



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-50228-XXXXX-XXX REVISION: L

PRODUCT NAME: 1.00mm PITCH SMT WIRE TO BOARD CONNECTOR

PRODUCT NO: 50228 ,50233 ,50234, 50438 ,50439,50440,
51287,51290,87214-Wx,50211-T,87224-T,51438 Series

PREPARED: SHI,YANAN DATE: 2018/08/14	CHECKED: BRAVE DATE: 2018/08/14	APPROVED: BRAVE DATE: 2018/08/14
---	--	---



TITLE: **1.00MM PITCH SMT WIRE TO BOARD CONNECTOR**

RELEASE DATE: 2018/08/14

REVISION: L

ECN No: ECN-1808261

PAGE: **2** OF **10**

1	<i>REVISION HISTORY</i>	3
2	<i>SCOPE</i>	4
3	<i>APPLICABLE DOCUMENTS</i>	4
4	<i>REQUIREMENTS</i>	4
5	<i>PERFORMANCE</i>	5
6	<i>INFRARED REFLOW CONDITION</i>	8
7	<i>PRODUCT QUALIFICATION AND TEST SEQUENCE</i>	9
8	<i>INSERTION / EXTRACTION FORCE</i>	10

TITLE: **1.00MM PITCH SMT WIRE TO BOARD CONNECTOR**

RELEASE DATE: 2018/08/14

REVISION: L

ECN No: ECN-1808261

PAGE: **3** OF **10**

1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
O	ECN-0812248	NEW SPEC	JASON	2008/11/24
A	ECN-0909088	FOR ADW0909030 ADD HAND SOLDERING	JASON	2009/09/10
B	ECN-1101087	MODIFY TERMINAL RETENTION FORCE ADD 50438 / 50439 & 50440 SERIES.	HUANTY	2011/01/11
C	ECN-1304267	ADD 51239 SERIES.	CANDY	2013/4/26
D	ECN-1401156	ADD WORKING VOLTAGE	XUFEI	2014/01/09
E	ECN-1506113	ADD 51287 SERIES	XUBIN	2015/06/17
F	ECN-1508407	ADD 51290,50211,87214,87224SERIS Delete 50226,50229,50230,50232,51239	JUGG	2015/07/28
G	ECN-1510321	Update Group 5&6	JUGG	2015/10/22
H	ECN-1711105	Update Crimping Terminal / Housing Retention Force(Cable Side)	FUJIAN	2017/11/08
J	ECN-1805362	ADD 17pin mating/un-mating Forces	Huang,Shun Sen	2018/05/26
K	ECN-1807248	ADD 51438 SERIES	Leishan jun	2018/07/14
L	ECN-1808261	UPDATE Salt Spray	SHIYANAN	2018/08/14

TITLE: **1.00MM PITCH SMT WIRE TO BOARD CONNECTOR**

RELEASE DATE: 2018/08/14

REVISION: L

ECN No: ECN-1808261

PAGE: **4** OF **10**

2 SCOPE

This specification covers performance, tests and quality requirements for 1.00mm pitch SMT Wire to Board connector. Aces's P/N: 50228 Series ; 50233 Series ; 50234 Series ; 50438 Series ; 50439 Series ; 50440 Series ; 51287 Series ; 51290 Series ; 87214-WX Series ; 50211-T Series ; 87224-T Series

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
Finish: [Refer to the drawing.](#)
- 4.2.2 Housing: Thermoplastic or Thermoplastic High Temp., UL94V-0
- 4.2.3 Nut or Ear: Copper Alloy,

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:
 - 4.3.3.1 Applicable wires: (a) AWG # 28: 2 Amperes (per pin)
 - (b) AWG # 30: 1 Amperes (per pin)
 - (c) AWG # 32: 1 Amperes (per pin)
 - (d) AWG # 34: 0.8 Amperes (per pin)
 - (e) AWG # 36: 0.5 Amperes (per pin)

- 4.3.4 Operating Temperature : -40°C to +85°C

TITLE: **1.00MM PITCH SMT WIRE TO BOARD CONNECTOR**

RELEASE DATE: 2018/08/14

REVISION: L

ECN No: ECN-1808261

PAGE: **5** OF **10**

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	55 m Ω Max.(initial)per contact 20 m Ω Max. Change allowed	Mate connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23)
Insulation Resistance	100 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: 1 mA max.	250 VAC Min. at sea level for 1 minute. Test between adjacent contacts of unmated connectors. (EIA-364-20)
Temperature rise	30°C 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)
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 \pm 3mm/min. (EIA-364-09)
Mating / Unmating Forces	Mating Force: See item 8 Unmating Force: See item 8	Operation Speed : 25.4 \pm 3 mm/minute.. Measure the force required to mate/unmate connector. (EIA-364-13)
Terminal / Housing Retention Force	0.4 kgf MIN.	Apply axial pull out force at the speed rate of 25.4 \pm 3 mm/minute. On the terminal assembled in the housing.

TITLE: 1.00MM PITCH SMT WIRE TO BOARD CONNECTOR

RELEASE DATE: 2018/08/14

REVISION: L

ECN No: ECN-1808261

PAGE: **6** OF **10**

Item	Requirement	Standard
Fitting Nail /Housing Retention Force	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.
Crimping Terminal / Housing Retention Force (Cable Side)	0.5 Kgf Min. per pin	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 (3 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 10 (Lead Free)	Pre Heat : 150°C~180°C, 60~120sec. 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: -40 +/-3 °C, 30 minutes +85 +/-2 °C, 30 minutes (EIA-364-32, test condition A)

TITLE: **1.00MM PITCH SMT WIRE TO BOARD CONNECTOR**

RELEASE DATE: 2018/08/14

REVISION: L

ECN No: ECN-1808261

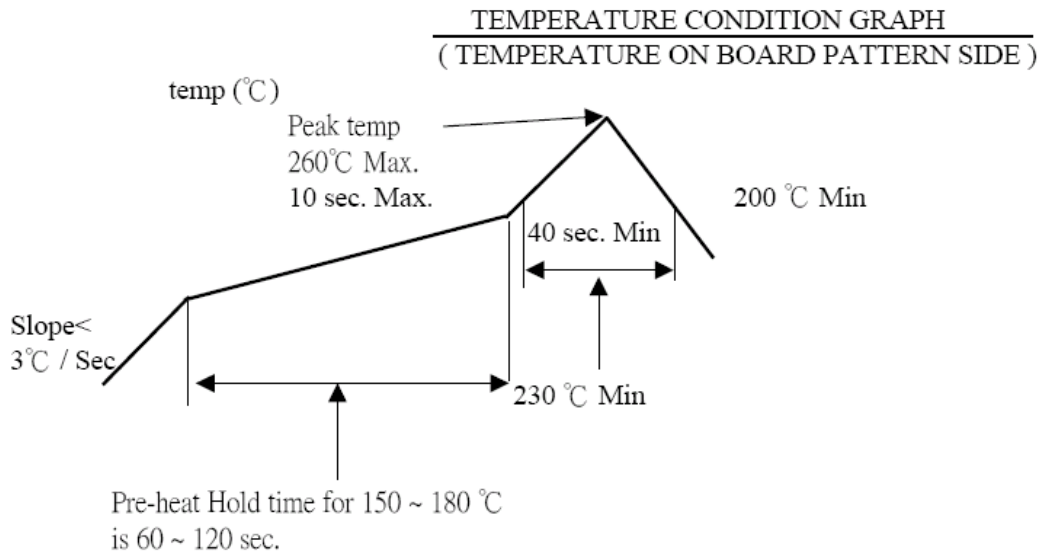
PAGE: **7** OF **10**

Humidity	See Product Qualification and Test Sequence Group 4	Mated Connector 40°C, 90~95% RH, 96 hours. (EIA-364-31, Condition A, Method II)
Item	Requirement	Standard
Temperature life-Heat	See Product Qualification and Test Sequence Group 5	Subject mated connectors to temperature life at 85 +/-2°C for 96 hours. Measure Signal. (EIA-364-17, Test condition A)
Temperature life-Cold	See Product Qualification and Test Sequence Group 6	Subject mated connectors to temperature life at -40 +/-2°C for 96 hours. Measure Signal. (EIA-364-17, Test condition A)
Salt Spray (Only For Gold Plating)	See Product Qualification and Test Sequence Group 7	Subject mated/unmated connectors to 5% salt-solution concentration, 35°C (I) Gold flash for 8 hours (II) Gold plating 3 u" for 48 hours. (II) Gold plating 5 u"(Min) for 96 hours. (EIA-364-26)
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 245 ±5°C, for 4-5 sec. (EIA-364-52)
Hand Soldering Temperature Resistance	Appearance: No damage	T ≥ 350°C, 3sec at least.

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

6 INFRARED REFLOW CONDITION

6.1. Lead-free Process (2 cycles max)



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、6	1、4			1	1
Low Level Contact Resistance		1、5	1、4	2、10	2、9	2、9	2、5			3	
Insulation Resistance				3、9	3、8	3、8					
Dielectric Withstanding Voltage				4、8	4、7	4、7					
Temperature rise	1										
Mating / Unmating Forces		2、4									
Durability		3									
Vibration			2								
Shock (Mechanical)			3								
Thermal Shock				5							
Humidity				6							
Temperature life-Heat					5						
Temperature life-Cold						5					
Salt Spray							3				
Solder ability								1			
Terminal / Housing Retention Force									1		
Fitting Nail /Housing Retention Force									2		
Resistance to Soldering Heat										2	
HandSoldering Temperature Resistance											2
Sample Size	2	4	4	4	4	4	4	4	2	4	4

8 Insertion / Extraction Force

Units: N

Number of circuits	At initial		At 30th
	I.F.(MAX.)	W.F.(MIN.)	W.F.(MIN.)
2	25	2	2
3	25	2	2
4	30	2	2
5	30	3	3
6	35	3	3
7	35	3	3
8	40	4	4
9	40	4	4
10	45	4	4
11	50	5	5
12	50	5	5
13	55	5	5
14	60	6	6
15	60	6	6
16	65	6	6
17	65	6	6
18	70	7	7
20	75	7	7
22	80	7	7
24	85	8	8
26	95	8	8