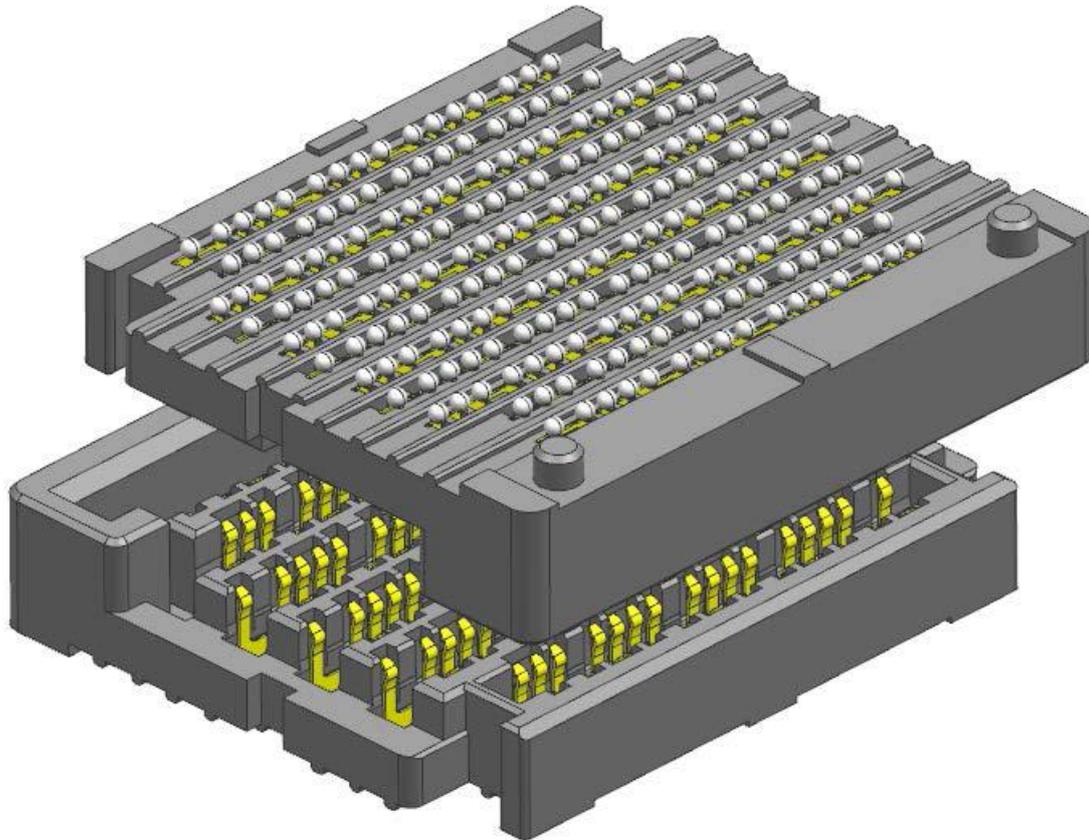


RESTRICTED PRODUCT SPECIFICATION
FOR MIRROR MEZZ™



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TENTATIVE RELEASE:

THIS SPECIFICATION IS BASED ON DESIGN OBJECTIVES AND IS STRICTLY TENTATIVE. PRELIMINARY TEST DATA MAY EXIST BUT THIS SPECIFICATION IS SUBJECTED TO CHANGE BASED ON RESULTS OF ADDITIONAL TESTING AND EVALUATION.

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1.0 SCOPE

This Product Specification covers the performance requirement and testing methods for Mirror Mezz™ connectors.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

Mirror Mezz™:

202828 209311
204843 211454
204358 209141
203456
206306

2.2 SAFETY AGENCY APPROVALS

TO BE CERTIFIED WITH UL/CSA

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

EIA-364-1000 / IPC-9701

4.0 RATINGS

4.1 VOLTAGE

Recommended: 30 Volts AC (RMS) / VDC and below

30~60 Volts AC(RMS) / VDC application, please consult Molex for details

4.2 CURRENT

0.75A per pin for 1 oz. Cu Trace

1.0A per pin for 1.5 oz. Cu Trace

1.2A per pin for 2 oz. Cu Trace

4.3 OPERATING TEMPERATURE

- 55°C to + 105°C

4.4 DURABILITY

100 Cycles

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5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|------|--|--|--|
| 1 | Contact Resistance (Low Level) | Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA. Per EIA-364-23. | 30 milliohms MAXIMUM [initial] |
| 2 | Insulation Resistance | Un-mate & unmount connectors: apply a voltage of 500VDC between adjacent terminals and between terminals to ground. Per EIA-364-21. | 1000 Megohms MINIMUM Signal/Signal |
| 3 | Dielectric Withstanding Voltage | Mated connectors: apply a voltage of 500 VAC (RMS) for 1 minute between adjacent terminals. Per EIA-364-20. | No breakdown; current leakage < 5 mA |
| 4 | Signal Continuity | Mate connectors. Per EIA-364-87. | No interrupts > 10 nanoseconds |
| 5 | Temperature Rise | Mate connectors. Apply a current of 0.75A for 1 oz. Cu trace to 6 adjacent terminals (GGSSGG) on the outer row and measure temperature rise of 2 middle (SS) terminals. Mate connectors. Apply a current of 1.2A for 2 oz. Cu Trace and measure temperature rise. | Temperature rise: 30°C MAXIMUM |

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5.2 MECHANICAL REQUIREMENTS

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|------|--|---|---|
| 6 | Connector Mate and Un-mate Forces | Mate and un-mate connector at a rate of 25 ± 6 mm per minute. Per EIA-364-13. | 0.35 N per Pin MAX Avg. mating force & 0.045 N per Pin MIN Avg. un-mating force |
| 7 | Durability | Mate connectors up to 100 cycles at a maximum rate of 10 cycles per minute. Per EIA-364-09. | 10 milliohms MAXIMUM (change from initial) |
| 8 | Vibration (Random) | Mate connectors and vibrate 20-500Hz Random, 3.1g's. 15 minutes, 3 axes. Per EIA 364-28, test condition VII, condition D. | 10 milliohms MAXIMUM (change from initial) & Discontinuity < 10 nanosecond |
| 9 | Shock (Mechanical) | Mate connectors and shock at 30 g's with ½ sine wave (11 milliseconds) shocks in the ±X, ±Y, ±Z axes (18 shocks total). Per EIA-364-27, condition H. | 10 milliohms MAXIMUM (change from initial]) & Discontinuity < 10 nanosecond |
| 10 | Contact Normal Force | Deflect contacts at a rate of 25.4mm +/- 0.20mm per minute. Take normal force measurements at nominal deflection. Per EIA-364-04 | 0.2 N MINIMUM contact normal force per pin |

5.3 ENVIRONMENTAL REQUIREMENTS

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|------|---------------------------------|--|--|
| 11 | Thermal Shock | Mate connectors; expose to 10 cycles of: -55°C to 85°C. Per EIA-364-32, Test Condition 1. | 10 milliohms MAXIMUM (change from initial) & Visual: No Damage |
| 12 | Temperature Life (Mated) | Mate connectors; expose to: 240 hours at 105 ± 2°C. Per EIA-364-17 | 10 milliohms MAXIMUM (change from initial]) & Visual: No Damage |

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| 13 | Cyclic Humidity (Mated) | <p>Mate connectors: 10 cycles at temperature 25 ± 3°C at 80%-98% relative humidity and 65 ± 3°C at 90%-98% relative humidity.</p> <p>Per EIA-364-31, method III, omitting 7b vibration test.</p> <p>{Note: Remove surface moisture and air dry for 1 hour prior to measurements.}</p> | <p>10 milliohms MAXIMUM (change from initial) & Visual: No Damage</p> |
| 14 | Thermal Disturbance | <p>Cycle the connector between 15 ± 3°C and 85 ± 3°C as measured on the connector contacts. Ramps should be a minimum of 2°C per minute, and dwell times should insure that the contacts reach these temperature extremes (a minimum of 5 minutes). Humidity is not controlled. Perform 10 cycles on Mated connectors.</p> <p>Per EIA-364-1000, table 4.</p> | <p>10 milliohms MAXIMUM (change from initial) & Visual: No Damage</p> |
| 15 | Thermal Cycling | <p>Cycle the connector between 15 ± 3°C and 85 ± 3°C as measured on the connector contacts. Ramps should be a minimum of 2°C per minute, and dwell times should insure that the contacts reach these temperature extremes (a minimum of 5 minutes). Humidity is not controlled. Perform 500 cycles on Mated connectors.</p> <p>Per EIA-364-1000, table 5.</p> | <p>10 milliohms MAXIMUM (change from initial) & Visual: No Damage</p> |
| 16 | Dust | <p>Use benign dust. Only one half of the unmated connector shall be exposed to dust and then mated to unexposed half.</p> <p>Per EIA-364-91.</p> | <p>10 milliohms MAXIMUM (change from initial)</p> |
| 17 | Mixed Flowing Gas (MFG) | <p>10 days Un-mated, 4 days Mated.</p> <p>Per EIA-364-65, method 2A</p> | <p>10 milliohms MAXIMUM (change from initial) & Visual: No Damage</p> |

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6.0 TESTING REQUIREMENTS

6.1 TEST SEQUENCE

Follow test sequence outlined in section 6.3 of this document.

6.2 IPC-9701 TEMPERATURE CYCLING TEST FOR SOLDER JOINT RELIABILITY

1. Cycle Condition TC1: 0 °C to +100 °C.
2. Test Duration: Whichever condition occurs first:
63.2% cumulative failure or 6,000 cycles
3. Temperature Profile
 - a. Low Temperature Dwell: 10 minutes +0/-5 °C.
 - b. High Temperature Dwell: 10 minutes +5/-0 °C.
 - c. Temperature Ramp Rate: Less than or equal to 20 °C /minute.
4. Sample Size: 32 mated sets and 10 reworked mated sets
(42 total test samples plus one for cross-section)
 - a. Package condition: Daisy-Chain
 - b. Monitoring: In-Situ Event Detection
 - c. If this test is terminated prior to 6000 cycles, then use the Dye/Pry method to assess the solder joints. If 90% or greater dye penetration, then that solder joint is counted as a failure.
 - i. Categorize failures as follows:
Type I: Between the terminal paddle and solder-ball
Type II: Within solder-ball
Type III: Between solder-ball and soldering pad
Type IV: Between soldering pad and Board.

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6.3 EIA-364-1000

| Sequence | Group 1 | Group 2 | Group 3 | Group 4 | Group 5 | Group 6 | Group 7 |
|----------|----------------------------------|----------------------------------|----------------------------------|---|---|----------------------------------|------------|
| 1 | LLCR | LLCR | LLCR | LLCR | LLCR | LLCR | LLCR |
| 2 | Durability* (preconditioning) | Durability* (preconditioning) | Durability* (preconditioning) | Durability* (preconditioning) | Durability* (preconditioning) | Durability* (preconditioning) | DWV |
| 3 | LLCR | LLCR | LLCR | LLCR | LLCR | LLCR | Durability |
| 4 | Temperature Life | Thermal shock | Vibration | Temperature Life** (preconditioning) | Temperature Life** (preconditioning) | Dust | LLCR |
| 5 | LLCR | LLCR | LLCR | LLCR | LLCR | LLCR | DWV |
| 6 | Reseating (3 M/U cycles) | Cyclic Temperature & humidity | Shock | Mixed Flowing Gas | Thermal Cycling | Thermal Disturbance | - |
| 7 | LLCR | LLCR | LLCR | LLCR | LLCR | LLCR | - |
| 8 | - | Reseating (3 M/U Cycles) | - | Thermal Disturbance | Reseating (3 M/U cycles) | Reseating (3 M/U cycles) | - |
| 9 | - | LLCR | - | LLCR | LLCR | LLCR | - |
| 10 | - | - | - | Reseating (3 M/U cycles) | - | - | - |
| 11 | - | - | - | LLCR | - | - | - |

Durability* preconditioning - perform 20 unplug/plug cycles
 Temperature Life** preconditioning – 48 hours @ 115degC, mated.

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