# PRODUCT SPECIFICATION

## SERIAL ATA HOST RECEPTACLE

### 1.0 SCOPE

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

### 2.0 PRODUCT DESCRIPTION

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

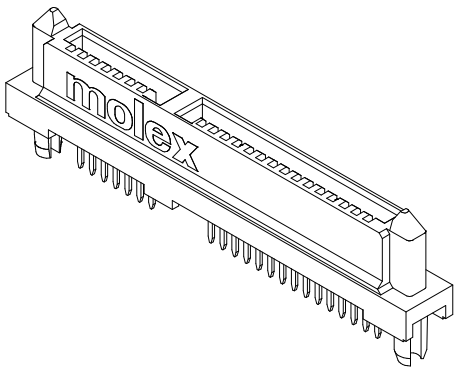
| Product Name | Part Number |
|---|---|
| SERIAL ATA RECEPTACLE, VERTICAL SINGLE-IN-LINE THROUGH HOLE BACKPLANE (EXTENDED HEIGHT), NON-LUBRICATED | 87779-1001 (Lead-Free) |
| SERIAL ATA RECEPTACLE, VERTICAL SINGLE-IN-LINE THROUGH HOLE BACKPLANE (EXTENDED HEIGHT), LUBRICATED | 87779-1003 (Lead-Free) |

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

See Sales Drawing SD-87779-020 (Non-Lubricated) or SD-87779-021 (Lubricated) for information on dimensions, materials, platings and markings.

#### 2.3 SAFETY AGENCY APPROVALS

UL FILE : E29174
CSA : 1422869 (LR19980)



## 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

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

Serial ATA Workgroup Specification

## 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: - 40°C to + 105°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]<br><br>Delta Change **15** mΩ Maximum from Initial value |
| 2 | **Contact Current Rating (Power Segment)** | Mount connector to a test PCB with ½ oz copper layer.<br>Wire power pins P1, P2, P8 and P9 in parallel for power.<br>Wire ground pins P4, P5, P6, P10 and P12 in parallel for return.<br>Supply 6A total DC current to the power pins in parallel (P1, P2, P8 and P9), returning from the parallel ground pins (P4, P5, P6, P10 and P12).<br>Record temperature rise when thermal equilibrium is reach. | **1.5** A per pin MINIMUM<br><br>Temperature rise shall not exceed **30**°C at any point in the connector when contacts are powered<br><br>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) | **1000** 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 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 & **4** N MINIMUM removal force |
| **6** | **Durability** | **500** cycles for Backplane Receptacle. All at a maximum rate of **200** cycles per hour. (EIA 364) | No Physical damage<br>Meet requirements of additional tests as specified in the test sequence in Section 7.0 |
| **7** | **Resistance to Soldering Heat** | Refer to Section 9.0 for soldering profile | No damage in appearance of connector |
| **8** | **Housing Slip-Out Force** | Apply axial pull out force on housing at a rate of **25.4** mm per minute. | **60.0** N MINIMUM housing slip-out force |

### 5.3 ENVIROMENTAL REQUIREMENTS

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|---|---|---|---|
| **9** | **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<br><br>Meet requirements of additional tests as specified in the test sequence in Section 7.0 |
| **10** | **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<br><br>No discontinuities of **1** μs or longer duration<br><br>Test Set-Up in Section 8.0 |
| **11** | **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** μs or longer duration<br><br>Test Set-Up in Section 8.0 |
| **12** | **Solderability** | Solder Time: **3** ± **0.5** seconds<br>Solder Temperature: **260** ± **5**°C | Dipped portion should have 95% continuous new solder coating 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<br><br>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<br><br>Meet requirements of additional tests as specified in the test sequence in Section 7.0 |

### 6.0 PACKAGING

Refer to Sales Drawing SD-87779-0020 (Non-Lubricated) or SD-87779-0021 (Lubricated) for packaging details.

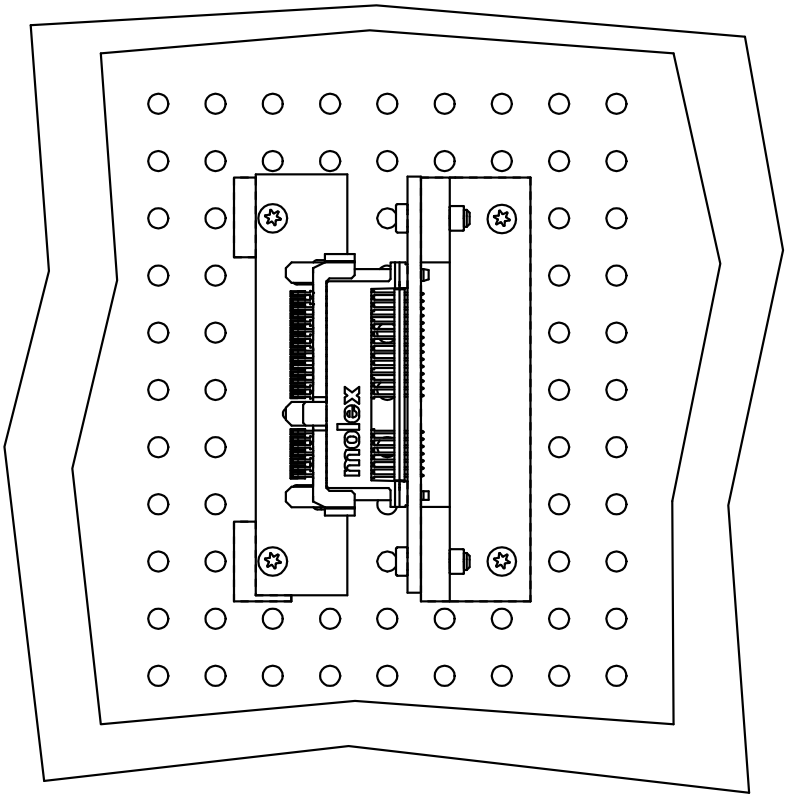
## 7.0 TEST SEQUENCES

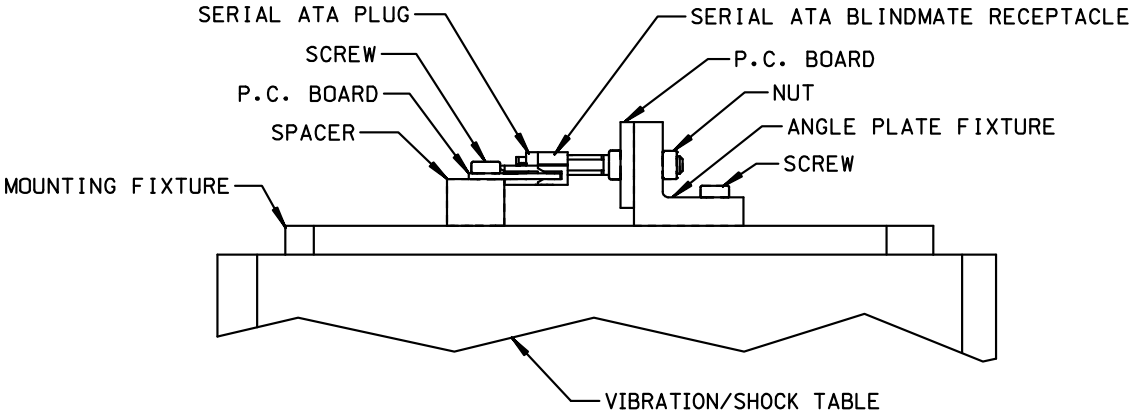
| **Test Group →** | A | B | C | D | E | F |
|---|---|---|---|---|---|---|
| **Test or Examination ↓** | | | | | | |
| Examination of the connector(s) | 1,5 | 1, 9 | 1, 8 | 1, 8 | 1 | |
| Low Level Contact Resistance (LLCR) | 2, 4, | 3, 7 | 2, 4, 6 | | | |
| Insulation Resistance | | | | 2, 6 | | |
| Dielectric Withstanding Voltage | | | | 3, 7 | | |
| Current Rating | | | 7 | | | |
| Insertion Force | | 2 | | | | |
| Removal Force | | 8 | | | | |
| Durability | 3 | 4[(a)] | | | | |
| Physical Shock | | 6 | | | | |
| Vibration | | 5 | | | | |
| Humidity | | | | 5 | | |
| Temperature Life | | | 3 | | | |
| Reseating (manually unplug/plug three times) | | | 5 | | | |
| Thermal Shock | | | | 4 | | |
| Housing Slip Out Force | | | | | 3 | |
| Resistance to Soldering Heat | | | | | 2 | |
| Solderability | | | | | | 1 |

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

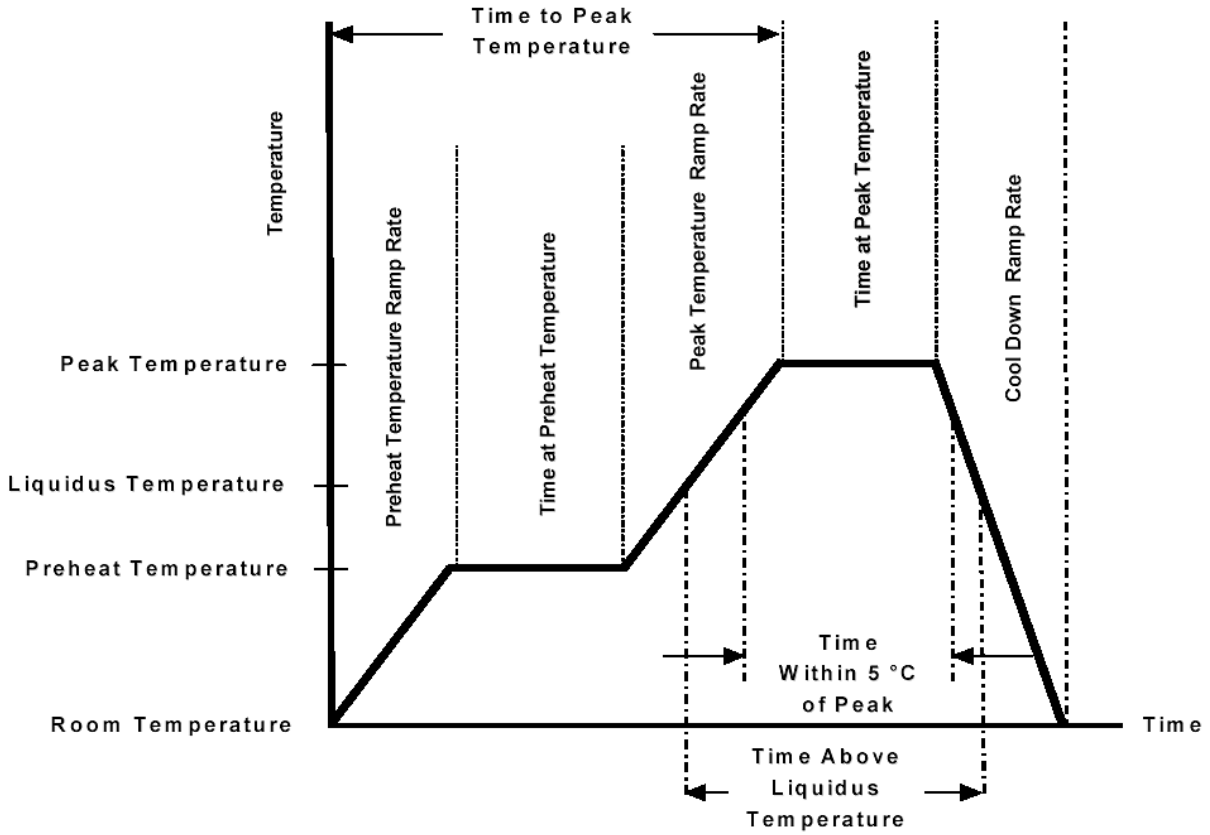
## 8.0 VIBRATION/SHOCK TEST SET-UP

Serial ATA Plug with Blindmate Receptacle



## 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 |