

**Product Specification**

09-OCT-2015 Rev B

**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 : $490 \text{ m/s}^2$ ( 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: $3 \pm 0.5 \text{ sec}$ , Flux : Alpha 100 (NON-active rosin base) EIA-364-638.

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

TEST ITEM		REQUIREMENT	PROCEDURE
Environmental Requirements			
13	Thermal Shock	$\Delta R = 25 \text{ m}\Omega$ Max. (Final).	Mated Connector -55+/-3°C (30 minutes), +85+/-2°C (30minutes) Perform this a cycle, repeat 10 cycles EIA-364-32C, condition A
14	Humidity Temperature Cycle	$\Delta R = 25 \text{ m}\Omega$ Max. (Final).	Mated Connector 40°C , 90~95% RH, 10 Cycles, 24hr a cycle EIA-364-31B, Method II, Test condition A.
15	Temperature Life (Heat Aging)	$\Delta R = 25 \text{ m}\Omega$ Max. (Final).	Mated Connector 85±5°C , 96 hours, EIA-364-17B.
16	Salt Spray	$\Delta R = 25 \text{ m}\Omega$ Max. (Final).	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

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.

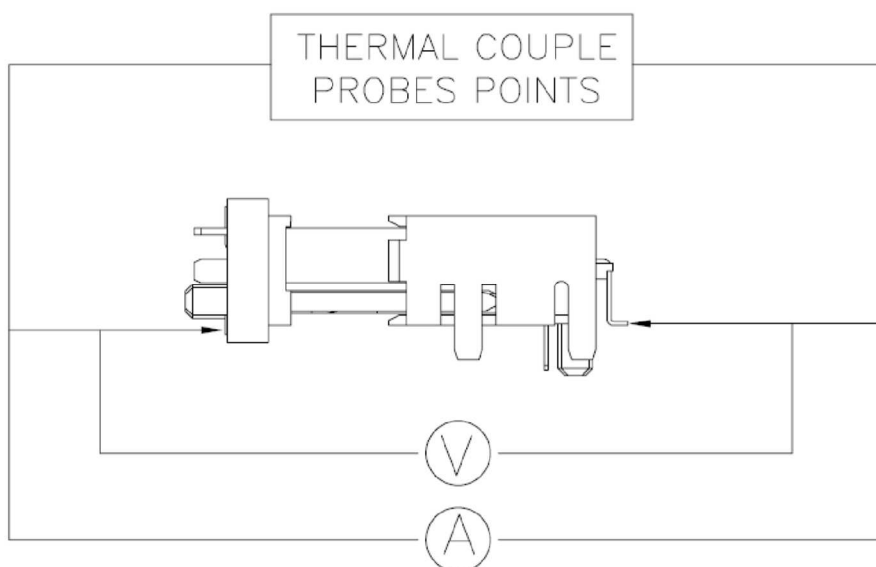


Fig.3 Contact Resistance and Temperature Rising Measuring Points

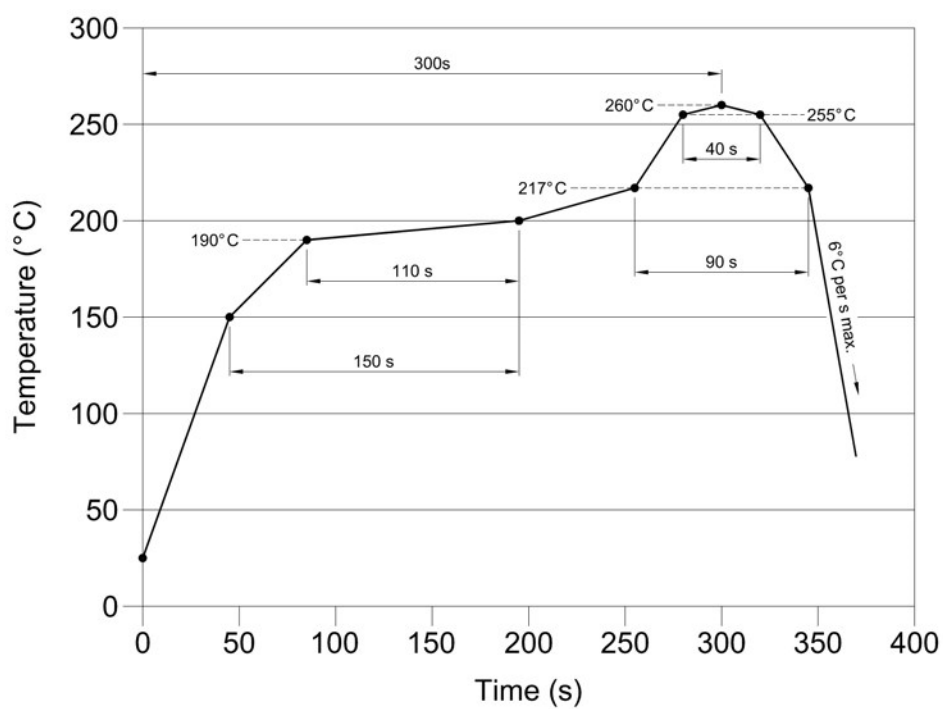


Fig.4