



<b>PRODUCT SPECIFICATION</b>		Issue No. T-2-69986	Rev. 0
Customer:	ARCTEC ELECTRONICS CORP		Issue date: December 10, 2024
Product Name:	SH Connector		Revision date:

This product specification contains the results of performance tests for the SH Connector.

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**1. PART NAME, PART NUMBER**

Part Name			Part Number	
Socket	Contact		SSH-002T-P0.2	
	Housing	Without protrusions	SHR-*V-S	
		With protrusions	SHR-*V-S-B	
Header	Top entry type	Connector part	BM*B-SRSS (LF)(SN)	
		Taping product	Without suction tape	BM*B-SRSS-TB (LF)(SN)
			With suction tape	BM*B-SRSS-TBT (LF)(SN)
	Side entry type	Connector part	SM*B-SRSS (LF)(SN)	
		Taping product	SM*B-SRSS-TB (LF)(SN)	

Note<sub>1</sub>: Number of circuits in one or two-digit figure is indicated in \*.

Note<sub>2</sub>: (LF)(SN) as identification part number indicating lead-free product shall be displayed on a label.

**2. MATERIAL & SURFACE FINISH**

Material and surface finish shall be as specified below.

Part Name			Material	Surface Finish, etc.
Taping part	Carrier tape		Polyester Polystyrene	/
	Cover tape		Polyester	
	Reel	Flange	Polystyrene	
		Core	Polypropylene Polystyrene	
	Suction tape		Polyimide	
Header	Base contact		Copper alloy	Tin-plated
	Reinforcement		Copper alloy	Tin-plated
	Base housing		PA (Heat resistance)	Color: Natural
Socket	Contact		Copper alloy	Tin-plated
	Housing		PBT	Color: Natural

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**3. CHARACTERISTICS**

Item		Rated Value
Current rating		1.0 A (AC/DC) (Note <sub>3</sub> )
Voltage rating		50 V (AC/DC)
Temperature range		-25°C to +85°C (Note <sub>4</sub> )
Applicable wire	Conductor size	AWG #26 to AWG #30
	Insulation O.D.	φ 0.8 mm to φ 0.5 mm
	Conductor spec.	Annealed copper stranded wire with tin coating.
Recommended solder paste thickness		120 μm to 150 μm

Note<sub>3</sub>: When AWG #26, AWG #28 is applied.

Note<sub>4</sub>: Including temperature rise in applying an electrical current.

**4. PERFORMANCE**

**4.1 Specimen**

Part Name		Part Number
Socket	Contact	SSH-002T-P0.2
	Housing	SHR-*V-S
		SHR-*V-S-B
Header	Top entry type	BM*B-SRSS-TB (LF)(SN)
	Side entry type	SM*B-SRSS-TB (LF)(SN)

Note<sub>5</sub>: Number of circuits in one or two-digit figure is indicated in \*.

**4.2 Test Conditions**

- When tested in accordance with the test conditions and methods specified in each item, each requirement shall be met.
- Unless otherwise specified, tests shall be conducted under the following ambient conditions specified in JIS C 60068-1 (IEC 60068-1) [Basic Environmental Testing Procedures General and Guidance].

Temperature: 15 to 35°C  
 Relative humidity: 25 to 75%

- For environmental tests, as a rule, the specimen assembled in the actual mounting state and the wire of AWG #28 shall be used.

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**4.3 Requirements, Test Methods & Test Results**

**4.3.1 Taping Part**

**4.3.1.1 Appearance**

- Requirement:
- (1) Sprocket hole shall not be covered with cover tape.
  - (2) Cover tape shall not run out of carrier tape.
  - (3) Cover tape shall not be peeled.
  - (4) There shall be no other defects.

Test method: Visual inspection.

Test result: Good.

**4.3.1.2 Tape Strength**

Requirement: There shall be no defects such as breakage.

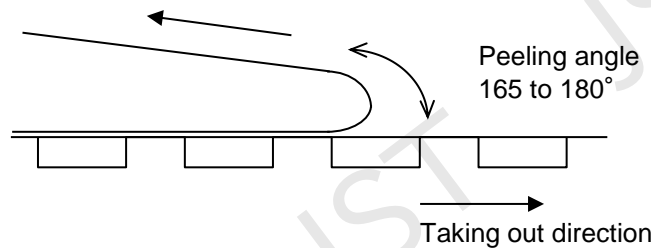
Test method: Pulling load of 10 N shall be applied to each of carrier tape and cover tape, in the direction of taking out the tape. Any defects such as breakage shall be checked.

Test result: There was no defect.

**4.3.1.3 Peel Strength of Cover Tape**

Requirement: 0.1 to 1 N

Test method: Measure a force to peel off cover tape, as illustrated below.  
(Peeling speed: 300 mm/min.)



Test result:	UNIT: N
0.20 to 0.52	
n=10	

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**4.3.2 Connector Part**

**4.3.2.1 Appearance**

Requirement: There shall be no crack, deformation or discoloration which may affect the performance specified in this specification.

Test method: Visual inspection.

Test result: Good.

**4.3.2.2 Mechanical Performance Test**

**4.3.2.2.1 Insertion Force (I.F.) & Withdrawal Force (W.F.)**

No. of circuits	Requirement:		UNIT: N
	At initial		At 30th
	I.F. (max.)	W.F. (min.)	W.F. (min.)
2	20	2	2
3	20	2	2
4	20	2	2
5	30	3	3
6	30	3	3
7	30	3	3
8	40	4	4
9	40	4	4
10	40	4	4
11	50	5	5
12	50	5	5
13	50	5	5
14	60	6	6
15	60	6	6

Test method: The header and the socket in which the contacts crimped properly with wire are inserted shall be mated and unmated on the mating axis. Initial insertion and withdrawal force, and withdrawal force at 30th shall be measured.  
(Testing speed: 1 to 5 mm/s)

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Test result:		UNIT: N		
No. of circuits	Items	Ave.	Max.	Min.
2	Initial I.F.	7.7	8.7	6.5
	Initial W.F.	6.7	7.3	5.8
	W.F. at 30th	4.2	5.0	3.8
3	Initial I.F.	8.7	9.3	6.8
	Initial W.F.	7.0	8.5	5.9
	W.F. at 30th	4.5	5.0	3.9
4	Initial I.F.	9.6	10.0	7.2
	Initial W.F.	8.4	9.1	7.9
	W.F. at 30th	5.7	6.2	4.4
5	Initial I.F.	10.6	11.4	8.1
	Initial W.F.	10.0	11.7	8.2
	W.F. at 30th	5.9	6.7	5.0
6	Initial I.F.	11.5	12.1	9.1
	Initial W.F.	10.9	12.0	9.6
	W.F. at 30th	6.3	7.1	6.2
7	Initial I.F.	12.0	13.7	10.4
	Initial W.F.	13.6	14.4	11.2
	W.F. at 30th	6.5	7.5	6.3
8	Initial I.F.	13.5	14.6	12.5
	Initial W.F.	14.0	15.6	13.0
	W.F. at 30th	7.3	7.9	6.0
9	Initial I.F.	14.4	15.3	12.6
	Initial W.F.	15.1	16.4	13.8
	W.F. at 30th	10.9	13.0	9.1
10	Initial I.F.	15.4	17.4	14.3
	Initial W.F.	15.6	17.8	14.1
	W.F. at 30th	12.3	14.5	10.4
11	Initial I.F.	17.1	19.3	15.6
	Initial W.F.	17.4	19.1	15.9
	W.F. at 30th	13.6	15.9	11.9
12	Initial I.F.	18.3	20.6	17.0
	Initial W.F.	18.3	20.5	16.5
	W.F. at 30th	15.0	17.4	12.8
13	Initial I.F.	19.7	22.3	18.2
	Initial W.F.	19.5	21.8	17.7
	W.F. at 30th	16.3	18.9	13.9
14	Initial I.F.	21.0	23.8	19.5
	Initial W.F.	20.8	23.1	18.9
	W.F. at 30th	17.6	20.4	15.1
15	Initial I.F.	22.3	25.3	20.8
	Initial W.F.	22.1	24.5	20.1
	W.F. at 30th	18.8	21.9	16.2

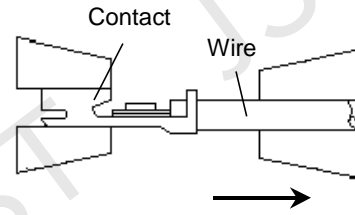
n=10

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**4.3.2.2.2 Crimp Tensile Strength**

Requirement:

Wire to be used	Requirements N min.
AWG #30	5
AWG #28	10
AWG #26	20



Test method: The properly crimped contact and wire shall be pulled to measure the tensile strength when the wire breaks or comes off. (Testing speed: 25 mm/min)

Test result:

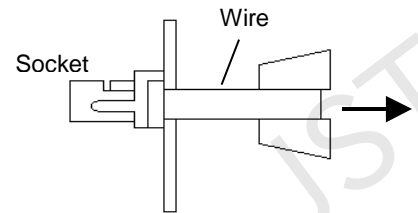
			UNIT: N
Wire size	Ave.	Max.	Min.
AWG #30	17.6	19.8	15.8
AWG #28	26.9	28.3	26.5
AWG #26	32.4	34.3	30.2

n=20

**4.3.2.2.3 Socket Contact Retention Force**

Requirement: 7 N min. (When AWG #28 is applied.)

Test method: The properly crimped contact shall be inserted into the housing. Pulling the contact in the axial direction, the force when separating the contact from the housing shall be measured. (Testing speed: 1 to 5 mm/s)



Test result:

			UNIT: N
Ave.	Max.	Min.	
11.1	13.5	10.3	

n=20

**4.3.2.2.4 Base Contact Retention Force**

Requirement: 5 N min.

Test method: The tip of the base contact shall be pushed perpendicularly to measure the force when the base contact starts to move from the base housing. (Testing speed: 25 mm/min)

Test result:

			UNIT: N
	Ave.	Max.	Min.
Top entry type	10.3	12.1	8.5
Side entry type	9.8	10.8	8.7

n=20

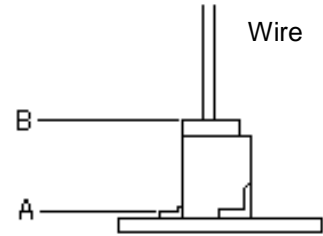
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**4.3.2.3 Electrical Performance Test**

**4.3.2.3.1 Contact Resistance**

Requirement: Initial: 20 mΩ max.  
 After tests: 40 mΩ max.

Test method: Contact resistance between points A and B of the specimen assembled in the actual mounting state as shown in the figure on the right shall be measured under the following conditions.



Test current: 1 mA (DC)  
 Open voltage: 20 mV max.  
 Wire to be used: AWG #28

Test result: See section on each environmental test.

**4.3.2.3.2 Current Continuity**

Requirement: There shall be no current discontinuity longer than 1 μs during vibration test.

Test method: Each circuit of the specimen assembled in the actual mounting state shall be connected in series and test current of 10 mA (DC) shall be applied. Current discontinuity longer than 1 μs during the test shall be detected by continuity meter.

Test result: See section on vibration test.

**4.3.2.3.3 Insulation Resistance**

Requirement: Initial: 100 MΩ min.  
 After tests: 100 MΩ min. (Humidity & Thermal shock tests)

Test method: 100 VDC shall be applied between adjacent pins of the mated specimen to measure insulation resistance. (The connector shall not be soldered to the PCB.)

Test result: UNIT: MΩ

Items	Measured values
Initial	100 min.
After humidity test	100 min.
After thermal shock test	100 min.

n=20

**4.3.2.3.4 Dielectric Withstanding Voltage**

Requirement: There shall be no breakdown or flashover.

Test method: Testing voltage specified below shall be applied between adjacent contacts of the mated specimen for one minute. (The connector shall not be soldered to the PCB.)

Initial: 500 VAC  
 After tests: 250 VAC (Humidity & Thermal shock tests)

Test result:

Items	Test results
Initial	Good.
After humidity test	Good.
After thermal shock test	Good.

n=20



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**4.3.2.4 Environmental Test**

**4.3.2.4.1 Durability**

Requirement: Contact resistance: Initial: 20 mΩ max. After the test: 40 mΩ max.

Test method: The header and the socket in which the contacts crimped properly with wire are inserted shall be mated and unmated by normal operation.  
After repeated 30 cycles, the contact resistance shall be measured.

Test result: UNIT: mΩ

Test item	Initial			After the test		
	Ave.	Max.	Min.	Ave.	Max.	Min.
Contact resistance	6.36	6.7	6.1	6.55	7.6	5.9

n=20

**4.3.2.4.2 Humidity**

Requirement: Contact resistance: Initial: 20 mΩ max. After the test: 40 mΩ max.  
Insulation resistance: Initial: 100 MΩ min. After the test: 100 MΩ min.  
Dielectric withstanding voltage: There shall be no breakdown or flashover.

Test method: The specimen assembled in the actual mounting state shall be placed in a humidity chamber of the following conditions. After the test, the contact resistance, insulation resistance, and dielectric withstanding voltage shall be measured.

Temperature: 40 ± 2°C  
Relative humidity: 90 to 95%  
Period: 240 h

Test result: UNIT: mΩ

Test item	Initial			After the test		
	Ave.	Max.	Min.	Ave.	Max.	Min.
Contact resistance	6.13	6.5	5.9	6.16	6.5	5.9

n=20

**4.3.2.4.3 Heat Aging**

Requirement: Contact resistance: Initial: 20 mΩ max. After the test: 40 mΩ max.

Test method: The specimen assembled in the actual mounting state shall be placed in a heat oven of the following conditions. After the test, the contact resistance shall be measured.

Temperature: 85 ± 2°C  
Period: 250 h

Test result: UNIT: mΩ

Test item	Initial			After the test		
	Ave.	Max.	Min.	Ave.	Max.	Min.
Contact resistance	6.03	6.6	5.9	6.33	7.0	6.1

n=20

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**4.3.2.4.4 Thermal Shock**

Requirement: Contact resistance: Initial: 20 mΩ max. After the test: 40 mΩ max.  
 Insulation resistance: Initial: 100 MΩ min. After the test: 100 MΩ min.  
 Dielectric withstanding voltage: There shall be no breakdown or flashover.

Test method: The specimen assembled in the actual mounting state shall be subjected to a thermal shock test of the following conditions. After the test, the contact resistance, insulation resistance, and dielectric withstanding voltage shall be measured.

1 cycle consists of:  
 -55 ± 3°C for 30 minutes  
 +85 ± 2°C for 30 minutes  
 Total cycles: 25 cycles

Test result: UNIT: mΩ

Test item	Initial			After the test		
	Ave.	Max.	Min.	Ave.	Max.	Min.
Contact resistance	6.11	6.5	5.7	6.22	6.6	5.8

n=20

**4.3.2.4.5 Hydrogen Sulfide Gas**

Requirement: Contact resistance: Initial: 20 mΩ max. After the test: 40 mΩ max.

Test method: The specimen assembled in the actual mounting state shall be subjected to hydrogen sulfide gas of the following conditions. After the test, the contact resistance shall be measured.

Concentration: 3 ± 1 ppm  
 Temperature: 40 ± 2°C  
 Relative humidity: 80 ± 5%  
 Period: 96 h

Test result: UNIT: mΩ

Test item	Initial			After the test		
	Ave.	Max.	Min.	Ave.	Max.	Min.
Contact resistance	6.18	6.7	5.8	6.11	6.8	5.8

n=20

**4.3.2.4.6 Salt Spray**

Requirement: Contact resistance: Initial: 20 mΩ max. After the test: 40 mΩ max.

Test method: The specimen assembled in the actual mounting state shall be subjected to a salt spray test of the following conditions. After the test, it shall be washed with running water and dried before the measurement of contact resistance.

Temperature: 35 ± 2°C  
 Concentration: 5% in weight  
 Period: 48 h

Test result: UNIT: mΩ

Test item	Initial			After the test		
	Ave.	Max.	Min.	Ave.	Max.	Min.
Contact resistance	6.09	6.5	5.8	6.28	6.7	5.9

n=20

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**4.3.2.4.7 Vibration**

Requirement: Contact resistance: Initial: 20 mΩ max. After the test: 40 mΩ max.  
 Current continuity: There shall be no current discontinuity longer than 1 μs.

Test method: The specimen assembled in the actual mounting state shall be installed to the testing jig and subjected to a vibration test of the following conditions. During the test, the current continuity shall be checked. After the test, the contact resistance shall be measured.

Frequency: 10 to 55 to 10 Hz swept in 1 min  
 Amplitude: 1.52 mm  
 Direction: Each of X, Y, and Z-axis directions  
 \*Each axis shall be at right angles to others.  
 Period: 2 h for each direction

Test result: UNIT: mΩ

Test item	Initial			After the test		
	Ave.	Max.	Min.	Ave.	Max.	Min.
Contact resistance	6.44	7.0	6.1	6.48	7.3	6.2

Current continuity	There was no current discontinuity longer than 1 μs.
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n=10

**4.3.2.4.8 Ammonia Gas**

Requirement: There shall be no abnormalities such as stress corrosion cracking.

Test method: The mated specimen shall be subjected to an ammonia gas test of the following conditions. (The connector shall not be soldered to the PCB.)  
 After the test, the stress corrosion cracking and other abnormalities shall be checked.

Ammonia solution: 3% in weight  
 Solution volume: 25 ml per liter of volume  
 Period: 7 h

Test result:

There were no stress corrosion cracking and other abnormalities.
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n=10

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**4.3.2.5 Solder Test**

**4.3.2.5.1 Solderability**

Requirement: Plating surface of solder-dipping section of the specimen shall be covered with smooth solder.

Test method: Fluxed soldering section of the specimen shall be dipped in solder of the following conditions.

Solder: Sn-3Ag-0.5Cu  
 Flux: Activation flux  
 (CF-110VH-2A made by Tamura Corporation)  
 Solder temperature: 245 ± 3°C  
 Immersion period: 3 ± 0.5 s

Test result:

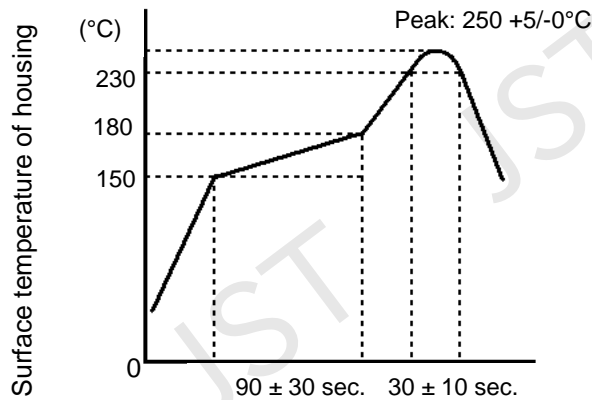
Good.

n=10

**4.3.2.5.2 Resistance to Soldering Heat**

Requirement: There shall be no deformation or damage which may affect the performance.

Test method: The specimen shall be subjected to a reflow heating of the condition shown in the graph below. After that, the appearance shall be visually observed. Material of the testing PCB shall be glass base epoxy resin and its thickness shall be 0.8 mm.



[Temperature profile for reflow soldering]

Test result:

There was no deformation or damage which may affect the performance.

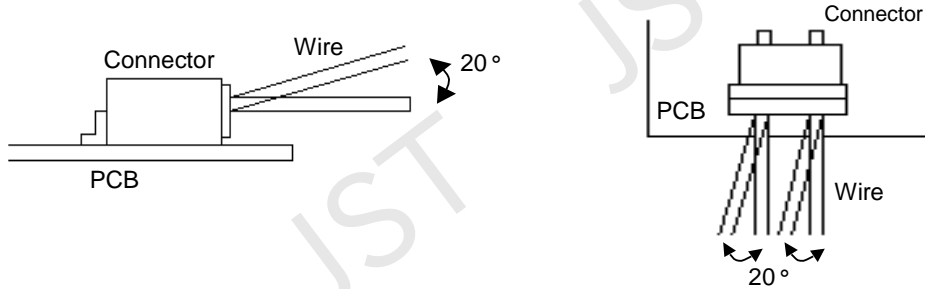
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**5. HANDLING PRECAUTIONS**

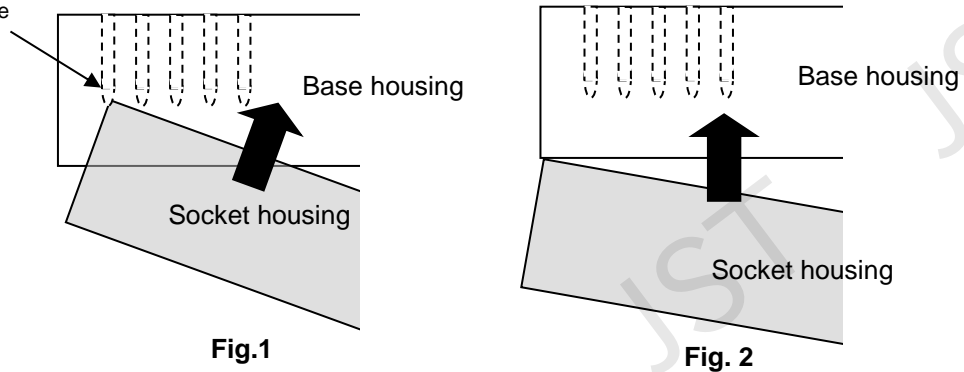
**5.1 Note on handling wires**

Make an allowance for handling wires so as not to apply the load more than that of bending wires to a connector. In mating operation, mate a connector with holding wires in a bundle on the same axis to mating axis, and unmate a connector within 20 degrees to the mating axis.



○ When the socket housing is inserted into the base housing improperly as shown in the Fig. 1, the socket housing comes into contact with the base contact, and it leads to the deformation. Insert the socket housing along with the base housing and do the mating operation on the same axis as much as possible. (See Fig.2.)

Socket housing contact with base contacts causes the base contacts to become deformed.



○ Even in the case of withdrawing straightly on the mating axis, the same action as that of withdrawing it with prying may be led if only several wires at the ends are pulled without holding whole wires in bulk. In withdrawing the socket, be sure to hold the wires in a bundle within 20 degrees to the mating axis.

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## 6. PACKAGING SPECIFICATIONS (EMBOSSSED-TAPING)

### 6.1 Packaging Quantity

Quantities to be wound specified below shall be the standard quantity.

Header (Top entry type):	1,500 pcs./reel
Header (Side entry type):	3,000 pcs./reel

### 6.2 Packaging Method

- (1) Each header shall be put into the predetermined<sup>\*1)</sup> of an embossed carrier tape, and a cover tape shall be heat-sealed onto the carrier tape.
- (2) After sealed, the carrier tape shall be wound<sup>\*2)</sup> to reel to be specified quantity<sup>\*3)</sup> and the end of the cover tape<sup>\*4)</sup> shall be fixed by adhesive tape.
- (3) After winding, the specified number of reels shall be put in a cardboard box for shipment.

Notes \*1: As indicated in the relevant drawings attached to this specification.

\*2: Winding direction is as indicated in the relevant drawings attached to this specification.

\*3: As indicated in Section 6.1.

\*4: Corresponding to the leader part in taking out the tape.

How to treat the both ends of tape shall be as indicated in the relevant drawings.

### 6.3 Marking

A label indicating the following items shall be pasted on the flange of reel.

- (1) Part number
- (2) Quantity
- (3) Manufacturing lot number
- (4) Company name or its abbreviation
- (5) Other necessary items

## 7. STORAGE

- Recommended storage condition: Temperature: 5°C to 35°C, Relative humidity 60% or less (Under packaging like the state of JST shipment)

Keep off direct sunlight, places exposing to such corrosive gas as industrial gas (generate from a stove and whatnot) and ammonia gas (generate from a toilet and whatnot), dusty place and condensation.

Note that the resin molding part may break due to transportation and handling, such as processing and mating, under dry or low temperature condition.

- Recommended storage period: Within 6 months after delivering to your company.

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**8. NOTES**

**8.1 Whisker**

This product has been treated with plating to suppress whisker growth; however, it does not completely eliminate the possibility of whisker occurrence.

**8.2 Black Spots**

Although black spots may appear on the resin molded part of the connector, please use this connector because it does not affect the product performance.

**8.3 Blister**

Considering handling of this connector in mating operation, heat-resistant PA resin with excellent toughness is used for the material of a housing. However, 'blister' may generate on the outer surface of the housing during the process of reflow soldering, depending on the condition of moisture absorption of the housing and the condition of reflow soldering. This "blister" does not cause the physical property change of PA resin. If the appearance is a concern, blister can be inhibited when predrying is carried out under the following conditions before use (reflow soldering).

Dry conditions: 50°C to 55°C, More than 20 hours (With embossed-reel)

※Product after such processing, please use it as soon as possible.