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)

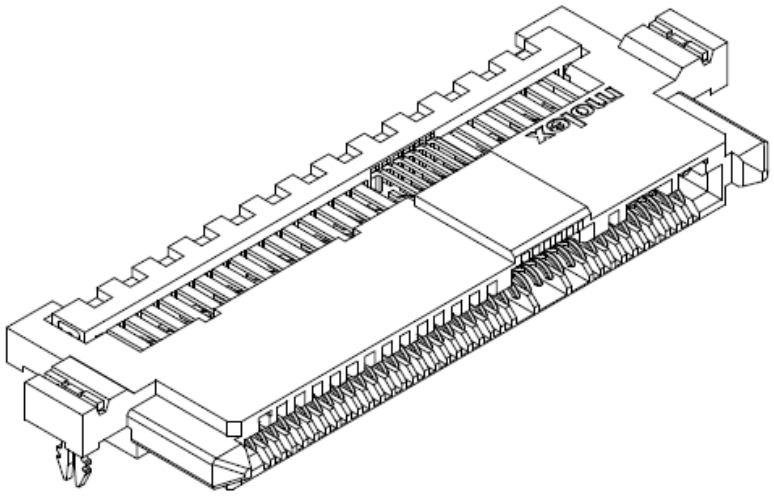
Product Name	Series Number
SAS/PCIE RECEPTACLE (REVERSE), R/A, SMT 0.35MM HT	151124

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)



REVISION:	ECR/ECN INFORMATION:	TITLE:	SHEET No.
A	EC No: S2016-0635 DATE: 2016/01/13	SAS / PCIe RECEPTACLE (REVERSE), R/A, SMT 0.35mm HEIGHT	1 of 8

DOCUMENT NUMBER:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
PS-151124-0001	WHLIONG	CGTAN	SHLENI

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

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

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 ± 15 minutes. Solder Time: **3** ± **0.5** seconds Solder Temperature: **260** ± **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.

7.0 TEST SEQUENCES

Test Group A to E is covered by SAS Specification.

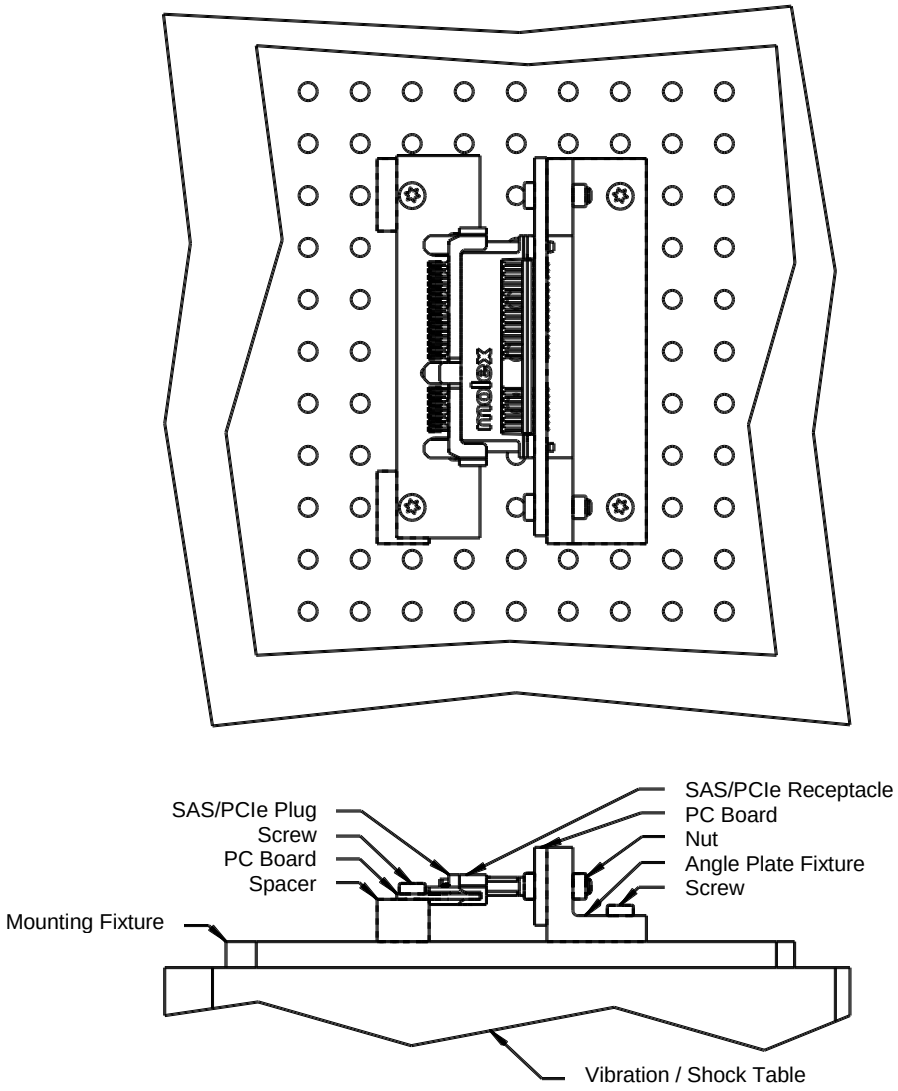
Test Group → / Test or Examination ↓	A	B	C	D	E	F	G	H
Examination of the connector(s)	1, 5	1,9	1,8	1,8	1,8	1		1,7
Low Level Contact Resistance (LLCR)	2,4	3,7	2,4,6		2,5,7			
Insulation Resistance				2,6				
Dielectric Withstanding Voltage				3,7				
Current Rating (Temperature Rise)			7					
Mate Force		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 :

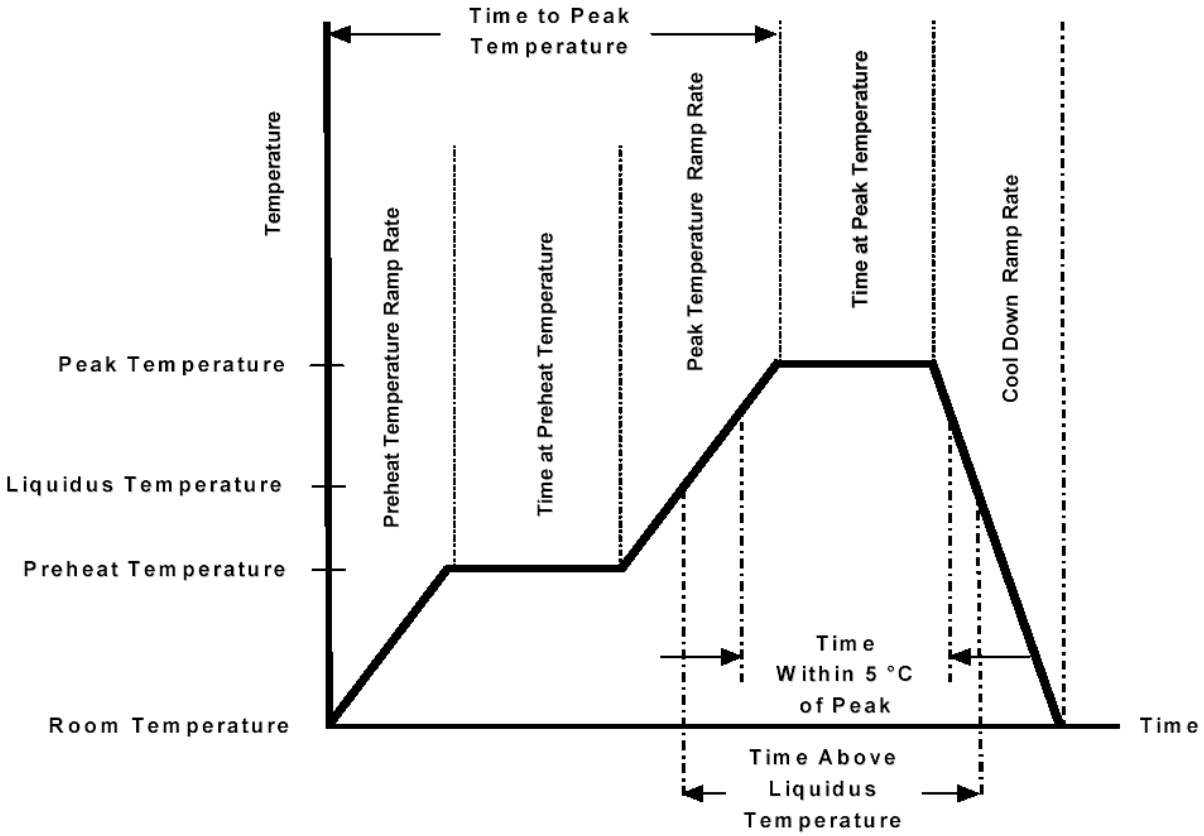
(a) Preconditioning, 50 cycles for the 500-durability cycles requirement. The mate and unmate cycle is at a maximum rate of 200 cycles per hour.

8.0 VIBRATION / SHOCK TEST SET-UP

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



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

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.