



1.Scope :

1.1 Contents

This specification covers the requirements for product performance, test methods and quality assurance provisions of nano SIM hinge type connector. Applicable product description and part numbers are as shown in Appendix 1.

2. Applicable Documents:

The following documents form a part of this specification to the extent specified herein. 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 TE connectivity Specification :

- A. 109-197 : Test Specification, General Requirements for Test Methods
- B. 501-78831 : Qualification Test Report

2.2 Commercial Standards and Specification :

- A. International Electrotechnical Commission (IEC)
- B. Electronic Industries Alliance (EIA)

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. Contact , Switch Contact:

Material : Copper Alloy

Finish : Au Plating at contact area and soldering area, over Ni plating.

B. Housing:

Material : Thermoplastic resin, Flammability : UL94V-0, Color : Black

C. Shell

Material : Stainless steel

Finish : Au Plating on soldering area over Ni plating.

3.3 Ratings :

A. Voltage Rating : Max. 10 V DC

B. Current Rating : Max. 0.3 A per contact

C. Operating Environment

Operating Temperature Rating : -30 °C to +85 °C

Relative Humidity: 95% Max. (non-condensing)

※High Limit temperature includes Raised Temperature by Operation.

D. Storage Environment

Storage Temperature Rating : -5 °C to +40 °C (with Packing)

Relative Humidity: 15% to 70% RH

3.4 Performance Requirements and Test Descriptions :

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in Fig. 1. All tests shall be performed in the room temperature(15~35°C),relative humidity(20~80%)、Air pressure(86~106kPa), unless otherwise specified.

3.5 Test Requirements and Procedures Summary

Para.	Test Items	Requirements	Procedures
3.5.1	Examination of product	No physical damage	Visual inspection No physical damage
Electrical Requirements			
3.5.2	Contact resistance (Low level)	Signal contact Initial: 100mΩ Max. After test: 150mΩ Max. Detect contact Initial: 100mΩ Max. After test: 150mΩ Max. Contact resistance includes also the bulk resistance due to terminal	Mate connector with dry circuit (20mV, 100mA Max.) 4-wire measurement required Resistance of termination wires shall be deducted from the reading Refer to fig.4 for measurement method (IEC 60512-3-1)
3.5.3	Insulation resistance	1000MΩ Min.	Unmated connector with 100 VDC between adjacent contact for 1 minute (IEC 60512-3-1)
3.5.4	Dielectric withstanding voltage	No voltage breakdown Current leakage: 0.5mA Max.	Unmated connector with 500 VAC between adjacent contact for 1 minute (IEC 60512-3-1)
3.5.5	Temperature rise	30°C Max under loaded rating Current	Contacts series apply test current of loaded rating current of the circuit and measure the temperature rising by probing on soldered areas of contacts, after the temperature becomes stabilized deduct ambient temperature from the measured (EIA-364-70A)

Fig. 1 (CONT.)

Para.	Test Items	Requirements	Procedures
Mechanical Requirements			
3.5.6	Hinge lock force (HINGE LOCK)	15N Max.	Lock shell from housing at a rate of 25mm/min Operation
3.5.7	Hinge un-lock force	0.5N Min. (Nominal condition)	Un-lock shell from housing at a rate of 25mm/min Operation
3.5.8	Durability (2500 cycle)	Signal contact After test: 150mΩ Max. Detect contact After test: 150mΩ Max. No mechanical damage for connector as well as nano SIM cards	【Operation speed】 Mechanically operated: 500 cycles/hour Manually operated: 200 cycles/hour including pause between mate/un-mate to 2500 cycles After every 10 (max.) cycles blow with dry air
Environmental Requirements			
3.5.9	Vibration	Discontinuity during testing < 1 μs with all contacts in series No mechanical damage No change to performance Signal contact After test: 150mΩ Max. Detect contact After test: 150mΩ Max.	Apply for 2 hours in each 3 mutually perpendicular axes (total 6 hours) Frequency=10-55-10 Hz (Sweep time: 1 minute max.) Amplitude=1.52mm, Current=100mA [EIA-364-28E Condition I]
3.5.10	Shock	Discontinuity during testing < 1 μs with all contacts in series No mechanical damage No change to performance Signal contact After test: 150mΩ Max. Detect contact After test: 150mΩ Max.	Apply 3 successive shocks in each direction along the 3 mutually perpendicular axes (total 18 shocks) Pulse shape=half sine Peak acceleration=490m/s ² (50G) Duration of pulse=11ms [EIA-364-27B Condition I]

Fig. 1 (CONT.)

Para.	Test Items	Requirements	Procedures
3.5.11	Temperature life	No mechanical damage No change to performance Signal Contact After test: 150mΩ Max. Detect contact: After test: 150mΩ Max.	+85°C for 96 hours; recovery period 1-2hours under ambient atmospheric conditions (IEC60068-2-2Bb)
3.5.12	Thermal Shock (Change of temperature)	No mechanical damage No change to performance Signal Contact After test: 150mΩ Max. Detect contact: After test: 150mΩ Max.	T _a = - 40 °C for 30 min; then change of temp=25°C, maximum 5 min; then T _b =+85°C for 30 min for 26cycles Recovery: 2 hours at ambient atmosphere (IEC60068-2-14 Test Na)
3.5.13	Humidity - temperature cycling	No mechanical damage No change to performance Signal Contact After test: 150mΩ Max. Detect contact: After test: 150mΩ Max. Insulation Resistance should be measured	Temp 25-65°C, RH 90-95% for 10 cycles Recovery: 2 hours at ambient atmosphere (EIA-364-31)
3.5.14	Salt spray	No mechanical damage No change to performance Signal Contact After test: 150mΩ Max. Detect contact: After test: 150mΩ Max.	48 hours spray at temp.35±2°C, R/H 90-95%, Salt NaCl mist 5% After test, parts and cards are washed and return to room ambient for 2 hours
3.5.15	SO2 gas	No mechanical damage No change to performance Contact resistance: 150mΩ Max. (Data)	10±3ppm, Damp 75% at 40±2°C, 48hours
3.5.16	Solderability	Solderable area shall have a minimum of 95% solder coverage. For lead free solder pot temperature shall be 240°C±5°C	Peak Temperature: 240°C±5°C, Reflow Time (230°C Min.):25~50 seconds

Fig. 1 (END)

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

Product Part No.	Description
2452796-1	nano SIM hinge type connector

Appendix 1

4. Product Qualification Test Sequence

Para.	Test Examination	Test Group								
		A	B	C	D	E	F	G	H	I
		Test Sequence (a)								
3.5.1	Examination of product	1,9	1,7	1,5	1,5	1,3	1,10	1,9	1,8	1,3
3.5.2	Contact resistance (Low level)	2,6	2,4,6	2,4	2,4		2,7		2,5,7	
3.5.3	Insulation resistance							2,7		
3.5.4	Dielectric with standing voltage							3,8		
3.5.5	Temperature rise					2				
3.5.6	Hinge lock force	3,7					3,8			
3.5.7	Hinge un-lock force	4,8					4,9			
3.5.8	Durability	5					5	4	3	
3.5.9	Vibration		3							
3.5.10	Shock		5							
3.5.11	Temperature life						6			
3.5.12	Thermal shock (Change of temperature)							5	4	
3.5.13	Humidity-temperature cycling							6	6	
3.5.14	Salt spray			3						
3.5.15	SO2 gas				3					
3.5.16	Solderability									2

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

Fig. 2