

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 78777

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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۸	<u>EC No:</u> S2016-0175	STD HE	EIGHT BACKPLAN	IE	1 of 8		
A	DATE: 2015/08/13	VERTICA	VERTICAL SMT RECEPTACLE				
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3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

The following documents form a part of this specification to the extend 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: $0^{\circ}C$ to $+ 55^{\circ}C$ Non-Operating: $-40^{\circ}C$ to $+ 85^{\circ}C$

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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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 6 A 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°C
3	Insulation Resistance	After 500 VDC for 1 minute, measure the insulation resistance between adjacent terminals of the mated and unmated connector assemblies. (EIA 364-21)	1 000 Megohms 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 Umate Forces	Mate and Unmate connector assemblies at a rate of 25 mm per minute. (EIA 364-13)	Mate force: 59 N MAXIMUM Unmate force: 5 N MINIMUM [At Initial and After Durability]
6	Durability	500 cycles for Backplane Receptacle, 25 cycles for Cable. All at a maximum rate of 200 cycles per hour. (EIA 364-09)	No Physical damage 15 mΩ MAXIMUM [Delta Change From Initial]
7	Housing Slip Out Force	Apply axial pull out force on housing at a rate of 25.4 mm per minute.	90 N MINIMUM Housing slip out force

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		0	PRODUCT SPECIFICATION			
	8	Physical Shock	Subject mated connector to 50 g's half-sine shock pulses of 11 msec duration. Three shocks in each direction applied along three mutually perpendicular planes for a total of 18 shocks. (EIA 364-27 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	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 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		

5.3 ENVIROMENTAL 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] <u>Insulation Resistance</u> 1000 Megohms MINIMUM [Initial & after test] <u>Dielectric Withstanding Voltage</u> No breakdown		
11	Resistance to Soldering Heat	Refer to Section 9.0 for soldering profile	No damage in appearance of connector		
12	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		

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13	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]
14	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	Mixed Flowing Gas	Subject connector to the following condition: SO_2 gas concentration: 0.1 ppm. NO_2 gas concentration: 0.2 ppm. H_2S gas concentration: 0.01 ppm. CL_2 gas concentration: 0.01 ppm. Temperature: 30 ± 1 °C Relative Humidity: 70 ± 2 % Half of the samples are exposed unmated for 7 days, then mated for the remaining 7 days. The other half of the 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

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

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7.0 TEST SEQUENCES

Test or Examination \checkmark ABCDEFGExamination of the connector(s)1, 51,91,81,81.811Low Level Contact Resistance2,43,72,4,62,5,711Insulation Resistance222,611Dielectric Withstanding Voltage73,7111Current Rating (Temperature Rise)77111Mate Force211111UnmateForce811111Durability34 ^(a) 13 ^(a) 11Physical Shock611111Vibration5111111Humidity134 ^(a) 3111Inserver Life3111111Reseating (manually unplug/plug three times)56111Internal Shock111321Mixed Flowing Gas1111311Note : (a) Preconditioning, 50 cycles for the 500-turability cycles requirement. The mate and unmate cycle is at a maximum rate of 200 cycles per hour.11	Test Group →	A	В	С	D	E	F	G
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 2,4 3,7 2,4,6 2,5,7 Dielectric Withstanding Voltage 2,6 3,7 Current Rating (Temperature Rise) 7 7 Mate Force 2 <td< td=""><td>Test or Examination ↓</td></td<>	Test or Examination ↓							
Low Level Contact Resistance (LLCR) 2, 4 3, 7 2,4,6 2,5,7 Insulation Resistance Image: Im	Examination of the connector(s)	1, 5	1,9	1, 8	1, 8	1,8	1	
Insulation Resistance Image: Marcine State S	Low Level Contact Resistance (LLCR)	2, 4	3, 7	2,4,6		2,5,7		
Dielectric Withstanding VoltageI3, 7ICurrent Rating (Temperature Rise)77IIMate Force2IIIUnmateForce8IIIDurability34(a)I3(a)IPhysical Shock6IIIIVibration5IIIIHumidityI5IIIReseating (manually unplug/plug three times)56IIThermal ShockIIIIIMixed Flowing GasIIIIIResistance to Soldering HeatIIIIIHousing Slip Out ForceIIIIINote : (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.II	Insulation Resistance				2, 6			
Current Rating (Temperature Rise)7111Mate Force2111UnmateForce8131Durability34(a)33(a)1Durability34(a)133(a)1Physical Shock61111Vibration51111Humidity15111Temperature Life3111Reseating (manually unplug/plug three times)561Thermal Shock1441Mixed Flowing Gas1142Housing Slip Out Force1113Solderability1111Note : (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.	Dielectric Withstanding Voltage				3, 7			
Mate Force2IIIUnmateForce8I3(a)IDurability34(a)3(a)IPhysical Shock6IIIVibration5IIIHumidity5IIITemperature Life3IIIReseating (manually unplug/plug three times)56IIThermal ShockI4IIMixed Flowing GasIII2IHousing Slip Out ForceIII3I1Note : (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.II	Current Rating (Temperature Rise)			7				
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Durability34(a)3(a)Physical Shock6Vibration5Humidity5Temperature Life3Reseating (manually unplug/plug three times)56Thermal Shock4Mixed Flowing Gas4Resistance to Soldering Heat2Housing Slip Out Force3Solderability1Note : (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.	UnmateForce		8					
Physical Shock6Vibration5Humidity5Temperature Life3Reseating (manually unplug/plug three times)56Thermal Shock4Mixed Flowing Gas4Resistance to Soldering Heat2Housing Slip Out Force33Solderability11Note : (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.	Durability	3	4 ^(a)			3 ^(a)		
Vibration5IHumidity5ITemperature Life3IReseating (manually unplug/plug three times)56Thermal Shock4IMixed Flowing Gas4IResistance to Soldering Heat2Housing Slip Out Force33Solderability11Note : (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.	Physical Shock		6					
Humidity5Temperature Life3Reseating (manually unplug/plug three times)5Thermal Shock4Mixed Flowing Gas4Mixed Flowing Gas2Housing Slip Out Force3Solderability1Note : (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.	Vibration		5					
Temperature Life3Image: Constraint of the systemReseating (manually unplug/plug three times)56Thermal Shock44Mixed Flowing Gas44Resistance to Soldering Heat2Housing Slip Out Force3Solderability1Note : unmate cycle is at a maximum rate of 200 cycles per hour.	Humidity				5			
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Thermal Shock4Mixed Flowing Gas4Mixed Flowing Gas4Resistance to Soldering Heat2Housing Slip Out Force3Solderability1Note : (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.	Reseating (manually unplug/plug three times)			5		6		
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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.	Mixed Flowing Gas					4		
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.	Resistance to Soldering Heat						2	
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.	Housing Slip Out Force						3	
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.	Solderability							1
	Note : (a) Preconditioning, 50 cyc unmate cycle is at a ma	cles for th aximum r	e 500-du ate of 20	urability c 0 cycles	ycles req per hour.	uirement	. The ma	te and

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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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