

**SPEC. NO.:** PS-50507-XXXXX-XXX

**REVISION:** K

**PRODUCT NAME:** 0.5mm/1.0mm PITCH EASY ON FPC CONN.

**PRODUCT NO:** 50505 Series, 50506 Series, 50507 Series, 50675 Series,  
51537 Series, 51579 Series, 51624 Series, 51578 Series,  
51674 Series, 51689 Series,

<b>PREPARED:</b>    <b>DATE:</b> <b>2017/10/18</b>	<b>CHECKED:</b>    <b>DATE:</b> <b>2017/10/18</b>	<b>APPROVED:</b>    <b>DATE:</b> <b>2017/10/18</b>
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Aces P/N: **50507/50505/50506/50675/51537/51579**  
**51624/51578/51674/51689 series**

TITLE: **0.5mm/1.0mm PITCH EASY ON FPC CONN.**

RELEASE DATE: **2017/10/18**

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ECN No: **ECN-1710212**

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Aces P/N: **50507/50505/50506/50675/51537/51579**  
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## 1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
O	ECN-0811117	NEW SPEC	JASON	2008.11.17
A	ECN-0906141	MODIFY FPC RETENTION FORCE	JASON	2009.06.23
B	ECN-0909088	FOR ADW0909029 ADD HAND SOLDERING	JASON	2009/09/10
C	ECN-1101154	ADD PART NO	K.J.SHAO	2011.01.19
D	ECN-1106037	MODIFY OPERATING TEMPERATURE &ADD 51537 SERIES	SHM	2011.06.02
E	ECN-1212013	FOR APD1010509 ADD51579 SERIES	GAVIN	2012.12.03
F	ECN-1311210	ADD 51624 SERIES	CANDY	2013.11.23
G	ECN-1312389	ADD 51578 SERIES/ADD Working Voltage	XUBIN	2014.01.06
H	ECN-1506351	ADD 51674 SERIES	ZHUWEI	2015.06.16
J	ECN-1601072	ADD 51689 SERIES	ZHUWEI	2016.01.07
K	ECN-1710212	REVISE ERROR	ZHUWEI	2017.10.18

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## 2 SCOPE

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

## 3 APPLICABLE DOCUMENTS

EIA-364: ELECTRONICS INDUSTRIES ASSOCIATION

## 4 REQUIREMENTS

### 4.1 Design and Construction

- 4.1.1 Product shall be of design, construction and physical dimensions specified on applicable product drawing.
- 4.1.2 All materials conform to R.o.H.S. and the standard depends on TQ-WI-140101.

### 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: **0.5mm pitch :0.5 Amperes (per pin)**  
**1.0mm pitch: 1.0 Amperes (per pin)**
- 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.
<b>ELECTRICAL</b>		
Item	Requirement	Standard
Low Level Contact Resistance	<b>40 m Ω</b> Max.(initial)per contact <b>20 m Ω</b> Max. Change allowed	Mate connectors, measure by dry circuit, <b>20mV</b> Max., <b>100mA</b> Max. (EIA-364-23)
Insulation Resistance	<b>1000 M Ω</b> Min.	Unmated connectors, apply <b>500 V</b> DC between adjacent terminals. (EIA-364-21)
Dielectric Withstanding Voltage	No discharge, flashover or breakdown. Current leakage: <b>1 mA</b> max.	<b>500 VAC</b> Min. at sea level for <b>1</b> minute. 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 until temperature stable. The ambient condition is still air at 25°C (EIA-364-70, METHOD1,CONDITION1)

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<b>MECHANICAL</b>		
<b>Item</b>	<b>Requirement</b>	<b>Standard</b>
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 <b>25.4 ± 3mm/min.</b> (EIA-364-09)
FPC Retention Force	Refer to page.10 FPC retention force	A connector shall be soldered on a board and insert the actuator, pull the FPC at the speed rate of <b>25.4 ± 3 mm/min.</b>
Terminal /Housing Retention Force	150gf Min.	Operation Speed : <b>25.4 ± 3 mm/minute.</b> Measure the contact retention force with tester.
Fitting Nail /Housing Retention Force	0.1kgf MIN.	Operation Speed : <b>25.4 ± 3 mm/minute.</b> 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 <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)	1 μs 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)

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### ENVIRONMENTAL

Item	Requirement	Standard
Resistance to <b>Reflow</b> Soldering Heat	See Product Qualification and Test Sequence Group <b>10 (Lead Free)</b>	Pre Heat : 150°C~180°C, 60~120sec. Heat : 230°C Min., 40sec Min. Peak Temp. : 260°C Max, 10sec Max. 2 times
Thermal Shock	See Product Qualification and Test Sequence Group <b>4</b>	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 I)
Humidity	See Product Qualification and Test Sequence Group <b>4</b>	Mated Connector 40°C, 90~95% RH, 96 hours. (EIA-364-31,Condition A, Method II)
Temperature Life	See Product Qualification and Test Sequence Group <b>5</b>	Subject mated connectors to temperature life at <b>85°C</b> for <b>96 hours</b> . (EIA-364-17, Test condition A)
Salt Spray (Only For Gold Plating)	See Product Qualification and Test Sequence Group <b>6</b>	Subject mated/unmated connectors to 5% salt-solution concentration, 35°C <b>(I) Gold flash for 8 hours</b> <b>(II) Gold plating 5 u" for 96 hours.</b> (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 <b>245 ±5°C</b> , for <b>4-5 sec.</b> (EIA-364-52)
Hand Soldering Temperature Resistance	Appearance: No damage	T ≥ 350°C, 3sec at least.

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

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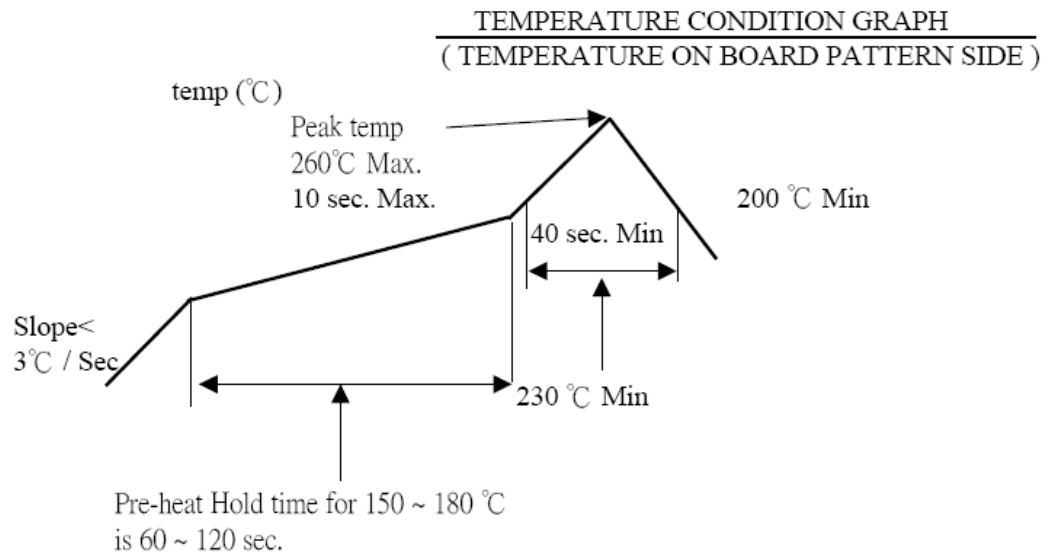
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## 6 INFRARED REFLOW CONDITION

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
	Test Sequence									
Examination of Product				1、7	1、6	1、4			1	1
Low 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									
Durability		3								
Vibration			2							
Shock (Mechanical)			3							
Thermal Shock				5						
Humidity				6						
Temperature Life					5					
Salt Spray(Only For Gold Plating)						3				
Solder ability							1			
FPC Retention Force		2、4								
Terminal / Housing Retention Force								1		
Fitting Nail /Housing Retention Force								2		
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 RETENTION FORCE**

UNIT: Kgf

NO. OF Ckt.	FPC Retention Force (Min)		NO. OF Ckt.	FPC Retention Force (Min)	
	1st	20th		1st	20th
CKT			CKT		
4	0.3kgf	0.2kgf	31	1.5kgf	1.35kgf
5			32		
6			33		
7			34		
8			35		
9			36		
10	0.75kgf	0.60kgf	37		
11			38		
12			39		
13			40		
14			41		
15			42		
16			43		
17			44		
18			45		
19			46		
20			47		
21	48				
22	49				
23	50				
24	51				
25	1.0kgf	0.85kgf	52		
26			53		
27			54		
28			55		
29			56		
30			57		