



PRODUCT SPECIFICATION
WIRE TO BOARD 1.25 MM PITCH
CKM PN: 1253 & 1251 SERIES

REVISION HISTORY:

| REV | REVISION DESCRIPTION | DATE | CREATED/REVISED |
|-----|---------------------------|------------|-----------------|
| A | NEW RELEASE | 2011/12/13 | Rock |
| B | UPGRADE TEM 3.2.3 | 2015/10/29 | Rock |
| C | UPGRADE TEMPERATURE RANGE | 2022/05/31 | Rock |
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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: Copper alloy.

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

3.1.3 Hold down:

A. Material: Copper alloy.

B. Contact plating: Tin plated over nickel.

3.2 RATINGS

3.2.1 Current rating: 1.0A AC, DC (AWG #28/AWG#30)
0.8A AC, DC (AWG #32)

3.2.2 Voltage rating: 250V AC, DC

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

3.2.4 Applicable wire: AWG #32 to #28, Insulation O.D.: 1.0mm Max.

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 | 100MΩ Min | Unmated connectors, apply 500V DC between adjacent terminals. |
| 4 | Dielectric Withstanding Voltage | No breakdown. | Apply 250V AC (rms). between adjacent terminals or terminal and ground for 1 minute. |
| 5 | Temperature Rise | Maximum Temperature Rise: 30°C above ambient. | Mate the connectors, series 6 contacts and measure the temperature rise at the rated current of 1.0 A after 3 hours. |
| MECHANICAL REQUIREMENT | | | |
| 6 | Insertion and Extraction Force | Insertion force and Extraction force: See section 4.2 | Subject terminated connector and header to mate and unmate to measure the force required to engage and disengage by operating at a rate of 25+/-3mm minute |
| 7 | Wire Retention Force | AWG # 28: 9.8N(1.0 kgf) Min AWG # 30: 4.9 N(0.5kgf) Min AWG # 32: 3.0 N(0.3 kgf) Min See section 4.1 | Fix the crimped terminal, apply axial pull out force on the wire at speed rate of 25±3 mm/minute |

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| 8 | Terminal / Housing Retention Force (For Plug) | 4.9 N {0.5 kgf} Min. | Apply axial pull out force at the speed rate of 25±3 mm/minute on the terminal assembly in the housing |
| 9 | Terminal Retention Force (For Header) | 4.9 N {0.5 kgf} Min. | Apply axial pull out force at the speed rate of 25±3 mm/minute |
| 10 | Durability | See section 4.2 Contact Resistance :40 m Ω Max | When mated up to 30 cycles, repeatedly by the rate of 10 cycles/min |

ENVIRONMENTAL REQUIREMENTS

| | | | |
|----|------------------|---|---|
| 11 | 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. |
| 12 | 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. |

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| 13 | 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. |
| 14 | Cold Resistance | No physical damage & Contact resistance: 40 m Ω Max After test | Mate connectors: Duration: 96 hours; Temperature: -40 ± 2°C |
| 15 | 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. |
| 16 | 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. |
| 17 | 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. |
| 18 | Resistance to Reflow Soldering Heat | 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. |
| 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. CRIMPING SPECIFICATION

| 1251TOP-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) |

4.2 INSERTION/EXTRACTION FOREC

Unit : Kgf

| Number of circuits | Insertion Force (Max) | | | Extraction Force (Min) | | |
|--------------------|-----------------------|------|------|------------------------|------|------|
| | 1st | 6st | 30st | 1st | 6st | 30st |
| 2 | 2.00 | 1.80 | 1.60 | 0.28 | 0.23 | 0.18 |
| 3 | 2.50 | 2.30 | 2.10 | 0.30 | 0.25 | 0.20 |
| 4 | 3.00 | 2.80 | 2.60 | 0.33 | 0.28 | 0.23 |
| 5 | 3.50 | 3.30 | 3.10 | 0.38 | 0.33 | 0.28 |
| 6 | 4.00 | 3.80 | 3.60 | 0.43 | 0.38 | 0.33 |
| 7 | 4.50 | 4.30 | 4.10 | 0.48 | 0.43 | 0.38 |
| 8 | 5.00 | 4.80 | 4.60 | 0.53 | 0.48 | 0.43 |
| 9 | 5.50 | 5.30 | 5.10 | 0.56 | 0.51 | 0.46 |
| 10 | 6.00 | 5.80 | 5.60 | 0.59 | 0.54 | 0.49 |
| 11 | 6.50 | 6.30 | 6.10 | 0.62 | 0.57 | 0.52 |
| 12 | 7.00 | 6.80 | 6.60 | 0.65 | 0.60 | 0.55 |
| 13 | 7.50 | 7.30 | 7.10 | 0.68 | 0.63 | 0.58 |
| 14 | 8.00 | 7.80 | 7.60 | 0.71 | 0.66 | 0.61 |
| 15 | 8.50 | 8.30 | 8.10 | 0.74 | 0.69 | 0.64 |

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4.2 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 |
| | Test Sequence (a) | | | | | | | | | | | | | |
| Examination of Product | 1,9 | 1,9 | 1 | 1,5 | 1;5 | 1,3 | 1,5 | 1,5 | 1,5 | 1 | 1,3 | 1 | 1 | 1 |
| Contact Resistance | 2,6 | 2,8 | | 2,4 | 2;4 | | 2,4 | 2,4 | 2,4 | | | | | |
| Insulation Resistance | | 3,7 | | | | | | | | | | | | |
| Dielectric withstanding Voltage | | 4,6 | | | | | | | | | | | | |
| Temperature Rise | | | | | | 2 | | | | | | | | |
| Insertion and Extraction Force | 3,5 | | | | | | | | | | | | | |
| Wire Retention Force | | | 2 | | | | | | | | | | | |
| Terminal / Housing Retention Force (For Plug) | | | | | | | | | | | | 2 | | |
| Terminal Retention Force (For Header) | | | | | | | | | | | | | 2 | |
| Durability | 4 | | | | | | | | | | | | | |
| Vibration | | | | 3 | | | | | | | | | | |
| Mechanical Shock | | | | | 3 | | | | | | | | | |
| Heat Resistance | | | | | | | 3 | | | | | | | |
| Cold Resistance | | | | | | | | 3 | | | | | | |
| Humidity | | 5 | | | | | | | | | | | | |
| Salt Spray | | | | | | | | | 3 | | | | | |
| Solder ability | | | | | | | | | | 2 | | | | |
| Resistance to Reflow Soldering Heat | | | | | | | | | | | 2 | | | |
| Resistance To Hand Soldering Heat | | | | | | | | | | | | | | 2 |
| Sample Size | 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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