

承認書

SPECIFICATION FOR APPROVAL



客 戶 名 稱 : 鴻海精密工業股份有限公司

CUSTOMER NAME _____

客 戶 料 號 :

CUSTOMER PART NO. _____
產 品 名 稱 : **EH CONNECTOR / 4 pin Top entry type**
PRODUCT NO. _____ having a post extension length of 4.0m/m

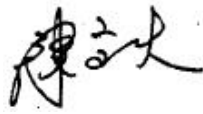
佳 順 品 名 : **B4B-EH(LF)(SN)**

備 註 : (1)Weight(單顆淨重): 0.239 g/ pc

(2)MPQ: 1000PCS

(3)一般圖面上無記載之尺寸即無法提供。

若有必要，則需提出理由說明。

客戶簽章 Customer Approve	承認公司簽章 Vendor Signature	審核人 Checked
	周淑英 2018/07/13	

CSE 佳順電子股份有限公司

CHIA-SOON ELECTRONICS CO., LTD.

台北市內湖區安康路 145-1 號

TEL : 02-27955787

FAX : 02-27953296



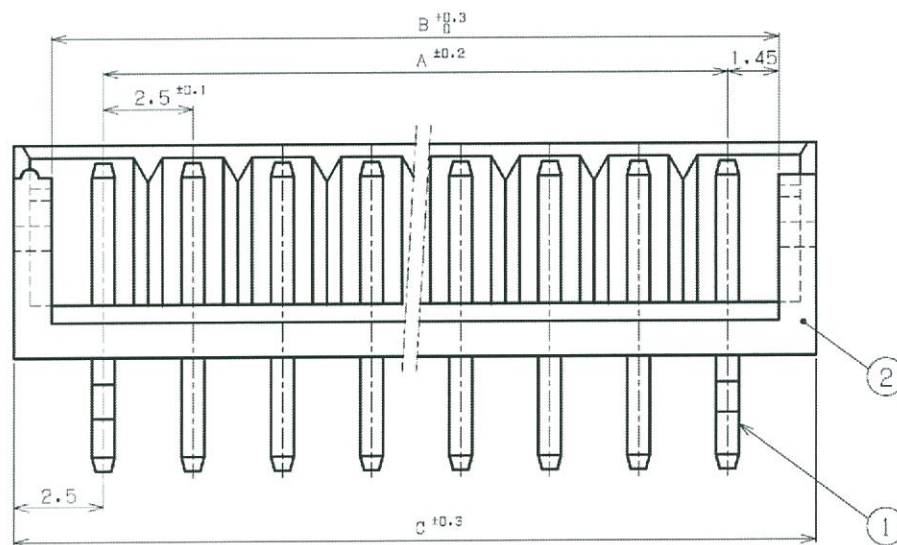
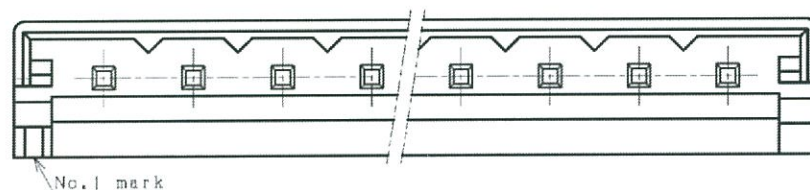
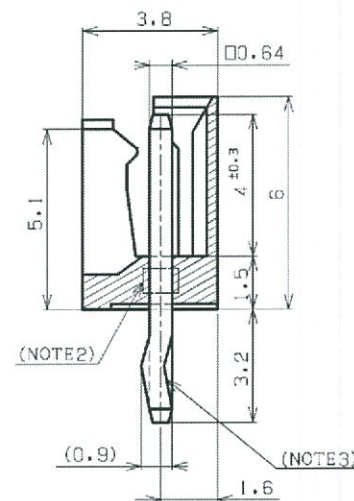
REV.	DESCRIPTION	DATE	DESIGNED
△			



NOTE

1. Unless otherwise specified, tolerances are $0 < L \leq 3.0: \pm 0.3$
 $3.0 < L: \pm 0.4$
2. Post side with holding construction for housing.
3. Posts at the both side shall be clinched.
4. Tolerance of hole pitch on PCB are not cumulative.

Cir- cuits	A	B	C
3	5.0	7.9	10.0
4	7.5	10.4	12.5
5	10.0	12.9	15.0
6	12.5	15.4	17.5
7	15.0	17.9	20.0
8	17.5	20.4	22.5
9	20.0	22.9	25.0
10	22.5	25.4	27.5
11	25.0	27.9	30.0
12	27.5	30.4	32.5
13	30.0	32.9	35.0
14	32.5	35.4	37.5
15	35.0	37.9	40.0



Recommendable P.C. Board hole layout

2	WAFER	66NYLON		UL94V-0, NATURAL
1	POST	BRASS	COPPER-UNDERPLATED TIN-PLATED	
No.	PART NAME	MATERIAL	SURFACE FINISH	REMARKS
SIZE	UNIT	SCALE	PROJECTION	DATE
A3	METRIC	7:1		NOV.14.2014
APPROVED	CHECKED	DESIGNED	DRAWN	CUSTOMER
S.S	T.T	Y.T		Hon Hai Precision Ind. Co. Ltd.
				SERIES NAME
				EH, HR CONNECTOR
				PART No.
				B () B-SH (LF) (SN)
				DRAWING No.
				KRD-50716
				RO

JST J.S.T.MFG.CO.,LTD.

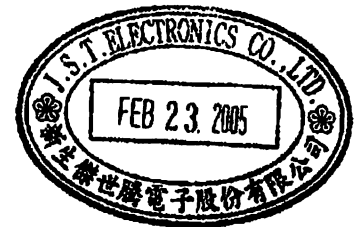
PRODUCT SPECIFICATION

No. T-1-2178 (R-1-2178)		Date Issued: February 15, 2005
Customer:		Revised:
Date Revised:		
Title Subject: EH CONNECTOR (Lead-free product)		Issued by: Osaka Engineering Center

This product specification contains the results of performance tests for the EH Connector (Lead-free product).

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Prepared by: <u>R. Hiraike</u>	Checked by: <u>K. Ichimi</u>	Reviewed by: <u>K. Wanaka</u>	Approved by: <u>K. Shimizu</u>
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1. PART NAME & PART NUMBER

Part Name		Part Number
Contact		SEH-001T-P0.6
Housing		EHR-*
Header	Top entry type	B2B-EH (LF)(SN)
		B*B-EH (LF)(SN)
		B2B-EH-A (LF)(SN)
		B*B-EH-A (LF)(SN)
	Side entry type	S*B-EH (LF)(SN)

Note₁: Number of circuits in one or two-digit figures is indicated in *.

Note₂: (LF)(SN) suffix on the part number as identification part number indicating pure 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.

Construction		Material	Surface Finish, etc.
Contact		Phosphor bronze	Tin-plated
Housing		66 Nylon	UL94V-0
Header	Wafer	66 Nylon	UL94V-0
	Post	Brass	Copper-underplated Tin-plated

3. CHARACTERISTICS

Items		Rated value	
Current rating		3 A (AC, DC)	(Note ₃)
Voltage rating		250 V (AC, DC)	
Temperature range		-25 to +85 °C	(Note ₄)
Applicable wire	Conductor size	AWG#30 to #22	
	Insulation O.D.	φ1.0 to φ1.9 mm	
	Conductor spec.	Tin-plated annealed copper wire (stranded wire).	
Recommended printed circuit board (PCB)	Thickness	0.8 to 1.6 mm	
	Hole size	0.9+0.1/-0 mm	(Note ₅)

Note₃: When AWG#22 applied.

Note₄: Including temperature rise in applying an electrical current.

Note₅: Recommended values when paper based epoxy resin PCB with drilled hole is used. Tolerance changes depending on PCB material and piercing method.

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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.

5. SPECIMEN

Part Name	Part Number
Contact	SEH-001T-P0.6
Housing	EHR-*
Header	B*B-EH (LF)(SN)
	B*B-EH-A (LF)(SN)
	S*B-EH (LF)(SN)

Note₆: Number of circuits in one or two-digit figures is indicated in *.

6. TEST CONDITIONS

- 6.1 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 %

- 6.2 For environmental tests, as a rule, a specimen assembled for actual use and the wire of AWG#22 UL1007 style shall be used.

7. REQUIREMENTS, TEST METHODS & TEST RESULTS

7.1 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.

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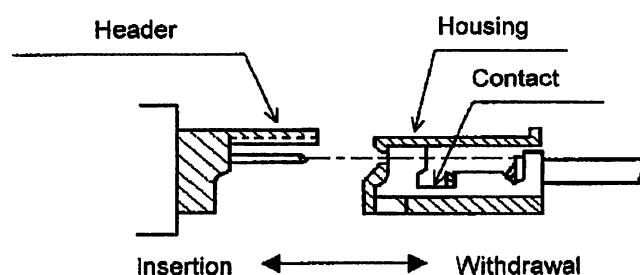
7.2 Mechanical Performance Test

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

Requirement:

No. of circuits	At Initial		At 50th
	I.F. (N max.)	W.F. (N min.)	W.F. (N min.)
2	19.6	3.9	2.0
3	24.5	4.9	2.9
4	29.4	5.9	3.9
5	34.3	6.9	4.9
6	39.2	7.8	5.9
7	44.1	8.8	6.9
8	49.0	9.8	7.8
9	53.9	10.8	8.8
10	58.8	11.8	9.8
11	63.7	12.7	10.8
12	68.6	13.7	11.8
13	73.5	14.7	12.7
14	78.4	15.7	13.7
15	83.3	16.7	14.7

Test method: A housing with crimped contacts and a header shall be mated and unmated on the same axis. Initial insertion and withdrawal forces and also withdrawal force at 50th shall be measured. (Testing speed: 1 to 5mm/sec.)



For the measurement of single circuit, a housing lock shall be removed.

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Test result:

UNIT: N

No. of circuits		Ave.	Max.	Min.
2	Initial I.F.	12.40	12.8	11.9
	Initial W.F.	16.42	17.5	15.5
	W.F. at 50th	11.10	11.9	10.5
3	Initial I.F.	15.33	16.2	14.1
	Initial W.F.	18.63	20.2	16.4
	W.F. at 50th	11.98	13.1	10.3
4	Initial I.F.	18.30	19.4	15.8
	Initial W.F.	22.31	24.8	20.7
	W.F. at 50th	13.32	14.5	11.9
5	Initial I.F.	22.33	24.1	21.0
	Initial W.F.	24.50	26.7	22.1
	W.F. at 50th	15.45	17.0	13.1
6	Initial I.F.	25.82	27.0	23.1
	Initial W.F.	27.31	28.2	26.4
	W.F. at 50th	19.66	22.1	15.3
7	Initial I.F.	32.98	35.6	30.4
	Initial W.F.	32.10	36.8	29.8
	W.F. at 50th	21.10	23.4	17.9
8	Initial I.F.	38.76	40.5	36.3
	Initial W.F.	37.16	39.4	34.5
	W.F. at 50th	23.76	27.0	21.3
9	Initial I.F.	43.44	44.9	41.0
	Initial W.F.	41.30	45.1	39.4
	W.F. at 50th	25.30	27.0	23.1
10	Initial I.F.	47.09	50.0	45.4
	Initial W.F.	45.30	46.8	43.1
	W.F. at 50th	27.42	29.5	23.4
11	Initial I.F.	50.98	53.4	48.1
	Initial W.F.	48.39	51.9	45.1
	W.F. at 50th	28.32	31.3	25.5
12	Initial I.F.	54.28	57.8	52.8
	Initial W.F.	51.47	54.9	47.1
	W.F. at 50th	29.80	32.5	26.4
13	Initial I.F.	61.28	64.8	58.2
	Initial W.F.	57.42	60.2	52.6
	W.F. at 50th	30.86	36.3	25.8
14	Initial I.F.	65.32	68.9	62.1
	Initial W.F.	58.30	60.0	55.4
	W.F. at 50th	35.66	37.2	32.5
15	Initial I.F.	68.32	70.3	65.8
	Initial W.F.	58.60	61.3	55.3
	W.F. at 50th	36.59	40.8	33.1

n=20

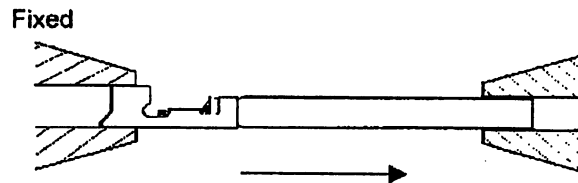
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7.2.2 Crimp Tensile Strength

Requirement:

Wire to be used	Requirements
AWG #30	4.9N min.
AWG #28	9.8N min.
AWG #26	19.6N min.
AWG #24	29.4N min.
AWG #22	49.0N Min.

Test method: Pulling load shall be applied to a correctly crimped contact and a wire. The load to pull the wire out of the contact or break the wire shall be measured. (Testing speed: 25mm/min.)



Test result:

UNIT: N			
Wire size	Ave.	Max.	Min.
AWG #30	13.5	15.7	9.8
AWG #28	21.9	24.5	19.6
AWG #26	35.2	38.2	31.4
AWG #24	55.1	56.8	51.0
AWG #22	78.5	80.4	75.5

n=10

7.2.3 Contact Retention Force

Requirement: 14.7N min.

Test method: Crimped contacts shall be mounted in a housing and pulled in the axial direction. The load to pull the contact out of the housing shall be measured. (Testing speed: 1 to 5mm/sec.)

Test result:

UNIT: N		
Ave.	Max.	Min.
26.7	28.4	25.5

n=18

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7.2.4 Post Retention Force

Requirement: 9.8N min.

Test method: The end of a post shall be pushed perpendicularly. The load to make the post start moving from the wafer shall be measured.
(Testing speed: 25mm/min.)

Test result:

UNIT: N		
Ave.	Max.	Min.
17.0	18.9	14.8
n=20		

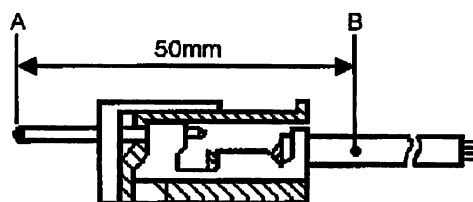
7.3 Electrical Performance Test

7.3.1 Contact Resistance

Requirement: Initial: 10mΩ max.
After tests: 20mΩ max.

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

Test current: 10mA (DC)
Open voltage: 20mV max.
Wire to be used: AWG#22



Test result: See each environmental test item.

7.3.2 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 continuity meter.

Test result: See vibration test item.

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7.3.3 Insulation Resistance

Requirement: Initial: 1,000MΩ min.
After tests: 500MΩ min. (Humidity & thermal shock tests)

Test method: 500V DC shall be applied between adjacent contacts of a mated specimen to measure insulation resistance. (A header shall not be soldered.)

Test result:

UNIT: MΩ	
	Measured values
Initial	1,000 min.
After humidity test	500 min.
After thermal shock test	500 min.

n=10

7.3.4 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.)

Initial: 800V AC
After tests: 800V AC (Humidity & thermal shock tests)

Test result:

Initial	Good
After humidity test	Good
After thermal shock test	Good

n=10

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7.4 Environmental Test

7.4.1 Durability

Requirement: Contact resistance shall be 20mΩ max. after the test.

Test method: A housing with crimped contacts and a header shall be mated and unmated. After repeated 50 cycles, contact resistance shall be measured.

Test result:

Test item	Initial			After the test		
	Ave.	Max.	Min.	Ave.	Max.	Min.
Contact Resistance	3.96	4.6	3.7	4.65	5.4	3.9

UNIT: mΩ

n=10

7.4.2 Humidity

Requirement: Contact resistance shall be 20mΩ max. after the test. Insulation resistance shall be 500MΩ 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:

Test item	Initial			After the test		
	Ave.	Max.	Min.	Ave.	Max.	Min.
Contact Resistance	3.97	4.7	3.6	4.39	4.7	4.2

UNIT: mΩ

n=10

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7.4.3 Heat Aging

Requirement: Contact resistance shall be 20 mΩ 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:

Test item	Initial			After the test		
	Ave.	Max.	Min.	Ave.	Max.	Min.
Contact Resistance	4.13	4.8	3.8	4.61	4.8	4.5

UNIT: mΩ

n=10

7.4.4 Thermal Shock

Requirement: Contact resistance shall be 20mΩ max. after the test. Insulation resistance shall be 500MΩ 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:

Test item	Initial			After the test		
	Ave.	Max.	Min.	Ave.	Max.	Min.
Contact Resistance	4.21	4.6	3.8	4.52	4.7	4.3

UNIT: mΩ

n=10

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7.4.5 Hydrogen Sulfide Gas

Requirement: Contact resistance shall be 20mΩ max. after the test.

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

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

Test result:

Test item	Initial			After the test		
	Ave.	Max.	Min.	Ave.	Max.	Min.
Contact Resistance	4.13	4.6	3.8	4.55	4.7	4.3

n=10

7.4.6 Salt Spray

Requirement: Contact resistance shall be 20mΩ 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 ± 2 °C
Concentration: 5 % in weight
Period: 48 hours

Test result:

Test item	Initial			After the test		
	Ave.	Max.	Min.	Ave.	Max.	Min.
Contact Resistance	4.15	4.6	3.9	4.76	5.0	4.2

n=10

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7.4.7 Vibration

Requirement: Contact resistance shall be 20 mΩ max. after the test. There shall be no current discontinuity longer than 1 microsecond during the test.

Test method: The specimen 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.

Frequency: 10-55-10 Hz/min.
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:

UNIT: mΩ						
Test item	Initial			After the test		
Contact Resistance	Ave.	Max.	Min.	Ave.	Max.	Min.
	4.06	4.6	3.8	4.88	5.1	4.5
Current continuity	There was no current discontinuity longer than 1 microsecond.					

n=10

7.4.8 Ammonia Gas

Requirement: There shall be no stress corrosion cracking.

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

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

Test result:

There was no stress corrosion cracking.

n=10

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7.5 Solder Test (Header)

7.5.1 Solderability

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

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

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

Test result:

Good.

n=10

7.5.2 Resistance to Soldering Heat

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

Test method: The specimen shall be mounted on a PCB and subjected to a resistance to soldering heat test of the following conditions.

Solder:	Sn-3Ag-0.5Cu
Flux:	Activation flux (CF-110VH-2A manufactured by Tamura Kaken Corporation)
PCB to be used:	Material; paper base epoxy resin pattern on one side
Solder temperature:	260 ± 5 °C
Immersion period:	5 ± 0.5 seconds

Test result:

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

n=10