



PRODUCT SPECIFICATION

CKM 2001 SERIES

2.0 mm PITCH WIRE TO BOARD CONNECTOR

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REVISION HISTORY:

REV	REVISION DESCRIPTION	DATE	CREATED/REVISED
A	INTERIM EDITION	2014/4/26	Winner
B	UPDATE SPECIFICATION	2022/05/06	Jimmy Wang
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D			

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1. SCOPE

This specification contains the test requirement of subject connectors when tested under the condition and procedure with terminals crimped on the specified maximum size for wire.

2. APPLICABLE STANDARDS

EIA-364 Methods for test of connectors for electronic equipment
JIS C5028 / Test methods for electrical connectors
MIL-STD-202
UL-1977-16

3. APPLICABLE SERIES NO

Product Name	Part No.
Housing	2001H-XP-X-HF
Terminal	2001TXP-XX
Wafer Assembly ST.	2001WV-XP-XX-HF
Wafer Assembly ST. (SMT)	2001WVS-XP-XX-XX 2001WVS-XP-XX-LC-HF
Wafer Assembly RA.	2001WR-XP-XX-HF
Wafer Assembly RA. (SMT)	2001WRS-XP-XX-HF

X: Refer to the drawing

4. PRODUCT SHAPE, DIMENSIONS AND MATERIALS

*See Customer drawings.

5. ACCOMMODATED P.C. BOARD

5.1 Thickness: 1.0 mm (.039 ") ~ 1.2mm (.047 "), 1.6 mm (.063 ")

5.2 P.C. Board Layout: See Customer drawings

6. RATINGS

6.1 Current rating: AWG#24: 3.0A max. ; AWG#26:2.5A max. ;
AWG#28: 2.0A max.; AWG#30:1.5A max.;

6.2 Voltage rating: 100V AC, DC

6.3 Temperature range:-40°C to +140°C

6.4 Applicable wire: AWG #24 to #30, Insulation O.D.: 0.90~1.40mm Max.

7. PERFORMANCE REQUIREMENTS AND TEST DESCRIPTIONS

The product is designed to meet the electrical, mechanical and environmental performance Requirements as specifics in **8.REQUIREMENTS**.

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8. TEST REQUIREMENTS AND PROCEDURES SUMMARY

TEST ITEM		REQUIREMENT	PROCEDURE
8.1	Examination of Product	Meets requirements of product drawing. No physical damage.	Per EIA-364-18 Visual inspection
ELECTRICAL REQUIREMENT			
8.2	Contact Resistance	30mΩ Max (Initial) 50mΩ Max (Final)	Subject specimens to 100 mA Max. and 20 mV Max. open circuit voltage. (EIA-364-23)
8.3	Insulation Resistance	500MΩ Min (Initial)	500 volts DC, 2 minute hold. Test between adjacent contacts. (EIA-364-21)
8.4	Dielectric Strength	One minute hold with no breakdown or flashover, leakage current <5 mA	800 volts AC at sea level, Test between adjacent contacts. (EIA-364-20, Condition I)
8.5	Contact Resistance on Crimped Portion	30mΩ Max (Initial) 50mΩ Max (Final)	Crimp the maximum applicable wire on to the terminal, measure by dry Wire Length : 50mm Max. (AWG #24) (EIA-364-23)
MECHANICAL REQUIREMENT			
8.6	Terminal crimp Tensile strength	Requirements as specifics in 9. Crimping Specification	Determine crimp tensile at a rate of 25.4 mm per minute.(EIA-364-8)
8.7	Terminal / Housing Retention Force (For Plug)	1.0 kgf minimum	Determine crimp tensile at a rate of 25.4 mm per minute.(EIA-364-8)
8.8	Connector Mating and Un-mating Force	Requirements as specifics in 11. REQUIREMENTS	Subject connector to mate and unmate to measure the mechanical forces required to engage and disengage at a rate of 25+/-6 mm per minute Record by using autograph. (EIA-364-13)
8.9	Durability	100 mating/ unmating cycles at a maximum rate of 30 cycles per hour. No evidence of damage Contact resistance: 50 mΩ (Final)	The object of this test procedure is to detail a uniform test method for determining the effects caused by subjecting a connector to the conditioning action of insertion and extraction, simulating the expected life of the connectors. Durability cycling with a gauge is intended only to produce mechanical stress. Durability performed with mating components is intended to produce both mechanical and wear stress. (EIA-364-09)

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8.10	Pin retention force (For Header)	1.0 kgf minimum	Apply axial load at a rate of 4.4 N per second and hold for 6 seconds. (EIA-364-29)
ENVIRONMENTAL REQUIREMENTS			
8.11	Temperature rise	85°C maximum temperature rise at specified current	Apply rated current load on mated connector in series-connection. Measure change of temperature on contact using thermocouples for 4 hours. (Based upon UL 1977)
8.12	Vibration	1) No discontinuities of 1ms or longer duration. 2) Contact resistance: 30 mΩ Max. 3) No physical damage.	Subject mated specimens to 3.10G's rms between 20 to 500 Hz, Amplitude: 1.52mm, Test Duration: 15 minutes each axis. (EIA-364-28, Test Condition VII, Condition Letter D)
8.13	Heat aging	Termination resistance (low level) shall be met	Subject mated specimens to 105±2°C for 96 hours.(EIA-364-17, Method A, Test Condition IV, Test Time Condition C)
8.14	Humidity	Insulation resistance 500MΩ Min Termination resistance (low level) shall be met Dielectric strength shall be met	Subject specimens to 10 cycles (10days) between 25°C and 65°C at 90 to 95% RH. (EIA-364-31, Method III)
8.15	Temperature cycling	Contact resistance (low level) shall be met. Must meet requirement of 8.3 & 8.4	Subject mated connector assembly to 25 cycle at -40±3°C for 30 min; +105±2°C for 30 min (EIA-364-32, Test Condition VII)
8.16	Salt spray	Appearance: No damage Contact resistance: Less than twice of initial	Temperature: 35 ± 2°C Solution: 5 ± 1% Spray time: 24 hours Min. Measurement must be taken after water rinse(JIS C5028/MIL-STD-202, method 101 D, condition B)
8.17	Solder ability	The contact solder tails should be covered by a continuous new solder coating for min 95% of affected area	Subject contacts to solder ability testing ,as specified solder transfer at 245±5°C for 3~5s
8.18	Resistance to Reflow heat (SMT)	The connector shall be mounted on the PCB ,the temperature of the solder shall be 260±5°C , and immersion duration:10seconds Max.	Refer 10.1 Recommended IR Reflow Temperature Profile
8.19	Resistance to wave soldering heat(DIP)	The connector shall be mounted on the PCB ,the temperature of the solder shall be 245±5°C , and immersion duration:3~5seconds.	Refer 10.2 Recommended wave soldering Temperature Profile

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8.20	Resistance to Soldering Heat	No physical damage shall occur	Soldering bath method Soldering Time: 5± 0.5 sec. Solder Temperature: 260 ± 5°C.
8.21	Soldering iron method	No damage	Solder Time: 3± 0.5 sec. MAX. Solder Temperature: 350 ± 5°C However, without too much pressure to the contact.

9. CRIMPING SPECIFICATION

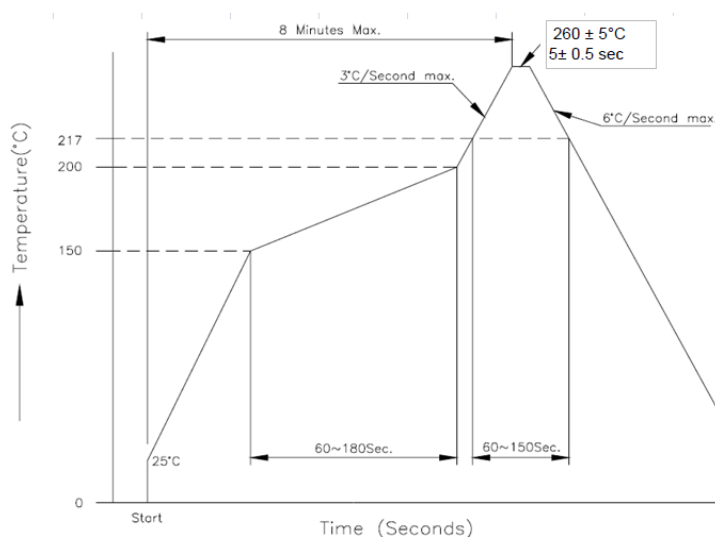
2001TOP-XX				
Wire Size(AWG)		#28	#26	#24
1. CONDUCTOR (mm)	CRIMP WIDTH	1.30±0.05		
	CRIMP HEIGHT	0.52~0.61	0.61~0.70	0.68~0.77
2. INSULATION (mm)	CRIMP WIDTH	1.50±0.05		
	CRIMP HEIGHT	1.45	1.50	1.56
CRIMP STRENGTH		0.9Kgf (MIN)	1.8Kgf (MIN)	2.7Kgf (MIN)

2001T1P-XX				
Wire Size(AWG)		#30	#28	#26
1. CONDUCTOR (mm)	CRIMP WIDTH	1.30±0.05		
	CRIMP HEIGHT	0.47~0.56	0.52~0.61	0.61~0.70
2. INSULATION (mm)	CRIMP WIDTH	1.50±0.05		
	CRIMP HEIGHT	1.40	1.45	1.50
CRIMP STRENGTH		0.45Kgf (MIN)	0.9Kgf (MIN)	1.8Kgf (MIN)

Figure 1

10. RECOMMENDED REFLOW TEMPERATURE PROFILE:

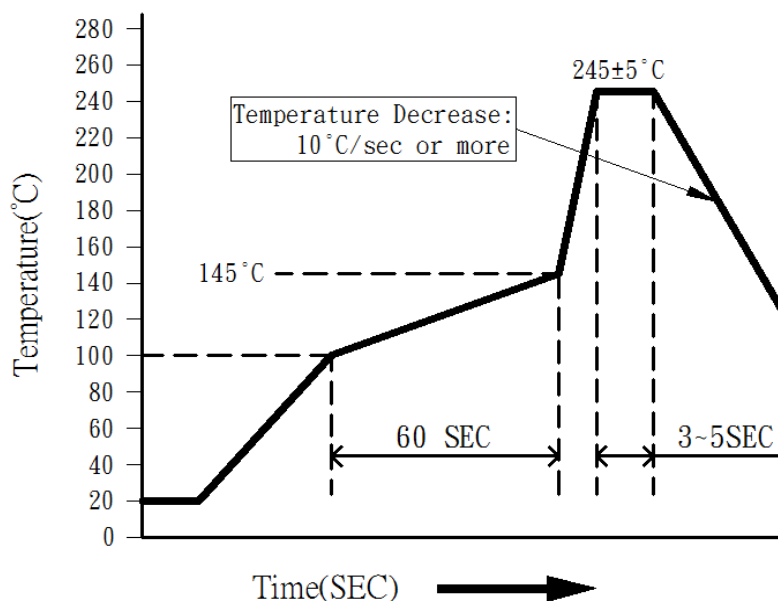
10.1 Recommended IR Reflow Temperature Profile (Using Lead-Free Solder Paste)



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10.2 Recommended wave soldering Temperature Profile (Using Lead-Free Solder Paste)



11. MATING AND UN-MATING FORCE:

PIN No.	At Initial		At 30th
	Mating (kgf Max.)	Un-mating (kgf Min.)	Un-mating (kgf Min.)
2	2.40	0.50	0.20
3	2.80	0.60	0.20
4	3.20	0.70	0.20
5	3.60	0.80	0.30
6	4.00	0.90	0.30
7	4.40	1.00	0.30
8	4.80	1.10	0.40
9	5.20	1.20	0.40
10	5.60	1.30	0.40
11	6.00	1.40	0.50
12	6.40	1.50	0.50
13	6.80	1.60	0.50
14	7.20	1.70	0.60
15	7.60	1.80	0.60
16	8.00	1.90	0.60

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12. PRODUCT QUALIFICATION AND REQUALIFICATION TEST SEQUENCE

Test or Examination	Test Group														
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
	Test Sequence (a)														
Examination of Product	1,8	1,7	1	1	1	1	1,5	1	1,5	1,6	1,5	1	1,4	1,3	1,5
Contact Resistance	2,7	2,6					2,4	2	2,4	2,4	2,4				2,4
Insulation Resistance		3,5								5					
Dielectric Withstanding Voltage	3,6														
Terminal crimp Tensile strength			2												
Terminal / Housing Retention Force (For Plug)				2											
Insertion and Withdrawal Force	4												3		
Durability	5														
Pin retention force					2										
Vibration							3								
Temperature rise								3							
Heat Resistance									3						
Humidity		4													
Temperature cycling										3					
Salt spray											3				
Solder ability												2			
Resistance to soldering heat													2		
Sample Size per Test Group	5	5	5	5	5	5	5	5	5	5	5	5	5	5	6

Figure 2

NOTE:

- A. See paragraph 13.1.A.
- B. Numbers indicate sequence in which tests are performed.
- C. Precondition specimens with 10 durability cycles.

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13. QUALITY ASSURANCE PROVISIONS

13.1 Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. Test groups A, B, C and E shall each consist of a minimum of 5 specimens with a minimum of 30 data points. Test group D shall consist of a minimum of 6 specimens with a minimum of 5 header posts

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 2.

13.2 Requalification Testing

If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

13.3 Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

13.4 Quality Conformance Inspection

The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.

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