



## SPECIFICATION

宏致電子股份有限公司

桃園縣中壢市東園路13號

No.13, Dongyuan Rd., Jhongli City,

Taoyuan County 320, Taiwan (R.O.C.)

TEL: +886-3-463-2808

FAX: +886-3-463-1800

SPEC. NO.: PS-51556-XXXXX-XXX

REVISION: A

PRODUCT NAME: 0.5 mm PITCH EASY ON FPC CONN

PRODUCT NO: 51556-XXXXX-XXX

PREPARED:

**YANGYANG**

DATE:

**2014/1/10**

CHECKED:

**JERRY**

DATE:

**2014/1/10**

APPROVED:

**JASON**

DATE:

**2014/1/10**



Aces P/N: **51556 series**

TITLE: **0.5 mm PITCH EASY ON FPC CONN**

RELEASE DATE: **2014/1/10**

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ECN No: **ECN-1401138**

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## 1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
1	ECN-1202048	FOR APD1010036 ADD 51556 SPEC	HUANTY	2012/2/4
O	ECN-1205056	RELEASE	HUANTY	2012/5/7
A	ECN-1401138	ADD Working voltage	YANGYANG	2014/01/10

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## 2 SCOPE

This specification covers performance, tests and quality requirements for **0.5 mm 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 AC (per pin)
- 4.3.2 Voltage: 50 Volts AC (per pin)
- 4.3.3 Current: DC 0.5 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.
ELECTRICAL		
Item	Requirement	Standard
Low Level Contact Resistance	<b>100 m <math>\Omega</math></b> Max. per contact	Mate connectors, measure by dry circuit, <b>20mV</b> Max., <b>1mA</b> Max. (EIA-364-23)
Insulation Resistance	<b>500 M <math>\Omega</math></b> Min.	Unmated connectors, apply <b>100 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>150 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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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 $25.4 \pm 3$ mm/min. (EIA-364-09)
FPC Retention Force	04~30PIN 30gf/PIN 31~50PIN 20gf/PIN	A connector shall be soldered on a board and insert the actuator, pull the FPC at the speed rate of $25.4 \pm 3$ mm/min.
Terminal /Housing Retention Force	0.10kgf MIN.	Operation Speed : $25.4 \pm 3$ mm/minute. Measure the contact retention force with tester.
Fitting Nail /Housing Retention Force	0.10kgf MIN.	Operation Speed : $25.4 \pm 3$ mm/minute. Measure the contact retention force with tester.
Vibration	1 $\mu$ 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 $\mu$ 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)

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## ENVIRONMENTAL

Item	Requirement	Standard
Resistance to <b>Wave</b> Soldering Heat	See Product Qualification and Test Sequence Group <b>10 (Lead Free)</b>	Solder Temp. : 265±5℃, 10±0.5sec.
Resistance to <b>Reflow</b> Soldering Heat	See Product Qualification and Test Sequence Group <b>10 (Lead Free)</b>	Pre Heat : 150℃~180℃, 60~120sec. Heat : 230℃ Min., 40sec Min. Peak Temp. : 260℃ Max, 10sec Max.
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 ℃, 30 minutes +85 +3/-0 ℃, 30 minutes (EIA-364-32, test condition I)
Humidity	See Product Qualification and Test Sequence Group <b>4</b>	Mated Connector 40℃, 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℃</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℃ <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℃</b> , for <b>4-5</b> sec. (EIA-364-52)
Hand Soldering Temperature Resistance	Appearance: No damage	T ≥ 350℃, 3sec at least.

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

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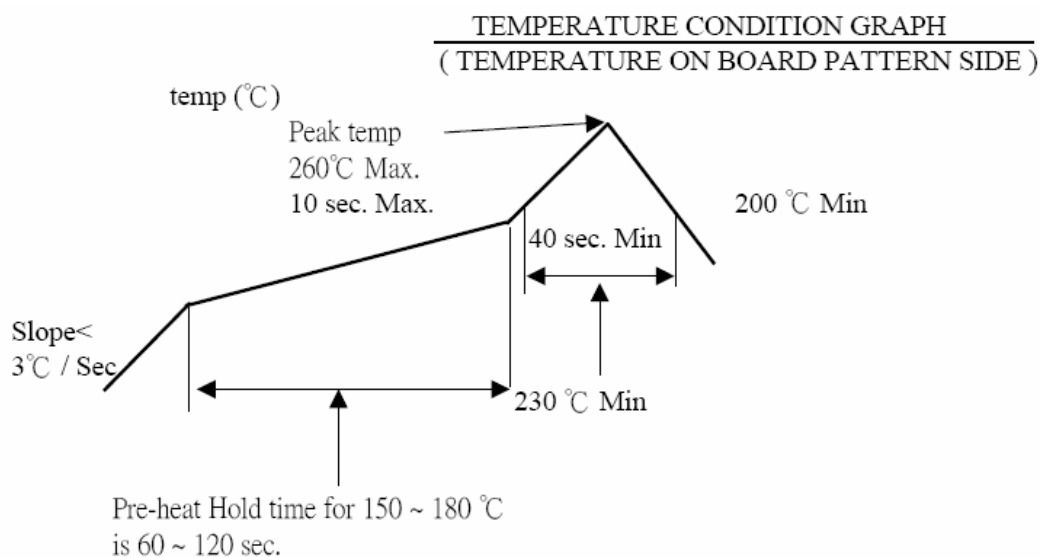
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## 6 INFRARED REFLOW CONDITION





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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

## 8 FPC CONNECTOR USAGE

This connector is small and thin and requires delicate and careful handling.

Be very careful not to apply any force to the FPC after inserting it. Otherwise, the connector may become unlocked or the FPC may break. Fix the FPC, in particular, when loads are applied to it continuously. Design the FPC layout with care not to bend it sharply near the insertion opening.

