



SPECIFICATION

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SPEC. NO.: PS-50509-XXXXX-XXX

REVISION: G

PRODUCT NAME: 0.5/1.0 mm PITCH FPC CONN.

ZIF EASY ON HIGH 1.20mm TYPE

PRODUCT NO: 50509 50510 50674 51507 51508 51509 70509 51571 51558

51559 Series

PREPARED: ZHUWEI DATE: 2015/12/04	CHECKED: BRAVE DATE: 2015/12/04	APPROVED: FRANK DATE: 2015/12/04
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1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
O	ECN-0811117	NEW SPEC	JASON	2008.11.17
A	ECN-0906034	ADD 50674 SERIES	JASON	2009.06.04
B	ECN-1006104	ADD 51507 51508 51509 SERIES	JASON	2010.06.14
C	ECN-1101144	ADD 70509 SERIES	LIZHAO	2011.01.18
D	ECN-1207382	ADD 51571 SERIES	HUANGKANG	2012.07.21
E	ECN-1211133	FOR APD1010105 & APD1010372 ADD 51558 & 51559 SERIES, REVISED SPEC	HUANTY	2012/11/12
F	ECN-1401251	ADD WORKING VOLTAGE	XUFEI	2014/01/14
G	ECN-1512053	ADD Reflow number cycle	ZHUWEI	2015/12/04



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2 SCOPE

This specification covers performance, tests and quality requirements for **0.5/1.0mm PITCH FPC CONN. ZIF EASY ON HIGH 1.20mm TYPE**.

Aces' P/N: **50509-XXXXX-XXX; 50510-XXXXX-XXX;
50674-XXXXX-XXX; 51507-XXXXX-XXX;
51508-XXXXX-XXX; 51509-XXXXX-XXX
70509-XXXXX-XXX; 51571-XXXXX-XXX
51558-XXXXX-XXX; 51559-XXXXX-XXX**

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: (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 Actuator: Thermoplastic or Thermoplastic High Temp., UL94V-0

4.2.4 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: 50 Volts AC (per pin)

4.3.3 Current: 0.5 Amperes (per pin)

4.3.4 Operating Temperature : -20°C to +80°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	40 m Ω Max.(initial)per contact 40 m Ω Max. Change allowed	Mate connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23)
Insulation Resistance	1000 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: 0.5 mA max.	500 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 METHOD 1, CONDITION1)
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 10 \pm 3mm/min. (EIA-364-09)
FPC Retention Force	Refer to FPC withdrawal force Refer to GROUP 8	Insert the actuator, pull the FPC at the speed rate of 10 \pm 3 mm/min.
Terminal / Housing Retention Force	0.15kgf MIN.	Apply axial pull out force at the speed rate of 10 \pm 3 mm/minute. On the terminal assembled in the housing.
Fitting Nail /Housing Retention Force	0.1kgf MIN.	Apply axial pull out force at the speed rate of 10 \pm 3 mm/minute. On the fitting nail assembled in the housing.



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Item	Requirement	Standard
Vibration	1 μ s 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 μ s 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 Wave Soldering Heat	See Product Qualification and Test Sequence Group 10 (Lead Free)	Solder Temp : 265 \pm 5 $^{\circ}$ C , 10 \pm 0.5 sec.
Resistance to Reflow Soldering Heat	See Product Qualification and Test Sequence Group 10 (Lead Free)	Pre Heat : 150 $^{\circ}$ C~180 $^{\circ}$ C, 60~120sec. Heat : 230 $^{\circ}$ C Min., 40sec Min. Peak Temp. : 260 $^{\circ}$ C Max, 10sec Max. Reflow number cycle : 2 times
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 $^{\circ}$C, 30 minutes +85 +3/-0 $^{\circ}$C, 30 minutes (EIA-364-32, test condition I)
Humidity	See Product Qualification and Test Sequence Group 4	Mated Connector 40$^{\circ}$C, 90~95% RH, 96 hours (EIA-364-31, Condition A, Method II)



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Temperature life	See Product Qualification and Test Sequence Group 5	Subject mated connectors to temperature life at 85°C for 96 hours (EIA-364-17 , Test condition A)
Item	Requirement	Standard
Salt Spray (Only For Gold Plating)	See Product Qualification and Test Sequence Group 6	Subject mated/unmated connectors to 5% salt-solution concentration, 35°C (I) Gold flash for 8 hours . (II) Gold plating 5u" 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°C , for 4-5 sec . (EIA-364-52)
Hand Soldering Temperature Resistance	Appearance : No damage	T ≥ 350°C , 3 sec at least

Note. Flowing Mixed Gas shall be conducted by customer request.

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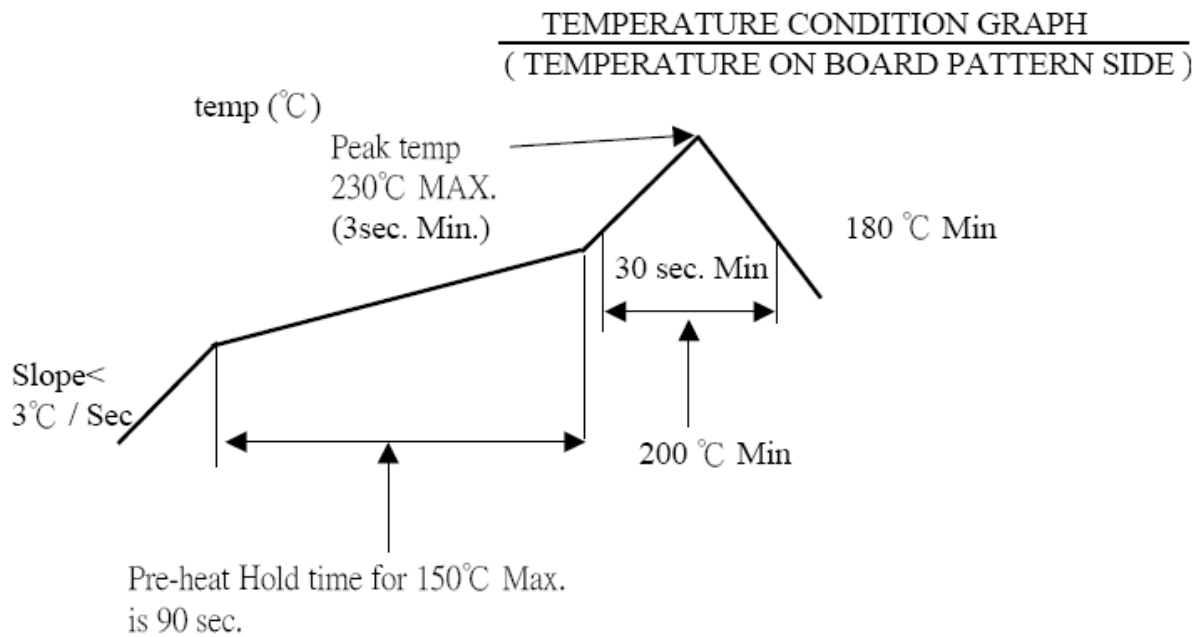
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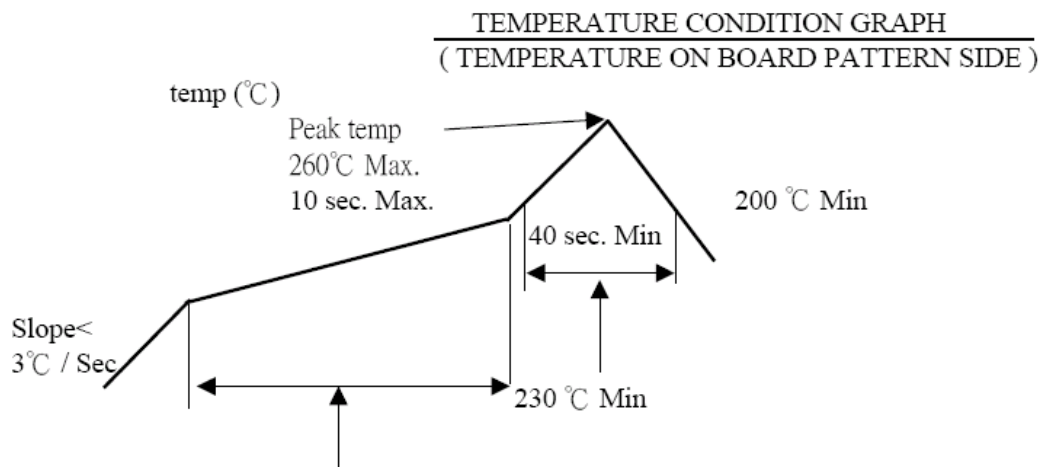
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6 INFRARED REFLOW CONDITION

6.1. General Process



6.2. Lead-free Process



Pre-heat Hold time for 150 ~ 180 °C is 60 ~ 120 sec.



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



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8 FPC WITHDRAWAL FORCE

NO. OF Ckt.	Withdrawal Force (Min)	NO. OF Ckt.	Withdrawal Force (Min)
4	0.15Kgf	29	0.6Kgf
5		30	
6		0.8Kgf	31
7	32		
8	33		
9	34		
10	0.2Kgf	35	1Kgf
11		36	
12		37	
13		38	
14		39	
15		40	
16	0.3Kgf	41	
17		42	
18		43	
19		44	
20		45	
21		46	
22		47	
23		48	
24	49		
25	50		
26		51	
27		52	
28		53	