SPECIFICATION

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SPEC. NO.: PS-51456-XXXXX-XXX **REVISION:** D

PRODUCT NAME: 1.0 mm PITCH WIRE TO BOARD CONNECTOR

PRODUCT NO: 51456/51466/52228/51469/52300 SERIES

PREPARED:	CHECKED:	APPROVED:
SUN.YA JIE	**XU,ZHI YONG**	**XU,ZHI YONG**
DATE: **2023.10.18**	DATE: **2023.10.18**	DATE: **2023.10.18**

1 REVISION HISTORY

Rev.	ECN #	Revision Description	Prepared	Date
A	ECN-1911106	PROPOSAL	XU,BIN	2019.07.23
B	ECN-000357	ADD 52228 SERIES	GUO,FEI	2020.09.21
C	ECN-010031	ADD 51469 SERIES	WAB,BO	2023.01.02
D	ECN-013111	ADD 52300 SERIES & Terminal/Housing Forces	SUN,YA JIE	2023.01.02

2 SCOPE

This specification covers performance, tests and quality requirements for1.0mm Wire to Board connector. Aces's P/N: 51456/ 51466/51469series.

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
4.2.2 Finish: Refer to the drawing
4.2.3 Housing: Thermoplastic or Thermoplastic High Temp., UL94V-0

4.3 Ratings

4.3.1 Voltage: 50 V AC ,DC
4.3.2 Current Rating: AWG#28：1.0A (Per Pin)
AWG#30：1.0A (Per Pin)
AWG#32：0.8A (Per Pin)

4.3.3 Operating Temperature : -40℃ to +105℃

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	Initial:20 m Ω Max. per contact After tests: 40 m Ω Max. per contact	Mate connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23)
Insulation Resistance	100 M Ω Min.	Mated connectors, apply 500 V DC between adjacent terminals. (EIA-364-21)
Dielectric Withstanding Voltage	No discharge, flashover or breakdown. Current leakage: 1 mA max	Mated connectors, apply 250 VAC at sea level for 1 minute. between adjacent terminals.(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 METHOD 1,CONDITION 1)
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 25.4 ± 3mm/min. (EIA-364-09)
Mating / Un-mating Forces	See Product Qualification and Test Sequence Group 2	Operation Speed： 25.4 ± 3 mm/minute.. Measure the force required to mate/Un-mate connector. (EIA-364-13)
Terminal/Housing Retention Force (Board Side)	0.3Kgf Min.	Operation Speed： 25.4 ± 3 mm/minute. Measure the contact retention force with Tensile strength tester

Fitting Nail/Housing Retention Force (Board Side)	0.3Kgf Min.	Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute. On the Fitting Nail assembled in the housing
Terminal/Housing Retention Force (Cable Side)	0.3Kgf Min.	Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute. On the Terminal assembled in the housing
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 100mA maximum for all contacts. (EIA-364-27, test condition A)
ENVIRONMENTAL		
Item	**Requirement**	**Standard**
Resistance to Reflow Soldering Heat	See Product Qualification and Test Sequence Group 4	Pre Heat：150℃~180℃, 60~90sec. 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 ±3 ℃, 30 minutes +105 ±2 ℃, 30 minutes Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. (EIA-364-32, test condition I)

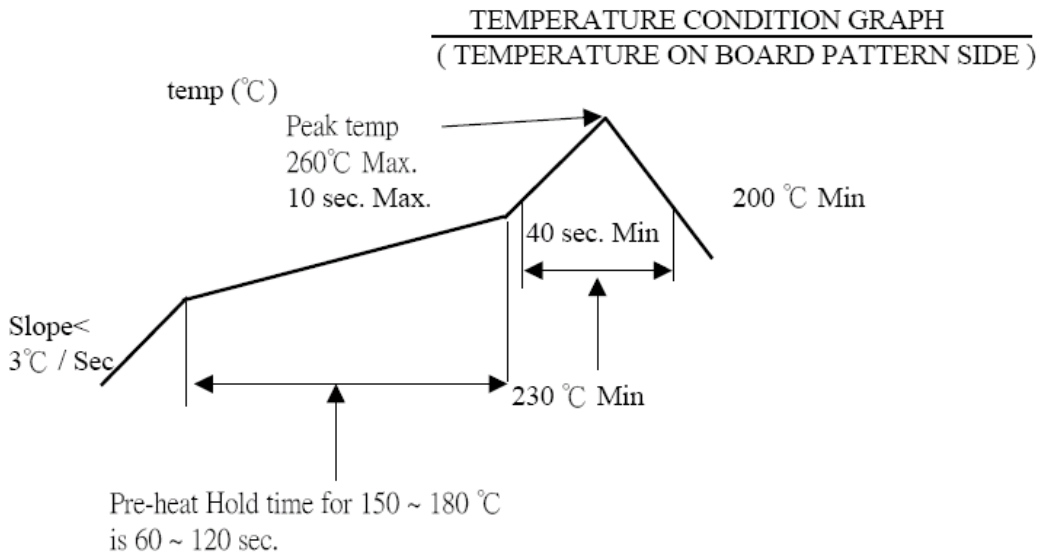
Humidity	See Product Qualification and Test Sequence Group 4	Mated Connector 60±2℃, 90~95% RH, 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. (EIA-364-31,Condition A, Method II)
Temperature life	See Product Qualification and Test Sequence Group 5	Mated connectors to temperature life at 105±2℃ for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. (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±2℃, Under the condition that the electroplating layer on the metal surface is not destroyed. (I) Gold flash for 8 hours (II) Gold plating 3 u" for 48 hours. (III) Gold plating 5 u" for 96 hours. (IV)Matte Tin for 48 hours
Solder ability (Board Side)	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℃, for3 ±0.5sec. (EIA-364-52)
Hand Soldering Temperature Resistance (Board Side)	Appearance: No damage	T:370~400℃, 3sec at least.
Ammonia Gas	See Product Qualification and Test Sequence Group 11	Mated connector Ammonia solution: 28% in weight Solution volume:25ml per liter of volume Temperature :20±2°C Humidity condition :90 to 95% Testing time: 40 minutes

H2S Gas	See Product Qualification and Test Sequence Group 12	The specimen shall be subjected to hydrogen sulfide gas of the following conditions. Concentration:50±5 ppm Temp.:40±2°C Period: 24 hours
Cold Resistance	See Product Qualification and Test Sequence Group 13	Mate connectors and expose to -40±3℃ for 96 hours. Upon completion of the exposure period, the test specimens shall be conditioned at ambient room conditions for 1 to 2 hours, after which the specified measurements shall be performed. (EIA-364-17, Test condition A)

Note. 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	12	13
	Test Sequence												
Examination of Product		1、6	1、5	1、7	1、6		1、3	1、3		1	1、4	1、4	1、4
Low Level Contact Resistance		2、7	2、6	2、10	2、9	1、3		4			2、5	2、5	2、5
Insulation Resistance				3、9	3、8								
Dielectric With Standing Voltage				4、8	4、7								
Temperature rise	1												
Mating / Un-mating Forces		3、5											
Durability		4											
Terminal/Housing Retention Force(Board Side)									1				
Fitting Nail/Housing Retention Force(Board Side)									2				
Vibration			3										
Shock (Mechanical)			4										
Thermal Shock				5									
Humidity				6									
Temperature life					5								
Salt Spray						2							
Solder ability(Board Side)							2						
Resistance to reflow Soldering Heat(Board Side)								2					
Hand Soldering Temperature Resistance(Board Side)										2			
Stress corrosion/moist ammonia (NH3) Test											3		
H2S Gas												3	
Cold Resistance													3
Sample Size	2	4	4	4	4	4	2	4	4	4	4	4	4

8 MATING / UNMATING FORCE

NO.	NO. OF Ckt.	Mating(kgf max)		Un-mating(kgf min)	
		1st	30th	1st	30th
51466	2	1.6	1.6	0.29	0.19
	3	1.9	1.9	0.31	0.21
	4	2.2	2.2	0.33	0.23
	5	2.5	2.5	0.35	0.25
51456	6	1.8	1.8	0.12	0.12
	7	2.1	2.1	0.14	0.14
	8	2.4	2.4	0.16	0.16
	9	2.7	2.7	0.18	0.18
	10	3.0	3.0	0.2	0.2
	11	3.3	3.3	0.22	0.22
	12	3.6	3.6	0.24	0.24
	13	3.9	3.9	0.26	0.26
	14	4.2	4.2	0.28	0.28
	15	4.5	4.5	0.3	0.3
52228	3	1.0	1.0	0.10	0.10