



**PRODUCT SPECIFICATION**

**CKM 5701 SERIES**

**WIRE TO BOARD 5.70 mm PITCH CONNECTOR**

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**REVISION HISTORY:**

REV	REVISION DESCRIPTION	DATE	CREATED/REVISED
1	PROPOSAL	2017/03/10	GuoXiang.Jiang
A			
B			
C			

<b>REVISION:</b> <b>A</b>	<b>ECR/ECN INFORMATION:</b> EC No.: DATE: 2021/9/13	<b>TITLE:</b> 5.70mm Pitch Wire to Board Connector		<b>SHEET No.</b> 1 of 7
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### 1.0 SCOPE

This product specification covers the performance requirements and test methods of 5.70 mm pitch wire to board connector systems terminated with 16 to 12 AWG or 1.5 to 4.0mm 2 stranded wire using crimp technology with tin or gold plating.

### 2.1 Product name and series number(s)

Product Name	Part No.
Housing	5701H-XP-XX
Terminal	5701TXH-XX
Wafer Assembly ST. (V/T)	5701WV-XP-XX-XX
Wafer Assembly . (R/A)	5701WR-XP-XX-XX

### 2.2 Dimensions, Materials, Finish and marking

Dimensions & Finish: See individual drawings.  
Material: RoHS & Halogen Free compliant materials.

### 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

See drawings and the other sections of this specification for the necessary referenced documents and specifications

### 4.0 ELECTRICAL PERFORMANCE RATINGS

#### 4.1 Voltage

600 Volts AC (RMS) or 600 Volts DC max.

\* Voltage rating based on UL 1977. Maximum voltage allowed may vary dependent upon “End Use Application.” Refer to the applicable end use standard for additional information on Voltage, Creepage and Clearance requirements.

#### 4.2 Applicable Wires

Maximum Insulation Diameter and Applicable Wire Gauges	Stranded copper 16 AWG: 3.18 mm / .125 inches Maximum
	Stranded copper 1.5 mm <sup>2</sup> : 3.18 mm / .125 inches Maximum
	Stranded copper 14 AWG: 3.66 mm / .144 inches Maximum
	Stranded copper 2.5 mm <sup>2</sup> : 3.75 mm / .148 inches Maximum
	Stranded copper 12 AWG: 4.11 mm / .162 inches Maximum
	Stranded copper 4.0 mm <sup>2</sup> : 4.11 mm / .162 inches Maximum

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### 4.3 Maximum Current Rating

Current rating is application dependent and may be affected by the wire rating such as listed in UL-60950-1. Each application should be evaluated by the end user for compliance to specific safety agency requirements. The ratings listed in the chart below are per CKM test method based on a 30° C maximum temperature rise over ambient temperature and are provided as a guideline. Appropriate de-rating is required based on circuit size, ambient temperature, copper trace size on the PCB, gross heating from adjacent modules/components and other factors that influence connector performance. Wire size & stranding, tin coated or bare copper, wire length & crimp quality are other factors that influence current rating.

Wire to Board Current Rating (Amp Max.)				
(As tested with tinned AWG copper wire and tin or gold plated terminals)				
Connector fully loaded with all circuits powered				
Ckt. Size AWG & metric Wire Size	2	4	6	8-12
12 AWG, 4.0mm <sup>2</sup>	23	20	18	16
14 AWG, 2.5mm <sup>2</sup>	21	17	15	13
16 AWG, 1.5mm <sup>2</sup>	17	15	13	12

Wire to Board Current Rating (Amp Max.)				
(As tested with bare AWG copper wire and tin or gold plated terminals)				
Connector fully loaded with all circuits powered				
Ckt. Size AWG & metric Wire Size	2	4	6	8-12
12 AWG, 4.0mm <sup>2</sup>	21	18	16	14
14 AWG, 2.5mm <sup>2</sup>	19	15	13	11
16 AWG, 1.5mm <sup>2</sup>	15	13	11	10

### 4.4 Temperature

Tin Plated:

Max. operating temperature range (including T-rise from applied current) is -40°C to 105°C.

Field temperatures and field life: Tested per EIA 364-1000.01 to meet field temperature of 65°C for 10 years life per table-8 in EIA-364-1000.01.

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Gold Plated:

Max. operating temperature range (including T-rise from applied current) is -40°C to 120°C, based on test sequence Group VIII, thermal aging at 120°C for 1000 hours.

Field temperatures and field life: Tested per EIA 364-1000.01 to exceed a field temperature of 65°C for 10 years life per table-8 in EIA-364-1000.01.

**4.5 Durability**

Tin plated: 25 mate/unmates

Gold plated: 200 mate/unmates

As tested in accordance with EIA-364-1000.01 test method (see Sec. 7.0 of this specification).

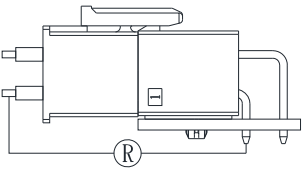
Durability per EIA-364-09.

**5.0 QUALIFICATION**

Laboratory conditions and sample selection are in accordance with EIA-364-1000.01

**6.0 PERFORMANCE**

**6.1 Electrical Performance**

DESCRIPTION	TEST CONDITION	REQUIREMENT
<b>Initial Contact Resistance (Low Level)</b>  Resistance Measure Points	Mate connectors, apply a maximum voltage of 20 mV and a current of 100 mA (measurement locations shown) Per EIA-364-23 Wire resistance and traces shall be removed from the measured value.	Maximum (Initial): 2 mΩ
<b>Contact Resistance @Rated Current (Voltage Drop)</b>	Mate connectors; apply the rated current. Per EIA-364-70	Maximum: Tin: 10 mΩ 15μ" & 30μ" Gold: 5 mΩ
<b>Insulation Resistance</b>	Apply 500 VDC between adjacent terminals or ground. Per EIA-364-21	Minimum : 1,000 MΩ
<b>Dielectric Withstanding Voltage</b>	Apply 2200 VAC for 1 minute between adjacent terminals. Per EIA-364-20	No breakdown Current leakage <5mA
<b>Temperature Rise</b>	Mate connectors,measure T- Rise @ Rated Current After 96 Hours. Per EIA-364-70	Temperature rise: 30° C maximum

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6.2 Mechanical Performance

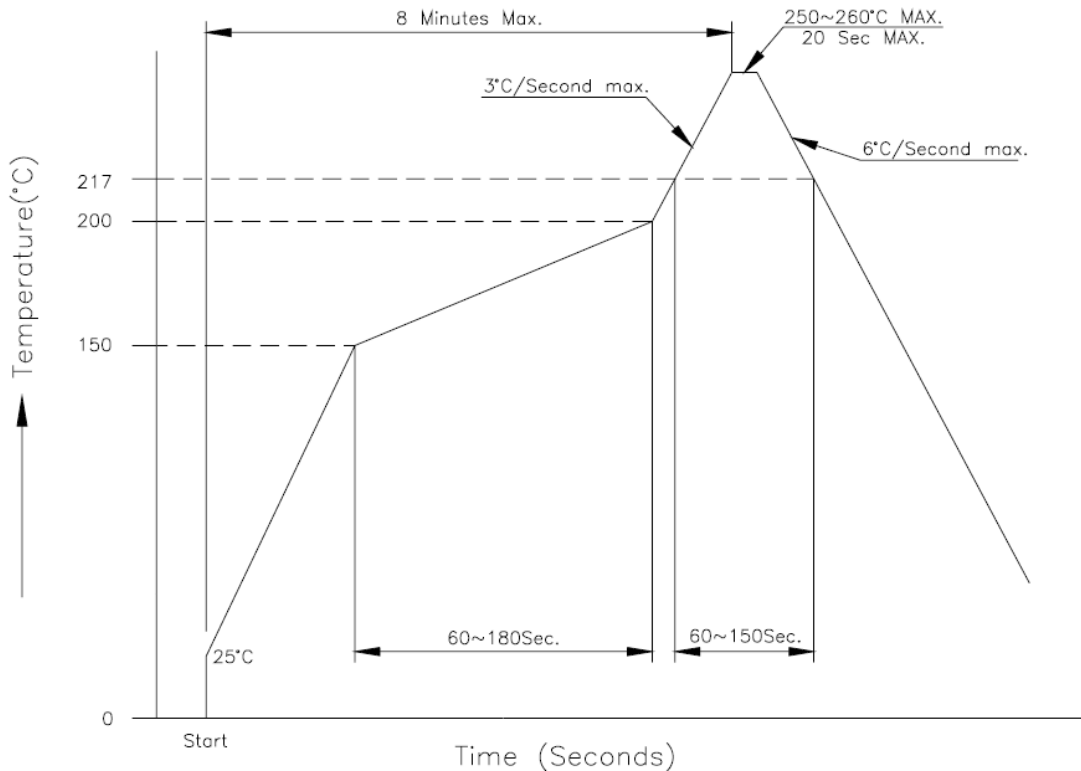
ITEM	TEST CONDITION	REQUIREMENT
<b>Connector Mating Force</b>	Mate connectors at a rate of 25.4 +/- 6 mm per minute. Per EIA-364-37	Tin plated: 6.8 N MAX. initial mate force per circuit 15μ" & 30μ" Gold plated: 6.0 N MAX. Per circuit
<b>Connector Un-mating Force (latch disabled)</b>	Un-mate connectors with latch disabled at a rate of 25.4 +/- 6 mm per minute. Per EIA-364-37	Tin plated: 6.5 N MAX. initial un-mate force per circuit 15μ" & 30μ" Gold plated: 5.6 N MAX. Per circuit
<b>Thumb Latch Yield Strength</b>	Mate loaded connectors fully. Pull connectors apart at a rate of 25.4 +/- 6 mm per minute.	68 N MIN.
<b>Durability</b>	Mate connectors 25 cycles for tin plated and 200 cycles for gold plated connectors at a maximum rate of 10 cycles per minute. Per EIA-364-09	Maximum change from initial: 2 mΩ
<b>Header Pin Retention Force in Housing Vertical Header</b>	Axial pull force on the vertical header housing away from the PCB at a rate of 25.4 +/- 6 mm per minute.	89 N min Per pin
<b>Header Pin Retention Force in Housing Right Angle Header</b>	Axial push force on the pin in the housing at a rate of 25.4 +/- 6 mm per minute.	9.81 N min per pin
<b>Crimp Terminal Retention Force (in housing)</b>	Axial pullout force on the terminal in the housing at a rate of 25 ± 6mm Per minute. Per EIA-364-29	30 N MINIMUM retention force
<b>Wire Pull Out Force From Terminal (Axial)</b>	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm per minute.	4.0mm <sup>2</sup> = 220 N Min. 12 AWG = 220 N Min. 2.5mm <sup>2</sup> = 220 N Min. 14 AWG = 220 N Min. 1.5mm <sup>2</sup> = 220 N Min. 16 AWG = 200 N Min.
<b>Thermal Shock</b>	Mate connectors, expose to 10 cycles from -55°C to 85°C Per EIA-364-32 method A,	Maximum Change from Initial: 2 mΩ

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<b>Thermal Aging</b>	Mate Connectors, expose to 240 hours at 105°C Per EIA-364-17	Maximum Change from Initial: 2 mΩ
<b>cyclic temperature and humidity</b>	Mate connectors: expose to 24 cycles from 25 °C / 80% RH to 65 °C / 50% RH ramp time: 0.5hr dwell time: 1hr Per EIA-364-1000.01	Maximum Change from Initial: 2 mΩ
<b>Solder ability Dip Test</b>	Lead-Free Process for DIP Type: Soldering time: 3 ± 0.5 second Soldering pot: 245 ± 5°C	Solder area shall have MIN. of 95% solder coverage
<b>Wave Solder Resistance</b>	DIP header terminal tails in solder: Duration: 10±0.5 seconds Solder temperature: 260±5° C	Visual: No damage

**6.3 Recommended Reflow Temperature Profile:**



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**7.0 PRODUCT QUALIFICATION AND REQUALIFICATION TEST SEQUENCE**

Test or Examination	Test Group									
	A	B	C	D	E	F	G	H	I	J
<b>SEQUENCE</b>	<b>Test Sequence(a)</b>									
Examination of connectors	1	1	1	1	1,10	1	1	1,3	1,3	1
Contact Resistance	2,7				2,6	2,4	2			
Insulation Resistance					3,8					
Dielectric Withstanding Voltage					4,9					
Temperature Rise							3			
Connector Mating Force	3									
Connector Un-mating Force	4									
Thumb Latch Yield Strenght		2								
Durability	6									
Header Pin Retention Force (Vertical)			2							
Crimp Terminal Retention Force (in housing)				2						
Wire Pull Out Force From Terminal (Axial)										2
Thermal Shock					5					
Thermal Aging						3				
Cyclic Temperature And Humidity					7					
Solder ability Dip Test								2		
Reflow Solder Resistance									2	
Sample Size	5	5	5	5	5	5	5	5	5	5

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