

molex[®] PRODUCT SPECIFICATION

SAS/PCIe RECEPTACLE (REVERSE), R/A, SMT, 0.35mm HEIGHT

1.0 SCOPE

This Product Specification covers the performance requirements of the SAS/PCIe High Speed Serialized Receptacle connector.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

Product Name

Series Number

SAS/PCIE RECEPTACLE (REVERSE), R/A, SMT
0.35MM HT

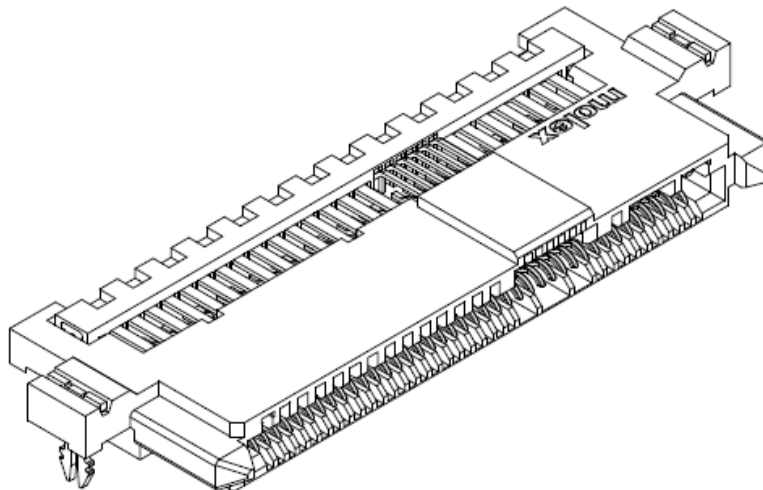
151124

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate Sales Drawing for information on dimensions, materials, plating and markings.

2.3 SAFETY AGENCY APPROVALS

UL FILE : E29179 VOL 10
CSA : 1422869 (LR 19980)



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3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

See the Sales Drawing and other sections of this Specification for the necessary referenced Documents and Specifications.

4.0 RATINGS

4.1 VOLTAGE

30 Volts Max.

4.2 CURRENT

Power section (per pin):

- Continuous Current 1.5A
- Peak Current 2.5A for 1.5s
- Peak Current Pre-charge 6A for 1ms

Signal Section (per pin):

- Continuous Current 500mA

4.3 TEMPERATURE

Operating: 0°C to + 55°C

Non-Operating: -40°C to + 85°C

5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Low Level Contact Resistance (LLCR)	Subject mated connectors to a maximum voltage of 20 mV and a current of 100 mA . (EIA 364-23)	45 mΩ MAXIMUM [initial] 15 mΩ MAXIMUM [Delta change from Initial]
2	Temperature Rise (via current cycling) (Power Segment, P1 thru P15)	Mount connector to a test PCB with ½ oz copper layer. Wire power pins P1, P2, P8 and P9 in parallel for power. Wire ground pins P4, P5, P6, P10 and P12 in parallel for return. Supply 6A total DC current to the power pins in parallel, returning from the parallel ground pins. Measure and record temperature after 96 hours (45 minutes ON and 15 minutes OFF per hour).	1.5 A per pin MINIMUM Temperature rise shall not exceed 30°C at any point in the connector when contacts are powered Still Air at Ambient temperature 25±3°C

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3	Insulation Resistance	Subject a voltage of 500 VDC for 1 minute, measure the insulation resistance between adjacent terminals of the mated and unmated connector assemblies. (EIA 364-21)	1000 MΩ MINIMUM
4	Dielectric Withstanding Voltage	Subject a voltage of 500 VAC for 1 minute between adjacent terminals of mated and unmated connector at sea level. (EIA 364-20)	No breakdown

5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5	Connector Mate and Unmate Forces	Mate and Unmate connector assemblies at a rate of 25.4 mm per minute. (EIA 364-13)	Backplane - Mate force : 50 N MAXIMUM Unmate force : 5 N MINIMUM [Initial and After Durability]
6	Durability	500 cycles for Backplane application. All at a maximum rate of 200 cycles per hour. (EIA 364-09)	No Physical damage 15 mΩ MAXIMUM [Delta Change From Initial]
7	Random Vibration	Subject mated connector to 3.10 g's RMS between 20-500Hz for 15 minutes in each of the three mutually perpendicular planes. (EIA 364-28 Test Condition VII Test letter D) Test Set-Up in Section 8.0	15 mΩ MAXIMUM [Delta Change From Initial] No discontinuities of 1 μs or longer duration
8	Physical Shock	Subject mated connector to 50 g's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along three mutually perpendicular planes for a total of 18 shocks. (EIA 364-27 Test Condition A) Test Set-Up in Section 8.0	No Physical damage 15 mΩ MAXIMUM [Delta Change From Initial] No discontinuities of 1 μs or longer duration
9	Terminal Retention Force	Apply axial pull out force on terminal in the housing at a rate of 25.4 mm per minute.	Port 1: 3.50 N MINIMUM Port 2: 2.20 N MINIMUM

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5.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
10	Humidity	Subject the connector to temperature and humidity of 40°C with 90% to 95% RH for 96 hours. (EIA 364-31 Method II Test Condition A)	No Physical damage 15 mΩ MAXIMUM [Delta Change From Initial]
11	Temperature Life	Subject mated connector to temperature life at +85°C for 500 hours. (EIA 364-17 Method A Test Condition 3)	No Physical damage 15 mΩ MAXIMUM [Delta Change from Initial]
12	Thermal Shock	Subject connector to 10 cycles between -55°C and +85°C . (EIA 364-32 Method A Test Condition I)	No Physical damage 15 mΩ MAXIMUM [Delta Change from Initial]
13	Resistance to Soldering Heat	Refer to Section 9.0 for Soldering profile.	No damage in appearance of connector.
14	Solderability	Unmated Connector. Steam age for 8 hours \pm 15 minutes. Solder Time: 3 \pm 0.5 seconds Solder Temperature: 260 \pm 5°C Flux type: ROL0 (JESD 22-B-102 Condition C)	95% MINIMUM Solder coverage
15	Mixed Flowing Gas	Half of samples are exposed unmated (receptacle only) for 7 days and then mated for additional 7 days. The other half of samples mated for full 14 days test period. (EIA 364-65, Class IIA)	No Physical damage 15 mΩ MAXIMUM [Delta Change from Initial]

6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage.

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7.0 TEST SEQUENCES

Test Group A to E is covered by SAS Specification.

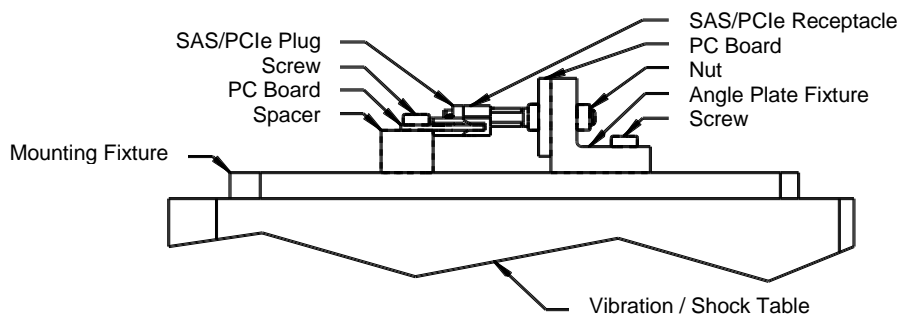
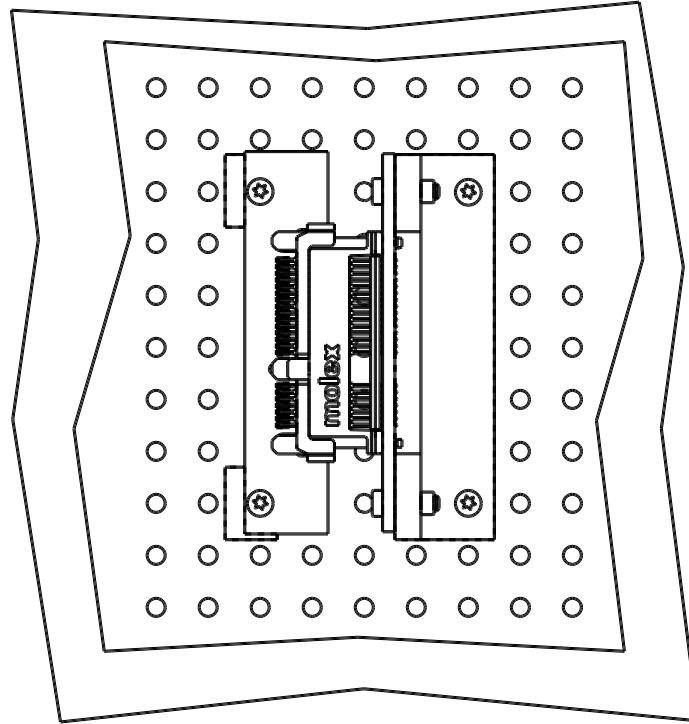
Test Group →	A	B	C	D	E	F	G	H
Test or Examination ↓								
Examination of the connector(s)	1, 5	1,9	1,8	1,8	1,8	1		1,7
Low Level Contact Resistance (LLCR)	2,4	3,7	2,4,6		2,5,7			
Insulation Resistance				2,6				
Dielectric Withstanding Voltage				3,7				
Current Rating (Temperature Rise)			7					
Mate Force		2						2,5
Unmate Force		8						3,6
Durability	3	4 ^(a)			3 ^(a)			4
Physical Shock		6						
Vibration		5						
Humidity				5				
Temperature Life			3					
Reseating (manually unplug/plug three times)			5		6			
Mixed Flowing Gas					4			
Thermal Shock				4				
Terminal / Pin Retention Force						2,4		
Resistance to Soldering Heat						3		
Solderability							1	
Note : (a) Preconditioning, 50 cycles for the 500-durability cycles requirement. The mate and unmate cycle is at a maximum rate of 200 cycles per hour.								

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8.0 VIBRATION / SHOCK TEST SET-UP

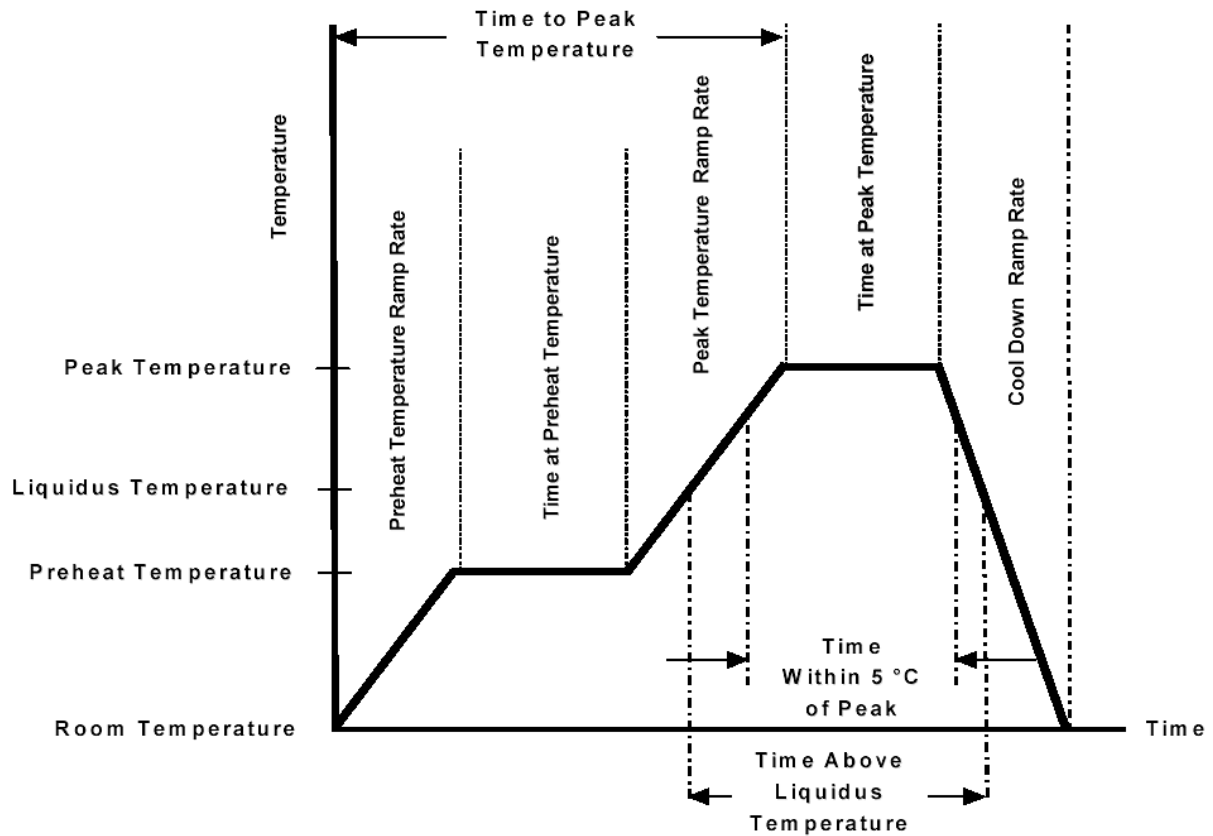
SAS/PCIe Receptacle mated with SAS/PCIe Plug (For Reference Only)



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9.0 SOLDERING PROFILE



Description	Requirement
Average Ramp Rate	3°C/sec Max
Preheat Temperature	150°C Min to 200°C Max
Preheat Time	60 to 180 sec
Ramp to Peak	3°C/sec Max
Time over Liquidus (217°C)	60 to 150 sec
Peak Temperature	260 +0/-5°C
Time within 5°C of Peak	20 to 40 sec
Ramp - Cool Down	6°C/sec Max
Time 25°C to Peak	8 min Max

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Note:

- 1) Temperature indicated refers to the PCB surface temperature at 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 & reflow equipment manufacturer for their recommendations to adopt a suitable process.

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