

0.5mm Pitch Docking Connector

1. SCOPE

1.1. CONTENTS

This specification covers the requirements for product performance, test methods and quality assurance provisions of 0.5 mm pitch docking connector.

1.2. QUALIFICATION

When tests are performed on the subject product line, the procedures specified in EIA-364 series specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

2. APPLICABLE DOCUMENT

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.

2.1. TE CONNECTIVITY SPECIFICATIONS

- A. 109-5000: Test Specification. General Requirements for Test Methods
- B. 109-197: TE Connectivity Test Specification cross reference EIA and IEC Test Methods.
- C. 501-99038 : Test Report

2.2. COMMERCIAL STANDARDS AND SPECIFICATIONS

- A. EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications.

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

RECEPTACLE:

- A. Housing: High temp. thermoplastic, UL94V-0.
- B. Contact : Copper alloy, gold plating on contact area, tin plating on soldertail over nickel underplating overall.
- C. Shell : Stainless steel, nickel plating overall.

DOCK PLUG:

- A. Housing: High temp. thermoplastic, UL94V-0.
- B. Contact : Copper alloy, gold plating on contact area, tin plating on soldertail over nickel underplating overall.
- C. Shell : Stainless steel, nickel plating overall.
- D. Spacer: High temp. thermoplastic, UL94V-0.

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CABLE PLUG:

- A. Housing: High temp. thermoplastic, UL94V-0.
- B. Contact : Copper alloy, gold plating on contact area, tin plating on soldertail over nickel underplating overall.
- C. Shell : Stainless steel, nickel plating overall.
- D. Spacer: High temp. thermoplastic, UL94V-0.
- E. Latch: Stainless steel.

3.3. RATINGS

- A. Voltage: 30V AC
- B. Current: For Signal: 0.6 A Max.
For Power: 0.6 A Max per pair, total capacity 4.5A/8 pairs. C.
- Temperature: -20°C to 65°C.

3.4. PERFORMANCE REQUIREMENT AND TEST DESCRIPTION

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig.1. All tests shall be performed in the room temperature, unless otherwise specified.

3.5. TEST REQUIREMENTS AND PROCEDURES SUMMARY

Test Item		Requirement	Procedure
1	Examination of Product	Meets requirements of product drawing. No physical damage.	Visual inspection. EIA-364-18
Electrical Requirement			
2	Low Level Contact Resistance	90 mΩ MAX	Subject mated contacts assembled in housing to 20mV Max open circuit at 10mA Max. EIA-364-23. (measuring point shown in Fig 3)
3	Dielectric withstanding Voltage	No creeping discharge or flashover shall occur. Current leakage: 0.5 mA MAX	0.25 kVAC, 1 minute. Test between adjacent circuits of mated connectors. EIA-364-20C Method B
4	Insulation Resistance	500 MΩ minimum (Initial) 100 MΩ minimum (Final)	Impressed voltage 500 VDC. Test between adjacent circuits of unmated connector. EIA-364-21C
5	Temperature Rising	30 °C Max. whole contacts under loaded specified current (0.6A)	Measure temperature rising by energized current, 8 sets (measuring point shown in Fig 3) EIA-364-70A

6	Connector Mating Force	Initial ,after interval 14N (1.428 Kgf) Max	Operation Speed : 25.4 mm/min. Measure the force required to mate connector. EIA-364-13D
7	Connector Un-mating Force	Initial 5N(0.510 kgf) Max for TE PN:2129392-1/Docking side 15N(1.53 kgf) -25N(2.55 kgf) for TE PN:2129391-1/cable side	Operation Speed : 25.4 mm/min. Measure the force required to unmate connector. EIA-364-13D Initial(for 5 cycles)

Figure 1 (continued)

Test Item		Requirement	Procedure
Mechanical Requirement			
8	Durability	$\Delta R=25 \text{ m}\Omega$ Max. (Final).	Operation Speed : 60 mm/min. Durability Cycles : 10000 Cycles EIA-364-9C
9	Vibration	No electrical discontinuity greater than $1 \mu \text{ sec}$ shall occur. See Note.	Subject mated connectors to 10-55-10 Hz traversed in 1minutes at 1.52mm amplitude 2 hours each of 3 mutually perpendicular planes. 100mA Max. Applied. EIA-364-28D
10	Mechanical Shock	No electrical discontinuity greater than $1 \mu \text{ sec}$ shall occur. See Note.	Accelerate velocity : 490m/s^2 (50G) Waveform : Half-sine shock plus Duration : 11msec No. of drops : 3 drops each to normal and reversed directions of X,Y and Z axes, totally 18 drops, passing DC 1mA current during the test. EIA-364-27B
Environmental Requirements			
11	Solder ability	Wet solder coverage : 95% Min.	Solder Temperature : $245\pm 5^\circ\text{C}$ Duration:3 \pm 0.5sec, Flux : Alpha 100 (NON-active rosin base) EIA-364-638.

12	Resistance to Reflow Soldering Heat	No physical damage shall occur.	<p>Pre-soak condition, 85°C/85% RH for 168 hours.</p> <p>Pre Heat : 150~200°C , 60~180sec.</p> <p>Time over liquids (217°C),60~150sec.</p> <p>Peak Temp. : 260+0/-5°C , 20~40sec.</p> <p>TEC-109-201, Condition B</p> <p>Shown in Fig. 4</p>
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Figure 1 (continued)

TEST ITEM	REQUIREMENT	PROCEDURE
Environmental Requirements		
13	Thermal Shock	<p>ΔR=25 mΩ Max. (Final).</p> <p>Mated Connector -55+/-3°C (30 minutes), +85+/-2°C (30minutes)</p> <p>Perform this a cycle, repeat 10 cycles EIA-364-32C,condition A</p>
14	Humidity Temperature Cycle	<p>ΔR=25 mΩ Max. (Final).</p> <p>Mated Connector 40°C , 90~95% RH, 10 Cycles, 24hr a cycle</p> <p>EIA-364-31B, Method II, Test condition A.</p>
15	Temperature Life (Heat Aging)	<p>ΔR=25 mΩ Max. (Final).</p> <p>Mated Connector 85±5°C , 96 hours, EIA-364-17B.</p>
16	Salt Spray	<p>ΔR=25 mΩ Max. (Final).</p> <p>Subject mated connectors to 35+/-2 °C and 5+/-1% salt condition for 48hours. After test, rinse the sample with water and recondition the room temperature for 1 hour. EIA-364-26B.cond. B</p>

Figure 1 (End)

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

3.6. PRODUCT QUALIFICATION AND REQUALIFICATION TEST

Test or Examination	Test Group							
	A	B	C	D(b)	E	F	G	H
	Test Sequence (a)							
Examination of Product	1,7	1,6	1	1,6	1	1,3	1,3	1,3
Low Level Contact Resistance	2,6	2,5	2,4	2,5	4,8			
Dielectric withstanding Voltage					3,7			
Insulation Resistance					2,6			
Temperature Rising						2		
Mating Force	3							
Unmating Force	4							
Durability	5							
Vibration				3				
Mechanical Shock				4				
Solderability							2	
Resistance to Soldering Heat								2
Thermal Shock		4						
Humidity Temperature Cycling					5			
Temperature Life		3						
Salt Spray			3					

Figure 2

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

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

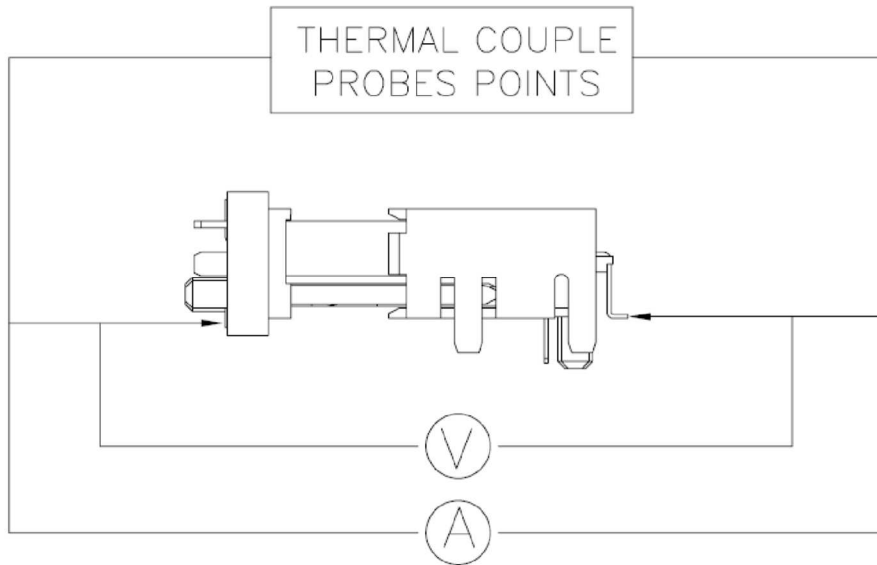


Fig.3 Contact Resistance and Temperature Rising Measuring Points

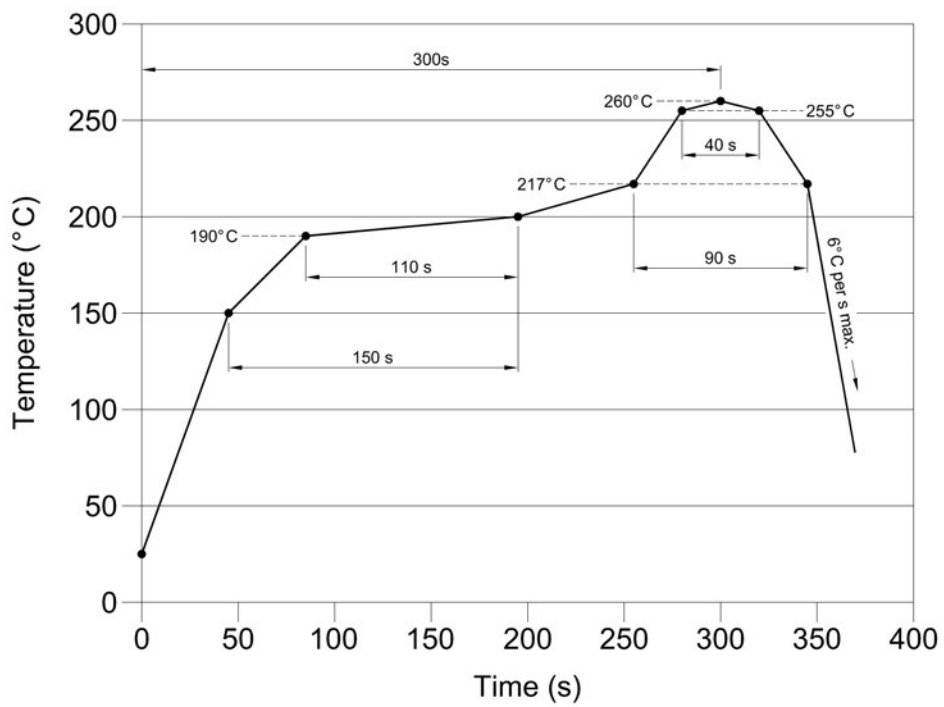


Fig.4