

PUSH-PUSH Micro SIM CONNECTOR

1.Introduction

1.1 Objective

Testing was performed on the PUSH-PUSH Micro SIM CONNECTOR to determine if it meets the requirement of product specification, 108-140068

1.2 Scope

This report covers the electrical, mechanical and environment performance requirements of the PUSH-PUSH Micro SIM CONNECTOR.

The qualification testing was performed between 20JUN2014 and 13AUG2014.

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.

1.3 Conclusion

The PUSH-PUSH Micro SIM CONNECTOR meets the electorical, mechanical and enviromental performance requirements of product specification, 108-140068

1.4 Product description

The PUSH-PUSH Micro SIM CONNECTOR is designed to make a connection between a Subscriber Identity Module (SIM) and printed circuit board.

1.5 Test samples

Samples were taken randomly from prototype samples. The follwing samples were used.

Part number	Description
2822541-1	PUSH-PUSH Micro SIM CONNECTOR
2229116-2	PUSH-PUSH Micro SIM CONNECTOR SHORT DIP TYPE
TB-1693	Test card

Fig.1

2. Test contents

Para.	Test items	Requirements	Judgment
2.1	Examination of product	<ul style="list-style-type: none"> • Visual inspection • No physical damage 	Acceptable
Electrical requirements			
2.2	Contact resistance (low level)	<ul style="list-style-type: none"> • Initial contact resistance: 150mΩ Max. • Max contact resistance after group testing: 150mΩ Max. • Contact resistance includes also the bulk resistance due to terminal • After any environmental test for every contact • Detection switch: 500mΩMax. • Mate connector with dry circuit (20mV, 100mA Max.) • 4-wire measurement required • Measure resistance with minimum thickness memory card (or PWB) <p>(IEC 60512-2-1)</p>	Acceptable
2.3	Insulation resistance	<ul style="list-style-type: none"> • 1000MΩ Min. • Unmated connector with 500 VDC between adjacent contact for 1 minute <p>(IEC 60512-3-1)</p>	Acceptable
2.4	Dielectric strength	<ul style="list-style-type: none"> • No voltage breakdown • Unmated connector with 500 VAC between adjacent contact for 1 minute <p>(IEC 60512-3-1)</p>	Acceptable
2.5	Temperature rise	<ul style="list-style-type: none"> • 30°C Max. under loaded rating current (0.5A) • Contacts series-, apply test current of loaded rating current of the circuit • Measure the temperature rising by probing on soldered areas of contacts • After the temperature becomes stabilized deduct ambient temperature from the measured 	Acceptable

Fig. 2 (CONT.)

Para.	Test items	Requirements	Judgment
Mechanical requirements			
2.6	Durability (1500 cycle)	<ul style="list-style-type: none"> • Contact resistance: 150mΩ Max. • No mechanical damage for connector as well as Micro SIM cards • Eject length : 2.8mm REF. • Mating contacts at 4-10 cycles/minute, including pause between mate/unmate to 1500 cycles • After every 10 (Max.) cycles blow with dry air 	Acceptable
2.7	Wrongly insertion test card upside down	<ul style="list-style-type: none"> • 25N Min. • No mechanical damage • The card cannot be stuck in the reader 	Acceptable
Environmental requirements			
2.8	Dry cold (steady state)	<ul style="list-style-type: none"> • No mechanical damage • No change to performance • Contact resistance: 150mΩ Max.(Data) • -40°C for 96hours; recovery period 1-2hours under ambient atmospheric conditions <p>(IEC60068-2-1Ab)</p>	Acceptable
2.9	Dry heat (steady state)	<ul style="list-style-type: none"> • No mechanical damage • No change to performance • Contact resistance: 150mΩ Max.(Data) • +85°C for 96 hours; recovery period 1-2hours under ambient atmospheric conditions <p>(IEC60068-2-2Bb)</p>	Acceptable
2.10	Thermal shock (change of temperature)	<ul style="list-style-type: none"> • No mechanical damage • No change to performance • Contact resistance: 150mΩ Max.(Data) • 25 cycle at T_a = -55 °C for 0.5 hours; then change of temp=25°C Max. 5 minute; then T_b=+85°C for 0.5 hours; then cool to ambient • Recovery: 2 hours at ambient atmosphere <p>(IEC60068-2-14 Test Na)</p>	Acceptable
2.11	Humidity - temperature cycling	<ul style="list-style-type: none"> • No change to performance • Contact resistance:150 mΩ Max. • Insulation Resistance should be measured • Measure the resistance without opening the mating after test • Temp 25-65°C, • RH 50-80% for 10 cycles • Cold shock -10°C performed <p>(EIA-364-31)</p>	Acceptable

Fig. 2 (CONT.)

Para.	Test items	Requirements	Judgment
2.12	SO ₂ gas	<ul style="list-style-type: none"> • No mechanical damage • No change to performance • Contact resistance: 150mΩ Max. (Data) • 10±3ppm, Damp 75% at 40±2°C, 48hours 	Acceptable
2.13	Vibration (random)	<ul style="list-style-type: none"> • Discontinuity during testing < 1 μs with all contacts in series • No mechanical damage • No change to performance • Contact resistance: 150mΩ Max. • Frequency: 10 - 100 Hz; 3 m²/s³ (0.0132 g²/Hz) ; 100 - 500 Hz; -3dB/Oct. for: 3 x 60 minute (X- Y- and Z-axis) <p>(IEC60068-2-64Fh)</p>	Acceptable
2.14	Shock (specified pulse)	<ul style="list-style-type: none"> • Discontinuity during testing < 1 μs with all contacts in series • No mechanical damage • No change to performance • Contact resistance: 150mΩ Max. • Pulse shape=half sine • Peak acceleration=50G • Duration of pulse=11ms • Apply 3 shocks in each direction along the 3 mutually perpendicular axes (18 shocks) <p>(IEC60068-2-27Ea)</p>	Acceptable

Fig. 2 (CONT.)

3. Product qualification test sequence

Para.	Test Examination	Test Group								
		1	2	3	4	5	6	7	8	9
3.5.1	Examination of product	1,7	1,5	1,5	1,5	1,5	1,5	1,6	1,3	1,3
3.5.2	Contact resistance (low level)		2,4	2,4	2,4	2,4	2,4	2,5		
3.5.3	Insulation resistance	2,5								
3.5.4	Dielectric strength	3,6								
3.5.5	Temperature rise								2	
3.5.6	Durability						3			
3.5.7	Wrongly Insertion test card upside down									2
3.5.8	Dry cold (steady state)		3							
3.5.9	Dry heat (steady state)			3						
3.5.10	Thermal shock (change of temperature)				3					
3.5.11	Humidity-temperature cycling	4								
3.5.12	SO ₂ gas					3				
3.5.13	Vibration (random)							3		
3.5.14	Shock (specified pulse)							4		

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

Fig. 3

4. Test results

Test item	Unit	Result					Requirements	Judge-ment
		N	Max.	Min.	Ave.	Sig.		
Test group 1								
Examination of product	-	5	No abnormalities				No abnormalities	Accept-able
Insulation resistance	Ω	5	154000000MΩ Min.				1000MΩ Min.	Accept-able
Dielectric strength	-	5	No abnormalities				No abnormalities	Accept-able
Insulation resistance after Humidity-temperature cycling	Ω	5	6180000MΩ Min.				1000MΩ Min.	Accept-able
Dielectric strength after Humidity-temperature cycling	-	5	No abnormalities				No abnormalities	Accept-able
Examination of product after Humidity-temperature cycling	-	5	No abnormalities				No abnormalities	Accept-able

Test item	Unit	Result					Requirements	Judge-ment	
		N	Max.	Min.	Ave.	Sig.			
Test group 2									
Examination of product	-	5	No abnormalities				No abnormalities	Accept-able	
Contact resistance	Contact	mΩ	30	13.2	5.6	9.4	2.17	150mΩ Max.(initial) Detection switch :500mΩMax.	Accept-able
	Detection switch		5	151.1	127.3	139.1	10.56		
Contact resistance after dry cold	Contact	mΩ	30	13.2	6.1	9.7	2.19	150mΩ Max.(final) Detection switch :500mΩMax.	Accept-able
	Detection switch		5	161.3	130.3	145.6	12.55		
Examination of product after dry cold	-	5	No abnormalities				No abnormalities	Accept-able	

Group 1,2 (End)

Test item		Unit	Result					Requirements	Judge-ment
			N	Max.	Min.	Ave.	Sig.		
Test group 3									
Examination of product		-	5	No abnormalities				No abnormalities	Accept-able
Contact resistance	Contact	mΩ	30	13.8	6.2	10.0	2.41	150mΩ Max.(initial) Detection switch :500mΩMax.	Accept-able
	Detection switch		5	171.4	147.5	160.8	9.34		
Contact resistance after dry heat	Contact	mΩ	30	20.9	7.5	13.4	3.57	150mΩ Max.(final) Detection switch :500mΩMax.	Accept-able
	Detection switch		5	176.6	139.6	157.1	15.26		
Examination of product after dry heat		-	5	No abnormalities				No abnormalities	Accept-able

Test item		Unit	Result					Requirements	Judge-ment
			N	Max.	Min.	Ave.	Sig.		
Test group 4									
Examination of product		-	5	No abnormalities				No abnormalities	Accept-able
Contact resistance	Contact	mΩ	30	14.3	6.9	10.3	2.45	150mΩ Max.(initial) Detection switch :500mΩMax.	Accept-able
	Detection switch		5	162.9	156.3	158.9	2.76		
Contact resistance after thermal shock	Contact	mΩ	30	16.7	7.7	11.8	2.55	150mΩ Max.(final) Detection switch :500mΩMax.	Accept-able
	Detection switch		5	186.1	140.0	163.0	20.24		
Examination of product after thermal shock		-	5	No abnormalities				No abnormalities	Accept-able

Group 3,4 (End)

Test item	Unit	Result					Requirements	Judge-ment	
		N	Max.	Min.	Ave.	Sig.			
Test group 5									
Examination of product	-	5	No abnormalities				No abnormalities	Accept-able	
Contact resistance	Contact	mΩ	30	13.4	5.8	9.8	2.10	150mΩ Max.(initial) Detection switch :500mΩMax.	Accept-able
	Detection switch	mΩ	5	162.3	137.2	146.2	10.26		
Contact resistance after SO ₂ gas	Contact	mΩ	30	19.3	7.0	11.1	2.78	150mΩ Max.(final) Detection switch :500mΩMax.	Accept-able
	Detection switch	mΩ	5	178.7	153.7	168.1	10.04		
Examination of product SO ₂ gas	-	5	No abnormalities				No abnormalities	Accept-able	

Test item	Unit	Result					Requirements	Judge-ment	
		N	Max.	Min.	Ave.	Sig.			
Test group 6									
Examination of product	-	5	No abnormalities				No abnormalities	Accept-able	
Contact resistance	Contact	mΩ	30	12.6	5.4	9.7	2.39	150mΩ Max.(initial) Detection switch :500mΩMax.	Accept-able
	Detection switch	mΩ	5	148.3	138.3	143.5	4.25		
Durability	-	5	No abnormalities				No abnormalities	Accept-able	
Contact resistance after durability	Contact	mΩ	30	18.6	5.4	10.3	3.17	150mΩ Max.(final) Detection switch :500mΩMax.	Accept-able
	Detection switch	mΩ	5	146.8	132.8	138.5	5.94		
Examination of product after durability	-	5	No abnormalities				No abnormalities	Accept-able	

Group 5,6 (End)

Test item		Unit	Result					Requirements	Judge-ment
			N	Max.	Min.	Ave.	Sig.		
Test group 7									
Examination of product		-	5	No abnormalities				No abnormalities	Accept-able
Contact resistance	Contact	mΩ	30	13.2	6.1	10.2	2.23	150mΩ Max.(initial) Detection switch :500mΩMax.	Accept-able
	Detection switch		5	150.1	137.6	144.3	4.91		
Vibration (random)		-	5	No abnormalities				1μs Max.	Accept-able
Shock (specified pulse)		-	5	No abnormalities				1μs Max.	Accept-able
Contact resistance after vibration and shock	Contact	mΩ	30	15.1	6.4	10.1	2.37	150mΩ Max.(final) Detection switch :500mΩMax.	Accept-able
	Detection switch		5	164.7	146.6	154.5	6.98		
Examination of product after vibration and shock		-	5	No abnormalities				No abnormalities	Accept-able

Test item		Unit	Result					Requirements	Judge-ment
			N	Max.	Min.	Ave.	Sig.		
Test group 8									
Examination of product		-	5	No abnormalities				No abnormalities	Accept-able
Temperature rise		°C	5	1.45	1.40	1.42	0.027	30°C Max.	Accept-able
Examination of product after temperature rise		-	5	No abnormalities				No abnormalities	Accept-able

Group 7,8 (End)

Test item	Unit	N	Result	Requirements	Judge-ment
Test group 9					
Examination of product	-	5	No abnormalities	No abnormalities	Accept-able
Wrongly insertion test card upside down	-	5	No mechanical damage at 25N (broken force : 72.1N Min)	25N Min.	Accept-able
Examination of product	-	5	No abnormalities	No abnormalities	Accept-able

Group 9 (End)