Micro SIM 1.18H Push-Pull Type

1. Introduction

1.1 Testing was performed on the Micro Sim 1.18H push-pull type to determine if it meets the requirement of Product Specification , 108-115082 REV.A

1.2 Scope

This report covers the electrical, mechanical and environmental performance requirements of the Micro Sim 1.18H push-pull type.

The qualification testing for standard type was performed between 6 June 2014 and 30 June 2014.

1.3 Conclusion

Micro Sim 1.18H push-pull type meets the electrical, mechanical and environmental performance requirements of Product Specification, 108-115082 REV.A

1.4 Test Samples

Samples were taken randomly from current production. The following samples were used.

Part Number	Description
-2199337-	Micro sim 1.18H push-pull type
-2286914-	Micro sim 1.18H push-pull type
-2286977-	Micro sim 1.18H push-pull type

Fig. 1

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2 Test Requirements and Procedures Summary

Para.	Test Items	Requirements	Procedures
2.1	Examination of Product	No physical damage	Visual inspection No physical damage
		Electrical Requirements	
2.2	Contact Resistance (Low Level)	Initial, 50mΩ Max. After test, 80mΩ Max.	Mate connector with dry circuit(20mV Max., 100mA Max.) at Min. Deflection position. 4-wire measurement is required. Resistance of termination wires shall be deducted from the reading. [IEC 60512-3-1]
2.3	Insulation Resistance	Initial, 1000MΩ Min. After test, 100MΩ Min.	Apply 100VDC with un-mating condition between adjacent contacts for 1 minute. [IEC 60512-3-1]
2.4	Dielectric withstanding Voltage	No voltage breakdown.	Apply 500VAC with un-mating condition between adjacent contacts for 1 minute. [IEC 60512-3-1]
2.5	Temperature Rise	After test, 30°C Max.	Connect series, Mate connector and measure the temperature rise at the rated current after 2hours. [EIA-364-70A]
		Mechanical Requirements	
2.6	Contact normal Force	At Contact Point Stroke : 0.50mm Requirement : 20gf Min 80gf Max	Measure contact normal force at normal working range. (Speed : 25±3mm/minuate)
2.7	Durability	No physical damage and shall meet requirements of subsequent tests.	5,000 cycles - Mechanically Operated : 500 cycle/hour - Manually Operated : 200 cycle/hour

Fig. 2 (CONT.)

Para.	Test Items	Requirements	Procedures
2.8	Vibration	No physical damage. No change to performance. No discontinuity greater than 1.0 microsecond.	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 [EIA-364-28E Condition Ⅰ]
2.9	Shock	No physical damage. No change to performance. No discontinuity greater than 1.0 microsecond.	Apply 3 successive shocks in each direction along the 3 mutually perpendicular axes(total 18 shocks) Pulse shape=harf sine Peak acceleration=490m/s2(50G) Duration of pulse=11ms [EIA-364-27B Condition Ⅰ]
2.10	Soldering Strength	5Kgf 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 Requirements			
2.11	Dry cold (steady state)	No physical damage and shall meet requirement of subsequent test.	-30°C±3°C for 48 hours Recovery period 2 hours at ambient atmosphere. [MIL-STD-202 Method 108]
2.12	Dry heat (steady state)	No physical damage and shall meet requirement of subsequent test.	+85°C±2°C for 48 hours Recovery period 2 hours at ambient atmosphere. [MIL-STD-202 Method 108]
2.13	Thermal Shock (change of temperature)	No physical damage and shall meet requirement of subsequent test.	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.
2.14	Damp heat (steady state)	No physical damage and shall meet requirement of subsequent test.	96 hours at Temp. 85°C±2°C, R/H 85±5%; After test, cool to ambient temp. for 2 hours.

Fig. 2 (CONT.)

Para.	Test Items	Requirements	Procedures
2.15	Salt spray	No physical damage and shall meet requirement of subsequent test.	48 hours spray, At temp. 35±2 °C R/H 90~95%, Salt NaCl mist 5% After test wash parts and return to room ambient for 2 hours. [EIA-364-26B]
2.16	Mixed Gas	No mechanical damage.	48 hours, H2S 3ppm + SO2 10ppm At temp. 40±2 °C, R/H 80% After test return to ambient temp. for 1~2 hours. [IEC 60068-2-60 Ke Method 1]
2.17	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)：45~60 seconds.
2. 18	Resistance to Reflow Heat	No mechanical damage allowed.	Reflow 2 times. EIA 364-56
2. 19	Reseating	No mechanical damage allowed.	100 cycles - Manually method, using empty adapter

Fig. 2 （END.）

3 Product Qualification Test Sequence

Para.	Test Examination	Test Group										
		1	2	3	4	5	6	7	8	9	10	11
		Test Sequence (a)										
2.1	Examination of Product	1,3	1,5	1	1,7	1,5	1,3	1,5	1,7	1,10	1,7	1,3
2.2	Contact resistance		2,4		2,4,6	2,4		2,4	2,4,6		5	
2.3	Insulation resistance									2,5,8	3	
2.4	Dielectric withstanding Voltage									3,6,9	4	
2.5	Temperature Rise										6	
2.6	Contact Normal Force	2										
2.7	Durability		3									
2.8	Vibration				3							
2.9	Shock				5							
2.10	Soldering Strength			2								
2.11	Dry cold (steady state)								3			
2.12	Dry heat (steady state)								5			
2.13	Thermal Shock									4		
2.14	Damp heat(steady state)									7		
2.15	Salt spray					3						
2.16	Mixed Gas							3				
2.17	Solderability						2					
2.18	Resistance to Reflow Heat										2	
2.19	Reseating											2

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

Fig. 3

4. TEST RESULT

Group	Test Item	N	Condition	Test Result				Requirement	Conclusion
				Max	Min	Ave	Unit		
1	Contact Normal Force	45	Initial	43.10	28.10	35.77	g	No abnormalities	Meet spec
2	Examination of Product	5	Initial	No physical damage occurred				No abnormalities	Meet spec
	LLCR	45	Initial	45.68	13.15	25.89	mΩ	50 Max	Meet spec
	Durability	5	Final	No physical damage occurred				No abnormalities	Meet spec
	LLCR	45	Final	62.44	16.59	33.43	mΩ	80 Max	Meet spec
	Examination of Product	5	Final	No physical damage occurred				No abnormalities	Meet spec
3	Examination of Product	5	Initial	No physical damage occurred				No abnormalities	Meet spec
	Soldering Strength	5	Final	183.00	60.94	122.09	N	50 MIN	Meet spec
	Examination of Product	5	Final	No physical damage occurred				No abnormalities	Meet spec
4	Examination of Product	5	Initial	No physical damage occurred				No abnormalities	Meet spec
	LLCR	45	Initial	40.12	8.74	20.25	mΩ	50 Max	Meet spec
	Vibration	5	Final	No discontinuity happened				No abnormalities	Meet spec
	LLCR	45	Final	42.99	7.15	20.53	mΩ	80 Max	Meet spec
	Shock	5	Final	No discontinuity happened				No abnormalities	Meet spec
	LLCR	45	Final	42.72	8.84	21.29	mΩ	80 Max	Meet spec
	Examination of Product	5	Final	No physical damage occurred				No abnormalities	Meet spec
5	Examination of Product	5	Initial	No physical damage occurred				No abnormalities	Meet spec
	LLCR	45	Initial	44.55	8.72	20.60	mΩ	50 Max	Meet spec
	Salt spray	5	Final	No physical damage occurred				No abnormalities	Meet spec
	LLCR	45	Final	55.52	9.10	25.73	mΩ	80 Max	Meet spec
	Examination of Product	5	Final	No physical damage occurred				No abnormalities	Meet spec
6	Examination of Product	5	Initial	No physical damage occurred				No abnormalities	Meet spec
	Solderability	5	Final	Solderable area have a minimum of 95% solder				No abnormalities	Meet spec
	Examination of Product	5	Final	No physical damage occurred				No abnormalities	Meet spec
7	Examination of Product	5	Initial	No physical damage occurred				No abnormalities	Meet spec
	LLCR	45	Initial	37.54	8.32	19.96	mΩ	50 Max	Meet spec
	Mixed Gas	5	Final	No physical damage occurred				No abnormalities	Meet spec
	LLCR	45	Final	52.47	9.59	24.18	mΩ	80 Max	Meet spec
	Examination of Product	5	Final	No physical damage occurred				No abnormalities	Meet spec

Fig. 3 (CONT)

Group	Test Item	N	Condition	Test Result				Requirement	Conclusion
				Max	Min	Ave	Unit		
8	Examination of Product	5	Initial	No physical damage occurred				No abnormalities	Meet spec
	LLCR	45	Initial	39.49	8.64	20.59	mΩ	50 Max	Meet spec
	Dry cold (steady state)	5	Final	No physical damage occurred				No abnormalities	Meet spec
	LLCR	45	Final	45.25	8.55	21.65	mΩ	80 Max	Meet spec
	Dry heat (steady state)	5	Final	No physical damage occurred				No abnormalities	Meet spec
	LLCR	45	Final	47.25	8.83	22.32	mΩ	80 Max	Meet spec
	Examination of Product	5	Final	No physical damage occurred				No abnormalities	Meet spec
9	Examination of Product	5	Initial	No physical damage occurred				No abnormalities	Meet spec
	Insulation resistance	25	Initial	13.46	3.77	8.72	$10^{10}\Omega$	$10^{9}\Omega$ Min	Meet spec
	Withstanding Voltage	25	Initial	No voltage breakdown happened				No abnormalities	Meet spec
	Thermal Shock	5	Initial	No physical damage occurred				No abnormalities	Meet spec
	Insulation resistance	25	Final	3.35	0.20	1.63	$10^{10}\Omega$	$10^{9}\Omega$ Min	Meet spec
	Withstanding Voltage	25	Final	No voltage breakdown happened				No abnormalities	Meet spec
	Damp heat(steady state)	5	Initial	No physical damage occurred				No abnormalities	Meet spec
	Insulation resistance	25	Final	17.53	1.88	5.56	$10^{10}\Omega$	$10^{9}\Omega$ Min	Meet spec
	Withstanding Voltage	25	Final	No voltage breakdown happened				No abnormalities	Meet spec
	Examination of Product	5	Final	No physical damage occurred				No abnormalities	Meet spec
10	Examination of Product	5	Initial	No physical damage occurred				No abnormalities	Meet spec
	Resistance to Reflow Heat	5	Initial	No physical damage occurred				No abnormalities	Meet spec
	Insulation resistance	25	Initial	3.35	0.20	1.63	$10^{10}\Omega$	$10^{9}\Omega$ Min	Meet spec
	Withstanding Voltage	25	Initial	No voltage breakdown happened				No abnormalities	Meet spec
	LLCR	45	Initial	41.46	9.27	22.18	mΩ	50 Max	Meet spec
	Temperature Rise	5	Final	20.85	18.00	19.42	°c	30 Max	Meet spec
	Examination of Product	5	Final	No physical damage occurred				No abnormalities	Meet spec
11	Examination of Product	5	Initial	No physical damage occurred				No abnormalities	Meet spec
	Reseating	5	Final	No physical damage occurred				No abnormalities	Meet spec
	Examination of Product	5	Final	No physical damage occurred				No abnormalities	Meet spec

Fig. 3 (END)