朝貴電子股份有限公司
CKM ELECTRONICS CO., LTD.

PRODUCT SPECIFICATION

CKM 2013 SERIES

WIRE TO BOARD 2.00mm PITCH CONNECTOR

INDEX

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REVISION HISTORY:

REV	REVISION DESCRIPTION	DATE	CREATED/REVISED
A	New Created	2015/4/16	Jimmy Wang
B	Revise Soldering Resistance Info	2019/10/2	Jimmy Wang
C			
D			

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 wire.

2. APPLICABLE STANDARDS

MIL - STD - 202 Methods for test of connectors for electronic equipment
MIL - STD - 1344 Test methods for electrical connectors
JIS C0020, C0021, C0025
JIS C5028
JIS C5402
UL 1977

3. APPLICABLE SERIES NO: 2013 SERIES

Product Name	Part No.
Housing	2013H-XP-X-XX(-HF)
Terminal	2013T0X-XX
Wafer Assembly ST.	2013WV-XX-XX-XXX-HF
Wafer Assembly RA.	2013WR-XX-XX-XXX-HF

X or (-HF):Refer to the drawing

4. PRODUCT SHAPE, DIMENSIONS AND MATERIALS

*See attached drawings.

5. ACCOMMODATED P.C. BOARD

5.1 Thickness: 0.6 mm (.024 ")～1.2mm (.047 "), 1.6 mm (.063 ")
5.2 P.C. Board Layout: See attached drawings

6. RATINGS

6.1 Current rating: 2.0A (AWG #24)

6.2 Voltage rating: 125V AC, DC

6.3 Temperature range:-25℃ to +85℃

6.4 Applicable wire: AWG #24 to #28, Insulation O.D.: 1.60mm 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.**

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	20mΩ Max (Initial) 50mΩ Max (Final)	Dry circuit of DC 20 mV max. , 10 mA max.(JIS C5402 5.4)
8.3	Insulation Resistance	1000MΩ Min	When applied DC 500 V between adjacent terminal or ground (JIS C5402 5.2/MIL-STD 202 method 301)
8.4	Dielectric Withstanding Voltage	No Breakdown and Flashover.	When applied AC 800 V 1 minute between adjacent terminal (JIS C5402 5.2/MIL-STD 202 method 302 Cond. B)
MECHANICAL REQUIREMENT			
8.5	Terminal crimp Tensile strength	AWG # 24: 3.0kgf Min. AWG # 26: 1.8kgf Min. AWG # 28: 1.1kgf Min.	Fix the crimped terminal, apply axial pull out force on the wire at speed rate of 25±3 mm/minute (Basedupon JIS C5402 6.22) *Crimping specification **refer to Figure 1**
8.6	Terminal / Housing Retention Force (For Plug)	1.3kgf Min.	Retention speed 25±3 mm per minute from housing
8.7	Mating & Un-mating force	See Item 10	Insert and withdraw connector at speed of 25 ±3 mm per minute

8.8	Durability	Contact resistance: Less than twice of initial Dielectric Withstanding Voltage: To pass Para 8.4	Connector shall be subjected to 30 cycles of insertion and withdrawal (repeatedly by the rate of 10 cycles per minute)
8.9	Pin retention force (For Header)	1.0kgf Min.	Push pin from insulator base at speed 25±3 mm per minute
8.10	Locking force	1.0kgf Min.	While withdrawing plug & receptacle without terminal at speed 25±3 mm per minute
ENVIRONMENTAL REQUIREMENTS			
8.11	Temperature rise	Final Temp 85°C max.	Then carried the rated current (UL 1977)
8.12	Vibration	Appearance: No damage Discontinuity: 50mΩ Max (Final) 1 micro second max.	1.5 mm 10-55-10 HZ / minute each 2 hours for X , Y and Z directions, (MIL-STD-202,method 201A)
8.13	Heat aging	No damage Contact resistance: Less than twice of initial 50mΩ Max (Final)	85 ±2°C , 96 hours(JIS C0021/ MIL-STD-202,method 108A, condition A)
8.14	Humidity	Appearance: No damage Contact resistance: 50mΩ Max (Final) Insulation resistance: 100MΩ Min.	40±2°C, 90~95% RH, 96 hours measurement must be taken within 30 min. after tested (JIS C0020/MIL-STD-202, method 103 B, condition B)

8.15	Temperature cycling	Appearance: No damage Contact resistance: 50mΩ Max (Final) Insulation resistance: 100MΩ Min.	Mated connector shall be set to temperature cycling for 5 cycles of which 1 cycle consists of: a) +25°C ~ 3 minutes b) -25°C ~ 30 minutes c) +25°C ~ 3 minutes d) +85°C ~ 30 minutes (Based upon JIS C5402 7.2)
8.16	Salt spray	Appearance: No damage Contact resistance: 50mΩ Max (Final)	Temperature: 35±2°C Solution: 5±1% Spray time: 48±4 Hours Measurement must be taken after water rinse(JIS C5402 7.1/MIL-STD-202, method 101 D, condition B)
8.17	Solder ability	Minimum: 95% of immersed area	Lead-Free Process for SMT Type: Soldering time: 3±0.5 second Soldering pot: 245±5°C
8.18	Resistance to Wave Soldering Heat	No physical damage shall occur	Subject product mounted on printed circuit board to solder bath at 260±5℃ for 5±0.5sec

Crimping Specification:

2013T0X-XX				
Wire Size(AWG)		#24	#26	#28
1. CONDUCTOR (mm)	CRIMP WIDTH	1.35±0.1		
	CRIMP HEIGHT	1.00~0.90	0.90~0.80	0.80~0.70
2. INSULATION (mm)	CRIMP WIDTH	1.55±0.1		
	CRIMP HEIGHT	1.60	1.50	1.40
CRIMP STRENGTH		3.0Kgf (MIN)	1.8Kgf (MIN)	1.1Kgf (MIN)

Figure 1

10. Mating and Un-mating Force(Remove Latch):

PIN No.	At Initial		At 30th
	Mating (kgf Max.)	Un-mating (kgf Min.)	Un-mating (kgf Min.)
2	1.2	0.40	0.30
3	1.8	0.60	0.45
4	2.4	0.80	0.60
5	3.0	1.00	0.75
6	3.6	1.20	0.90
7	4.2	1.50	1.05
8	4.8	1.70	1.20
9	5.4	1.90	1.35
10	6.0	2.10	1.50
11	6.6	2.30	1.65
12	7.2	2.50	1.80
13	7.8	2.80	1.95
14	8.4	3.00	2.10
15	9.0	3.20	2.25

11. PRODUCT QUALIFICATION AND REQUALIFICATION TEST SEQUENCE

Test or Examination	Test Group										
	A	B	C	D	E	F	G	H	I	J	K
	Test Sequence (a)										
Examination of Product	1,8	1,7	1	1	1,3	1	1,5	1,5	1,4	1,3	1,3
Contact Resistance	2,7	2,6					2,4	2,4	2,3		
Insulation Resitance		3,5									
Dielectric withstanding Voltage	3,6										
Terminal crimp Tensile strength			2								
Terminal / Housing Insertion Force (For Plug)				2							
Mating & Un-mating force	4										
Durability	5										
Temperature Rise						2					
Vibration					2						
Heat aging							3				
Humidity		4									
Temperature cycling								3			
Salt spray									3		
Solder ability										2	
Resistance to IR reflow heat (SMT)											2
Sample Size	5	5	5	5	5	5	5	5	5	5	5