

SPEC. NO.: PS-50507-XXXXX-XXX

REVISION: G

PRODUCT NAME: 0.5mm/1.0mm PITCH EASY ON FPC CONN.

PRODUCT NO: 50505-XXXXX-XXX, 50506-XXXXX-XXX,
50507-XXXXX-XXX, 50675-XXXX-XXX.
51537-XXXXX-XXX ,51579-XXXXX-XXX
51624-XXXXX-XXX 51578-XXXXX-XXX

| | | |
|---|--|---|
| PREPARED: DATE: 2014/01/06 | CHECKED: DATE: 2014/01/06 | APPROVED: DATE: 2014/01/06 |
|---|--|---|

TITLE: **0.5mm/1.0mm PITCH EASY ON FPC CONN.**

RELEASE DATE: 2014/01/06

REVISION: G

ECN No: ECN-1312389

PAGE: **2** OF **10**

| | | |
|---|--|----|
| 1 | REVISION HISTORY | 3 |
| 2 | SCOPE | 4 |
| 3 | APPLICABLE DOCUMENTS..... | 4 |
| 4 | REQUIREMENTS..... | 4 |
| 5 | PERFORMANCE | 5 |
| 6 | NFRARED REFLOW CONDITION | 8 |
| 7 | PRODUCT QUALIFICATION AND TEST SEQUENCE..... | 9 |
| 8 | FPC RETENTION FORCE | 10 |

Aces P/N: **50507/50505/50506/50675/51537/51579**
51624/51578 series

TITLE: **0.5mm/1.0mm PITCH EASY ON FPC CONN.**

RELEASE DATE: 2014/01/06

REVISION: G

ECN No: ECN-1312389

PAGE: 3 OF 10

1 Revision History

| Rev. | ECN # | Revision Description | Prepared | Date |
|------|-------------|---|----------|------------|
| O | ECN-0811117 | NEW SPEC | JASON | 2008.11.17 |
| A | ECN-0906141 | MODIFY FPC RETENTION FORCE | JASON | 2009.06.23 |
| B | ECN-0909088 | FOR ADW0909029 ADD HAND SOLDERING | JASON | 2009/09/10 |
| C | ECN-1101154 | ADD PART NO | K.J.SHAO | 2011.01.19 |
| D | ECN-1106037 | MODIFY OPERATING TEMPERATURE &ADD 51537 SERIES | SHM | 2011.06.02 |
| E | ECN-1212013 | FOR APD1010509 ADD51579 SERIES | GAVIN | 2012.12.03 |
| F | ECN-1311210 | ADD 51624 SERIES | CANDY | 2013.11.23 |
| G | ECN-1312389 | ADD 51578 SERIES/ADD Working Voltage | XUBIN | 2014.01.06 |

TITLE: **0.5mm/1.0mm PITCH EASY ON FPC CONN.**

RELEASE DATE: 2014/01/06

REVISION: G

ECN No: ECN-1312389

PAGE: 4 OF 10

2 SCOPE

This specification covers performance, tests and quality requirements for **0.5mm/1.0mm PITCH EASY ON FPC CONN.**

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: **Copper Alloy, Finish: 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: **0.5mm pitch :0.5 Amperes (per pin)**
1.0mm pitch: 1.0 Amperes (per pin)
- 4.3.4 Operating Temperature : **-40°C to +85°C**

TITLE: **0.5mm/1.0mm PITCH EASY ON FPC CONN.**

RELEASE DATE: 2014/01/06

REVISION: G

ECN No: ECN-1312389

PAGE: 5 OF 10

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. Change allowed | Mate connectors, measure by dry circuit, 20mV Max., 100mA Max. (EIA-364-23) |
| Insulation Resistance | 1000 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. | 500 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) |

TITLE: **0.5mm/1.0mm PITCH EASY ON FPC CONN.**

RELEASE DATE: 2014/01/06

REVISION: G

ECN No: ECN-1312389

PAGE: 6 OF 10

| 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 Retention Force | Refer to page.10 FPC retention force | A connector shall be soldered on a board and insert the actuator, pull the FPC at the speed rate of 25.4 ± 3 mm/min. |
| Terminal /Housing Retention Force | 150gf Min. | Operation Speed : 25.4 ± 3 mm/minute. Measure the contact retention force with tester. |
| Fitting Nail /Housing Retention Force | 0.1kgf MIN. | Operation Speed : 25.4 ± 3 mm/minute. Measure the contact retention force with tester. |
| 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) |

TITLE: **0.5mm/1.0mm PITCH EASY ON FPC CONN.**

RELEASE DATE: 2014/01/06

REVISION: G

ECN No: ECN-1312389

PAGE: 7 OF 10

| ENVIRONMENTAL | | |
|---|--|--|
| Item | Requirement | Standard |
| Resistance to Reflow Soldering Heat | See Product Qualification and Test Sequence Group 10 (Lead Free) | Pre Heat : 150°C~180°C, 60~120sec. Heat : 230°C Min., 40sec Min. Peak Temp. : 260°C Max, 10sec Max. |
| Thermal Shock | See Product Qualification and Test Sequence Group 4 | Mate module and subject to follow condition for 5 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 . (EIA-364-17, Test condition A) |
| Salt Spray (Only For Gold Plating) | See Product Qualification and Test Sequence Group 6 | Subject mated/unmated connectors to 5% salt-solution concentration, 35°C (I) Gold flash for 8 hours (II) Gold plating 5 u" for 96 hours. (EIA-364-26) |
| 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, 3sec at least. |

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

TITLE: **0.5mm/1.0mm PITCH EASY ON FPC CONN.**

RELEASE DATE: 2014/01/06

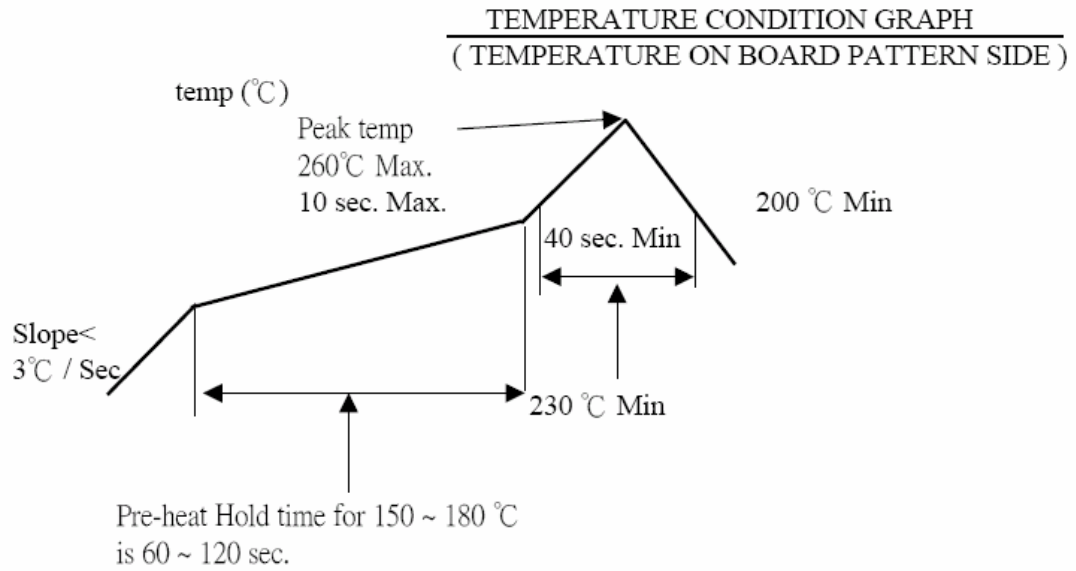
REVISION: G

ECN No: ECN-1312389

PAGE: 8 OF 10

6 INFRARED REFLOW CONDITION

Lead-free Process



TITLE: **0.5mm/1.0mm PITCH EASY ON FPC CONN.**

RELEASE DATE: 2014/01/06

REVISION: G

ECN No: ECN-1312389

PAGE: 9 OF 10

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、7 | 1、6 | 1、4 | | | 1 | 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 | | | | | | | | | |
| Durability | | 3 | | | | | | | | |
| Vibration | | | 2 | | | | | | | |
| Shock (Mechanical) | | | 3 | | | | | | | |
| Thermal Shock | | | | 5 | | | | | | |
| Humidity | | | | 6 | | | | | | |
| Temperature Life | | | | | 5 | | | | | |
| Salt Spray(Only For Gold Plating) | | | | | | 3 | | | | |
| Solder ability | | | | | | | 1 | | | |
| FPC Retention Force | | 2、4 | | | | | | | | |
| Terminal / Housing Retention Force | | | | | | | | 1 | | |
| Fitting Nail /Housing Retention Force | | | | | | | | 2 | | |
| Resistance to Soldering Heat | | | | | | | | | 2 | |
| Hand Soldering Temperature Resistance | | | | | | | | | | 2 |
| Sample Size | 2 | 4 | 4 | 4 | 4 | 4 | 2 | 4 | 4 | 4 |

TITLE: **0.5mm/1.0mm PITCH EASY ON FPC CONN.**

RELEASE DATE: 2014/01/06

REVISION: G

ECN No: ECN-1312389

PAGE: 10 OF 10

8 FPC RETENTION FORCE

UNIT: Kgf

| NO. OF Ckt. | FPC Retention Force (Min) | | NO. OF Ckt. | FPC Retention Force (Min) | |
|-------------|---------------------------|---------|-------------|---------------------------|---------|
| | 1st | 20th | | 1st | 20th |
| 4 | 0.3kgf | 0.2kgf | 31 | 1.5kgf | 1.35kgf |
| 5 | | | 32 | | |
| 6 | | | 33 | | |
| 7 | | | 34 | | |
| 8 | | | 35 | | |
| 9 | | | 36 | | |
| 10 | 0.75kgf | 0.60kgf | 37 | | |
| 11 | | | 38 | | |
| 12 | | | 39 | | |
| 13 | | | 40 | | |
| 14 | | | 41 | | |
| 15 | | | 42 | | |
| 16 | | | 43 | | |
| 17 | | | 44 | | |
| 18 | | | 45 | | |
| 19 | | | 46 | | |
| 20 | | | 47 | | |
| 21 | 48 | | | | |
| 22 | 49 | | | | |
| 23 | 50 | | | | |
| 24 | 51 | | | | |
| 25 | 1.0kgf | 0.85kgf | 52 | | |
| 26 | | | 53 | | |
| 27 | | | 54 | | |
| 28 | | | 55 | | |
| 29 | | | 56 | | |
| 30 | | | 57 | | |