

240 Pin VLP DDR-III Solder Tail Sockets

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the Tyco Electronics 240 pin VLP DDR-III solder tail Connector used primarily in desktop applications where soldering is acceptable.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 1 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

1.3. Qualification Test Results

Successful qualification testing on the subject product line was proceeding.

2. APPLICABLE DOCUMENTS

The following documents form a part of this specification to the extent specified herein. Unless otherwise specified, the latest edition of the document applies. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

2.1. Tyco Electronics Documents

- 109 series: Test Specification as indicated in Figure 1
- 109-197: Test Specification (AMP Test Specifications vs EIA and IEC Test Methods)
- 114-13154: Application Specification
- 501-115021: Qualification Test Report (VLP DDR3 DIMM Connector)

2.2. Industry Standards

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

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

3.2. Materials

Materials used in the construction of this product shall be as specified on the applicable product drawing.

3.3. Ratings

- Voltage: 25 volts AC
- Current: 0.5 A MAX.
- Temperature: -40°C to 85°C

3.4. Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. Unless otherwise specified, all tests shall be performed at ambient environmental conditions.

3.5. Test Requirements and Procedures Summary

Test Item		Requirement	Procedure
1	Examination of Product	Meets requirements of product drawing. No physical damage.	Visual inspection
Electrical Requirement			
2.1	Contact resistance.	30 milliohms Max (Initial) ΔR 20 milliohms Max (Final)	* Subject mated contacts assembled in housing to 20 mV Max open circuit at 100 mA Max. EIA-364-23
2.2	Contact resistance.	10 milliohms Max (Initial) ΔR 10 milliohms Max (Final)	* Subject mated contacts assembled in housing to 20 mV Max open circuit at 100 mA Max. EIA-364-23
3	Dielectric withstanding Voltage	No evidence of arc-over insulation breakdown or leakage current in excess of 1 mA.	* 500 VAC for 1 minute * 100 V rms at 60 Hz, between terminals and terminals to case. * The connectors shall be mated but not soldered to a PCB. EIA-364-20
4	Insulation Resistance	1 M-Ohm Min	* 500 VDC for 1 minuate * The connectors shall be mated but not soldered to a printed circuit board * Test between adjacent circuits of unmated connector. EIA-364-21A.
5	Current Rating	T rise 30°C max.	* Connect 10 pairs contacts in consecutive position (pins 65~74 and pins 185~194) on the same side of specimen are in series circuit and load 0.5A. EIA-364-70
Mechanical Requirement			
6	Module insertion force	106.8 N (10.9 Kgf) Max.	* Measure module card insertion force with 1.37mm THK module. * steel gage at rate of 25mm/minute EIA-364-13
7	Module withdraw force	110 N (11.2 Kgf) Min.	* Measure module withdraws force with latch locked. * with 1.17mm THK module. * steel gage at rate of 25mm/minute EIA-364-13
8	Durability	Meets requirements of product drawing. No physical damage.	* 25 times Mating/Unmating cycles with 1.37mm THK module at inserting rate of 25 mm/minute. EIA-364-09
9	Durability (preconditioning)	No physical damage.	* 5 times Mating/Unmating cycles with 1.37mm THK module at inserting rate of 25 mm/minute. EIA-364-09
Figure 1 (continued)			

10	Reseating	No physical damage.	Manually Mating/Unmating test module 3 cycles.
11	Vibration	No discontinuities No evidence of physical damage ΔR 20 milliohms max ΔR 10 milliohms max (For Connector with Lower LLCR)	* Subject 4 continuity and 4 termination resistance specimens to input acceleration 3.13g RMS between 5Hz to 500Hz, 10 minutes per axis to: ◦ 50 to 20Hz (slope): $(0.01g^2/Hz)$ @5Hz, $(0.02g^2/Hz)$ @20Hz ◦ 20 to 500Hz (flat): $(0.02g^2/Hz)$ @20Hz ◦ Random control limit tolerance: + 3 dB * Module weight 60g min with center of gravity of 20~25 mm from module mating edge. * 10 minutes per axis for all 3 axes on all samples EIA-364-28
Mechanical Requirement			
Test Item		Requirement	Procedure
12.1	Mechanical shock. (For SMT Type)	No discontinuities. No evidence of physical damage ΔR 20 milliohms max ΔR 10 milliohms max (For Connector with Lower LLCR)	* Profile: Trapezoidal shock of 50g±10% * Duration: 11 ms * Minimum velocity change: 212in/sec, ±10% * Module weight 60g min with center of gravity of 20~25 mm from module mating edge. * Three drops in each of 6 directions EIA-364-27
12.2	Mechanical shock. (For T/H Type)	No discontinuities. No evidence of physical damage ΔR 20 milliohms max ΔR 10 milliohms max (For Connector with Lower LLCR)	* Profile: Trapezoidal shock of 50g±10% * Duration: 11 ms * Minimum velocity change: 212in/sec, ±10% * Module weight 60g min with center of gravity of 20~25 mm from module mating edge. * Three drops in each of 6 directions EIA-364-27
13	Contact retention force	2.95 N (0.3 Kg) Min. per pin	* Measure the contact retention force with Tensile strength tester. EIA-364-29.
14.1	Solderability (For SMT Type)	Wet solder coverage: 95% Min. No physical damage	* Reflow Temperature: 230-245°C * Reflow Time: 50-70 s. EIA-364-52, Class 1, Category 3
14.2	Solderability (For T/H Type)	Wet solder coverage: 95% Min. No physical damage	* Solder Temperature: 245 ±5°C. * Solder Immersion Time: 5 ±0.5 s. EIA-364-52, Class 1, Category 3
Environmental Requirement			
15.1	Resistance to Reflow soldering heat	No physical damage shall occur	* Moisture Soak Preconditioning: 85°C and 85% RH. For 168 hours. * Preheat Temp.: 150-200°C, 60-180 s. * Time over liquidus (217°C): 60-150 s. * Peak Temp.: 260 +0/-5°C, 20 s. * Duration: 3 cycles.
15.2	Resistance to Wave soldering heat	No physical damage shall occur	* Solder Temp.: 265°C ±5°C, 10 +2/-0 s.
16	Thermal shock	See Note	* Mated connector -55°C (30 minutes), +85°C (30 minutes) * Perform this a cycles, repeat 10 cycles EIA-364-32, test condition 1
Figure 1 (continued)			

17	Cyclic Temperature & Humidity	See Note.	* Specimens shall be mated during test, Cycling the Connector between 25°C±3°C at 80% RH and 65°C ±3°C at 50% RH, * Ramp times should be 0.5 hour and dwell times be 1 hour. Perform 24 cycles. EIA-364-31
18	Mixed flowing gas	See Note	* 5 days to simulate a 3 year field life for gold flash plating. * 7 days to simulate a 5 year field life for 10u" gold plating. * 10 days to simulate a 7 year field life for 15u" & 20u" gold plating. 14 days to simulate a 10 year product life for 30u" gold plating. EIA-364-65, class IIA
19	Dust	△R 20 milliohms max △R 10 milliohms max (For Connector with Lower LLCR)	* Un-mated 1 hour duration 25°C/50% RH dust mass of 9 g/ft³ at rate of 300 m/min EIA-364-91
20	Temperature life (Preconditioning)	△R 20 milliohms max △R 10 milliohms max (For Connector with Lower LLCR)	Subject mated specimens to 105°C for 120 hours EIA-364-17, method A
21	Thermal cycling	△R 20 milliohms max △R 10 milliohms max (For Connector with Lower LLCR)	Cycle the connector or socket between 15°C±3°C and 85°C±3°C, as measured on the part. Ramps should be a minimum of 2°C per minute, and dwell times should insure that the contacts reach the temperature extremes (a minimum of 5 minutes). Humidity is not controlled. Perform 500 such cycles.

NOTE: *Shall meet visual requirements, show no physical damage, and meet requirements of additional tests as specified in the Product Qualification and Requalification Test Sequence shown in Figure 2.*

Figure 1 (end)

3.6. Product Qualification and Requalification test

Test or Examination	Test Group (a)								
	1	2	3	4	5	6	7	8	9
	Test Sequence (b)								
Initial examination of product	1	1	1	1	1	1	1	1	1
Contact resistance	2, 8	2, 6	2, 4, 6	2, 4, 7	2, 4			2, 4	2, 5, 7, 9
Dielectric withstanding Voltage		5							
Insulation Resistance				6					
Current Rating		4							
Module insertion force	3, 7								
Module withdraw force with latch	4, 6								
Durability.	5	3							
Durability(Preconditioning)									3
Reseating									8
Vibration			3						
Mechanical shock.			5						
Contact retention force						4			
Solderability							2		
Resistance to Reflow/Wave soldering heat						2			
Thermal shock				3					
Cyclic Temperature& Humidity				5					
Mixed flowing gas					3				
Dust								3	
Temperature life (Preconditioning)									4
Thermal Cycling									6
Final examination of product	9	7	7	8	5	3	3	5	10
Test specimens	5	5	5	5	5	5	5	5	5

Notes:

- (a) See paragraph 4.1. A
- (b) Numbers indicate sequence in which tests are performed.

Figure 2

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Specimen Selection

Specimens shall be prepared in accordance with applicable Instruction Sheets and shall be selected at random from current production. All test groups shall each consist of 5 specimens.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 2.

4.2. Requalification Testing

If changes significantly affecting form, fit or function are made to the product or manufacturing process, product assurance shall coordinate requalification testing, consisting of all or part of the original testing sequence as determined by development/product, quality and reliability engineering.

4.3. Acceptance

Acceptance is based on verification that the product meets the requirements of Figure 1. Failures attributed to equipment, test setup or operator deficiencies shall not disqualify the product. If product failure occurs, corrective action shall be taken and specimens resubmitted for qualification. Testing to confirm corrective action is required before resubmittal.

4.4. Quality Conformance Inspection

The applicable quality inspection plan shall specify the sampling acceptable quality level to be used. Dimensional and functional requirements shall be in accordance with the applicable product drawing and this specification.

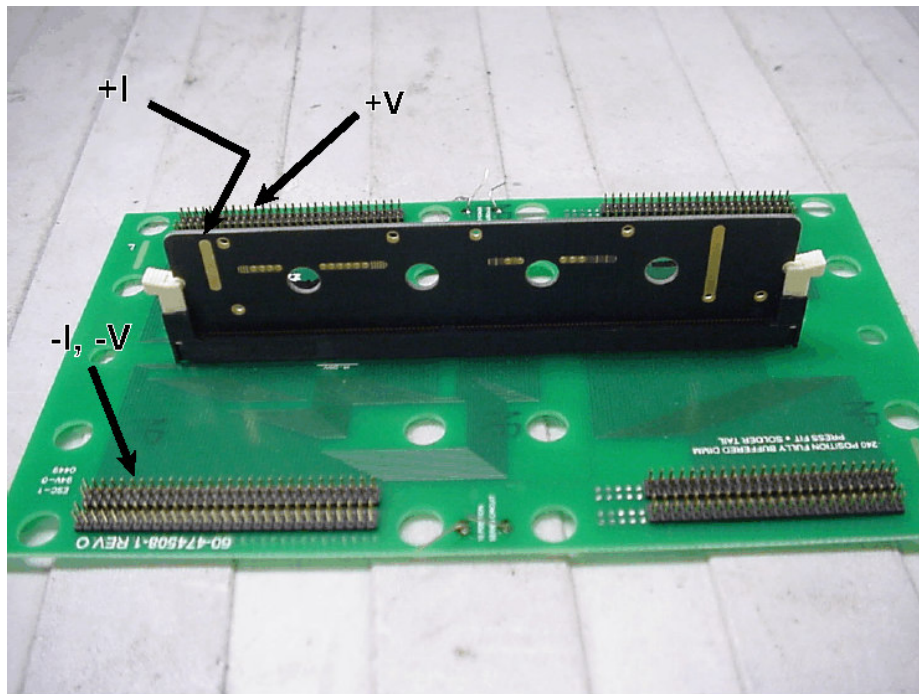


Figure 3

Low Level Contact Resistance

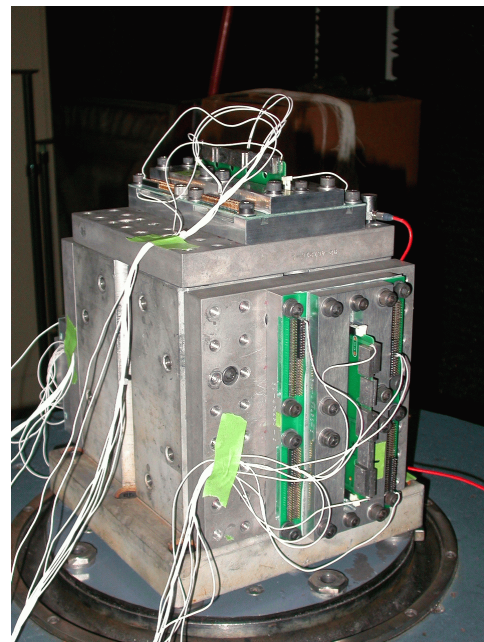
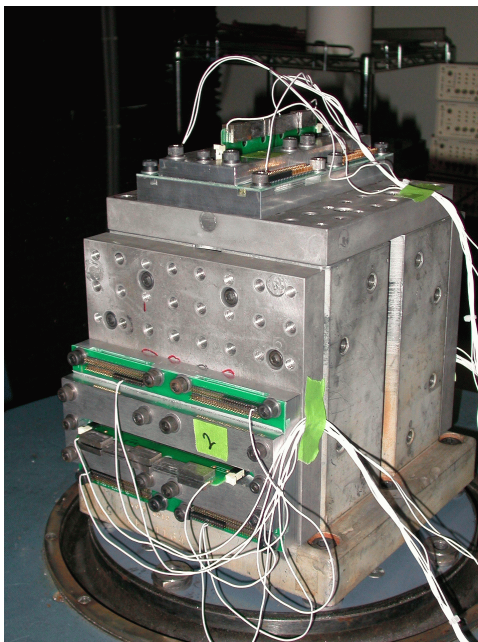
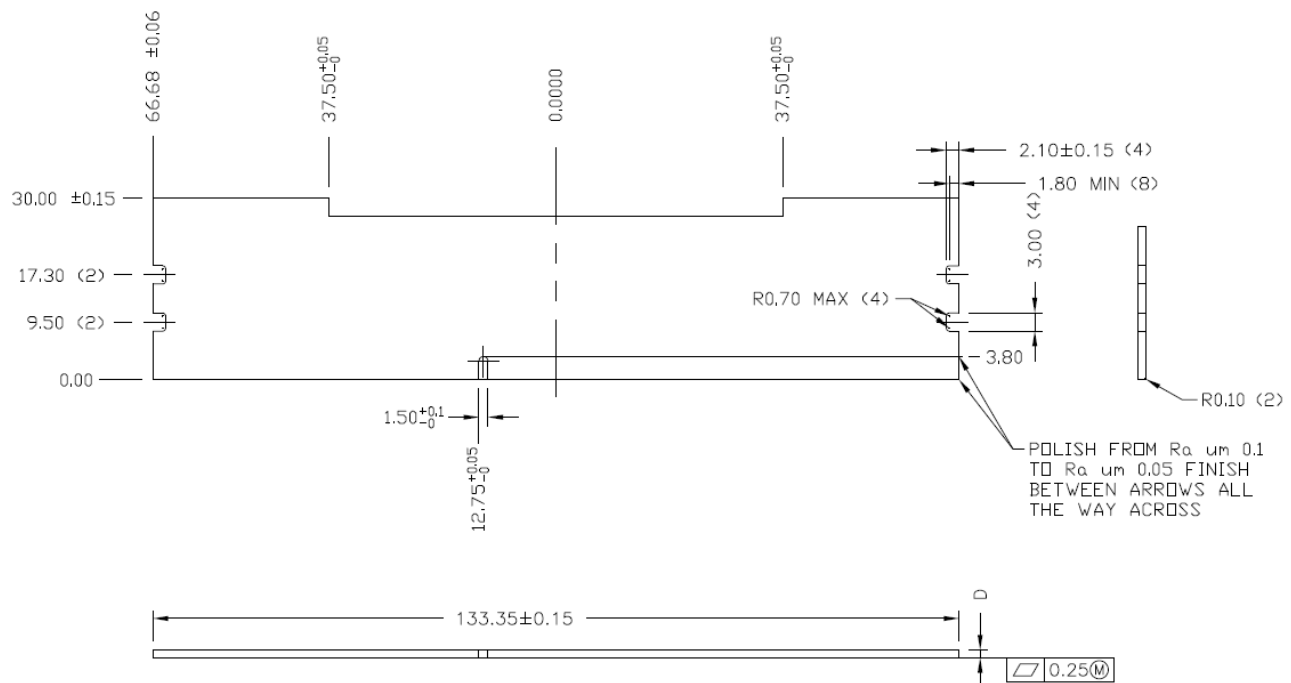


Figure 4

Vibration and Mechanical Shock



Material: Tool steel, ISO 100CrMoV5, hardened.

Tyco Drawing	Description	"A" Dimension
92-1888081	Maximum Card	1.37 +0.000/-0.013 mm

Figure 5

DDR3 DIMM Steel Insertion Gauge