SPECIFICATION

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SPEC. NO.: 51680-XXXXX-XXX **REVISION:** O

PRODUCT NAME: 0.5mm Pitch NON-ZIF FPC Conn. SMT R/A D/C Type

PRODUCT NO: 51680 series

PREPARED:	CHECKED:	APPROVED:
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DATE: 2017/03/29	DATE: 2017/03/29	DATE: 2017/03/29

1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
1	ECN-1604140	FOR APD1040179 NEW	LLJ	2016/04/15
O	ECN-1703410	"1"→"O"	LLJ	2017/03/29

2 SCOPE

This specification covers performance, tests and quality requirements for 0.5mm Pitch NON-ZIF FPC Connector. These connectors are used to hold graphic card in DSC.

Aces's P/N ：51680 (SMT R/A D/C Type)

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.
Finish: Plating pls. See the product drawing.
4.2.2 Housing: Thermoplastic High Temp., UL94V-0
4.2.3 Nut or Ear: Copper Alloy, Plating pls. See the product drawing.

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 pin)
4.3.4 Operating Temperature : -20℃ 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	55 m Ω Max.(initial)per contact 20 m Ω Max. Change allowed	Mate connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23)
Insulation Resistance	500 M Ω Min.	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.	300 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 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		
Item	**Requirement**	**Standard**
Durability	20 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)
Contact Retention Force	0.5 kgf Min.	Operation Speed： 25.4 ± 3 mm/minute. Measure the contact retention force with Tensile strength tester.
FPC Retention Force	Refer to page.NO,8 FPC retention force	A connector shall be soldered on a board and insert the actuator, pull the FPC at the speed rate of 25.4 ± 3 mm/min.

Fitting Nail /Housing Retention Force	0.5 kgf MIN.	Operation Speed： 25.4 ± 3 mm/minute. Measure the contact retention force with 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)

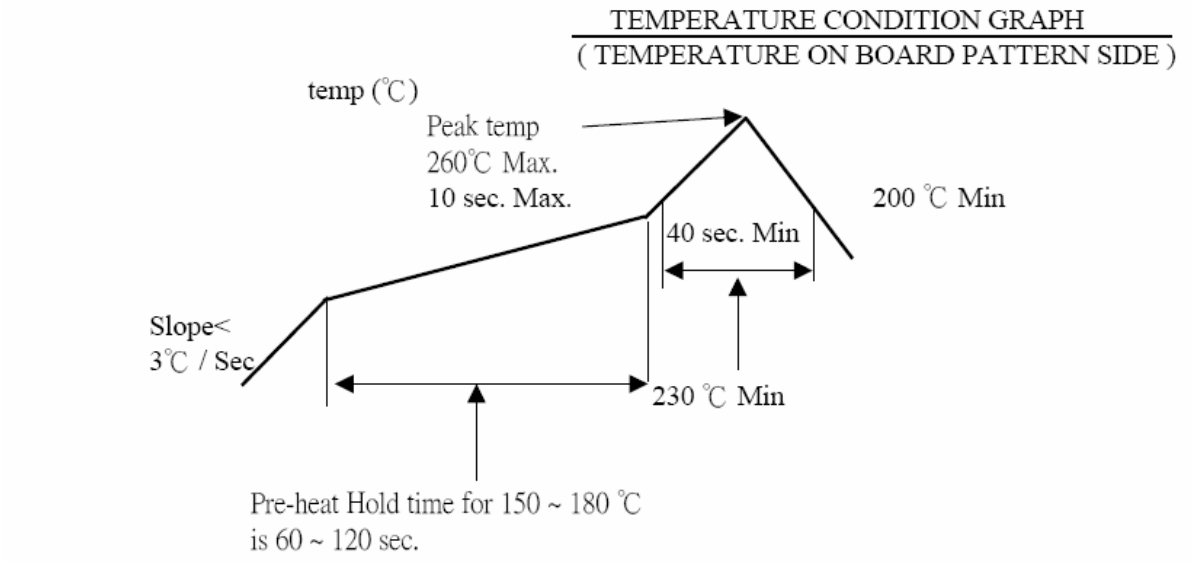
ENVIRONMENTAL		
Item	**Requirement**	**Standard**
Resistance to **Reflow** Soldering Heat	See Product Qualification and Test Sequence Group 9 **(Lead Free)**	Pre Heat：150℃~180℃, 60~120sec. Heat：230℃ Min., 40sec Min. Peak Temp.：260℃Max, 10sec Max. Reflow number cycle: 2 times (EIA-364-56)
Thermal Shock	See Product Qualification and Test Sequence Group 3	Mate module and subject to follow condition for 25 cycles. 1 cycles: -55±3 ℃, 30 minutes +85 ± 3℃, 30 minutes JIS C 60068-1(IEC 60068-1)
Humidity	See Product Qualification and Test Sequence Group 3	Mated Connector 40℃, 90~95% RH, 240 hours. JIS C 60068-1(IEC 60068-1)

Temperature life	See Product Qualification and Test Sequence Group 4	Subject mated connectors to temperature life at 85℃ for 250 hours. Measure Signal. JIS C 60068-1(IEC 60068-1)
Salt Spray	See Product Qualification and Test Sequence Group 5	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	Solder able area shall have minimum of 95% solder coverage.	Subject the test area of contacts into the flux for 5-10 sec. And then into solder bath, Temperature at 245 ±5℃, for 4-5 sec. (EIA-364-52)
Hand Soldering	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



(reflow 2 cycles)

7 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、3	1、8	1、7	1、6	1、4				1	
Low Level Contact Resistance		2、11	2、10	2、9	2、5				3	1、4
Insulation Resistance		3、10	3、9	3、8						
Dielectric Withstanding Voltage		4、9	4、8	4、7						
Temperature rise	2									
Durability		6								
Vibration										2
Shock (Mechanical)										3
Thermal Shock			5							
Humidity			6							
Temperature life				5						
Salt Spray					3					
Solder ability						1				
Contact Retention Force							1			
FPC Retention Force		5、7								
Fitting Nail /Housing Retention Force								1		
Resistance to Soldering Heat									2	
Sample Size	2	4	4	4	4	2	4	4	4	4

8 FPC RETENTION FORCE

UNIT: N

NO. OF Ckt.	Insertion Force (Max)		Extration Force (Min)	
	1th	20th	1th	20th
30	30	30	3.5	3.0