



Free Height 0.5 mm Pitch Board-to-Board Connector (SMT)

1. SCOPE

1.1. Contents

This specification covers the requirements for product performance, test methods and quality assurance provisions of Free Height 0.5 mm Pitch, Board-to-Board Connector (SMT).

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. 2.1. TE connectivity Documents

- A. 109-5000 : Test Specifications, General Requirements for Test Methods
- B. 114-115003 : Application Specification
- C. 501-5226 : Test Report

2.2. Commercial Standard and Specification

- A. MIL-STD-202 : Test Methods for Electronic & Electric 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. Contact: Copper Alloy
- B. Housing: Thermo Plastic Molded Compound: LCP
- 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 and Test Description

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Para 3.5. 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	Examination of product	No physical damage nor dirty	Visual inspection
Electrical Requirements (TR = Termination Resistance)			
3.5.2	Termination Resistance (Low Level)	50 mΩ Max. (Initial) ΔR = 20 mΩ Max. (Final)	Subject mated contacts assembled in housing to 20 mV Max. Open circuit at 10mA Fig.1 Spec. 109-5311-1
3.5.3	Dielectric withstanding Voltage	Neither creeping discharge nor flashover shall occur. Current leakage: 5 mA Max.	0.2k VAC for 1 minute. Test between adjacent circuits of unmated connectors. Spec. 109-5301
3.5.4	Insulation Resistance	500 MΩ Min. (Initial) 100 MΩ Min.(Final)	Impressed Voltage 500 VDC. Test between adjacent circuits of unmated connectors. Spec. 109-5302
Physical Requirements			
3.5.5	Connector Mating Force	0.9 N (90 gf) Max. per contact	Operation Speed: 100 mm/min. Measure the force required to mate connectors. Spec. 109-5206
3.5.6	Connector Un-mating Force	0.1 N (10 gf) Min. per contact	Operation Speed: 100 mm/min. Measure the force required to unmate connectors. Spec. 109-5206
3.5.7	Durability (Repeated Mating / Un-mating)	ΔR = 20 mΩ Max. (Final)	Operation Speed: 100 mm/min No. of cycles: 30 cycles Spec. 109-5213
3.5.8	Vibration (Low Frequency)	No electrical discontinuity greater than 0.1 micro-sec shall occur.	Subject mated connectors to 10-55-10 Hz transverses in 1 minute at 1.52 mm amplitude with 100mA applied. Duration: 2 hours each for 3 mutually perpendicular planes. Spec. 109-5201

3.5.9	Physical Shock	No electrical discontinuity greater than 0.1 micro-sec shall occur.	Accelerated Velocity: 490m/s ² (50G) Waveform: Half sine Wave Duration : 11 m sec Velocity Change: 11.3 m/s Number of Drops: 3 drops each to normal and reversed directions of X,Y and Z axes, totally 18 Drops Spec. 109-5208
3.5.10	Solderability	Wet Solder Coverage: 95 % Min.	Solder Temp: 230 ± 5°C Immersion Duration: 3+/-0.5 secs Flux : Alpha 100 Spec. 109-5203
Environmental Requirements			
3.5.11	Resistance to Cold	$\Delta R = 20 \text{ m}\Omega \text{ Max. (Final)}$	Mated connector -40°C +/-3°C, 96 hours Spec. 109-5108
3.5.12	Thermal Shock	$\Delta R = 20 \text{ m}\Omega \text{ Max. (Final)}$	Mated connector -40°C / 30 min.; +85°C / 30 min. Making this a cycle, repeat 5 cycles. Spec. 109-5103
3.5.13	Humidity-Temperature Cycling.	Insulation Resistance(Final) = 100 M Ω Min. Termination resistance $\Delta R = 20 \text{ m}\Omega \text{ Max. (Final)}$	Mated connector. Temp: 25~65°C, R.H.: 95% No. of cycles: 10
3.5.14	Salt Spray	$\Delta R = 20 \text{ m}\Omega \text{ Max. (Final)}$	Subject mated connectors to 5% salt concentration. Duration: 24 hours. Spec. 109-5101 MIL-STD-202, Method 101.
3.5.15	Resistance to Reflow Soldering Heat	Tested housing shall show no evidence of deformation or fusion of housing and on physical damage	Test Connector on PCB Pre-Heat: 100~150°C; 60 sec Min. Heat: 210°C Min.: 30 sec Max. Peak Temperature: 240 °C Max.

3.5.16	Industrial Gas (SO ₂)	$\Delta R = 20 \text{ m}\Omega \text{ Max. (Final)}$	Mated connector SO ₂ Gas: 10 ppm.95% R.H. 25°C, 24hours Spec. 109-5107
3.5.17	Temperature Life (Heat Aging)	$\Delta R = 20 \text{ m}\Omega \text{ Max. (Final)}$	Temp.: +85 °C, Duration : 4 days Spec. 109-5104

3.6. Product Qualification Test Sequence

Test Items	Test Group										
	1	2	3	4	5	6	7	8	9	10	11
	Test Sequence (a)										
Examination of product	1,7	1,5	1,6	1,9	1,3	1,3	1,5	1,5	1,5	1,5	1,5
Termination Resistance (Low Level)		2,4	2,5	2,8			2,4	2,4	2,4	2,4	2,4
Dielectric withstanding Voltage	2,5										
Insulation Resistance	3,6										
Vibration (Low Frequency)			3								
Physical Shock			4								
Connector Mating Force				3,6							
Connector Un-mating Force				4,7							
Durability (Repeated Mating/Un-mating)				5							
Solderability					2						
Humidity-Temperature Cycling	4	3									
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

Notes:

(a) Numbers indicate sequence in which tests are performed

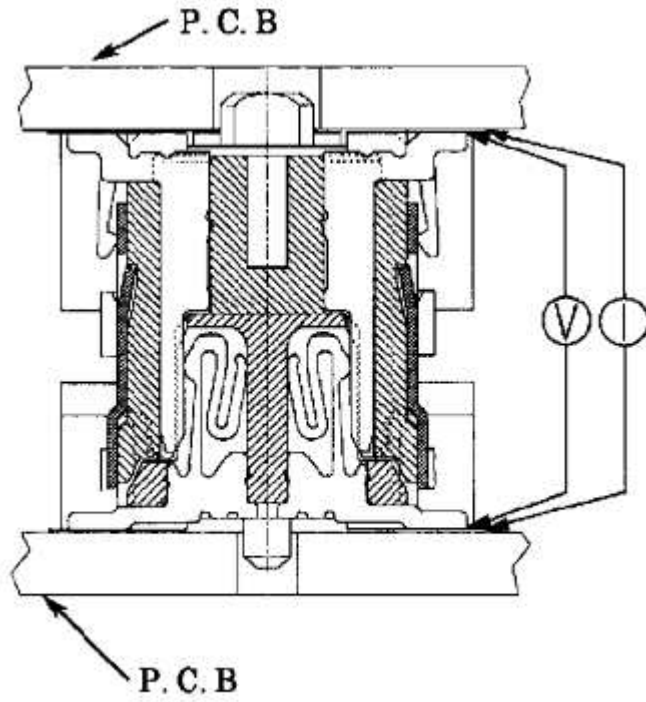


Fig. 1