



SPECIFICATION

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SPEC. NO.: PS-52729-XXXXX-XXX REVISION: C

PRODUCT NAME: 0.6mm PITCH MCIO INTEGRATED CONN. SMT TYPE

PRODUCT NO: 52729, 52730 SERIES

PREPARED: CHU CHENG.WU DATE: 2022/07/26	CHECKED: KUO HUA.HUANG DATE: 2022/07/26	APPROVED: KUO HUA.HUANG DATE: 2022/07/26
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TITLE: **0.6mm PITCH MCIO INTEGRATED CONN. SMT TYPE**

RELEASE DATE: 2022.07.26

REVISION: C

ECN No:ECN-008974

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1 Revision History

Rev.	ECN #	Revision Description	Prepared	Date
A	ECN-001232	ADD 52729 SERIES	KH.HUANG	2021/02/22
B	ECN-007378	ADD 52730 SERIES	KH.HUANG	2022/01/11
C	ECN-008974	ADD High Speed Electrical Requirements ADD Notes to 7 PRODUCT QUALIFICATION AND TEST SEQUENCE	C.C.WU	2022/07/26

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2 SCOPE

This specification covers performance, tests and quality requirements for **0.6mm PITCH MCIO INTEGRATED CONN. SMT TYPE**

3 APPLICABLE DOCUMENTS

EIA-364: ELECTRONICS INDUSTRIES ASSOCIATION
TS-1000: ENVIRONMENTAL TEST METHODOLOGY
PCI Express Card Electromechanical Specification Revision 5.0
SFF-TA-1016: Internal Unshielded High Speed Connector System

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 (**C7035-TM04**)
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 High Temp., UL94V-0
- 4.2.3 Insert Molding: Thermoplastic High Temp., UL94V-0
- 4.2.4 Base: Thermoplastic High Temp., UL94V-0
- 4.2.5 Cover: Thermoplastic High Temp., UL94V-0
- 4.2.6 Frame: Thermoplastic High Temp., UL94V-0
- 4.2.7 Shell: Stainless Steel (**SUS 304 3/4H**)
Finish: Under plate: **Refer to the drawing.**

4.3 Ratings

- 4.3.1 Voltage : **30 V DC (per pin)**
- 4.3.2 Current : **1.1 Amperes (per pin)**
- 4.3.3 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	Initial: Baseline After test: Delta 20 mΩ Max. change allowed	Mate connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23)
Insulation Resistance	1000 MΩ Min.	Unmated connectors, apply 300 V DC between adjacent terminals. (EIA-364-21)
Dielectric Withstanding Voltage	No discharge, flashover or breakdown. Current leakage: 0.5 mA max.	300 V DC 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 connectors: measure the temperature rise at rated current until temperature stable. The ambient condition is still air at 25°C (EIA-364-70,Method2)

HIGH SPEED ELECTRICAL REQUIREMENTS

Line Rate	Insertion Loss	Return Loss	Crosstalk
PCIe4	≥ -0.5 dB for $f < 4$ GHz; $\geq [-0.25 * f + 0.5]$ dB for $4\text{GHz} < f < 8\text{GHz}$ $\geq [-0.75 * f + 4.5]$ dB for $8\text{GHz} < f < 10\text{GHz}$	< -15 dB for $f < 3$ GHz; $< [5 * f - 30]$ dB for $3\text{GHz} < f < 4.4\text{GHz}$ < -8 dB for $4.4\text{GHz} < f < 10\text{GHz}$	< -32 dB for $f < 8$ GHz; < -20 dB for $8\text{GHz} < f < 10\text{GHz}$
PCIe5	$\geq [-0.1 - 0.0875 * f]$ dB for $f < 16$ GHz; $\geq [3.5 - 0.3125 * f]$ dB for $16\text{GHz} < f < 24\text{GHz}$	$< [0.625 * f - 20]$ dB for $f < 16$ GHz $< [0.875 * f - 24]$ dB for $16\text{GHz} < f < 24\text{GHz}$	$< [1.5 * f - 60]$ dB for $f < 10$ GHz $< [(5/6) * f - 53.33]$ dB for $10\text{GHz} < f < 24\text{GHz}$

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MECHANICAL

Item	Requirement	Standard
Durability	Cycle rate: 500±50 per hour Number of cycles: 200 cycles for 30 μ" Au plating 100 cycles for 15 μ" Au plating	The sample should be mounted in the tester and fully mated and unmated the number of cycles. (EIA-364-09)
Durability(precondition)	Perform 20 mate/unmate cycles.	No evidence of physical damage (EIA-364-09)
Mating Un-mating Force	Mating Force: 1.1 N /contact pair + 10 N Max. Un-mating Force: 0.1 N /contact pair Min.	Measure the force required to mate/unmate connector. Rate: 25.4 mm/minute (EIA-364-13 Method A)
Latch Retention	Retention Force: 50 N Min.	Pull in direction parallel to insertion, hold for minimum of 60 seconds. Rate: 25.4 mm/minute (EIA-364-13 Method A)
Wrenching strength (W/ mated Cable- Passive Latch)	25 N minimum	Bend cable 90° at minimum bend radius. Pull in 4 axis directions for round cable. Pull in 2 axis directions for flat cable. No damage to plug/ cable assembly.
Wrenching strength (W/ mated Cable- Active Latch)	40 N minimum	Bend cable 90° at minimum bend radius. Pull in 4 axis directions for round cable. Pull in 2 axis directions for flat cable. No damage to plug/ cable assembly.
Contact Normal Force	0.49 N (50 grams) minimum at nominal	Rate: 25.4 mm/minute (EIA-364-04)
Vibration	No damage No discontinuity longer than 1 microsecond allowed. 20 mOhms maximum change from initial (baseline) contact resistance	Subject mated specimens to 3.10 G's rms between 20-500 Hz for 15 minutes in each of 3 mutually perpendicular planes. (EIA-364-28, Test Condition VII, Condition D)
Mechanical Shock	No damage 20 mOhms maximum change from initial(baseline) contact resistance	Subject mated specimens to 50G' s half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks. (EIA-364-27, Test Condition H)
Reseating	No damage	Manually mated/unmated the connector or socket perform 3 cycles.

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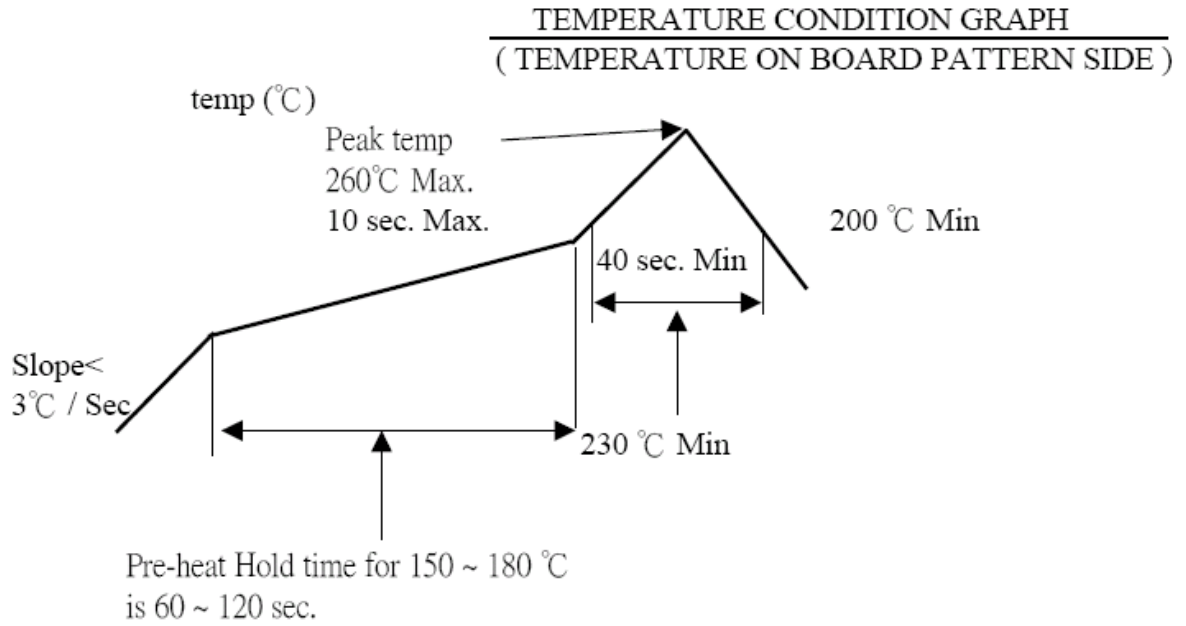
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ENVIRONMENTAL

Item	Requirement	Standard
Thermal Shock	No damage 20 mOhms maximum change from initial(baseline) contact resistance	-55 °C to 85 °C, perform 5 cycles in mating condition (EIA-364-32, Method A Test condition I)
Temperature Life	No damage 20 mOhms maximum change from initial(baseline) contact resistance	Subject mated connectors to temperature life at 105°C for 120 hours. (EIA-364-17, method A Test Condition 2, Test Time Condition C)
Temperature Life (precondition)	No damage	Subject mated connectors to temperature life at 105°C for 72 hours. (EIA-364-17, method A)
Salt Spray	No Physical damage 20 mOhms maximum change from initial(baseline) contact resistance	Subject mated connectors to 5±1% salt- solution concentration, 35±2°C Gold plating 30 u" for 48 hours. (EIA-364-26B)
Humidity-Temperature Cycling	No Physical damage 20 mOhms maximum change from initial(baseline) contact resistance	(EIA-364-31,Method III Condition A)
Solderability	Tin plating: Solder able area shall have minimum of 95% solder coverage. Gold plating: Solder able area shall have minimum of 75% solder coverage	Add then into solder bath, Temperature at 245 ±5°C, for 4-5 sec. (EIA-364-52)
Resistance to Reflow Soldering Heat	No Physical damage	Pre Heat : 150°C~180°C, 60~120sec. Heat : 230°C Min., 40sec Min. Peak Temp. : 260°C Max, 10sec Max.
Thermal Disturbance	No Physical damage	Temperature Range: 15C+/- 3°C to 85 +/- 3 °C Thermal Ramp: minimum of 2 °C per minute. Dwell times should insure that the contacts reach the extremes, no less than 5 minutes Number of cycles: 10
Mixed Flowing Gas (MFG)	No Physical damage	Test condition: mated connector. RH: 70±2% Temperature: 30±1°C Cl ₂ : 10±3 ppb NO ₂ : 200±50 ppb H ₂ S : 10±5 ppb SO ₂ : 100±20 ppb Duration: 7 days (EIA-364-65, class IIA)

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	11	12	13	14
	Test Sequence													
Examination of Product	1,8	1,10	1,10	1,12	1,9	1,3	1,7	1,5	1,3	1,3	1,3	1,3	1,3	1,3
Low Level Contact Resistance	2,5,7	2,5,7,9	2,5,7,9	2,5,7,9,11	4,6			2,4						
Insulation Resistance					3,8									
Dielectric Withstanding Voltage					2,7									
Temperature Rise						2								
Durability					5									
Durability(precondition)	3	3	3	3										
Mating / Unmating Force							3,6							
Vibration			6											
Mechanical Shock			8											
Reseating	6	8		10			2,5							
Thermal Shock		4												
Temperature Life	4						4							
Temperature Life(precondition)			4	4										
Salt Spray							3							
Humidity-Temperature Cycling		6												
Thermal Disturbance				8										
Mixed Flowing Gas(MFG)				6										
Solderability									2					
Resistance to Reflow Soldering Heat										2				
Latch Retention											2			
Wrenching Strength (W/ mated Cable-Passive Latch)												2		
Wrenching Strength (W/ mated Cable-Active Latch)													2	
Contact Normal Force														2
Sample Size	5	5	5	5	5	5	5	5	5	5	5	3	3	5

Notes: GROUP 4 provides according to customer request.