

**SPEC. NO.:** PS-50966-XXXXX-XXX

**REVISION:** B

**PRODUCT NAME:** 2.50mm PITCH BATTERY CONNECTOR

**PRODUCT NO:** 50966 SERIES, 5300X SERIES ,51998 SERIES

|   |  |   |
|---|--|---|
| <b>PREPARED:</b><br><br><b>BRAVE</b><br><br><b>DATE:</b><br><b>2011.08.24</b> | <b>CHECKED:</b><br><br><b>SAM</b><br><br><b>DATE:</b><br><b>2011.08.24</b> | <b>APPROVED:</b><br><br><b>JASON</b><br><br><b>DATE:</b><br><b>2011.08.24</b> |
|---|--|---|

**TITLE: 2.50MM PITCH BATTERY CONNECTOR**

RELEASE DATE: 2011.09.14

REVISION:B

ECN No: 1109243

PAGE: 2 OF 9

|   |  |   |
|---|--|---|
| 1 | REVISION HISTORY .....                       | 3 |
| 2 | SCOPE .....                                  | 4 |
| 3 | APPLICABLE DOCUMENTS.....                    | 4 |
| 4 | REQUIREMENTS .....                           | 4 |
| 5 | PERFORMANCE .....                            | 5 |
| 6 | INFRARED REFLOW CONDITION .....              | 8 |
| 7 | PRODUCT QUALIFICATION AND TEST SEQUENCE..... | 9 |

Aces P/N: **50966 series**

TITLE: **2.50MM PITCH BATTERY CONNECTOR**

RELEASE DATE: 2011.09.14

REVISION: B

ECN No: 1109243

PAGE: 3 OF 9

## 1 Revision History

| Rev. | ECN #       | Revision Description | Prepared | Date       |
|------|-------------|----------------------|----------|------------|
| 1    | ECN-0910214 | NEW SPEC             | JASON    | 2009.10.22 |
| O    | ECN-1001003 | RELEASE              | JASON    | 2009.01.04 |
| A    | ECN-1106240 | ADD PIN 50964        | BRAVE    | 2010.07.04 |
| B    | ECN-1109243 | ADD PIN 51998        | BRAVE    | 2011.08.24 |
|      |             |                      |          |            |
|      |             |                      |          |            |
|      |             |                      |          |            |
|      |             |                      |          |            |

TITLE: **2.50MM PITCH BATTERY CONNECTOR**

RELEASE DATE: 2011.09.14

REVISION: B

ECN No: 1109243

PAGE: 4 OF 9

## 2 SCOPE

This specification covers performance, tests and quality requirements for **2.50mm Pitch Battery Connector**.

## 3 APPLICABLE DOCUMENTS

EIA-364: ELECTRONICS INDUSTRIES ASSOCIATION

## 4 REQUIREMENTS

### 4.1 Design and Construction

- 4.1.1 Product shall be of design, construction and physical dimensions specified on applicable product drawing.
- 4.1.2 All materials conform to R.o.H.S. and the standard depends on TQ-WI-140101.

### 4.2 Materials and Finish

- 4.2.1 Contact: High performance copper alloy  
Finish: Pls refer to the drawing.
- 4.2.2 Housing: Thermoplastic or Thermoplastic High Temp., UL94V-0

### 4.3 Ratings

- 4.3.1 Voltage: **30 Volts AC (per pin)**
- 4.3.2 Current: **6 Amperes (per pin)**
- 4.3.3 Operating Temperature : **-40°C to +85°C**

**TITLE: 2.50MM PITCH BATTERY CONNECTOR**

RELEASE DATE: 2011.09.14

REVISION:B

ECN No: 1109243

PAGE: 5 OF 9

**5 Performance**

## 5.1. Test Requirements and Procedures Summary

| Item                            | Requirement   | Standard   |
|---------------------------------|---|--|
| Examination of Product          | Product shall meet requirements of applicable product drawing and specification.                                    | Visual, dimensional and functional per applicable quality inspection plan.   |
| <b>ELECTRICAL</b>               |   |  |
| Item                            | Requirement   | Standard   |
| Low Level Contact Resistance    | <b>30 m <math>\Omega</math></b> Max.(initial)per contact<br>$\Delta$ R <b>20 m <math>\Omega</math></b> Max. (Final) | Mate connectors, measure by dry circuit, <b>20mV</b> Max., <b>100mA</b> Max.<br>(EIA-364-23)   |
| Insulation Resistance           | <b>500 M <math>\Omega</math></b> Min.   | Unmated connectors, apply <b>500 V</b> DC between adjacent terminals.<br>(EIA-364-21)  |
| Dielectric Withstanding Voltage | No discharge, flashover or breakdown.<br>Current leakage: <b>1 mA</b> max.  | <b>300 V</b> AC Min. at sea level for <b>1</b> minute. Test between adjacent contacts of unmated connectors.<br>(EIA-364-20)   |
| Temperature rise                | <b>30°C</b> Max. Change allowed   | Mate connector: measure the temperature rise at rated current until temperature stable. The ambient condition is still air at <b>25°C</b><br>(EIA-364-70 METHOD 1,CONDITION 1) |
| <b>MECHANICAL</b>               |   |  |
| Item                            | Requirement   | Standard   |
| Durability                      | <b>5000</b> cycles.   | The sample should be mounted in the tester and fully mated and unmated the number of cycles specified at the rate of <b>25.4 <math>\pm</math> 3</b> mm/min.                    |
| Mating /Unmating Forces         | Mating Force: <b>0.9Kgf</b> Max./per pin<br>Unmating Force: <b>0.03Kgf</b> Min./per pin                             | Operation Speed : <b>25.4 <math>\pm</math> 3</b> mm/minute..<br>Measure the force required to mate/Unmate connector.<br>(EIA-364-13)   |

**TITLE: 2.50MM PITCH BATTERY CONNECTOR**

RELEASE DATE: 2011.09.14

REVISION:B

ECN No: 1109243

PAGE: 6 OF 9

|                         |               |  |
|-------------------------|---------------|--|
| Contact Retention Force | 0.5kgf MIN.   | Operation Speed :<br>25.4 ± 3 mm/minute.<br>Measure the contact retention force with tester.   |
| Lock Retention Force    | 0.35kg/f Min. | Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute. On the fitting nail assembled in the housing.  |
| Vibration               | 1 μs Max.     | 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. (EIA-364-28 Condition I) |
| Shock (Mechanical)      | 1 μs Max.     | 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. (EIA-364-27, test condition A)  |

**ENVIRONMENTAL**

| Item                                | Requirement  | Standard  |
|-------------------------------------|--|---|
| Resistance to Wave Soldering Heat   | See Product Qualification and Test Sequence Group 10 (Lead Free) | Solder Temp. :<br>265±5°C, 10±0.5sec.   |
| Resistance to Reflow Soldering Heat | See Product Qualification and Test Sequence Group 10 (Lead Free) | Pre Heat : 150°C~180°C,<br>60~120sec.<br>Heat : 230°C Min., 40sec Min.<br>Peak Temp. : 260°C Max,<br>10sec Max. |

**TITLE: 2.50MM PITCH BATTERY CONNECTOR**

RELEASE DATE: 2011.09.14

REVISION: B

ECN No: 1109243

PAGE: 7 OF 9

|  |  |  |
|--|--|--|
| Hand Soldering<br>Temperature Resistance | Appearance: No damage  | $T \geq 350^{\circ}\text{C}$ , 3sec at least.  |
| Thermal Shock                            | See Product Qualification and<br>Test Sequence Group <b>4</b>  | Mate module and subject to follow<br>condition for 5 cycles.<br>1 cycles:<br>-55 +0/-3 °C, 30 minutes<br>+85 +3/-0 °C, 30 minutes<br>(EIA-364-32, test condition I)                |
| Humidity                                 | See Product Qualification and<br>Test Sequence Group <b>4</b>  | Mated Connector<br>40°C, 90~95% RH,<br>96 hours.<br>(EIA-364-31, Condition A, Method<br>II)  |
| Temperature life                         | See Product Qualification and<br>Test Sequence Group <b>5</b>  | Subject mated connectors to<br>temperature life at 85°C for <b>96<br/>hours</b> .<br>(EIA-364-17, Test condition A)  |
| Salt Spray<br>(Only For Gold Plating)    | See Product Qualification and<br>Test Sequence Group <b>6</b>  | Subject mated/unmated<br>connectors to 5% salt-solution<br>concentration, 35°C<br><b>(I) Gold flash for 8 hours</b><br><b>(II) Gold plating 5 u" for 96 hours.</b><br>(EIA-364-26) |
| Solder ability                           | Tin plating:<br>Solder able area shall have<br>minimum of 95% solder<br>coverage.<br>Gold plating:<br>Solder able area shall have<br>minimum of 75% solder<br>coverage | And then into solder bath,<br>Temperature at $245 \pm 5^{\circ}\text{C}$ , for <b>4-5<br/>sec</b> .<br>(EIA-364-52)  |

**Note.** Flowing Mixed Gas shall be conducted by customer request.

**TITLE: 2.50MM PITCH BATTERY CONNECTOR**

RELEASE DATE: 2011.09.14

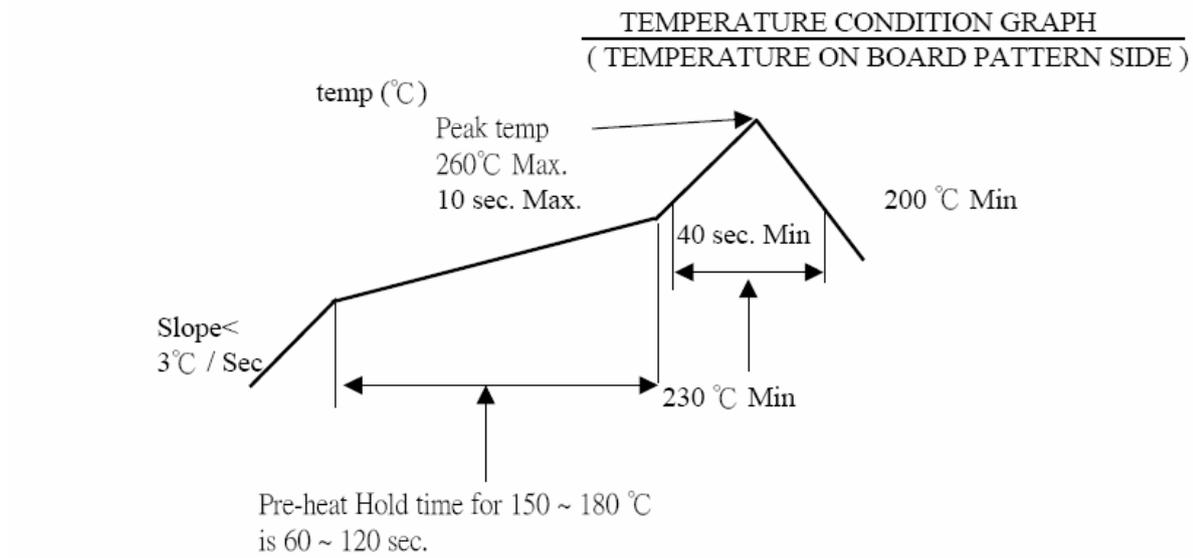
REVISION:B

ECN No: 1109243

PAGE: 8 OF 9

**6 INFRARED REFLOW CONDITION**

6.1. Lead-free Process



TITLE: **2.50MM PITCH BATTERY CONNECTOR**

RELEASE DATE: 2011.09.14

REVISION:B

ECN No: 1109243

PAGE: 9 OF 9

**7 PRODUCT QUALIFICATION AND TEST SEQUENCE**

| Test or Examination                   | Test Group    |     |     |      |     |     |   |   |   |     |     |
|---------------------------------------|---------------|-----|-----|------|-----|-----|---|---|---|-----|-----|
|                                       | 1             | 2   | 3   | 4    | 5   | 6   | 7 | 8 | 9 | 10  | 11  |
|                                       | Test Sequence |     |     |      |     |     |   |   |   |     |     |
| Examination of Product                | 1,3           |     |     | 1,7  | 1,6 | 1,4 |   |   | 1 | 1,4 | 1.3 |
| Low Level Contact Resistance          |               | 1,5 | 1,4 | 2,10 | 2,9 | 2,5 |   |   |   | 2,5 |     |
| Insulation Resistance                 |               |     |     | 3,9  | 3,8 |     |   |   |   |     |     |
| Dielectric Withstanding Voltage       |               |     |     | 4,8  | 4,7 |     |   |   |   |     |     |
| Temperature Rise                      | 2             |     |     |      |     |     |   |   |   |     |     |
| Mating / Unmating Forces              |               | 2,4 |     |      |     |     |   |   |   |     |     |
| Contact Retention Force               |               |     |     |      |     |     |   | 1 |   |     |     |
| Durability                            |               | 3   |     |      |     |     |   |   |   |     |     |
| Vibration                             |               |     | 2   |      |     |     |   |   |   |     |     |
| Shock(Mechanical)                     |               |     | 3   |      |     |     |   |   |   |     |     |
| Resistance to Soldering Heat          |               |     |     |      |     |     |   |   |   | 3   |     |
| Thermal Shock                         |               |     |     | 5    |     |     |   |   |   |     |     |
| Humidity                              |               |     |     | 6    |     |     |   |   |   |     |     |
| Temperature Life                      |               |     |     |      | 5   |     |   |   |   |     |     |
| Salt Spray(Only For Gold Plating)     |               |     |     |      |     | 3   |   |   |   |     |     |
| Solder ability                        |               |     |     |      |     |     | 1 |   |   |     |     |
| Lock Retention Force                  |               |     |     |      |     |     |   |   | 2 |     |     |
| Hand Soldering Temperature Resistance |               |     |     |      |     |     |   |   |   |     | 2   |
| Sample Size                           | 2             | 4   | 4   | 4    | 4   | 4   | 2 | 4 | 4 | 4   | 4   |