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-51700-XXXXX **REVISION:** R

PRODUCT NAME: 0.8mm PITCH MINI PCI EXPRESS CONNECTOR

PRODUCT NO: 51700 SERIES. 5071X SERIES. 51723 SERIES. 51722 SERIES
51725 SERIES, 51721 SERIES, 5070X SERIES, 51731 SERIES
51737 SERIES，51738 SERIES，51727 SERIES，51702 SERIES
51706 SERIES, 51707 SERIES，51712 SERIES，51705 SERIES

PREPARED:	CHECKED:	APPROVED:
LIUFUJIAN	DAVID	FRANK
DATE: 2017/08/07	DATE: 2017/08/07	DATE: 2017/08/07

1 REVISION HISTORY 3
2 SCOPE 4
3 APPLICABLE DOCUMENTS 4
4 REQUIREMENTS 4
5 PERFORMANCE 5
6 INFRARED REFLOW CONDITION 8
7 PRODUCT QUALIFICATION AND TEST SEQUENCE 9
8 HIGH FREQUENCY GRAPHIC 10

1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
O	ECN-0901060	RELEASE REV. O	JASON	2009/01/07
A	ECN-0908002	MODIFY SALT SPRAY AND IR REFLOW CONDITION	JASON	2009/08/01
B	ECN-0910179	UPDATE VIBRATION	JASON	2009/10/14
C	ECN-0910178	ADD 51723 SERIES	JASON	2009/12/11
D	ECN-0912132	ADD 50703/50708 SERIES	JASON	2009/12/31
E	ECN-1003214	ADD 51725/51721 SERIES	JASON	2010/03/31
F	ECN-1101068	REVISE ERRORS	WEIXING	2010/01/10
G	ECN-1205192	ADD 51722 SERIES	CHUNBO	2012/05/15
H	ECN-1207137	ADD 51731 SERIES	TANZHIWU	2012/07/09
J	ECN-1207390	ADD 51737 SERIES	GAVIN	2012/08/16
K	ECN-1211271	ADD 51738 SERIES	CHUNBO	2012/11/20
L	ECN-1401143	ADD Working voltage	YANGYANG	2014/01/10
M	ECN-1407012	ADD 51702 SERIES	YANGYANG	2014/07/01
N	ECN-1411083	ADD 51706SERIES	SKY	2014/11/06
P	ECN-1501178	ADD 51707 SERIES	ZHUWEI	2015/01/19
Q	ECN-1605062	ADD 51712 SERIES	ZHUWEI	2016/05/04
R	ECN-1708136	ADD 51705 SERIES	LIUFUJIAN	2017/08/07

2 SCOPE

This specification covers performance, tests and quality requirements for MINI PCI EXP. 0.80mm PITCH 52PIN 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) Contact Area: Gold plated based on order information
(b) Under plate: Nickel-Plated Allover
(c) Solder area: Gold Flash
(51701 the Solder area: Matt Tin (LEAD-FREE)

4.2.2 Housing: Thermoplastic or Thermoplastic High Temp., UL94V-0

4.2.3 Ear: Copper Alloy, Tin Pleated.

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: 0.5 Amperes (per pin)

4.3.4 Operating Temperature : -40℃ to +80℃

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	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: 1 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 after: 0.5A/Power contact. The temperature rise above ambient shall not exceed 30℃ The ambient condition is still air at 25℃ (EIA-364-70 METHOD 2)
Insertion Loss	1dB Max. Up to 1.25 GHz Reefer to High Frequency Graphic **Figure I**	A common test fixture for connector characterization shall be used. This is differential insertion loss requirement. (EIA-364-101)
Return Loss	12dB Max. Up to 1.3 GHz Reefer to High Frequency Graphic **Figure II**	A common test fixture for connector characterization shall be used. This is differential insertion loss requirement. (EIA-364-108)
Next Cross-talk	32dB Max. Up to 1.3 GHz Reefer to High Frequency Graphic **Figure III**	A common test fixture for connector characterization shall be used. This is differential cross-talk requirement. (EIA-364-90)

MECHANICAL

Item	Requirement	Standard
Mating / Unmating Force	Force: 2.3Kgf/Max.	Card mating/Unmating sequence: a.) Insert the card at the angle specified by the manufacturer b.) Rotate the card into position. c.) Reverse the installation sequence to unmated Operation Speed： 25.4 ± 3 mm/minute. Measure the force required to mate/Unmate connector. (EIA-364-13)
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)
Durability	50 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	2.5 N Min.	Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute on the terminal assembly in the housing

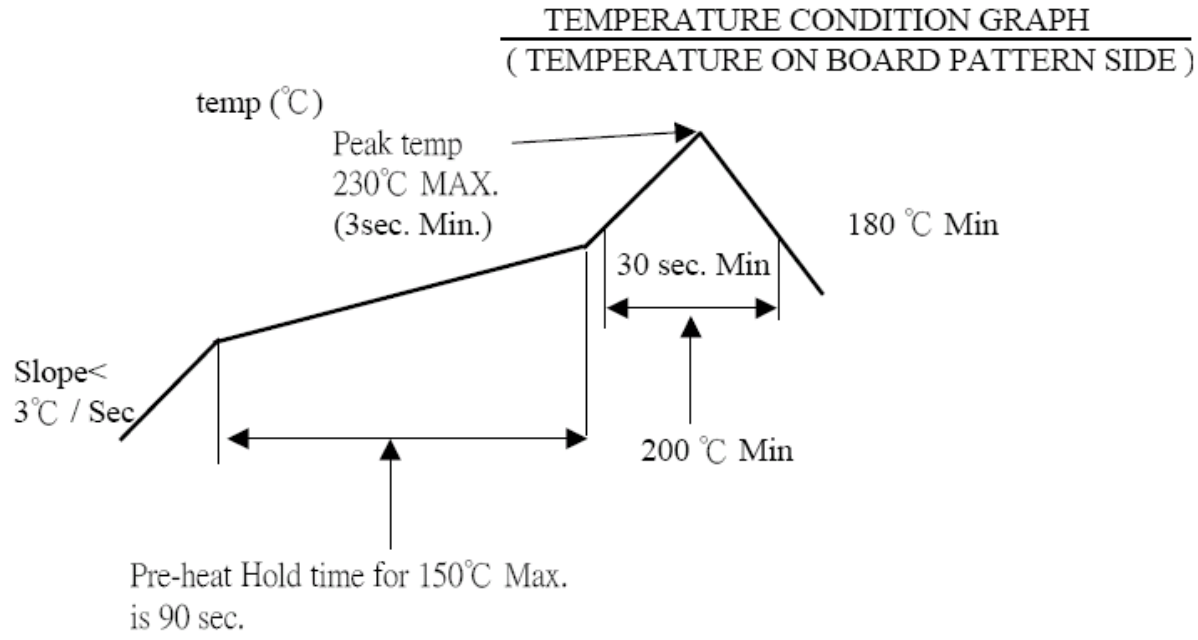
Nail / Housing Retention Force	2.5 N Min.	Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute on the terminal assembly in the housing
ENVIRONMENTAL		
Resistance to **Reflow** Soldering Heat	See Product Qualification and Test Sequence Group 8	Pre Heat：150℃Max, 90sec Min. Heat：200℃ Min., 30sec Min. Peak Temp.：230℃Max, 3sec Duration：2 cycles See Item 6.1
Resistance to **Reflow** Soldering Heat	See Product Qualification and Test Sequence Group 9 **(Lead Free)**	Pre Heat：150℃~180℃, 60~120sec. Heat：230℃ Min., 40sec Min. Peak Temp.260℃Max, 10sec Max. Duration：2 cycles See Item 6.2
Thermal Shock	See Product Qualification and Test Sequence Group 4	Mate module and subject to follow condition for 10 cycles. 1 cycles: -55 +0/-3 ℃, 30 minutes +85 +3/-0 ℃, 30 minutes (EIA-364-32, test condition A)
Temperature life	See Product Qualification and Test Sequence Group 7	Subject mated connectors to temperature life at 85℃±3℃ for 96 hours. Measure Signal. (EIA-364-17, Test condition A)
Salt Spray	See Product Qualification and Test Sequence Group 5	Subject mated/unmated connectors to 5% salt-solution concentration at 35℃. 1). Gold plated 5u" for 48 hours. 2). Gold plated 1u" for 8 hours.
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℃, for 4-5 sec. (EIA-364-52)
Hand soldering	Hand Soldering: Temperature:360±5℃,3 sec (Base on MIL-STD-202, Method 208)	Contact Resistance: 40 ohms MAX.
Cyclic Temperature and Humidity	See Product Qualification and Test Sequence Group 4	Mate module and subject to 5 cycles. Between 25℃ +/- 3℃ at 80% +/- 3% RH. And 65℃ +/- 3℃ at 50% +/- 3% RH. Dwell time of 1 hour; ramp time of 0.5 hours. 24 cycles.

		(EIA-364-31, Test condition A)

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

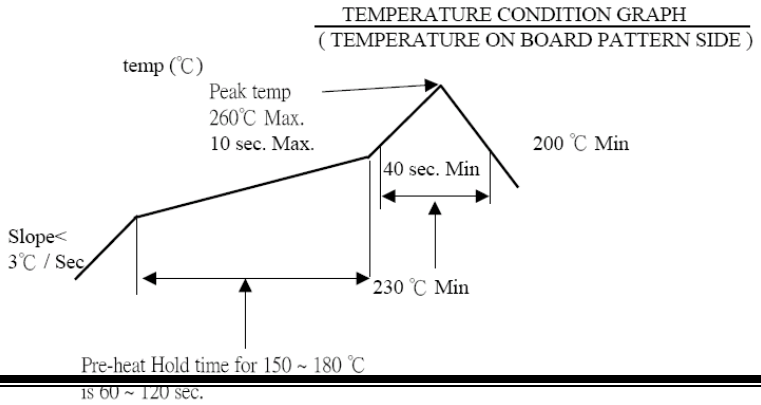
6 INFRARED REFLOW CONDITION

6.1. General Process



Notes: Thickness of the cream solder shall be maintained 0.12mm Min.

6.2 Lead-free Process



Notes: Thickness of the cream solder shall be maintained 0.12mm Min.

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

8 HIGH FREQUENCY GRAPHIC