## 1. Scope

This specification covers the performance, tests and quality requirements for the pitch 0.5mm board to board connectors.

## 2. Applicable documents

The following 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.

## 3. Ordering information

Refer to the drawing.

## 4. Connector dimensions

Refer to the drawing.

## 5. Material

Housing: Thermoplastic (UL 94V-0)
Color: Black
Terminal: Phosphor bronze
Plating: Gold plated

## 6. Accommodated P.C.B layout

Refer to the drawing.

## 7. Rating

| | |
|---|---|
| Operating voltage(Max.) | 50V DC |
| Current rating(Max.) | 0.5A allowable current to be applied |
| Temperature range-operating | -35°C -- +85°C (Including terminal temperature rise) |

## 8. Performance

| Test item | Requirement | Procedure |
|---|---|---|
| Examination Of Product | Meets requirements of product drawing.<br>No physical damage. | Visual inspection. |
| **Electrical Performance** | | |
| Contact Resistance | 50mΩ Max | Mate The sample connectors, measure by dry circuit, 20mV Max., 100mA Max.<br>(EIA-364-23) |
| Insulation Resistance | 100MΩ Min | Unmated The sample connectors, apply 500V DC between adjacent terminal or ground.<br>(EIA-364-21) |

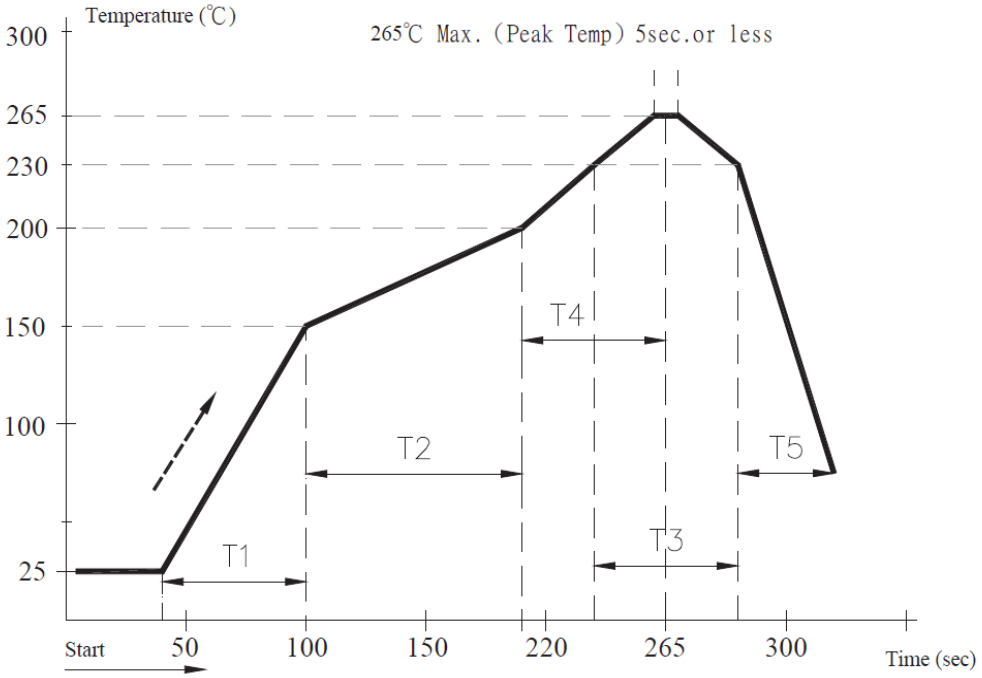
| Test item | Requirement | | Procedure |
|---|---|---|---|
| Dielectric Strength | No Breakdown.<br>Current leakage: 1 mA Max. | | Unmated The sample connectors, Apply 200 V AC for 1minute Test between adjacent circuit of unmated connector. (EIA-364-20) |
| **Mechanical Performance** | | | |
| Terminal Retention Force | 0.03kgf/Min. Circuit | | Load shall be applied on each at a speed of 25±3mm/minute as shown below then pin retention force shall be measured. |
| Insertion Force | 0.12kgfxN Max.<br>(N=Circuits ) | | Mate The sample connectors shall be soldered on a board and inserted and separated at speed of 25±3mm/min. (EIA-364-13) |
| Durability | Appearance | No Damage | Mate The sample connectors should be mounted in the tester and fully mated and unmated the number of 30 cycles specified at the rate of 25±3 mm/min. (EIA-364-09) |
| | Contact Resistance | 90mΩ Max | |
| Vibration | Appearance | No Damage | Mate connectors and subject to the following vibration conditions for period of 2 hours in each of 3 mutually perpendicular axes passing DC 1mA during the test.<br>Amplitude: 1.5mm P-P<br>Frequency: 10~55~10 Hz in 1 minute<br>(EIA-364-28 Condition I) |
| | Contact Resistance | 90mΩ Max | |
| | Discontinuity | 1μsec Max | |
| Shock | Appearance | No Damage | Mate The sample connectors shall and subject to the following shock condition. 3 times of shocks shall be applied for each 6 directions along 3 mutually perpendicular axes, passing DC 1mA current during the test.(Total of 18 shocks)<br>Peak value 490m/s$^2${50G}<br>(EIA-364-27, test condition A) |
| | Contact Resistance | 90mΩ Max | |
| | Discontinuity | 1μsec Max | |
| **Environmental Performance and others** | | | |
| Temperature Rising | 30°C Max. Under loaded rating current | | Mate The sample connectors and measure the temperature rise of contact when the maximum AC rated current is passed. (EIA-364-70 METHOD 2) |
| Heat Resistance | Appearance | No Damage | Mate The sample connectors shall expose to 85 ± 2°C for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room condition for 1 to 2 hours, after which the specified measurements shall be performed. |
| | Contact Resistance | 90mΩ Max | |

| Test item | Requirement | | Procedure |
|---|---|---|---|
| Cold Resistance | Appearance | No Damage | Mate The sample connectors shall expose to -25±2°C for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room condition for 1 to 2 hours, after which the specified measurements shall be performed. |
| | Contact Resistance | 90mΩ Max | |
| Humidity | Appearance | No Damage | Mate The sample connectors shall expose to 40±2°C relative humidity 90~95% for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room condition for 1 to 2 hours, after which the specified measurements shall be performed. |
| | Contact Resistance | 90mΩ Max | |
| | Dielectric Strength | No Breakdown | |
| | Insulation Resistance | 500MΩ Min. | |
| Temperature Cycling | Appearance | No Damage | A connector shall and subject to the following condition for 5 cycles. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room condition for 1 to 2 hours, after which the specified measurements shall be performed. 1cycle<br>a) -25±3°C,30 minutes<br>b) +85±3°C,30 minutes (Transit time shall be with in 3 minutes )<br>(EIA-364-31, Test condition A) |
| | Contact Resistance | 90mΩ Max | |
| Salt Spray | Appearance | No Damage | Mate The sample connectors shall expose to the following salt mist conditions. Upon completion of the exposure period, salt deposits shall be removed by a gentle wash or dip in running water, after which the specified NaCl solution Concentration: 5±1% Spray<br>Time: 24 hours Ambient temperature: 35±2°C<br>(EIA-364-26,Test condition B) |
| Solderability | Solder Wetting | 95% of immersed area must show no voids, pin holes. | Tip of solder tails and fitting mails into the molten solder (held at 260±5°C) up to 0.1mm from the Housing for 3±0.5sec onds.<br>(EIA-364-52) |
| Resistance to Soldering Heat | Appearance | No Damage | When reflowing….Refer to Paragraph 9.<br>Soldering iron method 0.2mm from terminal tip and fitting nail tip. Soldering time:5 seconds Max. Soldering temperature: 370~400°C |

Figure 1

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

**9. Infrared reflow condition (Lead Free)**




| | | |
|---|---|---|
| T1 | Temperature ramp up rate | 2°C--5°C/Sec |
| T2 | Preheat: 150°C--200°C | 60--90Sec |
| T3 | Time over 230°C | 30--50Sec |
| T4 | Preheat: 200°C--250°C | 30Sec |
| T5 | Ramp down rate during cooling | 4°C--7°C/Sec |
| | Peak temperature | 265°C Max. |

**Note:** Please check the reflow soldering condition by your own devices beforehand.
Because the condition changes by the soldering devices, P.C.Board and so on.

**10. Product qualification and reliability test sequence**

| Test or Examination | Test Group | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | E | F | G | H | I | J | K | L |
| Appearance | 1;7 | 1;3 | 1;6 | 1;6 | 1;6 | 1;3 | 1;6 | 1;6 | 1;5 | 1;5 | 1;3 | 1;3 |
| Contact Resistance | | | 2;5 | 2;5 | 2;5 | | 2;5 | 2;5 | 2;4 | 2;4 | | |
| Dielectric Withstanding Voltage | 3;6 | | | | | | | | | | | |
| Insulation Resistance | 2;5 | | | | | | | | | | | |
| Insertion Force | | 2 | | | | | | | | | | |
| Contact Retention Force | | | 3;4 | | | | | | | | | |
| Vibration | | | | 3;4 | | | | | | | | |
| Shock Mechanical | | | | | 3;4 | | | | | | | |
| Temperature Rising | | | | | | 2 | | | | | | |
| Heat Resistance | | | | | | | 3;4 | | | | | |
| Cold Resistance | | | | | | | | 3;4 | | | | |
| Humidity | 4 | | | | | | | | | | | |
| Temperature Cycling | | | | | | | | | 3 | | | |
| Salt Spray | | | | | | | | | | 3 | | |
| Solder ability | | | | | | | | | | | 2 | |
| Resistance to Soldering Heat | | | | | | | | | | | | 2 |

Figure 2

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

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