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## **Battery Holder Connector**

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### **1. SCOPE**

#### **1.1. CONTENTS**

This specification covers the performance, tests and quality requirements for the battery holder connector.

#### **1.2. QUALIFICATION**

When tests are performed on the subject product line, the procedures specified in Tyco 109 series specifications shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

### **2. APPLICABLE DOCUMENT**

The following Tyco 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 SPECIFICATIONS**

- A. 109-1: General Requirements for Test Specifications
- B. 109-197 : Tyco Specification vs EIA and IEC Test Methods
- C. 501-57624 : Test Report

### **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**

- A. Housing : thermoplastic, UL94V-0.
- B. Contact : Copper alloy, Tin Plating over Nickel under-plated.

#### **3.3. RATINGS**

- A. Voltage: 250V AC,DC
- B. Current: 1 A AC,DC
- C. Temperature: -55 °C to +105 °C

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**3.4. PERFORMANCE REQUIREMENT AND TEST DESCRIPTION**

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Figure 1. All tests shall be performed at ambient environmental conditions per AMP Specification 109-1 TEST REQUIREMENTS AND PROCEDURES SUMMARY.

**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.
<b>ELECTRICAL REQUIREMENT</b>			
2	Contact Resistance	30 m Ohm Max.	Subject mated contacts assembled in housing to 20mV Max open circuit at 10mA Max. EIA-364-6B.
3	Dielectric withstanding Voltage	No creeping discharge or flashover shall occur. Current leakage: 0.5 mA MAX	500 VAC for 1minute Test between adjacent circuits of unmated connector. EIA-364-20B
4	Insulation Resistance	5000 M Ohm Min.	Impressed voltage 500 VDC. Test between adjacent circuits of unmated connector. EIA-364-21C.
<b>MECHANICAL REQUIREMENT</b>			
5	Durability	No defects. Contact resistance shall be 30 miliohms max.	It should be tested in accordance with method 2016 of MIL-STD-1344A. Connector shall be subject to 50 cycles of insertion and withdrawal.
6	Vibration	No electrical discontinuity greater than 1.0 μ sec shall occur. See Note.	1.5 mm 10-55-10HZ / minute each 2 hours for X, Y and Z direction < Method 2005.1 of MIL-STD-1344A>
7	Mechanical Shock	No electrical discontinuity greater than 0.1 μ sec shall occur. See Note.	Accelerate Velocity : 490m/s <sup>2</sup> ( 50G ) Waveform : Half-sine shock plus Duration : 11msec No. of Drops : 3 drops each to normal and reversed directions of X,Y and Z axes, totally 18 drops, passing DC 1mA current during the test. <Method 2004.1 of MIL-STD-1344A>
8	Retention force	1.0 kgf/ pin Min.	Measure total extraction force (initial value) by using accommodated conductor specified in clause <Method 208 of MIL-STD-1344A >

Figure 1 ( Cont. )

MECHANICAL REQUIREMENT			
TEST ITEM	REQUIREMENT	PROCEDURE	
9	Solder ability (apply for wave soldering process. Note 2)	The inspected area of each lead must have 95% solder coverage minimum.  Steam Aging Preconditioning : 93+3/-5°C 、8hrs±15min. <JESD22-B102D, Condition C> Dip Solder temperature: 245±5°C, 5sec	
	Solderability (apply for reflow soldering process. Note 2)	The inspected area of each lead must have 95% solder coverage minimum.  Steam Aging Preconditioning: 93°C +3/-5°C, 8 hours ±15 min. <JESD22-B102D, Condition C> Reflow 230 - 245°C, 50 - 70 s.	
ENVIRONMENTAL REQUIREMENTS			
10	Resistance to Wave Soldering Heat [For customer drawing is applied with. See note 2]	No physical damage shall occur.	Solder Temp. : 265±5°C, 10±0.5sec. Tyco spec. 109-202, Condition B
	Resistance to Reflow Soldering Heat [For customer drawing is applied with. See note 2]	No physical damage shall occur.	Pre-soak condition, 85°C/85% RH for 168 hours. Pre Heat : 150~180°C, 90±30sec. Heat : 230°C Min., 30±10sec. Peak Temp. : 260+0/-5°C, 20~40sec. Duration : 3 cycles Tyco spec. 109-201, Condition B
11	Thermal Shock	See Notes	Mated Connector -55 +/- 3°C (30 minutes), +105 +/- 2°C (30 minutes) Perform this a cycle, repeat 5 cycles <Method 107G of MIL-STD-202G condition B>
12	Humidity-Temperature Cycle	See Notes	Mated Connector 25~65°C , 90~95% RH, 10 Cycles EIA-364-31B.
13	Salt Spray	No detrimental corrosion allowed in contact area and base metal exposed.	Subject mated connectors to 35+/-2 °C and 5+/-1% salt condition for 48hours. After test, rinse the sample with water and recondition the room temperature for 1 hour. EIA-364-26B.

Figure 1 ( End )

- Note 1 : Shall meet visual requirements, show no physical damage, and meet requirement of additional tests as specified in the test sequence in Figures 2
- Note 2 : Soldering process is indicated on notes of customer drawing. Select the appropriate test type which drawing notes are matched with.

**3.6. PRODUCT QUALIFICATION AND REQUALIFICATION TEST**

Test or Examination	Test Group							
	A	B	C	D	E	F	G	H
	Test Sequence (a)							
Examination of Product	1, 7	1, 5	1, 6	1, 5	1, 5	1, 5	1, 5	1, 3
Contact Resistance		2, 4	2, 5	2, 4	2, 4	2, 4		
Dielectric withstanding Voltage	3, 6							
Insulation Resistance	2, 5							
Durability		3						
Vibration			3					
Mechanical Shock			4					
Solderability								2
Retention Force							2, 4	
Resistance to Soldering Heat							3	
Thermal Shock				3				
Humidity-Temperature Cycle	4				3			
Salt Spray						3		

**Figure 2**

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

(b) Discontinuities shall not take place in this test group, during tests.