



PRODUCT SPECIFICATION

240 Ckt Vertical Through-Hole DDR3 1.1mm Seating Plane

1.0 SCOPE

This Product Specification covers the 1.00 mm centerline gold plated DDR3, 1.1MM SEATING PLANE, VLP edge card connector for 1.27 +/- 0.10 thick memory modules.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

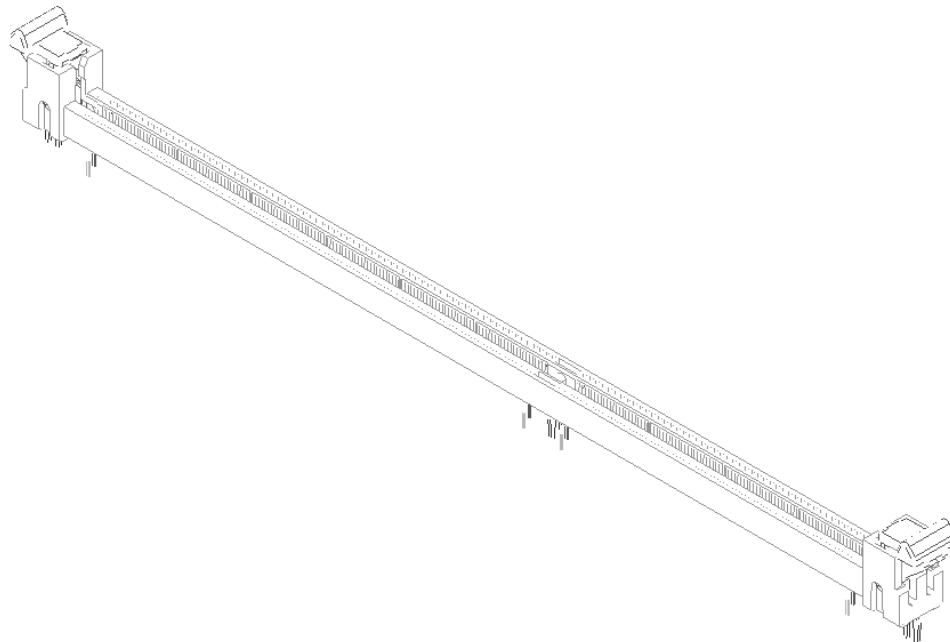
| <u>Series Number</u> | <u>Product Descriptions</u> |
|----------------------|---|
| 78588 | 240 Ckt Vertical Through-Hole DDR3, 1.1mm Seating Plane |

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate Sales Drawings for information on dimensions, materials, plating and markings, recommended module outlines and footprint Specifications.

2.3 SAFETY AGENCY APPROVALS

UL File: E-29179
CSA File: 1699020 (LR 19980)



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 THE RESULTS OF ADDITIONAL TESTING AND EVALUATION

| | | | |
|---|---|--|--|
| REVISION: 2 | ECR/ECN INFORMATION: EC No: S2012-0639 DATE: 2012/02/17 | TITLE: DDR3, 240 CKT, VERT, THROUGH HOLE 110 SEATING PLANE, LOW LLCR (15 Au) | SHEET No. 1 of 7 |
| DOCUMENT NUMBER: PS-78588-001 | CREATED / REVISED BY: VMANICKAM 2012/02/17 | CHECKED BY: CCTEH 2012/02/27 | APPROVED BY: SHLENI 2012/02/27 |



PRODUCT SPECIFICATION

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

The following documents are part of this specification between the requirements of this specified herewith. In the event of conflict between the requirements of this specification and the product drawings, the product drawings shall take precedence. In the event of conflict between the requirements of this specification and reference documents, this specification shall take precedence.

4.0 RATINGS

4.1 VOLTAGE

29 Volts AC (RMS) / DC

4.2 CURRENT

1.0 Amps/ pin

4.3 FIELD LIFE AND TEMPERATURE

Field Life: 5 years

Field Temperature: 65°C

4.4 OPERATING TEMPERATURE

-55°C ~ +85°C

4.5 NON-OPERATING TEMPERATURE

-55°C ~ +85°C

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 maximum current of 100 mA. (EIA-364-23) | 10 mΩ Max. Initial ΔR: 10 milliohms Max. |
| 2 | Insulation Resistance | Unmate & unmount connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground. (EIA-364-21) | 1 MΩ Min. |
| 3 | Dielectric Withstanding Voltage | Apply 500 VAC for 1 minute between adjacent terminals of an unmated connector. (EIA-364-20) | No breakdown |

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|---------------------|---|--|--------------------------|
| REVISION: | ECR/ECN INFORMATION: | TITLE: | SHEET No. |
| 2 | EC No: S2012-0639 DATE: 2012/02/17 | DDR3, 240 CKT, VERT, THROUGH HOLE 110 SEATING PLANE, LOW LLCR (15 Au) | 2 of 7 |
| DOCUMENT NUMBER: | CREATED / REVISED BY: | CHECKED BY: | APPROVED BY: |
| PS-78588-001 | VMANICKAM 2012/02/17 | CCTEH 2012/02/27 | SHLENI 2012/02/27 |



PRODUCT SPECIFICATION

5.2 MECHANICAL REQUIREMENTS

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT |
|------|--|--|--|
| 4 | Module Insertion Force (w/ Latches) | EIA-364-13 Insert a 1.37+ 0.015 mm thick steel gauge at a rate of 5 ± 1mm per minute. | 10.8 kgf max. |
| 5 | Terminal Retention Force | Axial pullout force on the terminal in the housing at a rate of 25.4 ± 6 mm per minute. | Contact: 0.25kgf Min. Fork lock: 1.36kgf Min. |
| 6 | Durability (Preconditioning) | Mate and unmated connectors up to 5 cycles at a maximum rate of 10 cycles per minute prior to Environmental Tests. | Contact Resistance: ΔR: 10 mΩ Max. |
| 7 | Durability | Mate and unmated connectors up to 25 cycles at a maximum rate of 10 cycles per minute prior to Environmental Tests. | Contact Resistance: ΔR: 10 mΩ Max. |
| 8 | Vibration | EIA-364-28. (Condition VII, Letter D). Module card, weighted 35 ± 5g with 18.4 mm card height; Frequency range: 5 Hz to 500 Hz 5 to 20 Hz (slope): (0.01 g ² / Hz)@5Hz, (0.02g ² / Hz)@20Hz; 20 to 500 Hz (flat): (0.02g ² / Hz)@20Hz Input acceleration is 3.13 g RMS; Random control limit tolerance: + 3 dB; Duration: 10 mins in each X, Y, Z axis (Ref JEDEC PS-001) | No Physical Damage Contact Resistance: ΔR: 10 mΩ Max. No discontinuities of 1 microsecond or longer duration. |
| 9 | Shock (Mechanical) | Module card, weighted 35 ± 5g with 18.4 mm card height; Profile: Trapezoidal shock of 50 g. ± 10% Duration: 11ms Minimum Velocity change: 67cm/sec, ± 10%. Quantity: Three drops in each of six directions. Total 18 drops per connector. | No Physical Damage Contact Resistance: ΔR: 10 mΩ Max. No discontinuities of 1 microsecond or longer duration. |
| 10 | Reseating | Manually mate and unmate the connector with PCB for 3 cycles. | No damage. |

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| 2 | EC No: S2012-0639 DATE: 2012/02/17 | DDR3, 240 CKT, VERT, THROUGH HOLE 110 SEATING PLANE, LOW LLCR (15 Au) | 3 of 7 |
| DOCUMENT NUMBER: | CREATED / REVISED BY: | CHECKED BY: | APPROVED BY: |
| PS-78588-001 | VMANICKAM 2012/02/17 | CCTEH 2012/02/27 | SHLENI 2012/02/27 |



PRODUCT SPECIFICATION

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|----|--|--|---|
| 11 | Latch Overstress Force | Apply an actuation force on the latch at a rate of 25 ± 6 mm / min in the fully open position. | 3.5kgf (7.7lbs) min force held for 10 sec. with no damage. |
| 12 | Latch Actuation Force | Apply an actuation force on the latch at a rate of 25 ± 6 mm/ min with recommended test module inserted into connector. | The force to fully actuate the latch open shall be 4.5kgf (10lbs) max. per latch. |
| 13 | Module Rip Out Force | Pull up from the center of the module with the latches closed at a rate of 25.0 ± 6 mm/min. | 9.1kgf (20lbs) min. retention force of the module in connector with no damage |
| 14 | Retention of Connector to PCB | Pull or push connector with a force of 0.45kgf on connector mounted on the PCB prior at the rate of 12.7 ± 3 mm fork lock PCB hole size: 2.45 ± 0.05 mm. | No lifting of connector from applicable PCB. |
| 15 | Insertion Force of Connector into PCB | Push connector into applicable PCB at a rate of 12.7 ± 3 mm. Fork lock PCB hole size: 2.45 ± 0.05 mm. | Total insertion force to be 6.8kgf (15lbs) max. |
| 16 | Module Unmate Force | Pull out 1.17 thick test blade from connector with latches removed at a rate of 12.7 ± 3 mm/min | 1.68kgf min per connector or 14gf per pin pair. |
| 17 | Retention of Latch insert to Latch | Latch metal Insert to be pushed out at the rate of 25.4 ± 6 mm per minute. | 1.0 Kgf min |

5.3 ENVIRONMENTAL REQUIREMENTS

| ITEM | DESCRIPTION | TEST CONDITION | REQUIREMENT | | | | | | | | | | |
|----------------|---|--|---|--------------------|-----------|----|---------|-----------|-----------|----|---------|-----------|---|
| 18 | Shock (Thermal) | Mate connectors; expose to 10 cycles of: <table border="1"> <thead> <tr> <th>Temperature °C</th> <th>Duration (Minutes)</th> </tr> </thead> <tbody> <tr> <td>-55 +0/-3</td> <td>30</td> </tr> <tr> <td>+25 ±10</td> <td>5 MAXIMUM</td> </tr> <tr> <td>+85 +3/-0</td> <td>30</td> </tr> <tr> <td>+25 ±10</td> <td>5 MAXIMUM</td> </tr> </tbody> </table> EIA-364-32 | Temperature °C | Duration (Minutes) | -55 +0/-3 | 30 | +25 ±10 | 5 MAXIMUM | +85 +3/-0 | 30 | +25 ±10 | 5 MAXIMUM | Contact Resistance: ΔR : 10 m Ω Max. Appearance: No Damage |
| Temperature °C | Duration (Minutes) | | | | | | | | | | | | |
| -55 +0/-3 | 30 | | | | | | | | | | | | |
| +25 ±10 | 5 MAXIMUM | | | | | | | | | | | | |
| +85 +3/-0 | 30 | | | | | | | | | | | | |
| +25 ±10 | 5 MAXIMUM | | | | | | | | | | | | |
| 19 | Temperature Life (Preconditioning) | Mate connectors; expose to: 72 hours at $105 \pm 3^\circ\text{C}$ Per EIA-364-17 | Contact Resistance: ΔR : 10 m Ω Max. Appearance: No Damage | | | | | | | | | | |
| 20 | Temperature Life | Mate connectors; expose to: 120 hours at $105 \pm 3^\circ\text{C}$ Per EIA-364-17 | Contact Resistance: ΔR : 10 m Ω Max. Appearance: No Damage | | | | | | | | | | |
| 21 | Solderability | Steam age for 8 hour +/- 15 min. Dip solder tails into solder pot at a temperature of $255 \pm 5^\circ\text{C}$ for 5 ± 0.5 seconds. Non-activated flux. As per IPC/ECA J-STD-002C | Solder coverage: 95% MINIMUM | | | | | | | | | | |

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|---------------------|---|--|--------------------------|
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| 2 | EC No: S2012-0639 DATE: 2012/02/17 | DDR3, 240 CKT, VERT, THROUGH HOLE 110 SEATING PLANE, LOW LCCR (15 Au) | 4 of 7 |
| DOCUMENT NUMBER: | CREATED / REVISED BY: | CHECKED BY: | APPROVED BY: |
| PS-78588-001 | VMANICKAM 2012/02/17 | CCTEH 2012/02/27 | SHLENI 2012/02/27 |



PRODUCT SPECIFICATION

| | | | |
|----|--|---|---|
| 22 | Resistance to Solder Heat | Dip solder tails into solder pot $260 \pm 5^{\circ}\text{C}$ for 10 ± 1 seconds; Solder Temperature: $260 \pm 5^{\circ}\text{C}$ Immerse leads to a depth of 1.00 +/-0.2 mm from connector body. EIA 364-56A | Visual: No Damage or discoloration of connector materials. |
| 23 | Temperature Rise | Mate the connectors, series 6 contacts and measure the temperature rise at the rated current of 1.0A after 4 hours. | Maximum Temperature Rise: 30 °C above ambient. |
| 24 | Cyclic Temperature & Humidity | Cycle the connector between $25^{\circ}\text{C} \pm 3^{\circ}\text{C}$ at $80\% \pm 3\%$ RH and $65^{\circ}\text{C} \pm 3^{\circ}\text{C}$ at $50\% \pm 3\%$ RH. Ramp times should be 0.5 hour and dwell times should be 1 hour. Dwell times start when the temperature and humidity have stabilized within the specified levels. Perform 24 such cycles. EIA-364-31 | Contact Resistance: ΔR : 10 m Ω Max. Appearance: No Damage |
| 25 | Mixed Flowing Gas | EIA-364-65, class IIA, expose unmated connector for 5 days in MFG chamber. Expose mated (to same test module mated during temp life preconditioning) connector for 2 days in MFG chamber. | Contact Resistance: ΔR : 10 m Ω Max. |
| 26 | Thermal Disturbance | Cycle the connector between $15^{\circ}\text{C} \pm 3^{\circ}\text{C}$ and $85^{\circ}\text{C} \pm 3^{\circ}\text{C}$, as measured on the part. Ramps should be a minimum of 2°C per minute, and dwell times should insure that contacts reach temperature extreme for a minimum of 5minutes. No humidity control. 10 cycles total. | Contact Resistance: ΔR : 10 m Ω Max |

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|---|---|--|--|
| REVISION: 2 | ECR/ECN INFORMATION: EC No: S2012-0639 DATE: 2012/02/17 | TITLE: DDR3, 240 CKT, VERT, THROUGH HOLE 110 SEATING PLANE, LOW LLCR (15 Au) | SHEET No. 5 of 7 |
| DOCUMENT NUMBER: PS-78588-001 | CREATED / REVISED BY: VMANICKAM 2012/02/17 | CHECKED BY: CCTEH 2012/02/27 | APPROVED BY: SHLENI 2012/02/27 |



PRODUCT SPECIFICATION

6.0 TEST SEQUENCE

| TEST DESCRIPTION SEQUENCE | TEST GROUP | | | | | | | | | | | | |
|---|------------|---------|---------|------|-----|---|---|-----|---|----|----|---------------|-----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
| Contact Resistance | 1,4,6 | 1,4,5,7 | 1,3,5,7 | | 1,3 | | | | | | | 1,4,6,8,10,12 | |
| Durability (preconditioning) | 2 | 2 | 2 | | | | | | | | | 2 | |
| Durability | | | | | 2 | | | | | | | | |
| Insulation Resistance | | | | 1, 5 | | | | | | | | | |
| Dielectric Withstand Voltage | | | | 2,6 | | | | | | | | | |
| Temperature Life (Preconditioning) | | | | | | | | | | | | 3 | |
| Temperature Life | 3 | | | | | | | | | | | | |
| Thermal Shock | | 3 | | 3 | | | | | | | | | |
| Thermal Disturbance | | | | | | | | | | | | 9 | |
| Cyclic Temp & Humidity | | 5 | | 4 | | | | | | | | | |
| Mixed Flowing Gas (Unmated) | | | | | | | | | | | | 5 | |
| Mixed Flowing Gas (mated) | | | | | | | | | | | | 7 | |
| Mechanical Shock | | | 6 | | | | | | | | | | |
| Vibration | | | 4 | | | | | | | | | | |
| Reseating | 5 | 6 | | | | | | | | | | 11 | |
| Temperature Rise | | | | | | 1 | | | | | | | |
| Solderability | | | | | | | 1 | | | | | | |
| Resistance to Soldering | | | | | | | | 3 | | | | | 2 |
| Module Insertion Force | | | | | | | | | 1 | | | | |
| Latch Actuation Force | | | | | | | | | | 1 | | | |
| Latch Overstress Force | | | | | | | | | | 2 | | | |
| Module Ripout Force | | | | | | | | | 2 | | | | |
| Connector Insertion and Retention to PCB | | | | | | | | | | | 1 | | |
| Terminal Retention | | | | | | | | 1,4 | | | | | |
| Forklock Retention | | | | | | | | 2,5 | | | | | |
| Module Unmate Forces | | | | | | | | | | | 2 | | |
| Latch insert Retention | | | | | | | | | | | | | 1,3 |
| Sample Size per Test Group | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |

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|---|---|--|--|
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PRODUCT SPECIFICATION

7.0 PACKAGING

Parts shall be packed in trays and protected against damage during handling, transportation and storage.

8.0 RECOMMENDED Pb-FREE REFLOW PROFILES

Connector should be soldered onto PCB using either the wave soldering technique or the reflow soldering technique according to the table shown below.

| Process | Peak Temperature | Duration |
|---------|--|---|
| Wave | 265° C Max (Solder Bath) 220° Max Connector Housing | 5 +/-2 sec (wave contact) |
| Reflow | 220°C Max Peak 220° Max Connector Housing | 20 to 40 sec Time within 5°C of peak |

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|---|---|--|--|
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| DOCUMENT NUMBER: PS-78588-001 | CREATED / REVISED BY: VMANICKAM 2012/02/17 | CHECKED BY: CCTEH 2012/02/27 | APPROVED BY: SHLENI 2012/02/27 |