Land Grid Array, LGA257 socket

1. SCOPE

1.1. Contents

This specification covers the requirements for product performance, test methods and quality assurance provisions of LGA257 socket.

1.2. Qualification Test Results

The Qualification Test Report number for this testing is 501-115154. This documentation is available from Star TEC.

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. 411-115006 : Instruction sheet
C. 114-115016 : Application specification
D. 501-115154 : Qualification test report

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 on contact area over Ni plating.
  Base housing : Thermoplastic UL94V-0.
B. Bolster assembly
  N/A
C. Back plate assembly
  N/A
D. Carrier
  N/A

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)	30mΩ max for initial △R=10mΩ max after test.	EIA-364-23 method 1. Subject specimens to 100 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-364-20D 360 Vrms for 1 minute. Test between adjacent contacts of unmated specimens.
Insulation resistance	800MΩ Min	EIA-364-21D. Impressed voltage 500VDC. Test between adjacent contacts of unmated specimens
Current Rating	After tests maximum increase for environmental temperature, 30 °C Max	0.5A min for arrays of 4X4 and 6X6 contacts. Refer to EIA-364-70B，Method 1.
Mechanical Requirements		
Contact Normal Force	Minimum contact normal force at full deflection=20g	EIA-364-04A
Durability (Repeated mate unmating)	30mΩ max for initial △R=10mΩ max after test.	EIA-364-9C Operation rate: 8cycle/min No. of cycles: 30cycles.

Figure 1 (Continue)

Environmental Requirement

Vibration (Random)	30mΩ max for initial △R=10mΩ max after test.	EIA-364-28 test condition VII , Letter D Vibration frequency: 20 to 500Hz (Random) Accelerated velocity: 30.38 m/s$_2$ (3.1 G),rms, Vibration direction: In each of 3 mutually perpendicular planes. Duration: 10 minute each axis Random control limit tolerance is+/-3dB.
Physical shock	30mΩ max for initial △R=10mΩ max after test.	EIA-364-27B, Condition A Accelerated velocity: 30 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.
Temperature humidity	30mΩ max for initial △R=10mΩ max after test.	Subject mated interposers to 240hours of 25℃to 85℃ exposure,2 hours dwell at each temperature, 2hours transition time ,with 80+/-2% RH at 25℃, 47% RH max at 85℃
Temperature life (Heat aging)	30mΩ max for initial △R=10mΩ max after test.	EIA-364-17B Condition 5, Time condition D Mated, 105 °C, / 533 hours
Thermal Shock	30mΩ max for initial △R=10mΩ max after test.	Subject mated interposers to 10cycles of -55℃ to 85℃ exposure,60 minutes per temperature. EIA-364-32.

Figure 1 (end)

3.6. Product Qualification Test Sequence

Table 2

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	1,10	1,5	1,5	1,4
Termination resistance (Low Level)	2,4,6	2,4	2,4		2,4	2,4	
Dielectric withstanding voltage				2,5,8			
Insulation resistance				3,6,9			
Vibration (Low frequency)	5						
Physical shock	3						
Durability (Repeated mate/unmating)			3				
Temperature humidity		3		7			
Temperature life (Heat aging)					3		
Thermal shock				4		3	
Contact normal force							2
Current Rating							3

4. QUALITY ASSURANCE PROVISIONS

4.1. Qualification Testing

A. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in table 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
2319757-1	LGA257,DMD Socket (3u' Au)

*2: Refer to customer drawing for detail

Rev.	Rev. Record	Prepared		Check		Approval	
1	Preliminary	T.Z	06th STP 2017	B.L	06th STP 2017	S.L	06th STP 2017
A	Updated	T.Z	12th JAN 2018	B.L	12th JAN 2018	S.L	12th JAN 2018