



PRODUCT SPECIFICATION
WIRE TO BOARD 1.50 MM PITCH
CKM PN: 1502 SERIES

REVISION HISTORY:

REV	REVISION DESCRIPTION	DATE	CREATED/REVISED
A	NEW RELEASE	2011/02/09	Rock
B	UPGRADE INSERTION AND EXTRACTION FORCE	2018/06/25	Rock
C	UPGRADE INSERTION AND EXTRACTION FORCE	2018/07/11	Rock

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DOCUMENT NUMBER: PS-1502-001		CREATED/REVISED Rock	CHECKED BY Angus.Chen	APPROVED BY Angus.Chen



1.0 SCOPE

This product specification covers specification and performance of the WTB Contactor.

2.0 APPLICABLE DOCUMENTS

The following document, of the latest issue in effect at the time of performance of the qualification tests, shall form a part of this specification to the extent specified herewith.

3.0 REQUIREMENTS

3.1 MATERIALS

3.1.1 Insulator

A. Housing: Thermoplastic, UL 94V-0, color: natural.

3.1.2 Contacts

A. Material: Phosphor bronze & Brass.

B. Contact plating: Au or Tin plated over nickel.

3.2 RATINGS

3.2.1 Current rating: 2.5A AC, DC (AWG#24)
2.0A AC, DC (AWG#26)
1.5A AC, DC (AWG#28)
1.5A AC, DC (AWG#30)

3.2.2 Voltage rating: 250V AC

3.2.3 Temperature range: -55°C to +105°C

3.2.4 Applicable wire: AWG #30 to #24, Insulation O.D.: 0.8 to 1.1mm Max.

3.2.5 Applicable PC board thickness: 0.6 to 1.2mm or 1.6mm.

3.3 PERFORMANCE REQUIREMENTS AND TEST DESCRIPTIONS

The product is designed to meet the electrical, mechanical and environmental performance requirements as specified in Figure 1. Unless otherwise specified, all tests are performed at ambient environmental conditions.

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4.0 TEST REQUIREMENTS AND PROCEDURES SUMMARY

TEST ITEM		REQUIREMENT	PROCEDURE
1	Examination of Product	Meets requirements of product drawing. No physical damage.	Per EIA-364-18 Visual inspection
ELECTRICAL REQUIREMENT			
2	Low Level Contact Resistance	20mΩ Max (Initial) 40mΩ Max (Final)	Subject mated contacts assembled in housing to 20 mV max. open circuit voltage at 10 m A max
3	Insulation Resistance	1000MΩ Min	Unmated connectors, apply 500V DC between adjacent terminals.
4	Dielectric Withstanding Voltage	No breakdown.	Apply 500V AC (rms). between adjacent terminals or terminal and ground for 1 minute.
MECHANICAL REQUIREMENT			
5	Insertion and Extraction Force	Refer to paragraph 4.1	Subject terminated connector and header to mate and unmate to measure the force required to engage and disengage by operating at a rate of 12.7mm minute
6	Wire Retention Force	AWG # 24: 3.0kgf Min. AWG # 26: 2.0kgf Min. AWG # 28: 1.8kgf Min. AWG # 30: 0.8kgf Min.	Fix the crimped terminal, apply axial pull out force on the wire at speed rate of 12.7 mm/minute
7	Terminal / Housing Retention Force (For Plug)	0.8 kgf Min.	Apply axial pull out force at the speed rate of 12.7 mm/minute on the terminal assembly in the housing

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8	Terminal Retention Force (For Header)	1.0 kgf Min.	Apply axial pull out force at the speed rate of 12.7 mm/minute
9	Durability	Contact resistance: 40 m Ω Max	Insert and withdraw connector 10 cycles repeatedly by rate of less than 10 cycles/minute.

ENVIRONMENTAL REQUIREMENTS

10	Vibration	No physical damage & No electric discontinuity greater than 1 μ sec. shall occur & Contact resistance: 40 m Ω Max after test	The electrical load condition shall be 100 mA maximum for all contacts. Subject to a simple harmonic motion having amplitude of 0.76mm (1.52mm maximum total excursion) in frequency between the limits of 10 and 55 Hz. The entire frequency range, from 10 to 55 Hz and return to 10 Hz, shall be traversed in approximately 1 minute. This motion shall be applied for 2 hours in each of three mutually perpendicular directions.
11	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.
12	Heat Resistance	No Physical damage & Contact resistance: 40 m Ω Max After test	Subject mated connectors to temperature life at 105± 2°C for 96 hours. Measure Signal.
13	Cold Resistance	No physical damage & Contact resistance: 40 m Ω Max After test	Mate connectors: Duration: 96 hours; Temperature: -55 ± 2°C

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14	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.
15	Salt Spray	No Physical damage & Contact resistance: 40 m Ω Max after test	Subject mated/unmated connectors to 5% salt-solution concentration, 35°C for 8 hours.
16	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.
17	Resistance to Reflow Soldering Heat (SMT TYP)	Visual: No damage or discoloration of Connector materials.	Pre heat: 150°C~180°C, 60~90sec. Heat: 230°C min., 40sec min. Peak temp: 260°C max, 10sec max.
18	Resistance to Wave Soldering Heat (DIP TYPE)	No damage	Solder Temp: 250°C ±5°C for 3±0.5sec.
19	Resistance To Hand Soldering Heat	No damage	Apply solder iron in solder tail Temperature: 350±10°C, 3~4 sec.

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4.1 INSERTION AND EXTRACTION FORCE:

No. of CKT	UNIT	Insertion (MAX.)	Withdrawal (MIN.)	
		1st	1st	After 10X durability
2	N {kgf}	25 {2.5}	9.8 {1.0}	5.9 {0.6}
3	N {kgf}	29 {3.0}	9.8 {1.0}	5.9 {0.6}
4	N {kgf}	34 {3.5}	9.8 {1.0}	5.9 {0.6}
5	N {kgf}	39 {4.0}	9.8 {1.0}	7.8 {0.8}
6	N {kgf}	44 {4.5}	9.8 {1.0}	7.8 {0.8}
7	N {kgf}	49 {5.0}	9.8 {1.0}	7.8 {0.8}
8	N {kgf}	54 {5.5}	15 {1.5}	9.8 {1.0}
9	N {kgf}	54 {5.5}	15 {1.5}	9.8 {1.0}
10	N {kgf}	59 {6.0}	15 {1.5}	9.8 {1.0}
11	N {kgf}	59 {6.0}	15 {1.5}	9.8 {1.0}
12	N {kgf}	64 {6.5}	15 {1.5}	9.8 {1.0}
13	N {kgf}	64 {6.5}	15 {1.5}	9.8 {1.0}
14	N {kgf}	69 {7.0}	15 {1.5}	9.8 {1.0}
15	N {kgf}	69 {7.0}	15 {1.5}	9.8 {1.0}

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4.1 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	1,5	1,9	1	1,5	1,5	1,3	1,5	1,5	1	1,5	1	1,3	1	1	1
Contact Resistance	2,4	2,8		2,4	2,4		2,4	2,4	3	2,4					
Insulation Resistance		3,7													
Dielectric withstanding Voltage		4,6													
Insertion and Extraction Force	3														
Wire Retention Force			2												
Terminal / Housing Retention Force (For Plug)													2		
Terminal Retention Force (For Header)														2	
Durability									2						
Vibration				3											
Mechanical Shock					3										
Heat Resistance							3								
Cold Resistance								3							
Humidity		5													
Salt Spray										3					
Solder ability											2				
Resistance to Reflow Soldering Heat (SMT TYP)						2									
Resistance to Wave Soldering Heat (DIP TYPE)												2			
Resistance To Hand Soldering Heat															2
Sample Size	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

5. PRODUCT SHAPE, DIMENSIONS AND MATERIALS

*Please refer to the drawing.

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