Product Specification

108-115008

Shield Finger Scalable Height From 1.24mm to 3.4mm

1. SCOPE

1.1. Content

This specification covers the requirements for product performance test methods and quality assurance provisions of the scalable spring finger. Applicable product descriptions and part numbers are as shown in Appendix 1.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Figure 2 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

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

501-115009-*: Qualification Test Report

2.2. Commercial Standard and Specifications:

Test Methods for Electronic Component Parts: MIL-STD-202.

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LTR	REVISION RECORD	DR	DATE
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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:

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

3.3. Ratings

A. Voltage: 12 volts AC

B. Current: 0.5A

C. Temperature: -40 ℃ to 85 ℃

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

Para.	Test Items	Requirements	Procedures
3.5.1	Initial examination of Product	Meets requirements of product drawing	Visual inspection. EIA-364-18.
3.5.2	Final examination of Product	Meets visual requirements	Visual inspection. EIA-364-18.
Electrical Requirements			
3.5.3	Low Level Contact Resistance(LLCR)	Initial: 80 mΩ Max. Final: ΔR 25 mΩ Max.	Subject mated specimens to 20 mV Max open circuit at 100 mA DC. In acc. with IEC 60512-2 test 2a
3.5.4	Temperature Rise	30℃ Max. under loaded rating current	The voltage / Current should be applied to the contacts for 1 hours as below. Voltage: 5V D.C Current: 0.7A
Mechanical Requirements			
3.5.5	Normal Force	Normal Force at nominal height: 0.60+/-0.2N.	Stroke the spring top to the nominal working height
3.5.6	Durability	Normal Force at nominal height: 0.60+/-0.2N. 80 milliohms Max.(Initial) ΔR 25 milliohms Maximum.(Final)	No. of cycles: 10 cycles. Stroke the spring top to the nominal working height

Figure 1 (continued)

3.5.7	Shock	No discontinuities of 1 microsecond or longer duration. 80 milliohms Max.(Initial) ΔR 25 milliohms Maximum.(Final)	Subject mated specimens to 30G's half-sine shock pulses of 6 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 shocks. See Figure 3
3.5.8	Vibration, Random	No discontinuities of 1 microsecond or longer duration. 80 milliohms Max.(Initial) ΔR 25 milliohms Maximum.(Final)	Subject mated specimens at nominal working height 5 Hz 0.1m2/s3 12 Hz 2.2 m2/s3 20Hz 2.2. m2/s3 200Hz 0.04 m2/s3 500Hz 0.04 m2/s3 Temperature: 23+/-5℃. Humidity: 35~70%RH. 2 hours for X&Y&Z.
3.5.9	Solderability	Solder wetting time shall be no more than 3 seconds. A new uniform coating of solder shall cover a minimum of 95% of the surface being immerged.	Refer to JESD22-B102E. Lead free soldering.
Environment Requirements			
3.5.10	Thermal shock	Initial: 80 mΩ Max. Final: ΔR 25 mΩ Max.	Subject mated specimen at nominal working height to 256 cycles between -40 and 85℃ with 30 minute dwells including 0~5 minute transition time. See Figure 6.
3.5.11	Heat test (non operational)	Initial: 80 mΩ Max. Final: ΔR 25 mΩ Max.	Subject mated specimen at nominal working height to 85+/-3 ℃, 50+/-5%RH, 16h. See Figure 4
3.5.12	Cold test (non operational)	Initial: 80 mΩ Max. Final: ΔR 25 mΩ Max.	Subject mated specimen at nominal working height to -40+/-3 ℃, 16h. See Figure 5.
3.5.13	Heat test (operational)	Initial: 80 mΩ Max. Final: ΔR 25 mΩ Max.	Subject mated specimen at nominal working height to test condition as Figure 7.
3.5.14	Cold test (operational)	Initial: 80 mΩ Max. Final: ΔR 25 mΩ Max.	Subject mated specimen at nominal working height to test condition as Figure 8.

Figure 1 (continued)

3.5.15	Condensation test–operational	Initial: 80 mΩ Max. Final: ΔR 25 mΩ Max.	Subject mated specimen at nominal working height to test condition as Figure 9.
3.5.16	Sulfuration for gold surface	No physical damage shall occur. Initial: 80 mΩ Max. Final: ΔR 25 mΩ Max.	Subject mated specimens to the environment: H2S: 3ppm Temperature: 40+/-2℃ Humidity: 75+/-3 % Duration: 24h
3.5.17	Peeling off strength	2N minimum in vertical to PCB direction. 15N minimum in Long pad direction. 10N minimum in Short pad direction.	Subject soldered specimens to the test condition as Figure 10(vertical to PCB direction) Figure 11(Long pad direction) Figure 12(Short pad direction)
3.5.18	Resistance to re-flow soldering heat	No physical damage shall occur.	Subject specimens to reflow process for 3 times per IPC/JEDEC J-STD-20, table 5-2. Moisture sensitivity should meet at lease level 2 per IPC/JEDEC J-STD-20, table 5-1.
3.5.19	Vibration Sinusoidal	No discontinuities of 1 microsecond or longer duration. 80 milliohms Max.(Initial) ΔR 25 milliohms Maximum.(Final)	Subject mated specimens at nominal working height to sinusoidal vibration over a specified frequency range of 10~500Hz. The X, Y and Z axes of the mated samples are subjected to 5 sweep cycles/axis. Temperature: 23+/-5℃. Humidity: 35~70%RH. Duration: approximately 1hour/axis
Figure 1 (end)			

Figure 1

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.

3.6. Product Qualification and Requalification Test Sequence

Test Items	Test group										
	1	2	3	4	5	6	7	8	9	10	11
	Test sequence										
Initial examination of product	1	1	1	1	1	1	1	1	1	1	1
Terminal resistance (LLCR)		3, 6	2, 4, 6		2, 4, 6	2, 4	2, 4		2, 5	2, 4	
Contact force measurement	4, 6										
Durability	5	4									
Shock, Operational										3	
Vibration, Random			3								
Vibration, Sinusoidal			5								
Temperature rise								2			
Solderability				2							
Cold test-non operation					5						
Heat test-non operation					3						
Cold test-Operation									4		
Heat test-Operation									3		
Condensation test-Operation		5									
Sulfuration for gold surface							3				
Thermal shock						3					
Resistance to soldering heat	2	2									
Peeling off											2
Final examination of product	3, 7	7	7	3	7	5	5	3	6	5	3

(a) Numbers indicate sequence in which tests are performed.

(b) Precondition specimens with 10 durability cycles.

Figure 2

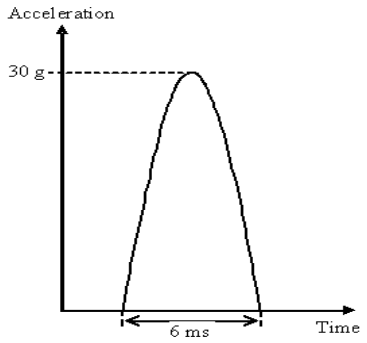

Figure 3

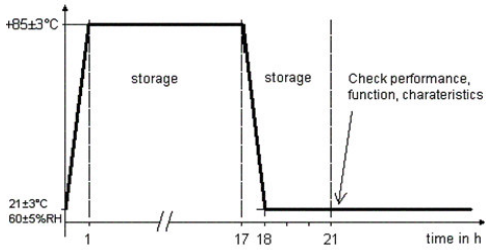

Figure 4

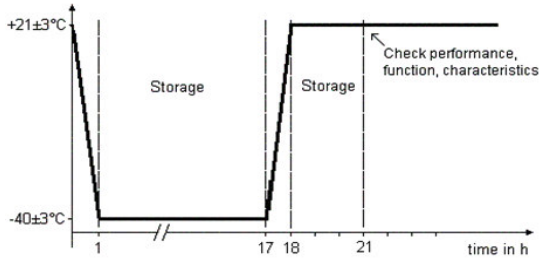

Figure 5

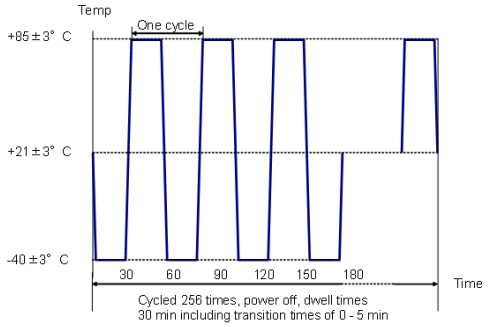

Figure 6

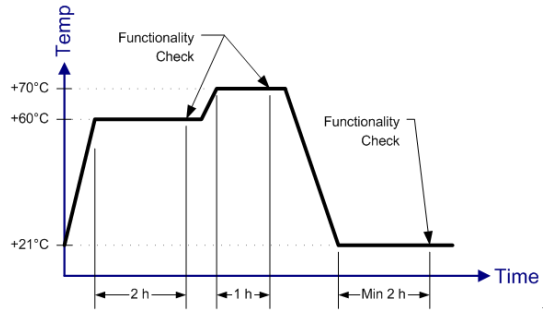

Figure 7

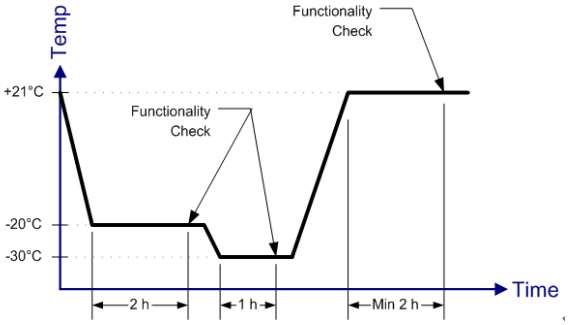

Figure 8

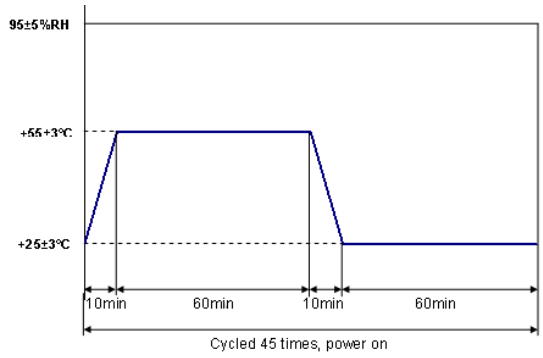

Figure 9

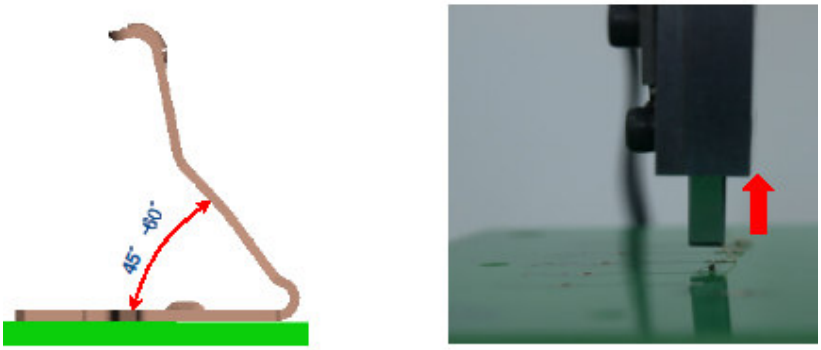

Figure 10

Figure 11

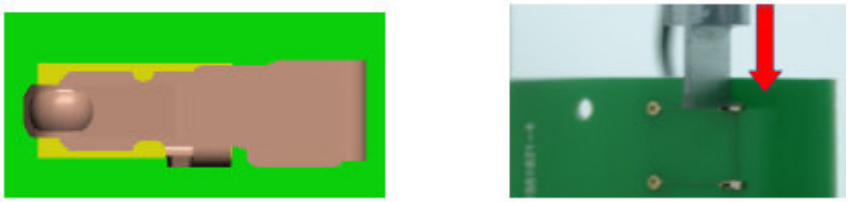

Figure 12

The applicable products description and part numbers are as shown in appendix 1.

Part Number	Description	Qualification Test
1551631-4	Spring Finger 124	501-115009
1551572-4	Spring Finger 1.80	501-115009-1
1551573-4	Spring Finger 2.15	501-115009-2
1551574-4	Spring Finger 2.60	501-115009-3
1551575-4	Spring Finger 3.0	501-115009-4
1551576-4	Spring Finger 3.4	501-115009-5

Appendix 1

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. Each test group shall consist of a minimum of 5 specimens.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified in Figure 1.

4.2. Requalification Testing

If changes significantly affect form, fit or functions 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.