

	PRODUCT SPECIFICATION	No. ER07-A055	Date Issued:
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Prepared by:	Checked by:	Reviewed by:	Approved by:





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1. PART NAME, PART NUMBER & DRAWING NUMBER

Part Name		Part Number		Drawing Number	
Top entry type	Loose piece product		BM*B-GHDS-G (LF)(SN)	KRD-39931
header	Taping proc	duct	BM*B-GHDS-G-TF	= (LF)(SN)	KRD-39932
Applicable	Housing	1	GHDR-*V-S		KRD-39933
socket	Contact 00	02 type	SGHD-002GA-P0.	2	KRD-39934

Note1: The number of circuits in two-digit figures is indicated in *.

Note₂: (LF) and (SN) as identification part number indicating lead-free product and tin-plated specification of lead-free product shall be displayed on a label until all products are shifted to the lead-free.

2. 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.

Pa	art Name	Material	Surface finish etc.
	Base contact	Phosphor bronze	Nickel-underplated Gold-plated
Header	Reinforcement	Brass	Copper-underplated Tin-plated
rieddei	Wafer	9T Nylon	Color: Natural Flammability: UL94V-0
Socket	Housing	PBT	Color: Natural Flammability: UL94V-0
	Contact	Phosphor bronze	Nickel-underplated Selective gold-plated
Tana	Carrier tape	Polyester	
Tape	Cover tape	Polyester	
	Flange	Polystyrene	
Reel	Core	Polystyrene Polypropylene	

3. CHARACTERISTICS (CONNECTOR PART)

Items		Rated values	
Current rating		1.0A (AC, DC)	(Note ₃)
Voltage rating		50V (AC, DC)	
Temperature ran	ge	-25 to +85 °C	(Note ₄)
	Conductor spec.	Tin-plated annealed copper wire (s	stranded wire)
Applicable wire Conductor size		AWG#30 to AWG#26	
	Insulation O.D.	φ0.8 mm to φ1.0 mm	

Note₃: When AWG#26 applied.

Note₄: Including temperature rise in applying an electrical current.

4. ABOUT WHISKER

Although the lead-free plating of this product has performed re-flow tin plating which ensures maximum effectiveness for retarding whisker growth, it is not possible to completely eliminate the whisker problem.



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5. PACKAGING SPECIFICATION (Embossed-taping)

5.1 Packaging quantity

Quantity to be wound shall be 1,250 pieces per reel for top and side entry type as the standard quantity.

5.2 Packaging method

- (1) Each product shall be put into the fixed position^{*1} of the embossed carrier tape individually. The tape shall be sealed with cover tape by heat treatment.
- (2) After sealed, carrier tape shall be wound^{*2} to reel to be specified quantity and the end of cover tape^{*3} shall be fixed to flange of reel by adhesive tape.
- (3) The wound reel shall be packaged in a corrugated cardboard box for shipment.
 - *1: See the attached drawings.
 - *2: The direction to be wound; See the attached drawings.
 - *3: Corresponding to leader part in taking out the tape. The treatment of the end of tape; See the attached drawings.

5.3 Marking

The label marked the following items shall be attached to the flange part of a reel.

- (1) Part number
- (2) Quantity
- (3) Manufacturing lot No.
- (4) Company name or its abbreviation
- (5) Other necessary items

5.4 Storage

Store the products in a clean room under the JST packaging conditions.

Storage temperature: 5 to 35 °C Storage humidity: 60% max.

6. SPECIMEN

Part Name			Part Number	
Header Top entry type		BM*B-GHDS-G (LF)(SN)		
Applicable cooket	Housing		GHDR-*V-S	
Applicable socket	Contact	002 type	SGHD-002GA-P0.2	

Note₅: The number of circuits in two-digit figures is indicated in *.



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7. TEST CONDITIONS

7.1 When tested in accordance with the test conditions and methods specified in each item, each requirement shall be met. Unless otherwise specified, the 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 °CRelative humidity:25 to 75 %

7.2 For environmental tests, as a rule, the specimen assembled for actual use and the wire of AWG#26 shall be used.

8. REQUIREMENTS, TEST METHODS & TEST RESULTS

- 8.1 Taping Part
 - 8.1.1 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.

8.1.2 Tensile Strength of Tape

Requirement: There shall be no defects such as breakage.

Test method: Pulling load of 10N shall be applied to each of carrier and cover tapes. Pulling direction shall be its pulling-out direction.

Test result: There was no defect.

8.1.3 Peel Strength of Cover Tape

Requirement: 0.1 to 1N

Test method: Cover tape shall be pulled as shown in the figure on the right side. (Peeling speed: 300mm/min.)



Test result: 0.19 to 0.38 N n=20



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8.2 Connector Part

8.2.1 Appearance

Requirement: There shall not be crack, deformation or discoloration which may affect the performance specified in this specification.

Test method: Visual inspection.

Test result: Good.

8.2.2 Mechanical Performance Test

8.2.2.1 Insertion Force (I.F.) & Withdrawal Force (W.F.)

Requirement:

No. of	At ir	At 30th	
circuits	I.F. (N max.)	W.F. (N min.)	W.F. (N min.)
20	50	5	5

Test method: A socket and a header shall be mated and unmated on the mating axis. Initial insertion and withdrawal force and withdrawal force at 30th shall be measured. A housing lock shall be removed for the measurement. (Testing speed: 1 to 5mm/sec.)

Test result:

UNIT: N No. of Items Ave. Max. Min. circuits Initial I.F. 10.8 11.5 10.3 20 Initial W.F. 10.6 9.4 9.8 W.F. at 30th 9.6 10.6 8.9

n=10 (No. of connectors)

8.2.2.2 Base Contact Retention Force

Requirement: 3N min.

Test method: A base contact shall be pushed in the axial direction. The load to make the base contact start moving from the wafer shall be measured. (Testing speed: 1 to 5mm/sec.)

Test method:

Unit: N

	Measured values		
	Ave.	Max.	Min.
Base contact retention force	5.3	6.8	4.7

n=20 (No. of pins)



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8.2.2.3 Crimp Tensile Strength

Requirement:



Test method: Pulling load shall be applied to a correctly crimped socket contact and a wire. The load to pull the wire out of the socket contact or break the wire shall be measured. (Testing speed: 1 to 5mm/sec.)

Test result:

			UNIT: N
Wire size	Ave.	Max.	Min.
AWG #26	38.5	40.4	36.4
AWG #28	26.9	27.8	25.6
AWG #30	14.0	15.4	12.6
		5 0	0 (No. of pipe)

n=20 (No. of pins)

8.2.2.4 Socket Contact Retention Force

Requirement: 5N min. (When AWG#26 applied.)

Test method: A correctly crimped socket contact shall be mounted in a housing, and pulling load shall be applied between a housing and a socket contact. The load to pull the socket contact or wire out of the housing shall be measured. (Testing speed: 1 to 5mm/sec.)



Test method:

			Unit: N
	Measured values		
	Ave.	Max.	Min.
Socket contact retention force	14.4	15.3	13.8

n=20 (No. of pins)

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8.2.2.5 Locking Strength

Requirement: 20N min.

Test method: A socket housing and a header shall be mated. And then, the load shall be applied between them. The load to come them off each other or to break the housing shall be measured. (Testing speed: $1 \sim 5 \text{ mm/sec.}$)

Test method:

			Unit. N	
	Measured values			
	Ave. Max. Min.			
20-circuit	72.8	74.5	70.8	
			n=10 (No. of pins)	

8.2.3 Electrical Performance Test

8.2.3.1 Contact Resistance

Requirement: Initial: $30 \text{ m}\Omega$ max. After tests: $50 \text{ m}\Omega$ max.

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

Test current: 1mA (DC) Open voltage: 20mV max. Wire to be used: AWG#26



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Test result: See each environmental test item.

8.2.3.2 Current Continuity

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

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

Test result: See Vibration test item.



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8.2.3.3 Insulation Resistance

Requirement: Initial: $100M\Omega$ min.After tests: $100M\Omega$ min. (Humidity & thermal shock tests.)

Test method: 250V DC shall be applied between adjacent contacts of a mated specimen to measure insulation resistance. (A header shall not be soldered onto a PCB.)

Test result:

Items	Measured values	
Initial	500MΩ min.	
After humidity test	500MΩ min.	
After thermal shock test	500MΩ min.	
	n 00 (Ne of compositors)	

n=20 (No. of connectors)

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8.2.3.4 Dielectric Withstanding Voltage

Requirement: There shall be no breakdown or flashover.

Test method: Testing voltage specified below shall be applied between adjacent contacts of a mated specimen for one minute. (A header shall not be soldered onto a PCB.)

Initial:	500V AC	
After tests:	250V AC	(Humidity & thermal shock tests.)

Test result:

Initial	Good
After humidity test	Good
After heat aging test	Good
	~ 00 (NIa of comparison)

n=20 (No. of connectors)



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8.2.4 Environmental Test

8.2.4.1 Durability

Requirement: Contact resistance shall be 50 m Ω max. after the test.

Test method: A socket and a header shall be mated and unmated by the normal operation way. After repeated 30 cycles, contact resistance shall be measured.

Test result:

						UNIT: mΩ
Test item		Initial		A	fter the tes	st
Contact	Ave.	Max.	Min.	Ave.	Max.	Min.
resistance	12.1	16.1	10.7	11.8	16.4	10.6
					10 (1)	

n=40 (No. of pins)

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8.2.4.2 Humidity

Requirement: Contact resistance shall be 50 m Ω max. after the test. Insulation resistance shall be 100 M Ω min. after the test. There shall be no breakdown or flashover on the dielectric withstanding voltage test.

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

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

Test result:

						UNIT: mΩ
Test item		Initial		A	fter the tes	st
Contact	Ave.	Max.	Min.	Ave.	Max.	Min.
resistance	13.0	17.6	11.7	13.8	16.6	11.9

n=40 (No. of pins)



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8.2.4.3 Heat Aging

Requirement: Contact resistance shall be 50 m Ω max. after the test.

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

Temperature:	85 ± 2 °C
Period:	250 hours

Test result:

						UNIT: mΩ
Test item		Initial		A	fter the tes	st
Contact	Ave.	Max.	Min.	Ave.	Max.	Min.
resistance	13.0	17.3	11.6	12.7	17.4	11.6

n=40 (No. of pins)

Thermal Shock 8.2.4.4

Requirement: Contact resistance shall be 50 m Ω max. after the test. Insulation resistance shall be 100 M Ω min. after the test. There shall be no breakdown or flashover on the dielectric withstanding voltage test.

Test method: The specimen shall be subjected to a 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 ± 3 °C for 30 minutes +85 ± 2 °C for 30 minutes Total cycles: 25 cycles

Test result:

UNIT: mΩ
After the test

Test item	Initial		After the test			
Contact	Ave.	Max.	Min.	Ave.	Max.	Min.
resistance	13.1	17.3	11.9	12.5	18.7	11.3

n=40 (No. of pins)



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8.2.4.5 Sulfur Dioxide Gas

Requirement: Contact resistance shall be $50m\Omega$ max. after the test.

Test method: The specimen shall be subjected to sulfur dioixde gas of the following conditions. After the test, contact resistance shall be measured.

Concentration:	10 ± 3 ppm
Temperature:	40 ± 2 ℃
Relative humidity:	80 ± 5 %
Period:	96 hours

Test result:

UNIT: $m\Omega$

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Test item	Initial			A	After the tes	st
Contact	Ave.	Max.	Min.	Ave.	Max.	Min.
resistance	13.0	15.9	12.1	13.8	16.6	11.0
					p 40 /N/	o of pipo)

n=40 (No. of pins)

8.2.4.6 Salt Spray

Requirement: Contact resistance shall be 50 m Ω max. after the test.

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

Temperature: $35 \pm 2 \circ C$ Concentration:5 % in weightPeriod:48 hours

Test result:

UNIT: $m\Omega$

Test item	Initial		A	fter the tes	st	
Contact	Ave.	Max.	Min.	Ave.	Max.	Min.
resistance	12.8	16.6	11.4	13.6	17.7	11.4

n=40 (No. of pins)



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8.2.4.7 Vibration

Requirement: Contact resistance shall be 50 m Ω max. after the test. There shall be no current discontinuity longer than 1 microsecond during the test.

Test method: The specimen shall be 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.

Frequency:	10-55-10 Hz/minute
Amplitude:	1.52 mm
Direction:	Each of X,Y,Z-axis directions
	*Each axis shall be at right angles to others.
Period:	2 hours for each direction

Test result:

I INIT[,] mO

						01111.11132
Test item	Initial			After the test		
Contact	Ave.	Max.	Min.	Ave.	Max.	Min.
resistance	13.8	18.3	12.2	12.9	18.1	11.9
Current continuity	There was no current discontinuity longer than 1 microsecond.					
n=40 (No. of pins)						

n=40 (No. of pins)

8.2.4.8 Ammonia Gas

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Requirement: There shall be no stress corrosion cracking.

Test method: A mated specimen shall be subjected to an ammonia gas test of the following conditions. After the test, stress corrosion cracking shall be checked. (A header shall not be soldered.)

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

Test result:

There was no stress corrosion cracking.

n=10 (No. of connectors)



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8.2.5 Solder Test

8.2.5.1 Solderability

Requirement: Plating surface of solder-dipping section of a 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-3.0Ag-0.5Cu
Flux:	Activation flux (CF-110VH-2A)
Solder temperature:	245 ± 3 °C
Immersion period:	3 ± 0.5 seconds

Test result:

Good.

n=10 (No. of pins)

8.2.5.2 Resistance to Soldering Heat

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

Test method:

[By soldering iron]

A specimen shall be soldered by soldering iron of the following conditions. After the test, the appearance shall be observed. No abnormal load such as lateral load shall be applied to the specimen during the test.

> Temperature of the tip: 350 °C Soldering period: 3 seconds

Test result:

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

n=10 (No. of connectors)



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[By reflow soldering]

A specimen shall be subjected to reflow soldering of the condition shown in the graph below. After the test, the appearance shall be observed. Material of testing PCB shall be glass base epoxy resin and its thickness shall be 1.6 mm.



[Temperature profile for reflow soldering]

Test result:

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

n=10 (No. of connectors)

9. NOTICE

9.1 For blister

Considering handling of GHD connector in mating operation, tenacious heat-resistant nylon is used for the material of a wafer. But 'blister' may generate on the outer surface of the wafer during the process of reflow soldering, depending on the condition of water absorption of a wafer and the condition of reflow soldering.

In regard to this "blister", the 'blister' is not caused by decomposition of resin, and it does not affect the performances of the connector.





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AND SHOULD NOT BE USED WITHOUT WRITTEN PERMISSION.

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