SPECIFICATION

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SPEC. NO.: PS-51023-XXXXX-XXX **REVISION:** B

PRODUCT NAME: 0.4mm BOARD TO FPC CONN. SMT D/R S/T TYPE

PRODUCT NO: 51023-XXXXX-XXX SERIES
51024-XXXXX-XXX SERIES

PREPARED:	CHECKED:	APPROVED:
TSO I CHIAO	**Chen, Chun Yuan**	**Huang Kuo Hua**
DATE: **2023/07/13**	DATE: **2023/07/13**	DATE: **2023/07/13**

1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
1	1204097	FOR PDR APD1010070 NEW REV	ALEX	2012/04/30
O	1401217	RELEASE	CARL	2013/12/31
A	1802162	Durability Increase to 50 cycles	TSO I CHIAO	2018/02/23
B	012390	Add Salt Spray 48 hours	TSO I CHIAO	2023/07/13

2 SCOPE

This specification covers performance, tests and quality requirements for 0.4mm BOARD TO FPC CONN. SMT D/R S/T TYPE

3 APPLICABLE DOCUMENTS

EIA-364: ELECTRONICS INDUSTRIES ASSOCIATION

4 REQUIREMENTS

4.1 Design and Construction

4.1.1 Product shall be of design, construction and physical dimensions specified on applicable product drawing.
4.1.2 All materials conform to R.o.H.S. and the standard depends on TQ-WI-140101.

4.2 Materials and Finish

4.2.1 Contact: High performance copper alloy (Phosphor Bronze)
Finish: (a) Contact Area: Refer to the drawing.
(b) Under plate: Refer to the drawing.
(c) Solder area: Refer to the drawing.
4.2.2 Housing: Thermoplastic or Thermoplastic High Temp., UL94V-0

4.2.3 Fitting Nail: Copper Alloy, Finish: Refer to the drawing.

4.3 Ratings

4.3.1 Working Voltage Less than 36 Volts (per pin)
4.3.2 Voltage: 60 Volts AC/DC (per pin)
4.3.3 Current: 0.3 Amperes (per pin)
All pins can carry 5A Max.
4.3.4 Operating Temperature : -55℃ to +85℃

5 Performance

5.1. Test Requirements and Procedures Summary

Item	Requirement	Standard
Examination of Product	Product shall meet requirements of applicable product drawing and specification.	Visual, dimensional and functional per applicable quality inspection plan.
ELECTRICAL		
Item	**Requirement**	**Standard**
Low Level Contact Resistance	70 m Ω Max.(initial)per contact 90 m Ω Max.(finish)	Mate connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23)
Insulation Resistance	1000 M Ω Min.	Unmated connectors, apply 250 V DC between adjacent terminals. (EIA-364-21)
Dielectric Withstanding Voltage	No discharge, flashover or breakdown. Current leakage: 1 mA max.	150 VAC Min. at sea level for 1 minute. Test between adjacent contacts of unmated connectors. (EIA-364-20)
Temperature rise	30℃ Max. Change allowed	Mate connector: measure the temperature rise at rated current until temperature stable. The ambient condition is still air at 25℃ (EIA-364-70,METHOD1,CONDITION1)
MECHANICAL		
Item	**Requirement**	**Standard**
Durability	50 cycles.	The sample should be mounted in the tester and fully mated and unmated the number of cycles specified at the rate of 25.4 ± 3mm/min. (EIA-364-09)
Mating/Unmating Forces	Mating 0.981N (Max.) /Per Pin Unmating 0.165N(Min.)/Per Pin	Operation Speed： 25.4 ± 3 mm/minute.. Measure the force required to mate/unmate connector. (EIA-364-13)
Terminal / Housing Retention Force (Rcpt. CONN.)	0.05kgf MIN.	Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute. On the terminal assembled in the housing.
Fitting Nail /Housing Retention Force (Plug/Rcpt. CONN.)	0.03kgf MIN.	Operation Speed： 25.4 ± 3 mm/minute. Measure the contact retention force with Tensile strength tester.

Vibration	1 μs Max.	The electrical load condition shall be 100 mA maximum for all contacts. Subject to a simple harmonic motion having amplitude of 0.76mm (1.52mm maximum total excursion) in frequency between the limits of 10 and 55 Hz. The entire frequency range, from 10 to 55 Hz and return to 10 Hz, shall be traversed in approximately 1 minute. This motion shall be applied for 2 hours in each of three mutually perpendicular directions. (EIA-364-28 Condition I)
Shock (Mechanical)	1 μs Max.	Subject mated connectors to 50 G's (peak value) half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction shall be applied along the three mutually perpendicular axes of the test specimen (18 shocks). The electrical load condition shall be 100mA maximum for all contacts. (EIA-364-27, test condition A)

ENVIRONMENTAL

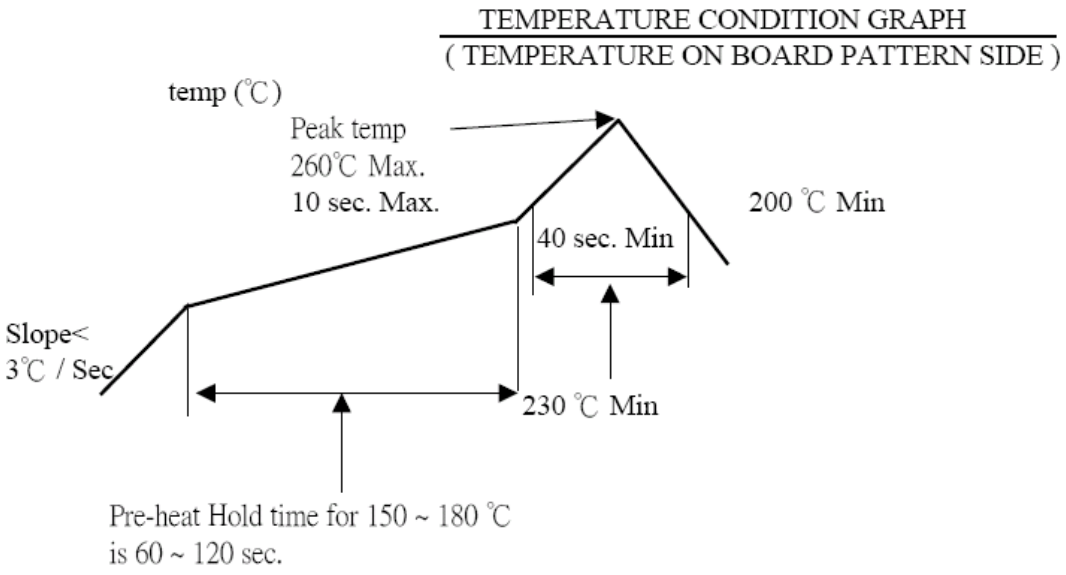
Item	Requirement	Standard
Resistance to **Reflow** Soldering Heat	See Product Qualification and Test **(Lead Free)**	Pre Heat：150℃~180℃, 60~120sec. Heat：230℃ Min., 40sec Min. Peak Temp.：260℃Max, 10sec Max.
Thermal Shock	See Product Qualification and Test Sequence Group 4	Mate module and subject to follow condition for 5 cycles. 1 cycles: -55 +0/-3 ℃, 30 minutes +85 +3/-0 ℃, 30 minutes (EIA-364-32, test condition I)
Humidity	See Product Qualification and Test Sequence Group 4	Mated Connector 40℃, 90~95% RH, 120 hours. (EIA-364-31,Condition A, Method II)
Temperature life	See Product Qualification and Test Sequence Group 5	Subject mated connectors to temperature life at 85℃ for 96 hours. (EIA-364-17, Test condition A)

Salt Spray (Only For Gold Plating)	See Product Qualification and Test Sequence Group 6	Subject mated/unmated connectors to 5% salt-solution concentration, 35℃ (I) Gold flash for 8 hours (II) Gold plating 3 u" or more for 48 hours. (III) Gold plating 5 u" or more for 96 hours. (EIA-364-26)
Solder ability	Tin plating: Solder able area shall have minimum of 95% solder coverage. Gold plating: Solder able area shall have minimum of 75% solder coverage	And then into solder bath, Temperature at 245 ±5℃, for 4-5 sec. (EIA-364-52)
Hand Soldering Temperature Resistance	Appearance: No damage	T≧350℃, 3sec at least.

Note. Flowing Mixed Gas shell be conduct by customer request.

6 INFRARED REFLOW CONDITION

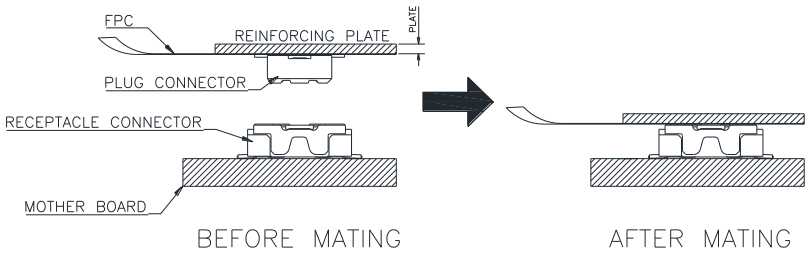
6.1. Lead-Free Process



7 PRODUCT QUALIFICATION AND TEST SEQUENCE

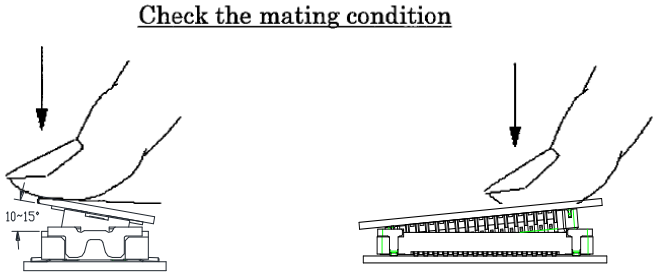
Test or Examination	Test Group										
	1	2	3	4	5	6	7	8	9		
	Test Sequence										
Examination of Product	1,3	1	1	1、7	1、6	1、4			1,3		
Low Level Contact Resistance		2、6	2、5	2、8	2、7	2、5					
Insulation Resistance				3、9	3、8						
Dielectric Withstanding Voltage				4、10	4、9						
Temperature rise	2										
Mating / Unmating Forces		3、5									
Durability		4									
Vibration			3								
Shock (Mechanical)			4								
Thermal Shock				5							
Humidity				6							
Temperature life					5						
Salt Spray(Only For Gold Plating)						3					
Solder ability							1				
Terminal / Housing Retention Force (Rcpt. CONN.)								1			
Fitting Nail /Housing Retention Force (PLUG/Rcpt. CONN.)								2			
Hand Soldering Temperature Resistance									2		
Sample Size	2	4	4	4	4	4	2	4	4		

8. CONNECTOR USAGE



MATING PROCEDURE

1. **Set the FPC block's position roughly.**
2. **Check the position of FPC block, moving it slightly.**
3. **Mate the connector until it becomes flat.(Don't push by too much force)**
4. **Check the mating state by pushing every corner of connector to prevent from Miss mating.**



UNMATING PROCEDURE