



SPECIFICATION

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SPEC. NO.: PS-50520-XXXXX-XXX REVISION: G

PRODUCT NAME: 0.5mm PITCH EASY ON FPC/FFC CONN.

SMT R/A B/C TYPE.

PRODUCT NO: 50520 SERIES ; 51546 SERIES

| | | |
|--|---|---|
| PREPARED: Huang,Shun Sen DATE: 2020/05/21 | CHECKED: Lu,Jing Quan DATE: 2020/05/21 | APPROVED: hsieh,fu yu DATE: 2020/05/21 |
|--|---|---|



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RELEASE DATE: 2020/05/21

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1 Revision History

| Rev. | ECN # | Revision Description | Prepared | Date |
|------|-------------|--|--------------------|------------|
| O | ECN-0811117 | NEW SPEC | JASON | 2008.11.17 |
| A | ECN-0905114 | AMEND PLATED INFORMATION | JASON | 2009.6.18 |
| B | ECN-1112025 | FOR APD1000471 ADD 51546 SERIES AND REVISED SPEC | HUANTY | 2011/12/5 |
| C | ECN-1401253 | ADD WORKING VOLTAGE | XUFEI | 2014/01/14 |
| D | ECN-1506130 | REVISED OPERATING TEMPERATURE | TANGENHUI | 2015/06/08 |
| E | ECN-1511291 | ADD FPC RETENTION FORCE SERIES | TANGENHUI | 2015/11/24 |
| F | ECN-1710020 | ADD FPC RETENTION FORCE SERIES | Huang, Shun Sen | 2017/10/07 |
| G | ECN-2005391 | ADD FPC RETENTION FORCE SERIES | Huang, Shun Sen | 2020/05/21 |

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2 SCOPE

This specification covers performance, tests and quality requirements for FPC 0.5 pitch SMT R/A Easy on H=2.5 connector.

Aces' P/N: [50520-XXXXX-XXX](#);

3 APPLICABLE DOCUMENTS

EIA-364: ELECTRONICS INDUSTRIES ASSOCIATION

4 REQUIREMENTS

4.1 Design and Construction

Product shall be of design, construction and physical dimensions specified on applicable product drawing.

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, High temp. UL94V-0](#)

4.2.3 Actuator: [Thermoplastic, High temp. UL94V-0](#)

4.2.4 Fitting nail: [High performance copper alloy](#)

- Finish:
- (a) Contact Area: Refer to the drawing.
 - (b) Under plate: Refer to the drawing.

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: [0.5 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 | 40 m Ω Max.(initial)per contact 20 m Ω Max. (after test) Change allowed | Mate connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23) |
| Insulation Resistance | 500 M Ω Min. | Unmated connectors, apply 500 V DC between adjacent terminals. (EIA-364-21) |
| Dielectric Withstanding Voltage | No discharge, flashover or breakdown. Current leakage: 1 mA max. | 300 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 | | |
|---------------------------------------|---|--|
| Item | Requirement | Standard |
| Durability | 20 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 ± 3mm/min. (EIA-364-09) |
| FPC/FFC Retention Force | Refer to item 8 FPC/FFC retention force | Insert the actuator, pull the FPC at the speed rate of 25± 3 mm/min for 20 cycles. |
| Terminal / Housing Retention Force | 100 gf 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 | 100 gf 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) |
| Product Hold Protrusion Break Force | 2000 gf MIN. Test Sequence Group 10 | Apply axial pull out force at the speed rate of 25.4 ± 3 mm/minute. On the Tools assembled in the Product. |

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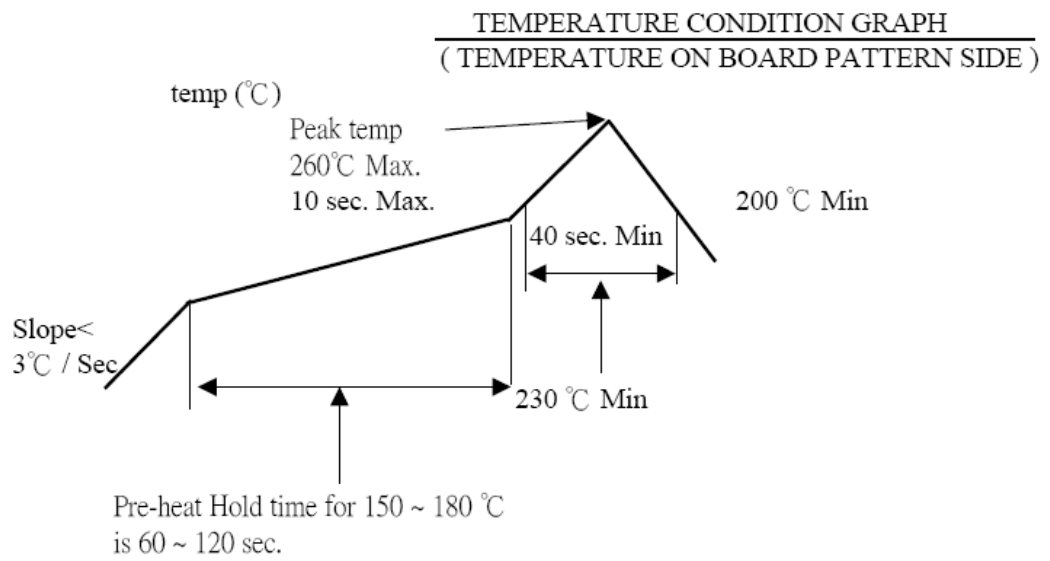
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| ENVIRONMENTAL | | |
|---------------------------------------|--|---|
| Item | Requirement | Standard |
| Resistance to Soldering Heat | Reflow See Product Qualification and Test Sequence Group 9 (Lead Free) | Pre Heat : 150°C~180°C, 60~90sec. Heat : 230°C Min., 40sec Min. Peak Temp. : 260°C Max, 10sec Max. Cycles : 2 times |
| Thermal Shock | See Product Qualification and Test Sequence Group 4 | Mate module and subject to follow condition for 10 cycles. 1 cycles: -55 +0/-3 °C, 30 minutes +85 +3/-0 °C, 30 minutes (EIA-364-32, test condition I) |
| Humidity | See Product Qualification and Test Sequence Group 4 | Mated Connector 40°C, 90~95% RH, 96 hours. (EIA-364-31, Condition A, Method II) |
| Temperature life | See Product Qualification and Test Sequence Group 5 | Subject mated connectors to temperature life at 85°C for 96 hours. Measure Signal. (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 | Solder able area shall have minimum of 95% solder coverage. | Subject the test area of contacts into the flux for 5-10 sec. 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, 3sec at least. |

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

6 INFRARED REFLOW CONDITION



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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 | 11 |
| | Test Sequence | | | | | | | | | | |
| Examination of Product | | | | 1、7 | 1、6 | 1、4 | | | 1 | | |
| Low Level Contact Resistance | | 1、5 | 1、4 | 2、10 | 2、9 | 2、5 | | | 3 | | |
| Insulation Resistance | | | | 3、9 | 3、8 | | | | | | |
| Dielectric Withstanding Voltage | | | | 4、8 | 4、7 | | | | | | |
| Temperature rise | 1 | | | | | | | | | | |
| FPC/FFC Retention Force | | 2、4 | | | | | | | | | |
| Durability | | 3 | | | | | | | | | |
| Vibration | | | 2 | | | | | | | | |
| Shock (Mechanical) | | | 3 | | | | | | | | |
| Thermal Shock | | | | 5 | | | | | | | |
| Humidity | | | | 6 | | | | | | | |
| Temperature life | | | | | 5 | | | | | | |
| Salt Spray | | | | | | 3 | | | | | |
| Solder ability | | | | | | | 1 | | | | |
| Terminal / Housing Retention Force | | | | | | | | 1 | | | |
| Fitting Nail /Housing Retention Force | | | | | | | | 2 | | | |
| Resistance to Soldering Heat | | | | | | | | | 2 | | |
| Product Hold Protrusion Break Force | | | | | | | | | | 1 | |
| Hand Soldering Temperature Resistance | | | | | | | | | | | 1 |
| Sample Size | 2 | 4 | 4 | 4 | 4 | 4 | 2 | 4 | 4 | 4 | 4 |

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8 FPC RETENTION FORCE

| No. of CKT | UNIT | Retention Force (MIN.) | | |
|---------------|------|------------------------|------|------|
| | | 1st | 10th | 20th |
| 5-10 | kgf | 0.30 | 0.28 | 0.25 |
| 12 | kgf | 0.40 | 0.32 | 0.28 |
| 13-15 | kgf | 0.45 | 0.34 | 0.30 |
| 20 | kgf | 0.50 | 0.36 | 0.32 |
| 40 | kgf | 0.58 | 0.39 | 0.34 |
| 45 | kgf | 0.60 | 0.40 | 0.35 |
| 50-60 | kgf | 0.70 | 0.50 | 0.45 |
| 64 | kgf | 0.80 | 0.60 | 0.55 |
| 68 | kgf | 0.85 | 0.65 | 0.60 |
| 80 | kgf | 1.00 | 0.80 | 0.70 |