



# PRODUCT SPECIFICATION

## SAS/ PCIe VERTICAL SMT RECEPTACLE

### 1.0 SCOPE

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

### 2.0 PRODUCT DESCRIPTION

#### 2.1 PRODUCT NAME AND SERIES NUMBER(S)

**Product Name**

**Series Number**

SAS/PCIE, VERTICAL RECEPTACLE, SMT, RECEPTACLE

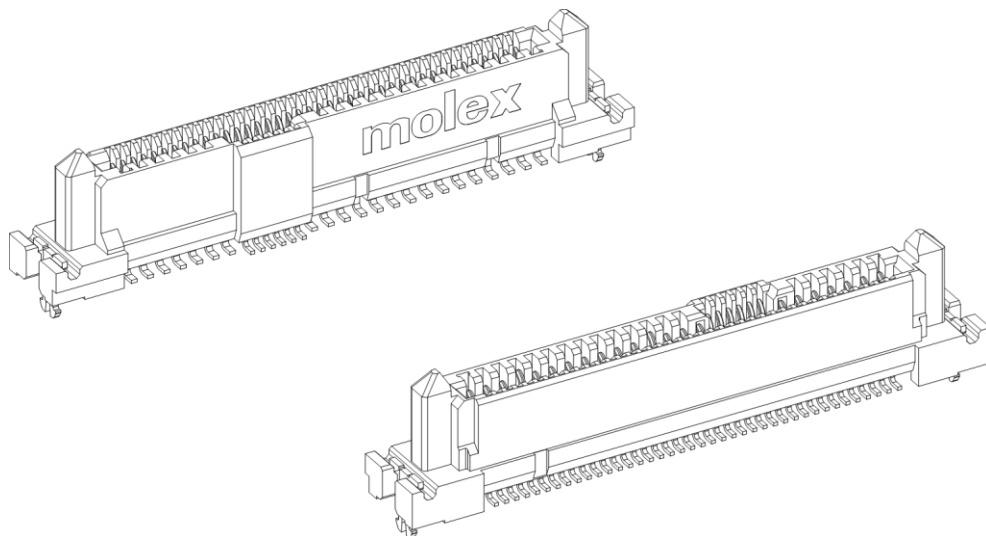
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#### 2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

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

#### 2.3 SAFETY AGENCY APPROVALS

UL FILE : E29179 VOL 10  
CSA : 1699307 (LR19980)



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## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

The following documents form a part of this specification to the extent specified herewith. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In addition, in event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

## 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)	30 mΩ MAXIMUM [Initial]  15 mΩ MAXIMUM [Delta Change from Initial]

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<b>2</b>	<b>Temperature Rise (via current cycling)  (Power Segment, P1 thru P15)</b>	<p>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 <b>6A</b> total DC current to the power pins in parallel, returning from the parallel ground pins. Measure and record temperature after <b>96</b> hours (45 minutes ON and 15 minutes OFF per hour).</p>	<p><b>1.5 A per pin MINIMUM</b></p> <p>Temperature rise shall not exceed <b>30°C</b> at any point in the connector when contacts are powered</p> <p>Still Air at Ambient temperature <b>25°C</b></p>
<b>3</b>	<b>Insulation Resistance</b>	<p>After <b>500 VDC</b> for <b>1</b> minute, measure the insulation resistance between adjacent terminals of the mated and unmated connector assemblies. (EIA 364-21)</p>	<b>1000 Megohms MINIMUM</b>
<b>4</b>	<b>Dielectric Withstanding Voltage</b>	<p>Subject a voltage of <b>500 VAC</b> for <b>1</b> minute between adjacent terminals of mated and unmated connector at sea level. (EIA 364-20)</p>	No breakdown

## 5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
<b>5</b>	<b>Connector Mate and Umate Forces</b>	<p>Mate and Unmate connector assemblies at a rate of <b>25</b> mm per minute. (EIA 364-13)</p>	<p>Mate force: <b>59 N MAXIMUM</b></p> <p>Unmate force: <b>5 N MINIMUM</b></p> <p>[At Initial and After Durability]</p>
<b>6</b>	<b>Durability</b>	<p><b>500</b> cycles for Backplane Receptacle, <b>25</b> cycles for Cable. All at a maximum rate of <b>200</b> cycles per hour. (EIA 364-09)</p>	<p>No Physical damage</p> <p><b>15 mΩ MAXIMUM</b> [Delta Change From Initial]</p>
<b>7</b>	<b>Housing Slip Out Force</b>	<p>Apply axial pull out force on housing at a rate of <b>25.4</b> mm per minute.</p>	<p><b>90 N MINIMUM</b> Housing slip out force</p>

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<b>8</b>	<b>Physical Shock</b>	<p>Subject mated connector to <b>50 g's</b> half-sine shock pulses of <b>11 msec</b> duration. Three shocks in each direction applied along three mutually perpendicular planes for a total of <b>18</b> shocks. (EIA 364-27 Condition A)</p> <p>Test Set-Up in Section 8.0</p>	<p>No Physical damage</p> <p><b>15 mΩ MAXIMUM</b> [Delta Change From Initial]</p> <p>No discontinuities of <b>1 μs</b> or longer duration</p>
<b>9</b>	<b>Random Vibration</b>	<p>Subject mated connector to <b>3.10 g's RMS</b> between 20-500Hz for <b>15</b> minutes in each of the three mutually perpendicular planes. (EIA 364-28 Condition VII Test letter D)</p> <p>Test Set-Up in Section 8.0</p>	<p><b>15 mΩ MAXIMUM</b> [Delta Change From Initial]</p> <p>No discontinuities of <b>1 μs</b> or longer duration</p>

## 5.3 ENVIROMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
<b>10</b>	<b>Humidity</b>	<p>Subject the connector to temperature and humidity of <b>40°C</b> with <b>90%</b> to <b>95%</b> RH for <b>96</b> hours. (EIA 364-31 Method II Test Condition A)</p>	<p>No Physical damage</p> <p><b>15 mΩ MAXIMUM</b> [Delta Change From Initial]</p> <p><u>Insulation Resistance</u> <b>1000 Megohms MINIMUM</b> [Initial &amp; after test]</p> <p><u>Dielectric Withstanding Voltage</u> No breakdown</p>
<b>11</b>	<b>Resistance to Soldering Heat</b>	Refer to Section 9.0 for soldering profile	No damage in appearance of connector
<b>12</b>	<b>Solderability</b>	<p>Unmated Connector. Steam age for <b>8</b> hours ± 15 minutes. Solder Time: <b>3 ± 0.5</b> seconds Solder Temperature: <b>260 ± 5°C</b> Flux type: ROL0 (JESD 22-B-102 Condition C)</p>	<p><b>95% MINIMUM</b> Solder coverage</p>

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13	<b>Temperature Life</b>	Subject mated connector to temperature life at <b>+85°C</b> for <b>500</b> hours. (EIA 364-17 Method A Test Condition 3)	No Physical damage  <b>15 mΩ MAXIMUM</b> [Delta Change From Initial]
14	<b>Thermal Shock</b>	Subject connector to <b>10</b> cycles between <b>-55°C</b> and <b>+85°C</b> . (EIA 364-32 Method A Test Condition I)	No Physical damage
15	<b>Mixed Flowing Gas</b>	Subject connector to the following condition: SO <sub>2</sub> gas concentration: <b>0.1</b> ppm. NO <sub>2</sub> gas concentration: <b>0.2</b> ppm. H <sub>2</sub> S gas concentration: <b>0.01</b> ppm. CL <sub>2</sub> gas concentration: <b>0.01</b> ppm. Temperature: <b>30 ± 1 °C</b> Relative Humidity: <b>70 ± 2 %</b> Half of the samples are exposed unmated for <b>7</b> days, then mated for the remaining <b>7</b> days. The other half of the samples mated for full <b>14</b> days test period.  (EIA 364-65, Class IIA)	No Physical damage  <b>15 mΩ MAXIMUM</b> [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	B	C	D	E	F	G
Test or Examination ↓							
Examination of the connector(s)	1, 5	1,9	1, 8	1, 8	1,8	1	
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					
Unmate Force		8					
Durability	3	4 <sup>(a)</sup>			3 <sup>(a)</sup>		
Physical Shock		6					
Vibration		5					
Humidity				5			
Temperature Life			3				
Reseating (manually unplug/plug three times)			5		6		
Thermal Shock				4			
Mixed Flowing Gas					4		
Resistance to Soldering Heat						2	
Housing Slip Out Force						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.

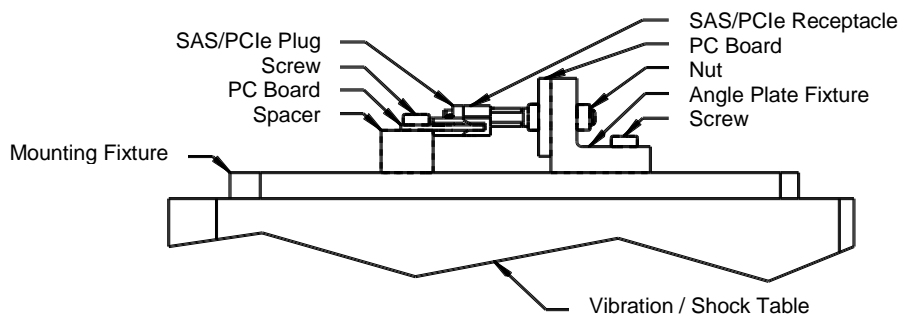
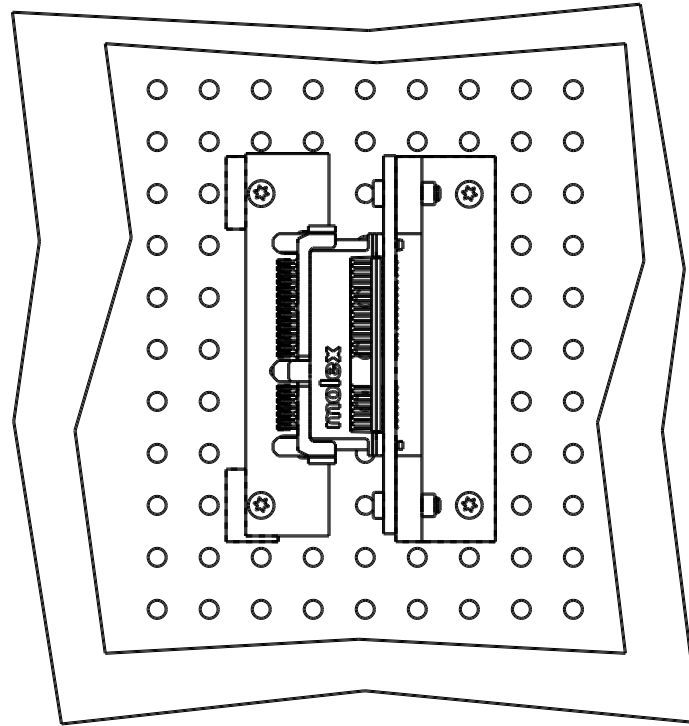
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## 8.0 VIBRATION/SHOCK TEST SET-UP

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

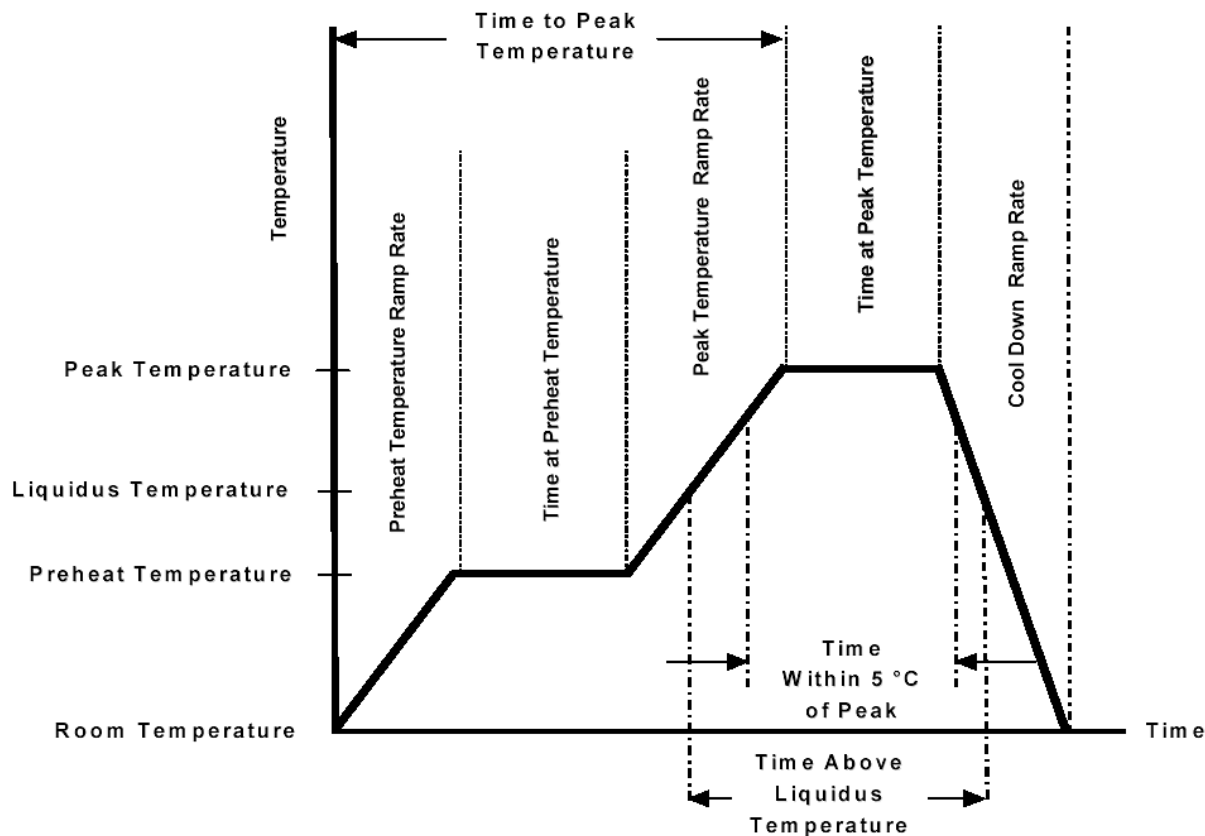


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## 9.0 SOLDERING PROFILE



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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