瀚荃股份有限公司
CviLux Corporation

# RELIABILITY TEST REPORT

TESTITEM: 1.ELECTRICAL
2.MECHANICAL
3.ENVIRONMENTAL

SERIES NO.: CI52 Series

TEST EQUIPMENT: 1.INSERTION & REMOVAL APPARATUS
2.ELECTRONIC MEASURING APPARATUS
3.ENVIRONMENTAL APPARATUS

DATE OF TESTING: 3 / 12 / 03

TEST DEPART: QA TESTER: chang

CONTAINT: ATTACHED

REVIEWED : Smith APPROVED : Smith VERIFIED : chang .

1.ELECTRICAL PERFORMANCE：

| | ITEM | TEST CONDITION | REQUIREMENT | TEST RESULT | |
|---|---|---|---|---|---|
| 1-1 | Contact resistance | Dry circuit of DC 20mV max.100mA max. | Less than 20 mΩ | Sample | 20 mΩ max. |
| | | | | 1 | 1.60 mΩ |
| | | | | 2 | 1.74 mΩ |
| | | | | 3 | 1.67 mΩ |
| | | | | 4 | 1.68 mΩ |
| | | | | 5 | 1.70 mΩ |
| 1-2 | Dielectric strength | When applied AC 1500V 1 minute between adjacent terminal | No change | Sample | 1500 V 1 minute |
| | | | | 1 | Pass |
| | | | | 2 | Pass |
| | | | | 3 | Pass |
| | | | | 4 | Pass |
| | | | | 5 | Pass |
| 1-3 | Insulation resistance | When applied DC 500 V between adjacent terminal or ground | More than 1000 MΩ | Sample | 1000 MΩ min. |
| | | | | 1 | $20\times10^5$ MΩ |
| | | | | 2 | $20\times10^5$ MΩ |
| | | | | 3 | $15\times10^5$ MΩ |
| | | | | 4 | $20\times10^5$ MΩ |
| | | | | 5 | $15\times10^5$ MΩ |

2. MECHANICAL PERFORMANCE:

| | ITEM | TEST CONDITION | REQUIREMENT | TEST RESULT | |
|---|---|---|---|---|---|
| 2-1 | Terminal crimp tensile strength | When crimped AWG# 16 size wire | More than 11.0 Kgf | Sample | > 11.0 Kgf |
| | | | | 1 | 13.45 Kgf |
| | | | | 2 | 13.47 Kgf |
| | | | | 3 | 13.87 Kgf |
| | | | | 4 | 13.58 Kgf |
| | | | | 5 | 14.02 Kgf |
| | | When crimped AWG# 18 size wire | More than 9.0 Kgf | Sample | > 9.0 Kgf |
| | | | | 1 | 11.24 Kgf |
| | | | | 2 | 10.97 Kgf |
| | | | | 3 | 10.45 Kgf |
| | | | | 4 | 11.04 Kgf |
| | | | | 5 | 10.57 Kgf |
| | | When crimped AWG# 20 size wire | More than 7.0 Kgf | Sample | > 7.0 Kgf |
| | | | | 1 | 7.98 Kgf |
| | | | | 2 | 7.14 Kgf |
| | | | | 3 | 7.87 Kgf |
| | | | | 4 | 7.38 Kgf |
| | | | | 5 | 7.18 Kgf |

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|---|---|---|---|---|---|
| | | When crimped AWG# 22 size wire | More than 5.0 Kgf | Sample | > 5.0 Kgf |
| | | | | 1 | 5.98 Kgf |
| | | | | 2 | 6.23 Kgf |
| | | | | 3 | 6.35 Kgf |
| | | | | 4 | 5.89 Kgf |
| | | | | 5 | 6.45 Kgf |
| 2-2 | Terminal insertion force | Insertion speed 25± 3 mm per minute into housing | Less than 1.5 Kgf | Sample | < 1.5 Kgf |
| | | | | 1 | 0.78 Kgf |
| | | | | 2 | 0.70 Kgf |
| | | | | 3 | 0.76 Kgf |
| | | | | 4 | 0.75 Kgf |
| | | | | 5 | 0.71 Kgf |
| 2-3 | Contact retaining force in insulator | Retention speed 25± 3 mm per minute from housing | More than 3.0 Kgf | Sample | > 3.0 Kgf |
| | | | | 1 | 7.31 Kgf |
| | | | | 2 | 7.67 Kgf |
| | | | | 3 | 6.87 Kgf |
| | | | | 4 | 7.23 Kgf |
| | | | | 5 | 7.10 Kgf |
| 2-4 | Single contact insertion force | Measure force to insertion using 1.14 mm square pin at speed 25±3 mm per minute | 1.2 Kgf max. | Sample | 1.2 Kgf max. |
| | | | | 1 | 0.62 Kgf |
| | | | | 2 | 0.65 Kgf |
| | | | | 3 | 0.72 Kgf |
| | | | | 4 | 0.69 Kgf |
| | | | | 5 | 0.67 Kgf |
| 2-5 | Single contact withdrawal force | Measure force to withdrawal using 1.14 mm square pin at speed 25±3 mm per minute | 300 gram min. | Sample | 300 gram min. |
| | | | | 1 | 571 gram |
| | | | | 2 | 510 gram |
| | | | | 3 | 594 gram |
| | | | | 4 | 542 gram |
| | | | | 5 | 526 gram |
| 2-6 | Durability | Connector shall be subjected to100 cycles of insertion and withdrawal | Contact resistance: Less than twice of initial | Sample | < twice of initial |
| | | | | 1 | 1.68 mΩ |
| | | | | 2 | 1.76 mΩ |
| | | | | 3 | 1.69 mΩ |
| | | | | 4 | 1.76 mΩ |
| | | | | 5 | 1.76 mΩ |
| 2-7 | Pin retention force | Push pin from insulator base at speed 25±3mm per minute | More than 2.5 Kgf | Sample | > 2.5 Kgf |
| | | | | 1 | 4.06 Kgf |
| | | | | 2 | 4.44 Kgf |
| | | | | 3 | 4.27 Kgf |
| | | | | 4 | 3.98 Kgf |
| | | | | 5 | 4.47 Kgf |

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|---|---|---|---|---|---|---|
| 2-8 | Mating and unmating force | Speed 25±3 mm per minute | 2 pin Unit: Kgf Mating force 2.5 max. Unmating force 0.3 min. | Sample | Mating | unmating |
| | | | | 1 | 1.78 | 1.26 |
| | | | | 2 | 1.64 | 1.48 |
| | | | | 3 | 1.83 | 1.32 |
| | | | | 4 | 1.72 | 1.37 |
| | | | | 5 | 1.86 | 1.42 |
| | | | 6 pin Mating force 5.0 max. Unmating force 0.7 min. | Sample | Mating | unmating |
| | | | | 1 | 4.13 | 3.77 |
| | | | | 2 | 3.79 | 3.96 |
| | | | | 3 | 4.20 | 3.85 |
| | | | | 4 | 3.87 | 3.42 |
| | | | | 5 | 4.08 | 3.57 |
| | | | 12 pin Mating force 11.5 max. Unmating force 2.0 min. | Sample | Mating | unmating |
| | | | | 1 | 9.27 | 5.48 |
| | | | | 2 | 10.25 | 6.50 |
| | | | | 3 | 9.79 | 5.62 |
| | | | | 4 | 10.10 | 5.94 |
| | | | | 5 | 9.71 | 6.22 |

3. ENVIRONMENTAL PERFORMANCE:

| | ITEM | TEST CONDITION | REQUIREMENT | TEST RESULT | |
|---|---|---|---|---|---|
| 3-1 | Temperature rise | Then carried the rated current | 30 ℃ max. | Sample | 30 ℃ max. |
| 3-2 | Vibration | 1.5 mm 10-55-10 HZ/minute each 2 hours for X, Y and Z directions | Appearance: No damage | Sample | No damage |
| | | | Discontinuity: 1 micro second max. | Sample | 1 micro second max. |
| 3-3 | Solder ability | Soldering time: 5 ±0.5 sec. Soldering pot:230 ±5℃ | Minimum: 90% of immersed area | Sample | 90% of Immersed area |
| | | | | 1 | Pass |
| | | | | 2 | Pass |
| | | | | 3 | Pass |
| | | | | 4 | Pass |
| | | | | 5 | Pass |
| 3-4 | Resistance to soldering heat | Soldering time: 5 ±0.5 sec. Soldering pot:260 ±5℃ | No damage | Sample | No damage |
| | | | | 1 | Pass |
| | | | | 2 | Pass |
| | | | | 3 | Pass |
| | | | | 4 | Pass |
| | | | | 5 | Pass |

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|---|---|---|---|---|---|
| 3-5 | Heat aging | 85 ±2°C , 96 hours | No damage | Sample | No damage |
| | | | | 1 | Pass |
| | | | | 2 | Pass |
| | | | | 3 | Pass |
| | | | | 4 | Pass |
| | | | | 5 | Pass |
| 3-6 | Humidity | 40 ±2°C, 90-95%RH, 96 hours measurement must be taken within 30 min. after tested | Appearance: No damage | Sample | No damage |
| | | | | 1 | Pass |
| | | | | 2 | Pass |
| | | | | 3 | Pass |
| | | | | 4 | Pass |
| | | | | 5 | Pass |
| | | | Contact resistance: Less than twice of initial | Sample | < twice of initial |
| | | | | 1 | 1.65 mΩ |
| | | | | 2 | 1.70 mΩ |
| | | | | 3 | 1.75 mΩ |
| | | | | 4 | 1.72 mΩ |
| | | | | 5 | 1.67 mΩ |
| | | | Dielectric strength: To pass Para 1-2 | Sample | Pass para 1-2 |
| | | | | 1 | Pass |
| | | | | 2 | Pass |
| | | | | 3 | Pass |
| | | | | 4 | Pass |
| | | | | 5 | Pass |
| 3-7 | Temperature cycling | One cycle consists of:<br>1. $-55^{+0}_{-3}$ °C, 30 min<br>2. Room temp. 10-15 min<br>3. $85^{+3}_{-0}$ °C, 30 min<br>4. Room temp. 10-15 min | Appearance: No damage | Sample | No damage |
| | | | | 1 | Pass |
| | | | | 2 | Pass |
| | | | | 3 | Pass |
| | | | | 4 | Pass |
| | | | | 5 | Pass |
| | | | Contact resistance: Less than twice of initial | Sample | < twice of initial |
| | | | | 1 | 1.66 mΩ |
| | | | | 2 | 1.68 mΩ |
| | | | | 3 | 1.70 mΩ |
| | | | | 4 | 1.72 mΩ |
| | | | | 5 | 1.71 mΩ |
| 3-8 | Salt spray | Temperature:35±3°C<br>Solution:5±1%<br>Spray time:48±4hours<br>Measurement must be taken after water rinse | Appearance: No damage | Sample | No damage |
| | | | | 1 | Pass |
| | | | | 2 | Pass |
| | | | | 3 | Pass |
| | | | | 4 | Pass |
| | | | | 5 | Pass |

| | | | | | |
|---|---|---|---|---|---|
| | | | Contact resistance:<br>Less than twice of initial | Sample | < twice of initial |
| | | | | 1 | 1.69 mΩ |
| | | | | 2 | 1.75 mΩ |
| | | | | 3 | 1.72 mΩ |
| | | | | 4 | 1.70 mΩ |
| | | | | 5 | 1.73 mΩ |