SPECIFICATION

宏 致 電 子 股 份 有 限 公 司

桃園縣中壢市東園路13號

No.13, Dongyuan Rd., Jhongli City,

Taoyuan County 320, Taiwan (R.O.C.)

TEL: +886-3-463-2808
FAX: +886-3-463-1800

SPEC. NO.: PS-51162-xxxxx-xxx **REVISION:** A

PRODUCT NAME: 0.4 mm PITCH SMT S/T D/R TYPE CONNECTOR

PRODUCT NO: **51162/51163/51182/51188/51187 series**

PREPARED:	CHECKED:	APPROVED:
GUOFEI	**BRAVE**	**BRAVE**
DATE: **2021/12/17**	DATE: **2021/12/17**	DATE: **2021/12/17**

1 Revision History

Rev.	ECN #	Revision Description	Approved	Date
O	ECN-1802066	NEW SPEC	JINTAO	2017/09/14
A	ECN-002125	add 51182 series; 51188 series; 51187 series;	GUOFEI	2021/12/17

2 SCOPE

This specification covers performance, tests and quality requirements for 0.4mm pitch BOARD TO BOARD CONNECTOR.
Aces's P/N : 51162-xxxxx-xxx series, 51163-xxxxxx-xxx series; 51182-xxxxxx-xxx series;
51188-xxxxxx-xxx series; 51187-xxxxxx-xxx series;

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

4.3 Ratings

4.3.1 Working Voltage Less than 36 Volts AC (per pin)
4.3.2 Voltage: 50 Volts AC (per pin)
4.3.3 Current: 0.3 Amperes
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-signal Level Contact Resistance	40 m Ω Max.(initial)per contact △R 20 m Ω Max.	Mate connectors, measure by dry circuit, 20mV Max., 10mA 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.	500V AC 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 after:0.5 A/Power contact. The temperature rise above ambient shall not exceed 30℃ The ambient condition is still air at 25℃ (EIA-364-70 METHOD 2)
MECHANICAL		
Durability	30 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 Force: 70 gf Max(per pin) Unmating Force: 12 gf 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	0.11kgf MIN.	Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute. On the terminal assembled in the housing.

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

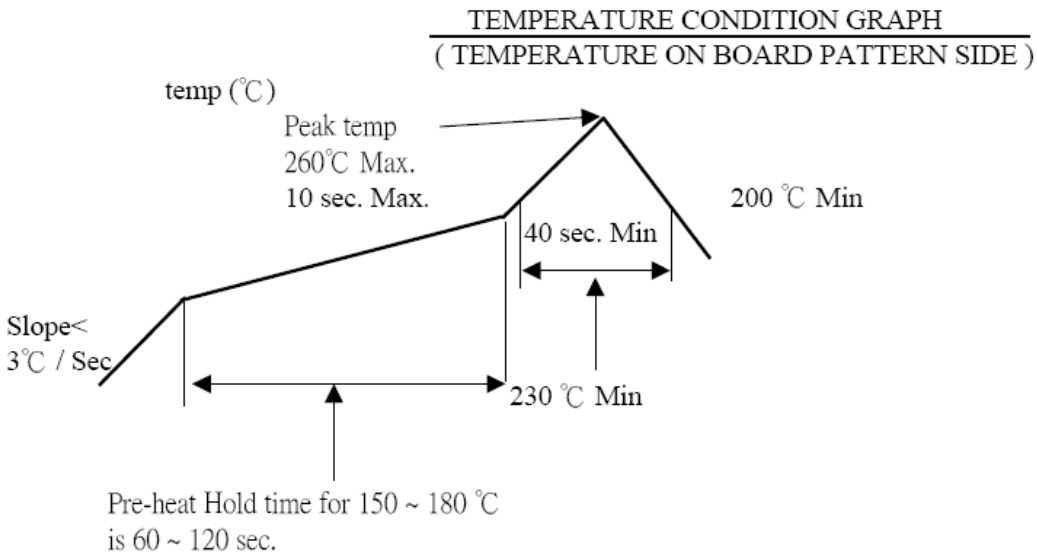
Item	Requirement	Standard
Resistance to **Reflow** Soldering Heat	See Product Qualification and Test Sequence Group 9 (**Lead Free)**	Pre Heat：150℃~180℃ 60~120sec. Heat：230℃ Min., 40sec Min. Peak Temp.：260℃Max,10sec Max.
Thermal Shock	See Product Qualification and Test Sequence Group 3	Mate module and 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 3	Mated Connector 40℃, 90~95% RH, 96 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. Measure Signal. (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 5 u" 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 95% solder coverage	And then into solder bath, Temperature at 245 ±5℃, for 4-5 sec. (EIA-364-52)

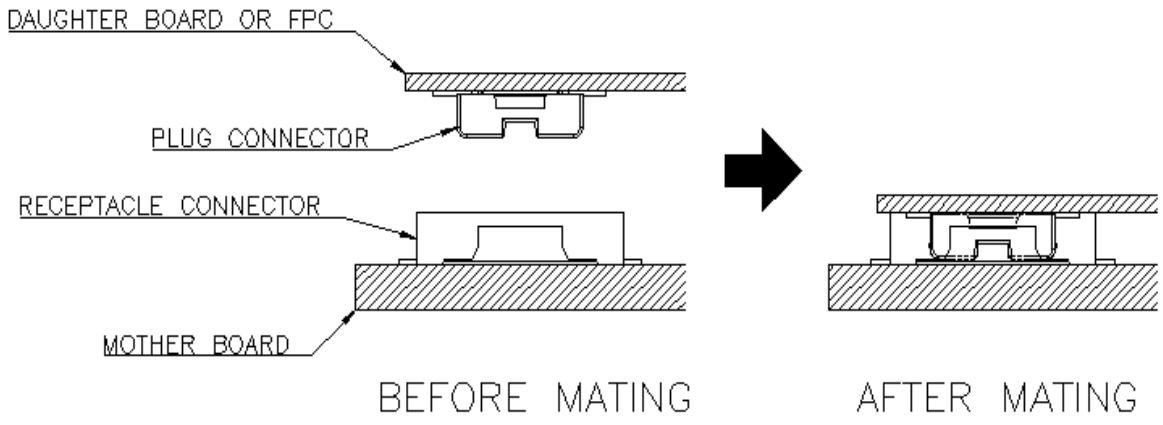
Note. Flowing Mixed Gas shell be conduct by customer request.

6 INFRARED REFLOW CONDITION

6.1. Lead-free Process



7 CONNECTOR USAGE



8 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、5	1、5	1、7	1、6	1、4	1、3		1、3	
Low-signal Level Contact Resistance	2、7	2、6	2、10	2、9	2、5			4	
Insulation Resistance			3、9	3、8					
Dielectric Withstanding Voltage			4、8	4、7					
Temperature rise									1
Mating / Unmating Forces	3、6								
Durability	4								
Vibration(Random) / Vibration		3							
Shock (Mechanical)		4							
Thermal Shock			5						
Humidity			6						
Temperature life				5					
Salt Spray					3				
Solder ability						2			
Terminal / Housing Retention Force							1		
Resistance to Soldering Heat								2	
Sample Size	4	4	4	4	4	2	4	4	2