Push In type PCB Terminal Blocks, 5.0 & 5.08 mm

1. INTRODUCTION

1.1 Purpose

Testing was performed on Push-In terminal blocks 5.0 mm and 5.08 mm Header and Receptacles to verify the performance according to product specification 108-161183 Rev A.

1.2 Scope

This report covers the electrical, mechanical and environmental performance of 5.0mm and 5.08mm Push-In terminal blocks HEADER AND RECEPTACLE. Testing was performed at the Shanghai Electrical Components Test Laboratory from 19/9/2025 to 22/10/2025. The associated test number is TP-25-01171.

1.3 Conclusion

Based on the test results, all samples meet the requirement according to TE connectivity product specification 108-161183 Rev A, for the test items related to its performance.

1.4 Test Specimens

Specimens with the following part numbers as Table 1 were used for test.

Table 1

SI.NO	Header PN	Receptacle PN	Test Group
1.	2842545-2	2842543-2	TG1, TG2, TG3, TG4
	2842545-4	2842543-4	
	2842518-2	2842514-2	
	2-2842518-4	2-2842514-4	
2.	-	2842543-2	TG5, TG6
	-	2842543-4	
	-	2842514-2	
	-	2-2842514-4	
3.	1-2842545-0	-	TG7, TG8
	1-2842518-0	-	
4.	2842545-2	-	TG10
	2842518-2	-	

Note: 5 samples of each part number were used in every test group.

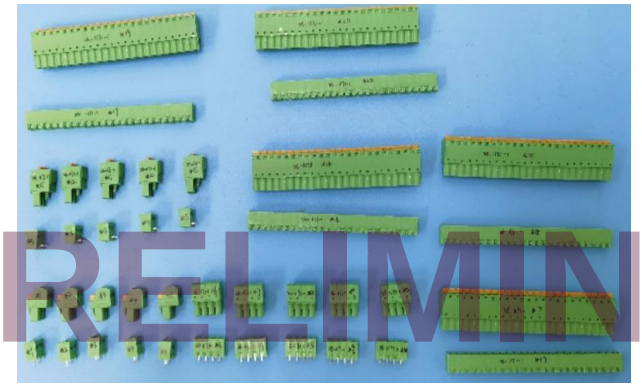

Fig.1 Test Specimens

| Indicates Change

1.5 Test Sequence

Table 2

Test or Examination	Test Group									
	1	2	3	4	5	6	7	8	9	10
	Test Sequence(a)									
Initial examination of product	1	1	1	1	1	1	1	1	1	1
Contact resistance	3, 7	2,4	2,4							
Insulation resistance				2,6						
Voltage Proof				3,7						
Vibration	5									
Mechanical shock	6									
Durability	4									
Mating Force	2									
Un-mating force	8									
Contact retention in housing *(b)& (c)*							2			
Thermal shock				4						
Humidity, Steady State			3	5						
Dry Heat / Temperature life		3								
Solderability *(b)& (c)*										2
Rotating test *(d)*					2					
Pull test *(d)*						2				
Resistance to wave Soldering heat *(b)*								2		
Resistance to Reflow Soldering heat *(c)*									2	
Final examination of product	9	5	5	8	3	3	3	3	3	3

Note: Number***s*** indicate sequence in which tests are performed

1.6 Environmental Conditions

Unless otherwise stated, the following environmental conditions prevailed during testing:
Temperature: 20°C to 30°C
Relative Humidity: 45% to 75%

2. TEST PROCEDURES

2.1. Examination

All specimens were visually examined for evidence of physical damage detrimental to product performance

Test method: IEC 60512-1-1

2.2. Contact Resistance

Contacts assembled in housing to closed circuit current of 100mA at open circuit voltage of 20mV max.

Requirement: Initial: 10 mΩ (milliohm) maximum

Final: 30 mΩ (milliohm) maximum

Test Method: IEC 60512-2-1

2.3. Insulation Resistance

The insulation resistance shall be measured between two adjacent terminations having minimum spacing

Using 500V DC for 1 minute

Requirement: Initial: 2000 MΩ Min.

Final: 1000 MΩ Min.

Test method: IEC 60512-3-1

2.4. Voltage Proof

Measured by applying voltage potential to adjacent contacts in the mated connector assembly.

Connectors must withstand potential of 500V AC for 1 min.

Requirement: No breakdown or flashover. Current leakage limit to 2 mA Max.

Test method: IEC 60512-4-1

2.5. Connector Mating Force

Measure the force required to mate connectors with locking latches. Operation Speed: 25.4 mm/min.

Requirement: 10.5N (maximum) per contact

Test Method: IEC 60512-13-1

2.6. Connector Un-mating Force

Measure the force required to un-mate connectors without locking latches. Operation Speed: 25.4 mm/min.

Requirement: 3N (minimum) per contact

Test Method: IEC 60512-13-1

2.9. Contact Retention in housing

Measure the axial force required to remove contact from the housing and measure the force required to

Dislodge the contact from the housing.

Requirement: 5 N minimum

Test Method: IEC 60512-15-2.

2.4. Vibration

Subject mated specimens to 3.1G's r.m.s. between (20-500) Hz. 15 minutes in each of 3 mutually perpendicular planes. No less than 200mm length of free hanging cable to be used.

Requirement: No electrical discontinuity greater than 1 μs shall occur.
No physical damage that would impair product performance.

Test Method: IEC 60512-6-4

2.5. Mechanical Shock

Subject mated connector to 50G's half -sine shock pulse of 11 ms duration. 3 drops each to normal and reserved directions of X, Y and Z axis. Total of 18 drops.

Requirement: No electrical discontinuity greater than 1 μs shall occur.
No physical damage that would impair product performance.

Test Method: IEC 60512-6-3

2.6. Connector Durability

Mate and un-mate connectors for 25 cycles for 3μm Tin.

Requirement: No physical damage that would impair product performance.

Test Method: IEC 60512-9-1

2.6. Rotating test

The test specimens are attached to the end of apparatus. Apply the load specified and maintain it for 1 min.

Requirement: The conductor shall neither slip out of the clamping unit nor break near the clamping, nor shall the conductor be damaged.

Test Method: As per spec UL 486E

2.6. Pull test

The force shall be applied in one smooth and continuous application, in the direction of the axis of the conductor for 1 min.

Requirement: Conductors shall not slip out of the connecting device.

Test Method: As per spec UL 486E

2.11. Dry Heat / Temperature life

Subject mated connector to 115°C for a duration of 24 hours.

Requirement: No physical damage that would impair product performance.

Test Method: IEC 60512-11-9

2.10. Humidity, steady state

Subject mated connectors to steady state humidity at 40°C±2°C and 95% R.H for 24 hrs.

Requirement: No physical damage that would impair product performance.

Test Method: IEC 60512-11-12

2.8 Thermal Shock

Subject mated connector assemblies on 5 cycles -40°C and +115°C for Gold Plated Contact for 30 minutes each duration at temperature extremes with temperature transfer time of ≤ 5 minutes.

Requirement: No physical damage

Test method: IEC 60512-11-4

2.9 Solderability

Aging: 16 hours at 155℃. Lead-Free solder, Solder Temperature: 235℃, Immersion Duration: 3 sec.

Requirements: Wet Solder Coverage :95 % Min.

Test method: IEC 60512-12-1

2.10 Resistance to Soldering Heat

3 cycles of 260 ℃ peak reflow soldering simulation curve.

Requirements: No physical damage

Test method: TEC 109-202 Condition B

3. SUMMARY OF TESTING

- Visual examination, all test groups	**Measurement result**	**Requirement**	**Judgment**
- Initial and final	- No physical or functional damage was observed.	-No physical or functional damage	OK

Test group 1 - Mechanical tests

5.0 mm Pitch				
Test item	**Measurement Results**		**Requirement**	**Judgment**
	2842543-2, 2842545-2	**2842543-4, 2842545-4**		
-Contact resistance, Initial	R max = 1.41 mΩ	R max = 1.55 mΩ	< 10 mΩ	OK
-Contact resistance, Final	R max = 9.31 mΩ	R max = 7.96 mΩ	< 30 mΩ	OK
- Mating force	F max = 15.5 N	F max = 32.5 N	< 10 N per contact	OK
-Un-Mating force	Fmax=13.0 N	F max = 20.1 N	≥ 4 N per contact	OK
-Durability test	- No physical damage was observed.		No physical damage. Contact Resistance (Final) shall be met.	OK
	- No physical damage was observed. No discontinuities of 1 µs or longer duration were recorded.		- No physical damage. No discontinuities of 1 µs or longer duration.	OK

5.08 mm Pitch				
Test item	**Measurement Results**		**Requirement**	**Judgment**
	2842514-2, 2842518-2	**2-2842514-4, 2-2842518-4**		
-Contact resistance, Initial	R max = 1.96 mΩ	R max = 2.09 mΩ	< 10 mΩ	OK
-Contact resistance, Final	R max = 1.91 mΩ	R max = 7.79 mΩ	< 30 mΩ	OK
- Mating force	F max = 17.0 N	F max = 143.2 N	< 10 N per contact	OK
-Un-Mating force	Fmax=12.9 N	F max = 122.3 N	≥ 4 N per contact	OK
- Durability test	- No physical damage was observed.		- No physical damage. Contact-resistance (Final) shall be met.	OK
- Mechanical Shock & Vibration test	- No physical damage was observed. No discontinuities of 1 µs or longer duration were recorded.		- No physical damage. No discontinuities of 1 µs or longer duration.	OK

Test group 2 - Dry Heat/Temperature life tests

5.0 mm Pitch				
Test item	**Measurement Results**		**Requirement**	**Judgment**
	2842543-2, 2842545-2	**2842543-4, 2842545-4**		
-Contact resistance,Initial	R max = 1.64 mΩ	R max = 1.80 mΩ	< 10 mΩ	OK
-Contact resistance, Final	R max = 2.10 mΩ	R max = 2.79 mΩ	< 30 mΩ	OK

5.08 mm Pitch				
Test item	**Measurement Results**		**Requirement**	**Judgment**
	2842514-2, 2842518-2	2-2842514-4, 2-2842518-4		
-Contact resistance, Initial	R max = 1.41 mΩ	R max = 1.76 mΩ	< 10 mΩ	OK
-Contact resistance, Final	R max = 1.93 mΩ	R max = 2.14 mΩ	< 30 mΩ	OK

Test group 3 - Humidity, Steady State tests

5.0 mm Pitch				
Test item	**Measurement Results**		**Requirement**	**Judgment**
	2842543-2, 2842545-2	**2842543-4, 2842545-4**		
-Contact resistance, Initial	R max = 2.28 mΩ	R max = 1.84 mΩ	< 10 mΩ	OK
-Contact resistance, Final	R max = 1.66 mΩ	R max = 2.36 mΩ	< 30 mΩ	OK

5.08 mm Pitch				
Test item	**Measurement Results**		**Requirement**	**Judgment**
	2842514-2, 2842518-2	**2-2842514-4, 2-2842518-4**		
-Contact resistance, Initial	R max = 2.02 mΩ	R max = 2.39 mΩ	< 10 mΩ	OK
-Contact resistance, Final	R max = 1.63 mΩ	R max = 2.26 mΩ	< 30 mΩ	OK

Test group 4 - Thermal Shock & Humidity, Steady State tests

5.0mm and 5.08 mm

-Insulation resistance, all samples	Measurement result	Requirement	Judgment
- Initial - Final	All samples meet the requirement.	≥ 2000 MΩ ≥ 1000 MΩ	OK
-Dielectric withstanding voltage, all samples	**Measurement result**	**Requirement**	**Judgment**
- Initial and final	No flashover or breakdown	- 1600 Vrms for 5.0 mm and 5.08mm pitch samples. No breakdown or flashover shall occur for 1 minute.	OK

Test group 5 - Rotating test

5.0mm and 5.08 mm

- Rotating test, all samples	Measurement result	Requirement	Judgment
Rotating test	All samples meet the requirement.	The conductor shall neither slip out of the clamping unit nor break near the clamping, nor shall the conductor be damaged.	OK

Test group 6- Pull test

5.0mm and 5.08 mm

- Pull test, all samples	Measurement result	Requirement	Judgment
Rotating test	All samples meet the requirement.	Conductors shall not slip out of the connecting device.	OK

Test group 7 - Contact retention in housing tests

5.0mm and 5.08 mm

- Contact retention in housing test, all samples	Measurement result	Requirement	Judgment
Contact retention in housing test	All samples meet the requirement.	Conductors shall not slip out of the connecting device.	OK

Test group 8 - Resistance to wave soldering heat test

5.0mm and 5.08 mm

-Resistance to wave soldering heat test, all samples	Measurement result	Requirement	Judgment
Resistance to wave soldering heat	No physical damage was observed.	No physical damage shall occur.	OK

Test group 10 - Solderability Test

5.0mm and 5.08 mm

Solderability test, all samples	Measurement result	Requirement	Judgment
Resistance to wave soldering heat	More than 95 % of coverage was observed. No physical damage was observed.	The contact solder tails should be covered by a continuous new solder coating for 95% Minimum of affected area. No physical damage shall occur.	OK