

NUMBER GS-12-0924	TYPE PRODUCT SPECIFICATION		
TITLE Press Fit DDR3 R-DIMM 240P 1mm Pitch Socket		PAGE 1 of 10	REVISION A
		AUTHORIZED BY Beer Fu	DATE Feb 27th, 2012
		CLASSIFICATION Unrestricted	

1.0 Objective

This specification defines the performance, test, quality and reliability requirements of the DDR3 R-DIMM 240P product.

2.0 Scope

This specification is applicable to the termination characteristics of the DDR3 DIMM family of products which provides memory module card to PCB interconnecting.

3.0 Ratings

3.1 Operating Voltage Rating = $30 V_{AC}(RMS)$ or V_{DC}

3.2 Operating Current Rating = 1 Amperes/6 contacts

3.3 Operating Temperature Range = $-55^{\circ}C \sim +85$

4.0 Applicable Documents

4.1 FCI Engineering drawings 10076443, 10120194

4.2 FCI Product Shelf life-Storage-Solderability GS-20-060

4.3 FCI Package specification GS-14-528

4.4 Flammability: UL94V-0 or similar applicable specification

4.5 EIA-364: Electrical Connector/Socket Test Procedures Including Environmental Classifications.

4.6 IEC 60512: Connectors for Electronic Equipment – Tests and Measurement

5.0 Requirements

5.1 Qualification


Connectors furnished under this specification shall be capable of meeting the qualification test requirements specified herein.

5.2 Material

Terminal: Copper alloy

Housing: High temperature thermoplastic, UL 94V-0 compliant

Ejector: High temperature thermoplastic, UL 94V-0 compliant

NUMBER GS-12-0924	TYPE PRODUCT SPECIFICATION		
TITLE Press Fit DDR3 R-DIMM 240P 1mm Pitch Socket		PAGE 2 of 10	REVISION A
		AUTHORIZED BY Beer Fu	DATE Feb 27th, 2012
		CLASSIFICATION Unrestricted	

5.3 Terminal Plating

- Contact Area:
Performance-base plating, qualified to meet the requirements of this specification
- Tails: Tin plated over Nickel Or Tin-lead plated over Nickel

5.4 Design and Construction

Connectors shall be of the design, construction and physical dimensions specified on the applicable product drawings.

5.5 Visual

Visual examinations shall be performed using 10X magnification. Parts should be free from blistering, cracks, discoloration, etc.

6.0 Electrical Characteristics

6.1 Contact Resistance, Low Level (LLCR)

The low level contact resistance shall not exceed 10 milliohms initially. The low level contact resistance shall also not exceed 10 milliohms increase in resistance (from the initial measurement) after any treatment and/or environmental exposure.

Measurements shall be in accordance with EIA-364-23.

The following details shall apply:

- a. Test Voltage - 20 milli-volts DC max open circuit.
- b. Test Current - Not to exceed 100 milli-amperes.

6.2 Insulation Resistance

The insulation resistance of unmated connectors shall not be less than 1M ohms initially and after environmental exposure.

Measurements shall be in accordance with EIA-364-21.

The following details shall apply:


- a. Test Voltage - 500 volts DC.
- b. Electrification Time - 2 minutes, unless otherwise specified.
- c. Points of Measurement - Between adjacent contacts.

6.3 Dielectric Withstanding Voltage

There shall be no evidence of arc-over, insulation breakdown, or excessive leakage current > 1m amperes when unmated connectors are tested in accordance with EIA-364-20.

The following details shall apply:

- a. Test Voltage - 500 volts (AC RMS, 60Hz).
- b. Test Duration - 60 seconds

NUMBER GS-12-0924	TYPE PRODUCT SPECIFICATION		
TITLE Press Fit DDR3 R-DIMM 240P 1mm Pitch Socket		PAGE 3 of 10	REVISION A
		AUTHORIZED BY Beer Fu	DATE Feb 27th, 2012
		CLASSIFICATION Unrestricted	

- c. Test Condition - 1 (760 Torr - sea level).
- d. Points of Measurement - Between adjacent contacts.

6.4 Temperature Rise

The temperature rise above ambient shall not exceed 30 at any point in the system when 6 contacts are powered at 1 amperes after 4 hours.

The following details shall apply:

- a. Ambient Conditions – Still air at room temperature.
- b. Reference – EIA-364-70

7.0 Mechanical Characteristics

7.1 Module Insertion/Unmate Force

The force to mate a 1.37 ± 0.015 mm thick steel gage with ejectors installed shall not exceed 10.8kgf. The force to pull out 1.17 ± 0.015 mm thick steel gage with ejectors uninstalled shall not be less than 1.68kgf.

The following details shall apply:

- a. Cross Head Speed for mating- 25.4 ± 1 mm per minute.
- b. Cross Head Speed for unmating – 12.7 ± 3 mm per minute.
- b. Utilize free floating fixtures.
- c. Reference –EIA-364-13.

7.2 Compliant Pin Insertion Force to PCB(single)

The force to insert a compliant pin into applicable PCB hole with minimum hole size 0.46mm at a rate of 25.4 ± 1 mm/minute shall not exceed 1.5kg.

7.3 Compliant Pin Retention Force to PCB(single)


The force to pull out axially from a compliant pin from PCB hole with maximum hole size 0.53mm at a rate of 25.4 ± 1 mm/minute shall not be less than 0.20kg.

7.4 Ejector Overstress Force

- a. Test conditions:-

Apply a minimum 3.5kgf actuation force on the ejector at a rate of 25.4 ± 1 mm the fully open position.

- b. Duration: 10 seconds.
- c. No physical damage.

NUMBER GS-12-0924	TYPE PRODUCT SPECIFICATION		
TITLE Press Fit DDR3 R-DIMM 240P 1mm Pitch Socket		PAGE 4 of 10	REVISION A
		AUTHORIZED BY Beer Fu	DATE Feb 27th, 2012
		CLASSIFICATION Unrestricted	

7.5 Ejector Actuation Force

The force to fully actuate the ejector open at module card mated shall not exceed 3.0kgf per ejector.

The following details shall apply:

- a. Cross Head Speed - 25.4 ± 1 mm per minute.
- b. No physical damage.

7.6 Terminal Retention Force

Axially force pull out the terminal from housing shall not be less than 0.3kgf.

The following details shall apply:

- a. Cross Head Speed - 25.4 ±1 mm per minute.

8.0 Environmental Conditions

After exposure to the following environmental conditions in accordance with the specified test procedure and/or details, the product shall show no physical damage and shall meet the electrical and mechanical requirements per paragraphs 6.0 and 7.0 as specified in the Table 1 test sequences. Unless specified otherwise, assemblies shall be mated during exposure.

8.1 Thermal Shock – EIA-364-32.

- a. Number of Cycles - 10
- b. Temperature Range - Between -55 and 85
- c. Time at Each Temperature - 30 minutes
- d. Transfer Time -5 minutes, maximum

8.2 Cyclic Temperature and Humidity – EIA-364-31 method III


- a. Relative Humidity and Temperature– Between 90-98% RH, 25 and 80-98%RH, 65
- b. Ramp time should be 2.5 hours and dwell time should be 2.5 hours.
- c. Dwell time start when the relative humidity and temperature stabilize within the specified level.
- d. Duration - 10 days

8.3 Temperature Life (Preconditioning) –EIA-364-17, following shall be applied in mated connectors,

- a. Test Temperature – 105± 3
- b. Test Duration – 72 hours for P/N 10120194-00XLF, 48 hours for P/N 10076443-10XLF

8.4 Temperature Life –EIA-364-1000.01, following shall be applied in mated connectors,

- a. Test Temperature – 105± 3
- b. Test Duration – 500 hours for P/N 10120194-00XLF, 96 hours for P/N 10076443-10XLF

NUMBER GS-12-0924	TYPE PRODUCT SPECIFICATION		
TITLE Press Fit DDR3 R-DIMM 240P 1mm Pitch Socket		PAGE 5 of 10	REVISION A
		AUTHORIZED BY Beer Fu	DATE Feb 27th, 2012
		CLASSIFICATION Unrestricted	

8.5 Mixed Flowing Gas(unmated) – EIA-364-65.

- a. Class – 2A
- b. Duration - 14 days to simulate a 10 year product life for P/N 10120194-00XLF
Duration - 5 days to simulate a 3 year product life for P/N 10076443-10XLF
- c. Unmated for ½ the duration and mated the remaining ½ duration.
- d. Mate/Unmate 1 cycle prior to LLCR measurement.

8.6 Mixed Flowing Gas(mated) – EIA-364-65.

- a. Class – 2A
- b. Duration - 14 days to simulate a 10 year product life for P/N 10120194-00XLF
Duration - 5 days to simulate a 3 year product life for P/N 10076443-10XLF
- c. mated for ½ the duration and mated the remaining ½ duration
- d. Mate/Unmate 1 cycle prior to LLCR measurement.

8.7 Thermal Disturbance


- a. Temperature– Between 15±3 and 85±3 without humidity control.
- b. Ramp should be a minimum of 2 per minute.
- c. Dwell time: 5 minutes, start when the temperature have stabilized.
- d. Duration - 10 cycles.

8.8 Vibration (Random) – EIA-364-28

- a. Test Condition –
Module card weighted 49+/-5 gram with center of gravity 20-25mm from module mating edge.
Frequency range: 5Hz to 500Hz.
5 to 20Hz(slope): (0.01g²/Hz)@5Hz, (0.02g²/Hz)@20Hz
20 to 500Hz(Flat): (0.02g²/Hz)@20Hz
Input acceleration is 3.13 g RMS.
Random control limit tolerance: +/-3 dB.
- b. Duration – 15 minutes per axis for X,Y,Z axes on all samples.
- c. No physical damage and no discontinuities greater than 1 microseconds.

8.9 Mechanical Shock – EIA-364-27

- a. Condition -
Module card weighted 49+/-5 gram with center of gravity 20-25mm from module mating edge.
Mated connectors and shock at 50g's with 1/2 sine wave (11 milliseconds).
- b. Shocks - 3 shocks in both directions along each of three orthogonal axes (18 shocks total)

NUMBER GS-12-0924	TYPE PRODUCT SPECIFICATION		
TITLE Press Fit DDR3 R-DIMM 240P 1mm Pitch Socket		PAGE 6 of 10	REVISION A
		AUTHORIZED BY Beer Fu	DATE Feb 27th, 2012
		CLASSIFICATION Unrestricted	

c. No physical damage and no discontinuities greater than 1 microseconds.

8.10 Durability - EIA-364-09, 1.27+/- 0.10mm module card shall be applied.

- a. Number Cycles - 25 cycles
- b. Cycling Rate – 10 cycles/min

8.11 Durability(Preconditioning) - EIA-364-09,1.27+/- 0.10mm module card shall be applied.

- a. Number Cycles - 5 cycles
- b. Cycling Rate – 10 cycles/min

8.12 Reseating

- a. Test conditions:-Manually mate and unmate module card for 3 cycles.
- b. No physical damage.

9.0 QUALITY ASSURANCE PROVISIONS

9.1 Equipment Calibration

All test equipment and inspection facilities used in the performance of any test shall be maintained in a calibration system in accordance with ANSI Z-540 and ISO 9000.

9.2 Inspection Conditions

Unless otherwise specified herein, all inspections shall be performed under the following ambient conditions:


- a. Temperature: 25 +/- 5
- b. Relative Humidity: 30% to 60%
- c. Barometric Pressure: Local ambient

9.3 The sample size is listed for each test in section 9.7 Qualification Test Table.

9.4 Acceptance

9.4.1 Electrical and mechanical requirements placed on test samples as indicated in paragraphs 6.0 and 7.0 shall be established from test data using appropriate statistical techniques or shall otherwise be customer specified, and all samples tested in accordance with this product specification shall meet the stated requirements.

9.4.2 Failures attributed to equipment, test setup, or operator error shall not disqualify the product. If product failure occurs, corrective action shall be taken and samples resubmitted for qualification.

NUMBER GS-12-0924	TYPE PRODUCT SPECIFICATION		
TITLE Press Fit DDR3 R-DIMM 240P 1mm Pitch Socket		PAGE 7 of 10	REVISION A
		AUTHORIZED BY Beer Fu	DATE Feb 27th, 2012
		CLASSIFICATION Unrestricted	


9.5 Qualification Testing

Qualification testing shall be performed on sample units produced with equipment and procedures normally used in production.

9.6 Re-Qualification Testing


If any of the following conditions occur, the responsible product engineer shall initiate requalification testing consisting of all applicable parts of the qualification test matrix.

- a. A significant design change is made to the existing product which impacts the product form, fit or function. Examples of significant changes shall include, but not be limited to, changes in the plating material composition or thickness, contact force, contact surface geometry, insulator design, contact base material, or contact lubrication requirements.
- b. A significant change is made to the manufacturing process which impacts the product form, fit or function.
- c. A significant event occurs during production or end use requiring corrective action to be taken relative to the product design or manufacturing process.

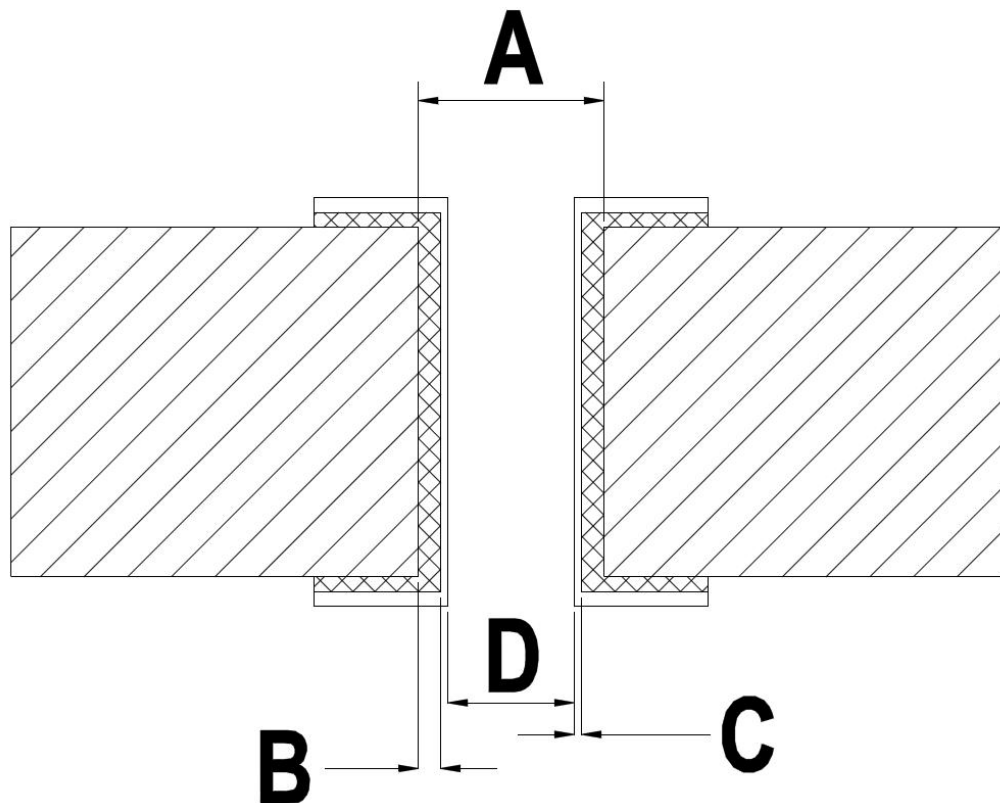
NUMBER GS-12-0924	TYPE PRODUCT SPECIFICATION		
TITLE Press Fit DDR3 R-DIMM 240P 1mm Pitch Socket		PAGE 8 of 10	REVISION A
		AUTHORIZED BY Beer Fu	DATE Feb 27th, 2012
		CLASSIFICATION Unrestricted	

9.7 Qualification Test Table

TEST DESCRIPTION SEQUENCE	PARA.	Test Group												
		1	2	3	4	5	6	7	8	9	10	11	12	13
		Test Sequence												
Examination of Product	5.5	1 7	1 10	1 8	1 8	1 5	1 3			1 3	1 4		1 12	1 12
Low Level Contact Resistance	6.1	2 5 7	2 5 7 9	2 5 7		2 4							2 5 7 9 11	2 5 7 9 11
Durability (Preconditioning)	8.11	3	3	3									3	3
Durability	8.10					3								
Insulation Resistance	6.2				2 6									
Dielectric Withstanding Voltage	6.3				3 7									
Temperature Life (Preconditioning)	8.3												4	4
Temperature Life	8.4	4												
Thermal Shock	8.1		4		4									
Thermal Disturbance	8.7												8	8
Cyclic Temp & Humidity	8.2		6		5									
Mixed Flowing Gas (unmated)	8.5												6	
Mixed Flowing Gas (mated)	8.6													6
Mechanical Shock	8.9			6										
Vibration	8.8			4										
Reseating	8.12	6	8										10	10
Temperature Rise	6.4						2							
Module Insertion Force	7.1									2				
Ejector Actuation Force	7.5										2			
Ejector Overstress Force	7.4										3			
Compliant Pin Insertion Force	7.2											1		
Compliant Pin Retention Force	7.3											2		
Terminal Retention Force	7.6									1				
Module Unmate Force	7.1									1				
Sample Size		6	6	6	6	6	6	6	6	6	6	6	6	6


NUMBER GS-12-0924	TYPE PRODUCT SPECIFICATION		
TITLE Press Fit DDR3 R-DIMM 240P 1mm Pitch Socket		PAGE 9 of 10	REVISION A
		AUTHORIZED BY Beer Fu	DATE Feb 27th, 2012
		CLASSIFICATION Unrestricted	

9.8 Test Board specification



A	Drilled hole	Ø0.57±0.02 mm
B	Copper	0.025mm Min.
C	OSP	0.2~0.5 µm
D	Plated Through Hole	Ø0.46~0.53 mm

FIG 2. OSP HOLE SPECIFICATION

NUMBER GS-12-0924	TYPE PRODUCT SPECIFICATION		
TITLE Press Fit DDR3 R-DIMM 240P 1mm Pitch Socket		PAGE 10 of 10	REVISION A
		AUTHORIZED BY Beer Fu	DATE Feb 27th, 2012
		CLASSIFICATION Unrestricted	

REVISION RECORD

Rev	Page	Description	EC#	Date
1	all	Preliminary version 1	-	2011-03-11
2	7 9	Page 7: Add 1.27 +/- 0.10mm module card in 8.10 & 8.11 Page 9: Sample size change from 5 to 6	-	2011-04-29
3	9	Update group 3 test sequence	-	2011-10-27
A	all	Initial release		2012-02-27