

## AMPMODU 2.0 Pitch Connector

### 1. SCOPE

#### 1.1. CONTENTS

This specification covers the performance, tests and quality requirements for the AMPMODU 2.0 Pitch Connector.

#### 1.2. QUALIFICATION

When tests are performed on the subject product line, the procedures specified in TE 109 series specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

### 2. APPLICABLE DOCUMENT

The following TE documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

#### 2.1. TE SPECIFICATIONS

- A. 109-1: General Requirements for Test Specifications
- B. 109-197 : TE Specification vs EIA and IEC Test Methods
- C. 501-57799 : Test Report

### 3. REQUIREMENTS

#### 3.1. DESIGN AND CONSTRUCTION

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

#### 3.2. MATERIALS

- A. Housing : Thermoplastic, UL94V-0
- B. Contact : Copper Alloy, Gold plating on contact area, Tin Plating on soldertail over Nickel underplating overall.
- C. Shield : Copper Alloy, Gold plating on contact area, Tin Plating on soldertail over Nickel underplating overall.

#### 3.3. RATINGS

- A. Voltage: 250 VAC rms.
- B. Current: 1 A Max
- C. Temperature: - 55 °C to 105 °C

|             |             |                |             |
|-------------|-------------|----------------|-------------|
| DR          | DATE        | APVD           | DATE        |
| Scott Chien | 30-May-2008 | William Kodama | 30-May-2008 |

**3.4. PERFORMANCE REQUIREMENT AND TEST DESCRIPTION**

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. All tests shall be performed at ambient environmental conditions per AMP Specification 109-1 TEST REQUIREMENTS AND PROCEDURES SUMMARY.

**3.5. TEST REQUIREMENTS AND PROCEDURES SUMMARY**

| TEST ITEM                     |                                 | REQUIREMENT  | PROCEDURE   |
|-------------------------------|---------------------------------|--|---|
| 1                             | Examination of Product          | Meets requirements of product drawing. No physical damage.                     | Visual inspection.  |
| <b>ELECTRICAL REQUIREMENT</b> |                                 |  |   |
| 2                             | Contact Resistance              | 20 m Ohm Max(Initial)<br>30 m Ohm Max(Final)                                   | Subject mated contacts assembled in housing to 20mV Max open circuit at 10mA Max. EIA-364-6B. Refer to Fig.3  |
| 3                             | Dielectric withstanding Voltage | No creeping discharge or flashover shall occur.<br>Current leakage: 0.5 mA MAX | 600VAC for 1minute<br>Test between adjacent circuits of unmated connector. EIA-364-20B  |
| 4                             | Insulation Resistance           | 1000 M Ohm Min.(Initial)<br>500 M Ohm Min.(Final)                              | Impressed voltage 500 VDC.<br>Test between adjacent circuits of unmated connector. EIA-364-21C.   |
| 5                             | Temperature Rising              | 30°C Max. Under loaded rating current  | Contact series-wired, apply test current of loaded rating current to the circuit, and measure the temperature rising by probing on soldered areas of contacts, after the temperature becomes stabilized deduct ambient temperature from the measured value.                           |
| <b>MECHANICAL REQUIREMENT</b> |                                 |  |   |
| 6                             | Connector Mating Force          | 2.4 kgf Max.   | Operation Speed : 100 mm/min.<br>Measure the force required to mate connector. EIA-364-13B  |
| 7                             | Connector Unmating Force        | 0.6 kgf Min.   | Operation Speed : 100 mm/min.<br>Measure the force required to unmate connector. EIA-364-13B  |
| 8                             | Durability                      | See Note   | Operation Speed : 250 cycle/min.<br>Durability Cycles : 10,000 Cycles<br>EIA-364-9C   |
| 9                             | Vibration                       | No electrical discontinuity greater than 1 μ sec shall occur.<br>See Note.     | Subject mated connectors to 10-55-10 Hz traversed in 1minutes at 1.52mm amplitude 2 Hours each of 3 mutually perpendicular planes. 100mA Max. Applied. EIA-364-28D, Condition I   |
| 10                            | Mechanical Shock                | No electrical discontinuity greater than 1 μ sec shall occur.<br>See Note.     | Accelerate Velocity : 490m/s <sup>2</sup> (50G)<br>Waveform : Half-sine shock plus<br>Duration : 11msec<br>No. of Drops : 3 drops each to normal and reversed directions of X,Y and Z axes, totally 18 drops, passing DC 100mA max. current during the test.<br>EIA-364-27B, Method A |

Figure 1 ( Cont. )

| MECHANICAL REQUIREMENT                              |  |  |
|---|--|--|
| TEST ITEM   | REQUIREMENT  | PROCEDURE  |
| 11 Solder ability                                   | The inspected area of each lead must have 95% solder coverage minimum.   | Steam Aging Preconditioning :<br>1. Intended for nontin and nontin-alloy leadfinishes for 93+3/-5°C 、 1hrs.<br>2. Intended for tin and tin-alloy leadfinishes for 93+3/-5°C 、 8hrs.<br><JESD22-B102D, Condition C><br>Solder pot temperature: 245±5°C , 5sec |
| ENVIRONMENTAL REQUIREMENTS                          |  |  |
| 12 Resistance to Reflow Soldering Heat [See Note 2] | No physical damage shall occur.  | Pre-soak condition, 85°C/85%RH for 168 hours.<br>Pre Heat : 150~180°C , 90±30sec.<br>Heat : 230°C Min., 30±10sec.<br>Peak Temp. : 260+0/-5°C , 20~40sec.<br>Duration : 3 cycles<br>Test spec. 109-201, Condition B.  |
| 12 Resistance to Wave Soldering Heat [See Note 2]   | No physical damage shall occur. ( Lead-Free )                            | Solder Temp. : 265±5°C , 10±0.5sec.<br>TE spec. 109-202, Condition B   |
| 13 Thermal Shock                                    | See Note   | Mated Connector<br>-55+/-3°C (30 min.), +85+/-2°C (30 min.)<br>Perform this a cycle, repeat 5 cycles<br>EIA-364-32C, Condition I   |
| 14 Humidity-Temperature Cycle                       | See Note   | Mated Connector<br>25~65°C , 90~95% RH, 10 Cycles<br>EIA-364-31B.  |
| 15 Temperature Life (Heat Aging)                    | See Note   | Mated Connector<br>85°C , 250 hours, EIA-364-17B.  |
| 16 Salt Spray                                       | No detrimental corrosion allowed in contact area and base metal exposed. | Subject mated connectors to 35+/-2°C and 5+/-1% salt condition for 48hours.<br>After test, rinse the sample with water and recondition the room temperature for 1 hour. EIA-364-26B, Condition B   |

Figure 1 ( End )

NOTE : Shall meet visual requirements, show no physical damage, and meet requirement of additional tests as specified in the test sequence in Figures 2

NOTE 2 : Resistance to soldering process is indicated on notes of customer drawing. Select the appropriate test type which drawing notes are matched with.

**3.6. PRODUCT QUALIFICATION AND REQUALIFICATION TEST**

| Test or Examination             | Test Group        |      |      |      |      |      |      |      |      |      |
|---------------------------------|-------------------|------|------|------|------|------|------|------|------|------|
|                                 | A                 | B    | C    | D    | E    | F    | G    | H    | I    | J    |
|                                 | Test Sequence (a) |      |      |      |      |      |      |      |      |      |
| Examination of Product          | 1, 7              | 1, 9 | 1, 6 | 1, 5 | 1, 5 | 1, 5 | 1, 5 | 1, 3 | 1, 3 | 1, 3 |
| Contact Resistance              |                   | 2, 8 | 2, 5 | 2, 4 | 2, 4 | 2, 4 | 2, 4 |      |      |      |
| Dielectric withstanding Voltage | 3, 6              |      |      |      |      |      |      |      |      |      |
| Insulation Resistance           | 2, 5              |      |      |      |      |      |      |      |      |      |
| Temperature Rising              |                   |      |      |      |      |      |      | 2    |      |      |
| Mating Force                    |                   | 3, 7 |      |      |      |      |      |      |      |      |
| Unmating Force                  |                   | 4, 6 |      |      |      |      |      |      |      |      |
| Durability                      |                   | 5    |      |      |      |      |      |      |      |      |
| Vibration                       |                   |      | 3    |      |      |      |      |      |      |      |
| Mechanical Shock                |                   |      | 4    |      |      |      |      |      |      |      |
| Solderability                   |                   |      |      |      |      |      |      |      |      | 2    |
| Resistance to Soldering Heat    |                   |      |      |      |      |      |      |      | 2    |      |
| Thermal Shock                   |                   |      |      | 3    |      |      |      |      |      |      |
| Humidity Temperature Cycling    | 4                 |      |      |      | 3    |      |      |      |      |      |
| Temperature Life                |                   |      |      |      |      | 3    |      |      |      |      |
| Salt Spray                      |                   |      |      |      |      |      | 3    |      |      |      |

**Figure 2**

**NOTE : (a) Numbers indicate sequence in which tests are performed.**

**(b) Discontinuities shall not take place in this test group, during tests.**

Figure 3. Contact Resistance & Resistance to flow solder heat

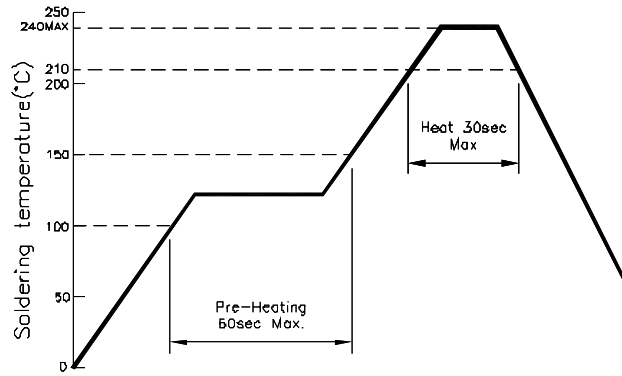


Fig.4-1 Temperature Profile of Reflow Soldering

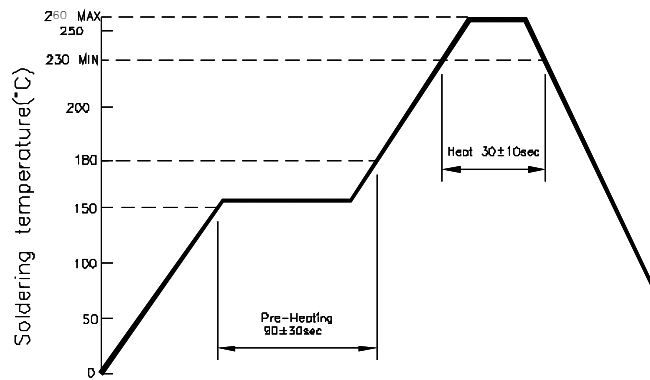


Fig.4-2 Temperature Profile of Reflow Soldering