



PRODUCT SPECIFICATION

CKM 1251 & 1253 HIGH CURRENT SERIES

WIRE TO BOARD 1.25 mm PITCH CONNECTOR

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REVISION HISTORY:

REV	REVISION DESCRIPTION	DATE	CREATED/REVISED
A	NEW RELEASE	2018.08.15	Rock
B	UPGRADE TEM 9	2022.03.24	Rock
C	UPGRADE ITEM 6.3	2022.05.31	Rock

REVISION: B	ECR/ECN INFORMATION: EC No.: EC-22041195 DATE: 2022/05/31	TITLE: CKM 1251 & 1253 HIGH CURRENT SERIES		SHEET No. 1 of 7
DOCUMENT NUMBER: PS-1251-003		CREATED/REVISED	CHECKED BY	APPROVED BY



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-364-18 Methods for test of connectors for electronic equipment
MIL-STD-202
JIS C5402
UL 1977

3. APPLICABLE SERIES NO: 1251 & 1253 SERIES

Product Name	Part No.
Housing	1251H-XP-X-HC-HF
	1251HM-XP-X-HC-HF
Terminal	1251T0H-XX
	1251TM0H-XX
Wafer Assembly ST. (SMT)	1253WD-XP-A-HC-HF
Wafer Assembly RA. (SMT)	1253WE-XP-A-HC-HF

X: Refer to the drawing

4. PRODUCT SHAPE, DIMENSIONS & MATERIALS

*See attached 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 attached drawings

6. RATINGS

6.1 Current rating: 2.0A MAX. AC/DC (AWG #28)

6.2 Voltage rating: 125V AC, DC

6.3 Temperature range: -40°C to +105°C

6.4 Applicable wire: AWG #32 to #28, Insulation O.D.: 1.0mm 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	20mΩ Max (Initial) 40mΩ Max (Final)	Mate connectors, measure by dry circuit, 20mV MAX., 10mA. Mated Length : 50mm (AWG #28) (Based upon JIS C5402 5.4)
8.3	Insulation Resistance	100MΩ Min	Mate connectors, apply 500V D.C. Between adjacent terminal or ground. (Based upon JIS C5402 5.2 / MIL-STD-202 Method 302 Condition B)
8.4	Dielectric Withstanding Voltage	No breakdown	Mate connectors, apply 250V A.C. for 1 minute between adjacent terminal or ground. (Based upon JIS C5402 5.1/ MIL-STD-202 Method 301)
MECHANICAL REQUIREMENT			
8.5	Terminal crimp Tensile strength	See Item 9.	Fix the crimped terminal, apply axial pull out force on the wire at speed rate of 25±3 mm/minute. *Crimping specification refer to Figure 2
8.6	Pin Retention Force	0.5kgf Min.	Apply axial pull out force at the speed rate of 25±3 mm/minute
8.7	Terminal / Housing Retention Force	0.5kgf Min.	Apply axial pull out force at the speed rate of 25±3 mm/minute on the terminal assembly in the housing
8.8	Mating & Un-mating force	See Item 11.	Insert and withdraw connector at speed of 25 ±3 mm per minute

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8.9	Durability	Contact resistance: Less than twice of initial Dielectric Withstanding Voltage: To pass Para 9.4 * See Item 11.	Connector shall be subjected to 30 cycles of insertion and withdrawal (repeatedly by the rate of 10 cycles per minute)
8.10	Pin retention force (For Header)	0.5kgf Min.	Push pin from insulator base at speed 25± 3 mm per minute
ENVIRONMENTAL REQUIREMENTS			
8.11	Temperature rise	Maximum Temperature Rise: 30°C above ambient	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	Appearance: No damage; Contact resistance: 40mΩ Max; Discontinuity: 1 micro second max.	Amplitude: 0.75mm Sweep Time: 10-55-10 Hz/minute Duration: 2 Hours in each X,Y,Z axials (Based upon MIL-STD-202 Method 201)
8.13	Mechanical Shock	No physical damage & No electric discontinuity greater than 1 μ sec. shall occur & Contact resistance: 40 m Ω Max After test	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.
8.14	Heat aging	No Physical damage & Contact resistance: 40 m Ω Max After test	Mated connector shall be placed in an oven for 96±4 hours at 105 ± 2°C. (Based upon JIS C5402 7.8)
8.15	Cold Resistance	No physical damage & Contact resistance: 40 m Ω Max After test	Mate connectors: Duration: 96 hours; Temperature: -40 ± 2°C

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8.16	Humidity	No physical damage & Contact resistance: 40 m Ω Max after test & Insulation resistance: 10 MΩ Min; & Dielectric withstanding voltage No breakdown	Subject mated plug and connector, soldered to P.C. Board, to relative humidity 90~95%RH and a temperature of 60°C ± 2°C relative humidity for 96 hour. It shall be subjected to standard atmospheric condition for 1 hour after which measurements shall be made.
8.17	Temperature cycling	Appearance: No damage Contact resistance: Less than twice of initial	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)
8.18	Salt spray	Appearance: No damage Contact resistance: Less than twice of initial	Mated connector shall be placed on a salt spray chamber on the following conditions. (Based upon JIS C5402 7.1 / MIL-STD-202 Method 101 Condition B) Salt Solution Density : 5±1% Temperature : 35±2°C Duration : 8 Hours
8.19	Solder ability	Solder coverage: 95% Min.	Subject the test area of contacts into the flux for 5-10 sec. And then into solder bath, Temperature at 245 ±5°C for 3±0.5sec.
8.20	Resistance to Reflow Soldering Heat	No damage	Refer Reflow temperature profile See Figure 2.
8.21	Soldering iron method	No damage	Apply solder iron in solder tail Temperature: 350±10°C, 3~4 sec.

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9. Crimping Specification

1251T0H-XX				
Wire Size(AWG)		#28	#30	#32
1. CONDUCTOR (mm)	CRIMP WIDTH	0.85±0.05		
	CRIMP HEIGHT	0.52~0.62	0.47~0.57	0.42~0.52
2. INSULATION (mm)	CRIMP WIDTH	1.00	1.00	0.95
	CRIMP HEIGHT	1.15	1.00	0.85
CRIMP STRENGTH		1.0Kgf (MIN)	0.5Kgf (MIN)	0.3Kgf (MIN)

Figure 1

10. Recommended Reflow Temperature Profile: Using Lead-Free Solder Paste

Using Lead-Free Solder Paste

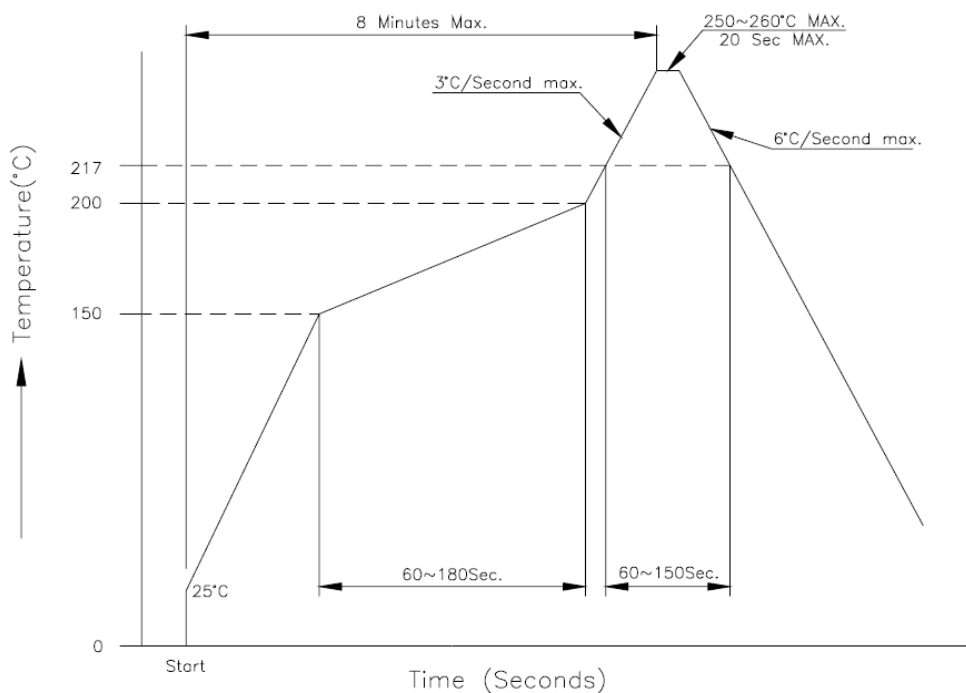


Figure 2

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11. MATING AND UN-MATING FORCE (REMOVE LATCH)

UNIT: Kgf

Circuits	Insertion (MAX.)	Withdrawal (MIN.)		
	Initial	Initial	10th	30th
2	2.0	0.28	0.23	0.18
3	2.5	0.30	0.25	0.20
4	3.0	0.33	0.28	0.23
5	3.5	0.38	0.33	0.28
6	4.0	0.43	0.38	0.33
7	4.5	0.48	0.43	0.38
8	5.0	0.53	0.48	0.43
9	5.5	0.56	0.51	0.46
10	6.0	0.59	0.54	0.49

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
	Test Sequence (a)												
Examination of Product	1,8	1,7	1	1	1	1	1,3	1,5	1,5	1,5	1,5	1,3	1,3
Contact Resistance	2,7	2,6						2,4	2,4	2,4	2,4		
Insulation Resistance		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												
Pin retention force (For Header)					2								
Temperature Rise						2							
Vibration							2						
Heat aging								3					
Cold Resistance									3				
Humidity		4											
Temperature cycling										3			
Salt spray											3		
Solder ability												2	
Resistance to Reflow heat													2
Sample Size	5	5	5	5	5	5	5	5	5	5	5	5	5

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