



SPECIFICATION

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SPEC. NO.: PS-50515-XXXXX-001 REVISION: F

PRODUCT NAME: 0.3 mm PITCH EASY ON FPC CONN.

SMT R/A B/C TYPE.

PRODUCT NO: 50515 SERIES 51685 SERIES

| | | |
|---|---|--|
| PREPARED: TANGENHUI DATE: 2015/12/01 | CHECKED: ANDREW DATE: 2015/12/01 | APPROVED: CHARLESLEE DATE: 2015/12/01 |
|---|---|--|



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RELEASE DATE: 2015/12/01

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ECN No: ECN-1512340

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1 Revision History

| Rev. | ECN- | Revision Description | Prepared | Date |
|----------|--------------------|---|------------------|-------------------|
| 0 | ECN-0904195 | Release REV. 0 | Jason Chen | 2009/04/23 |
| A | ECN-0912306 | Revised Precautions | Jason Chen | 2009/12/31 |
| B | ECN-1003165 | Add FPC CKT Retention Force | Jason Chen | 2010/03/15 |
| D | ECN-1205290 | ADD HAND SOLDERING TEMPERATURE RESISTANCE | CANDY | 2012/05/21 |
| E | ECN-1401251 | ADD WORKING VOLTAGE | XUFEI | 2014/01/14 |
| F | ECN-1512340 | ADD 51685 SERIES | TANGENHUI | 2015/12/01 |

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2 SCOPE

This specification covers performance, tests and quality requirements for **0.3 mm Pitch Easy On FPC CONN. SMT R/A B/C TYPE**.

ACES Part/Number : **50515-XXXXX-001 & 50516-XXXXX-001 & 50693-XXXXX & 51685-XXXXX-XXX**

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 (Phosphor Bronze)
Finish: (a) Contact Area: Refer to the drawing.
(b) Under plate: Refer to the drawing.
(c) Solder area: Refer to the drawing.
- 4.2.2 Housing: Thermoplastic or Thermoplastic High Temp., UL94V-0
- 4.2.3 Actuator: Thermoplastic or Thermoplastic High Temp., UL94V-0
- 4.2.4 Fitting Nail: High performance copper alloy (Brass)
Finish: Matt Tin overall. Under plating Nickel allover.

4.3 Ratings

- 4.3.1 Working voltage less than 36 volts (per pin)
- 4.3.2 Voltage: 50 Volts AC (per pin)
- 4.3.3 Current: DC 0.3 Amperes (per pin)
- 4.3.4 Operating Temperature : -40°C to +85°C

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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. |
| ELECTRICAL | | |
| Item | Requirement | Standard |
| Low Level Contact Resistance | 80 m Ω Max. (initial) per contact 40 m Ω Max. Change allowed | Mate connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23) |
| Insulation Resistance | 50 M Ω Min. | Unmated connectors, apply 250 V DC between adjacent terminals. (EIA-364-21) |
| Dielectric Withstanding Voltage | No discharge, flashover or breakdown. Current leakage: 1 mA max. | 250 VAC Min. at sea level for 1 minute. Test between adjacent contacts of unmated connectors. (EIA-364-20) |
| Temperature rise | 30°C Max. Change allowed | Mate connector: measure the temperature rise at rated current until temperature stable. The ambient condition is still air at 25°C (EIA-364-70, METHOD1, CONDITION1) |

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MECHANICAL

| | | |
|---------------------------------------|---|--|
| Durability | 10 cycles. | The sample should be mounted in the tester and fully mated and unmated the number of cycles specified at the rate of 25.4 ± 3 mm/min. (EIA-364-09) |
| FPC Retention Force | Refer to FPC Retention force See Item 7 | Insert the actuator, pull the FPC at the speed rate of 25.4 ± 3 mm/min. |
| Terminal / Housing Retention Force | 80gf MIN. | Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute. On the terminal assembled in the housing. |
| Fitting Nail /Housing Retention Force | 80gf 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 ms 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 ms 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) |

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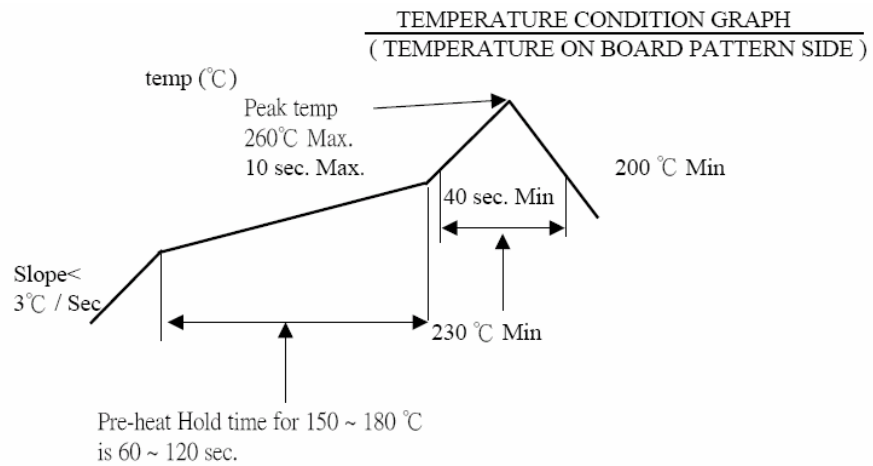
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| ENVIRONMENTAL | | |
|---------------------------------------|--|--|
| Item | Requirement | Standard |
| Resistance to Reflow Soldering Heat | No deformation of components Affecting performance. | Pre Heat : 150°C~180°C, 60~120sec. Heat : 230°C Min., 40sec Min. Peak Temp. : 260°C Max, 10sec Max. |
| Resistance to Manual Soldering Heat | No deformation of components affecting performance. | 350c±5c for 5 seconds |
| Thermal Shock | See Product Qualification and Test Sequence Group 4 | Mate module and subject to follow condition for 5 cycles. 1 cycles: -40 +0/-3 °C, 30 minutes +85 +3/-0 °C, 30 minutes (EIA-364-32, test condition A) |
| Humidity | See Product Qualification and Test Sequence Group 4 | Mated Connector 40°C, 90~95% RH, 96 hours. Reefer to Method II. (EIA-364-31, Test condition A) |
| Temperature life | See Product Qualification and Test Sequence Group 5 | Subject mated connectors to temperature life at 85°C for 96 hours. (EIA-364-17, Test condition A) |
| Salt Spray | See Product Qualification and Test Sequence Group 6 | Subject mated/unmated connectors to 5% salt-solution concentration, 35°C for 8 hours. (EIA-364-26, Test condition B) |
| Solder ability | Tin plating: Solder able area shall have minimum of 95% solder coverage. Gold plating: Solder able area shall have minimum of 75% solder coverage | And then into solder bath, Temperature at 245 ±5°C, for 4-5 sec. (EIA-364-52) |
| Hand Soldering Temperature Resistance | Appearance : No damage | T ≥ 350°C , 3 sec at least |

Note. Flowing Mixed Gas shall be conduct by customer request.

6 INFRARED REFLOW CONDITION

Lead-free Process



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7 PRODUCT QUALIFICATION AND TEST SEQUENCE

| Test or Examination | Test Group | | | | | | | | | |
|---------------------------------------|---------------|-----|-----|------|-----|-----|---|---|---|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| | Test Sequence | | | | | | | | | |
| Examination of Product | 1、3 | 1、7 | 1、6 | 1、10 | 1、9 | 1、5 | | | | 1、3 |
| Low Level Contact Resistance | | 2、6 | 2、5 | 2、9 | 2、8 | 2、4 | | | | |
| Insulation Resistance | | | | 3、8 | 3、7 | | | | | |
| Dielectric Withstanding Voltage | | | | 4、7 | 4、6 | | | | | |
| Temperature rise | 2 | | | | | | | | | |
| Durability | | 4 | | | | | | | | |
| Vibration | | | 3 | | | | | | | |
| Shock (Mechanical) | | | 4 | | | | | | | |
| Thermal Shock | | | | 5 | | | | | | |
| Humidity | | | | 6 | | | | | | |
| Temperature life | | | | | 5 | | | | | |
| Salt Spray | | | | | | 3 | | | | |
| Solder ability | | | | | | | 1 | | | |
| FPC Retention Force | | 3、5 | | | | | | | | |
| Terminal / Housing Retention Force | | | | | | | | 1 | | |
| Fitting Nail /Housing Retention Force | | | | | | | | | 1 | |
| Resistance to Soldering Heat | | | | | | | | | | 2 |
| | | | | | | | | | | |
| Sample Size | 2 | 4 | 4 | 4 | 4 | 4 | 2 | 4 | 4 | 4 |

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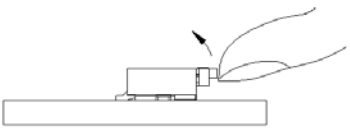
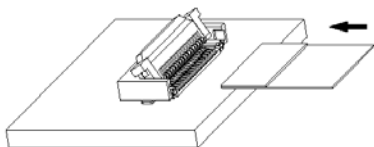
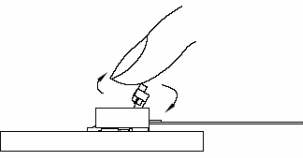
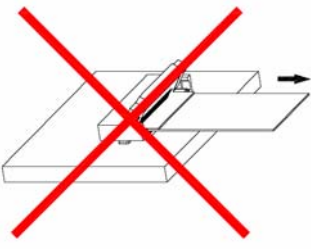
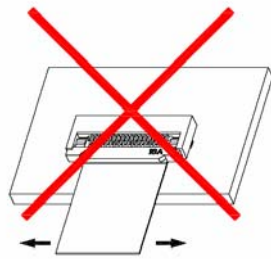
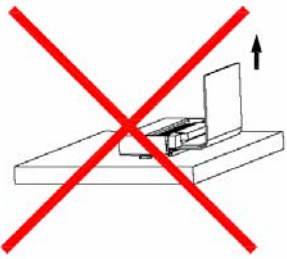
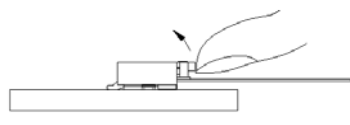
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8 FPC Retention Force

| NO. OF Ckt. | Retention Force (Min) |
|-------------|-----------------------|
| 11 | 80 gf |
| 13 | |
| 15 | |
| 17 | |
| 19 | |
| 21 | 150 gf |
| 23 | |
| 25 | |
| 27 | 250 gf |
| 29 | |
| 31 | |
| 33 | |
| 35 | |
| 37 | 350 gf |
| 39 | |
| 41 | |
| 43 | |
| 45 | 450 gf |
| 47 | |
| 49 | |
| 51 | |
| 53 | |
| 55 | 550 gf |
| 57 | |
| 59 | |
| 60 | |
| 61 | |
| 63 | |
| 63 | |
| 67 | |
| 69 | |
| 71 | |

9 INSTRUCTION UPON USAGE

| Operation | Precautions |
|--|---|
| <p>FPC/FFC Termination procedure. Connector installed on the board.</p> <p>1) Lift up the actuator. Use thumb or index finger.</p>  <p>2) Do with the actuator opened completely, and insert it in the interior of the insertion entrance surely when you insert FPC/FFC. There are some insertion resistance because this connector has the FPC/FFC temporary retention mechanism.</p>  <p>3) Rotate down the actuator until firmly closed. It is critical that the inserted FPC/FFC is not moved and remains fully inserted. Should the FPC/FFC be moved, open the actuator and repeat the process, starting with Step 1 above.</p>  | <p>1) Do when you pull out mating FPC/FFC with the Actuator opened completely. Confirm whether to Have adhered to the terminal contact part before FPC/FFC is mated with the connector housing when the opening of the actuator is the un-complete and FPC/FFC is pulled out.</p>  <p>2) Do not add the load mating FPC/FFC with connector housing.</p>  <p>3) Due to the structure of the connectors, they do not have string resistance to upward pulling; therefore, support the FPC/FFC when a pulling force is applied to it.</p>  |
| <p>FPC/FFC Removal</p> <p>1) Lift up the actuator.</p> <p>2) Carefully remove the FPC/FFC.</p>  | |

Precautions

4) This connector is small and thin and requires delicate and careful handling.

Be very careful not to apply any force to the FPC after inserting it. Otherwise, the connector may become unlocked or the FPC may break. Fix the FPC, in particular, when loads are applied to it continuously. Design the FPC layout with care not to bend it sharply near the insertion opening.

