



0.80mm PITCH CRIMP WIRE TO BOARD CONNECTOR SERIES

1. SCOPE

1.1. Content

This specification covers the requirements for product performance of 0.80mm pitch wire to board connector series.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Fig 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

1.3. Qualification Test Results

Successful qualification testing on the subject product line was completed in TBD. The Qualification Test Report number for this testing is 501-161684.

2. APPLICABLE DOCUMENTS AND FORMS

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.

2.1. TE Connectivity Specifications

- 114-161208 Application Specification
- 501-161684 Qualification Test Report

2.2. Commercial Standards and Specifications

- UL 1977 Safety Standards – Component Connectors for Use in Data, Signal, Control, and Power Applications
- EIA-364 Electrical Connector/Socket Test Procedures Including Environmental Classifications

2.3. Reference Documents

- 109-1 General Requirements for Testing

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the design, construction, materials and physical dimensions specified on the applicable product drawing. The part numbers used for testing were X-2495754-X, X-2483180-X, and X-2483190-X

3.2. Materials

Materials used in the construction of this product shall be as specified on the applicable TE drawing.

- A. Housing (Socket, Header): LCP, UL94V-0
- B. Terminal: Phosphor Bronze, Gold-flash over Nickel plating.

3.3. Ratings

- A. Voltage Rating: 30 V AC/DC
- B. Current Rating: 1.0A AC,DC(AWG: 28#)

C. Temperature Rating: -25°C to +85°C

3.4. Performance Requirements and Test Description

The product should meet the electrical, mechanical and environmental performance requirements specified in Figure 2. All tests shall be performed at ambient environmental conditions otherwise specified.

3.5. Test Requirements and Procedure Summary

| Test Description | Requirement | Procedure | | | |
|---|--|--|---------------------|--|---------------------|
| Examination of Product | Product shall be conforming to the requirements of applicable product drawing and applicable Specification | Condition/Method: Visual inspection Standard: No breaks, crack, and deform should be found. | | | |
| Electrical | | | | | |
| Contact Resistance | 30mΩ Max. | Mate connectors, measure by dry circuit, 20mV/max. 10mA. (Based upon JIS C5402 5.4) | | | |
| Dielectric Withstanding Voltage | There shall be no breakdown nor flashover. | Mate connectors, apply 200V AC(rms) for 1 minute between adjacent terminal or ground. (Based upon JIS C5402 5.2/MIL-STD-202 Method 302 Cond.B) | | | |
| Insulation Resistance | 100MΩ min | Mate connectors, apply 500V DC between adjacent terminal or ground. (Based upon JIS C5402 5.2/MIL-STD-202 Method 302 Cond.B) | | | |
| Temperature Rising | 30°C Max. | Carrying rated current load. (Based upon UL 498) | | | |
| Mechanical | | | | | |
| Connector Mating Force & Unmating Force | Pos | Initial | At 30th | The product is clamped on a plugging force machine and inserted and unplugged 30 times at a rate of 25.4mm/min | |
| | | Mating Force Max. | Unmating Force Min. | | Unmating Force Min. |
| | 2 | 0.6kgf | 0.06kgf | | 0.04kgf |
| | 3 | 0.9kgf | 0.09kgf | | 0.06kgf |
| | 4 | 1.2kgf | 0.12kgf | | 0.08kgf |
| | 5 | 1.5kgf | 0.15kgf | | 0.10kgf |
| | 6 | 1.8kgf | 0.18kgf | | 0.12kgf |
| | 7 | 2.1kgf | 0.21kgf | | 0.14kgf |
| | 8 | 2.4kgf | 0.24kgf | | 0.16kgf |
| | 9 | 2.7kgf | 0.27kgf | | 0.18kgf |
| | 10 | 3.0kgf | 0.30kgf | | 0.20kgf |
| | 11 | 3.3kgf | 0.33kgf | | 0.22kgf |

| | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------------------|---|--|---------|---------|---------|----|--------|---------|---------|----|--------|---------|---------|----|--------|---------|---------|----|--------|---------|---------|--|
| | <table border="1"> <tbody> <tr> <td>12</td> <td>3.6kgf</td> <td>0.36kgf</td> <td>0.24kgf</td> </tr> <tr> <td>13</td> <td>3.9kgf</td> <td>0.39kgf</td> <td>0.26kgf</td> </tr> <tr> <td>14</td> <td>4.2kgf</td> <td>0.42kgf</td> <td>0.28kgf</td> </tr> <tr> <td>15</td> <td>4.5kgf</td> <td>0.45kgf</td> <td>0.30kgf</td> </tr> <tr> <td>16</td> <td>4.8kgf</td> <td>0.48kgf</td> <td>0.32kgf</td> </tr> </tbody> </table> | 12 | 3.6kgf | 0.36kgf | 0.24kgf | 13 | 3.9kgf | 0.39kgf | 0.26kgf | 14 | 4.2kgf | 0.42kgf | 0.28kgf | 15 | 4.5kgf | 0.45kgf | 0.30kgf | 16 | 4.8kgf | 0.48kgf | 0.32kgf | |
| 12 | 3.6kgf | 0.36kgf | 0.24kgf | | | | | | | | | | | | | | | | | | | |
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| 16 | 4.8kgf | 0.48kgf | 0.32kgf | | | | | | | | | | | | | | | | | | | |
| Durability | Contact Resistance : 60mΩ max. | When mated up to 50 cycles repeatedly by the rate of 10 cycles per minute. | | | | | | | | | | | | | | | | | | | | |
| Crimp Strength | AWG#28: 1.00kgf AWG#30: 0.50kgf min. AWG#32: 0.30kgf min. | An axial force shall be applied to pull out wire. The force shall be applied with rate of 25 mm/minute. (Based upon JIS C5402 6.8) | | | | | | | | | | | | | | | | | | | | |
| Terminal Retention Force (in housing) | 0.30kgf min. | Apply axial pull out force at the speed rate of 25 ± 3mm/minute on the Pin assembled in the housing. | | | | | | | | | | | | | | | | | | | | |
| Pin Retention Force | 0.20kgf min. | Apply axial pull out force at the speed rate of 25 ± 3mm/minute on the Pin assembled in the housing. | | | | | | | | | | | | | | | | | | | | |
| Vibration | No electrical discontinuity greater than 1 μ sec. shall occur. Contact resistance : Max. 60mΩ | Amplitude: 1.5mm P-P Sweep time: 10-55-10 Hz in 1 minute Duration: 2 hours in each X.Y.Z. axes (Based upon MIL-STD-202 Method 201A) | | | | | | | | | | | | | | | | | | | | |
| Physical Shock | No electrical discontinuity greater than 1 μ sec. shall occur. Contact resistance : Max. 60mΩ | 490m/s ² {50G}, 3 strokes in each X.Y.Z. axes. (Based upon JIS C0041/MIL-STD-202 Method 213B Cond. A) | | | | | | | | | | | | | | | | | | | | |
| Environmental | | | | | | | | | | | | | | | | | | | | | | |
| Temperature Cycling | Appearance: No Physical Damage. Contact Resistance : 60m Ω max | 5 cycles of: a) - 55°C 30 minutes b) +85°C 30 minutes (Based upon JIS C0025) | | | | | | | | | | | | | | | | | | | | |
| Humidity | Appearance: No Physical Damage. Contact Resistance : 60m Ω max Dielectric Withstanding Voltage: There shall be no breakdown nor flashover. Insulation Resistance: 50MΩ min | Temperature: 40 ± 2°C Relative Humidity: 90 ~ 95% Duration: 96 hours (Based upon JIS C0022/MIL-STD-202 Method 103B Cond. B) | | | | | | | | | | | | | | | | | | | | |
| Salt Spray | Appearance: No Physical Damage Contact Resistance : 60m Ω max | 36± 4 hours exposure to a salt spray from the 5 ± 1% solution at 35 ± 2°C. (Based upon JIS C0023/MIL-STD-202 Method 101D Cond. B) | | | | | | | | | | | | | | | | | | | | |
| Heat Resistance | Appearance: No Physical Damage. Contact Resistance : 60m Ω max | 85 ± 2°C, 96 hours (Based upon JIS C0021/MIL-STD-202 Method 108A Cond. A) | | | | | | | | | | | | | | | | | | | | |

| | | |
|------------------------------|--|---|
| Solderability | 90% of immersed area must show no voids, pin holes | Solder Temperature: $245 \pm 5^\circ\text{C}$ Soldering Time: 5 ± 0.5 sec. |
| Resistance to soldering Heat | Appearance No Damage | Solder-dipping section shall be covered by solder entirely. |
| | Reflow soldering temperature profile : | |
| SO2 Gas | Appearance: No Physical Damage Contact Resistance : $60\text{m}\Omega$ max. | 24 hours exposed to 50 ± 5 ppm. SO2 gas at $40 \pm 2^\circ\text{C}$. |

Fig.1 Test Requirement and Procedure Summary


NOTE Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Fig 2.

3.6. Product Qualification and Requalification Test Sequence

| Test Examination | Test Group (a) | | | | | | | | | | | |
|------------------------------|-------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | A | B | C | D | E | F | G | H | I | J | K | L |
| | Test Sequence (b) | | | | | | | | | | | |
| Examination of Product | 1 | 1,7 | 1,3 | 1,9 | 1,5 | 1,9 | 1,5 | 1,5 | 1,3 | 1,5 | 1,5 | 1,3 |
| Contact/Pin Retention force | 2 | | | | | | | | | | | |
| Mating force | | 3 | | | | | | | | | | |
| Un-mating force | | 4 | | | | | | | | | | |
| Durability | | 5 | | | | | | | | | | |
| Insulation resistance | | | | 2,6 | | 2,6 | | | | | | |
| Withstand Voltage | | | | 3,7 | | 3,7 | | | | | | |
| Contact resistance | | 2,6 | | 4,8 | 2,4 | 4,8 | 2,4 | 2,4 | | 2,4 | 2,4 | |
| Temperature Rise | | | 2 | | | | | | | | | |
| Humidity | | | | 5 | | | | | | | | |
| Salt Spray | | | | | 3 | | | | | | | |
| Temperature Cycling | | | | | | 5 | | | | | | |
| Heat Resistance | | | | | | | 3 | | | | | |
| Vibration | | | | | | | | 3 | | | | |
| Resistance to soldering Heat | | | | | | | | | | | | 2 |
| Solderability | | | | | | | | | 2 | | | |
| SO2 Gas | | | | | | | | | | 3 | | |
| Mechanical shock | | | | | | | | | | | 3 | |

Fig.2 Test Sequence


NOTE
 (a) See paragraph 4.2.
 (b) Numbers indicate sequence in which tests are performed.

4. QUALITY ASSURANCE PROVISIONS

4.1. Test Conditions

Unless otherwise specified, all the tests shall be performed in any combination of the following test conditions shown in Fig.3 .

| | |
|----------------------|------------------|
| Temperature | 15°C – 35°C |
| Relative Humidity | 45% – 75% |
| Atmospheric Pressure | 86.6 – 106.6 kPa |

Fig.3 Test Condition

4.2. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable instruction sheets and shall be selected at random from current production.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Fig.2

4.3. Requalification Testing

If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

4.4. Acceptance

Acceptance is based on verification that the product meets the requirements in Fig.1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.5. Quality Conformance Inspection

The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.