# 108-60047

# Product Specification

# 0.6 mm Pitch Board to Board Connector, Free Height Type Lead Free version

## 1. Scope:

### 1.1 Contents:

This specification covers the requirements for product performance, test methods and quality assurance provisions of 0.6mm Pitch Board to Board Connector, Free Height Type, lead free version.

## 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 AMP Specifications:

A. 109-5000 Test Specification, General Requirements for Test Methods

B. 501-60025 Test Report

### 2.1 Commercial Standards and Specifications:

A. MIL-STD-202 Test Methods for Electronic and Electric Parts.



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| APP | I. ENOMOTO | NO 108-60047 | REV O / LOC ES |
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## 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. Contact | : Copper Alloy |
| B. Housing | : Thermo Plastic Molded Compound: L. C. P |
| C. Other | : Ground-Plate Copper Alloy |

### 3.3 Ratings:

| | |
|---|---|
| A. Voltage Rating | : 50 VAC |
| B. Current Rating | : 0.5 A |
| C. Temperature Rating | : -40°C TO 85°C |

### 3.4 Performance Requirements and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig. 2. All tests shall be performed in the room temperature, unless otherwise specified.

3.5 Test Requirements and Procedures Summary:

| Para. | Test Items | Requirements | Procedures |
|---|---|---|---|
| 3.5.1 | Confirmation of Product | Product shall be conforming to the requirements of applicable product drawing and Application Specification. | Visually, dimensionally and functionally inspected per applicable quality inspection plan. |
| | | Electrical Requirements | |
| 3.5.2 | Termination Resistance (Low Level) | 55 mΩ Max. (Initial)<br>ΔR=20 mΩ Max. (Final) | Subject mated contacts assembled in housing to 20 mV Max. open circuit at 10 mA.<br>Fig. 1<br>AMP Spec. 109-5311-1 |
| 3.5.3 | Dielectric withstanding Voltage | No creeping discharge nor flashover shall occur.<br>Current leakage: 5 mA Max. | 0.2 k VAC for 1 minute.<br>Test between adjacent circuits of mated connectors.<br>AMP Spec. 109-5301 |
| 3.5.4 | Insulation Resistance | 500 MΩ Min. (Initial)<br>100 MΩ Min. (Final) | Impressed voltage 500 V DC.<br>Test between adjacent circuits of mated connectors.<br>AMP Spec. 109-5302 |
| 3.5.5 | Capacitance | 5 p F Max. | Test between the adjacent circuits of mated connector.<br>MIL-STD-202 Method 305<br>1 kHz |
| 3.5.6 | Connector Mating Force | 0.9 N (90 gf) Max. per contact | Operation Speed: 100mm/min.<br>Measure the force required to mate connectors.<br>AMP Spec. 109-5206 |
| 3.5.7 | Contact Unmating Force | 0.1 N (10 gf) min per contact. | Operation Speed: 100 mm/min.<br>Measure the force required to unmate connectors.<br>AMP Spec. 109-5206 |

Fig. 2 (To be continued)

| Para. | Test Items | Requirements | Procedures |
|---|---|---|---|
| 3.5.8 | Durability (Repeated Mate/Unmating) | ΔR=20 mΩ Max. (Final) | Operation Speed : 100mm/min<br>No. of Cycles : 50 cycles.<br>AMP Spec. 109-5213 |
| 3.5.9 | Vibration<br>(Low Frequency) | No electrical discontinuity greater than 0.1 µsec. Shall occur. | Subject mated connectors to 10-55-10 Hz traversed in 1 minute at 1.52 mm amplitude 2 hours each of 3 mutually perpendicular planes.<br>100 mA applied.<br>AMP Spec. 109-201 |
| 3.5.10 | Shock | No electrical discontinuity greater than 0.1 µsec. Shall occur. | Accelerated Velocity: 50G<br>Waveform : Saw tooth shock pluse<br>Duration : 11 m sec.<br>Velocity Change : 11.3m/s²<br>Number of Drops : 3 drops each to normal and reversed directions of X, Y and Z axes, totally 18 drops<br>AMP Spec. 109-5208 |
| 3.5.11 | Solderability | Wet Solder Coverage:<br>95% Min. | Solder Temperature: 230±5°C<br>Immersion Duration: 3±0.5 seconds<br>Flux: Alpha 100<br>AMP Spec. 109-5203 |
| Environmental Requirements | | | |
| 3.5.12 | Resistance to Cold | ΔR= 20 mΩ Max. (Final) | Mated Connector<br>-40˚C±3°C, 96 hours<br>AMP Spec. 109-5108 Condition |
| 3.5.13 | Thermal Shock | ΔR=20 mΩ Max. (Final) | Mated connector -40˚C/30 min,<br>85˚C/30 min.<br>Making this a cycle, repeat 5 cycles.<br>AMP Spec. 109-5103 Condition |
| 3.5.14 | Humidity-Temperature Cycling | Insulation resistance (Final)<br>100 MΩ Min.<br>Termination resistance<br>ΔR=20 mΩ Max. (Final) | Mated connector, 25~65˚C,<br>95% R. H. 10 cycles |

Fig. 1 (To be continued)

| Para. | Test Items | Requirements | Procedures |
|---|---|---|---|
| 3.5.15 | Salt Spray | ΔR=20 mΩ Max. (Final) | Subject mated connectors to 5% salt concentration for 24 hours: MIL-STD-202, Method 101 AMP Spec. 109-5101 |
| 3.5.16 | Resistance to Reflow Soldering Heat | Tested housing shall show no evidence of deformation or fusion of housing and no physical damage. | Test connector on PCB.<br>Pre-Heat 150~180˚C: 90±30 sec min.<br>Heat over than 230˚C: 30±10 sec .<br>Heat Peak: 250+5/-0˚C Max. |
| 3.5.17 | Industrial Gas ($SO_2$) | ΔR= 20 mΩ Max. (Final) | Mated connector $SO_2$ Gas: 10 ppm, 95% R. H.<br>25˚C, 24 hours<br>AMP Spec. 109-5107 |
| 3.5.18 | Temperature Life (Heat Aging) | ΔR= 20 mΩ Max. (Final) | 85˚C, Duration: 4 days<br>AMP Spec. 109-5104 |

Fig. 2 (End)

## 3.6 Product Qualification Test Sequence

| Test of Examination | Test Group | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| | Test Sequence (a) | | | | | | | | | | | |
| Confirmation of Product | 1,9 | 1,3 | 1,9 | 1,5 | 1,5 | 1,3 | 1,5 | 1,5 | 1,5 | 1,3 | 1,5 | 1,5 |
| Termination Resistance (Low Level) | 2,6 | | 2,8 | 2,4 | 2,4 | | 2,4 | 2,4 | 2,4 | | 2,4 | 2,4 |
| Dielectric withstanding Voltage | 3,7 | | | | | | | | | | | |
| Insulation Resistance | 4,8 | | | | | | | | | | | |
| Capacitance | | 2 | | | | | | | | | | |
| Vibration (Low Frequency) | | | | 3 | | | | | | | | |
| Physical Shock | | | | | 3 | | | | | | | |
| Connector Mating Force | | | 3,6 | | | | | | | | | |
| Connector Unmating Force | | | 4,7 | | | | | | | | | |
| Durability (Repeated Mate/Unamting) | | | 5 | | | | | | | | | |
| Solderability | | | | | | 2 | | | | | | |
| Humidity-Temperature Cycling | 5 | | | | | | | | | | | |
| Resistance to Reflow Soldering Heat | | | | | | | | | | 2 | | |
| Thermal Shock | | | | | | | | 3 | | | | |
| Salt Spray | | | | | | | | | 3 | | | |
| Industrial Gas ($SO_2$) | | | | | | | | | | | 3 | |
| Temperature Life (Heat Aging) | | | | | | | | | | | | 3 |
| Resistance to Cold | | | | | | | 3 | | | | | |

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

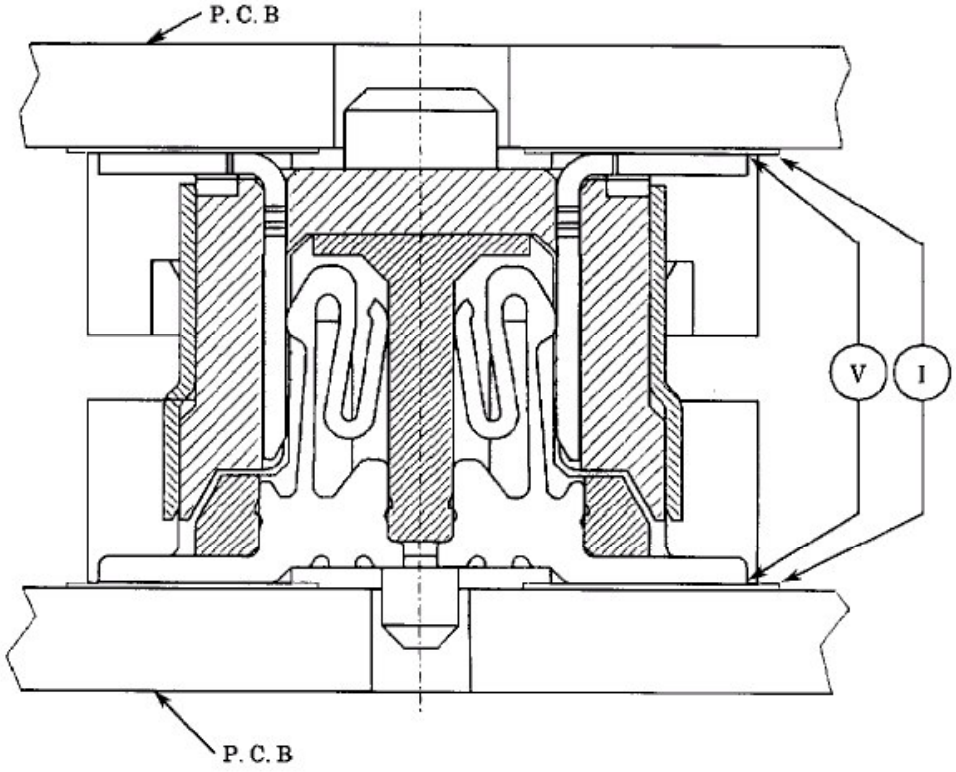


Fig. 1