



SPECIFICATION

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SPEC. NO.: PS-50168-XXXXX-XXX

REVISION: C

PRODUCT NAME: 0.5mm PITCH BOARD TO BOARD CONN

SMT D/R S/T TYPE

PRODUCT NO: 50168-xxxxx-xxx , 50169-xxxxx-xxx

PREPARED: XUJINJUN DATE: 2022/11/05	CHECKED: XUZHIYONG DATE: 2022/11/05	APPROVED: XUZHIYONG DATE: 2022/11/05
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1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
1	ECN-0702055	APD980086 NEW RELEASE	JASON	2007.2.13
O	ECN-0909194	APD980086 NEW RELEASE	JASON	2009.9.24
A	ECN-1106177	ADD USAGE	GAVIN	2011.06.13
B	ECN-1401262	UPDATE WORKING VOLTAGE	FENGXIAO	2014/01/18
C	ECN-008835	ADD THE MATING/UNTMATING FORCE FOR 18PIN	XUJINJUN	2022/11/05

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2 SCOPE

This specification covers performance, tests and quality requirements for 0.50mm pitch BOARD TO BOARD connector series. Aces's P/N:50168-xxxxx,50169-xxxxx series.

3 APPLICABLE DOCUMENTS

EIA-364: ELECTRONICS INDUSTRIES ASSOCIATION

4 REQUIREMENTS

4.1 Design and Construction

Product shall be of design, construction and physical dimensions specified on applicable product drawing.

4.2 Materials and Finish

4.2.1 Contact: High performance copper alloy

Plated: (a) Finish: [See Order Information](#)

(b) Under plate: [Nickel-plated all over](#)

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: [0.5 Amperes \(per contact\)/10 Amperes total contact](#)

4.3.4 Operating Temperature : [-40°C to +85°C](#)

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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. after test	Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23)
Insulation Resistance	1000 M Ω Min. initial 100 M Ω Min. after test	Unmated connectors, apply 500 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°C Max. Change allowed	Mate connector: measure the temperature rise at rated current until temperature stable. The ambient condition is still air at 25°C (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 \pm 3mm/min. (EIA-364-09)

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Mating / Unmating Forces	Mating Force: SEE ITEM 8 Unmating Force: SEE ITEM 8	Operation Speed : 25.4 ± 3 mm/minute.. Measure the force required to mate/unmate connector. (EIA-364-13)
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MECHANICAL

Item	Requirement	Standard
Vibration	0.1 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)	0.1 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 10 (Lead Free)	Pre Heat : 150°C~180°C, 60~120sec. Heat : 230°C Min., 40sec Min. Peak Temp. : 260°C Max, 10sec Max.
Thermal Shock	Insulation Resistance 100MΩ Contact Resistance 90mΩ max	Mate module and subject to follow condition for 5 cycles. 1 cycles: -55 +0/-3 °C, 30 minutes +85 +3/-0 °C, 30 minutes (EIA-364-32, test condition A)

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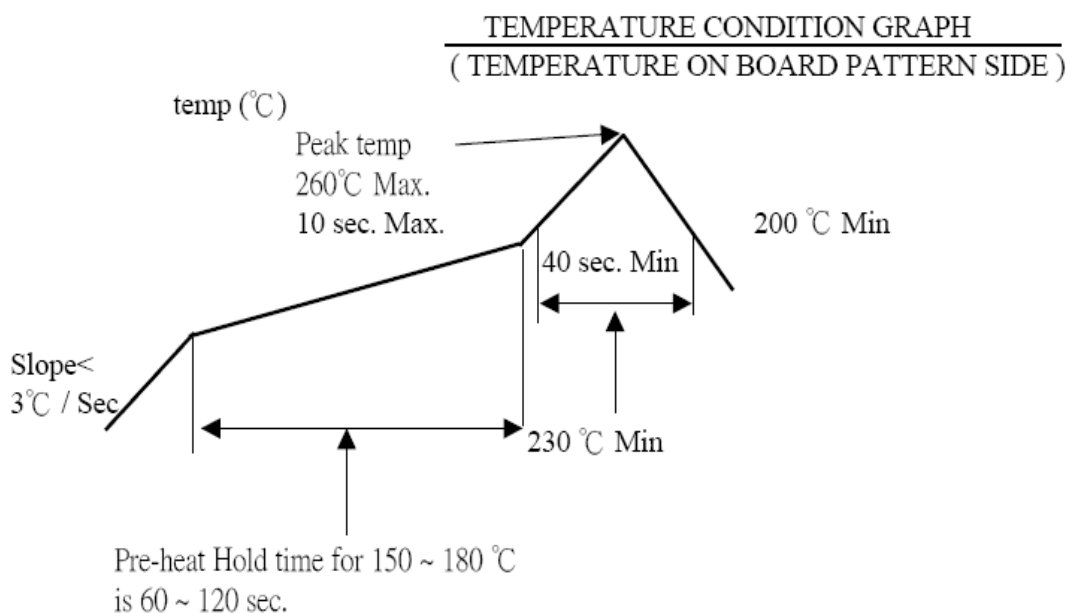
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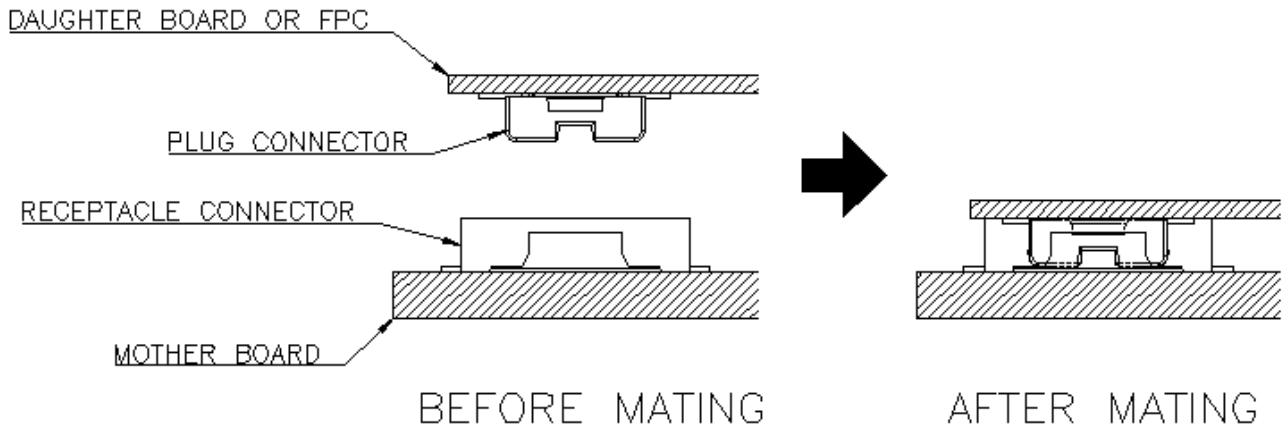
Humidity	Insulation Resistance 100MΩ Contact Resistance 90mΩ max	Mated Connector 40°C, 90~95% RH, 120 hours. (EIA-364-31, Condition A, Method II)
Salt Spray	Contact Resistance 90 mΩ max	Subject mated/unmated connectors to 5% salt-solution concentration, 35± 2°C for 24 hours. (EIA-364-26, Test condition B)
Solder ability	Solder able area shall have minimum of 75% solder coverage.	Subject the test area of contacts into the flux for 5-10 sec. And then into solder bath, Temperature at 245 ±5°C, for 4-5 sec. (EIA-364-52)

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	10
	Test Sequence									
Examination of Product				1、7	1、6	1、4				
Low Level Contact Resistance		1、5	1、4	2、10	2、9	2、5				
Insulation Resistance				3、9	3、8					
Dielectric Withstanding Voltage				4、8	4、7					
Temperature rise	1									
Mating / Unmating Forces		2、4								
Durability		3								
Vibration			2							
Shock (Mechanical)			3							
Thermal Shock				5						
Humidity				6						

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Salt Spray						3				
Solder ability							1			
Resistance to Soldering Heat					5					
Sample Size	2	4	4	4	4	4	2			

9 MATING / UNMATING FORCE

Unit:N/ kgf

NO. OF Ckt.	MATING FORCE (MAX)		NO. OF Ckt.	UNMATING FORCE (Min)	
	INITIAL	50 th		INITIAL	50 th
10	6.95 /0.7	5.55 /0.55	10	0.5/0.05	0.4/0.04
14	9.4/0.95	7.65/0.77	14	0.7/0.07	0.55/0.05
20	13.9 /1.4	11.1 /1.1	20	1 / 0.1	0.8/0.08
22	15.3 /1.54	12.21 /1.21	22	1.1/0.11	0.88/0.106
24	16.68/1.68	13.32 /1.32	24	1.2/0.12	0.96/0.096
26	18.1 /1.82	14.43 /1.43	26	1.3/0.13	1.04/0.104
30	20.85 /2.1	16.65 /1.65	30	1.5/0.15	1.2/0.12
32	22.24/2.24	17.76/1.76	32	1.6/0.16	1.28/0.128
34	23.63 /2.38	18.87 /1.87	34	1.7/0.17	1.36/0.136
40	27.8 /2.8	22.2 /2.2	40	2/0.2	1.6/0.16
50	34.75 /3.5	27.75 /2.75	50	2.5/0.25	2/0.2
60	41.7 /4.2	33.3 /3.3	60	2.4	0.24
80	55.6/5.6	44.4/4.4	80	4/0.4	3.2/0.32