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PRODUCT NO： A1251 SERIES

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1. Scope：

This product specification contains the test results that general performances of A1251 SERIES connectors were examined.

2. Part name & part number：

Part name	Part number
Housing	A1251H A1251HM
Terminal	A1251-T A1251M-T
Wafer(DIP)	A1251WV, A1251WR
Wafer(SMT)	A1251WV-S, A1251WR/WRA-S

3. Construction、dimensions、material & surface finish：

Construction and dimensions shall be in accordance with the referenced drawings.
Material and surface finish shall be as specified below.

Part name		Material	Surface finish
Housing		Nylon 66	UL 94V-0
Terminal		Phosphor Bronze	Tin-plated
Wafer (DIP)	Post	Phosphor Bronze	Tin-plated
	Body	Nylon 66	UL 94V-0
Wafer (SMT)	Post	Phosphor Bronze	Tin-plated
	Tab	Brass	Tin-plated
	Body	Nylon 6T/LCP	UL 94V-0

4. Characteristics：

Current rating： 1A AC,DC
Voltage rating：125V AC,DC
Temperature range：-40°C ~105°C

5. Conditions：

The conditions shall be in accordance with the referenced drawing of next page.

Number	Item	Requirement
①	Bend up	4°max.
	Bend down	4°max.
	Twisting	3°max.
	Rolling	8°max.
②	Bell mouth (flare)	0.2-0.4 mm
③	Cut-off tab length	0.15 mm max.
④	Extruded wire length	0-0.5 mm
⑤	Seam	Seam shall not be opened and no wire allowed out of crimping area
⑥	Wire strip length	1.1-1.5 mm ref.
⑦	Lance height	0.3 mm ref.

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6. Mechanical test：

6.1 Crimp width、crimp height & crimp strength

After crimping, the crimped areas (⑥、⑦) should be as follows.

Wire Size (AWG)	Terminal Part Number	Conductor(mm)		Insulation(mm)		Crimp Strength (Kg)
		Crimp Width	Crimp Height	Crimp Width	Crimp Height	
#28	A1251-T A1251M-T	0.8±0.15	0.49-0.58	1.00 max	1.15 max.	0.8 min.
#30			0.45-0.54		1.05 max.	0.5 min.
#32			0.41-0.50		1.00 max.	0.4 min.

Note：no distorted after terminal crimped.

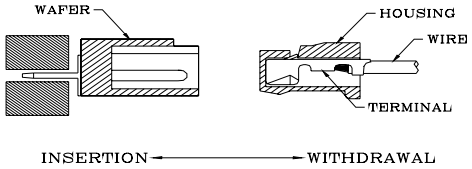
6.2 Insertion force (I.F.) & withdrawal force (W.F.)

(1) Requirement：

Number of Circuits	At initial		At 50th
	I.F. (max)	W.F. (min)	W.F. (min)
Single	1.20Kg	0.10Kg	0.08Kg
2	1.80Kg	0.20Kg	0.18Kg
3	2.40Kg	0.30Kg	0.28Kg
4	3.00Kg	0.38Kg	0.36Kg
5	3.60Kg	0.46Kg	0.42Kg
6	4.20Kg	0.52Kg	0.48Kg
7	4.80Kg	0.60Kg	0.56Kg
8	5.40Kg	0.68Kg	0.62Kg
9	6.00Kg	0.76Kg	0.72Kg
10	6.60Kg	0.84Kg	0.80Kg
11	7.20Kg	0.92Kg	0.88Kg
12	7.80Kg	1.00Kg	0.96Kg
13	8.40Kg	1.10Kg	1.00Kg
14	9.00Kg	1.20Kg	1.10Kg
15	9.60Kg	1.30Kg	1.20Kg

(2) Test method：Housing with crimped terminal and wafer shall be mated and unmated on the same axis. Initial insertion and withdrawal forces and withdrawal forces at 50th shall be measured for single circuit and multi-circuits. For the measurement of single circuit , housing lock shall be removed.

Insertion and withdrawal speed：20±5 mm/minute.



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(3) Test results：

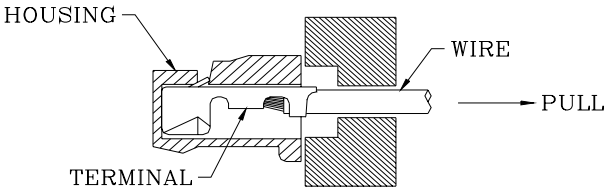
Number of Circuits		At initial		At 50th	N=20
		I.F. (Kg)	W.F. (Kg)	W.F. (Kg)	
Single	Max.	0.73	0.35	0.32	
	Min.	0.28	0.23	0.20	
	Ave.	0.60	0.30	0.25	
2	Max.	0.83	0.61	0.52	
	Min.	0.45	0.40	0.34	
	Ave.	0.72	0.49	0.42	
3	Max.	1.11	0.73	0.65	
	Min.	0.58	0.49	0.42	
	Ave.	0.90	0.64	0.58	
4	Max.	1.51	1.01	0.95	
	Min.	0.70	0.68	0.62	
	Ave.	1.02	0.78	0.73	
5	Max.	1.98	1.42	1.36	
	Min.	0.95	0.88	0.82	
	Ave.	1.32	1.08	0.96	
6	Max.	2.19	1.65	1.53	
	Min.	1.10	0.99	0.92	
	Ave.	1.76	1.38	1.32	
7	Max.	2.28	1.95	1.76	
	Min.	1.33	1.03	0.94	
	Ave.	1.91	1.64	1.58	
8	Max.	2.39	1.98	1.86	
	Min.	1.64	1.30	1.24	
	Ave.	2.21	1.73	1.62	
9	Max.	3.06	2.04	1.89	
	Min.	1.79	1.49	1.43	
	Ave.	2.53	1.81	1.69	
10	Max.	3.33	2.10	1.96	
	Min.	2.38	1.69	1.65	
	Ave.	3.06	1.90	1.82	
11	Max.	4.10	2.24	2.13	
	Min.	2.54	1.81	1.41	
	Ave.	3.45	1.84	1.72	
12	Max.	4.35	2.61	2.53	
	Min.	2.64	1.93	1.86	
	Ave.	4.47	2.20	2.13	

Number of Circuits		At initial		At 50th
		I.F. (Kg)	W.F. (Kg)	W.F. (Kg)
13	Max.	4.57	2.82	2.75
	Min.	2.79	1.89	1.83
	Ave.	4.03	2.62	2.53
14	Max.	4.76	3.40	3.31
	Min.	2.79	2.33	2.21
	Ave.	4.26	3.14	3.02
15	Max.	5.21	3.50	3.42
	Min.	3.27	2.36	2.29
	Ave.	4.45	3.33	3.21

6.3 Contact retention force

(1) Requirement：0.5 Kg (min.)

(2) Test method：Crimped terminal shall be mounted in a housing and pulled in an alignment. The load to pull the terminal out of the housing shall be measured.



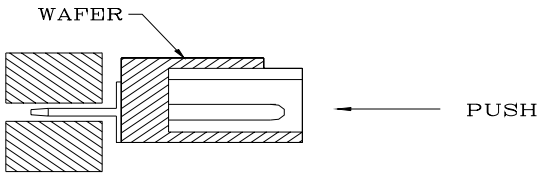
(3) Test results：

Max.	Min.	Ave.
1.41 Kg	1.12 Kg	1.24 Kg

6.4 Post retention force

(1) Requirement：0.5 Kg (min.)

(2) Test method：The end of a post shall be pushed in a perpendicular to wafer. The load to make the post start moving shall be measured.



(3) Test results：

Max.	Min.	Ave.
1.85 Kg	1.26 Kg	1.45 Kg

7. Electrical test：

7.1 Contact resistance

(1) Requirement：Initial : 20 mΩ (max.)
After environmental test : 3 0 mΩ (max.)

(2) Condition：Test current : 10 mA (DC)
Open voltage : 20mV (max.)

7.2 Insulation resistance

(1) Requirement：Initial : 100 MΩ (min.)
After humidity test：50 MΩ (min.)
After thermal shock test：50 MΩ (min.)

(2) Test method：DC 500V shall be applied between outer surface of housing and terminal and between adjacent terminals to measure insulation resistance. (MIL-STD-202 , test method 302 , condition B)

7.3 Dielectric withstanding voltage

(1) Requirement：There shall be no breakdown nor flashover.

(2) Test method：Mate connector and apply 500V AC/rms for one minute between adjacent terminal or ground. (MIL-STD-202 , test method 301)

Test current : 1mA

8. Environment test：

8.1 Humidity

(1) Requirement：Contact resistance shall be 30 milliohms (max.) after the test. Insulation resistance shall be 200 megohms (min.) after the test. There shall be no breakdown nor flashover on dielectric withstanding voltage test.

(2) Test method：Mated connector shall be placed in a humidity chamber of the following conditions. After the test , contact resistance , insulation resistance and dielectric with-standing voltage shall be measured. (MIL-STD-202 , test method 103 , condition A)

Temperature : 60±2 °C
Humidity : 90% ~ 95% (RH)
Period : 240 hours continuously

(3) Test results:

Test item	Initial (mΩ)			After test(mΩ)		
Contact Resistance	Max	Min	Ave	Max	Min	Ave
	8.5	3.8	6.4	9.1	5.2	7.8

Test item	Housing-Terminal(MΩ)		Terminal -Terminal(MΩ)	
Insulation Resistance	Initial	After Test	Initial	After Test
	500 min	200 min	500 min	200 min

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Test Item	Housing-Terminal(MΩ)		Terminal -Terminal(MΩ)	
D.W.V	Initial	After Test	Initial	After Test
	Good	Good	Good	Good

(D.W.V.: Dielectric withstanding voltage)

8.2 Salt spray

(1) Requirement：Contact resistance shall be 30 milliohms (max.) after the test.

(2) Test method：Mated connector shall be subjected to salt spray test of the following conditions. After the test, specimen shall be washed with running water and dried naturally before the measurement of contact resistance.

Temperature : 35±2 °C

Humidity : 90% ~ 95% (RH)

Period :8or16or24or32or 48 hours

(3)Test result:

Test item	Initial (mΩ)			After test(mΩ)		
Contact Resistance	Max	Min	Max	Min	Max	Min
	8.4	3.6	6.2	9.3	4.9	6.9

8.3 Thermal shock

(1) Requirement：Contact resistance shall be 30 milliohms (max.) after the test. Insulation resistance shall be 200 megohms (min.) after the test. There shall be no breakdown nor flashover on dielectric withstanding voltage test.

(2) Test method：Mated connector shall be subjected to thermal shock test of the following conditions. After the test , contact resistance , insulation resistance and dielectric withstanding voltage shall be measured.

1 cycle consists of：

-55 °C for 30 minutes

+105 °C for 30 minutes

Times of cycles：25 cycles

(3)Test result:

Test item	Initial (mΩ)			After test(mΩ)		
Contact Resistance	Max	Min	Max	Min	Max	Min
	9.2	4.3	7.5	10.2	5.8	8.3

Test item	Housing-Terminal(MΩ)		Terminal -Terminal(MΩ)	
Insulation Resistance	Initial	After Test	Initial	After Test
	500 min	200 min	500 min	200 min

Test Item	Housing-Terminal(MΩ)		Terminal -Terminal(MΩ)	
D.W.V	Initial	After Test	Initial	After Test
	Good	Good	Good	Good

8.4 Vibration

(1) Requirements：Contact resistance shall be 30 milliohms (max.) after the test. There shall be no current discontinuity longer than 1 microsecond during the test.

(2) Test method：Mated connector shall be mounted on a PCB and subjected to a vibration test of the following conditions. During the test , current continuity shall be checked. After the test , contact resistance shall be measured.
(MIL-STD-202 , test method 201)

Frequency : 10~55~10 Hz/min.
Amplitude : 1.5 mm
Direction : 1. Axis of up and down
2. Axis of right and left
3. Axis of front and back

(3)Test result:

Test item	Initial (mΩ)			After test(mΩ)		
Contact Resistance	Max	Min	Max	Min	Max	Min
	8.9	4.6	6.8	9.5	5.2	7.4

8.5 Solderability

(1) Requirements：95％of immersed area must show no voids, pin holes.

(2) Test method ：Fluxed soldering section of shrouded header shall be dipped in solder of the following conditions.

Solder temperature : 235±5 °C
Immersion period : 3-5 seconds
0.5mm from terminal tip and fitting nail tip.

8.6 Resistance to soldering heat

(1) Requirements：There shall be no deformation nor damage which may affect the performance.

(2) Test method ：Specimen shall be mounted on a PCB (inserted only) and subjected to resistance to soldering heat test of the following conditions.

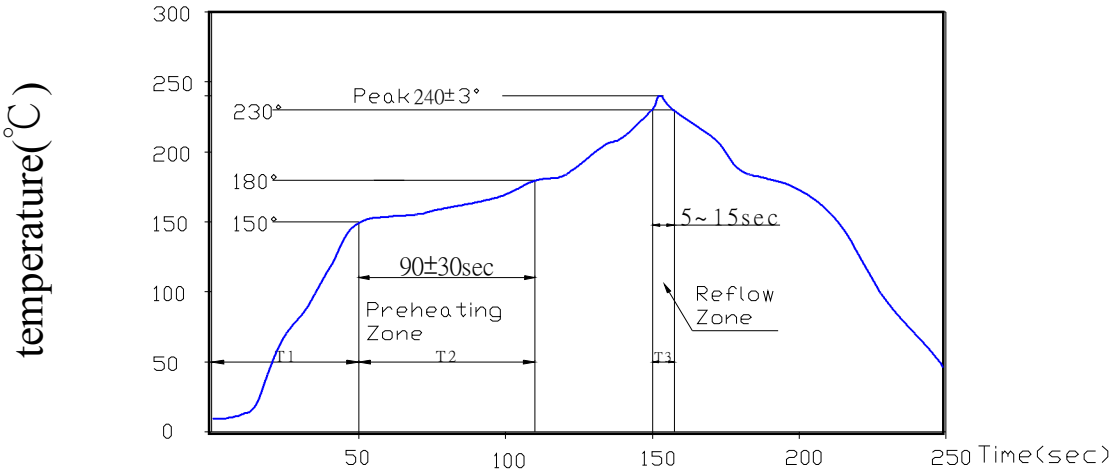
Solder temperature : 250±5 °C
Immersion period : 3-5 seconds

(3) Test results:

8.7 Solderability

(1) Requirements：Solder-dipping section shall be covered by solder entirely.

INFRARED REFLOW CONDITION



RAMP UP	Preheat	RAMP	ramp down
2℃~3℃/Sec	90Sec ± 30Sec	30sec.	4℃~7℃/Sec

T1:	temperature ramp up rate:	2℃~3℃/ sec
T2:	prehect: 150℃ ~ 180℃	60~120sec
T3:	time Over 230℃:	5～15 sec
	ramp down rate during cooling:	4℃~7℃/sec
	peak temperature :	240℃Max

(2) Test result：Good.