacts)
- Pigtails available in 1 foot lengths use high grade flexible silicone wire rated at 200˚C and 600 V (other wire options available)



RF Connectors

- I/O for LRUs and LRMs
- Blindmate, rugged, high pin count
- Signal, Quadrax, RF, power, and optical (ARINC 801 and mini expanded beam)



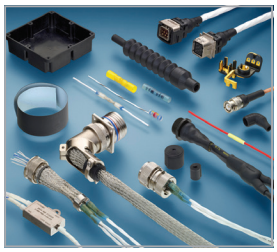
High-Speed Cable

- Gigabit/10G Ethernet
- Fibre Channel
- DVI/HDMI
- IEEE 1394
- USB 3.0
- CANbus



Optical Connectors

- Expanded beam, ceramic ferrule, and MT termini
- Single mode and multimode for any reach
- Compatibility with an extensive line of standard and optics-only connectors



Harnessing Components

- Families matched to application extremes
- Heat-shrink tubing
- Molded parts
- Adhesives
- Backshells
- Identification
- Solder sleeves and termination devices

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