SPECIFICATION

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SPEC. NO.: PS-51517-XXXXX-XXX **REVISION:** A

PRODUCT NAME: 0.5mm PITCH EASY ON FPC CONN.

PRODUCT NO: 51517 SERIES

PREPARED:	CHECKED:	APPROVED:
YANGYANG	**JERRY**	**JASON**
DATE: **2014/01/10**	DATE: **2014/01/10**	DATE: **2014/01/10**

1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
1	ECN-1010023	FOR APD990301	BRAVE	2010.10.14
O	ECN-1101189	FOR APD990301 RELEASE	BRAVE	2011.01.25
A	ECN-1401127	ADD Working voltage	YANGYANG	2014/01/10

2 SCOPE

This specification covers performance, tests and quality requirements for 0.5 mm pitch Easy On FPC SMT Type connector.

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

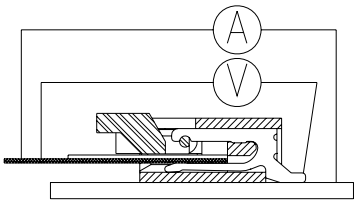
4.2.1 Contact: High performance copper alloy (Phosphor Bronze)
Finish: (a) Gold flash overall
(b) Under plate: Nickel-plated overall
4.2.2 Housing: Thermoplastic, High temp. UL94V-0
4.2.3 Actuator: Thermoplastic, High temp. UL94V-0
4.2.4 Fitting Nail: Copper Alloy, Finish: TIN-Plated overall

4.3 Ratings

4.3.1 Working voltage less than 36 volts AC（per pin）
4.3.2 Voltage: 50 V AC(Per Pin)
4.3.3 Current: DC 0.5 Amperes (Per Pin)
4.3.4 Operating Temperature : -40℃ to +85℃

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		
Low Level Contact Resistance	50m Ω Max.(initial) per contact △R 50 m Ω Max.	Mate connectors, measure by dry circuit, 20mV Max., 100mA Max.  (EIA-364-23)
Insulation Resistance	Initial: 500 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: 2 mA max.	300 VAC Min. at sea level for 1 minute. 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 until temperature stable. The ambient condition is still air at 25℃ (EIA-364-70,METHOD1,CONDITION1)
MECHANICAL		
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 ± 3mm/min. (EIA-364-09)
Terminal / Housing Retention Force	0.2kgf MIN.	Operation Speed： 25.4 ± 3 mm/minute. Measure the contact retention force with Tensile strength tester..
Fitting nail / Housing Retention Force	0.3kgf MIN.	Operation Speed： 25.4 ± 3 mm/minute. Measure the contact retention force with Tensile strength tester.

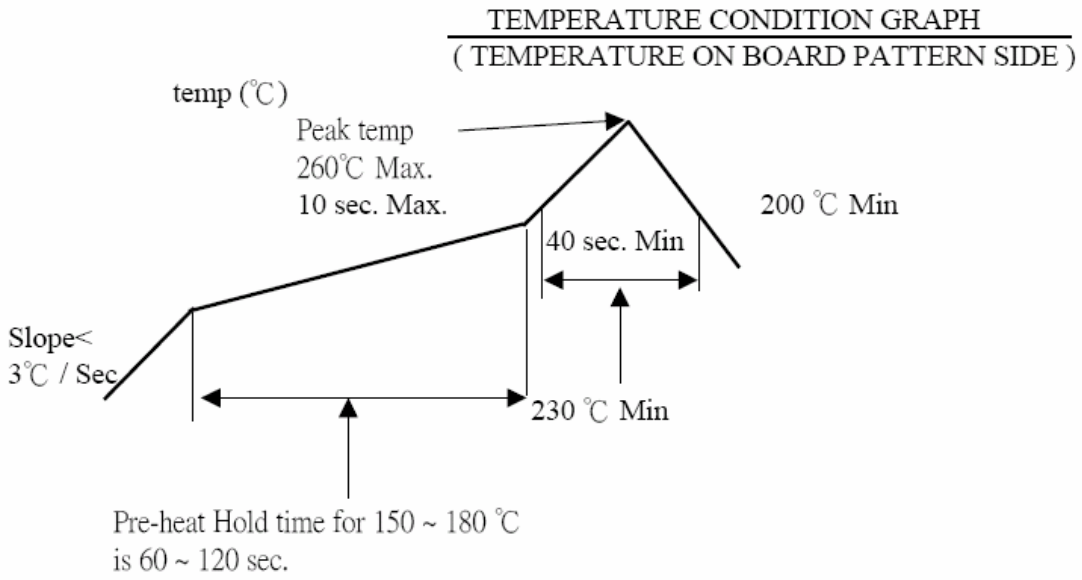
FPC Retention Force	0.5kgf MIN.	A connector shall be soldered on a board and insert the actuator, pull the FPC at the speed rate of 25.4 ± 3 mm/min.
Vibration	1 μs Max.	The electrical load condition shall be 100 mA maximum for all contacts. Subject to a simple harmonic motion having amplitude of 0.76mm (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 DC 100mA maximum for all contacts. (EIA-364-27, test condition A)

ENVIRONMENTAL		
Item	**Requirement**	**Standard**
Hand Soldering Temperature Resistance	Appearance: No damage	T≧350℃, 3sec at least.
Resistance to **Reflow** Soldering Heat	See Product Qualification and Test Sequence Group 10 **(Lead Free)**	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 4	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 4	Mated Connector 40℃, 90~95% RH, 96 hours. (EIA-364-31,Condition A, Method II)
Temperature life	See Product Qualification and Test Sequence Group 5	Subject mated connectors to temperature life at 85℃ for 96 hours. (EIA-364-17, Test condition A)
Salt Spray (Only For Gold Plating)	See Product Qualification and Test Sequence Group 6	Subject mated/unmated connectors to 5% salt-solution concentration, 35℃ (I) Gold flash for 8 hours (II) Gold plating 5 u" 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℃, for 4-5 sec. (EIA-364-52)

Note 1. Flowing Mixed Gas shell be conduct by customer request.

6 INFRARED REFLOW CONDITION

6.1. Lead-free Process



7 PRODUCT QUALIFICATION AND TEST SEQUENCE

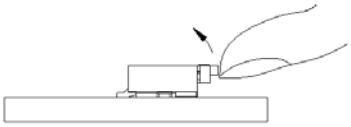
Test or Examination	Test Group										
	1	2	3	4	5	6	7	8	9	10	11
	Test Sequence										
Examination of Product				1、7	1、6	1、4			1	1	
Low Level Contact Resistance		1、5	1、4	2、10	2、9	2、5			3		
Insulation Resistance				3、9	3、8						
Dielectric Withstanding Voltage				4、8	4、7						
Temperature rise	1										
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 INSTRUCTION UPON USAGE

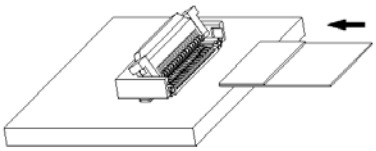
Operation

FPC/FFC Termination procedure.
Connector installed on the board.

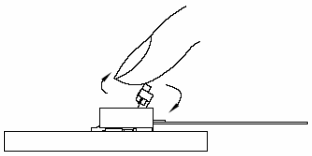
1) Lift up the actuator. Use thumb or index finger.



2) Do with the actuator opened completely, and insert it in the interior of the insertion entrance surely when you insert FPC/FFC. There are some insertion resistance because this connector has the FPC/FFC temporary retention mechanism.

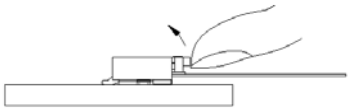


3) Rotate down the actuator until firmly closed.
It is critical that the inserted FPC/FFC is not moved and remains fully inserted. Should the FPC/FFC be moved, open the actuator and repeat the process, starting with Step 1 above.



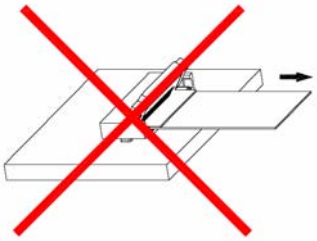
FPC/FFC Removal

1) Lift up the actuator.
2) Carefully remove the FPC/FFC.

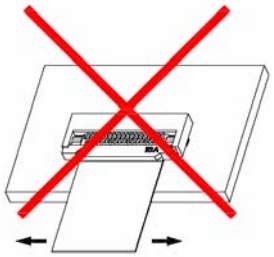


Precautions

1) Do when yon pull out mating FPC/FFC with the Actuator opened completely. Confirm whether to Have adhered to the terminal contact part before FPC/FFC is mated with the connector housing when the opening of the actuator is the un-complete and FPC/FFC is pulled out.



2) Do not add the load mating FPC/FFC with connector housing.



3) Due to the structure of the connectors, they do not have string resistance to upward pulling; therefore, support the FPC/FFC when a pulling force is applied to it.