



SPECIFICATION

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SPEC. NO.: PS-51455-XXXXX-XXX

REVISION: A

PRODUCT NAME: 2.0 mm PITCH WTB WAFER CONN. T/H D/R S/T TYPE

PRODUCT NO: 51455 , 51462 SERIES

PREPARED:

ZHUWEI

DATE:

2019.06.11

CHECKED:

BRAVE

DATE:

2019.06.11

APPROVED:

BRAVE

DATE:

2019.06.11



Aces P/N: **51455 , 51462 series**

TITLE: **2.0 mm PITCH WTB WAFER CONN. T/H D/R S/T TYPE**

RELEASE DATE: **2019/06/11**

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ECN No: **ECN-1906268**

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1 REVISION HISTORY

| Rev. | ECN # | Revision Description | Prepared | Date |
|------|-------------|----------------------|----------|------------|
| A | ECN-1906268 | NEW DRAWING | ZHUWEI | 2019.06.11 |
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2 SCOPE

This specification covers performance, tests and quality requirements for **2.0 mm pitch WTB wafer connector T/H D/R S/T Type**.

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:
 - (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

4.3 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: **3.0 Amperes (per pin)**
- 4.3.4 Operating Temperature : **-40°C to +105°C**

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5 TEST PLAN FLOW

| Test or Examination | Test Group | | | | | | | |
|--|---------------|----------|----------|----------|----------|----------|----------|----------|
| | A | B | C | D | E | F | G | H |
| | Test Sequence | | | | | | | |
| Examination of Product | 1,10 | 1,10 | 1,9 | 1,3 | | 1,4 | 1,4 | |
| Low Level Contact Resistance (LLCR) | 2,5,7,9 | 2,5,7,9 | 2,4,8 | | 1,3 | | | |
| Current rating | | | | 2 | | | | |
| Durability | 3 | 3 | 3 | | | | | |
| Temperature Life | 4 | | | | | | | |
| Reseating (manually unplug/plug 3 times) | 8 | 8 | 7 | | | | | |
| Thermal Shock | | 4 | | | | | | |
| Thermal Cycling | 6 | | | | | | | |
| Cycling T&H | | 6 | | | | | | |
| Mechanical Shock | | | | | 2 | | | |
| Mating & Unmating force | | | | | | 2 | | |
| Contact Retention Force (Board Side) | | | | | | | | 1,4 |
| Random Vibration | | | 5 | | | | | |
| Resistance to Soldering Heat | | | | | | | | 3 |
| Neutral Salt Spray Test (only for gold plating) | | | | | | 3 | | |
| Dielectric Withstanding Voltage | | | | | | | 2 | |
| Mixed Flowing Gas | | | 6 | | | | | |
| Insulation Resistance | | | | | | | 3 | |
| Solder Ability | | | | | | | | 2 |
| Sample Size | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |

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6 ENVIRONMENTAL CONDITIONS

- Temperature : 22± 3℃
- Humidity : 20%~80%RH
- Air Pressure : 650~800 millimeter mercury

7 THE SUMMARY OF QUALIFICATION TEST RESULTS

Group A

| Item | Requirement | Standard |
|---|--|--|
| 1. Visual Inspection (initial) | Product shall meet requirements of applicable product drawing and specification. | Visual, dimensional and functional per applicable quality inspection plan. |
| 2. Low Level Contact Resistance (initial) | 30 m Ω Max. | Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23) |
| 3. Durability | 25 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. |
| 4. Temperature Life | No visual or physical failure | Subject mated connectors to temperature life at 105℃ for 168 hours. (EIA-364-17, Test condition A) |
| 5. LLCR After Durability | ΔR 10 m Ω Max | Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23) |
| 6. Thermal Cycling | No visual or physical failure | Perform mated socket between 15℃ and 85℃, each dwell 5 minutes minimum , ramps is 2℃/minute , 500 total cycles. |
| 7. LLCR After Thermal Cycling | ΔR 10 m Ω Max | Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23) |
| 8. Reseating | No visual or physical failure | Manually unplug/plug 3 times |
| 9. LLCR After Reseating | ΔR 10 m Ω Max | Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23) |
| 10. Visual Inspection (final) | Product shall meet requirements of applicable product drawing and specification. | Visual, dimensional and functional per applicable quality inspection plan. |

Group B

| Item | Requirement | Standard |
|---|--|--|
| 1. Visual Inspection (initial) | Product shall meet requirements of applicable product drawing and specification. | Visual, dimensional and functional per applicable quality inspection plan. |
| 2. Low Level Contact Resistance (initial) | 30 m Ω Max. | Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23) |

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| | | |
|--|--|---|
| 3. Durability | 25 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. |
| 4. Thermal Shock | No visual or physical failure | Subject mated connectors to 10 cycles between $-55 \pm 0/-3^{\circ}\text{C}$ to $+85 \pm 3/-0^{\circ}\text{C}$, each stage dwell for 15 minutes (EIA-364-32, test condition I) |
| 5. LLCR (middle) | ΔR 10 m Ω Max | Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23) |
| 6. Cycling temperature & humidity | No visual or physical failure | EIA-364-31(Cycle the connector between 25°C at 80%RH and 65°C at 50%RH. Ramp time is 0.5 hours and dwell time is 1 hrs. Perform 24 cycles total |
| 7. LLCR After Cycling temperature & humidity | ΔR 10 m Ω Max | Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23) |
| 8. Reseating | No visual or physical failure | Manually unplug/plug 3 times |
| 9. LLCR After Reseating | ΔR 10 m Ω Max | Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23) |
| 10. Visual Inspection (final) | Product shall meet requirements of applicable product drawing and specification. | Visual, dimensional and functional per applicable quality inspection plan. |

Group C

| Item | Requirement | Standard |
|---|--|--|
| 1. Visual Inspection (initial) | Product shall meet requirements of applicable product drawing and specification. | Visual, dimensional and functional per applicable quality inspection plan. |
| 2. Low Level Contact Resistance (initial) | 30 m Ω Max. | Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23) |
| 3. Durability | 50 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. |
| 4. LLCR (middle) | ΔR 10 m Ω Max | Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23) |
| 5. Random Vibration with electrical discontinuity | No loosened parts or electrical discontinuity | Throughout the random vibration test of 3.13 Grms over 20 to 500 Hz frequency range per axis. Test duration for each axis was 60 minutes. There shall be no loosened parts or electrical discontinuity greater than 1 microsecond during the test. |

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| 6. Mixed Flowing Gas - mated | No visual or physical failure (only for Gold plating 15u" and over 15u") | After MFG test, the samples shall pass the requirements of following test item(s). (EIA-364-65 , Condition IIA for 10 days) Relative humidity: 70±2% ; Temperature: 30±1℃ ; Concentration(ppb) : Cl₂(10±2) , NO₂(200±50) , H₂S(10±5) , SO₂(100±20) . |
| 7. Reseating | No visual or physical failure | Manually unplug/plug 3 times |
| 8. LLCR After Reseating | ΔR 10 m Ω Max | Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23) |
| 9. Visual Inspection (final) | Product shall meet requirements of applicable product drawing and specification. | Visual, dimensional and functional per applicable quality inspection plan. |

Note: 1. The test results and conclusion in this report are relate only to the test samples.
2. The report shall not be reproduced except in full without the written approval of our laboratory.

Group D

| Item | Requirement | Standard |
|--------------------------------|--|---|
| 1. Visual Inspection (initial) | Product shall meet requirements of applicable product drawing and specification. | Visual, dimensional and functional per applicable quality inspection plan. |
| 2. Current rating | 30℃ Max. Change allowed | Connector should be powered 3 A per pin min, the temperature rise above ambient shall not exceed 30℃ at any point in the connector when contact positions are powered. |
| 3. Visual Inspection (final) | Product shall meet requirements of applicable product drawing and specification. | Visual, dimensional and functional per applicable quality inspection plan. |

Group E

| Item | Requirement | Standard |
|---|--|---|
| 1. Low Level Contact Resistance (initial) | 30 m Ω Max. | Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23) |
| 2. Mechanical Shock | No loosened parts or electrical discontinuity. | Mated samples were subjected to 6 shocks per axis complied with half-sine waveform which had a 50 G peak level and a normal duration of 11 ms . Throughout the test, electrical discontinuity of 1 microsecond or longer shall not be allowed. |
| 3. Low Level Contact Resistance (final) | ΔR 10 m Ω Max | Mate connectors, measure by dry circuit, 20mV Max., 10mA Max. (EIA-364-23) |

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Group F

| Item | Requirement | Standard |
|------------------------------------|---|--|
| 1. Visual Inspection (initial) | Product shall meet requirements of applicable product drawing and specification. | Visual, dimensional and functional per applicable quality inspection plan. |
| 2. Mating Forces & Unmating Forces | Mating Forces: 0.5Kgf max. per pin Unmating Forces: 0.02Kgf min. per pin | Operation Speed : 25.4 ± 3 mm/minute.. Measure the force required to mate/unmate connector. (EIA-364-13) |
| 3. Salt Spray | No evidence of physical defects. | Subject mated/unmated connectors to 5% salt-solution concentration, 35°C (I) Gold flash for 8 hours (II) Gold plating 3 u" for 48 hours (III) Gold plating 5 u" and over 5 u" for 96 hours. (EIA-364-26) |
| 4. Visual Inspection (final) | Product shall meet requirements of applicable product drawing and specification. | Visual, dimensional and functional per applicable quality inspection plan. |

Group G

| Item | Requirement | Standard |
|------------------------------------|--|--|
| 1. Visual Inspection (initial) | Product shall meet requirements of applicable product drawing and specification. | Visual, dimensional and functional per applicable quality inspection plan. |
| 2. Dielectric Withstanding Voltage | No discharge, flashover or breakdown. Current leakage: 1 mA max. | 500V AC Min. at sea level for 1 minute. Test between adjacent contacts of unmated connectors. (EIA-364-20) |
| 3. Insulation Resistance | 1000 M Ω Min. | Unmated connectors, apply 500 V DC between adjacent terminals. (EIA-364-21) |
| 4. Visual Inspection (final) | Product shall meet requirements of applicable product drawing and specification. | Visual, dimensional and functional per applicable quality inspection plan. |

Group H

| Item | Requirement | Standard |
|--------------------------------------|-----------------------------|--|
| 1. Contact Retention Force (initial) | 0.91kgf/per pin Min. | Operation Speed : 25.4 ± 3 mm/minute. Measure the contact retention force with tester. |

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| 2. 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℃ , for 4-5 sec. (EIA-364-52) |
| 3. Resistance to Soldering Heat | No visual or physical failure | A visual examination shall be made for physical deterioration such as cracks and damage. |
| 4. Contact Retention Force (final) | 0.91kgf/per pin Min. | Operation Speed : 25.4 ± 3 mm/minute. Measure the contact retention force with tester. |

8 INFRARED REFLOW CONDITION

