



PRODUCT SPECIFICATION

1.8 INCH SERIAL ATA PLUG

1.0 SCOPE

This Product Specification covers the performance requirements of the Serial ATA / High Speed Serialized device plug connector.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

Product Name

Part Number

SATA PLUG, 1.8 INCH SSD
RIGHT ANGLE SMT

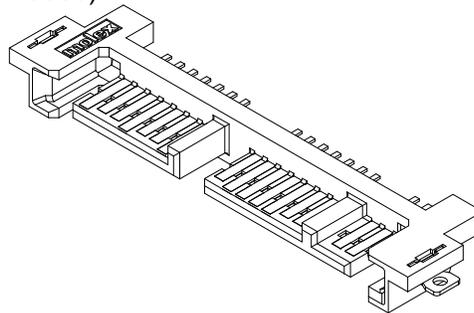
78285-0001

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See Sales Drawing SD-78285-001 for information on dimensions, materials, platings and markings.

2.3 SAFETY AGENCY APPROVALS

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



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.

SATA Specification

TENTATIVE RELEASE:

THIS SPECIFICATION IS BASED ON DESIGN OBJECTIVES AND IS STRICTLY TENTATIVE. PRELIMINARY TEST DATA MAY EXIST, BUT THIS SPECIFICATION IS SUBJECT TO CHANGE BASED ON THE RESULTS OF ADDITIONAL TESTING AND EVALUATION

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|---|---|---|---|
| REVISION: 3 | ECR/ECN INFORMATION: EC No: S2010-0563 DATE: 2010/01/18 | TITLE: SERIAL ATA PLUG 1.8 INCH SSD RIGHT-ANGLE SMT | SHEET No. 1 of 7 |
| DOCUMENT NUMBER: PS-78285-002 | CREATED / REVISED BY: Victor Lim 2010/01/18 | CHECKED BY: Colynn Goh 2010/01/27 | APPROVED BY: B.O Kok 2010/01/27 |



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4.0 RATINGS

4.1 VOLTAGE

30 Volts Max

4.2 CURRENT

1.5 Amps DC or AC (RMS) Max @ 60 Hz

4.3 TEMPERATURE

Operating: - 0°C to + 55°C

Non Operating: - 40°C to + 85°C

4.4 HUMIDITY

20% - 80%

4.5 PRESSURE

650 mm – 800 mm Hg

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] 15 mΩ MAXIMUM [Delta change from Initial] |
| 2 | Contact Current Rating (Power Segment) | Mount connector to a test PCB with ½ oz copper layer. Wire power pins P1, P2, P5 and P6 in parallel for power. Wire ground pins P3 and P4 in parallel for return. Supply 6A total DC current to the power pins in parallel, returning from the parallel ground pins (P3, and P4). Record temperature rise when thermal equilibrium is reach. | 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 | Apply a voltage of 500 VDC for 1 minute between adjacent terminals. Measure the insulation resistance for mated and unmated connectors (EIA 364-21) | 1000 MΩ MINIMUM |

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|----------|--|---|--------------|
| 4 | Dielectric Withstanding Voltage | Apply a voltage of 500 VAC for 1 minute between adjacent terminals of mated and unmated connectors. (EIA 364-20 Method B) | No breakdown |
|----------|--|---|--------------|

5.2 MECHANICAL REQUIREMENTS

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|----------|---|--|--|
| 5 | Connector Insertion and Removal Forces | Mate and Unmate connector assemblies at a rate of 12.5 mm per minute. (EIA 364-13) | 20 N MAXIMUM insertion force & 2.5 N MINIMUM removal force [Initial & After 500 cycles] |
| 6 | Durability | 500 cycles for backplane/blindmate application. All at a maximum rate of 200 cycles per hour. (EIA 364-09) | No Physical damage Meet requirements of additional tests as specified in the test sequence in Section 7.0 |
| 7 | Solder tab Retention Force | Apply axial pull out force on solder tab in the housing at a rate of 25.4 mm per minute. | 4.45 N MINIMUM retention force |
| 8 | Physical Shock | Subject mated connector to 30 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 H) | No Physical damage No discontinuities of 1 μ s or longer duration |
| 9 | Random Vibration | Subject mated connector to 5.35 g's RMS. 30 minutes in each of the three mutually perpendicular planes. (EIA 364-28 Condition V Test letter A) | No discontinuities of 1 μ s or longer duration |

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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 at 95% RH for 96 hours. (EIA 364-31 Method II Test Condition A) | No Physical damage Meet requirements of additional tests as specified in the test sequence in Section 7.0 |
| 11 | Resistance to Soldering Heat | Refer to Section 9.0 for soldering profile | No damage in appearance of connector |
| 12 | Solderability | Solder Time : 3 ± 0.5 seconds Solder Temperature : 260 ± 5°C | 95% MIN Solder coverage |
| 13 | Temperature Life | Subject mated connector to temperature life at +85°C for 500 hours. (EIA 364-17 Test Condition III Method A) | No Physical damage Meet requirements of additional tests as specified in the test sequence in Section 7.0 |
| 14 | Thermal Shock | Subject connector to 10 cycles between -55°C and +85°C . (EIA 364-32 Test Condition I) | No Physical damage Meet requirements of additional tests as specified in the test sequence in Section 7.0 |
| 15 | Mixed Flowing Gas | 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 2A) | No Physical damage Meet requirements of additional tests as specified in the test sequence in Section 7.0 |

6.0 PACKAGING

Refer to Sales Drawing SD-78285-001 for packing details.

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7.0 TEST SEQUENCES

| 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, 7 | 1 | 1, 5 | |
| Low Level Contact Resistance (LLCR) | 2, 4 | 3, 7 | 2, 4, 6 | | 4, 6 | | | |
| Insulation Resistance | | | | 2, 6 | | | | |
| Dielectric Withstanding Voltage | | | | 3, 7 | | | | |
| Current Rating | | | 7 | | | | | |
| Insertion Force | | 2 | | | | | 2 | |
| Removal Force | | 8 | | | | | 4 | |
| Durability | 3 | 4 ^(a) | | | 2 ^(a) | | 3 | |
| Physical Shock | | 6 | | | | | | |
| Vibration | | 5 | | | | | | |
| Humidity | | | | 5 | | | | |
| Temperature Life | | | 3 | | | | | |
| Reseating (manually unplug/plug three times) | | | 5 | | 5 | | | |
| Mixed Flowing Gas | | | | | 3 | | | |
| Thermal Shock | | | | 4 | | | | |
| Resistance to Soldering Heat | | | | | | 3 | | |
| Solder Tab Retention Force | | | | | | 2, 4 | | |
| Solderability | | | | | | | | 1 |

Note –

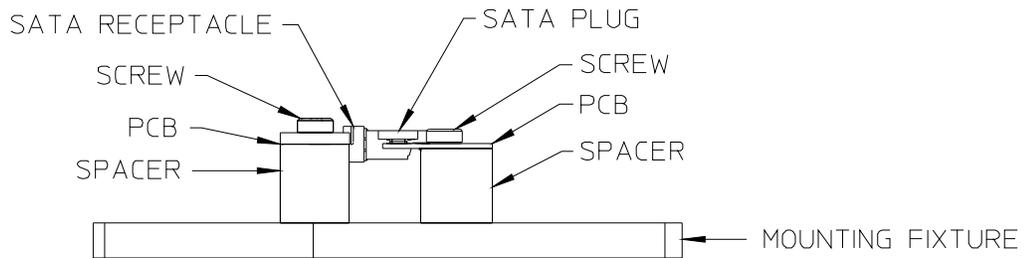
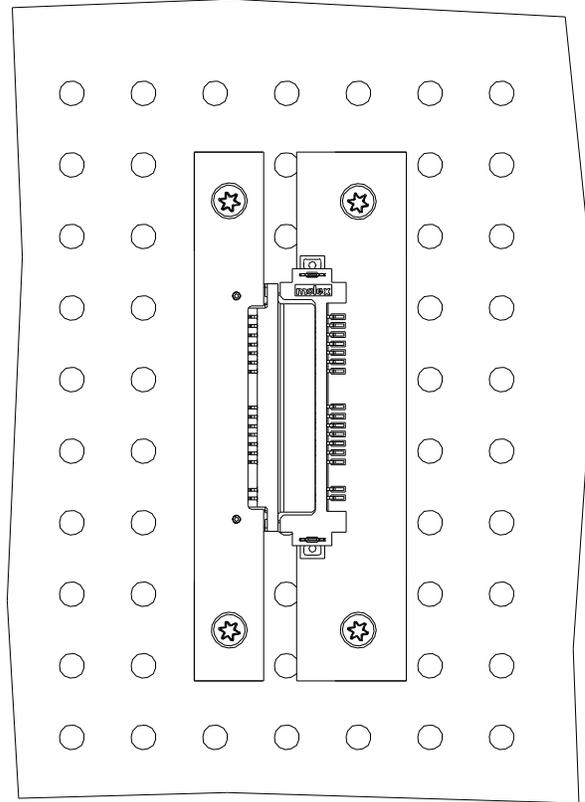
(a) Preconditioning, 50 cycles for the 500-durability cycles requirement. The insertion and removal cycle is at a maximum rate of 200 cycles per hour.

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8.0 VIBRATION/SHOCK TEST SET-UP

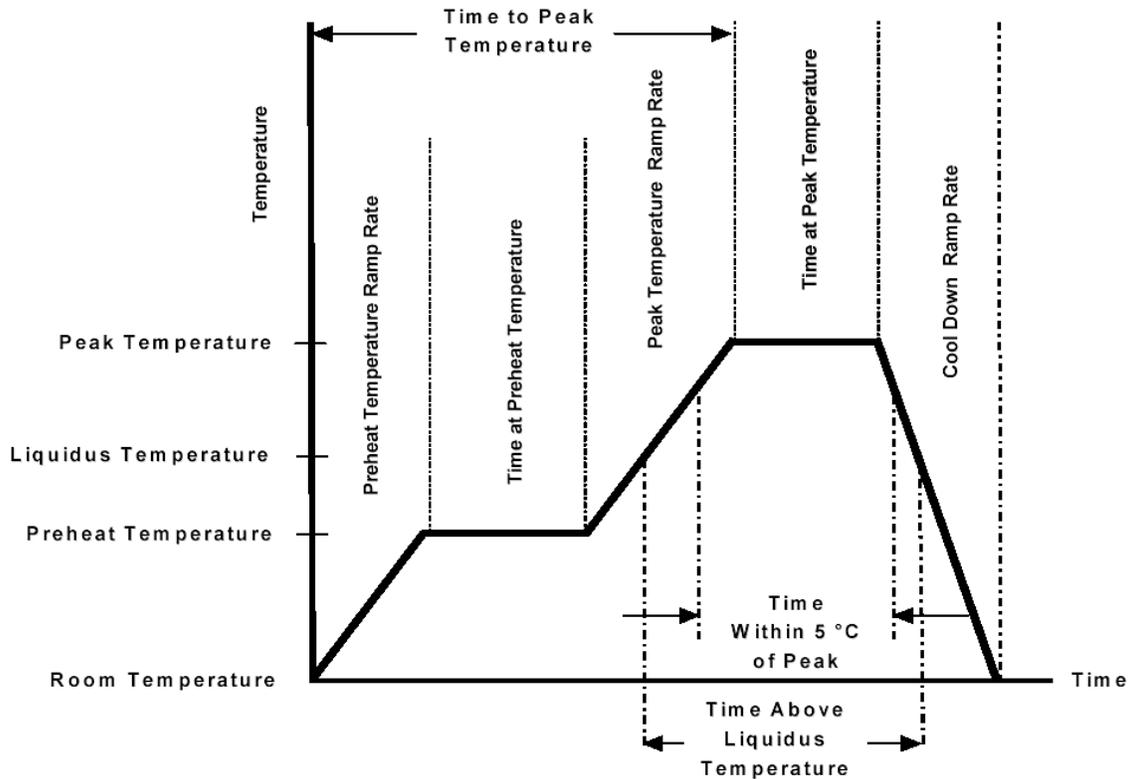


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9.0 SOLDERING PROFILE



| 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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