1. Scope

This specification covers the performance, tests and quality requirements for the pitch 0.4mm board to board connectors.

2. Applicable documents

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.

3. Ordering information

Refer to the drawing.

4. Connector dimensions

Refer to the drawing.

5. Material

Housing: Thermoplastic (UL 94V-0)

Color: Black

Terminal: Copper alloy

Plating: Gold plated

6. Accommodated P.C.B layout

Refer to the drawing.

7. Rating

Operating voltage(Max.)	60V AC/DC
Current rating(Max.)	0.3A per pin (Max.)
Temperature range-operating	-40°C -- +85°C

8. Test Condition

All tests shall be performed as bellow conditions unless otherwise specified.

Temperature range	+15°C -- +35°C
Humidity range	25% to 80%
Atmospheric pressure	86kPa to 106 kPa (860 to 1060 m bar)

9. Performance

Test item	Requirement	Procedure
Examination Of Product	Shall meet visual requirement, show no physical damage	Shall be confirmed with eyes in accordance with each drawing. Shall be confirmed by using proper measuring instruments. (EIA 364-18)
	Structure shall be meet the design and dimensional requirements of drawing	

Test item	Requirement		Procedure
Electrical Performance			
Contact Resistance	Initial	50 mΩ Max.	Make the board to board plugs and receptacles on board be fully mated ,then apply 20mV, 100mA current to the mated specimens, LLCR (JIS C5402)
	After test	90 mΩ Max.	
Insulation Resistance	Initial	1000 MΩ Min.	Apply a voltage of 250 V DC between adjacent terminals of the plugs and receptacles. Electrification time: 1 min. (EIA 364-21 / MIL-STD-202F, Method 302, Test Condition B)
	After test	100 MΩ Min.	
Dielectric Withstanding Voltage	Samples no breakdown.		Apply a voltage of 150 V DC between adjacent terminals of the plugs and receptacles. Electrification time: 1 min. (EIA 364-20 / MIL-STD-202F, Method 301, Test Condition B)
	Leakage current	0.5mA Max.	
Mechanical Performance			
Contact Retention Force	0.2N / Pin Min.		The pull speed shall 25.4 mm per minute on the terminal assembled in the housing (Only for female assemble Pin terminal) (EIA 364-35)
Insertion and Withdrawal Force	Insertion Force: Max. 1.2N / Pin x N. (N means pin numbers)		Make the specimens that are on board mated, then fix the receptacles to the machine on horizontal or perpendicular direction. Use the machine catch the plugs and separate the specimens, then make the plugs be fully mated with receptacles at a rate of 25.4 millimeters / minute on horizontal or perpendicular direction. (EIA-364-13)
	Withdrawal Force: Min. 0.165N / Pin x N. (N means pin numbers)		
Durability	Shall meet visual requirement, show no physical damage.		Make the specimens that are on board mated, then fix the receptacles to the machine on horizontal or perpendicular direction. Use the machine catch the plugs and separate the specimens, then make the plugs be fully mated with receptacles at a rate of 25.4 millimeters / minute on horizontal or perpendicular direction. duration: 30 cycles (EIA-364-09)
	Contact Resistance value (After test)	90 mΩ Max.	
Vibration	Shall meet visual requirement, show no physical damage.		Half-sine wave, apply 0.1 A DC current. Frequency: 10-55-10 Hz; Amplitude: 1.52mm Sweep time: 1 minute The connectors condition is PCB mounting and the plugs mated with receptacles, they must be tested 2 hours in each of the 3 axis (X,Y,Z), total 6 hours. (MIL-STD-202 Method 201)
	Contact Resistance value (After test)	90 mΩ Max.	
	Discontinuity	1μsec Max.	

Test item	Requirement		Procedure
Physical Shock	Shall meet visual requirement, show no physical damage.		Half-sine wave, apply 0.1A DC current Acceleration: 50G (490m/s²) Duration: 11 ms. The connectors condition is PCB mounting and the plugs mated with receptacles, shocking apply to 3 times in each of the 6 direction of 3 axis. 18 total shock. (EIA 364-27 Test Condition A / MIL-STD-202F Method 213)
	Contact Resistance value (After test)	90 mΩ Max.	
	Discontinuity	1μsec Max.	

Environmental Performance and others

Temperature Rise	30°C Max. (Per pin)		Connect series, Mate connector and measure the temperature rise at the rated current after 3 hours. (EIA 364-20, Test Method B)
Heat Resistance	Appearance	No Damage	Make the samples be separated and Leave them in the chamber of temperature +85°C for 96 hours, then it shall be subjected to standard atmospheric condition for 1 ~ 2 hours
	Contact Resistance value (After test)	90 mΩ Max.	
Cold Resistance	Appearance	No Damage	Make the samples be separated and Leave them in the chamber of temperature -40°C for 96 hours, then it shall be subjected to standard atmospheric condition for 1 ~ 2 hours
	Contact Resistance value (After test)	90 mΩ Max.	
Humidity	Appearance	No Damage	The specimens shall be separated and left in the chamber of 40 ± 2°C temperature and 90 ~ 95% humidity for 120 hours. After test drying in ambient condition for 1 hour. (EIA 364-31, Test Condition A Method III / MIL-202F, Method 103B Test Condition B)
	Insulation Resistance value (After test)	100 MΩ Min.	
	Contact Resistance value (After test)	90 mΩ Max.	
Thermal Shock	Appearance	No Damage	Specimens shall be separated and exposed 5 cycles as the following table conditions.
	Insulation Resistance value (After test)	100 MΩ Min.	
	Contact Resistance value (After test)	90 mΩ Max.	(EIA 364-32, Test Condition I / MIL-202F, Method 107G Condition A)
Salt Spray	Appearance	No Damage	Temperature: 35°C ± 2°C Density of salt water: 5 ± 1% Duration: 48 ± 2 hours. (EIA 364-16A / MIL-STD-202, Method 101)
	Contact Resistance value (After test)	90 mΩ Max.	

Step.	1	2	3	4
Temp. (°C)	-55+0,-3	25+10,-5	85+3,-0	25+10,-5
Exposed time (minute)	30	5	30	5

Test item	Requirement		Procedure
Solderability	The surface of the portion to be soldered shall at least 95% covered area must show no voids, pin holes		Make the specimens' tail tested by the last testing step immersion into molten solder at 245 ± 5 °C for 5 - 10 seconds. (EIA-364-52)
Resistance to Soldering Heat	Appearance	No abnormality	According to the following conditions to test connector. 1. Infrared reflow soldering, the peak temperature of 260 degrees Celsius, reference temperature curve, and the requirements of the SMT 2 times; 2. Electric soldering iron, requires 300 degrees 5 seconds, 350 degrees below 3 seconds.
	Coplanarity of the solder tail should be not beyond 0.10mm		

10. Infrared reflow condition

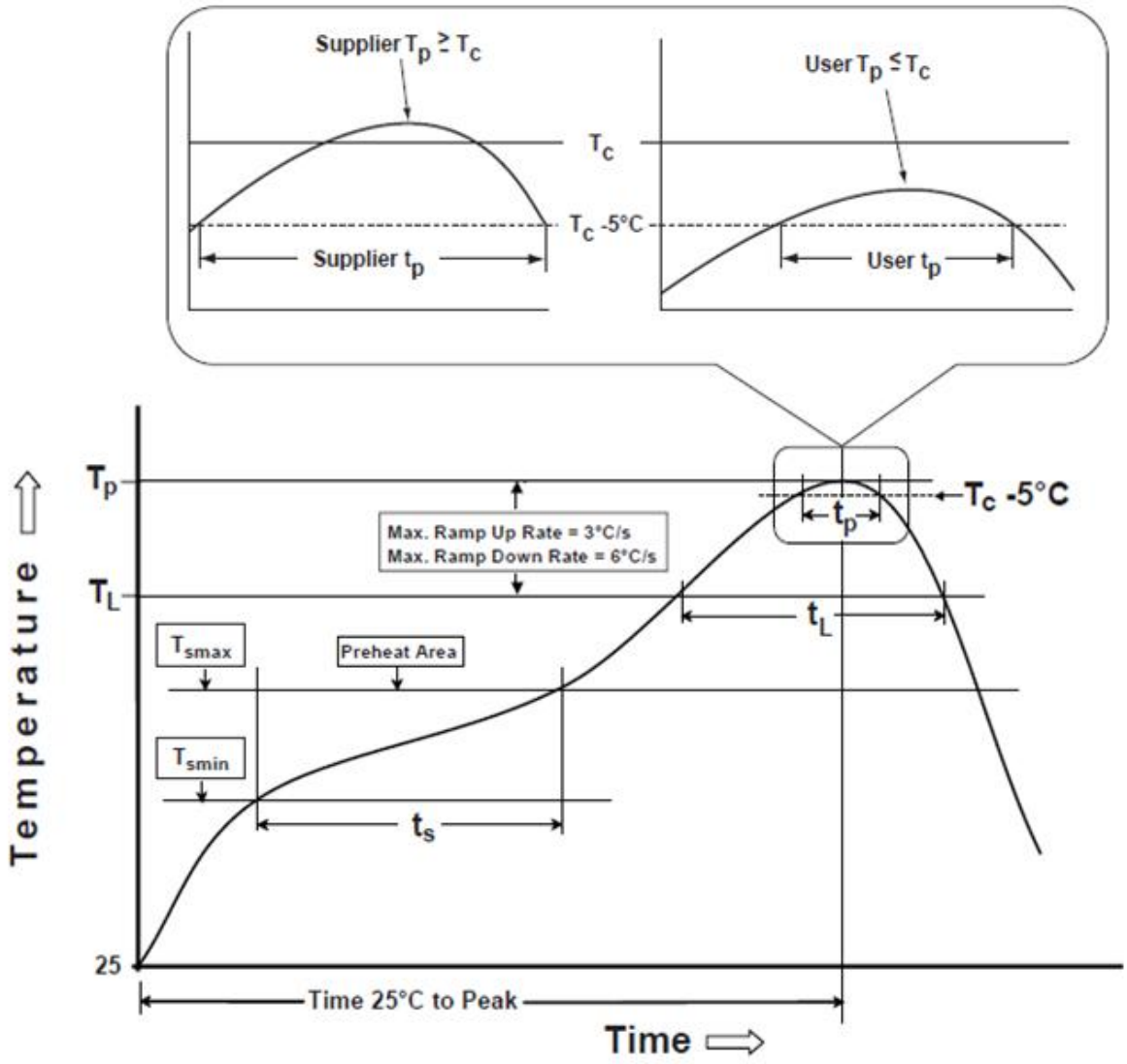

Figure 1. Reflow Temperature profile

Parameter	Typical value
Preheat: 150°C--200°C	100--120 S
Temperature ramp up rate (TL--Tp)	Max. 3°C / S
Time over 217°C	100--150 S
Min. peak reflux temperature	255°C
Time over 250°C	Min. 30 S
Ramp down rate during cooling (Tp--TL)	Max. -6°C / S
Time of 25°C -- Tp	Max. 8 min

Note: Please check the reflow soldering condition by your own devices beforehand.
Because the condition changes by the soldering devices, P.C.Board and so on.

11. Product qualification and reliability test sequence

Number of Test Samples (Min.)	5	5	5	5	5	5	5	5	5	5
Test Item	Test Group									
	A	B	C	D	E	F	G	H	I	J
Examination Of Product	1,7	1,9	1,6	1,3	1,4	1,4	1,4	1,3	1,3	1,3
Contact Resistance	2,6	2,10	2,5		3	3	3			
Insulation Resistance		3,7								
Dielectric Withstanding Voltage		4,8								
Contact Retention Force									2	
Insertion and Withdrawal Force	3,5									
Durability	4									
Vibration			3							
Physical shock			4							
Temperature rise								2		
Heat resistance					2					
Cold resistance						2				
Humidity		6								
Thermal Shock		5								
Salt Spray							2			
Solderability				2						
Resistance to soldering heat										2

Figure 2

Note: (a) Numbers indicate sequence in which tests are performed.
(b) Discontinuities shall not take place in this test group, during test.