



PCB Terminal Block – SMD

1. SCOPE

1.1. Content

This specification covers performance, tests, and quality requirements for the TE Connectivity (TE) Terminal block – SMD, Mount 180°.

This SMD Terminal Block is designed to terminate solid and stranded 16-30 AWG wire for 5.00 mm centerline spacing, 18-28 AWG for 3.81 mm centerline spacing & 16-28 AWG for 3.5 mm centerline spacing.

1.2. Qualification

When tests are performed on the subject product line, procedures specified in Table 5 shall be used. All inspections shall be performed using the applicable inspection plan and product drawing.

1.3. Qualification Test Results

Qualification testing on the subject product line has not been completed. The Qualification Test Report number will be issued upon completion of qualification testing.

2. APPLICABLE DOCUMENTS AND FORMS

The following documents constitute a part of this specification to the extent specified herein. Unless otherwise indicated, the latest edition of the document applies.

2.1. TE Documents

- 114-XXXXX: Terminal block – SMD Mount 180°. (TBD)

2.2. Industry Documents

- IEC 60512 : Connectors for Electronic Equipment Tests and Measurements.
- Clamping units: 60999-1 /UL 486E : Wire pull out & rotation test
- Screw type terminals: comply with IEC 60998-2-1
- EN 60335-1: GWT compliance

2.3. Reference Document

- 109-197 : TE Connectivity Test Specifications vs EIA and IEC Test Methods
- 109-1: General Requirements for Testing

3. REQUIREMENTS

3.1. Design and Construction

Product shall be of the design, construction, materials and physical dimensions specified on the applicable product drawings.

3.2. Ratings

Table 1

TE PN	PITCH (mm)	Voltage Max.	Current	Temperature	Wire size
X-2383938-X	5.00	300VAC	13.5 A	-40° to 105°C	16-30 AWG (Sol/Str)
X-2383941-X	3.81	300VAC	7A	-40° to 105°C	18-28 AWG (Sol/Str)
X-2383945-X	3.81	300VAC	12A	-40° to 105°C	16-28 AWG (Sol/Str)
X-2383942-X	3.50	300VAC	12A	-40° to 105°C	16-28 AWG (Sol/Str)

3.3. Materials

Materials used in the construction of this product shall be as specified on the applicable product drawing. In case of a conflict between this document and the production drawing, Production drawing shall be considered.

- Housing : High Temp Polyamide, UL 94 V0, BLACK.
- Contact : Copper Alloy, Tin over Nickel Plating
- Clamping Screw : Copper Alloy, Nickel Plated
- Cage Clamp : Copper Alloy, Nickel Plated

3.4 Clamping securement :

Table 2

TE SERIES	2383938		2383941		2383942		2383945	
Wire Size (AWG)	16	24	18	24	16	24	16	24
Secureness Force (N)	4	2	4	2	4	2	4	2

3.5 Pull out Force :

Table 3

TE SERIES	2383938			2383941			2383942			2383945		
Wire Size (AWG)	16	24	30	18	24	28	16	24	28	16	24	28
Pull out force (N)	40	10	2.5	30	10	4.5	35	10	4.5	35	10	4.5

3.6 Dielectric Withstand Voltage :

Table 4

TE SERIES	2383938	2383941	2383942	2383945
Dielectric Withstand Voltage (V)	1600	1300	1600	1600

4. TEST REQUIREMENTS AND PROCEDURES

4.1 Product is designed to meet the electrical, mechanical and environmental performance requirements specified below:

i Unless otherwise specified, all tests shall be performed at ambient environmental conditions per TE specification 109-1

Table 5

TEST DESCRIPTION	REQUIREMENT	PROCEDURE	
Examination of product	Meets requirements of product drawing	Visually inspected per applicable quality inspection plan or IEC 60512-1-1 (Visual inspection)	
ELECTRICAL			
Contact Resistance (Termination Resistance)	PITCH in mm		
	5.00	3.81	3.50
	Value (mΩ)	<15	<15
		<15	
			IEC 60512-2-1 (Contact resistance – millivolt level method) Contacts assembled in housing to closed circuit current of 100mA max at open circuit voltage of 20mV max.
Insulation Resistance.	≥1000M Ω (500 VDC)	The insulation resistance shall be measured between two adjacent terminations having a minimum spacing using 500V IEC 60512-3-1, Method C	
Voltage proof	Dielectric strength - Connector must withstand potential of Dielectric withstand voltage as per Table 4 for 1 min.	IEC 60512-4-1 Measured by applying voltage potential to adjacent contacts, and between the grounds in the connector assembly.	
MECHANICAL			
Clamping securement	Conductor shall not slip out of the connecting device Ratings : See table 2	IEC -60998-2-1	
Vibration.	No discontinuities of 1 microsecond or longer duration. no physical damage,	10-55-10 Hz traversed in 1 minute at 1.52mm amplitude 2 Hours each of 3 mutually perpendicular planes IEC 60512-6-4.	

Wire pull out test	Conductor shall not slip out of the connecting device. Ratings : See table 3	IEC -60998-2-1 Subject connector to a pull force for 1 min in the axis of the tapping conductor , pull force values to be as per UL 468E
--------------------	---	---

ENVIRONMENTAL

(Damp Heat) Humidity, Steady State	Insulation Resistance 2000M Ω min. Contact resistance (Final) shall be met	Subject mated connectors to steady state humidity at 40°C \pm 2°C and 90 R.H for 24 hrs. IEC 60512-11-12
Thermal Shock.	Contact resistance (Final) shall be met.	Subject mated connector assemblies on 5 cycles – 40 °C and +105°C for Tin Plated Contact for 30 minutes each duration at temperature extremes. IEC 60512-11-4 (Rapid change in Temp/thermal shock)
Solderability	The contact solder tails should be covered by a continuous new solder coating for 95% Minimum of affected area. No Physical damage shall occur	IEC 60512-12-1. Solder bath temp. 235°C Aging 3, 16 hours at 155°C
Resistance to Soldering Heat	No physical damage shall occur. 3 cycles of 260°C peak reflow soldering simulation curve.	TEC 109-201, Condition B (reflow curve 3.3, test method B)

4.2 Product Qualification and Requalification Test Sequence

Table 6

Test or Examination	Test Group					
	1	2	3	4	5	6
	Test Sequence(a)					
Initial examination of product	1	1	1	1	1	1
Contact resistance	2, 4	2,5				
Insulation resistance			2,6			
Voltage Proof			3,7			
Vibration	3					
Thermal shock		4	4			
Humidity, Steady State		3	5			
Solderability					2	
Resistance to Soldering heat					3	
Wire pull out				2		
Clamping securement						2
Final examination of product	5	6	8	3	4	3



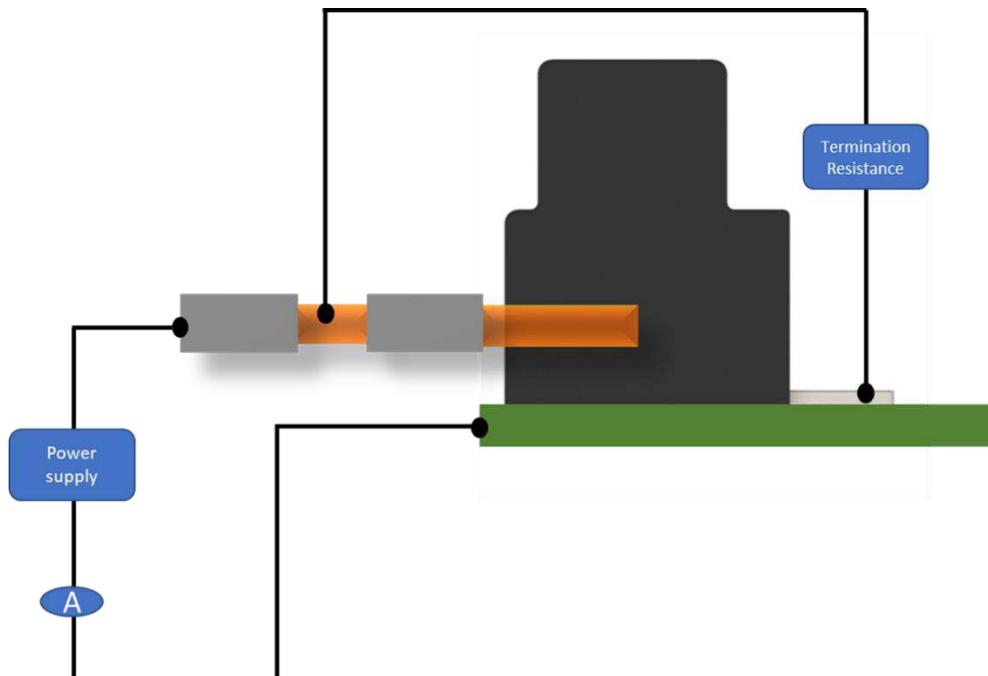
Note:

a - Numbers indicate sequence in which tests are performed.

5. QUALIFICATION TEST

Qualification test shall be performed according to the test methods and requirements specified in Table 5 according to sequence specified by Table

Figure 1 – Contact Resistance Measurement Set up



6. QUALITY ASSURANCE PROVISIONS

6.1. SAMPLE SELECTION

The test specimens to be used for the performance evaluation testing, shall be prepared in accordance with TE Application Specification 114-32242. They shall be selected at random from production. At least 5 connectors of the 6 positions or at least 30 contacts shall be used for each test group.

6.2. RE-QUALIFICATION TESTING

If the changes significantly affecting form, fit or function are made to product or manufacturing process, product assurance shall coordinate re-qualification testing, consisting of all or part of original testing sequence as determined by development/product, quality and reliability engineering.

6.3. ACCEPTANCE

Acceptance is based on verification that product meets requirements defined in section 4. Failures attributed to equipment; test setup or operator deficiencies shall not disqualify product. When product failure occurs, corrective action shall be taken, and samples resubmitted for qualification. Testing to confirm corrective action is required before resubmitting.

6.4. QUALITY CONFORMANCE INSPECTION

Applicable TE quality inspection plan will specify sampling acceptable quality level to be used. Dimensions and functional requirements shall be in accordance with applicable product drawing and this specification