

DDR4 MINI DIMM SOCKET

1.0 SCOPE

This Product Specification covers performance requirements of the 0.50mm centerline gold plated DDR4 MINI DIMM edge card connector for 1.40 ± 0.10 thick memory modules.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

Series Number
151105

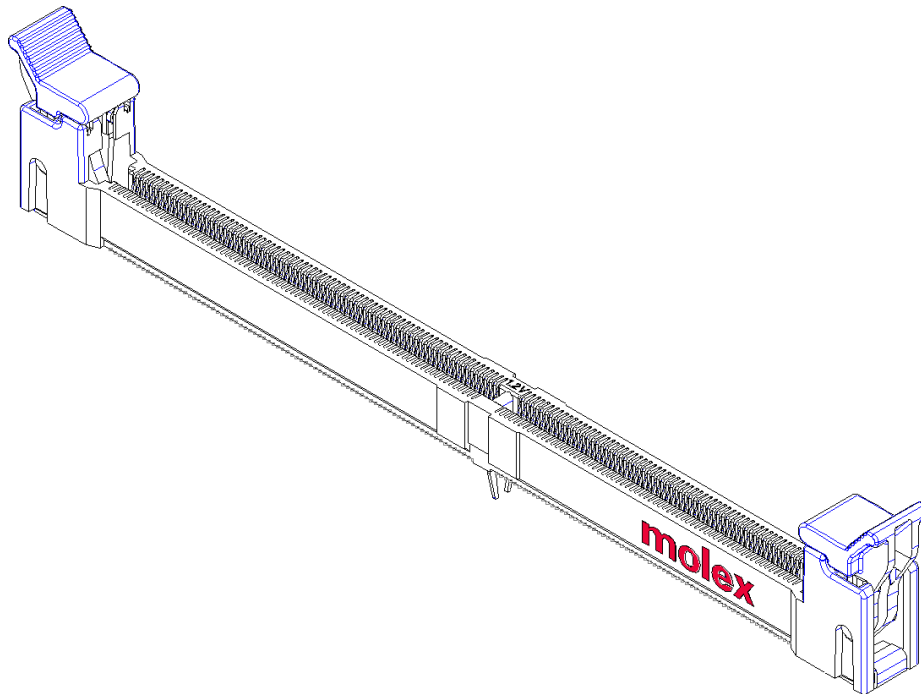
Product Description
DDR4 MINIDIMM VERTICAL SMT 0.76Au 288CKT

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate sales drawing(s) for information on dimensions, materials, plating and markings, on recommended module outlines and footprint specifications.

2.3 SAFETY AGENCY APPROVALS

- UL File Number E29179
- CSA File Number 1699020 (LR19980)



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

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DOCUMENT NUMBER: PS-151105-0001	CREATED / REVISED BY: JA KEE MEW	CHECKED BY: CC TEH	APPROVED BY: SH LENI

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

Refer to the appropriate sales drawing(s) and other sections of this specification for the necessary referenced documents and specifications. In the event of conflict between the requirements of this specification and the product drawing(s), the product drawing(s) shall take precedence. In the event of conflict between the requirements of this specification and the reference documents, this specification shall take precedence.

4.0 RATINGS

4.1 VOLTAGE

29 Volts AC (RMS) / DC

4.2 CURRENT

0.75 Amps / pin

4.3 TEMPERATURE

Operating: - 55°C to + 85°C

Nonoperating: - 55°C to + 85°C

4.4 FIELD LIFE AND TEMPERATURE

Field life: 5 Years

Field temperature: 65°C

5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Low Level Contact Resistance (LLCR) (Initial)	EIA-364-23 – Option 1 Mate connectors: apply a current of 100 mA maximum and voltage of 20 mV maximum.	20 milliohms MAXIMUM
2	Low Level Contact Resistance (LLCR) (Change from initial)	EIA-364-23 – Option 1 Mate connectors. Apply a current of 100 mA maximum and a voltage of 20 mV maximum.	10 milliohms MAXIMUM
3	Insulation Resistance	EIA-364-21 Unmate and unmount connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.	1 Megohm MINIMUM
4	Dielectric Withstanding Voltage	EIA-364-20 – Method B Unmate connectors: apply a voltage of 500 VAC for 1 minute between adjacent terminals.	No breakdown

5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
5	Insertion Force (Module to connector with latches)	EIA-364-13 – Method B Mate a 1.50 ± 0.01 mm thickness steel gauge to the connector at a rate of 25.4 mm per minute.	150.0 N MAXIMUM

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5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
6	Retention Force – Terminal	EIA-364-29 – Method C Axial pull-out of terminal in the housing at a maximum rate of 25.4 mm per minute.	300gf MINIMUM per pin
7	Retention Force – Fork lock	EIA-364-29 – Method C Axial pull-out of fork lock in the housing at a maximum rate of 25.4 mm per minute.	8.0 N MINIMUM per fork lock
8	Durability (Preconditioning)	EIA-364-09 Perform 5 plug-and-unplug cycles at a maximum rate of 5 cycles per minute.	No evidence of physical damage
9	Durability	EIA-364-09 Perform 25 plug-and-unplug cycles at a maximum rate of 5 cycles per minute.	No evidence of physical damage
10	Vibration	EIA-364-28 Mated connectors Random profile: 5 Hz @ 0.01 g²/Hz to 20 Hz @ 0.02 g²/Hz (slope up) 20 Hz to 500 Hz @ 0.02 g²/Hz (flat) Input acceleration is 3.13 g RMS 10 minutes per axis for all 3 axes on all samples Random control limit tolerance is ± 3 dB Module weight 10 ± 2g with center of gravity 18-20mm from module mating edge.	No evidence of physical damage No discontinuities of ≥ 1 microsecond
11	Shock (Mechanical)	Mated Connectors. Profile: Trapezoidal shock 50 g, ± 10% Duration : 11 millisecond Velocity change : 170" per second, $\pm 10\%$ Quantity: Three drops in each of six directions. Total 18 drops per connector Module weight 10 ± 2g with center of gravity 18-20mm from module mating edge.	No evidence of physical damage No discontinuities of ≥ 1 microsecond
12	Reseating	EIA-364-09 Manually mate and unmate the connector with the module card for 3 cycles at a maximum rate of 5 cycles per minute.	No evidence of physical damage
13	Latch Overstress Force	Unmated connectors: apply an actuation force on the latch at a rate of 25.4 ± 6mm per minute in the fully open position.	35.0 N MINIMUM force held for 10 seconds with no damage
14	Latch Actuation Force	Apply an actuation force on the latch at a rate of 25.4 ± 6mm per minute with the steel test blade of 1.50 ± 0.01mm inserted into the connector.	The force to fully actuate the latch open shall be 35.0 N MAXIMUM per latch
15	Module Rip-out Force	Pull up from the center of the steel test blade 1.50 ± 0.01mm thick at a rate of 25.4 ± 6mm	3.6kgf MINIMUM Retention force of the module

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5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
		per minute. with the latches closed.	in the connector with no damage
16	Insertion Force – Connector to board	EIA-364-05 Unmated connectors: Push connector into applicable PCB at a rate of 12.7 ± 3 mm per minute. Fork lock PCB hole size: 2.45 ± 0.05 mm	25 N MAXIMUM
17	Retention Force – Connector to board	EIA-364-05 Unmated connectors: Pull or push with a force of 0.20 kgf the connector mounted on the PCB at a rate of 12.7 ± 3 mm per minute. Fork lock PCB hole size: 2.45 ± 0.05 mm	No lifting of connector from applicable PCB
18	Unmating Force (per pin pair)	EIA-364-13 – Method B Pull out 1.30 ± 0.01 mm thick steel test blade from connector with latches removed at a rate of 12.7 ± 3 mm per minute.	2.02kgf MINIMUM for 288 circuits (14gf per pin pair)

5.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT										
19	Shock (Thermal)	EIA-364-32 – Method A, Test Condition I, Duration A-4 Mate connectors: expose to 10 cycles of <table border="1"> <thead> <tr> <th>Temperature (°C)</th> <th>Duration (min)</th> </tr> </thead> <tbody> <tr> <td>-55^{+0}_{-3}</td> <td>30</td> </tr> <tr> <td>Specimen transfer from cold to hot</td> <td>5 MAXIMUM</td> </tr> <tr> <td>85^{+3}_{-0}</td> <td>30</td> </tr> <tr> <td>Specimen transfer from hot to cold</td> <td>5 MAXIMUM</td> </tr> </tbody> </table>	Temperature (°C)	Duration (min)	-55^{+0}_{-3}	30	Specimen transfer from cold to hot	5 MAXIMUM	85^{+3}_{-0}	30	Specimen transfer from hot to cold	5 MAXIMUM	None
Temperature (°C)	Duration (min)												
-55^{+0}_{-3}	30												
Specimen transfer from cold to hot	5 MAXIMUM												
85^{+3}_{-0}	30												
Specimen transfer from hot to cold	5 MAXIMUM												
20	Temperature Life (Preconditioning)	EIA 365-17 – Method A (without electrical load) Mate connector: expose 72 hours at $105^{\circ} \pm 2^{\circ}$ C. Exposure time as per EIA-364-1000, Table 9	None										
21	Temperature Life	EIA 365-17 – Method A (without electrical load) Mate connector: expose 120 hours at $105^{\circ} \pm 2^{\circ}$ C. Exposure time as per EIA-364-1000, Table 8	None										
22	Solderability	IPC J-STD-002 Unmated connector: Steam age for 8 hours \pm 15 minute. Place connector onto solder paste printed on a substrate via stencil. Process through a forced hot convection oven. Connector is removed from substrate and inspected.	95% MINIMUM Solder coverage No bridging										

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5.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT								
23	Resistance to Solder Heat	EIA-364-56 Place connector on a substrate surface. Apply heat at a rate of $2.5 \pm 1.5^{\circ}\text{C}$ per second until $260^{+10}_{-0}^{\circ}\text{C}$ is reached and maintained for 32.5 ± 2.5 seconds. Connector is removed from substrate and inspected.	Visual: No damage or discoloration of connector materials.								
24	Temperature Rise	EIA-364-70 Ten pair contacts in consecutive positions on the same side of the connector are connected in a series circuit (mated condition). A thermocouple is inserted through holes in the socket housing, as close to the contact interface as possible. Supply the rated current.	Maximum Temperature Rise shall not exceed 30°C above ambient								
25	Cyclic Temperature & Humidity	EIA-364-1000 – Test Group 2, Cyclic temperature and humidity Cycle the connector between <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">Cycle between temperature and RH</th> </tr> <tr> <th>Temperature ($^{\circ}\text{C}$)</th> <th>RH (%)</th> </tr> </thead> <tbody> <tr> <td>25 ± 3</td> <td>80 ± 3</td> </tr> <tr> <td>65 ± 3</td> <td>50 ± 3</td> </tr> </tbody> </table> 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	Cycle between temperature and RH		Temperature ($^{\circ}\text{C}$)	RH (%)	25 ± 3	80 ± 3	65 ± 3	50 ± 3	None
Cycle between temperature and RH											
Temperature ($^{\circ}\text{C}$)	RH (%)										
25 ± 3	80 ± 3										
65 ± 3	50 ± 3										
26	Mixed Flowing Gas	EIA-364-65 – Class IIA, Exposure time: EIA-364-1000 – Table 4.1. Expose unmated connector for 112 hours in MFG chamber. Expose mated (to same test module mated during temp life preconditioning) connector for 56 hours in MFG chamber.	None								
27	Thermal Disturbance	EIA-364-1000 – Table 4. Mated connector. Cycle the connector between $15 \pm 3^{\circ}\text{C}$ and $85 \pm 3^{\circ}\text{C}$, as measured on the part. Ramps should be a minimum of 2°C per minute. Dwell times should ensure that contacts reach temperature extreme (for a minimum of 5 minutes). No humidity control. Perform 10 cycles.	None								

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6.0 TEST SEQUENCE

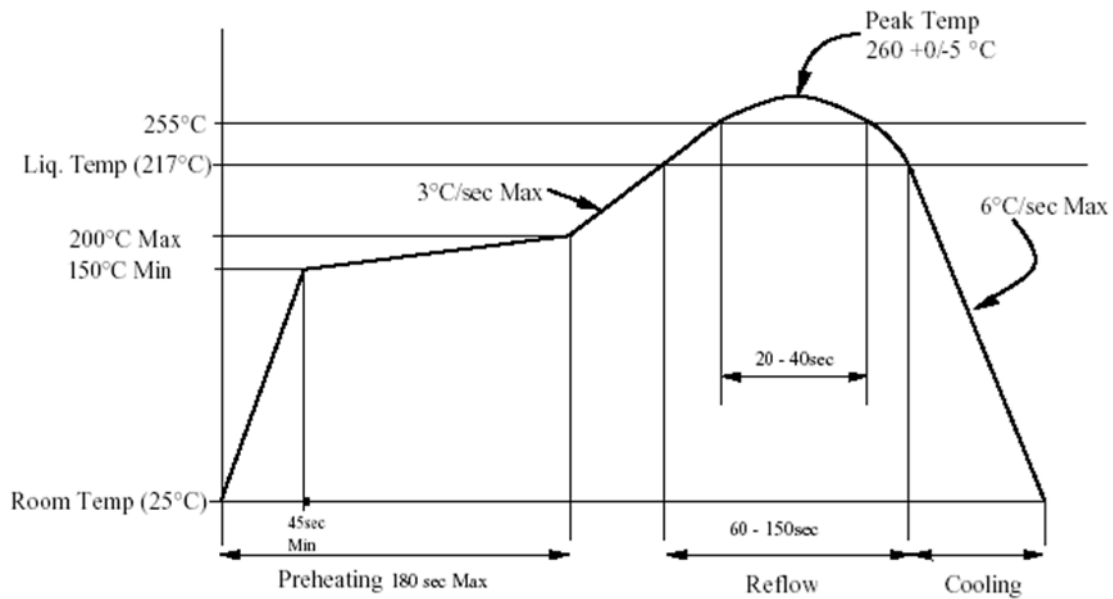
TEST DESCRIPTION SEQUENCE												
	1	2	3	4	5	6	7	8	9	10	11	12
Low level contact resistance (Initial)	1	1	1		1							1
Durability (Preconditioning)	2	2	2									2
Durability					2							
Low level contact resistance (Change from initial)	4,6	4,6,8	3,5,7		3							4,6,8,10,12
Insulation resistance				1, 5								
Dielectric withstanding voltage				2,6								
Temperature life (Preconditioning)												3
Temperature life	3											
Shock (Thermal)		3		3								
Thermal disturbance												9
Cyclic temperature & humidity		5		4								
Mixed flowing gas (Unmated)												5
Mixed flowing gas (Mated)												7
Shock (Mechanical)			6									
Vibration			4									
Reseating	5	7										11
Temperature rise						1						
Solderability							1					
Resistance to solder heat								3				
Insertion Force (Module to connector with latches)									1			
Latch Actuation Force										1		
Latch Overstress Force										2		
Module Rip-out Force									2			
Insertion force – Connector to board											1	
Retention force – Connector to Board											2	
Retention Force - Terminal								1,4				
Retention Force – Fork lock								2,5				
Unmating Force (per pin pair)											3	
Sample Size per Test Group	5	5	5	5	5	5	5	6	5	5	5	5

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7.0 PACKAGING

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

8.0 RECOMMENDED LEAD-FREE REFLOW PROFILES



LEAD-FREE PROFILE FOR PEAK REFLOW - 260°C

Notes

1. Temperature indicted refers to the PCB surface temperature at the solder tail area.
2. Connector can withstand up to 2 reflow cycles with a cool-down to room temperature in-between.
3. Actual reflow profile also depends on equipment, solder paste, PCB thickness, and other components on the board. Please consult your solder paste and reflow equipment manufacturer for their recommendations to adopt a suitable process.

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