

1. Scope:

1.1 Contents

This specification covers the requirements for product performance test methods and quality requirement for 0.3mm Pitch FPC SMT Connector.

The applicable product descriptions and part numbers are as shown in Appendix 1.

2. Applicable Documents:

The following documents form a part of this specification to the extent specified herein. 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. 108-115143: Test Specification, General Requirements for Test Methods
- B. 501-115158: Test Report for 0.3mm pitch FPC SMT Connector
- C. 109-1: General Requirement for Test Specifications
- D. 109-201: Component Heat Resistance to Lead-Free Reflow Soldering

2.2 Commercial Standards and Specifications:

- A. MIL-STD-202: Test Methods for Electronic and Electrical Component Parts.

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: Actuator: Thermoplastic, UL94V-HB
- C: Contact: Copper Alloy, Gold Plated over Nickel under-plating,
- D: Fitting nail: Copper Alloy, Tin Plated over Nickel under-plating,

3.3 Ratings:

- A. Temperature Rating; $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$
- B. Voltage Rating; 30 VAC rms.
- C. Current Rating; 0.5A

3.4 Performance Requirements and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig. 1. All tests shall be performed at ambient environmental conditions per TE Specification 109-1 test requirement and performance summary.

3.5 Applicable

This specification applies to two times reflow later.

3.6 Test Requirements and Procedures Summary

| Fig. 1 | | | |
|--------------------------------|---------------------------------|--|---|
| Para. | Test Items | Requirements | Procedures |
| 3.6.1 | Examination of Product | Meets requirements of product drawing. | Visual inspection No physical damage |
| Electrical Requirements | | | |
| 3.6.2 | Contact Resistance (Low Level) | 50mΩ Max. (Initial) 80mΩ Max. (Final) | Subject mated contacts assembled in housing to 20 mV MAX open circuit at 100 mA Max. EIA-364-68B. |
| 3.6.3 | Dielectric withstanding voltage | No creeping discharge or flashover shall occur. Current leakage: 0.5 mA MAX. | 250VAC for 1 minute Test between adjacent circuits of unmated connector. EIA-364-20B |
| 3.6.4 | Insulation resistance | 500 MΩ MIN. | Impressed voltage 250VDC Test between adjacent circuits of unmated connector. EIA-364-21C. |
| 3.6.5 | Temperature rising | 30 °C MAX. under loaded specified current. | Measure temperature rising by energized current. (measurement of time) EIA-364-70B |
| Mechanical Requirements | | | |
| 3.6.6 | Durability | See note | Operation speed: 25.4mm/min. Durability cycles:20cycles EIA-364-9C |
| 3.6.7 | vibration | No electrical discontinuity greater than 1 μsec shall occur. See note. | Subject mated connectors to 10-55-10 HZ Traversed in 1 minutes at 1.52 mm amplitude 2 hours each of 3 mutually perpendicular planes. 100 mA MAX. Applied. EIA-364-28D |
| 3.6.8 | Mechanical shock | No electrical discontinuity greater than 1 μsec shall occur. | Accelerate velocity: 490m/s ² (50G) Waveform: Half-sine shock plus Duration: 11msec Velocity change: 3.4m/s No. of drops: 3 drops each to normal and reversed directions of X.Y and Z axes, totally 18 drops, passing DC 100mA current during the test. EIA-364-27B |
| 3.6.9 | Contact retention force | 0.20N MIN. | Measure the contact retention force with tensile strength tester. EIA-364-29B |

| | | | |
|-----------------------------------|-------------------------------------|--|---|
| 3.6.10 | FPC retention force | The actuator retention force shall be more than 0.20 N x pin NO. MIN.. | While applying a axial pulling force to the support member of the plug or receptacle EIA-364-13B |
| 3.6.11 | Solderability | The inspected area of each lead must have 95% Solder Coverage minimum. | Steam aging preconditioning: 93+3/-5 °C,100% HR,8 Hrs. <JESD22-B102D, condition C> Solder pot Temperature: 245 ± 5 °C Immersion Duration:5 ± 0.5 seconds |
| Environmental Requirements | | | |
| 3.6.12 | Resistance to reflow Soldering Heat | No physical damage shall occur. | Pre-soak condition, 85°C/95%RH, 168 Hrs. Pre-heat: 150~200°C,60~180sec. Peak temp:260+/-5°C,20~40sec. Duration:3 cycles TE spec.109-201, condition B |
| 3.6.13 | Thermal Shock | See Note | Mated connector, -55°C(30 minutes)~85°C (30minutes) ,perform this a cycle,repeat 5 cycles EIA-364-32C |
| 3.6.14 | Humidity-Temperature Life | See Note | Mated connector,25°C~65°C ,90~95% RH ,10 cycles EIA-364-31B |
| 3.6.15 | Temperature Life | See Note | Mated connector 85°C, 96Hrs. EIA-364-17B |
| 3.6.16 | Resistance to cold | See Note | Mated connector -40°C, 96Hrs. |
| 3.6.17 | Humidity (Steady state) | See Note | mated connectors shall be stored at temperature of 40+/-2°C with relative humidity 90~95%RH for 96 hours, After test, it shall be subjected to standard atmospheric condition for 1 hour, after which measurement shall be made. EIA-364-31B |
| 3.6.18 | 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 48 hours. After test, rince the sample with water and recondition the room temperature for 1 hour. EIA-364-26B. |

Fig. 1 (End.)

Note: shall meet visual requirement, show no physical damage, and meet requirement of additional tests as specified in the test sequence in figures 2.

3.7 Product Qualification Test Sequence

| Fig. 2 | | | | | | | | | | |
|-------------------------------------|-------------------|-----|-----|-----|-----|-----|-----|-------|-------|-----|
| Test or Examination | Test Group | | | | | | | | | |
| | A | B | C | D | E | F | G | H | I | J |
| | Test Sequence (a) | | | | | | | | | |
| Examination of Product | 1,9 | 1,3 | 1,7 | 1,6 | 1,3 | 1,3 | 1,3 | 1,7 | 1,7 | 1,5 |
| Contact resistance | 2,8 | | 2,6 | 2,5 | | | | 2,4,6 | 2,4,6 | 2,4 |
| Dielectric withstanding voltage | 4,6 | | | | | | | | | |
| Insulation resistance | 3,7 | | | | | | | | | |
| Temperature rising | | 2 | | | | | | | | |
| Durability | | | 4 | | | | | | | |
| Vibration | | | | 3 | | | | | | |
| Mechanical shock | | | | 4 | | | | | | |
| Contact retention force | | | | | 2 | | | | | |
| FPC retention force | | | 3,5 | | | | | | | |
| Solderability | | | | | | 2 | | | | |
| Resistance to reflow Soldering Heat | | | | | | | 2 | | | |
| Thermal Shock | | | | | | | | 3 | | |
| Humidity- temperature cycle | | | | | | | | 5 | | |
| Temperature Life | | | | | | | | | 3 | |
| Resistance to cold | | | | | | | | | 5 | |
| Humidity (steady state) | 5 | | | | | | | | | |
| Salt spray | | | | | | | | | | 3 |
| No.of test samples | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |

Note: (a) Numbers indicate sequence in which the tests are performed.

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

The applicable product descriptions and part numbers are as shown in Appendix. 1.

| Product Part No. | Description | Test Report |
|------------------|---|-------------|
| 1-2328724-3 | 13pin ,0.3mm pitch FPC connector (Front flip lock) | 501-115158 |
| 1-2328724-5 | 15pin ,0.3mm pitch FPC connector (Front flip lock) | 501-115158 |
| 2-2328724-1 | 21pin ,0.3mm pitch FPC connector (Front flip lock) | 501-115158 |
| 2-2328724-5 | 25pin ,0.3mm pitch FPC connector (Front flip lock) | 501-115158 |
| 3-2328724-1 | 31pin ,0.3mm pitch FPC connector (Front flip lock) | 501-115158 |
| 3-2328724-3 | 33pin ,0.3mm pitch FPC connector (Front flip lock) | 501-115158 |
| 3-2328724-9 | 39pin ,0.3mm pitch FPC connector (Front flip lock) | 501-115158 |
| 4-2328724-5 | 45pin ,0.3mm pitch FPC connector (Front flip lock) | 501-115158 |

Appendix 1

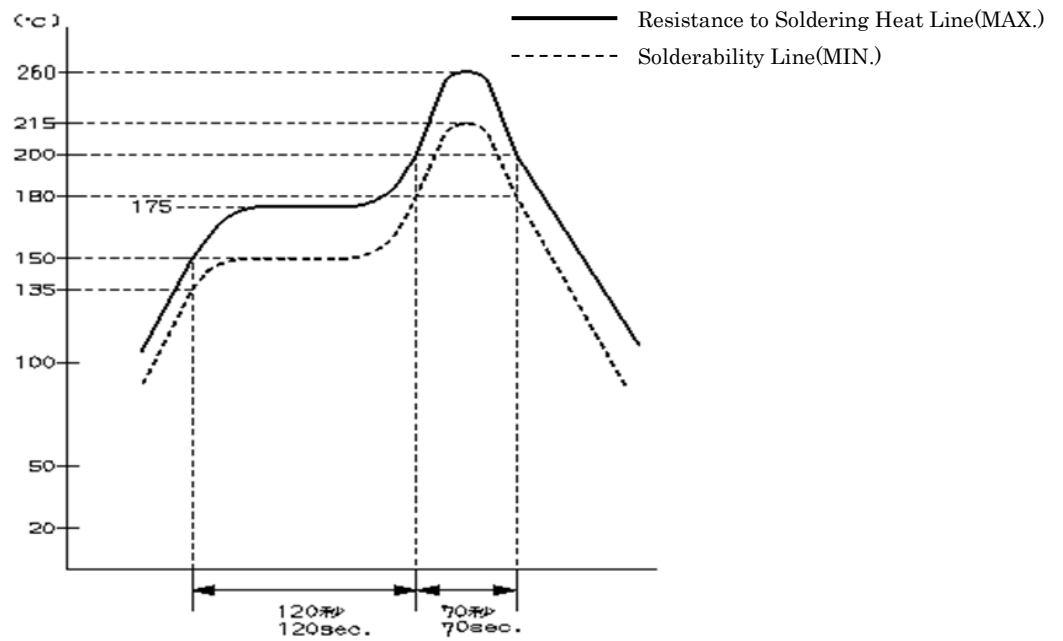


Fig. 3 Reflow Condition