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Multi-Trak Series Receptacle Connector Specification	REVISION : A2	STATUS : OFFICIAL RELEASE
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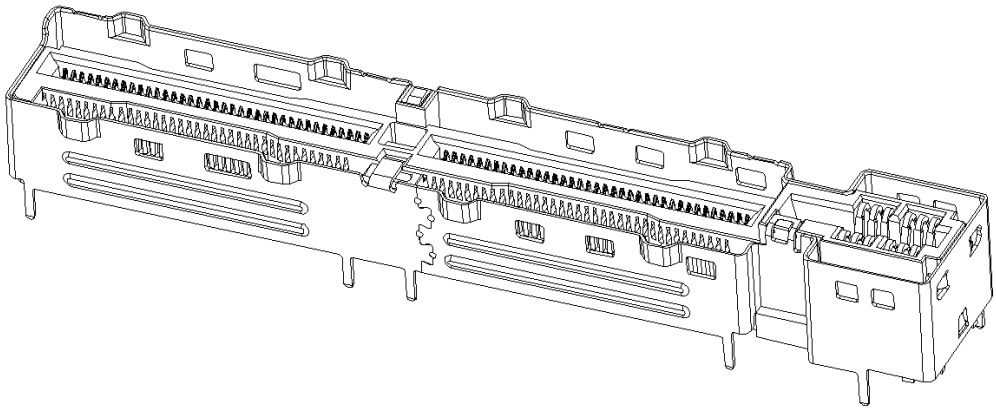
Multi-Trak Receptacle Connector Series



Multi-Trak Vertical Combo 16X+21A Power Connector

1. OBJECTIVE

This Specification defines the performance, test, quality and reliability requirement of the Multi-Trak Card Edge and Multi-Trak Connector.

2. SCOPE

This Specification Covers the Performance Requirements for The Multi-Trak Card Edge and Multi-Trak Connector.

3. PRODUCT DESCRIPTION

3.1 PRODUCT NAME AND SERIES NUMBER(S)
Multi-Trak 8X GEN 5 VERTICAL CONNECTOR SERIES
P947AXXXXXX2-0
Multi-Trak 8X GEN 6 VERTICAL CONNECTOR SERIES
HS: P947BXXXXXX2-0
SB: P947CXXXXXX2-0

3.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKING

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See Customer Drawing for information on dimensions, material, plating and marking.

4. APPLICABLE DOCUMENTS

The Following Documents from Part of This Specification to The Extent Specified Herewith. In The Event of Conflict Between the Requirements of The Specification and The Product Drawing, The Product Drawing Shall Take Precedence.

4.1 INDUSTRY DOCUMENTS

EIA-364 Standard: Test methods for electrical connectors

SFF-TA-1016: Internal Unshielded High Speed Connector System

PCI-Express Revision 4.0 & 5.0

5. RATINGS

ITEM	REQUIREMENT
Current	10.5Amps per power pin,0.5Amps per SB Pin, 1Amps per diff. pair
Voltage	30Volts DC
Temperature	Field:65℃
None operating Temperature	-20℃ to +80℃

6. PERFORMANCE

6.1 ELECTRICAL REQUIREMENTS

Item		Test methods	Requirement
6-1-1	Low level Contact Resistance	EIA-364-23 20 mV DC maxim um 100mA maxim um To include wire termination or connector-to-board termination	30 mΩ Max (Initial) △20milliohms Max. from baseline

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6-1-2	Dielectric Withstanding Voltage	EIA-364-20 Unmated connectors: apply a voltage of 300 VDC for 1 minute between adjacent terminals	No creeping discharge or flashover shall occur current leakage:5m A Max
6-1-3	Insulation Resistance	EIA-364-21 Unmated and unmount connectors: apply a voltage of 100 VDC between adjacent terminals and between terminals to ground	1000Megohm MINIMUM

Notes:

6.1.1 The first low level contact resistance reading in each test sequence in used to determine a baseline measurement. Subsequent measurements in each sequence are measured against this baseline.

6.2 MECHANICAL REQUIREMENTS

Item		Test methods	Requirement
6-2-1	Latched Mating force	To be tested with connector (with integrated latch shroud) and module (plug) without any heat sinks. Latching mechanism deactivated (locked out) Per EIA-364-13 Operation Speed：25.4mm/minute	1.1N (112.17) g max per contact pair
6-2-2	Latched Unmating force	To be tested with connector (with integrated latch shroud) and module (plug) without any heat sinks. Latching mechanism deactivated (locked out) EIA-364-13 Operation Speed：25.4mm/minute	0.1N (10.2)g min per contact pair

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6-2-3	Latch Retention	To be tested with connector (with integrated latch shroud) and module (plug) without any heat sinks. Latching mechanism engaged (not locked out) Per EIA-364-13 Rate: 25.4 mm/minute Pull in direction parallel to insertion, hold for minimum of 60 seconds	50N Min.
6-2-4	Durability	To be tested with connector and module (Latches should be locked out per EIA-364-1000) Per EIA-364-09 Cycle Rate: 500 ± 50 cycles per hour Perform cycles: 200 cycles for 30μ" gold plating 100 cycles for 15μ" gold plating	No visual damage to mating interface or latching mechanism.
6-2-5	Durability (preconditioning)	To be tested with connector and module (Latches should be locked out) Per EIA-364-09	No evidence of physical damage.
6-2-6	Reseating	Manually mate and un-mate the connector with P.C.B for 3 such cycles	No damage in appearance
6-2-7	Wrenching Strength	Bend cable 90° at minimum bend radius. Pull 25N Min. in each of 4 axis directions for round cable. Pull 25N Min. in each of 2 axis directions for flat cable.	No damage to plug / cable assembly

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6-2-8	Contact Normal Force	EIA-364-04 Rate: 5.0 mm/minute	0.098 N (10 grams) Minimum at nominal

Notes:

6.2.1 If the durability requirement on the connector is greater than that of the module, modules may be replaced after their specified durability rating.

6.3 ENVIRONMENTAL REQUIREMENTS

Item		Test methods	Requirement
6-3-1	Thermal Shock	Mate connectors exposed 5 cycles of: Temperature °C Duration (MIN) -20 0/-3 30 +25 +10/-5 5.0 +80 +3/0 30 +25 +10/-5 5.0 per EIA-364-32	No evidence of physical damage 20 milliohm maximums change from initial (baseline) contact resistance
6-3-2	Thermal Disturbance	EIA-364-1000 Cycle the connector between 15 ±3 °C and 85 ±3 °C, as measured on the part. Ramps should be a minimum of 2 °C/minute. Dwell times should ensure that the contacts reach the temperature extremes (a minimum of 5 minutes), humidity is not controlled; perform 10 cycles in mated condition	No evidence of physical damage 20 milliohm maximums change from initial (baseline) contact resistance
6-3-3	Cyclic Temperature & Humidity	Cycle the connector between 25°C and 65°C, with RH of 80 to 50%. Ramp times should be 30 minutes and dwell times should be 60 minutes. Dwell times start when the temperature and humidity have stabilized within the specified levels Perform 24 such cycles EIA-364-31	No evidence of physical damage 20 milliohm maximums change from initial (baseline) contact resistance

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6-3-4	Temperature life	Expose mated connectors to a temperature of 105°C +/-3°C for 120hrs. EIA-364-17	No evidence of physical damage 20 milliohm maximums change from initial (baseline) contact resistance
6-3-5	Temperature life (preconditioning)	Expose mated connectors to a temperature of 105°C +/-3°C for 72hrs. Per EIA-364-17	No evidence of physical damage
6-3-6	Solderability	J-STD-002 Unmated connector: Steam age for 8 hours ± 15 minutes. Dip tails into flux for 5 second, drain, and then dip into the solder pot of 245+5°C for 5±0.5seconds.	95% Minimum solder coverage
6-3-7	Resistance to Solder Heats	EIA-364-56 Pre Heat：150~200°C, 90±30sec. Heat：217°C Min., 60~150sec. Peak Temp.：260+0/-5°C, 20~40sec. Duration：3 cycles	No evidence of physical damage
6-3-8	Current Rating/ Temperature Rise	EIA-364-70 Maximum of 6 adjacent pins per side and 12 pins in total are connected in series, the thermocouple shall be placed as close as possible to the contact interface. Supply the rated current for a duration of 1 hour before measurement is taken	10.5A per power pin MAX. Maximum temperature rise :30°C above ambient condition of 25°C still air
6-3-9	Salt Spray	EIA-364-26 Subject mated connectors to 35±2°C and 5±1% salt condition for 48hours. After test, rinse the sample with water and recondition the room temperature for 1 hour.	No evidence of physical damage 20 milliohm maximums change from initial (baseline) contact resistance

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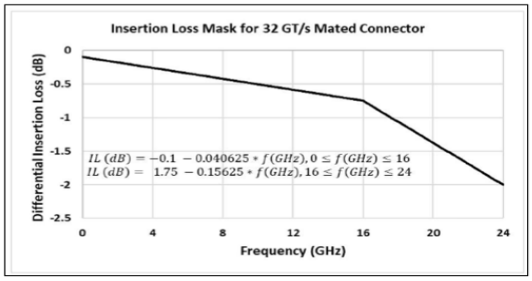
Notes:

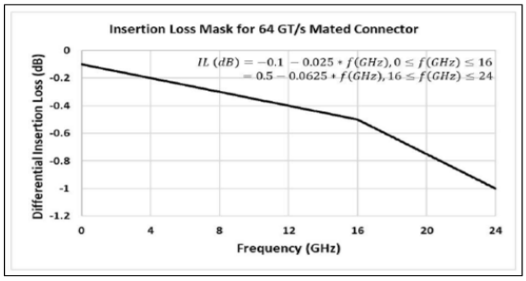
6.3.1 Test option, temperature, duration must be reported.

6.4 HIGH SPEED ELECTRICAL REQUIREMENTS

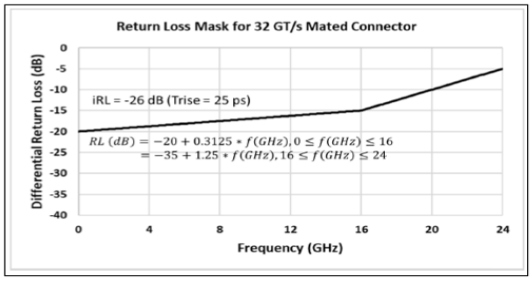
Line Rate	Insertion Loss	Return Loss	Near-End Crosstalk	Far-End Crosstalk
PCIe5	-0.75 dB @16GHz	-15 dB @16GHz	ccICN = 450μV	ccICN = 250μV
PCIe6	-0.50 dB @16GHz	-15 dB @16GHz	ccICN = 175μV	ccICN = 150μV



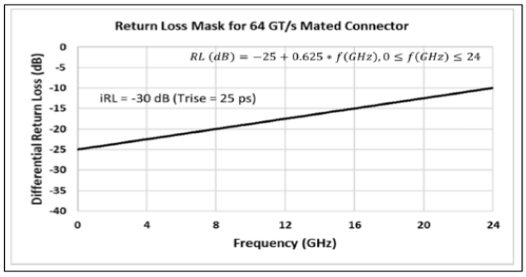
Insertion Loss (PCIe 5.0)



Insertion Loss (PCIe 6.0)



Return Loss (PCIe 5.0)



Return Loss (PCIe 6.0)

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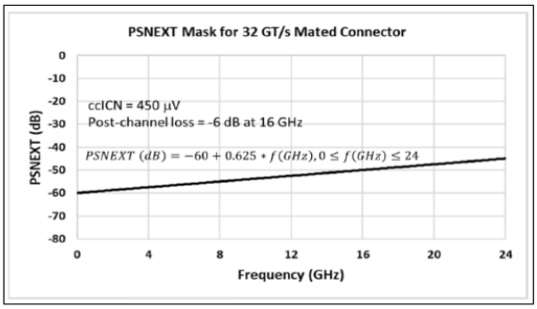
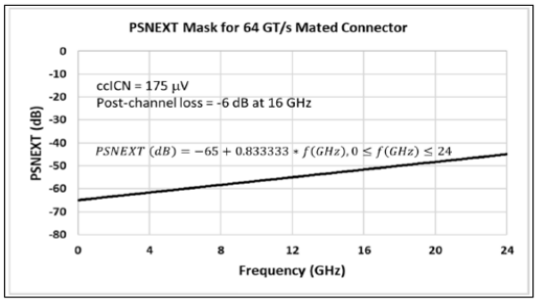
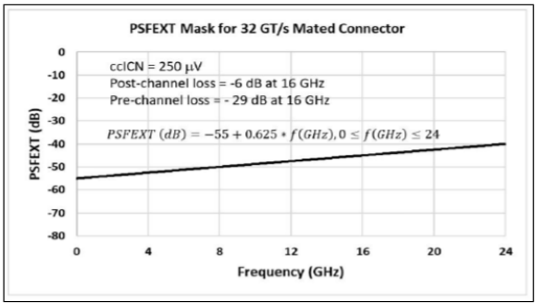


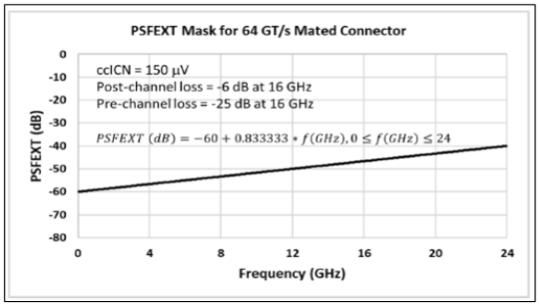
Near-End Crosstalk (PCIe 5.0)



Near-End Crosstalk (PCIe 6.0)



Far-End Crosstalk (PCIe 5.0)



Far-End Crosstalk (PCIe 6.0)

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7. TEST SEQUENCE

TEST DESDRIPTION SEQUENCE	TEST GROUP											
	A	B	C	D	E	F	G	H	I	J	K	L
Examination of product	1,8	1,10	1,7	1,9	1,3	1,9	1,5	1,3	1,3	1,3	1,3	1,3
Temperature Rise					2							
LLCR	2,5,7	2,5,7,9	2,5,6	4,6			2,4					
Insulation resistance				3,8								
Dielectric withstanding voltage				2,7								
Durability				5								
Durability (Precondition)	3	3	3									
Mating Force						3,7						
Unmating Force						4,8						
Reseating	6	8				2,6						
Thermal Shock		4										
Humidity		6										
Temperature life	4					5						
Temperature life (Precondition)			4									
Salt Spray							3					
Solderability								2				
Resistance to soldering heat									2			
Active Latch Retention Strength										2		
Contact Normal Force											2	
Wrenching Strength (With Mated Cable-Active Latch)												2
Sample Size	5	5	5	5	5	5	5	5	5	5	5	5

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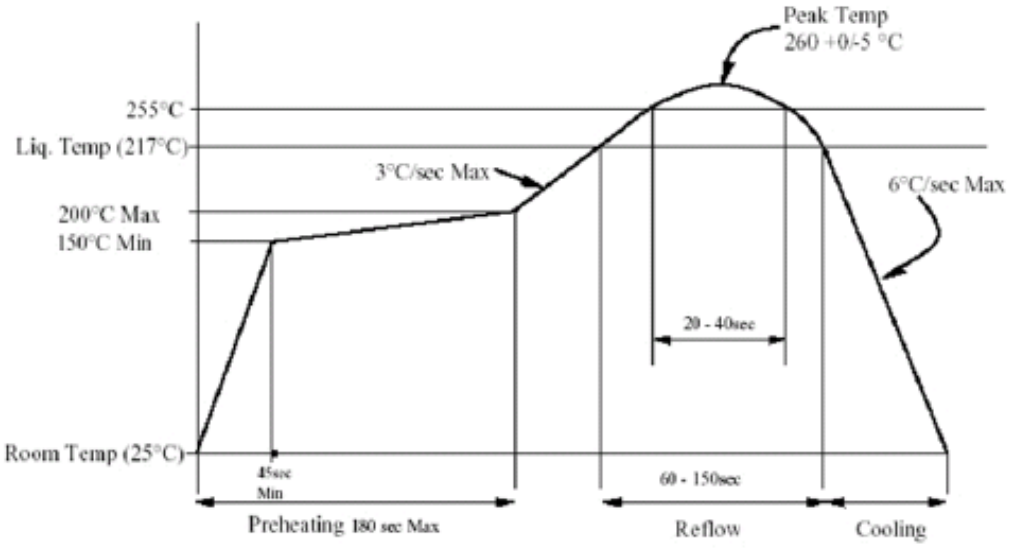
8. PACKAGING

Parts shall be packed in hard trays and protected against damage during handling, transportation and storage

9. RECOMMENDED LEAD-FREE REFLOW PROFILES



LEAD-FREE PROFILE FOR PEAK REFLOW - 260°C

Notes

9.1.1 Temperature indicated refers to the PCB surface temperature at the solder tail area.

9.1.2 Connector can withstand up to 3 reflow cycles with a cool-down to room temperature in-between.

9.1.3 Actual reflow profile also depends on equipment, solder paste, PCB thickness, and other components on the board. Please consult your solder paste and reflow equipment manufacturer for their recommendations to adopt a suitable process.

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10. REVISION RECORD

Rev.	Comments	Originator	Approval	Date
A1	Approved Release	Sam	Ray	09/18/2025
A2	Revised Errors	Jason	Ray	01/02/2026