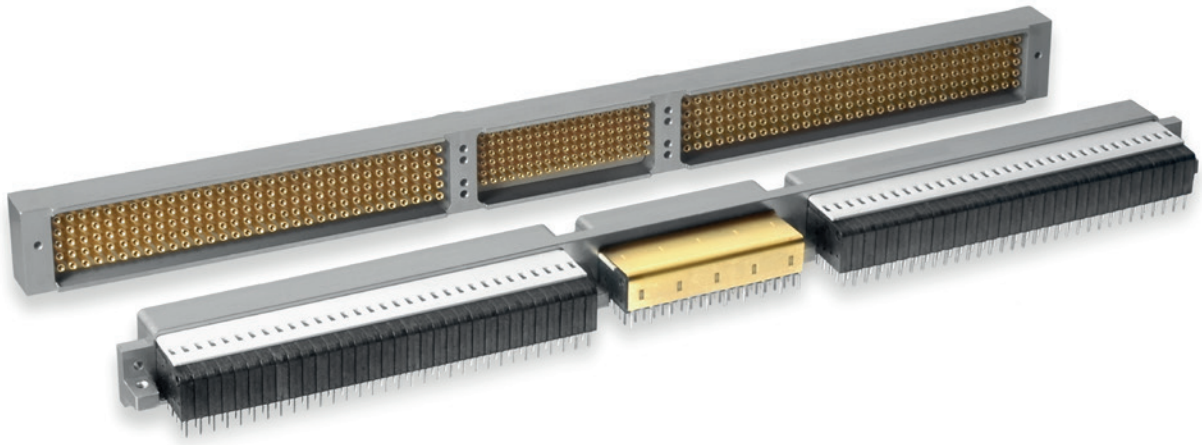
smiths interconnect

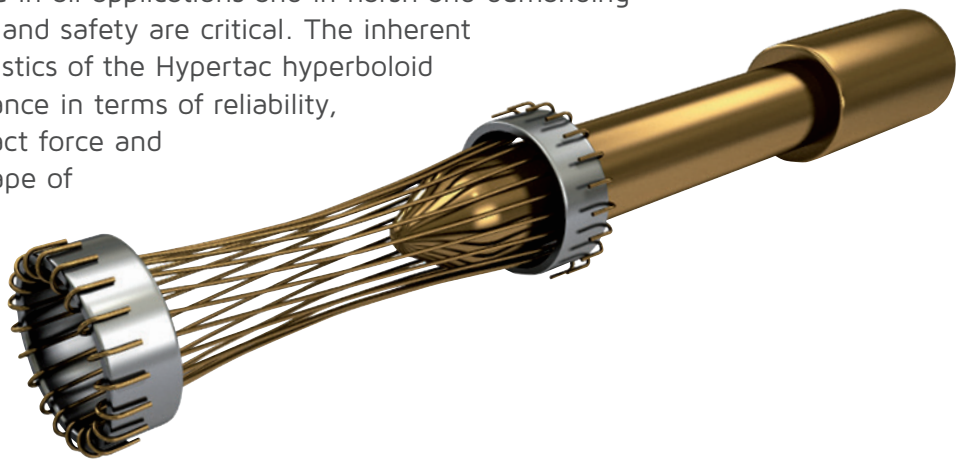
VME64X Series

Rugged high-speed connectors



Hypertac® Hyperboloid Technology

Smiths Interconnect offers an extensive range of superior contact technologies suitable for standard and custom solutions. Hypertac® (HYPERboloid conTACt) is the original superior performing hyperboloid contact technology designed for use in all applications and in harsh and demanding environments where high reliability and safety are critical. The inherent electrical and mechanical characteristics of the Hypertac hyperboloid contact ensures unrivalled performance in terms of reliability, number of mating cycles, low contact force and minimal contact resistance. The shape of the contact sleeve is formed by hyperbolically arranged contact wires, which align themselves elastically as contact lines around the pin, providing a number of linear contact paths.



Features

Low insertion/extraction forces

The angle of the socket wires allows tight control of the pin insertion and extraction forces. The spring wires are smoothly deflected to make line contact with the pin.

Long contact life

The smooth and light wiping action minimizes wear on the contact surfaces. Contacts perform up to 100,000 insertion/extraction cycles with minimal degradation in performance.

Lower contact resistance

The design provides a far greater contact area and the wiping action of the wires insures a clean and polished contact surface. Our contact technology has about half the resistance of conventional contact designs.

Higher current ratings

The design parameters of the contact (e.g., the number, diameter and angle of the wires) may be modified for any requirement. The number of wires can be increased so the contact area is distributed over a larger surface. Thus, the high current carried by each wire because of its intimate line contact, can be multiplied many times.

Immunity to shock & vibration

The low mass and resultant low inertia of the wires enable them to follow the most abrupt or extreme excursions of the pin without loss of contact. The contact area extends 360° around the pin and is uniform over its entire length. The 3 dimensional symmetry of the Hypertac contact design guarantees electrical continuity in all circumstances.

Benefits

High density interconnect systems

Significant reductions in size and weight of sub-system designs. No additional hardware is required to overcome mating and un-mating forces.

Low cost of ownership

The Hypertac contact technology will surpass most product requirements, thus eliminating the burden and cost of having to replace the connector or the entire subsystem.

Low power consumption

The lower contact resistance of our technology results in a lower voltage drop across the connector reducing the power consumption and heat generation within the system.

Maximum contact performance

The lower contact resistance of the Hypertac contact reduces heat build-up; therefore Hypertac contacts are able to handle far greater current in smaller contact assemblies without the detrimental effects of high temperature.

Reliability under harsh environments

Harsh environmental conditions require connectors that will sustain their electrical integrity even under the most demanding conditions such as shock and vibration. The Hypertac contact provides unmatched stability in demanding environments when failure is not an option.

Features

- Low mating forces
- Modular design of high speed modules feature round pins to mate with Hypertac contacts
- Optimized lead traces
- Shielding
- Rugged aluminium frames
- Mechanically compliant with IEEE-1101.2, ruggedisation level 5
- Keying feature
- Complies with ANSI/VITA 1.7 high current standard for VME64X
- COTS and custom applications

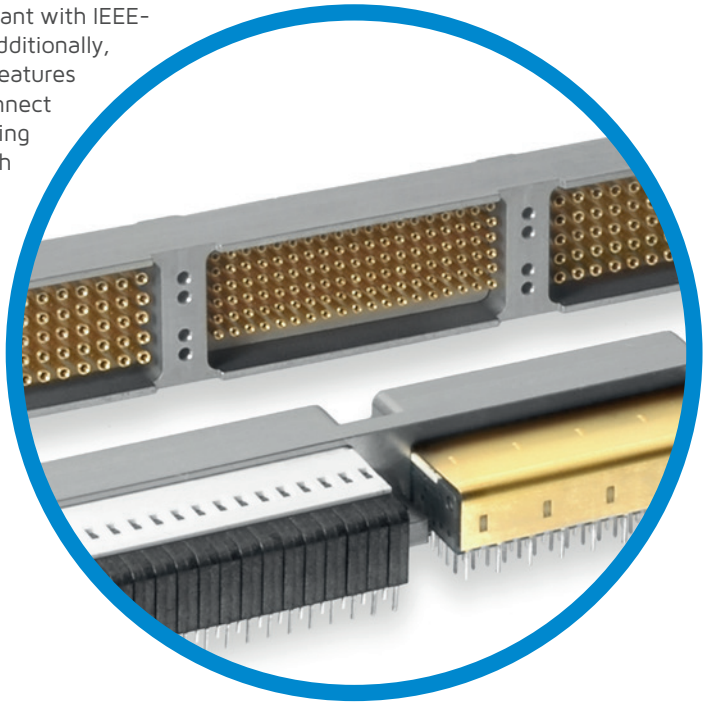
Benefits

- Designed for severe environments with extreme levels of shock and vibration
- Delivers the highest level of reliability and performance
- Superior performance in high speed applications
- EMI/RFI protection
- Provides ruggedness and conduction cooling
- Supports the premier embedded bus architecture
- Ensures proper mating

VME64X Connectors

The ruggedised VME64X is a cutting-edge interconnect solution that has established a proven track record of dependability. It provides customers with a competitive advantage by offering optimized contact lead traces that deliver superior performance in high-speed signal applications environments.

VME64X connectors are not only robust, but also mechanically compliant with IEEE-1101.2 - 1992, supporting the premier embedded bus architecture. Additionally, their rugged aluminium frames contain condition cooling and keying features to ensure proper mating. The VME64X is a cost-effective interconnect solution that is designed and developed with an emphasis on protecting customers' investments by minimizing the costs associated with development and manufacturing.



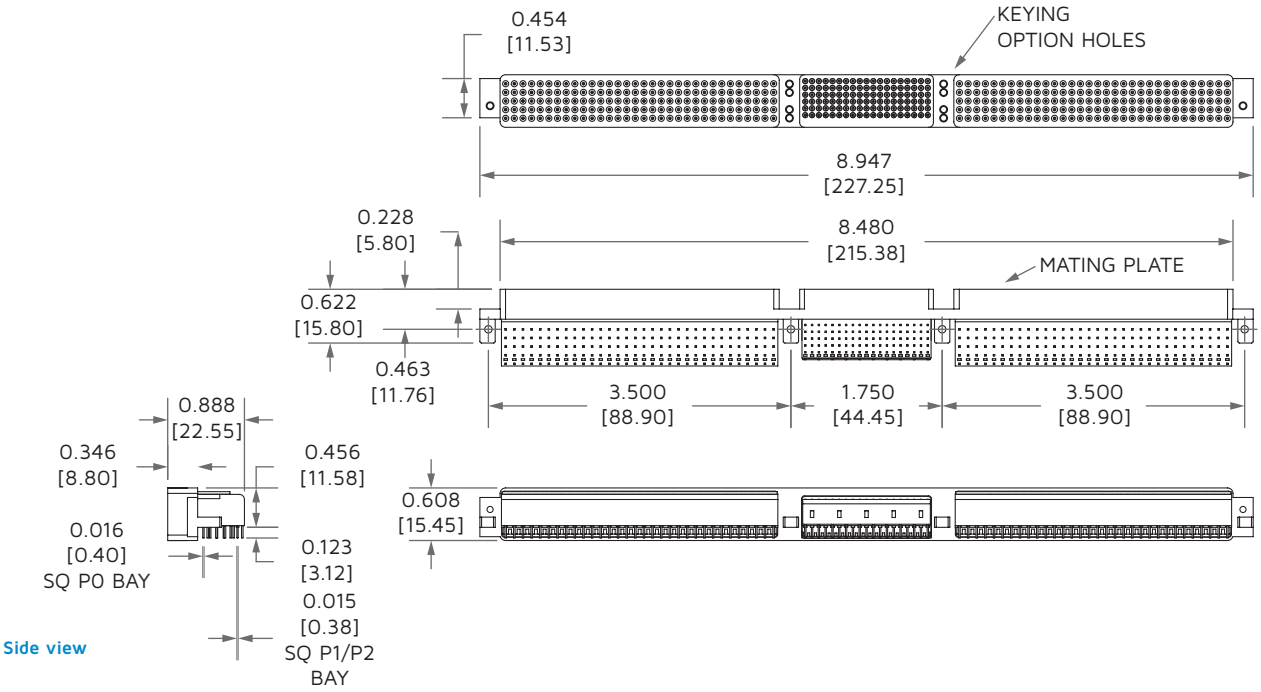
In addition to their low mating forces, VME64X connectors deliver flawless performance because they benefit from the highly reliable Hypertac® contact technology, offering complete immunity to shock, vibration and fretting. Hypertac contact technology features a hyperboloid-shaped basket of individual spring wires that deliver the highest level of reliability and performance.

Smiths Connectors offers both standard and customizable VME64X solutions. With the VME64x connectors, manufacturers with critical applications are guaranteed a reliable, high-performance connector solution for situations in which the cost of failure is incalculable.

Assemblies

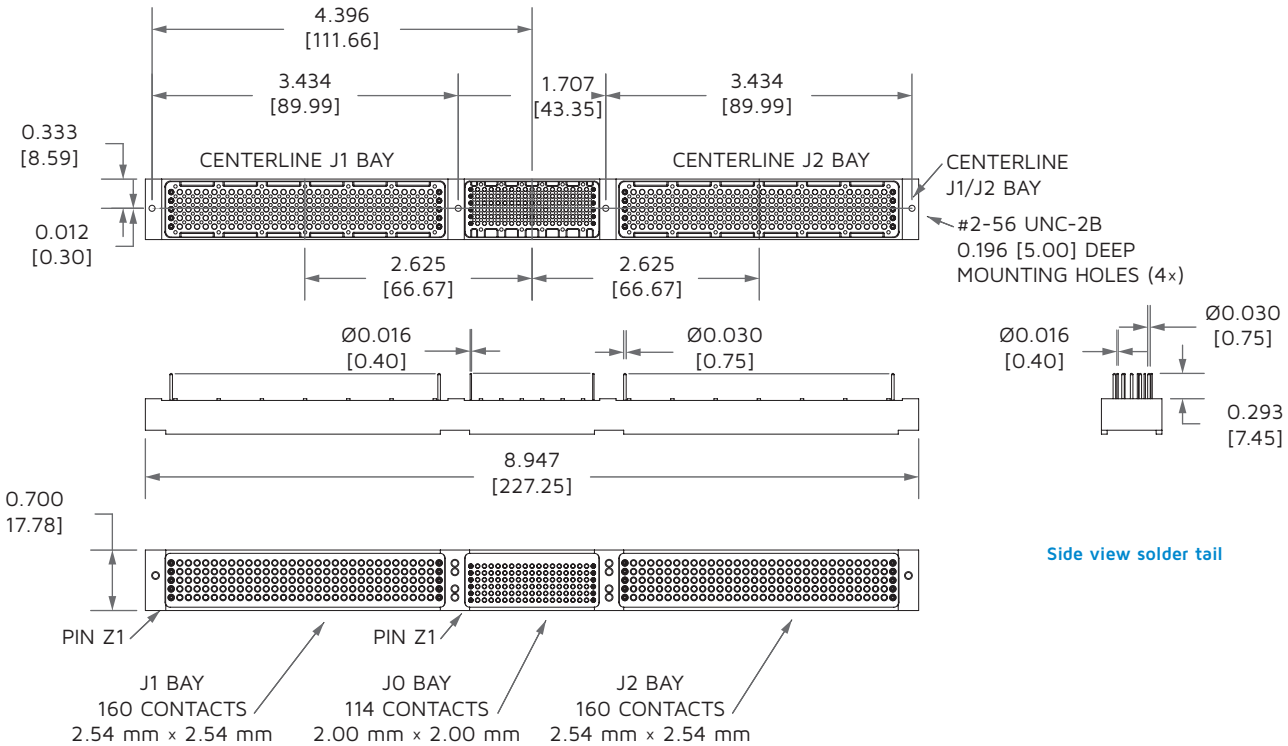
Male assembly

Part Number KVME434MR00BH



Receptacle assembly - solder tails

Part Number KVME434FD00AH

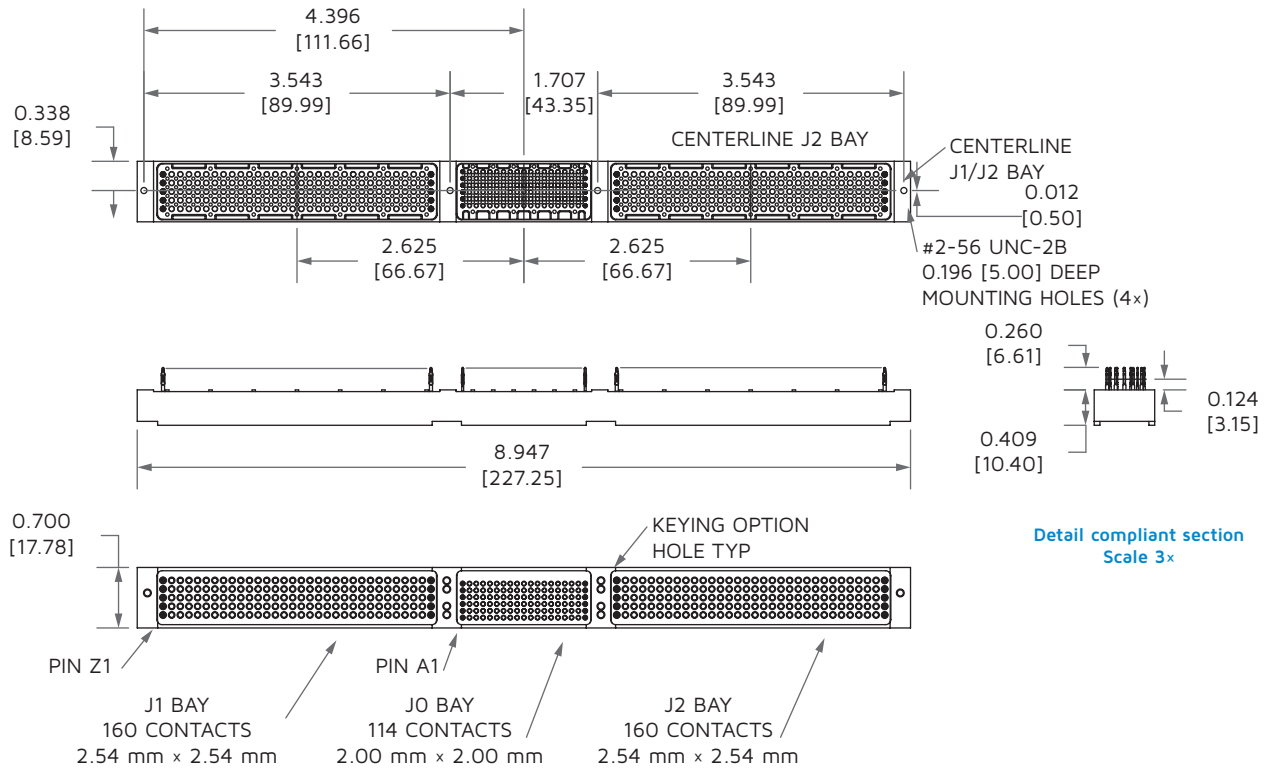


Dimensions are in inches [mm]

Assemblies

Receptacle assembly - compliant tails

Part Number KVME434FC00AH



Detail compliant section
Scale 3x

Dimensions are in inches [mm]

Technical characteristics

Number of Rows/Ways	5 (P1 and P2) and 6 (P0)
Pitch	2.54 (5 row), 2.00 (6 row)
Contact Positions	P1/J1 and J1/J2 - 160 contacts P0/J0 - 95 signal and 19 ground contacts
Contact Termination	Straight through board solder, press fit
Nominal Current	1 A (P0) and 2.5 A (P1/P2)
Nominal Pin Diameter	0.4 mm (P0) and 0.5 mm (P1/P2)

Mechanical and environmental

Shell Style	Aluminium
Contact Style	Hypertac hyperboloid
Operating Temperature	–55 °C to 125 °C
Shock	100 G peak (6 millisecond pulse, 3 shocks per axis)
Vibration	15 G sweep from 10 Hz to 2000 Hz to 10 Hz 4 h per axis (12 h total)
Mating Cycles	>4,000 cycles
Engagement/Disengagement	27.3 lbf average (mating per module) 22.4 lbf average (unmating per module)

Materials and finishes

Insulator	30% glass filled LCP
Contact	Beryllium copper plated with 50 µin. Au/50 µin. Ni

Electrical

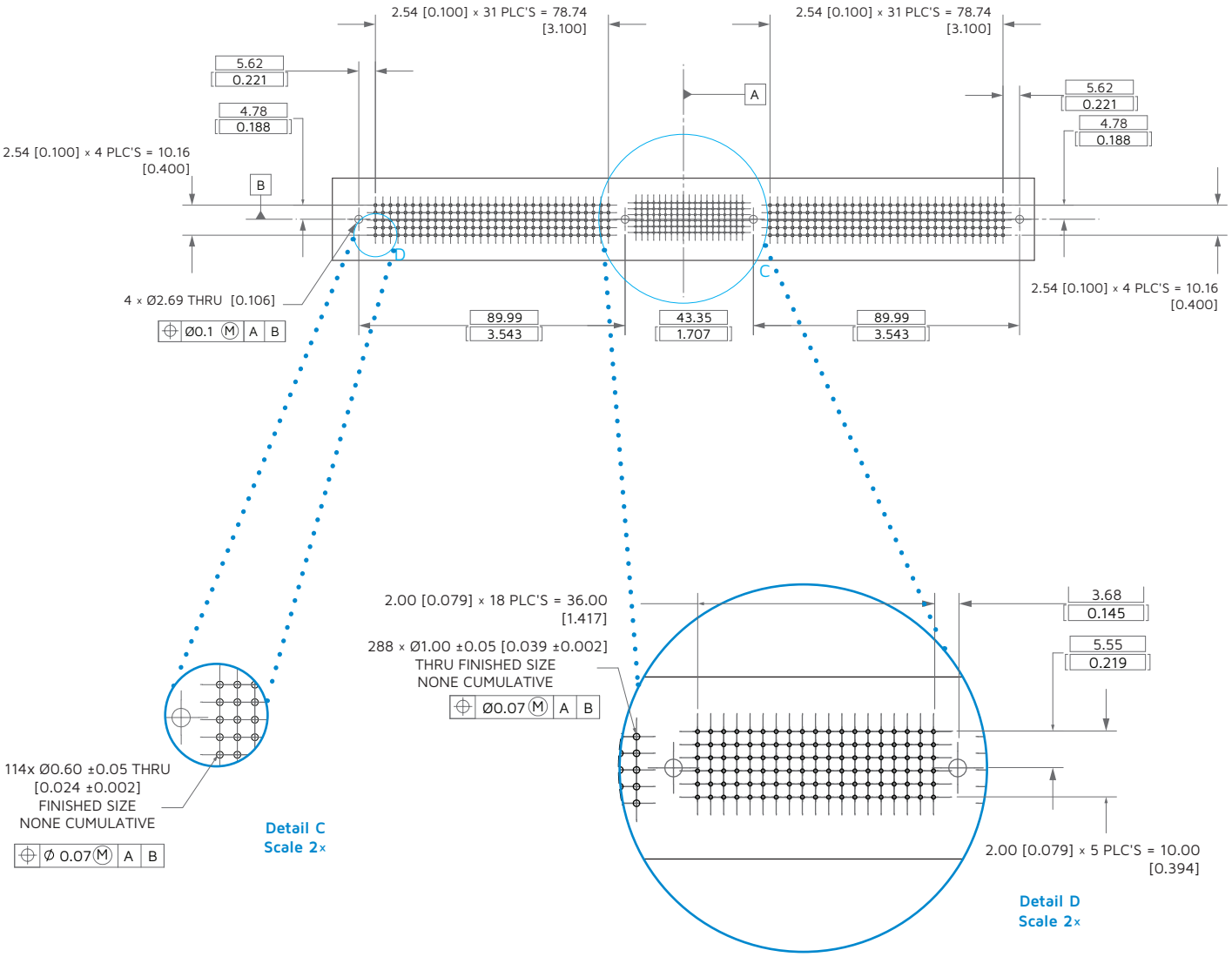
Current Rating	1 A (P0) and 2.5 A (P1/P2)
DWV	1,000 V RMS
Insulation Resistance	>5,000 MΩ
Data Rates	Up to 3.125 Gb/s

PCB layouts

Recommended alignment fixturing and tooling

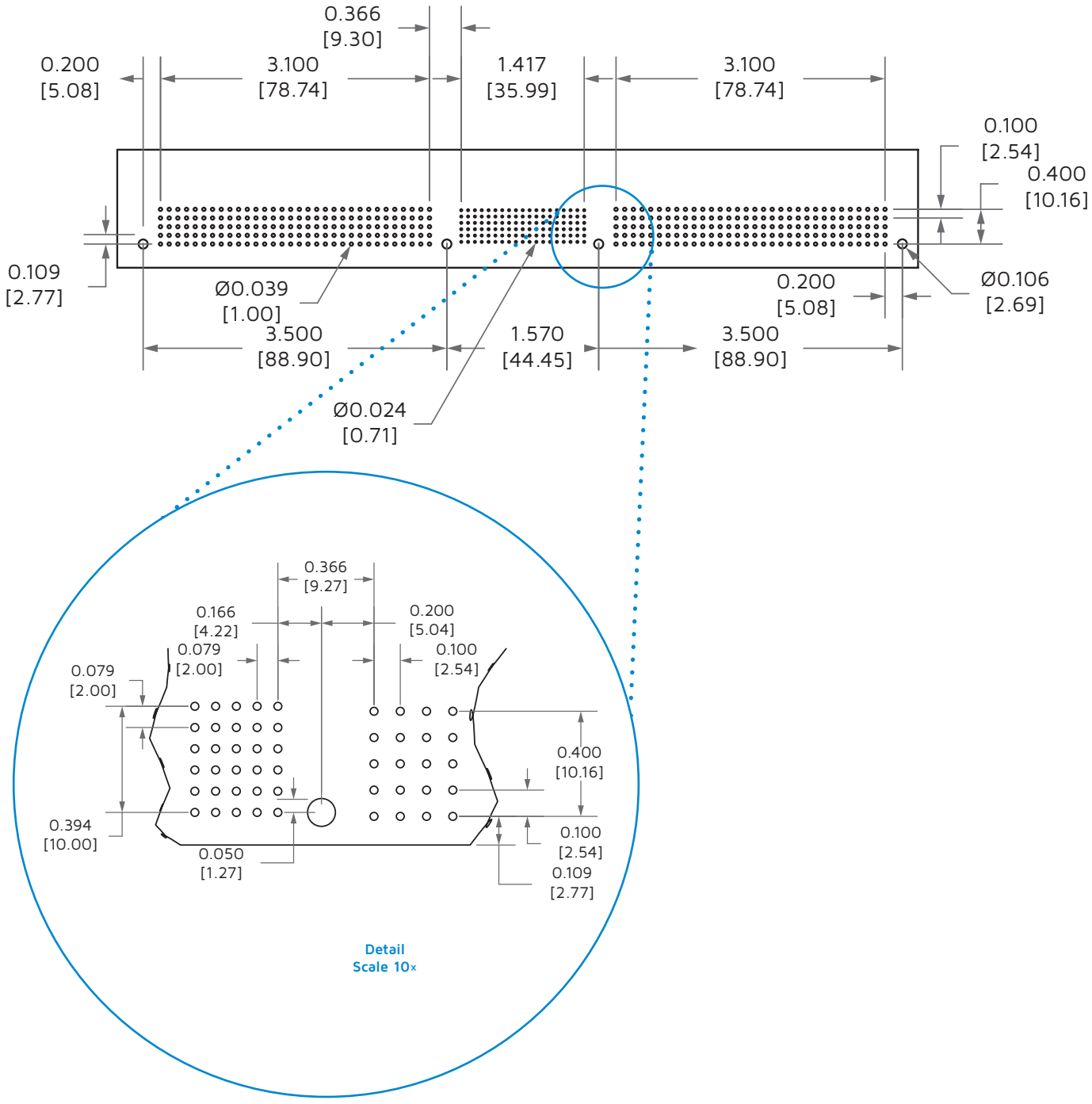
Alignment tool	Description	Work instructions
T2079	Standard VME Daughtercard	S50477
T2074	Standard VME Backplane J1/J2 press tool	S50478
T2073	Standard VME Backplane J0 press tool	S50478
T2058	Standard VME Polarizing pin press tool	S50478
T2093	Standard VME Daughtercard alignment	S50478
T2094	Standard VME Backplane alignment	S50478

Backplane layout



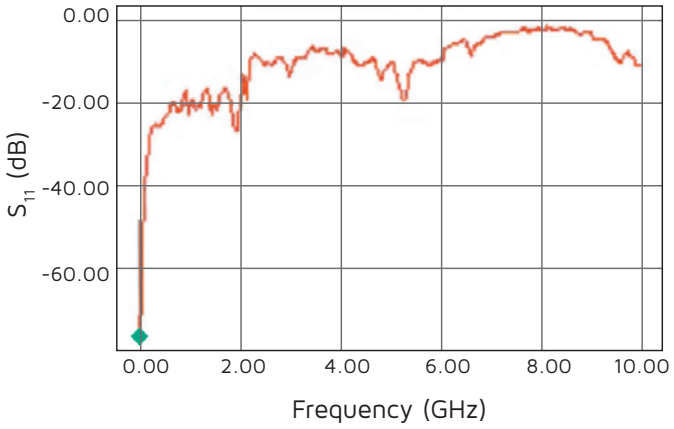
Dimensions are in inches [mm]

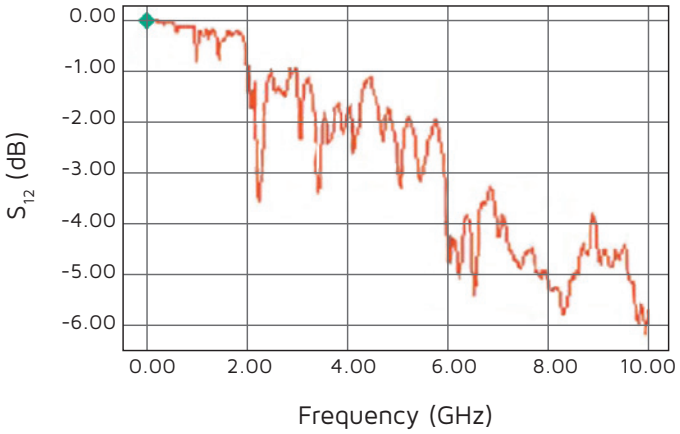
Daughter card layout

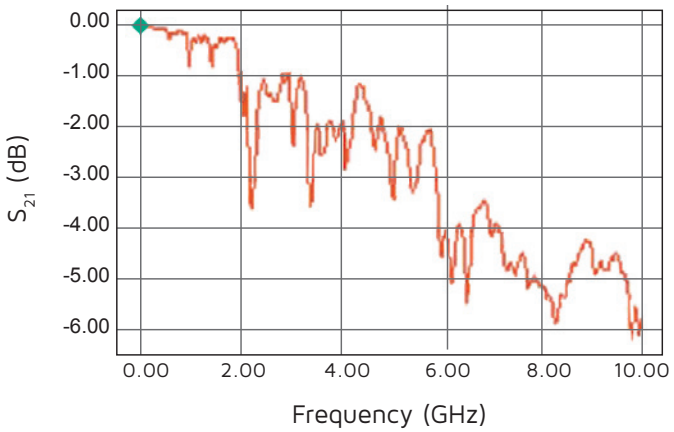


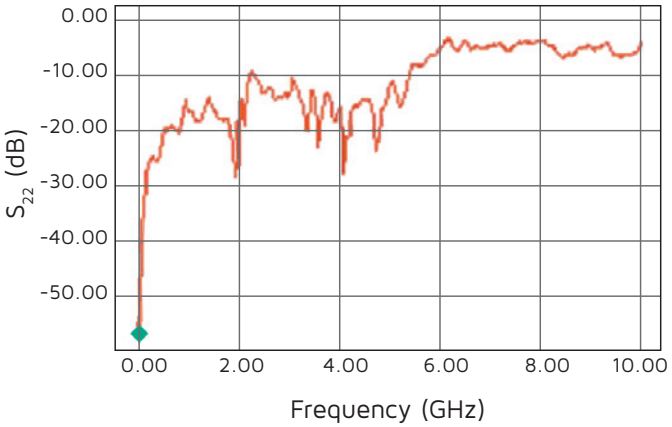
Dimensions are in inches [mm]

Differential S-parameter [1, 2]









Propagation delay and skew

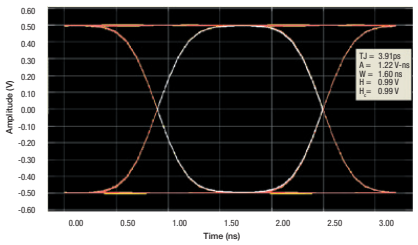
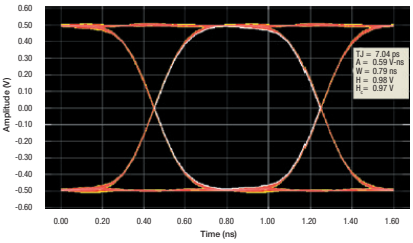
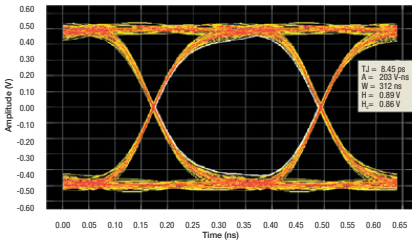
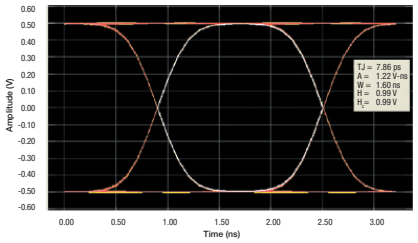
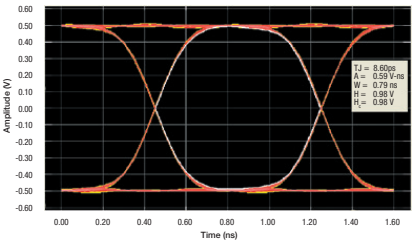
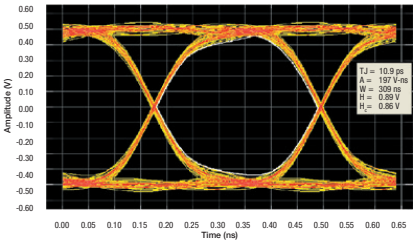
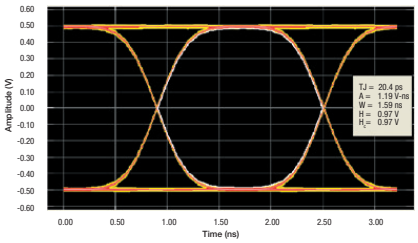
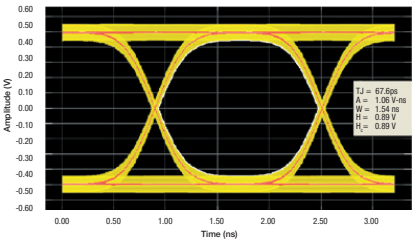
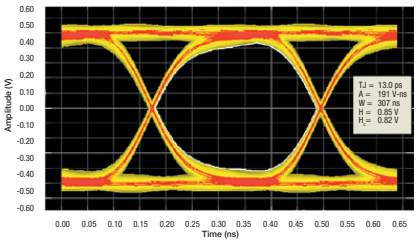
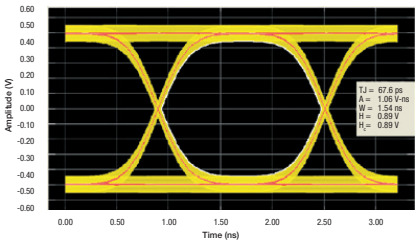
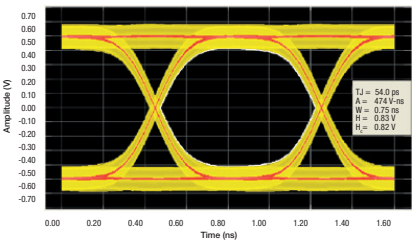
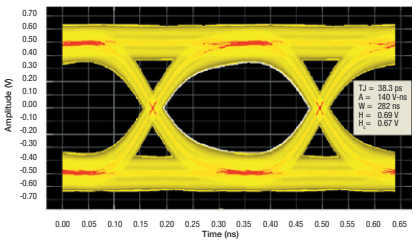
Propagation delay through the intrinsic connector assembly is estimated by making a measurement on the reflected signal received on the same broadband fixture that is used to obtain the full vector scattering parameters. In these measurements, there is no inclusion of any other pin lengths other than what is within the intrinsic connector.

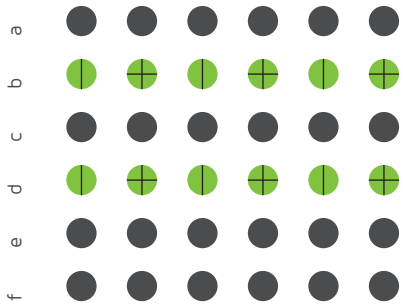
Parameters	Connector row				
	A	B	C	D	E
Propagation Delay (ps)	68	90	112	134	156
Skew (ps)	22	22	22	22	
Maximum Data Rate[2]	3.125 Gb/s				

Notes:

1) Pattern illustrated in the figure on next page was used in the S-parameter and cross talk measurements.
2) Please refer to the full characterization test report for details.

Connector eye-pattern-diagram [1, 2]

	622 MB/s	1.25 GB/s	3.125 GB/s
Intrinsic			
With Inclusion of Printed Circuit Board VIAs			
With Inclusion of Near End Cross Talk (Aggressor / Victim = 30%)			
With Inclusion of Near End Cross Talk (Aggressor / Victim = 120%)			



Differential pair

Ground

Notes:

1) Pattern illustrated in the figure above was used in the S-parameter and cross talk measurements.
2) Please refer to the full characterization test report for details.

Disclaimer

All of the information included in this catalogue is believed to be accurate at the time of printing. It is recommended, however, that users should independently evaluate the suitability of each product for their intended application and be sure that each product is properly installed, used and maintained to achieve desired results.

Smiths Interconnect makes no warranties as to the accuracy or completeness of the information, and disclaims any liability regarding its use.

Smiths Interconnect reserves the right to modify design and specifications, in order to improve quality, keep pace with technological development or meet specific production requirements.

Worldwide Support

Connectors

Americas

Sales
connectors.uscsr@smithsinterconnect.com

Technical Support
connectors.ustechsupport@smithsinterconnect.com

Europe

Sales
connectors.emeacsr@smithsinterconnect.com

Technical Support
connectors.emeatechsupport@smithsinterconnect.com

Asia

Sales
asiacsr@smithsinterconnect.com

Technical Support
asiatechsupport@smithsinterconnect.com

Fibre Optics & RF Components

Americas

Sales
focom.uscsr@smithsinterconnect.com

Technical Support
focom.techsupport@smithsinterconnect.com

Europe

Sales
focom.emeacsr@smithsinterconnect.com

Technical Support
focom.techsupport@smithsinterconnect.com

Asia

Sales
focom.asiacsr@smithsinterconnect.com

Technical Support
focom.techsupport@smithsinterconnect.com

Semiconductor Test

Americas

Sales
semi.uscsr@smithsinterconnect.com

Technical Support
semi.techsupport@smithsinterconnect.com

Europe

Sales
semi.emeacsr@smithsinterconnect.com

Technical Support
semi.techsupport@smithsinterconnect.com

Asia

Sales
semi.asiacsr@smithsinterconnect.com

Technical Support
semi.techsupport@smithsinterconnect.com

RF/MW Subsystems

Americas, Europe & Asia

Sales
subsystems.csr@smithsinterconnect.com

Technical Support
subsystems.techsupport@smithsinterconnect.com

Connecting Global Markets

more > smithsinterconnect.com