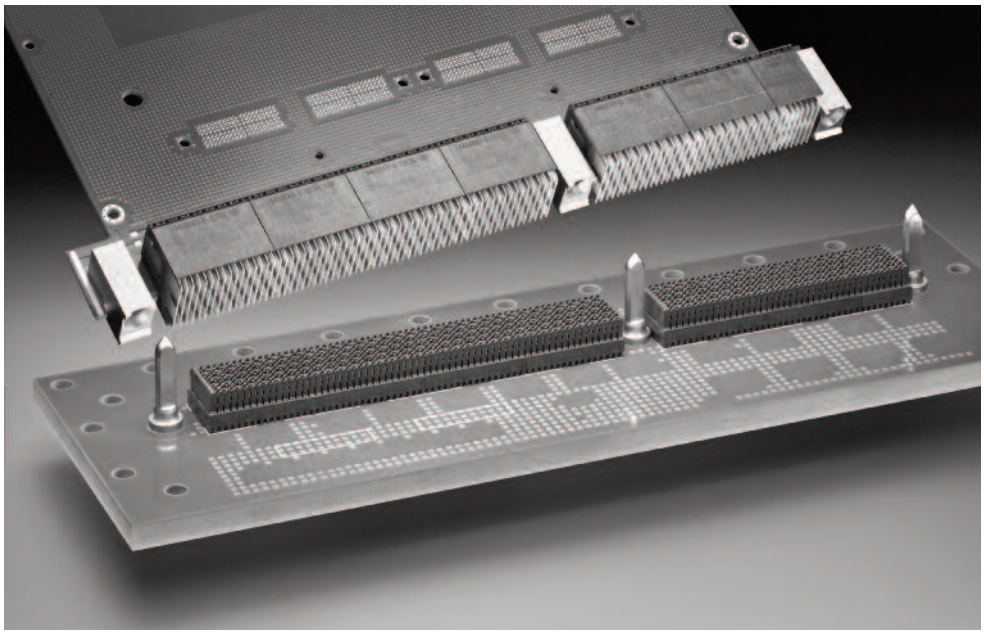
MULTIGIG RT 2-R Ruggedized Connectors for VPX Applications

Product Facts

- **Quad-redundant contact system supports high levels of shock/vibration**
- **Compliant to VITA 46 for Open VPX applications**
- **Supports Ethernet, Fibre Channel, InfiniBand applications, PCIe and Serial RapidIO high speed protocols**
- **Modular, lightweight connector system**
- **Robust “pinless” interface**
- **Differential, single-ended and power**
- **Ruggedized guide hardware available**
- **Supports 0.8 inch card slot pitches**
- **VITA 46 compliance enables upgrade in existing VPX applications**
- **Can be combined with high power modules (VITA 62), RF modules (VITA 67) and Optical modules (VITA 66)**



Description

TE’s MULTIGIG RT 2-R ruggedized, light weight, high speed board-to-board-interconnect is compliant to VITA 46 standard. This connector system features a quad-redundant contact structure designed for high vibration levels.

Applications

Rugged embedded computing applications:

- Ground Defense
- Missile Defense
- Electronic Systems / C4ISR
- Space
- Commercial and Military Aerospace

Materials

Contacts: High performance copper alloy, plated 50 µin Au over 50 µin Ni in mating area, tin-lead on compliant pin tails

Housings: High temperature thermoplastic

Rugged Guide Hardware: Aluminum and passivated stainless steel

Mechanical

Operating Temperature: -55 to +105˚C

Mating Force: 0.75 N [2.70 ozf] maximum per contact

Standards & Specifications

Compliant to VITA 46 (VPX)

Product Specification: 108-2072

Application Specification: 114-13056

Qualification Test Report: 501-544

Physical or other Properties

Tested to HALT (Highly accelerated life test) vibration levels (0.2G2/Hz) per VITA 72

Connector modules available for 3U and 6U VPX slot profiles, including rear transition modules

Reliable press-fit termination, requiring only flat rock tooling

Lightest weight VPX connector system: mated set of connectors and guide hardware for typical module and backplane slots: 3U - 62.66g (2.21 oz); 6U - 140.26g (4.95 oz)

Catalog 1308940
Revised 9-14

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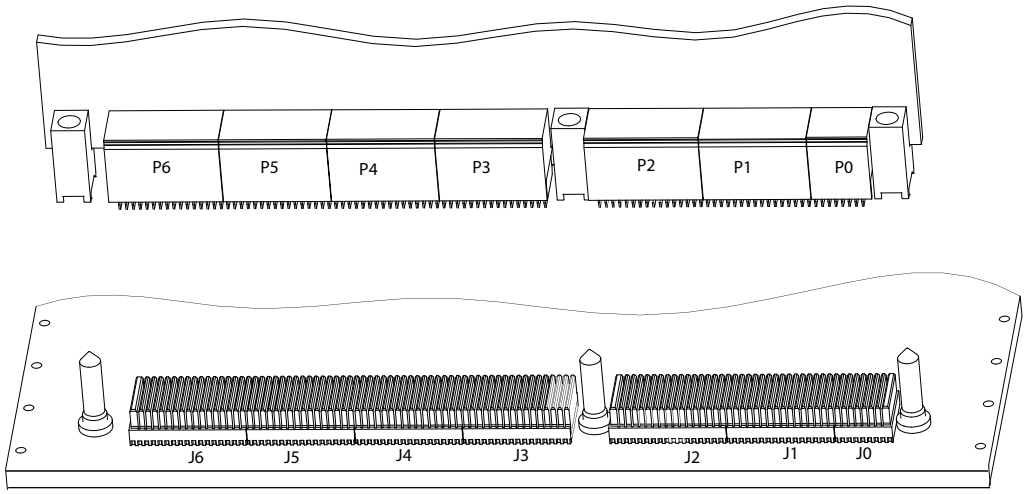
MULTIGIG RT 2-R Ruggedized Connectors for VPX Applications (Continued)

Part Configurations



Daughtercard

Module Position		Part No.	
		Ruggedized MULTIGIG RT 2-R (Extended Pad Wafers)	MULTIGIG RT 2 Connectors
PO		2102772-1	1410189-3
P1, P2, P3, P4, P5, P6	Differential	2102771-1	1410187-3
	Single-Ended	2102847-1	1410190-3
Keying Guide Modules		2000713-X	1-1469492-X
		Machined 6061 Aluminum Guide Socket, w/ESD Contact	Standard (Zinc Die Cast) Guide Socket

See TE drawings for guide module and pin options.

Backplane

Module Position	Part No.	
	Ruggedized MULTIGIG RT 2-R (Quad Redundant Contacts)	MULTIGIG RT 2 Connectors
JO	2102735-1	1410186-1
J1, J3, J4, J5	2102736-1	1410140-1
J2, J6	2102737-1	1410142-1
Keying Guide Pin	2000676-X	1-1469491-X
	Stainless Steel Guide Pin	Standard (Zinc Die Cast) Guide Pin

See TE drawings for guide module and pin options.

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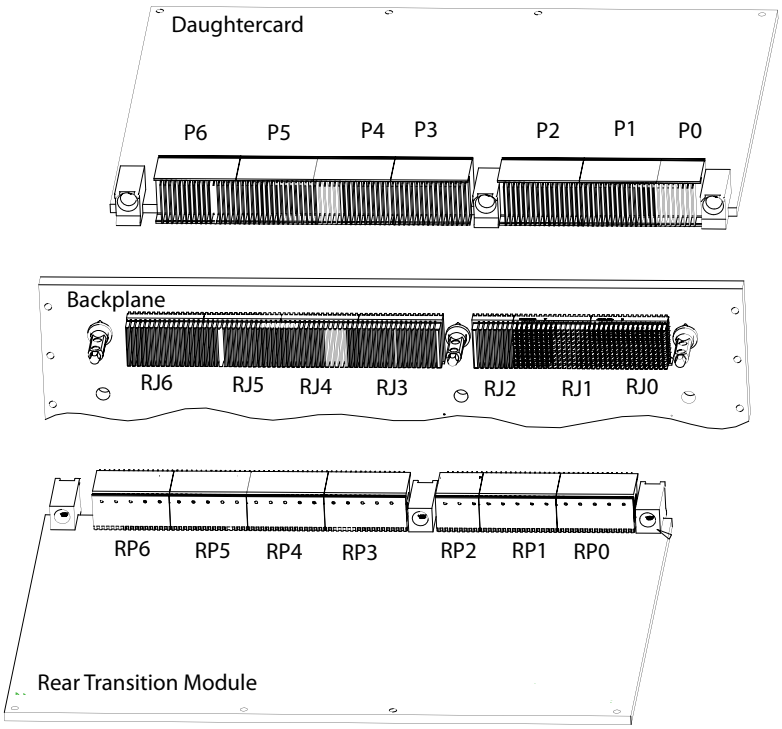
Part Configurations



Rear Transition Module

Module Position MULTIGIG RT 2		Part No. Ruggedized MULTIGIG RT 2-R (Extended Pad Wafers)	Connectors
RPO		2102773-1	1410968-3
RP1	Differential	2102774-1	1410975-3
	Differential & Single-Ended	2102849-1	1410970-3
RP2	Differential	2102775-1	1410971-3
	Single-Ended	2102848-1	1410972-3
RP3, RP4, RP5, RP6	Differential	2102774-1	1410975-3
	Single-Ended	2102847-1	1410190-3
Keying Guide Modules		2000713-X Machined 6061 Aluminum Guide Socket, w/ESD Contact	1-1469492-X Standard (Zinc Die Cast) Guide Socket

See TE drawings for guide module and pin options.

Rear Transition Backplane

Module Position		Part No. Ruggedized MULTIGIG RT 2-R (Quad Redundant Contacts)	MULTIGIG RT 2 Connectors
RJO	See Note 1	2102768-1	1410964-1
	See Note 2	2102850-1	1410965-1
RJ1	See Note 3	2102736-1	1410140-1
	See Note 4	2102851-1	1410966-1
RJ2		2102735-1	1410186-1
RJ3		2102737-1	1410142-1
RJ4, RJ5, RJ6		2102736-1	1410140-1
Keying Guide Pin		2226127-1 Stainless Steel Guide Pin	1410956-1 Standard (Zinc Die Cast) Guide Pin

Notes (Reference VITA 46.10; Observation 3-6):
Note 1: 16 column shell, 15 columns of contacts
Note 2: 16 column shell, 7 columns of contacts present
Note 3: 16 column shell, 16 columns of contacts
Note 4: 16 column shell, 8 columns of contacts present

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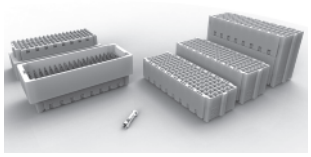
MULTIGIG RT 2-R Ruggedized Connectors for VPX Applications (Continued)

Associated VPX Solutions

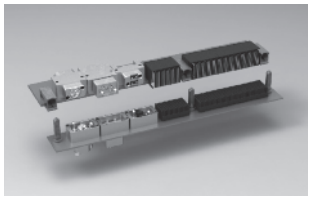


MEZALOK Mezzanine Connectors (Compliant to VITA 61)

- Utilizes the proven, reliable MIL-55302 Mini-Box contact interface, with four points of contact
- Backwards compatible with XMC board footprint
- Accommodates 10mm, 12mm, 15mm and 18mm stack heights
- Solder ball SMT attach in SnPb and RoHS options
- 114 (6 x 19) positions and 60 (6 x 10) positions
- Protected “stub-proof” socket contacts w/superior signal integrity
- Exceptional solder joint reliability (1000+ cycles thermal shock)

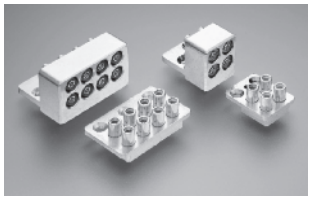
MULTI-BEAM XLE Power Connectors (Compliant to VITA 62)

- 20A and 50A 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
- Slim guide sockets reduce the overall PCB footprint
- Vented housing allows for better heat dissipation
- Hot-plug capable



Optical Modules (Compliant to VITA 66)

- Light weight
- High bandwidth
- EMI immunity
- 3 fiber optic interface types available:
  - 66.1 has two MT ribbon ferrules up to 24 fibers each
  - 66.2 four ARINC 801 termini
  - 66.3 one expanded beam lensed insert with four fibers



RF Modules (Compliant to VITA 67)

- Excellent channel-to-channel isolation and RF performance to 65 GHz
- Modular design permits application specific configuration with high RF contact count
- Float mounted jack maintains positive RF ground
- 240 center-to-center spacing
- 4 and 8 position modules are designed to meet the requirements of VITA 67.1 and VITA 67.2

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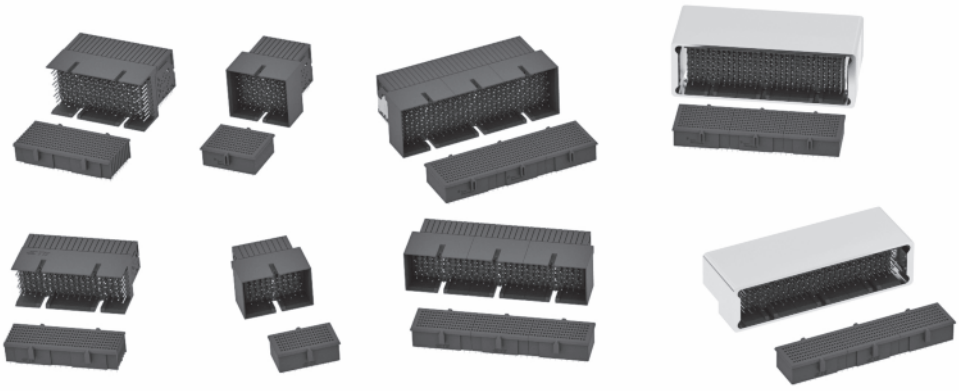
Fortis Zd Connector

Product Facts

- **Allows 10+ Gb/s data rates**
- **Extreme mechanical and electrical performance for the most demanding applications**
- **Modular design allows for user configurability and modular evolution**
- **M55302 heritage Mini-Box separable interface provides 4 points of contact**
- **Three options for application versatility, including standard, shielded and rugged metal shell**
- **3-Pair and 2-Pair versions available to accommodate multiple slot pitches**
- **Space compatible materials**
- **Proven compliant pin board attach facilitates manufacturing efficiency, repairability, and superior electrical performance**
- **Staggered daughtercard pin field supports 2 level maintenance**
- **Protected pin field on backplane for reliability and durability**



Description

Modular backplane connector system combining the highest performance mil/aero and commercial technologies in a user configurable platform.

Built to be the most robust and highest performance backplane connector.

Technical Documents

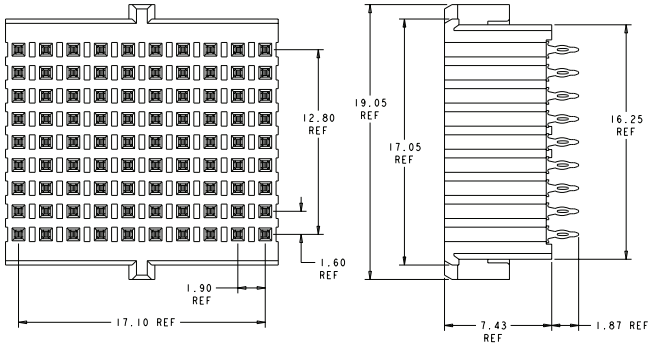
Product Specifications:
108-2409

Qualification Test Report:
501-752

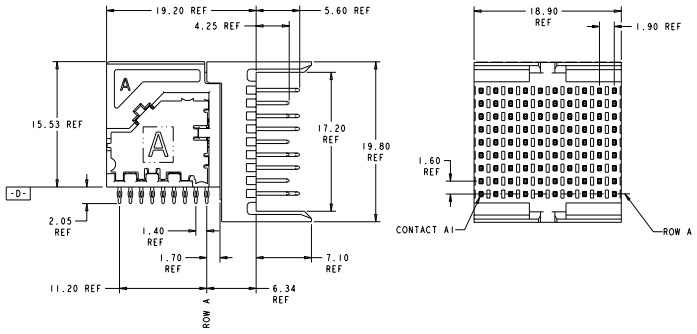
Application Specification:
114-13267

Product Dimensions

2000896-1 (3-pair, Vertical Center Module)



-1 (3-pair, Right-Angle Center Module)



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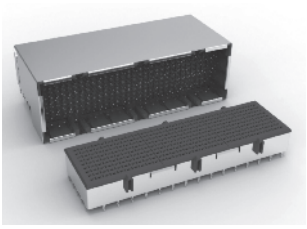
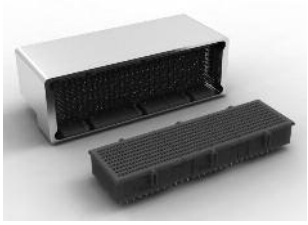
Fortis Zd Connector (Continued)



3-Bay Shielded



3-Bay Metal Shell

Mechanical

Durability: 500 mating cycles

Operating Temperature: -55 to +125˚C

Contact Engaging & Separating Force: 4.0 oz. max

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 module enables 0.6” reduced form factor card pitch

Modularity enables scalability for various card sizes

Materials

Contacts: High performance copper alloy
Plated 50µin Au over 50µin Ni in mated contact area
Tin/lead or tin (RoHS) on compliant tails

Housings: High temperature thermoplastic

Shell:
Shield: Copper alloy
Rugged shell: 6061 Aluminum with trivalent chromate conversion coating

Ordering Information

Size	Description	Right Angle Connector Modules[1]						Vertical Connector Modules[1]				
		10-col. left	10-col. center	20-col. center	10-col. right	10-col. full shroud	20-col. full shroud	10-col. end	10-col. center	20-col. center	10-col. full shroud	20-col. full shroud
2-pair	Differential	2102086	2102087	2102096	2102088	2102081	2102232	2102092	2102093	2102098	2102094	2102234
3-pair	Differential	2000890	2000891	2000903	2000892	2102155	2102159	2000895	2000896	2000905	2102157	2102161
3-pair[2]	Single-Ended	2102314	2102315	2102316	2102317	2102318	2102319					

Size	Description	Shielded Right Angle Connector Modules						Shielded Vertical Connector Modules					
		10-col.	20-col.	30-col.	40-col.	50-col.	60-col.	10-col.	20-col.	30-col.	40-col.	50-col.	60-col.
3-pair	Differential	2102247-1	2102247-2	2102247-3	2102247-4	2102247-5	2102247-6	2102248-1	2102248-2	2102248-3	2102248-4	2102248-5	2102248-6
3-pair[2]	Single-Ended	2102320-1	2102320-3	2102320-4	2102320-4	2102320-5	2102320-6						

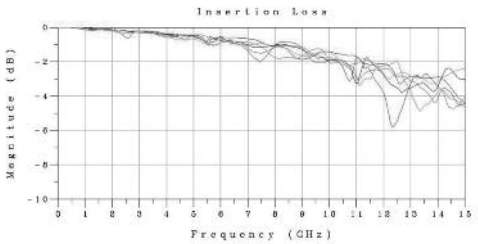
Size	Description	Rugged Shell for Right Angle Connector Modules					
		10-col.	20-col.	30-col.	40-col.	50-col.	60-col.
2-pair	Differential	2102114-1	2102114-2	2102114-3	2102114-4	2102114-5	2102114-6
3-pair	Differential	2102077-1	2102077-2	2102077-3	2102077-4	2102077-5	2102077-6

1. -1 SnPb Tails, -2 Sn Tails
2. Single-Ended 3-pair uses the same vertical connector as differential 3-pair

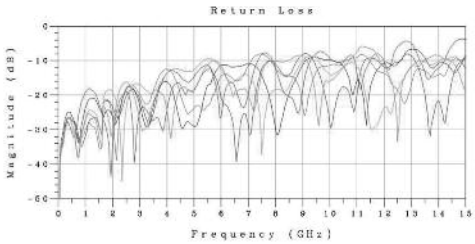
	VITA 46 Die Cast	VITA 46 Machined
Guide Pin	1469491	2000676
Guide Module	1469492	2000677 or 2000713

See drawings for dash number options.

Differential Insertion Loss



Differential Return Loss



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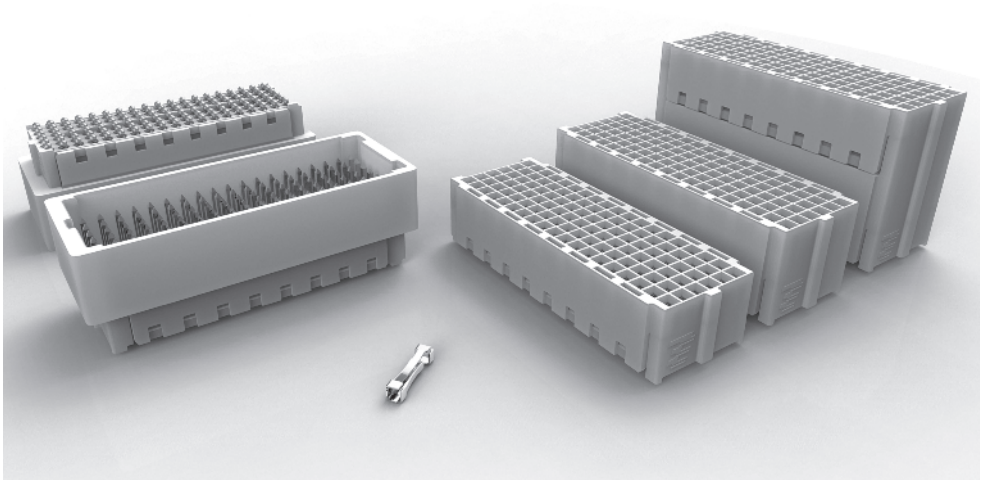
Mezalok Connector (High Reliability Mezzanine Connector)

Product Facts

- **Allows 10Gb/s and data rates**
- **60, 114, and 320 positions**
- **Mini-Box contact system provides 4 points of contact for ultra reliability**
- **LCP plastic housings offer superior thermal stability and are low-outgassing**
- **Compliant BGA board attach supports standard surface mount processing and excellent thermal stability**
- **114 position footprint compatible to XMC footprint and all dimensional constraints, VITA 61 compliant**
- **Stack heights from 10 mm to 18 mm**



Technical Documents

Product Specifications:
108-2411

Qualification Test Report:
501-735

Application Specification:
114-13279

Description

Rugged surface mount mezzanine connector incorporating “super-redundant” Mini-Box contact system for separable interface.

Designed for 10 mm through 18 mm stack heights.

Applications

Stacking or mezzanine applications

114 position is designed to support VITA 61 XMC architecture as rugged alternative to VITA 42 XMC

60 and 320 position designed for custom architecture stacking applications

Mechanical

500 mating cycles durability

Mating force: 0.30 lb. max. times number of contacts

-65˚C to +125˚C operating temperature

Shock and vibration per VITA 47 requirements

Materials

Pin Assembly: LCP plastic housings, white in color

Socket Assembly: LCP plastic housings, white in color

Contacts: High Performance Copper Alloy, 50µ” Au in mating interface (Sn/Pb and SAC305 solder balls are available)

Standards & Specs

114 position conforms to requirement of VITA 61 (VITA 42 Alternate)

VITA 42 and VITA 61 are not intermateable, but are footprint and XMCarchitecture compatible

Application Tooling

Product is installed via standard BGA surface mount processes.

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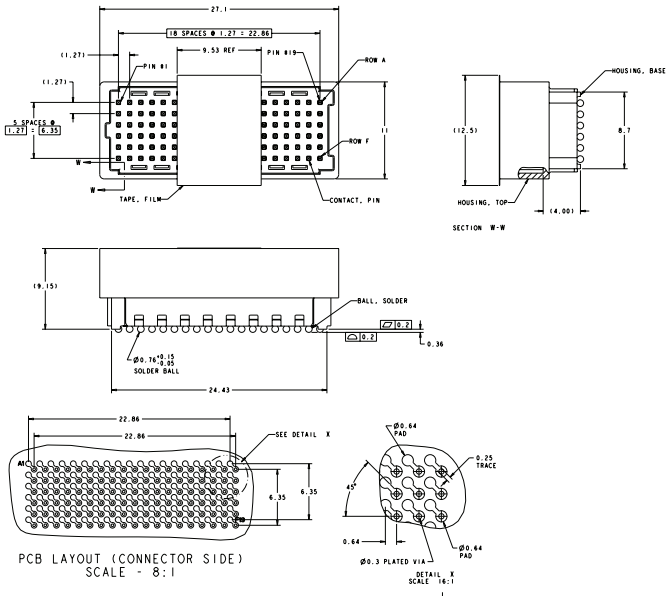
Mezalok Connector (High Reliability Mezzanine Connector) (Continued)

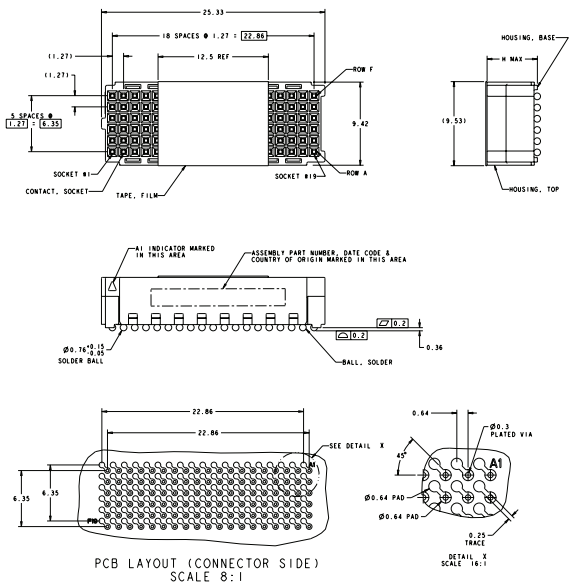
Mini-box contact

No. of Pos.	Interface	Mated Stack Height (mm)	Part No.	Contact Plating	BGA Solder
60	pin		2102079-1	1.27 um gold	tin-lead
			2102079-2	1.27 um gold	lead free
			2102079-3	0.76 um gold	tin-lead
			2102079-4	0.76 um gold	lead free
	socket	10	2102080-1	1.27 um gold	tin-lead
			2102080-2	1.27 um gold	lead free
			2102080-5	0.76 um gold	tin-lead
			2102080-6	0.76 um gold	lead free
		12	2102080-3	1.27 um gold	tin-lead
			2102080-4	1.27 um gold	lead free
			2102080-7	0.76 um gold	tin-lead
			2102080-8	0.76 um gold	lead free
		18	2102080-9	1.27 um gold	tin-lead
			1-2102080-0	1.27 um gold	lead free
			1-2102080-1	0.76 um gold	tin-lead
			1-2102080-2	0.76 um gold	lead free
114	pin		2102060-1	1.27 um gold	tin-lead
			2102060-2	1.27 um gold	lead free
			2102060-3	0.76 um gold	lead free
			2102060-4	0.76 um gold	lead free
	socket	10	2102061-1	1.27 um gold	tin-lead
			2102061-2	1.27 um gold	lead free
			2102061-5	0.76 um gold	tin-lead
			2102061-6	0.76 um gold	lead free
		12	2102061-3	1.27 um gold	tin-lead
			2102061-4	1.27 um gold	lead free
			2102061-7	0.76 um gold	tin-lead
			2102061-8	0.76 um gold	lead free
		15	1-2102061-3	1.27 um gold	tin-lead
			1-2102061-4	1.27 um gold	lead free
			1-2102061-5	0.76 um gold	tin-lead
			1-2102061-6	0.76 um gold	lead free
		18	2102061-9	1.27 um gold	tin-lead
			1-2102061-0	1.27 um gold	lead free
			1-2102061-1	0.76 um gold	tin-lead
			1-2102061-2	0.76 um gold	lead free
320	pin		2102429-1	1.27 um gold	tin-lead
			2102429-2	1.27 um gold	lead free
			2102429-3	0.76 um gold	tin-lead
			2102429-4	0.76 um gold	lead free
	socket	10	2102430-1	1.27 um gold	tin-lead
			2102430-2	1.27 um gold	lead free
			2102430-5	0.76 um gold	tin-lead
			2102430-6	0.76 um gold	lead free
		18	2102430-9	1.27 um gold	tin-lead
			1-2102430-0	1.27 um gold	lead free
			1-2102430-1	0.76 um gold	tin-lead
			1-2102430-2	0.76 um gold	lead free

Pin — 2102060



Socket — 2102061



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