Normal entry anti-buckling Block SIM Connector

1. SCOPE

1.1. Content

This specification covers performance, tests and quality requirements for Anti-buckling Block SIM connector. Applicable product descriptions and part numbers are as shown in product drawing.

1.2. Qualification

When tests are performed on the subject product line, procedures specified 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.

TE Connectivity Documents:

109-197: Test Specification (AMP Test Specifications vs. EIA and IEC Test Methods)

501-115100: 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

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

3.3. Ratings

A. Voltage: 10 V DC Max.

B. Current: 0.2 A Max.

C. Operating Temperature: -40℃to 85℃

D. Storage Environment:

Temperature: - 5℃to 40℃

Relative humidity: 15%-70%

3.4. Performance and Test Description

Product is designed to meet the electrical, mechanical and environmental performance requirements. Unless otherwise specified, all tests shall be performed in the room temperature(5～35℃), relative humidity(45～85％), air pressure(86～106kPa), and special case temperature(18～22℃), relative humidity(60～70％), unless otherwise specified.

3.5. Test Requirements and Procedures Summary

Test Description	Requirement	Procedure
Examination of the product	Meets requirements of product drawing.	Visual, dimensional and functional per applicable inspection plan. In accordance with IEC 60512-1-1and IEC 60512-1-2.
ELECTRICAL		
(Low Level) Contact Resistance (LLCR).	Initial, 100mΩ Max. After test, 150mΩ Max.	IEC 60512-2-1 Measure at nominal working position (20 mV, 100 mA max.) Simple sketch showing the testing method have to be added in test report template. Four-wire measurement method must be used. See Figure 1.
Insulation resistance.	100 MΩ Min.	IEC 60512-3-1 Unmated connector with 100 V DC between adjacent contact for 1 min.
Dielectric strength	No breakdown	IEC 60512-4-1. Unmated connector with 200 V AC between adjacent contact for 1 min.
Temperature Rise	After test, 30°C Max.	EIA-364-70A Connect series, Mate connector and measure the temperature rise at the rated current after 2hours.
MECHANICAL		
Contact normal force	0.2~0.9 N	Normal force test equipment
Vibration	No physical damage. No change to performance. No discontinuity greater than 1.0 microsecond.	EIA-364-28E See para. 3.7.2. Figure 2. Apply for 2 hours in each 3 mutually perpendicular axes(total 6 hours). Frequency=10-55-10Hz (Sweep time :1 minute max.) Amplitude=1.5mm, Current=100mA
Physical shock	No physical damage. No change to performance. No discontinuity greater than 1.0 microsecond.	EIA-364-27B See para. 3.7.2. Figure 2. Apply 3 successive shocks in each direction along the 3 mutually perpendicular axes(total 18 shocks) Pulse shape=half sine Peak acceleration=490m/s2(50G) Duration of pulse=11ms

Test Description	Requirement	Procedure
Mechanical Operation	No mechanical damage for connector, and no obviously damage and short issue for SIM card.	3000 mating cycles, Rate: 500 cycles/hour. Speed: 10 mm/s, blow the connector and card with dry air after every 100 (max.) cycles See para. 3.7.2. Figure 3
Soldering Strength	2Kgf Min.	Apply a force to the connector in each parallel direction(X & Y) with PCB until the breakdown of connecotr or soldering parts occurs.

ENVIRONMENTAL

Damp/heat cyclic	25/40°C, 95% RH, 12+12 hrs cycles - 10 cycles. (Unmated in test group 3).	IEC 60512-11-12
Heat age test	Temperature: 85°C Duration: 500 hrs	IEC 60512-11-9
Thermal Shock	No physical damage and shall meet requirement of subsequent test.	IEC 60512-11-4 Ta=-40°C for 30 min ; then change of temp.=25°C , 5minute max.; then Tb=+85°C for 30 min. After 24cycles, cool to ambient for 2 hours.
Solderability	Solderable area shall have a minimum of 95% solder coverage. For lead free solder pot emperature shall be 240°C±5°C	Peak Temperature : 240°C±5°C, Reflow Time(230°C Min) : 45~60 seconds. IR reflow profile as Figure 4.
Resistance to Reflow Heat	No mechanical damage allowed.	EIA 364-56 Temperature profile;as shown in Fig.4 Reflow 2 times.
Mixed Gas	No mechanical damage.	IEC 60068-2-60 24 hours, H2S 3ppm At temp. 40±2 °C, R/H 80% After test return to ambient temp. for 1~2 hours.
Reseating	No mechanical damage allowed.	Manually method as Fig.3, but using empty adapter for 100 cycles
Salt mist	+35°C, 5% NaCl, duration 48 hrs	In acc. with IEC 60512-11-6

The meaning of text “No mechanical damage”:

- No structure is damaged
- No connection becomes loose.
- The specimen still is fully functional in electricity after testing.

3.6. Additional Testing Details

3.6.1 Termination resistance shall be measured as follows:

Termination resistance shall be measured as indicated in figure 1.

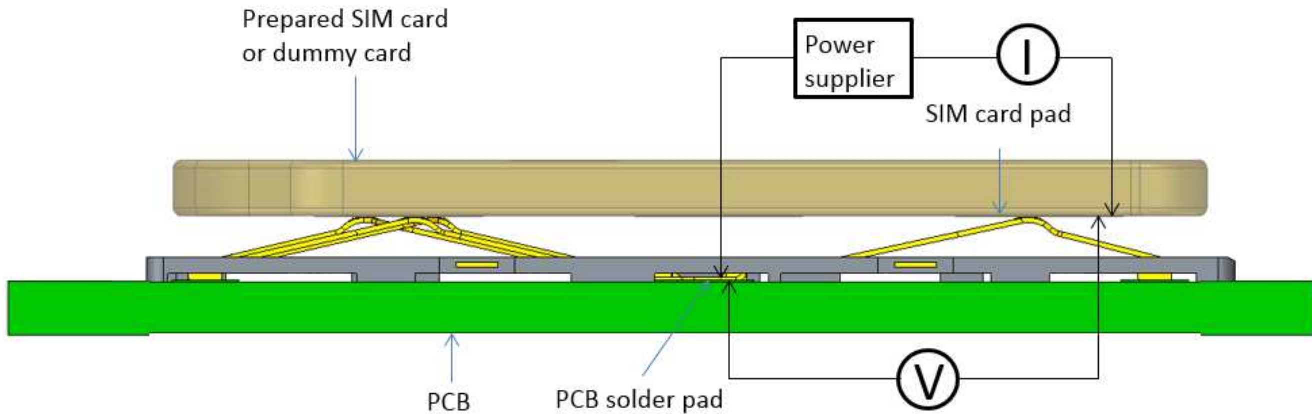

Figure 1 Termination Resistance Measurement Points

3.6.2 Test frames

During Vibration and physical shock, test-frames shall provide mechanical stability of the connector in relation to its mating parts and shall simulate the actual application as indicated in figure 2.
An electrical circuit is checking that no electrical contact interruptions occur that exceed the requirement.

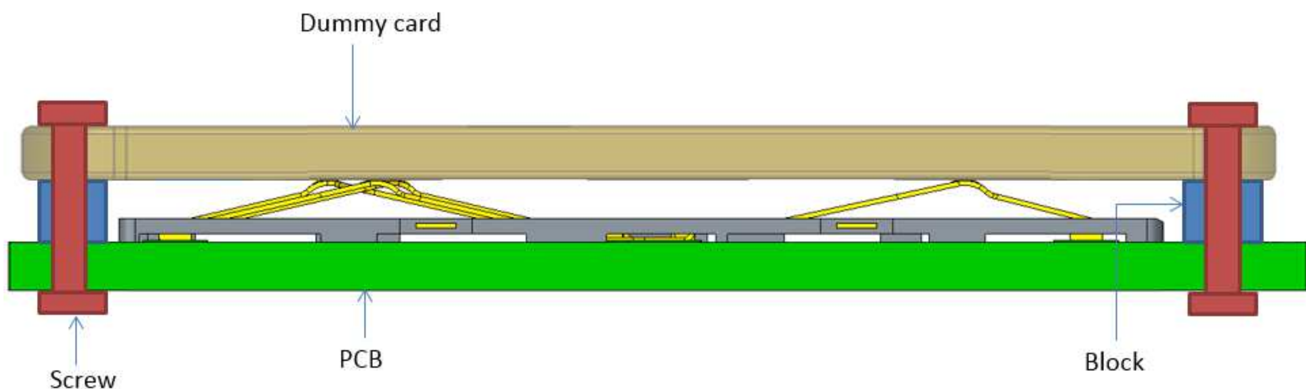

Figure 2

When applicable, necessary parts of the actual application shall be used for Mechanical Operation or else test frame(s) shall simulate the actual application as indicated in figures 3.

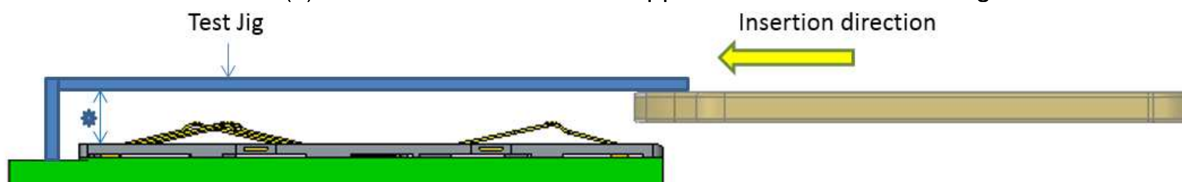

Figure 3

3.6.3 IR reflow requirements

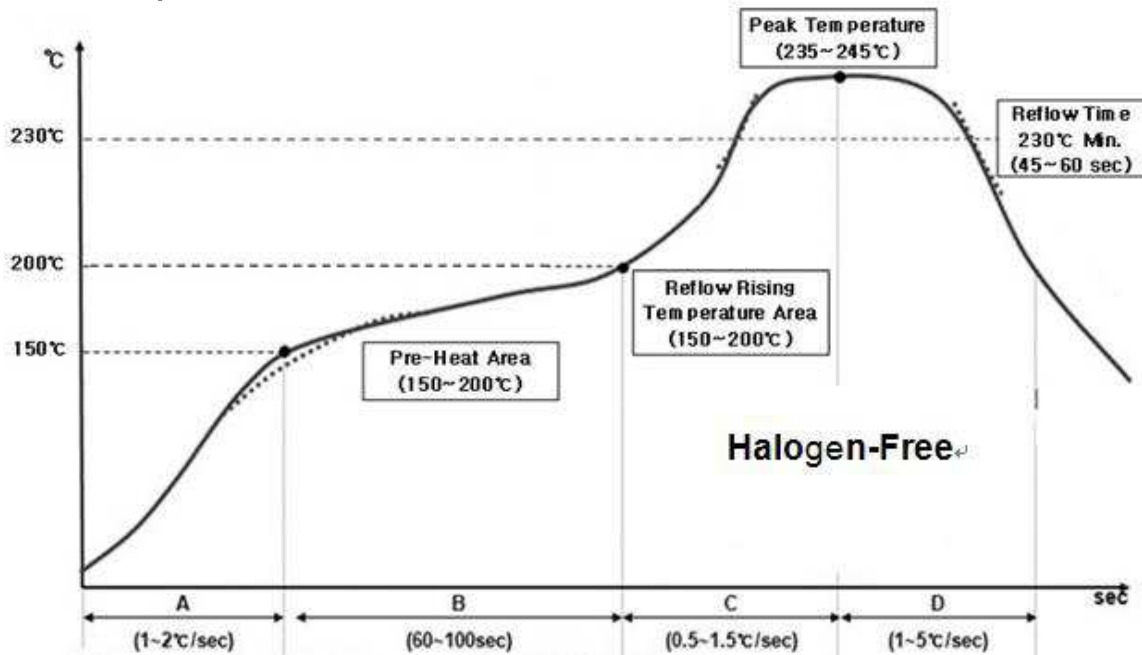

Figure 4

3.7. Product Qualification and Requalification Test Sequence

Description	A	B	C	D	E	F	G	H	I	J	K
Examination of the product	**1,3**	**1,5**	**1**	**1,7**	**1,3**	**1,5**	**1,5**	**1,10**	**1,4**	**1,3**	**1,5**
Contact Resistance		**2,4**		**2,4,6**		**2,4**	**2,4**				**2,4**
Insulation resistance.								**2,5,8**			
Dielectric strength								**3,6,9**			
Temperature Rise									**3**		
Contact normal force	**2**										
Vibration				**3**							
Physical shock				**5**							
Mechanical Operation		**3**									
Soldering Strength			**2**								
Damp/heat cyclic								**7**			
Heat age test							**3**				
Thermal Shock								**4**			
Solderability					**2**						
Resistance to Reflow Heat									**2**		
Mixed Gas						**3**					
Reseating										**2**	
Salt mist											**3**
Sample size (pcs)	5	5	5	5	5	5	5	5	5	5	5

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.

B. Test Sequence

Qualification inspection shall be verified by testing specimens as specified.

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. 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 resubmitted.

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.

The applicable product descriptions and part numbers are as shown in Appendix. 1

Product No.	Description
2286237-*	Normal entry anti-buckling Block SIM connector

Appendix.1

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
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