

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for the Tyco Electronics lever actuated Land Grid Array (LGA) socket F 1207.

1.2. Qualification

When tests are performed on the subject product line, procedures as defined by AMD Publication 32890 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

The Qualification Test Report number for this testing is 501-5736. This documentation is on file at and available from StarTEC.

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

- 114-5383: Application Specification
- 444-78212: Instruction Sheet
- 501-5736: Qualification Test Report

2.2. Industry Standards

- AMD Publication 31700: AMD socket F 1207 Design Specification
- AMD Publication 32890: AMD socket F 1207 Qualification Plan
- 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

- Current: 1.33A
- Temperature: -55 to 110°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 per EIA-364.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Initial examination of product.	Meets requirements of product drawing.	EIA-364-18. Visual and dimensional (C of C) inspection per product drawing.
Final examination of product.	Meets visual requirements.	EIA-364-18. Visual inspection.
ELECTRICAL		
Termination resistance.	20 mΩ maximum per contact. Each measurement must be made across a set of two daisy-chained contact/pin locations.	EIA-364-23. Subject specimens to 100 mA maximum and 20 mV maximum open circuit voltage.
Insulation resistance.	1000 MΩ minimum.	EIA-364-21. 100VDC for 2 minutes Test between adjacent contacts.
Withstanding voltage.	1 minute hold with no breakdown or flashover.	EIA-364-20, Condition I. 650 volts AC at sea level. Test between adjacent contacts.
Pin current rating.	30°C maximum temperature rise per specified contact circuit The current to measure is 1.33A.	EIA-364-70, Method 2. Increment mated and mounted specimens with a heat sink(b), energized fan, and retention mechanism through 1.33A current, stabilizing each until 3 readings at 5 minute intervals are within 1°C.

Figure 1 (cont)

Test Description	Requirement	Procedure
Inductance.	Mated Partial Self Inductance 3.5 nH maximum. Mated Loop Inductance 4.4 nH maximum with solder balls	AMD 32890,6.2 Test frequencies shall be 500MHz.
Capacitance.	1 pF maximum.	EIA-364-30. Test frequencies shall be 500 MHz.
Single ended crosstalk.	8% maximum.	EIA-364-90. Rise time shall be 35 and 100 picoseconds to go from 10% to 90%.
MECHANICAL		
Resistance to soldering heat.	See Note (a). Socket housing must meet flatness requirements before and after solder reflow process	EIA-364-56. Repeat cycle 3 times.
Vibration, random.	No discontinuities of 1 microsecond or longer duration. See Note (a).	EIA-364-28, Test Condition VII, Level D. Subject mated specimens, including a heat sink (b) attached to the retention mechanism and printed circuit board assembly to 3.1 gRMS between 20-500 Hz. 45 minutes in each of 3 mutually perpendicular planes.

figure 1 (cont)

Test Description	Requirement	Procedure
Mechanical shock.	No discontinuities of 1 microsecond or longer duration. See Note.	EIA-364-27, Condition A. Subject mated specimens, including a heat sink (b) attached to the retention mechanism and printed circuit board assembly to 50 G's half-sine shock pulses of 11 milliseconds duration. 3 shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.
Durability.	See Note (a).	EIA-364-9. Mate and unmate specimens for 50 cycles at a maximum rate of 300 cycles per hour.
Package mating/unmating operation force of lever.	5 kgf maximum.	AMD 32890
Contact retention force.	65 gf minimum.	Measure force to extract the contacts from an assembled socket housing.
Solder ball shear force.	750gf minimum.	AMD 32890 The force required to shear off the solder ball on the contact assembled in the socket housing
Porosity.	Count and record pores. (Two pores maximum per set of 20 contacts)	EIA-364-60. Nitric acid technique. Test must be performed on 20 loose contacts

ENVIRONMENTAL

Thermal shock.	See Note (a).	EIA-364-32, Test Condition A. Subject specimens to 10 cycles between -55 and 110°C with 30 minute dwell at each extreme.
Temperature life.	See Note (a).	EIA-364-17, Method A. Subject specimens to 115°C for 500 hours.

Figure 1 (cont)

Test Description	Requirement	Procedure
Mixed flowing gas.	See Note (a). EIA-364-65,	Class IIA (4 gas). Subject specimens to environmental Class IIA for a total of 10 days. For the first 5 days, ½ of the specimens shall be mated, the other half unmated. For the second 5 days, all specimens shall be mated.
Thermal cycling life.	See Note (a). Minimum requirement is 1,000 cycles. Test must be continued until 60% of the sockets have a failure or 3,000 cycles have completed.	EIA-364-32. Subject mated specimens, including a heat sink (b) attached to the retention mechanism and printed circuit board assembly to 3000 cycles between -55 and 110°C.
Cycling Humidity.	See Note (a).	EIA-364-31, Temperature: 25° C to 85° C Relative Humidity: 90 % to 95 % 1000 hours duration, 8 hours cycle time
Solvent resistance.	See Note (a).	EIA-364-11, Table 1. Four solution test.

NOTE

(a) *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.*

(b) *2ZF51- 014 by FTC technology.*

Figure 1 (end)

3.6. Product Qualification and Requalification Test Sequence

Test or Examination	Test Group (a)									
	1	2	3	4	5	6	7	8	9	10
	Test Sequence (b)									
Initial examination of product	1	1	1	1	1	1	1	1	1	1
Termination resistance	2,4,6,8	2,4,6,8,10,12,14		2,4,6,	2,4,6,8	2,4			2,4	2,4,6,8,10,12,14,16,18,20
Insulation resistance			3,6,9							
Withstanding voltage (c)			2,5,8							
Pin current rating						3				
Inductance							3			
Capacitance							2			
Single ended crosstalk							4			
Resistance to soldering heat									3	
Vibration, random	5									
Mechanical shock	3									
Durability		3			3(c)					
Package mating/unmating operation force of lever								2		
Contact retention force								3		
Solder ball shear force								4		
Plating thickness								5		
Porosity								6		
Thermal shock		5(h)	4(i)							
Temperature life (d)				3,5(h)						
Mixed flowing gas (e)					5,7					
Thermal cycling life (g)	7									3,5,7,9,11,13,15,17,19
Cycling Humidity (f)		7,9,11,13(h)	7(i)							
Solvent resistance									5	
Final examination of product	9	15	10	7	9	5	5	7	6	21

- NOTE**
- (a) See paragraph 4.1.
 - (b) Numbers indicate sequence in which tests are performed.
 - (c) Durability 5X
 - (d) Perform termination resistance every 250 hours of temperature life exposure.
 - (e) Perform termination resistance after 5 and 10 days of mixed flowing gas exposure.
 - (f) Perform termination resistance after 250, 500, 750 and 1000 hours of cyclic humidity exposure.
 - (g) Perform termination resistance after 250, 500, 750, 1000, 1250, 1750, 2250, 2750 and 3000 thermal life cycles.
 - (h) Mated specimens.
 - (i) Unmated specimens.

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. Test group 1 and 10 shall each consist of 25 specimens. Test groups 2 shall consist of 15 specimens. Test groups 3 and 4 shall each consist of 12 specimens. Test groups 5, 7 and 9 shall each consist of 8 specimens, the same specimens are not necessarily used in different test, but the same number of specimens are used. Test group 8 shall consist of 4 specimens and loose contact.

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.

Product part NO.	Description
1871554-1	Socket F 1207 Right / U-lever Lead free
1871554-2	Socket F 1207 Right / U-lever Leaded
1939259-1	Socket F 1207 Right / straight-lever Lead free
1939259-2	Socket F 1207 Right / straight-lever Leaded
1939416-1	Socket F 1207 Left / U-lever Lead free
1939416-2	Socket F 1207 Left / U-lever Leaded

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A	Released	--	Y.S	24 AUG'06	S.H	24 AUG'06	H.S	24 AUG'06