SPEC. NO.: PS-50578-XXXXX-XXX **REVISION:** B

PRODUCT NAME: 1.0 mm Pitch FPC Connector

PRODUCT NO: 50578，50579，50580，50581，50582，50583，50584，50585，50586，50587，50588，50589，50590，50591，50592，50593series.

PREPARED:	CHECKED:	APPROVED:
DATE: **2009.10.22**	DATE: **2009.10.22**	DATE: **2009.10.22**

1 Revision History

Rev.	ECN #	Revision Description	Approved	Date
O	ECN-0812016	NEW PROJECT SPEC	JASON	2008/12/05
A	ECN-0908013	REVISED FPC RETENTION FORCE、CONTACT RETENTION FORCE、FITTING NAIL /HOUSING RETENTION FORCE	JASON	2009/08/03
B	ECN-0910290	REVISED RESISTANCE TO SOLDERING HEAT	JASON	2009/10/22

2 SCOPE

This specification covers performance, tests and quality requirements for 1.0 mm Pitch FPC Connector. These connectors are used to hold graphic card in computer.

Aces's P/N ：50578series，50579series，50580series，50581series，50582series，50583series，50584series，50585series，50586series，50587series，50588series，50589series，50590series，50591series，50592series，50593series，

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 (Phosphor Bronze)
Finish: Plating pls. See the product drawing.
4.2.2 Housing: Thermoplastic High Temp., UL94V-0
4.2.3 Latch: Thermoplastic High Temp., UL94V-0
4.2.4 Fitting nail: Copper Alloy, Plating pls. See the product drawing.

4.3 Ratings

4.3.1 Voltage: 50 Volts AC (per pin)
4.3.2 Current: 0.5 Amperes (per pin)
4.3.3 Operating Temperature : -40℃ to +80℃

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	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	100 M Ω Min.	Unmated connectors, apply 500 V DC between adjacent terminals. (EIA-364-21)
Dielectric Withstanding Voltage	250 VAC Min. at sea level for 1 minute. No discharge, flashover or breakdown. Current leakage: 1 mA max.	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	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)
Contact Retention Force	0.30kgf Min.	Operation Speed： 25.4 ± 3 mm/minute. Measure the contact retention force with Tensile strength tester.
Actuator Insertion / Extration Force	Refer to Refer to Actuator Insertion/Extration Force	Mate applicable FPC insert and extract actuator at the speed of 25 ± 3 mm/min.
FPC Retention Force	50gf/pin MIN	Insert the actuator, pull the FPC at the speed rate of 25.4 ± 3 mm/min.
Fitting Nail /Housing Retention Force	0.30kgf MIN.	Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute. On the fitting nail 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

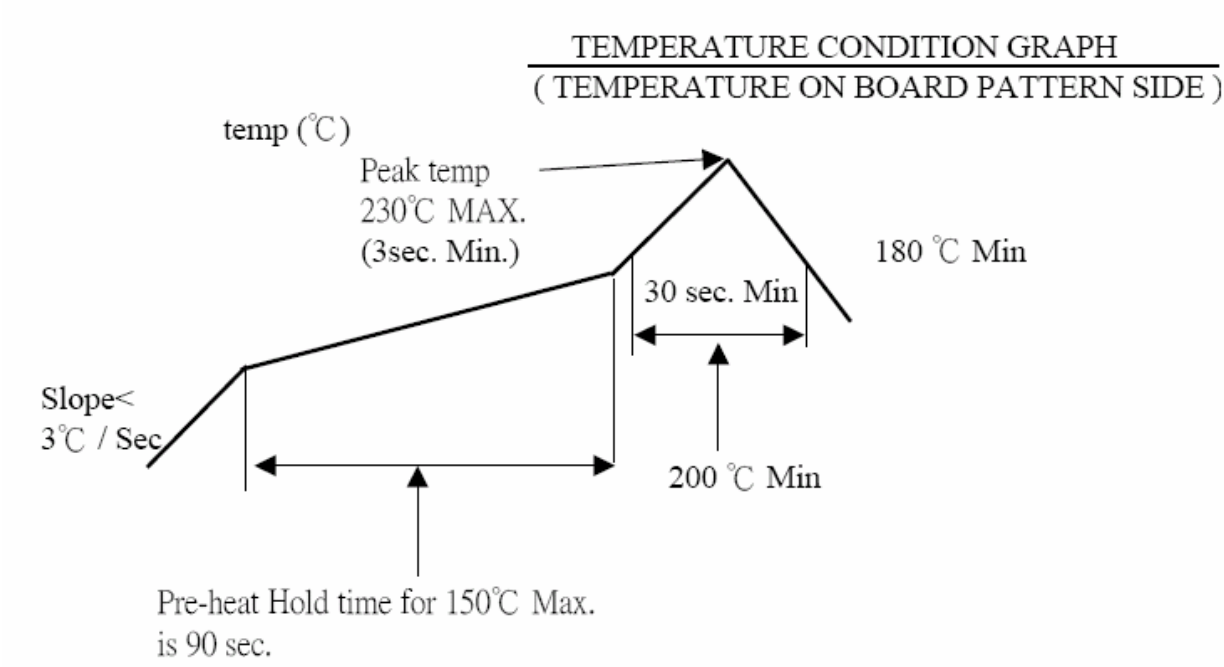
Item	Requirement	Standard
Resistance to **Reflow** Soldering Heat	See Product Qualification and Test Sequence Group 9	Pre Heat：150℃Max, 90sec Min. Heat：200℃ Min., 30sec Min. Peak Temp.： 230℃Max, 3sec Min. See 6.1 General process
Resistance to **Reflow** Soldering Heat	See Product Qualification and Test Sequence Group 9 **(Lead Free)**	Pre Heat：150℃~180℃, 60~90sec. Heat：230℃ Min., 40sec Min. Peak Temp.： 260℃Max, 10sec Max. See 6.2 Lead free process
Thermal Shock	See Product Qualification and Test Sequence Group 3	Mate module and subject to follow condition for 5 cycles. 1 cycles: -40 +0/-3 ℃, 30 minutes +80 +3/-0 ℃, 30 minutes (EIA-364-32, test condition A)
Humidity	See Product Qualification and Test Sequence Group 3	Mated Connector 40℃, 90~95% RH, Reefer to Method II. (EIA-364-31, Test condition A)

Temperature life	See Product Qualification and Test Sequence Group 4	Subject mated connectors to temperature life at 85℃ for 96 hours. Measure Signal. (EIA-364-17, Test condition A)
Salt Spray	See Product Qualification and Test Sequence Group 5	Subject mated/unmated connectors to 5% salt-solution concentration, 35℃ for 8 hours. (EIA-364-26,Test condition B)
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)
Resistance to Soldering Heat	No deformation of components affecting performance.	350℃±5℃ for 5 seconds

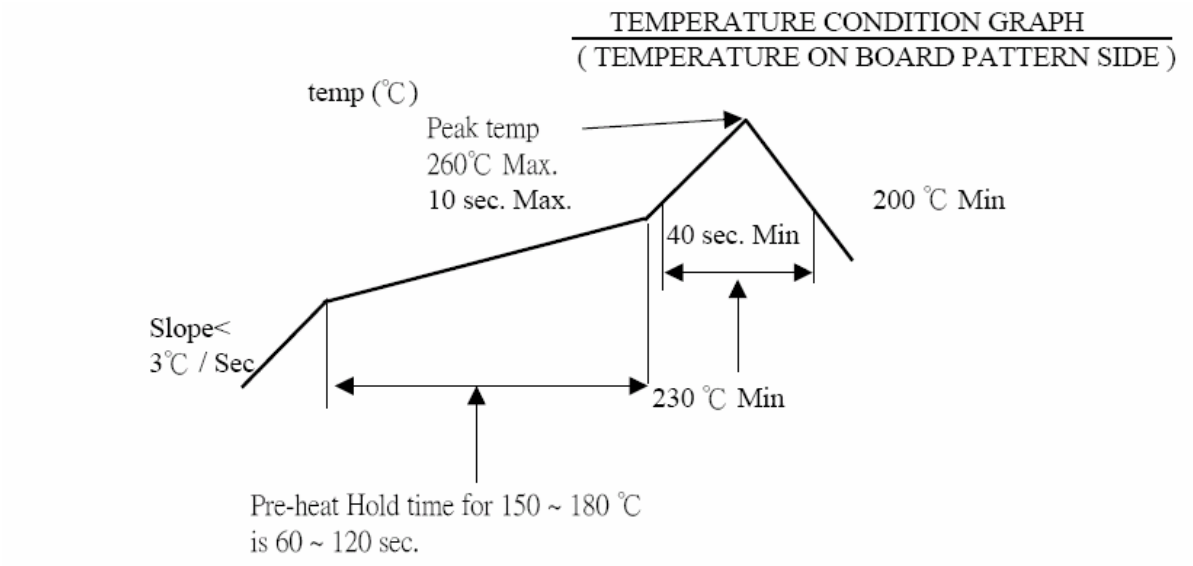
Note. Flowing Mixed Gas shell be conduct by customer request.

6 INFRARED REFLOW CONDITION

6.1. General Process



6.2. 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-signal 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

Actuator Insertion/Extration Force

NO. OF Ckt.	Insertion Force (Kgf, Max)	Extration Force (Kgf, Min)
4	2.90	0.30
5	3.00	
6	3.10	
7	3.20	
8	3.30	
9	3.40	
10	3.50	
11	3.60	0.33
12	3.70	0.36
13	3.80	0.39
14	3.90	0.42
15	4.00	0.45
16	4.10	0.48
17	4.20	0.51
18	4.30	0.54
19	4.40	0.57
20	4.50	0.60
21	4.60	0.63
22	4.70	0.66
23	4.80	0.69
24	4.90	0.72
25	5.00	0.75
26	5.10	0.78
27	5.20	0.81
28	5.30	0.84
29	5.40	0.87
30	5.50	0.90
31	5.60	0.93
32	5.70	0.96
33	5.80	0.99
34	5.90	1.02