

Miniature Waterproof 4 types WtB Connector**1. Purpose:**

This is qualification test. The purpose of this test is to evaluate the performance of miniature waterproof 4 types WtB connector. Testing was performed on below products to determine it compliance with the requirements of product specification.

2. Scope:

This is test report for miniature waterproof 4 types WtB connector. Testing was performed at TE Connectivity Shanghai Electrical Components Test Laboratory between Aug.02th, 2017 and Sep.19th, 2017.

3. Conclusion:

The product met the electrical, mechanical, and environmental performance requirements of TE product specification

4. Test samples:

Samples were taken randomly from current production. The following part numbers were used for test:

Description	Product Part No.
Vertical SMT Connector	*-2834235-*
R/A SMT Connector	*-2834236-*
Vertical DIP Connector	*-2834237-*
R/A DIP Connector	*-2834238-*

5. Test Method**5.1 Examination of Product**

Visual, dimensional and functional per applicable inspection plan.

Requirements: Meets requirements of product drawing

Test Method: In accordance with EIA-364-18

5.2 Contact Resistance

Subject the specimen to maximum allowed rating current and measure the contact resistance.

Requirements: 20mΩ Max.

Test Method: EIA-364-06

5.3 Temperature Rise

Measured at maximum rated current with series all contacts. (Matched with 2834182-*)

Current: 5.5A for 18-20AWG

4A for 22AWG

Requirement: Temperature rise should be 30°C Max.

Test method: EIA-364-70

5.4 Vibration, Random

Subject mated specimens to 3.10G's rms between 20~500HZ. Fifteen minutes in each of 3 mutually perpendicular planes.

Requirements: Discontinuity max 1 μ s

Test method: EIA-364-28, Test Condition VII, Condition D

5.5 Mechanical shock

Subject mated specimens to 30 G's half-sine shock pulses of 11 milliseconds duration. Three shocks in each direction applied along 3 mutually perpendicular planes, 18 total shocks.

Requirements: Discontinuity max 1 μ s

Test method: EIA-364-27, Condition H

5.6 Housing lock strength

Determine housing lock strength at a maximum rate of 12.7 mm [.5 in] per minute.

Requirements: 30N Min.

Test method: EIA-364-98.

5.7 Mating Force

Measure force necessary to mate specimens at a max rate of 12.7mm per minute.

Requirements: 40N Max

Test method: EIA-364-13.

5.8 Unmating force(Without latch)

Measure force necessary to unmated specimens at a max rate of 12.7mm per minute.

Requirements: 10N Max.

Test method: EIA-364-13

5.9 Contact retention force

Measure force necessary to unmated specimens at a max rate of 12.7mm per minute.

Requirements: 14N Min.

Test method: EIA-364-13

5.10 Thermal Shock

Subject specimens to 25 cycles between -40 and 105°C with 30 minute dwells at temperature extremes and 1 minute transition between temperatures.

Requirements: Contact resistance 20m Ω Max.

Test method: EIA-364-32, Test Condition VII

5.11 Humidity (cycling Temperature)

Subject specimens to 10 cycles (10 days) between 25 °C and 65 °C at 80 to 100% RH.

Requirements: Contact resistance 25mΩ Max.

Test method: EIA-364-31, Method III

5.12 Temperature life

Subject mated specimens to 105 °C for 648 hours.

Requirements: LLCR 20mΩ Max.

Test method: EIA-364-17, Method A

5.13 Withstanding voltage

Unmated connector with 1500 V AC between adjacent contacts for 1 min

Requirements: No breakdown or flashover

Test method: EIA-364-20, Condition I

5.14 Insulation resistance

Unmated connector with 500 V DC between adjacent contacts for 1 min.

Requirements: 1000 MΩ Min

Test method: EIA-364-21

5.15 Durability

Mating and unmating specimens for 30 cycles at a max rate of 500 cycles per hour.

Requirement: No mechanical damage; No change to performance; Contact resistance: 20mΩ Max;

Test method: EIA-364-09

5.16 Ingress protection.

Waterproof IPX7 Test.

Requirements: No physical damage, and meet requirements of additional tests specified in Product Qualification Test Sequence

Test method: IEC 60529, IPX7.

5.17 Use aging.

Subject specimens to 113 ± 5°C for 168 hours.

Requirements: No physical damage, and meet requirements of additional tests specified in Product Qualification Test Sequence

Test method: UL 486D, Sections 9.4.1.1(a).

6. Unless otherwise stated, the following environmental conditions prevailed during testing:

Temperature: 5°C to 35°C Relative Humidity: 45 % to 80%

7. Test Sequence

Test group	a	b	c	d	e	f
Examination of product	1,7	1,7	1	1	1,5	1,5
Contact resistance	2,6	2,6				
Insulation resistance			2,6			
Withstanding Voltage			3,7			
Current rating		3				
Contact retention force				2		
Random vibration	4					
Mechanical shock	5					
Durability	3					3
Mating force						2
Unmating force(without latch)						4
Housing lock strength				3		
Thermal shock			4			
Humidity -temperature cycling		4	5			
Temperature life		5				
Ingress protection					2,4	
Use aging					3	
Sample size	5(a)	5(c)	5(a)	5(b)	5(b)	5(b)

NOTE

- a. 5 sets of each type for default wire size: 20AWG.
- b. 5 sets for 2834237-* only
- c. 5 sets for 20AWG, 5 sets for 22AWG.

8. Test Result

Group	Test Item	N	Condition	Test Result			Requirement	Judgment
				Max	Min	Ave		
A	Examination of Product	20	Initial	No physical damage occurred			No abnormalities	Pass
	Contact resistance(*-2834235-*)	5	Initial	5.25	4.28	4.75	<20mΩ	Pass
	Contact resistance(*-2834236-*)	5	Initial	5.32	4.78	5.07	<20mΩ	Pass
	Contact resistance(*-2834237-*)	5	Initial	4.88	4.05	4.46	<20mΩ	Pass
	Contact resistance(*-2834238-*)	5	Initial	5.62	4.82	5.20	<20mΩ	Pass
	Durability	20	Final	No physical damage occurred			No abnormalities	Pass
	Random Vibration	20	Final	No discontinuities of 1 microsecond or longer duration occurred			No abnormalities	Pass
	Mechanical Shock	20	Final	No discontinuities of 1 microsecond or longer duration occurred			No abnormalities	Pass
	Contact resistance(*-2834235-*)	5	Final	8.59	4.09	5.80	<20mΩ	Pass

	Contact resistance(*-2834236-*)	5	Final	6.06	4.62	5.16	<20mΩ	Pass
	Contact resistance(*-2834237-*)	5	Final	5.52	4.51	4.96	<20mΩ	Pass
	Contact resistance(*-2834238-*)	5	Final	5.96	5.07	5.39	<20mΩ	Pass
	Examination of Product	20	Final	No physical damage occurred			No abnormalities	Pass
B	Examination of Product	20	Initial	No physical damage occurred			No abnormalities	Pass
	Contact resistance (*-2834235-*)	5	Initial	5.55	4.30	5.05	<20mΩ	Pass
	Contact resistance (*-2834236-*)	5	Initial	5.30	4.18	4.68	<20mΩ	Pass
	Contact resistance (*-2834237-*)	5	Initial	5.20	4.10	4.91	<20mΩ	Pass
	Contact resistance (*-2834238-*)	5	Initial	5.35	4.80	5.10	<20mΩ	Pass
	Current rating (20AWG/ 5.5A)	5	Initial	28.80	18.53	23.73	△30°C Max	Pass
	Current rating (22AWG/ 4A)	5	Initial	24.10	12.52	18.54	△30°C Max	Pass
	Humidity (cycling Temperature)	20	Final	No physical damage occurred			No abnormalities	Pass
	Temperature life	20	Final	No visual change found			No abnormalities	Pass
	Contact resistance (*-2834235-*)	5	Final	7.69	4.15	5.55	<20mΩ	Pass
	Contact resistance (*-2834236-*)	5	Final	7.12	4.25	5.31	<20mΩ	Pass
	Contact resistance (*-2834237-*)	5	Final	6.52	4.21	5.66	<20mΩ	Pass
	Contact resistance (*-2834238-*)	5	Final	6.96	5.25	5.60	<20mΩ	Pass
	Examination of Product	20	Final	No physical damage occurred			No abnormalities	Pass
	C	Examination of Product	20	Initial	No physical damage occurred			No abnormalities
Insulation resistance (unit:10 ¹¹ Ω) (*-2834235-*)		5	Initial	4.35	2.28	3.00	1000MΩ Min	Pass
Insulation resistance (unit:10 ¹¹ Ω) (*-2834236-*)		5	Initial	3.52	1.82	2.71	1000MΩ Min	Pass
Insulation resistance (unit:10 ¹¹ Ω) (*-2834237-*)		5	Initial	7.40	0.99	4.18	1000MΩ Min	Pass
Insulation resistance (unit:10 ¹¹ Ω) (*-2834238-*)		5	Initial	3.11	1.31	2.25	1000MΩ Min	Pass
Withstanding Voltage		20	Final	No Breakdown			No abnormalities	Pass
Thermal shock		20	Final	No visual change found			No abnormalities	Pass
Humidity (cycling Temperature)		20	Final	No physical damage occurred			No abnormalities	Pass
Insulation resistance (unit:10 ¹¹ Ω) (*-2834235-*)		5	Final	3.59	2.18	2.95	1000MΩ Min	Pass
Insulation resistance (unit:10 ¹¹ Ω) (*-2834236-*)		5	Final	4.55	2.32	3.20	1000MΩ Min	Pass
Insulation resistance (unit:10 ¹¹ Ω) (*-2834237-*)		5	Final	5.45	1.29	3.85	1000MΩ Min	Pass
Insulation resistance (unit:10 ¹¹ Ω) (*-2834238-*)		5	Final	4.69	2.30	3.51	1000MΩ Min	Pass
Withstanding Voltage		20	Final	No Breakdown			No abnormalities	Pass
Examination of Product		20	Final	No physical damage occurred			No abnormalities	Pass
Examination of Product		5	Initial	No physical damage occurred			No abnormalities	Pass

D	Contact retention force	5	Final	99.8	55.2	78.2	>14N	Pass
	Housing lock strength	5	Final	191.31	173.69	179.43	>30N	Pass
	Examination of Product	5	Final	No physical damage occurred			No abnormalities	Pass
E	Examination of Product	5	Initial	No physical damage occurred			No abnormalities	Pass
	Ingress protection	5	Final	No water ingress			No abnormalities	Pass
	Use aging	5	Final	No physical damage occurred			No abnormalities	Pass
	Ingress protection	5	Final	No water ingress			No abnormalities	Pass
	Examination of Product	5	Final	No physical damage occurred			No abnormalities	Pass
F	Examination of Product	5	Initial	No physical damage occurred			No abnormalities	Pass
	Mating force	5	Final	18.41	14.50	16.05	40N Max	Pass
	Durability	5	Final	No physical damage occurred			No abnormalities	Pass
	Unmating force (without latch)	5	Final	5.88	3.65	4.70	10N Max	Pass
	Examination of Product	5	Final	No physical damage occurred			No abnormalities	Pass

END