

**SPEC. NO.:** PS-50558-XXXXX-XXX

**REVISION:** B

**PRODUCT NAME:** 0.5mm ZIF FPC CONN. SMT S/T TYPE.

**PRODUCT NO:** 50558 , 50559 , 50560 , 50561series

<b>PREPARED:</b>   <b>DATE:</b> <b>2016/11/17</b>	<b>CHECKED:</b>   <b>DATE:</b> <b>2016/11/17</b>	<b>APPROVED:</b>   <b>DATE:</b> <b>2016/11/17</b>
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Aces P/N: **50558 series**

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## 1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
O	ECN-0812016	新制 SPEC	JASON	2008/12/05
A	ECN-1401261	ADD WORKING VOLTAGE	XUFEI	2014/01/15
B	ECN-1611239	FOR APD1050105 UPDATE FPC RETENTION FORCE	XUBIN	2016/11/17

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## 2 SCOPE

This specification covers performance, tests and quality requirements for **0.5mm ZIF FPC CONN. SMT S/T TYPE**.

Aces' P/N: **50558series** , **50559series** , **50560series** , **50561series**

## 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: **Plating pls. See the product drawing.**  
(b) Under plate: **Plating pls. See the product drawing.**  
(c) Solder area: **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 (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 +85°C**

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## 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.
<b>ELECTRICAL</b>		
Item	Requirement	Standard
Low-signal Level Contact Resistance	<b>50 m <math>\Omega</math></b> Max. (initial)per contact <b>20 m <math>\Omega</math></b> Max. Change allowed	Mate connectors, measure by dry circuit, <b>20mV</b> Max., <b>100mA</b> Max. (EIA-364-23)
Insulation Resistance	<b>500 M <math>\Omega</math></b> Min.	Unmated connectors, apply <b>500 V</b> DC between adjacent terminals. (EIA-364-21)
Dielectric Withstanding Voltage	<b>250 VAC</b> Min. at sea level for <b>1</b> minute. No discharge, flashover or breakdown. Current leakage: <b>1 mA</b> max.	Test between adjacent contacts of unmated connectors. (EIA-364-20)
Temperature rise	<b>30°C</b> Max. Change allowed	Mate connector: measure the temperature rise at rated current after: <b>0.5 A</b> /Power contact. The temperature rise above ambient shall not exceed <b>30°C</b> The ambient condition is still air at <b>25°C</b> (EIA-364-70 METHOD 2)

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**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 <b>25.4 ± 3mm/min.</b> (EIA-364-09)
FPC Retention Force	Refer to 8. FPC retention force	Insert the actuator, pull the FPC at the speed rate of <b>25.4 ± 3 mm/min.</b>
Actuator Insertion / Separation Force	Refer to 9. Actuator insertion/separation force	A connector shall be soldered on a board and inserted and separation at speed of <b>25± 3 mm/min</b> for <b>30</b> cycles.
Terminal / Housing Retention Force	<b>0.15kgf</b> MIN.	Apply axial pull out force at the speed rate of <b>25.4 ± 3 mm/minute.</b> On the terminal assembled in the housing.
Fitting Nail /Housing Retention Force	<b>0.10kgf</b> MIN.	Apply axial pull out force at the speed rate of <b>25.4 ± 3 mm/minute.</b> On the fitting nail assembled in the housing.
Vibration	<b>1 μs</b> 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 <b>10 and 55 Hz.</b> The entire frequency range, from <b>10 to 55 Hz</b> and return to <b>10 Hz,</b> 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)	<b>1 μs</b> Max.	Subject mated connectors to <b>50 G's</b> (peak value) <b>half-sine</b> shock pulses of <b>11</b> 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
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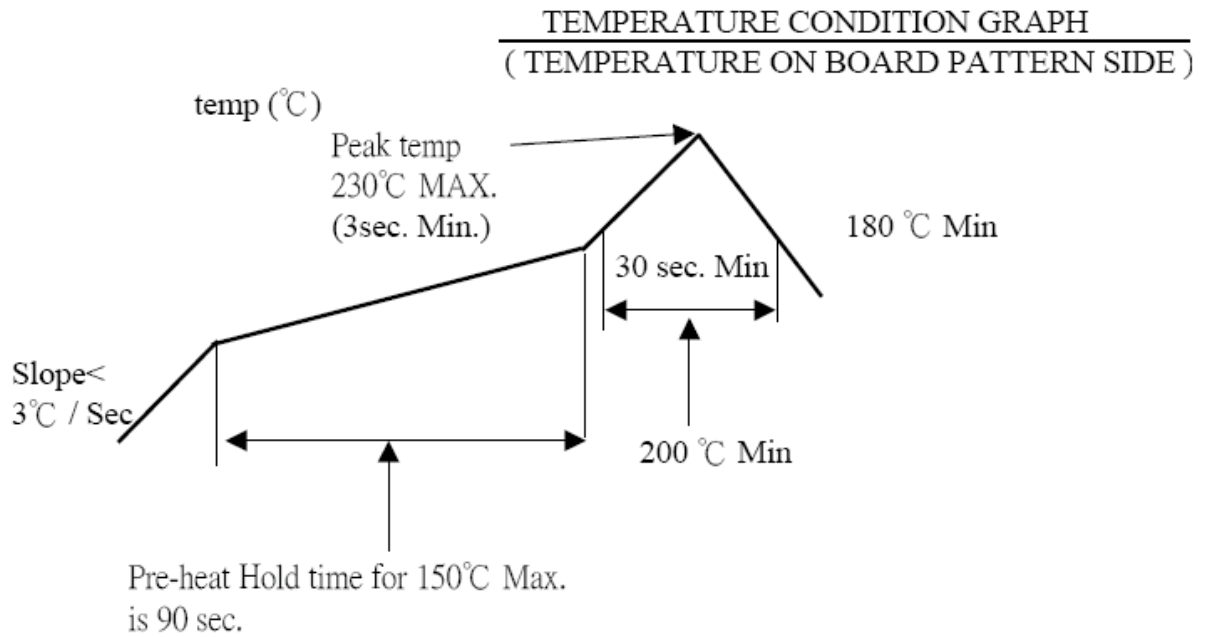
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Resistance to <b>Reflow</b> Soldering Heat	See Product Qualification and Test Sequence Group 10	Pre Heat : 150°C Max, 90sec Min. Heat : 200°C Min., 30sec Min. Peak Temp. : 230°C Max, 10sec
Resistance to <b>Reflow</b> Soldering Heat	See Product Qualification and Test Sequence Group 10 ( <b>Lead Free</b> )	Pre Heat : 150°C~180°C, 60~90sec. Heat : 230°C Min., 40sec Min. Peak Temp. : 260°C Max, 10sec Max.
Thermal Shock	See Product Qualification and Test Sequence Group 4	Mate module and subject to follow condition for 5 cycles. 1 cycles: -20 +0/-3 °C, 30 minutes +85 +3/-0 °C, 30 minutes (EIA-364-32, test condition A)
Humidity	See Product Qualification and Test Sequence Group 4	Mated Connector 40°C, 90~95% RH, Reffer to Method II. (EIA-364-31, Test condition A)
Temperature life	See Product Qualification and Test Sequence Group 5	Subject mated connectors to temperature life at <b>85°C</b> for <b>96 hours</b> . Measure Signal. (EIA-364-17, Test condition A)
Salt Spray	See Product Qualification and Test Sequence Group 6	Subject mated/unmated connectors to 5% salt-solution concentration, 35°C for <b>8 hours</b> . (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 <b>245 ±5°C</b> , for <b>4-5 sec</b> . (EIA-364-52)

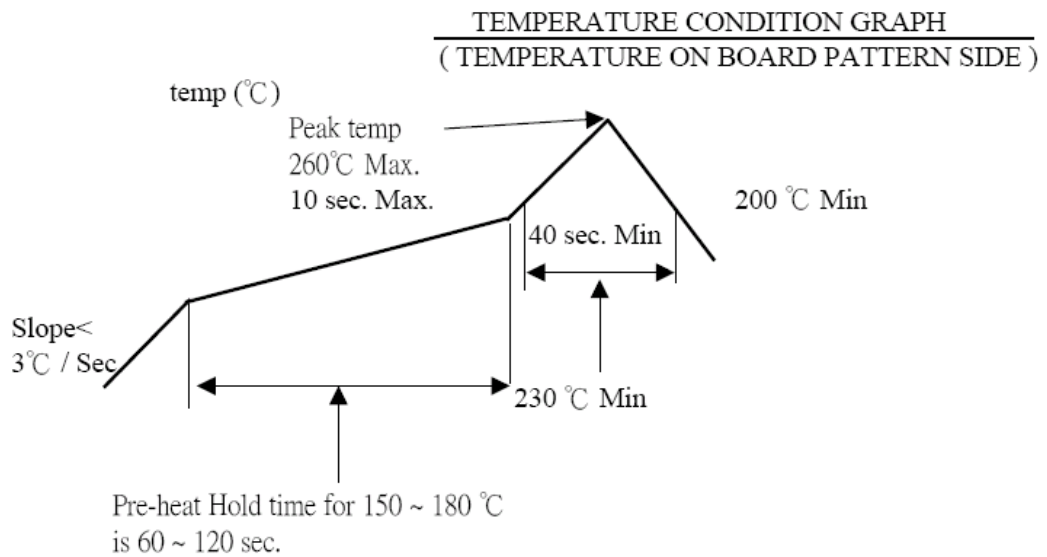
**Note.** Flowing Mixed Gas shall be conduct by customer request.

## 6 INFRARED REFLOW CONDITION

### 6.1. General Process



### 6.2. Lead-free Process





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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	11	
	Test Sequence											
Examination of Product				1、7	1、6	1、4					1	
Low-signal Level Contact Resistance		1、5	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											
Mating / Unmating Forces		2、4										
Durability		3										
Vibration(Random) / Vibration			2									
Shock (Mechanical)			3									
Thermal Shock				5								
Humidity				6								
Temperature life					5							
Salt Spray						3						
Solder ability							1					
FPC Retention Force								1				
Actuator Insertion / Separation Force												1
Terminal / Housing Retention Force										1		
Fitting Nail /Housing Retention Force										2		
Resistance to Soldering Heat											2	
Sample Size	2	4	4	4	4	4	2	4	4	4	4	4

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**8 FPC RETENTION FORCE**

NO. OF Ckt.	Withdrawal Force (Min)	NO. OF Ckt.	Withdrawal Force (Min)	
4	<b>0.20Kgf</b>	1.30Kgf	1.00Kgf	
5		36		
6	<b>0.30Kgf</b>	37		
7		38		
8		39		
9		40		
10		41		
11		42		
12		43		
13		44		
14		45		1.40Kgf
15		46		
16		47		
17		48		
18	49			
19	50			
20	<b>0.50Kgf</b>	51		
21		52		
22		53		
23		54		
24		55	1.60Kgf	
25		<b>0.75Kgf</b>		56
26	57			
27	58			
28	59			
29	60			
30	61			
31	62			
32	63			
33	64			
34	65			

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NO. OF Ckt.	Insertion Force (Max)	Separation Force (Min)	NO. OF Ckt.	Insertion Force (Max)	Separation Force (Min)		
4	2.20Kgf	0.25Kgf	35	5.50Kgf	0.90Kgf		
5			36				
6			37				
7			38				
8			39				
9			40				
10			41				
11			42				
12			43				
13			44				
14			45			6.00Kgf	1.30Kgf
15			46				
16			47				
17			48				
18	49						
19	50						
20	51						
21	52						
22	53	8.00Kgf	1.50Kgf				
23	54						
24	55						
25	56						
26	57						
27	58						
28	59						
29	60						
30	61						
31	62						
32	63						
33	64						
34	65						