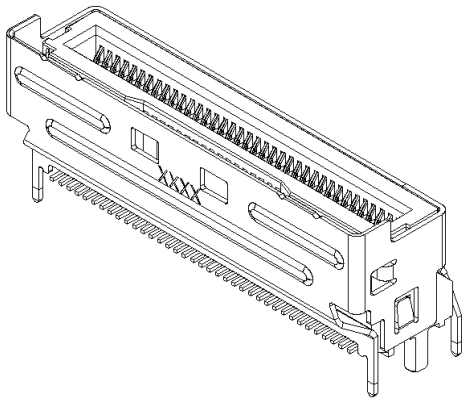
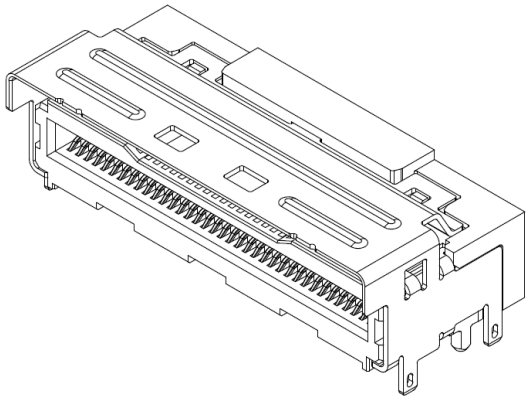
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MCIO Receptacle Connector Series





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1.0 SCOPE

This Product Specification covers performance, test and quality requirements for the JPC MCIO Connector.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

MCIO Receptacle connector series.
JPC P/N: P94XXXXXXXXX-0

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKING

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

3.0 APPLICABLE DOCUMENTS

3.1 EIA-364 Standard Test methods for electrical connectors
3.2 UL-STD-94 Tests for flammability of plastic materials for parts in devices and appliances.
3.3 CopprLink Internal Cable Specification for PCI Express 5.0 and 6.0
3.4 SFF-TA-1016 Specification for Internal Unshielded High Speed Connector System Rev 1.3

4.0 RATINGS

ITEM	SPEC
Voltage	**30** Volts DC Max
Current	**1.1A** per contact
Operating Temperature	**0°**C to **65°**C
Storage Temperature	**- 20°**C to **80°**C

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5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Low Level Contact Resistance (LLCR)	Subject mated contacts assembled in housing to **20** mV maximum Open circuit at **100** mA maximum. (EIA 364-23)	30 mΩ maximum [Initial] 20 mΩ maximum [Delta change from Initial]
2	Insulation Resistance	Apply a voltage of **100** VDC for 1 minute between adjacent terminals. Measure the insulation resistance for mated and unmated connectors (EIA 364-21)	1000 MΩ minimum
3	Current rating	Measure the temperature rise at the rated current. Ambient temperature: 25℃up to a maximum of 6 adjacent pins per side, 12 pins total (EIA-364-70)	30℃ maximum change from initial
4	Dielectric Withstanding Voltage	Apply a voltage of **300** VDC for 1 minute between adjacent terminals of mated and unmated connectors. (EIA 364-20 Method B)	No breakdown No disruptive discharge No leakage current in excess of 0.5mA

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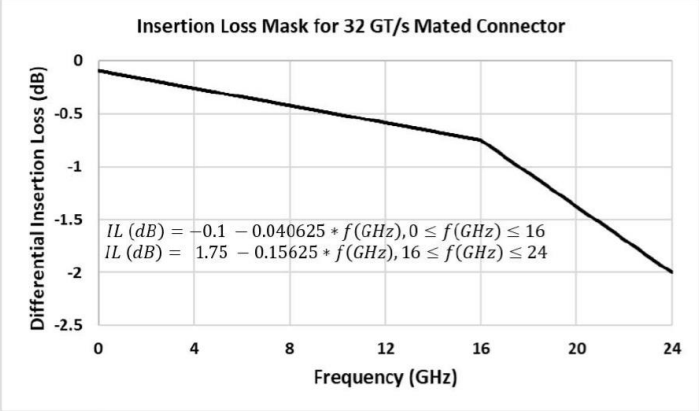
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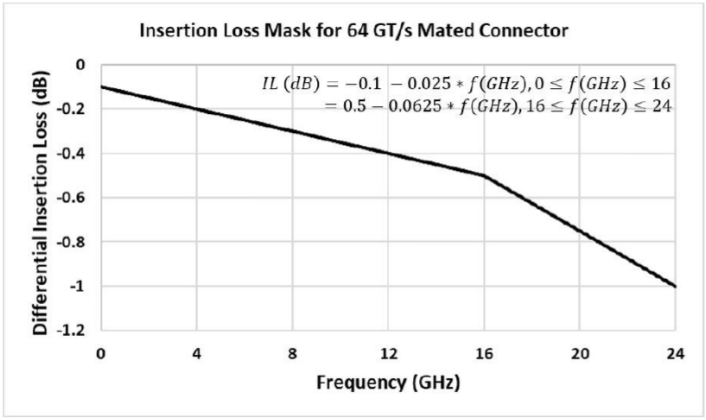
5.2 HIGH SPEED ELECTRICAL REQUIREMENTS

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**

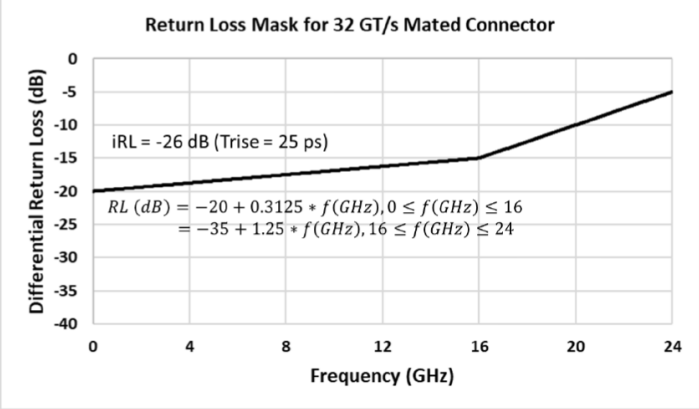
Insertion Loss (Gen5)



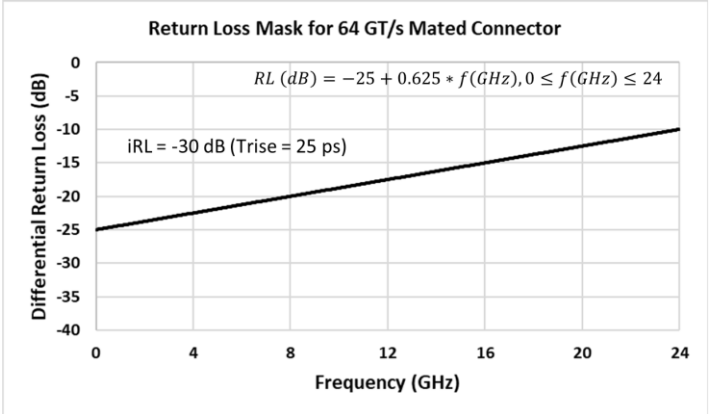
Insertion Loss (Gen6)



Return Loss (Gen5)



Return Loss (Gen6)

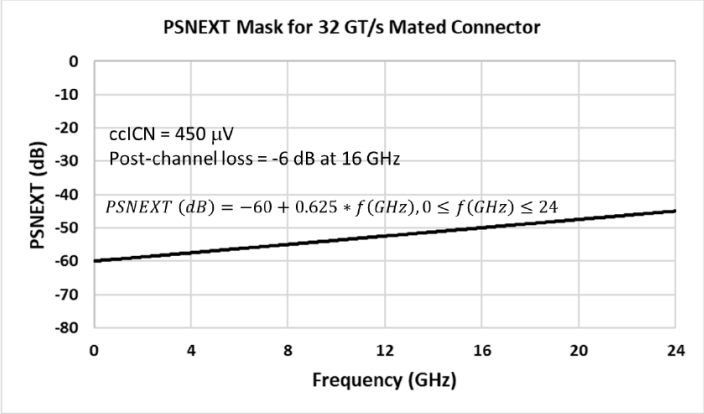


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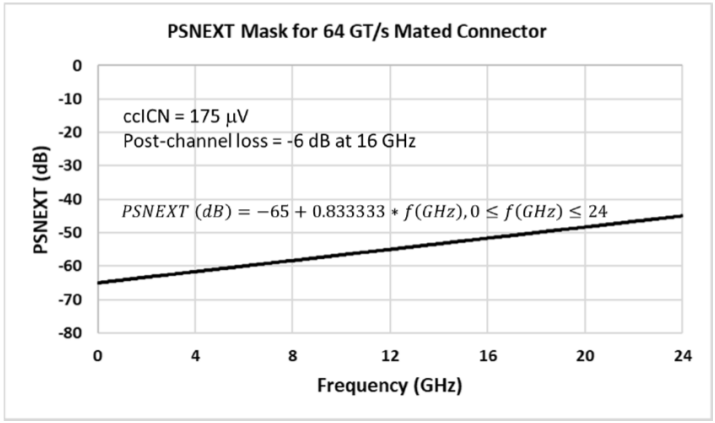
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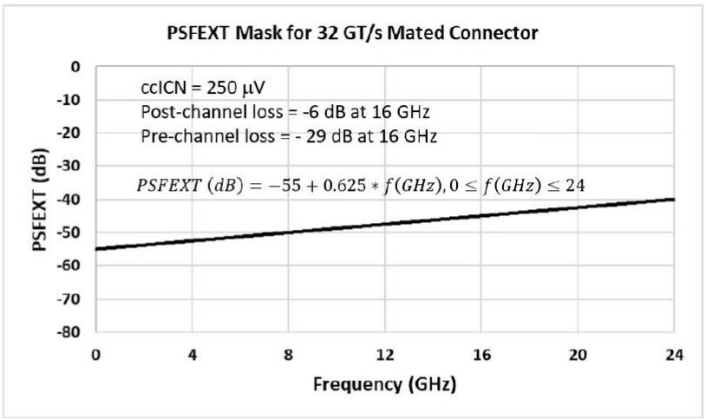
Near-End Crosstalk (Gen5)



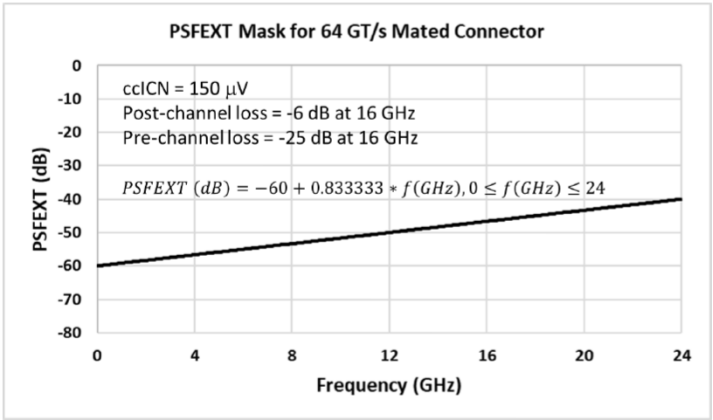
Near-End Crosstalk (Gen6)



Far-End Crosstalk (Gen5)



Far-End Crosstalk (Gen6)



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5.3 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Mating/un-mating Force	Mate and Unmated connector assemblies at a rate of 25.4 mm per minute. (EIA 364-13)	Matting Force: 1.1 N Max./ per pair contact Un-mating Force: 0.1N Min./ per pair contact
2	Durability (preconditioning)	20 unmated/mate cycles (EIA-364-09)	No evidence of physical damage
3	Durability	Cycle rate: 500±50 per hour Number of cycles: 200 cycles (EIA 364-09)	No Physical damage
4	Active Latch Retention Strength	Rate: 25.4 mm/minute Pull in direction parallel to insertion, hold for minimum of 60 seconds (EIA-364-13)	50 N minimum
5	Wrenching strength (W/ mated Cable-Passive Latch)	Bend cable 90° at minimum bend radius. Pull in 4 axis directions for round cable. Pull in 2 axis directions for flat cable. No damage to plug/ cable assembly	25 N minimum
6	Contact Normal Force	Rate: 25.4 mm/minute (EIA-364-04)	0.49 N (50 grams) minimum at nominal
7	Vibration	Subject mated specimens to 3.10 G's rms between 20-500 Hz for 15 minutes in each of 3 mutually perpendicular planes (EIA 364-28 Condition VII Test letter D)	No discontinuities of **1**μs or longer duration **20**mΩ maximum (Delta change from Initial)
8	Mechanical Shock	Subject mated specimens to 50 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. (EIA 364-27 Condition H)	No Physical damage No discontinuities of **1**μs or longer duration **20**mΩ maximum (Delta change from Initial)

9	Reseating	Manually unmated/mate the connector 3 cycles.	No evidence of physical damage.

5.4 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Humidity	EIA-364-31, Method III	No Physical damage 20mΩ maximum change from initial(baseline) contact resistance
2	Solderability	Solder Time: 5 ± 0.5 seconds Solder Temperature :245 ± 5°C (MIL-STD-202, Method 208)	Dipped portion should have 95% continuous new solder coating coverage
3	Resistance to Soldering Heat	EIA-364-56 Pre Heat: 150~200°C, 90±30sec. Heat: 217°C Min., 60~150 sec. Peak Temp.: 260+0/-5°C, 20~40sec. Duration: 2 cycles	No damage in appearance of connector
4	Temperature Life (Precondition)	Subject mated connector to temperature life at +105°C±2°C for 72 hours. (EIA 364-31 Test I Method A)	No Physical damage
5	Temperature Life	Subject mated connector to temperature life at +105°C±2°C for 120 hours. (EIA 364-17 Test I Method A)	No Physical damage 20mΩ maximum (Delta change from Initial)
6	Thermal Shock	Subject connector to 5 cycles between -55°C and +85°C. (EIA 364-32 Test Condition I)	No Physical damage 20mΩ maximum change form initial (baseline) contact resistance

7	Salt Spray	Test condition: mated connector. a.) 5±1% salt. b.) temperature :35±2℃. c.) Duration: 48 hours. (EIA-364-26B)	No evidence of physical damage LLCR Initial: baseline After test: ΔR=20 mΩ maximum
8	Mixed Flowing Gas(MFG)	EIA-364-65, class IIA Test condition: mated connector. RH: 70±2% Temperature: 30±1℃ Cl2 : 10±3 ppb NO2 : 200±50 ppb H2S : 10±5 ppb SO2 : 100±20 ppb Duration: 7 days	No Physical damage

6.0 PACKING

Refer to Customer Drawing for packing information

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7.0 TEST SEQUENCES

DESCRIPTION	GROUP SEQUENCE												
	A	B	C	D	E	F	G	H	I	J	K		
Examination of product	1,8	1,10	1,10	1,11	1,9	1,3	1,9	1,5	1,3	1,3	1,3		
Temperature Rise						2							
LLCR	2,5,7	2,5,7,9	2,5,7,9	2,5,6, 8,10	4,6			2,4					
Insulation resistance					3,8								
Dielectric withstanding voltage					2,7								
Durability					5								
Durability (Precondition)	3	3	3	3									
Mating Force							3,7						
Unmating Force							4,8						
Reseating	6	8		9			2,6						
Thermal Shock		4											

Humidity		6											
Thermal disturbance				7									
Temperature life	4						5						
Temperature life (Precondition)			4	4									
Mechanical Shock			8										
Vibration			6										
Salt Spray								3					
Solderability									2				
Resistance to soldering heat										2			
Contact Normal Force											2		
Test sample(PCS)	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**	**5**		

NOTE：(a) Numbers indicate sequence in which tests are performed.

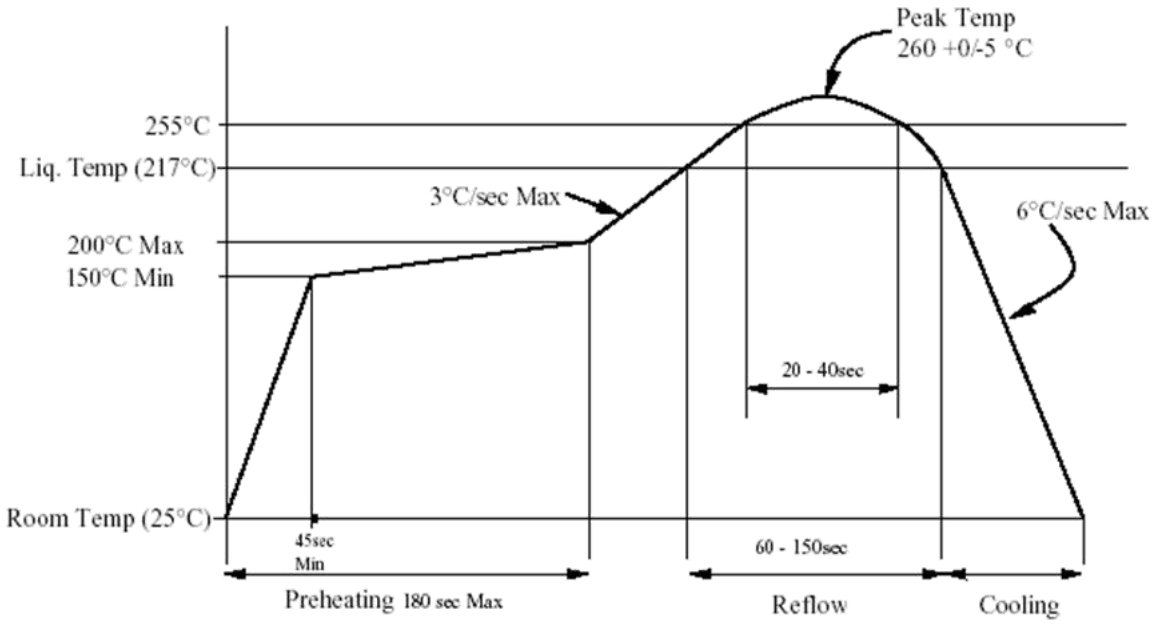
(b) Discontinuities shall not take place in this test group, during tests.

8.0 SOLDERING PROFILE

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LEAD-FREE PROFILE FOR PEAK REFLOW - 260°C

Notes

1. Temperature indicated refers to the PCB surface temperature at the solder tail area.
2. Connector can withstand up to 2 reflow cycles with a cool-down to room temperature in- between.
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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9.0 REVISION RECORD

Rev.	Comments	Originator	Approval	Date
A1	Approved Release	Brady	Jason	04/15/2024
A2	Add R/A Photo	Brady	Jason	07/15/2024
A3	Text corrections modified	Veera	Venson	08/07/2024
A4	Add Gen6 Spec	Sam	Ray	02/11/2025