

1. SCOPE

1.1. Contents

This specification covers the requirements for product performance, test methods and quality assurance provisions of LGA2011-X Socket.

1.2. Qualification Test Results

The Qualification Test Report number for this testing is 501-78294.

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 specifications

- A. 109-5000: Test specification, general requirements for test methods
- B. 109-197: AMP test specification vs EIA and IEC test methods
- C. 411-78373: Instruction sheet
- D. 114-5474: Application specification
- E. 501-78294: Test report (LGA2011-X socket)

2.2. Commercial standards and specifications

- A. MIL-STD-202 Test method for electronic and electric parts.
- B. 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.

A. Socket assembly

Contact: Copper Alloy, Au plating at contact area on Ni under plating.

Base housing: High temperature thermoplastic UL94V-0.

Cap: High temperature thermoplastic UL94V-0.

3.3. Ratings

A. Temperature rating:

Continuous: 0 to 85 °C

Operating: -25 to 100°C

3.4. Performance requirements and test descriptions.

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig. 1.

All tests shall be performed in the room temperature, unless otherwise specified.

3.5. Test Requirements and Procedures Summary

Test Items	Requirements	Procedures
Initial examination of product	Meets requirements of customer drawing.	EIA-364-18. Visual and dimensional inspection. No physical damage
Final examination of product	Meets visual requirements.	EIA-364-18. Visual inspection.

Electrical Requirements

Termination resistance (Low level)	Max. chain resistance (2~14pos. chain average) : Refer to table1 *1	EIA-364-23. Subject specimens to 10 mA maximum and 20 mV maximum open circuit voltage.
Dielectric withstanding voltage	No creeping discharge nor flashover shall occur. Current leakage: 0.5mA Max	EIA-364-20 360 Vrms for 1 minute. Test between adjacent contacts of unmated specimens.
Insulation resistance	800MΩ Min	EIA-364-21. Impressed voltage 500VDC. Test between adjacent contacts of unmated specimens
Durability (Repeated mate unmating)	Max. chain resistance (2~14pos. chain average) : Refer to table1 *1	Operation rate: 8cycle/min No. of cycles: 30cycles.

Fig. 1 (Continue)

Vibration (Random)	Max. chain resistance (2~14pos. chain average) : Refer to table1 *1	Test Package mated socket by compressive load from heat sink Vibration frequency: 10 to 2000Hz (Random) Accelerated velocity: 30.38 m/s ² (3.1 G),rms, Vibration direction: In each of 3 mutually perpendicular planes Duration: 15 minute each EIA-364-28 test condition VII , Condition D
Physical shock	Max. chain resistance (2~14pos. chain average) : Refer to table1 *1	EIA-364-27 Test Package mated socket by compressive load from heat sink Accelerated velocity: 490 m/s ² (50 G) Waveform: Halfsine Duration: 11 m sec. Number of drops: 3 drops each to normal and reversed directions of X, Y and Z axes, totally 18 drops.

Environmental Requirement

Temperature Humidity	Max. chain resistance (2~14pos. chain average) : Refer to table1 *1	EIA-364-31 Test Package mated socket by compressive load from heat sink 85 °C, 85 % R.H. 1000 hours
Temperature life (Heat aging)	Max. chain resistance (2~14pos. chain average) : Refer to table1 *1	Test Package mated socket by compressive load from heat sink 125 °C, / 1000 hours AMP Spec. 109-5104-2 Condition A EIA-364-17 table 8
Thermal cycling	Max. chain resistance (2~14pos. chain average) : Refer to table1 *1	EIA-364-110 Test Package mated socket by compressive load from heat sink -25 °C / 15 min., +100 °C / 15 min. / cycle, No. of cycle: 1000 cycles

Fig. 1 (continue)

Resistance to reflow soldering heat	Tested housing shall show no evidence of deformation or fusion of housing and no physical damage.	EIA-364-56 Test socket on PCB. (Lead Free, Sn-Ag-Cu solder ball) Solder ball part Pre-Heat 150~170 °C : 90 sec Min. Heat 225 °C min. : 60~90sec Heat Peak : 245±5 °C Other than solder ball Heat Peak : 260 °C max.
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*1 Bulk resistances of test CPU are subtracted.

Fig. 1 (end)

Table1: Max Chain Average Resistance

Number of contacts per chain	Max Chain LLCR (mΩ)
2	59.5
4	40.75
6	34.5
8	31.4
10	29.5
12	28.25
14	27.4

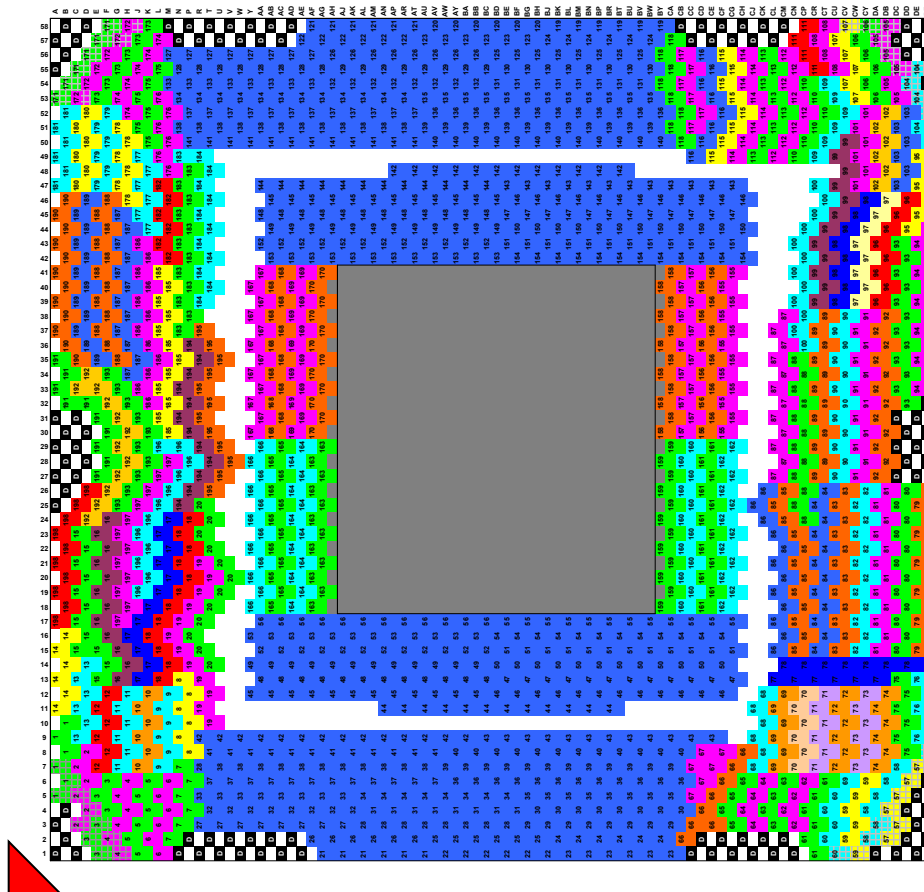


Fig. 2 Location of termination resistance daisy chain, socket top side view.

3.6. Product Qualification Test Sequence

Test examination / Test sequence	Test Group						
	1	2	3	4	5	6	7
Test sequence (a)							
Examination of product	1,7	1,5	1,5	1,4	1,5	1,4	1,5
Termination resistance (Low Level)	2,4,6	2,4	2,4		2,4		2,4
Dielectric withstanding voltage				2			
Insulation resistance				3			
Vibration (Low frequency)	5						
Physical shock	3						
Durability (Repeated mate/unmating)			3 (b)				
Temperature humidity		3(c)					
Temperature life (Heat aging)					3(c)		
Thermal cycling							3(d)
Solder ball shear force						2	
Resistance to reflow soldering heat						3	

Fig. 3

NOTE

- (a) Numbers indicate sequence in which the tests are performed.
- (b) Durability 30X
- (c) Perform termination resistance every 250 hours (until 1000 hours).
- (d) Perform termination resistance every 250 cycles (until 1000 cycles)

4. QUALITY ASSURANCE PROVISIONS
4.1. Qualification Testing
A. Test Sequence

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

4.2. 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 re-submittal.

4.3. 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.

Product parts number.	Description
1554653-X (*1)	LGA2011-0 Socket
2174988-X(*1)	LGA2011-1 Socket
2201838-X(*1)	LGA2011-3 Socket

(*1) Refer to customer drawing for detail

Rev.	Rev. Record	Prepared		Check		Approval	
A	RELEASED	S.A	09 FEB11	Y.S	09 FEB11	T.N	09 FEB11
B	REVISED	R.Z	24 MAR14	S.L	12DEC12	C.W	24 MAR14