



WHA YU INDUSTRIAL CO., LTD.(HEAD OFFICE)  
 DONGGUAN AEON TECH CO.,LTD.(CHINA)  
 SUZHOU AEON TECH CO.,LTD.(CHINA)  
 AEON TECH (SHANGHAI) CO.,LTD(CHINA)  
 DONGGUAN PARNER TECH CO.,LTD.(CHINA)

## SPECIFICATION FOR APPROVAL

**CUSTOMER:** 明泰科技股份有限公司 **產地:** 大陸吳江市。東莞市  
**PART NAME:** PIFA Antenna **產品單重:** 2450mg  
**PART NO.:** **REVISION:**  
**W. Y. P/NO.:** C037-511026-A (SSR-209371) **REV.:** X2

|                  | MANUFACTURER<br>SIGNATURE | CUSTOMER<br>SIGNATURE |
|------------------|---------------------------|-----------------------|
| APPROVED<br>BY : | 陳達英                       |                       |
| DATE :           | 09' 12.10                 |                       |

### WHA YU GROUP

WHA YU INDUSTRIAL CO., LTD.(HEAD OFFICE)

譚裕實業股份有限公司

Address: No. 326, Sec. 2, Kung Tao 5 Road, Hsin Chu City, Taiwan, R.O.C.

Tel: +886-3-5714225(REP.) Fax: +886-3-5713853 · +886-3-5723600

DONGGUAN AEON TECH CO., LTD.(CHINA)

東莞台霖電子通訊有限公司

Address: Hupan Industrial District, Tai Ling Shan Town, Dong Guan City, Guangdong, China

Tel: +86-769-85655858 Fax: +86-769-85655258

SUZHOU AEON TECH CO., LTD(CHINA)

蘇州華廣電通有限公司

Address: Limin North Road, LiLi Town, LiLi Industrial Park, LinHu Economic Zone

Wujiang City, Jiangsu Province, China

Tel: +86-512-63627980 Fax: +86-512-63627981

AEON TECH (SHANGHAI) CO., LTD(CHINA)

普翔電子貿易(上海)有限公司

Address: Flat 501, 5F, Build 27, NO.68, Guiping Road, Huhui District, Shanghai, China

Tel: +86-21-64959151 Fax: +86-21-64959059

DONGGUAN PARNER TECH CO., LTD.(CHINA)

東莞倍能電子有限公司

Address: Hupan Industrial District, Shida Road, Tai Ling Shan Town,

Dong Guan City, Guangdong, China

Tel: +86-769-81662366 Fax: +86-769-81602681

# Contents

| <i>Item</i> | <i>Description</i>      | <i>Page</i> |
|-------------|-------------------------|-------------|
| 1. ....     | 規格表                     | ..... 1     |
| 2. ....     | 成品圖                     | ..... 2     |
| 3. ....     | BOM List                | ..... 3     |
| 4. ....     | 測試報告                    | ..... 4~6   |
| 5. ....     | <b>Cable 規格/UL</b>      | ..... 7~11  |
| 6. ....     | <b>Connector檢驗規格/UL</b> | ..... 12~20 |
| 7. ....     | <b>PIFA材質規格</b>         | ..... 21    |
| 8. ....     | 泡棉雙面膠材質特性               | ..... 22~25 |
| 9. ....     | Core材質特性                | ..... 26~27 |
| 10. ....    | 熱縮套管材質特性/UL             | ..... 28~36 |
| 11. ....    | 樣品檢驗記錄表                 | ..... 37    |
| 12. ....    | 樣品圖                     | ..... 38    |

# PIFA Antenna Assembly

## Specification

### 1. Electrical Properties (Free Space)

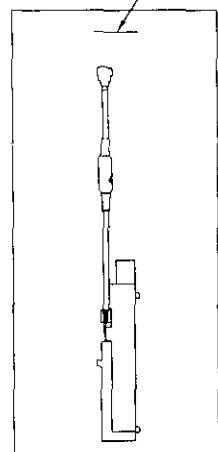
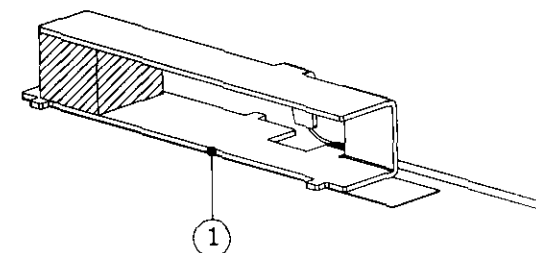
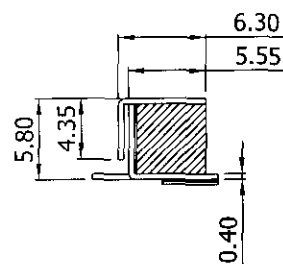
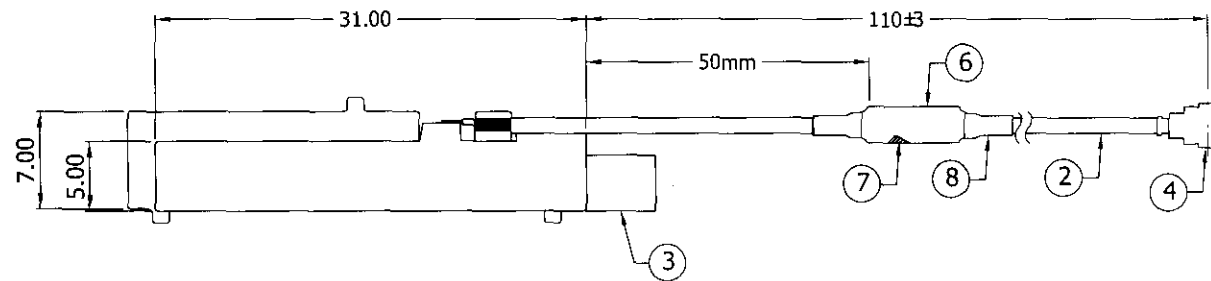
- 1.1 Frequency Range.....2.4GHz ~ 2.5GHz
- 1.2 Impedance .....50 $\Omega$  Nominal
- 1.3 VSWR .....3.5:1 Max.
- 1.4 Return Loss.....- 5.1dB Max.
- 1.5 Radiation .....Omni-directional
- 1.6 Gain(peak).....-0.4dBi (excluding cable loss )
- 1.7 Cable Loss..... 0.3dB Max.
- 1.8 Polarization.....Linear ; Vertical
- 1.9 Admitted Power..... 1W
- 1.10 Cable..... $\Phi$ 1.13mm Coaxial Cable
- 1.11 Connector.....MHF

### 2. Physical Properties :

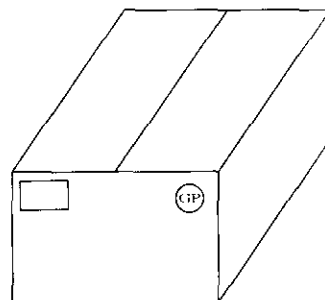
- 2.1 Operating Temp. ....-10 $^{\circ}$ C ~ +60 $^{\circ}$ C
- 2.2 Storage Temp. ....-10 $^{\circ}$ C ~ +70 $^{\circ}$ C

CG-

| REV | DATE       | DESCRIPTION |
|-----|------------|-------------|
| X1  | 10/16-2009 | New Issue   |
| X2  | 12/09-2009 | 增加Core      |



Packing : 1 pcs/bag  
(每10袋用釘書機訂起來)



GP標籤貼於紙箱兩側右上角(共2PCS)  
外箱標籤貼於左上角1PCS  
成品單重:2450±5%mg

| 8  | H.S.Tube    | Heat Shrink Tube            | 2   |        |
|----|-------------|-----------------------------|-----|--------|
| 7  | Core        | RH 4*10*2mm                 | 1   |        |
| 6  | H.S.Tube    | Heat Shrink Tube            | 1   |        |
| 5  | Sponge      | EVA ; Black                 | 1   |        |
| 4  | Connector   | MHF Connector               | 1   |        |
| 3  | 雙面背膠        | Sony G4000                  | 1   |        |
| 2  | Cable       | φ1.13 Coaxial Cable ; Black | 1   |        |
| 1  | PIFA        | Nickel Silver               | 1   |        |
| NO | DESCRIPTION |                             | QTY | REMARK |

CUSTOMER'S SIGNATURE

|      |      |          |
|------|------|----------|
| XX.  | ±5   | APPROVED |
| X.   | ±3.0 | CHECKED  |
| .X   | ±1.0 |          |
| .XX  | ±0.5 |          |
| .XXX | ±0.1 | DRAWING  |
| ⊕    |      |          |

CUSTOMER: 明泰

PART NO : SSR-93081

PARTNAME: PIFA Antenna

W.Y P/NO : C037-511026-A

REV UNIT FILE : SSR-93081

X2 m/m SHEET : 1/1

**M.gear** Wha Yu Group

THIS DRAWING, AND ITS INHERENT DESIGN CONCEPTS, ARE THE PROPERTY OF WHA YU AND AS SUCH MAY NOT BE COPIED, REPRODUCED, OR GIVEN TO THIRD PARTIES WITHOUT THE WRITTEN CONSENT OF WHA YU.



譚裕實業股份有限公司

WHA YU INDUSTRIAL CO., LTD

BILL OF MATERIAL

CUSTOMER P/N: 明泰科技股份有限公司

DATE:2009.12.10

W.Y.P/N:C037-511026-A

PART NO:SSR-209371

PART NAME:PIFA Antenna Assembly

REV:X2

| 序號 | 零件名稱      | 供應商       | 規格描述                                                                         | UL 防火等級    |
|----|-----------|-----------|------------------------------------------------------------------------------|------------|
| 1  | Cable     | EVERNEW   | Φ1.13mm Coaxial Cable,Black,50Ω,鍍錫線                                          | 60or80℃30V |
| 2  | Connector | I-PEX     | MHF Plug for Φ1.13 Coaxial Cable                                             | V-()       |
| 3  | PIFA      | XINLILAI  | (L)33.00*(W)9.0*(H)5.8 mm;洋白銅;T=0.4mm                                        | —          |
| 4  | 雙面背膠      | SONY      | 泡棉雙面背膠 Sony G4000;21(L)*7(W)*0.15(T)mm                                       | —          |
| 5  | Sponge    | SYUN-LI   | 泡棉雙面背膠 Sony G4000;21(L)*7(W)*0.15(T)mm                                       | —          |
| 6  | Core      | KING Core | K5B;RH4*10*2mm                                                               | —          |
| 7  | H.S Tube  | HAMBURG   | H.S TUBE V4 UL/CSA (T=0.15) Φ4.0*18mm;H-2 (T=0.18) Φ3.0 L=10mm;收縮比例3:1;Black | 125℃.150V  |
| 8  | H.S Tube  | WOER      | H.S TUBE V4 UL/CSA (T=0.15) Φ4.0*18mm;H-2 (T=0.18) Φ3.0 L=10mm;收縮比例3:1;Black | 125℃.600V  |

變更履歷:

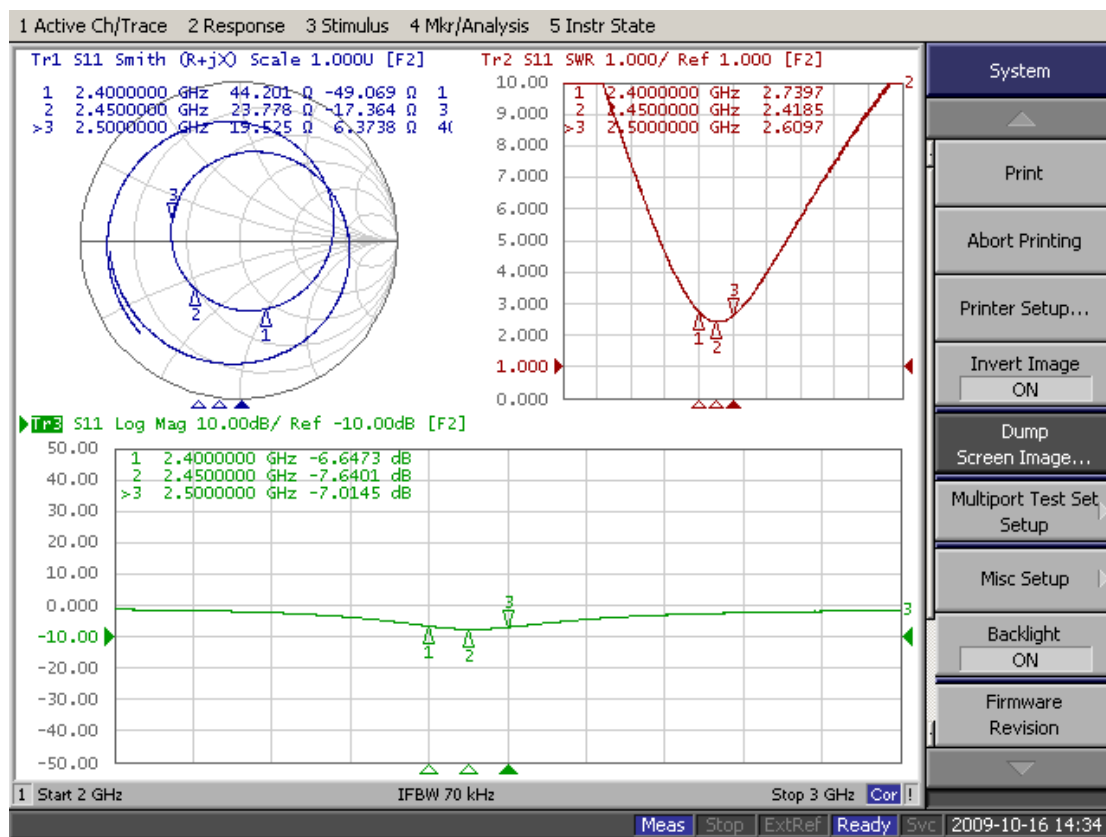
| 序號 | 變更依據  | 變更內容   | 變更日期       | 版本     |
|----|-------|--------|------------|--------|
| 1  | 依客戶需求 | 增加CORE | 2009.12.10 | X1=>X2 |
|    |       |        |            |        |
|    |       |        |            |        |

|        |  |        |  |        |  |
|--------|--|--------|--|--------|--|
| 核<br>準 |  | 審<br>核 |  | 制<br>作 |  |
|--------|--|--------|--|--------|--|

工程部'未經許可'不得複印"

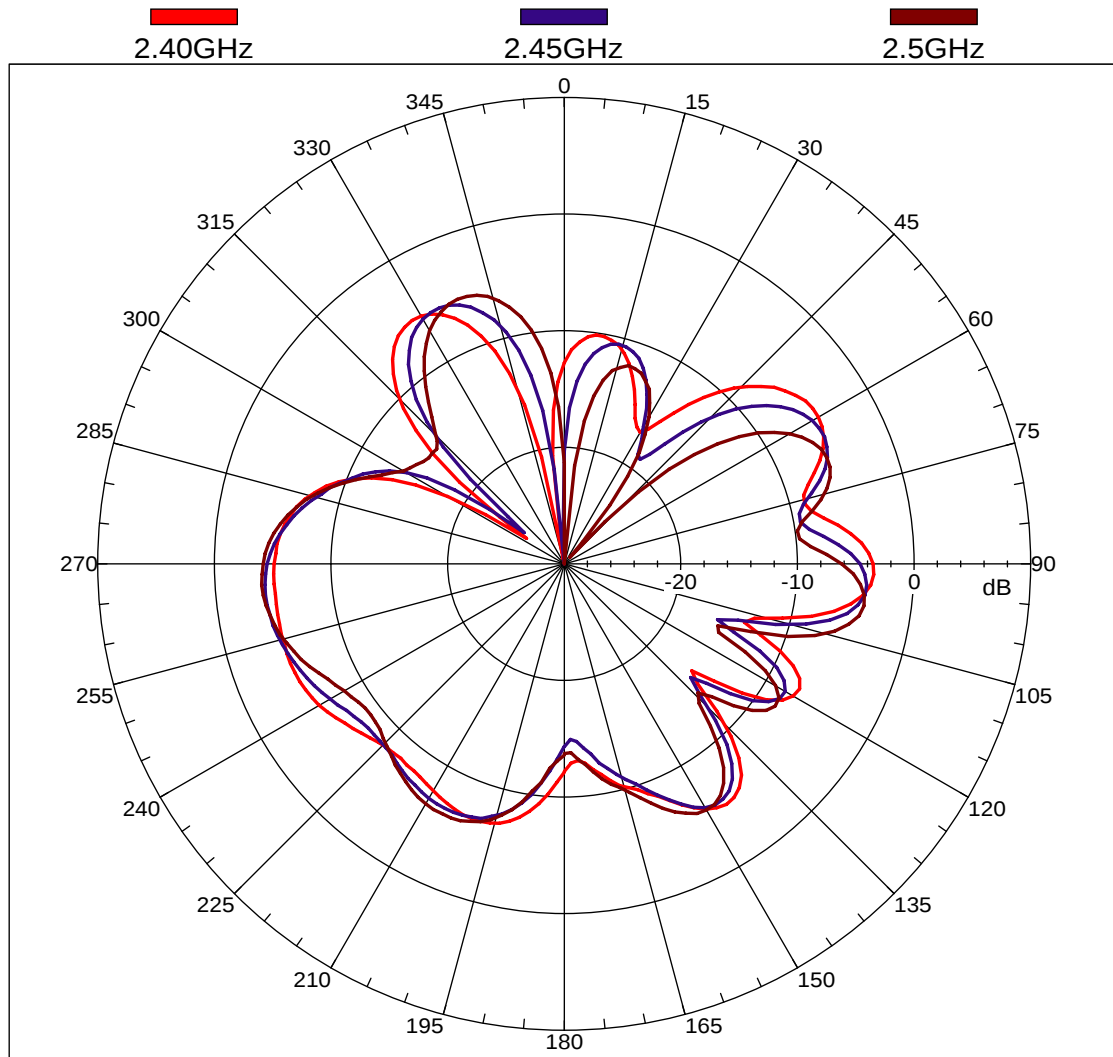
## RF Antenna Assembly

P/NO : C037-511026-A(SSR-209371) SPEC :2.4~2.5GHz

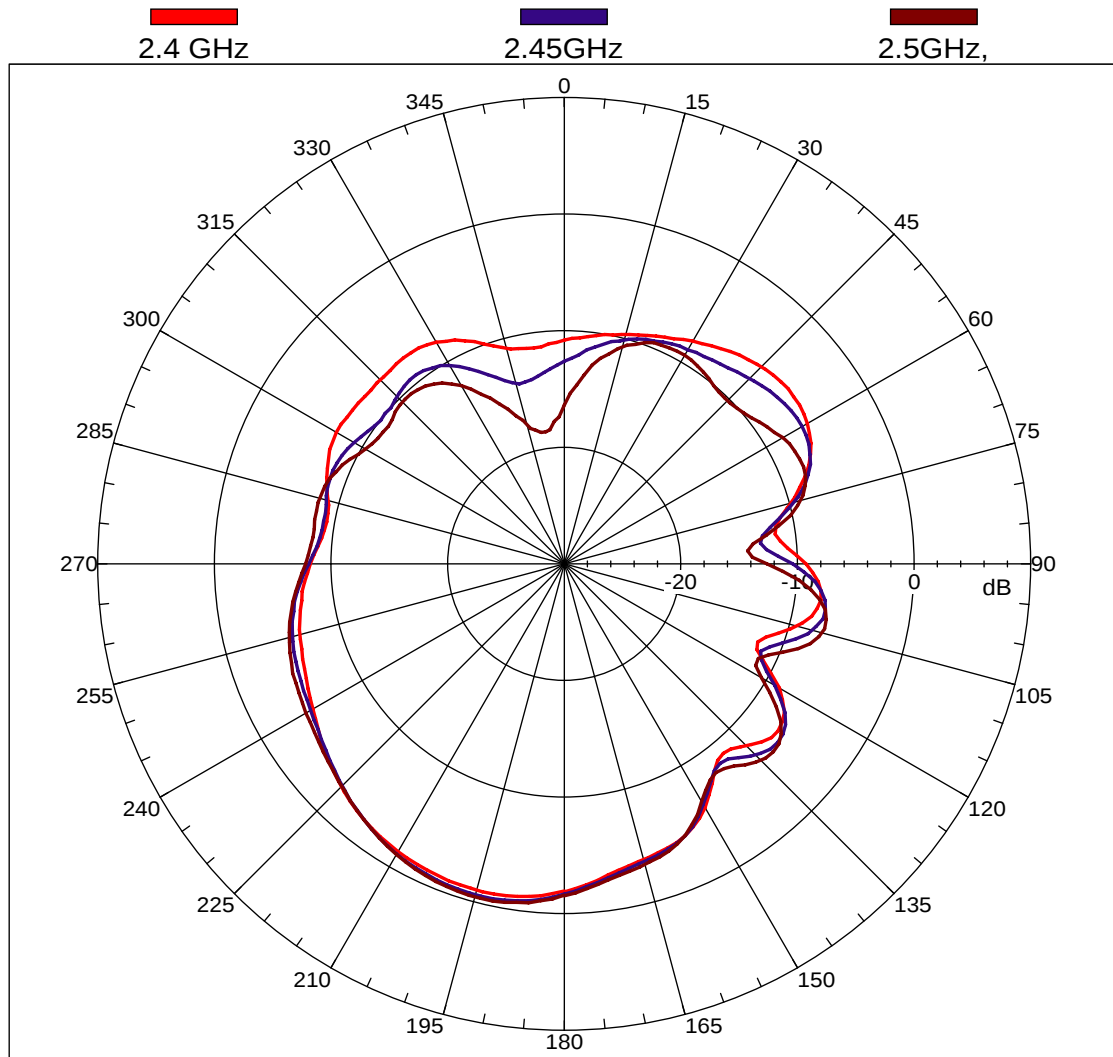


2009/10/16

Far-field amplitude of C037-511026-A SSR-209371-H.nsi



Far-field amplitude of C037-511026-A SSR-209371-V.nsi





# EVERNEW WIRE & CABLE CO.,LTD.

6,Shang Shing Rd.,Shang Jeau Industrial District,  
Chang An Town,Dongguan,Guangdong,China

Tel:86-769-5411045

Fax:86-769-5540257

|          |         |          |
|----------|---------|----------|
| APPROVED | CHECKED | ENGINEER |
| ELI      | QF      | ZQY      |

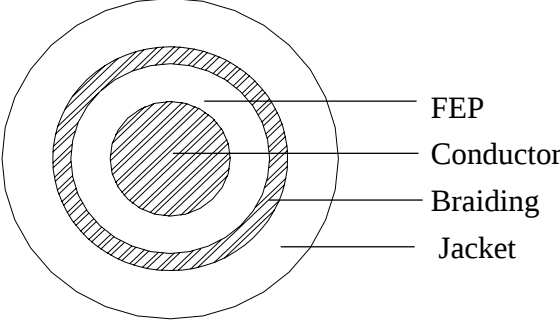
APPROVED BY CUSTOMER:\_\_\_\_\_

DOCUMENT NO. RF

REVISION NO. B/0

## Product Specifications

DATE: 07-10-2009

| Construction & Material                                                              |                  | Guests Part No. |                        |
|--------------------------------------------------------------------------------------|------------------|-----------------|------------------------|
| Item                                                                                 | Unit             | Specification   |                        |
| Product                                                                              |                  | RF              |                        |
| Conductor                                                                            | Size             | mm              | 32                     |
|                                                                                      | Number           | C               | 1                      |
|                                                                                      | Material         |                 | Silver-Gilt Copper     |
|                                                                                      | Construction     | pcs / mm        | 7/0.084±0.005          |
|                                                                                      | Diameter         | mm              | 0.26                   |
| Insulation                                                                           | Material         |                 | FEP                    |
|                                                                                      | Nom.thickness    | mm              | 0.22                   |
|                                                                                      | Overall Diameter | mm              | 0.68±0.05              |
|                                                                                      | Color            |                 | Transparent            |
| Braiding                                                                             | Material         |                 | Stranded Tinned Copper |
|                                                                                      | Construction     | mm              | 4/0.05/16              |
| Jacket                                                                               | Material         |                 | FEP                    |
|                                                                                      | Nom.thickness    | mm              | 0.12                   |
|                                                                                      | Overall Diameter | mm              | 1.13+0.1/-0.06         |
|                                                                                      | Color            |                 | By Order               |
| Marking                                                                              | None Marking     |                 |                        |
| Cross - Section View :                                                               |                  |                 |                        |
|  |                  |                 |                        |

NOTE : Please confirmed in two days , Or we will take it as confirmed.

FORM NO. EW-FOR-009C,C/1

| 電 氣 性 能          |                        |           |
|------------------|------------------------|-----------|
| 特性阻抗             | 50±2(TDR,250ps &500ps) | Ω         |
| 耐電壓 A.C          | 0.5/1                  | KV/min    |
| 最小絕緣電阻           | 1000(650V D.C)         | MΩ-km     |
| Attenuation(min) | Frequency(GHZ)         | dB/m      |
|                  | 1.0                    | -2.2      |
|                  | 2.0                    | -3.0      |
|                  | 2.4~2.5                | -3.3      |
|                  | 3.0                    | -3.9      |
|                  | 4.0                    | -4.8      |
|                  | 4.8~6.0                | -5.3      |
| 反射損失(max)        | 2.4G~2.5G              | -20dB/m   |
|                  | 4.8G~6.0G              | -15.5dB/m |



## AVLV2.E138922 Appliance Wiring Material - Component

[Page Bottom](#)

### Appliance Wiring Material - Component

[See General Information for Appliance Wiring Material - Component](#)

EVERNEW WIRE & CABLE CO LTD  
5TH FL  
111 KEELUNG RD, SEC 2  
TAIPEI, TAIWAN

E138922

| Table of Recognized Styles                    |      |      |      |       |      |
|-----------------------------------------------|------|------|------|-------|------|
| Single-conductor, thermoplastic insulation.   |      |      |      |       |      |
| 1007                                          | 1185 | 1208 | 1365 | 1533  | 1792 |
| 1061                                          | 1195 | 1354 | 1503 | 1777  |      |
| Multiple-conductor, thermoplastic insulation. |      |      |      |       |      |
| 2464                                          | 2725 | 2854 | 2960 | 20276 |      |
| 2562                                          | 2835 | 2919 | 2990 |       |      |

Marking: Company name, voltage rating, temperature rating, conductor size, conductor material if other than copper, and use.  
[Last Updated](#) on 2008-10-23

[Questions?](#)

[Notice of Disclaimer](#)

[Page Top](#)

Copyright ?2009 Underwriters Laboratories Inc.®

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL's Follow-Up Service. Only those products bearing the UL Mark should be considered to be Listed and covered under UL's Follow-Up Service. Always look for the Mark on the product.

UL permits the reproduction of the material contained in the Online Certification Directory subject to the following conditions: 1. The Guide Information, Designs and/or Listings (files) must be presented in their entirety and in a non-misleading manner, without any manipulation of the data (or drawings). 2. The statement "Reprinted from the Online Certifications Directory with permission from Underwriters Laboratories Inc." must appear adjacent to the extracted material. In addition, the reprinted material must include a copyright notice in the following format: "Copyright © 2009 Underwriters Laboratories Inc.®"

An independent organization working for a safer world with integrity, precision and knowledge.



[Click here to go to UL's iQ™ for Appliance Wiring Materials Database](#)

## UNDERWRITERS LABORATORIES

## APPLIANCE WIRING MATERIAL

Subj.758 Section 1 Page 1354

Issued:1964-02-19

Revised:2009-04-30

Style 1354 Coaxial Cable.

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rating     | 60, 80 deg C, 30 Vac, Horizontal flame.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Conductor  | 44 AWG min., material not specified.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Insulation | 2 mils minimum at any point, 125 mils maximum. The insulation may be: Extruded solid or cellular PE, FRPE, PP, PFA, FEP, ECTFE, PTFE, ETFE, or combination thereof with or without irradiation; or tape wrapped solid or cellular PTFE, PFA, or FEP. Applied as a spiral wrapped thread (5 mils minimum, 40 mils maximum) and enclosed in a tube of insulation.                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Assembly   | Insulated conductor with optional inner covering, optional inner shield, optional middle covering, required outer shield and required outer covering.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Shield     | Optional. Outer Shield required.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Covering   | Optional Inner Covering - Extruded PVC, PFA, Polyamide, Polyester, PVDF, FEP, PTFE, ECTFE, ETFE, PE, XLPE, XLFRPE or FRPE; lacquered braids; heat sealed PTFE, PFA or FEP tape; Polyester or Polyester-Polyethylene film. Thicknesses not specified. Optional Middle Covering - Extruded PVC, PFA, PP, Polyamide, Polyester, PVDF, FEP, PTFE, ECTFE, ETFE, PE, XLPE, XLFRPE or FRPE; lacquered braids; heat sealed PTFE, PFA or FEP tape; Polyester or Polyester-Polyethylene film. Thicknesses not specified. Required Outer Covering - Extruded Irradiated PE, Irradiated PVC, Polyurethane, PVC, PFA, PP, Polyamide, Polyester, PVDF, FEP, PTFE, ECTFE, ETFE, PE, XLPE, XLFRPE or FRPE; lacquered braids; heat sealed PTFE, PVC, PFA or FEP tape; Polyester or Polyester-Polyethylene film. Thicknesses not specified. |

|          |                                                                                                                       |
|----------|-----------------------------------------------------------------------------------------------------------------------|
| Standard | Appliance Wiring Material UL 758.                                                                                     |
| Marking  | General.                                                                                                              |
| Use      | Internal wiring of Class 2 circuits of electronic equipment or as insulated single in jacketed multiconductor cables. |



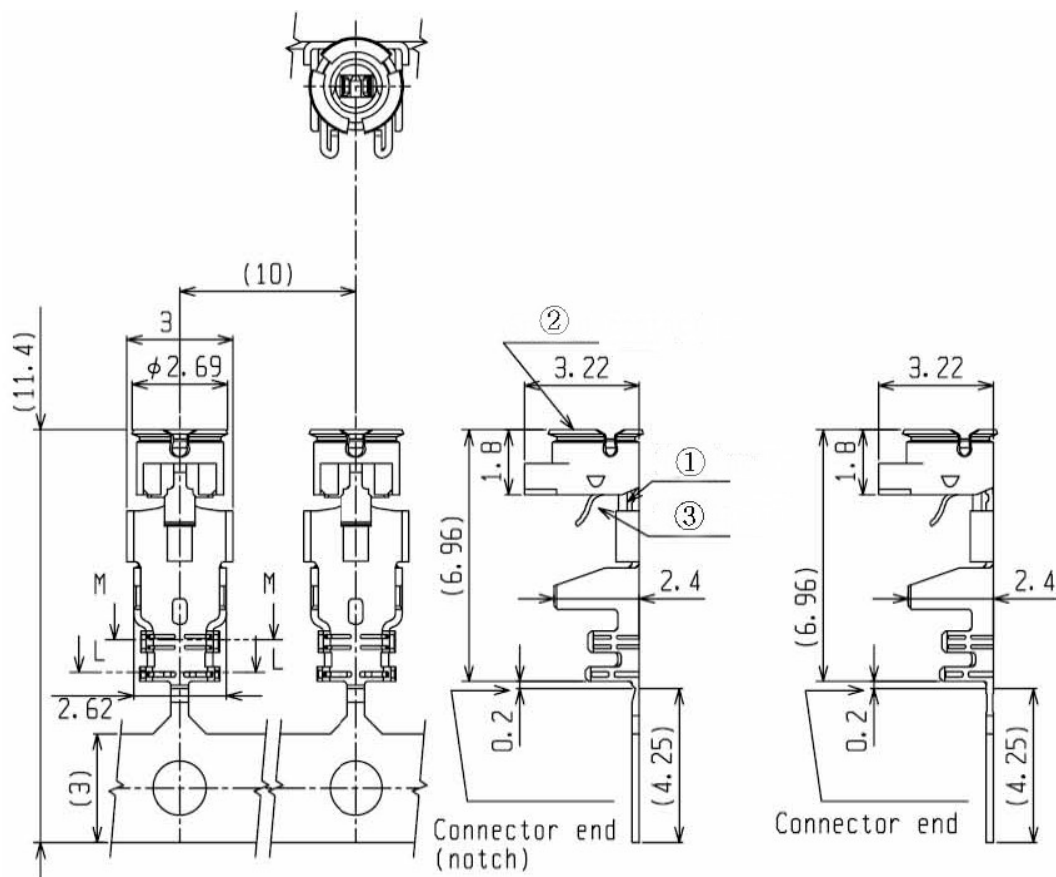
譚裕實業股份有限公司

WHA YU INDUSTRIAL CO., LTD

# Connector Material Data Sheet

|                   |                  |                      |                                        |
|-------------------|------------------|----------------------|----------------------------------------|
| 譚裕料號<br>Whayu P/N | Z101-02110002-B1 | 產品名稱<br>Product Name | MHF Plug for $\phi$ 1.13 Coaxial Cable |
|-------------------|------------------|----------------------|----------------------------------------|

## Structural Drawing



| Material |           |                 |                                      |    |   |    |    |  | Surface                  |
|----------|-----------|-----------------|--------------------------------------|----|---|----|----|--|--------------------------|
| 1        | Isolation | PBT             | Polybutylene Terephthalate(UL 94V-0) |    |   |    |    |  | Black                    |
| 2        | Shell     | Phosphor Bronze | Cu                                   | Sn | P | Zn | Pb |  | Gold Plated 0.05 $\mu$ m |
| 3        | Crimp Pin | Phosphor Bronze | Cu                                   | Sn | P | Zn | Pb |  | Gold Plated 0.1 $\mu$ m  |
|          |           |                 |                                      |    |   |    |    |  |                          |
|          |           |                 |                                      |    |   |    |    |  |                          |
|          |           |                 |                                      |    |   |    |    |  |                          |

Remark：插拔次數 30 次



# MICRO COAXIAL CONNECTOR

Applicable for

IEEE802.11a/b/g/n, UWB, WiMAX, Bluetooth, iBurst,  
ZigBee and MIMO(Multiple Input and multiple output)

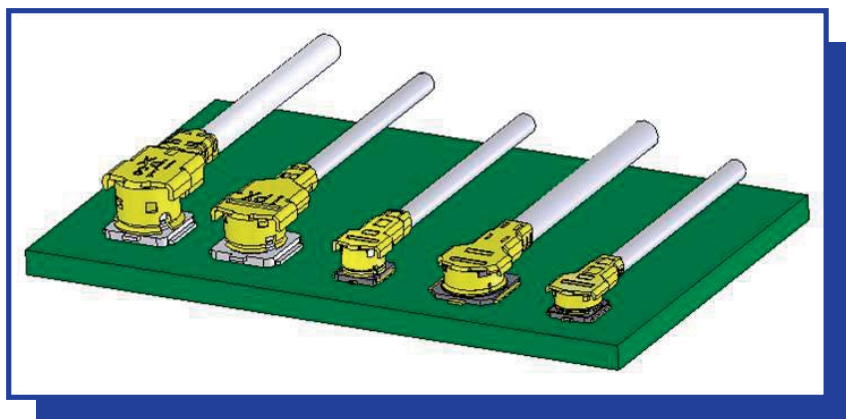
RoHS Compliance

Halogen - Free \*1

**MHF SERIES**

Easy Cable termination by “i-Fit<sup>®</sup>” Technology

# MHF SERIES MICRO COAXIAL CONNECTOR



## 【Major Application】

- Wireless LAN Antenna
  - Cellular Phone
  - Note Book Computer
  - Game Equipment
  - Digital Appliance
  - Access Point

## 【Key Features】

- SMT Receptacle and Mating Plug Cable Connector
- Small form factor and low profile : 1.2mm to 2.5mm MAX. Mating Height
- Applicable Cable :  
O.D.0.64mm / 0.81mm / 0.98mm / 1.13mm / 1.32mm / 1.37mm and 1.8mm Coaxial Cable
- High productivity : Easy Cable termination by “i-Fit<sup>®</sup>” without soldering
- Applicable Technology :  
IEEE802.11 a/b/g/n, UWB, WiMAX, iBurst, Zigbee, Bluetooth Wireless and MIMO

## 【Specifications】

- Frequency Range : DC up to 6GHz ( V.S.W.R. : 1.3MAX at 0.1~3GHz, 1.4MAX at 3~6GHz )
- Characteristic Impedance : 50 ohm ( Nominal )
- Temperature : -40°C to +90°C
- Rated Voltage : AC 60V
- Contact Resistance : 20m ohm MAX. ( Signal ) and 10m ohm MAX. ( Ground )
- Withstand Voltage : AC 200V
- Insulation Resistance : 500M ohm MIN. / DC 100V

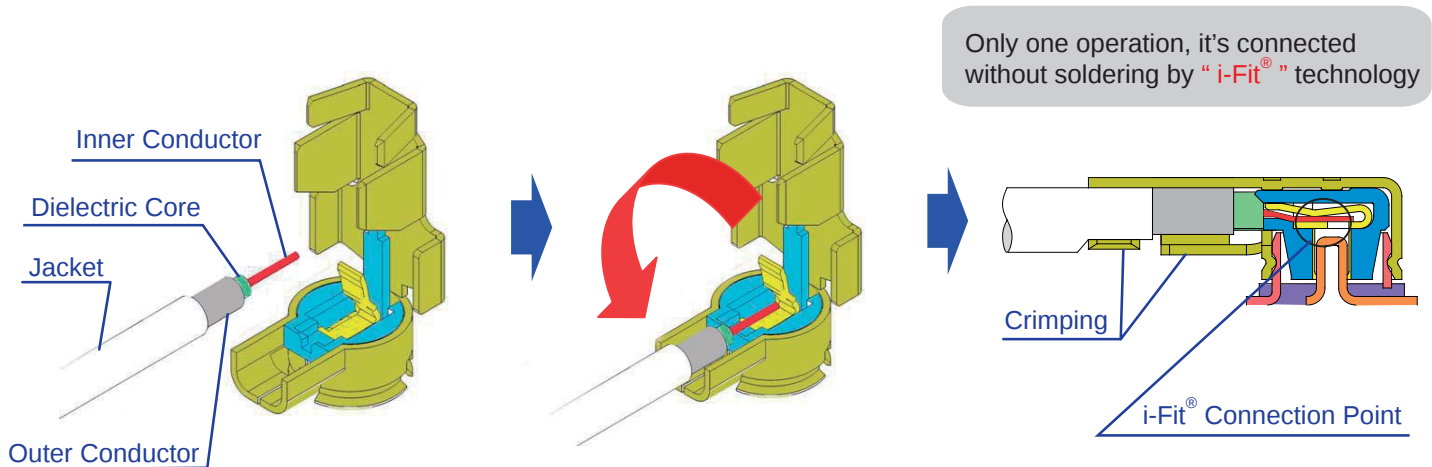
## 【Product Overview】

| MHF type<br>Plating<br>(Center/<br>Ground) |                       | MHF Receptacle                 |               |                                | MHF III Receptacle |            | MHF-A Receptacle |            | MHF 4 Receptacle |                |            |
|--------------------------------------------|-----------------------|--------------------------------|---------------|--------------------------------|--------------------|------------|------------------|------------|------------------|----------------|------------|
|                                            |                       | MHF Plug                       | MHF II Plug   |                                | MHF III Plug       |            | MHF-A13 Plug     |            | MHF 4 Plug       | MHF 4 SMT Plug |            |
| Mating Height                              |                       | 2.5mm (MAX.)                   | 2.1mm (MAX.)  |                                | 1.6mm (MAX.)       |            | 1.45mm (MAX.)    |            | 1.2mm (MAX.)     | 1.2mm (MAX.)   |            |
| Gold / Gold                                | 20279-001E-01 (3pads) | 20278-1*2R-**                  | 20351-1*2R-37 | 20311-011R-08                  | 20369-001E         | 20367-001R | 20429-001E       | 20428-001R | 20407-001E       | 20448-001R-081 | 20462-001E |
|                                            | 20441-001E-01 (4pads) |                                |               |                                |                    |            |                  |            |                  |                |            |
| Gold / Silver                              | 20314-001E-01 (3pads) | 20308-1*2R-13<br>20308-1*2R-32 | N/A           | 20312-011R-08<br>20312-011R-10 | N/A                | N/A        | N/A              | N/A        | N/A              | N/A            | N/A        |

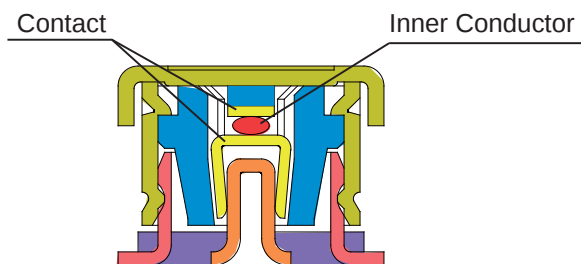
◆All Center contact are Gold Plated

Easy and Speedy Cable Connection of Center Conductor ( i-Fit<sup>®</sup> ) and Outer Conductor at **Only one operation** by our special assembling tool

## < i-Fit<sup>®</sup> Connection mechanism >

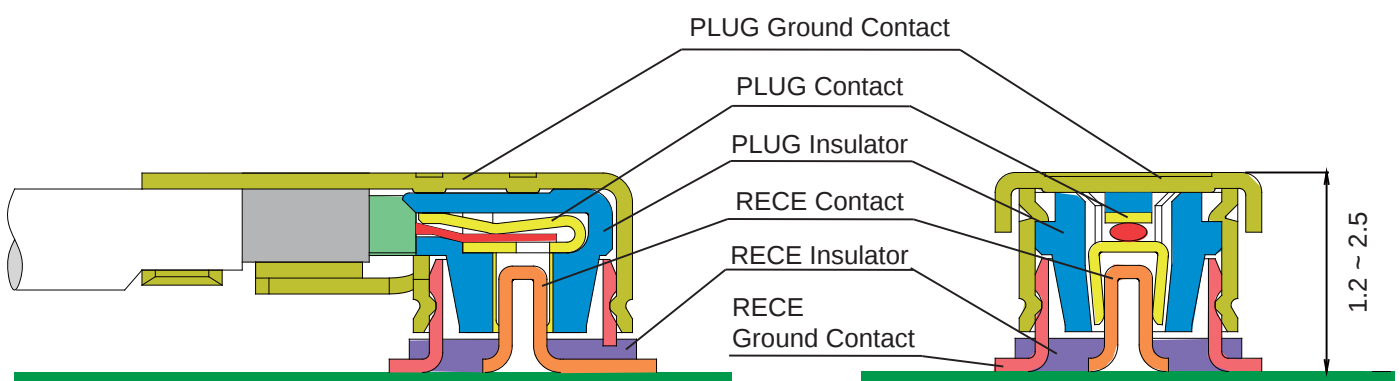


**i-Fit<sup>®</sup> PATENT NO.**  
 U.S.A. PAT.6,790,082  
 JAPAN PAT.4148339



i-Fit<sup>®</sup> Cross-section

## < Product Mechanism >



# MHF Receptacle

## 3pads type

### 【Part Number】

Ground Contact : **Au** Plating

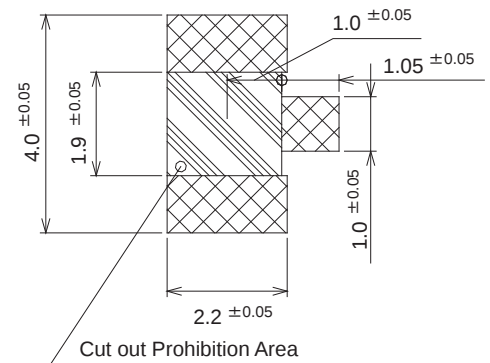
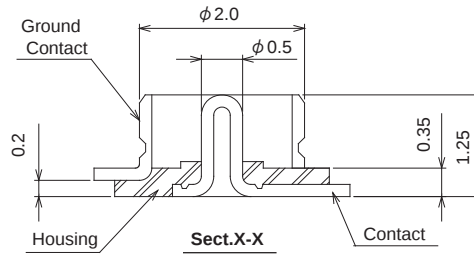
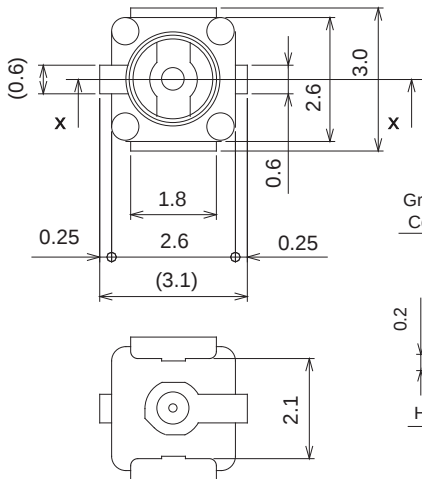
**20279-001 E- 01**

Packing : Emboss Tape  
1reel : 2,500pcs

Ground Contact : **Ag** Plating

**20314-001 E- 01**

Packing : Emboss Tape  
1reel : 2,500pcs



RECOMMENDED FOOTPRINT PATTERN

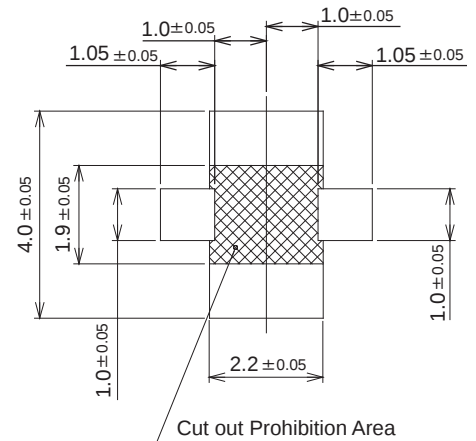
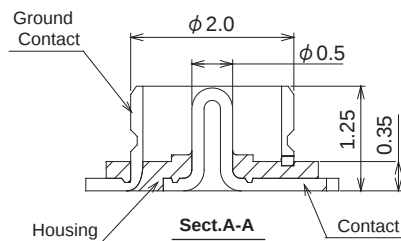
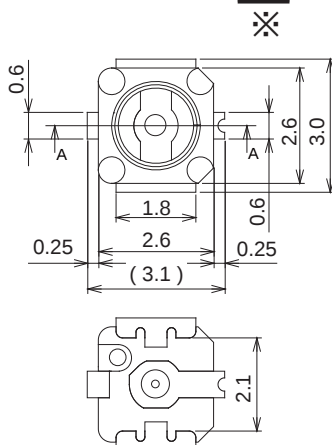
## 4pads type

### 【Part Number】

Ground Contact : **Au** Plating

**20441-001 E- 01**

※ Packing : Emboss Tape  
1reel : 5,000pcs



RECOMMENDED FOOTPRINT PATTERN

### 【Material and Finish】

| Parts          | Material     | Plating / Color (3pads) | Plating / Color (4pads) |
|----------------|--------------|-------------------------|-------------------------|
| HOUSING        | LCP UL94V-0  | NATURAL                 | BLACK                   |
| CONTACT        | COPPER ALLOY | Au                      | Au                      |
| GROUND CONTACT | COPPER ALLOY | Au or Ag                | Au                      |

# MHF Plug Cable Assembly

Mating Height : 2.5mm MAX

Applicable for Four kinds of Cable Size

## 【Part Number】

Ground Contact : **Au** Plating

**20278-1 \* 2 R- \* \***

① ② ③

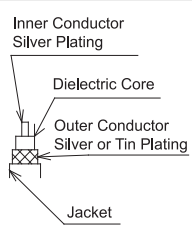
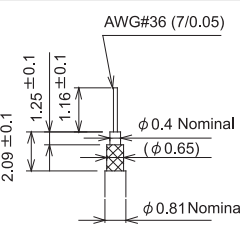
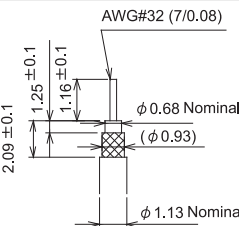
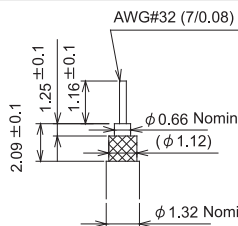
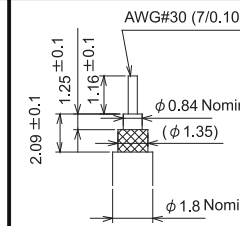
Ground Contact : **Ag** Plating

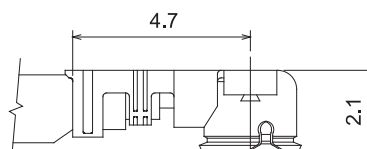
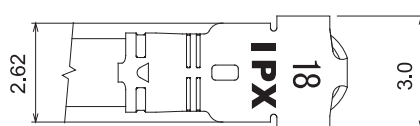
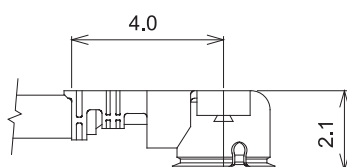
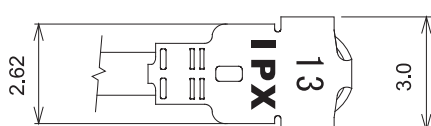
**20308-1 \* 2 R- \* \***

① ② ③

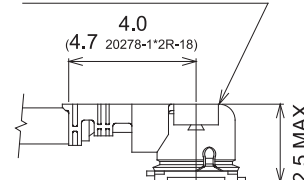
|   |                       |          |                                                  |
|---|-----------------------|----------|--------------------------------------------------|
| ① | TOOL                  | <b>0</b> | for Hand Tool ( with Notch )                     |
|   |                       | <b>1</b> | for Semi-Auto ( without Notch )                  |
| ② | Packing               | <b>R</b> | Reel 1reel : 2,000pcs                            |
| ③ | Applicable Cable Size | -        | P/N 20278 : 08, 13, 32, 18<br>P/N 20308 : 13, 32 |

## 【Applicable Cable Size】

| Part No. (Au)                                                                       | 20278-1**R-08                                                                       | 20278-1**R-13                                                                       | 20278-1**R-32                                                                        | 20278-1**R-18                                                                         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Part No. (Ag)                                                                       | -                                                                                   | 20308-1**R-13                                                                       | 20308-1**R-32                                                                        | -                                                                                     |
|                                                                                     | for AWG#36                                                                          | for AWG#32                                                                          | for AWG#32                                                                           | for AWG#30                                                                            |
|  |  |  |  |  |
| Braided Shield of Outer Conductor                                                   | Single Braided Shield                                                               | Single Braided Shield                                                               | Double Braided Shield                                                                | Single Braided Shield                                                                 |



Plug  
P/N 20278-1\*2R-08  
P/N 20278-1\*2R-13 P/N 20308-1\*2R-13  
P/N 20278-1\*2R-32 P/N 20308-1\*2R-32



Receptacle  
P/N 20279-001E-01 P/N 20314-001E-01  
P/N 20411-001E-01

## 【Material and Finish】

MATED VIEW

| Parts          | Material     | Plating / Color  | Note                         |
|----------------|--------------|------------------|------------------------------|
| HOUSING        | PBT UL94V-0  | NATURAL or BLACK | Only Au 08, Au 18 is NATURAL |
| CONTACT        | COPPER ALLOY | Au               |                              |
| GROUND CONTACT | COPPER ALLOY | Au or Ag         |                              |

No.06027-1  
Feb / 26/'08

## 材料証明書 MATERIAL CERTIFICATE

当社製品には下記の材料が使われている事を証明致します。

WE HEREBY CERTIFY THAT THE FOLLOWING MATERIALS ARE USED IN OUR PRODUCT.

PRODUCT NAME : MHF series micro coaxial connector PLUG & RECEPTACLE VERTICAL

Plug, Non halogen free type

| Part No.      | Contents      | Housing              | Contact         | Ground contact    |
|---------------|---------------|----------------------|-----------------|-------------------|
| 20278-101R-08 | 材質名/ Material | PBT                  | Phosphor bronze | Phosphor bronze   |
| 20278-111R-08 |               |                      |                 |                   |
| 20278-101R-13 | 型名/ Cat No.   | DURANEX 3116         | C5210R-H        | C5191R-1/2H       |
| 20278-111R-13 |               |                      |                 |                   |
| 20278-101R-32 | 材料メーカー        | WINTECH POLYMER LTD. | Nippon Mining & | HARADA METAL      |
| 20278-111R-32 | Manufacturer  |                      | Metals Co.,Ltd. | INDUSTRY Co.,Ltd. |
| 20278-101R-18 |               |                      |                 |                   |
| 20278-111R-18 | UL94難燃性       | V-0                  | -----           | -----             |
| 20308-101R-13 | UL94 flame    |                      |                 |                   |
| 20308-111R-13 | class         |                      |                 |                   |
| 20308-101R-32 |               |                      |                 |                   |
| 20308-111R-32 | UL file No.   | E213445              | -----           | -----             |
| 20351-101R-37 |               |                      |                 |                   |
| 20351-111R-37 |               |                      |                 |                   |

添付資料 : ULカード写し / UL CARD COPY

| APPROVAL               | CHECK                  | ORIGINATOR                |
|------------------------|------------------------|---------------------------|
| T.Harada<br>Feb/26/'08 | T.Tagawa<br>Feb/26/'08 | K.Ohbayashi<br>Feb/26/'08 |

FORM REV.0

Plug, Halogen free type

| Part No.      | Contents      | Housing              | Contact                         | Ground contact                 |
|---------------|---------------|----------------------|---------------------------------|--------------------------------|
| 20278-102R-08 | 材質名/ Material | PBT                  | Phosphor bronze                 | Phosphor bronze                |
| 20278-112R-08 | 型名/ Cat No.   | XFR4840 GF10         | C5210R-H                        | C5191R-1/2H                    |
| 20278-102R-13 | 材料メーカー        | WINTech POLYMER LTD. | Nippon Mining & Metals Co.,Ltd. | HARADA METAL INDUSTRY Co.,Ltd. |
| 20278-112R-13 | Manufacturer  |                      |                                 |                                |
| 20278-102R-32 | UL94難燃性       | V-0                  | -----                           | -----                          |
| 20278-112R-32 | UL94 flame    |                      |                                 |                                |
| 20278-102R-18 | class         |                      |                                 |                                |
| 20278-112R-18 | UL file No.   | E213445              | -----                           | -----                          |
| 20351-102R-37 |               |                      |                                 |                                |
| 20351-112R-37 |               |                      |                                 |                                |

添付資料：ULカード写し / UL CARD COPY

Receptacle

| Part No.      | Contents      | Housing              | Contact                         | Ground contact                 |
|---------------|---------------|----------------------|---------------------------------|--------------------------------|
| 20279-001E-01 | 材質名/ Material | LCP                  | Brass                           | Phosphor bronze                |
| 20314-001E-01 | 型名/ Cat No.   | VECTRA E130i         | C2680R-o                        | C5191R-1/2H                    |
|               | 材料メーカー        | Polyplastics Co.,Ltd | Nippon Mining & Metals Co.,Ltd. | HARADA METAL INDUSTRY Co.,Ltd. |
|               | Manufacturer  |                      |                                 |                                |
|               | UL94難燃性       | V-0                  | -----                           | -----                          |
|               | UL94 flame    |                      |                                 |                                |
|               | class         |                      |                                 |                                |
|               | UL file No.   | E 106764             | -----                           | -----                          |

添付資料：ULカード写し / UL CARD COPY

**WINTech POLYMER LTD**

18-1 KONAN 2-CHOME MINATO-KU TOKYO 108-8280 JP

Material Designation: **3116(e)**

Product Description: Polybutylene Terephthalate (PBT), designated "Duranex" furnished as pellets.

| Color                                      | Min. Thick. (mm) | Flame Class                                     | HWI | HAI | RTI Elec | RTI Imp | RTI Str | IEC GWIT                                 | IEC GWFI |
|--------------------------------------------|------------------|-------------------------------------------------|-----|-----|----------|---------|---------|------------------------------------------|----------|
| ALL                                        | 0.75             | V-0                                             | 4   | 0   | 130      | -       | 130     | -                                        | -        |
|                                            | 1.5              | V-0                                             | 3   | 0   | 130      | 120     | 130     | -                                        | -        |
| NC, BK                                     | 3                | 5VA                                             | 2   | 0   | 130      | 120     | 130     | -                                        | -        |
| CTI: 2                                     | IEC CTI (V): -   | HVTR: 3                                         |     |     | D495: 6  |         |         | IEC Ball Pressure ( ° C): -              |          |
| Dielectric Strength (kV/mm): 23            |                  | Volume Resistivity (10 <sup>9</sup> ohm-cm): 16 |     |     |          |         |         | Dimensional Stability(%):0.0             |          |
| ISO Tensile Strength (MPa): -              |                  | ISO Flexural Strength (MPa): -                  |     |     |          |         |         | ISO Heat Deflection (C): -               |          |
| ISO Tensile Impact (kJ/m <sup>2</sup> ): - |                  | ISO Izod Impact (kJ/m <sup>2</sup> ): -         |     |     |          |         |         | ISO Charpy Impact(kJ/m <sup>2</sup> ): - |          |

(e) Virgin and regrind from 1 to 50 by weight incl. have the same basic material characteristics (at a minimum thickness of 0.75 mm), except for 310EP which has a lower as received Tensile Impact value from 26 to 50 percent regrind.

Report Date: 11/15/2000

Underwriters Laboratories IncR

UL94 small-scale test data does not pertain to building materials, furnishings and related contents. UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in components and parts of end-product devices and appliances, where the acceptability of the combination is determined by ULI.

# REPORT OF MATERIAL TEST

|                                                                                     |                |
|-------------------------------------------------------------------------------------|----------------|
| Commodity: NICKEL SILVER C7521 R<br>品名 洋白铜                                          | State:<br>状态 H |
| Executive Standard: JIS H 3110 Tough-Pitch Copper Sheets, Plates and Strips<br>执行标准 |                |

## Chemical Analysis Test

| Chemical Analysis Test |                      |                  |                   |                               |                           |                          |                          |
|------------------------|----------------------|------------------|-------------------|-------------------------------|---------------------------|--------------------------|--------------------------|
| Work No<br>产品编号        | Size of Product 产品规格 |                  |                   | Cu+Ni+Zn<br>(%)<br>Min. 99.10 | Pb 含量 (%)<br>Max.<br>0.10 | Fe 含量 (%)<br>Max<br>0.25 | Mn 含量 (%)<br>Max<br>0.50 |
|                        | 厚度 Thickness<br>(mm) | 宽度 Width<br>(mm) | 长度 Length<br>(mm) |                               |                           |                          |                          |
|                        | Standard             |                  |                   |                               |                           |                          |                          |
| 20P625A                | 0.2                  | 44               | -----             | ≥99.10                        | < 0.01                    | ≦0.25                    | ≦0.50                    |

## Mechanical & Physical Test

| Work No<br>产品编号 | 产品规格<br>Size of Product     |                     |                      | 尺寸检测<br>Dimension Test   |                     | 张力测试<br>Tension Test                          |                         | 硬度<br>Hardness Test<br>HV |     |     |
|-----------------|-----------------------------|---------------------|----------------------|--------------------------|---------------------|-----------------------------------------------|-------------------------|---------------------------|-----|-----|
|                 | 厚度<br>Thickn<br>ess<br>(mm) | 宽度<br>Width<br>(mm) | 长度<br>Length<br>(mm) | 厚度<br>Thickne<br>ss (mm) | 宽度<br>Width<br>(mm) | 抗拉强度<br>Tensile St<br>rength<br>(kgf/m<br>m²) | 伸长率<br>Elongatin<br>(%) |                           |     |     |
|                 | 标准<br>Standard              |                     |                      | ±0.01                    | +0.00<br>-0.10      | 44-60                                         | 10 以上                   |                           |     |     |
| 20P625A         | 0.2                         | 44                  | --                   | 0.198                    | 43.98               | 54.1                                          | 13.0                    | 166                       | --- | --- |

深圳市明鑫铜业制品有限公司

审核: 代支生

制表: 胡晨晖

2007 年 6 月 26 日

# 鈦邦科技有限公司

241-59 台北縣三重市重新路五段 609 巷 20 號 2 樓之 10 (湯城工業區)

TEL : 886-2-2999-2277 FAX : 886-2-2999-7722

## 東莞市達邦電子有限公司

523073 廣東省東莞市南城區第一國際百安居 B 座 1507 號

TEL : 886-2-2999-2277 FAX : 886-2-2999-7722

## 昆山興登寶電子有限公司

215300 江蘇省昆山市陸家鎮禾豐東部開發區豐夏路 28 號

TEL : 86-512-8618-8168 FAX : 86-512-8618-8181



## EVA 泡棉(材質證明)

### EVA Foam Properties Table

| Item No.                                          | E-1020    | E-1020-1  | E-1025    | E-1030    | P-1035    | N-1040    | RE-1050                | RE-1065   | S-2030    | MP-015    | SM-25     |
|---------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|------------------------|-----------|-----------|-----------|-----------|
| Density (g/cm <sup>3</sup> )                      | 0.09-0.1  | 0.07-0.08 | 0.09-0.1  | 0.09-0.1  | 0.09-0.1  | 0.06-0.07 | 0.06-0.07              | 0.19-0.22 | 0.08-0.09 | 0.11-0.12 | 0.14-0.15 |
| Density (lb/ft <sup>3</sup> )                     | 6.1-6.2   | 4.3-4.4   | 6.1-6.2   | 6.2-6.3   | 6.2-6.3   | 4.0-4.6   | 4.0-4.6                | 12.0-14.0 | 5.4-5.5   | 7.2-7.5   | 8.8-9.2   |
| Compression Strength (PSI at 25%)                 | 8         | 8         | 12        | 14        | 9         | 9         | 30                     | 25        | 21        | 5         | 8         |
| Compression Strength (PSI at 50%)                 | 12        | 12        | 15        | 18        | 13        | 13        | 38                     | 29        | 26        | 9         | 12        |
| Water Absorption (% by weight, room temp., 5 hrs) | 1.4       | 1.4       | 0.5       | 0.4       | 0.4       | 0.4       | 0.3                    | 0.3       | 0.7       | 0.5       | 0.5       |
| Shore Hardness (type C)                           | 20-25     | 25-30     | 20-25     | 25-30     | 35-40     | 40-45     | 45-50                  | 60-65     | 25-30     | 15-20     | 25-30     |
| Resin Type                                        | EVA/LDPE  | EVA/LDPE  | EVA/LDPE  | EVA/LDPE  | EVA/LDPE  | EVA/LDPE  | EVA/LDPE               | EVA/LDPE  | EVA/LDPE  | EVA/LDPE  | EVA/LDPE  |
| Original Sheet Size (cm)                          | 90x180    | 100x200   | 90x180    | 100x200   | 100x200   | 100x200   | 94x188<br>100x200      | 80x160    | 100x153   | 100x200   | 100x175   |
| Original Sheet Size (inch)                        | 35.4x70.9 | 39.4x78.7 | 35.4x70.9 | 39.4x78.7 | 39.4x78.7 | 39.4x78.7 | 37.0x74.0<br>39.4x78.7 | 31.5x63.0 | 39.4x60.2 | 39.4x78.7 | 39.4x68.9 |
| Original Sheet Thickness (mm)                     | 34        | 35        | 34        | 36        | 40/30     | 40        | 32<br>40               | 40        | 36        | 36        | 5.5/7     |



SONY

## 強力高性能両面接着テープ

## G4000

★G4000は従来品であるT4000の特徴を継承しつつ、無溶剤型に発展させた次世代の基材入り両面接着テープです。

□従来品に比べ接着力が強力な基材入りの両面接着テープです。「ULNo.MH15431取得」

□初期接着性に優れています

□ウレタンフォームの凹凸に粘着剤が追従しよく接着します。

□環境劣化に強く高度な実用特性を有します

□従来のように、塗工時に有機溶剤を使用しないため、地球環境への影響が少ない次世代の接着テープです

| 名称      | 厚み              |
|---------|-----------------|
| アクリル粘着剤 | (約 55 $\mu$ m)  |
| 不織布     | (約 40 $\mu$ m)  |
| アクリル粘着剤 | (約 55 $\mu$ m)  |
| 剥離紙     | (約 120 $\mu$ m) |

|        |         |                 |               |
|--------|---------|-----------------|---------------|
| 粘着剤主成分 | アクリル系樹脂 | 粘着剤厚み<br>(基材含む) | 0.15mm        |
| 色      | 無色透明    | 形状              | 抜き加工品<br>ロール品 |
| 基 材    | 不織布     |                 |               |

□自動車・家電製品・コンピューターから携帯情報機器などにおける金属・プラスチックの銘板やアクリル窓等の各種材料の恒久接着テープとしてご使用頂けます。

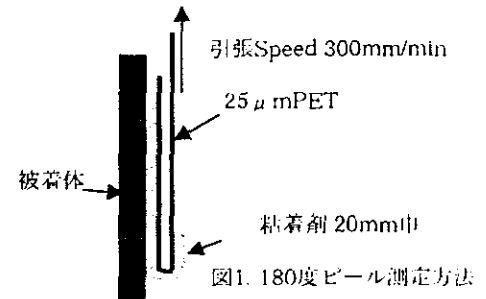
G4000

SONY

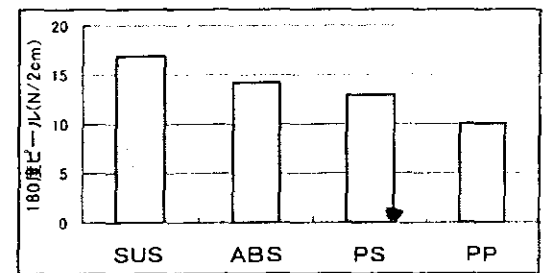
## 特性

## 1. 剥離強度 (180度ピール)

- ・テープ幅: 20mm
- ・圧着条件: 2kgローラー1往復
- ・常温1日放置後
- ・測定雰囲気:  $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$   $65\% \pm 10\%$
- ・引張り速度: 300mm/min
- ・バックング材: 25  $\mu$  mPET



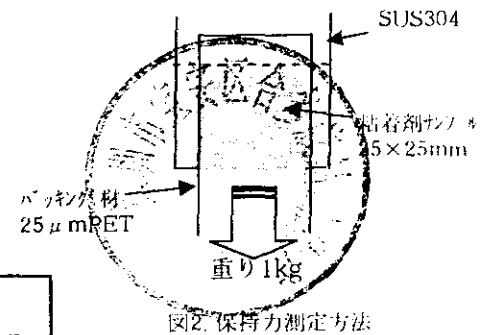
|      | (N/2cm) |      |      |      |
|------|---------|------|------|------|
| 被着体  | SUS     | ABS  | PS   | PP   |
| 剥離強度 | 16.8    | 14.1 | 13.0 | 9.93 |



## 2. 保持力

- ・テープ貼付け面積: 25 × 25 mm
- ・被着体: SUS304
- ・圧着条件: 2kgローラー1往復
- ・荷重: 1kg
- ・1時間後のズレ (mm) を測定

| 測定温度    | 40°C | 60°C | 80°C |
|---------|------|------|------|
| ズレ (mm) | 0.3  | 0.4  | 0.6  |



## 3. ボールタック (J. Dow法)

| ボールタック (ボールNo.) | 7~8 |
|-----------------|-----|
|-----------------|-----|

SONY

## 4. ウレタンフォームとの接着性：耐反発（180度折り曲げ接着）

- ・ 接着幅：20mm
- ・ 接着長さ：5mm、10mm
- ・ 試験温度：RT、50℃
- ・ 接着条件：80%圧縮
- ・ 被着体（支持体）：0.5mm厚AL板
- ・ 被着体：ウレタンフォーム5mm厚（エーテル、エステル）

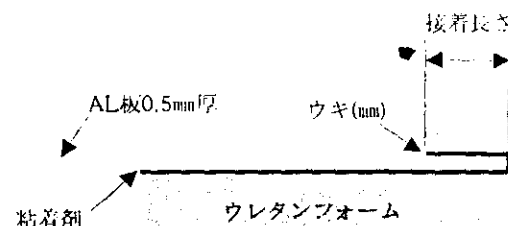


図3. ウレタンフォーム耐反発測定方法

| ウキ高さ(mm) ○:0.5mm未満 |      |     | 常温放置  | 50℃放置 |
|--------------------|------|-----|-------|-------|
| 接着長さ<br>5mm        | エーテル | 3日後 | ○     | ○     |
|                    |      | 7日後 | ○     | ○     |
|                    | エステル | 3日後 | ○     | 0.5mm |
|                    |      | 7日後 | 0.5mm | 0.5mm |
| 接着長さ<br>10mm       | エーテル | 3日後 | ○     | ○     |
|                    |      | 7日後 | ○     | ○     |
|                    | エステル | 3日後 | ○     | ○     |
|                    |      | 7日後 | ○     | ○     |

上記のレポートは当社の信頼できる実験に基づいたものですが、記載内容通りの性能が保証されることを意味するものではありません。使用目的や使用条件において、当製品の使用目的、使用条件を充分ご検討の上、ご使用ください。お問い合わせは、お問い合わせください。

ソニーケミカル株式会社

<http://www.scc.sony.co.jp/>

本社 〒141-0032 東京都品川区大崎1-11-2  
ゲートシティ大崎イーストタワー8F

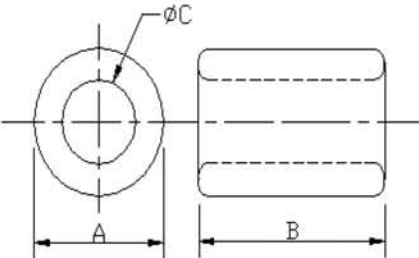
Tel.03-5435-3946 (代)

鹿沼工場 〒322-8502 栃木県鹿沼市さつき町12-3

Tel.0289-76-0211 (代)

2004年04月作成

# SPECIFICATION

|                                                                                                                                                                                                                                                                                      |                      |                                                                                                                                                   |                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| CUSTOMER:                                                                                                                                                                                                                                                                            |                      | CUST.P/N:                                                                                                                                         |                   |
| ITEM:                                                                                                                                                                                                                                                                                | <b>K5B RH 4x10x2</b> | K.C.P/N:                                                                                                                                          | <b>PS0404IA</b>   |
| <b>(1) SHAPE :</b><br><br>                                                                                                                                                                          |                      | A                                                                                                                                                 | <b>4±0.2</b> m/m  |
|                                                                                                                                                                                                                                                                                      |                      | B                                                                                                                                                 | <b>10±0.4</b> m/m |
|                                                                                                                                                                                                                                                                                      |                      | C                                                                                                                                                 | <b>2±0.15</b> m/m |
|                                                                                                                                                                                                                                                                                      |                      | D                                                                                                                                                 | m/m               |
|                                                                                                                                                                                                                                                                                      |                      | E                                                                                                                                                 | m/m               |
|                                                                                                                                                                                                                                                                                      |                      | F                                                                                                                                                 | m/m               |
|                                                                                                                                                                                                                                                                                      |                      | G                                                                                                                                                 | m/m               |
|                                                                                                                                                                                                                                                                                      |                      |                                                                                                                                                   |                   |
|                                                                                                                                                                                                                                                                                      |                      |                                                                                                                                                   |                   |
|                                                                                                                                                                                                                                                                                      |                      | <b>(2) ELECTRICAL REQUIREMENTS:</b><br>$Z_1 = 37^{-0}$ OHM AT 25 MHz<br>$Z_2 = 63^{-0}$ OHM AT 100 MHz                                            |                   |
| <b>(4) PACKING</b><br><input checked="" type="checkbox"/> IN BULK <input type="checkbox"/> VACUUM <input type="checkbox"/> INSERTION<br>2000 PCS/BAGS* 4    BAG/INNER BOX* 4    BOXES/CARTON = 32000 PCS<br>PCS/PLATE*    PLATES/CARTON=    PCS<br>PCS/TRAY*    TRAYS/CARTON=    PCS |                      | <b>(5) APPEARANCE</b><br>(1) AREA OF BREAK : <2 m/m <sup>2</sup><br>(2) SUM OF BREAKING AREA : <3 m/m <sup>2</sup><br>(3) DEPTH OF BREAK : <1 m/m |                   |
| <b>(6) REMARK:</b>                                                                                                                                                                                                                                                                   |                      | Approved by                                                                                                                                       |                   |
|                                                                                                                                                                                                                                                                                      |                      | Checked by                                                                                                                                        |                   |
|                                                                                                                                                                                                                                                                                      |                      | Drawn by                                                                                                                                          |                   |
|                                                                                                                                                                                                                                                                                      |                      | DWG.NO.                                                                                                                                           |                   |

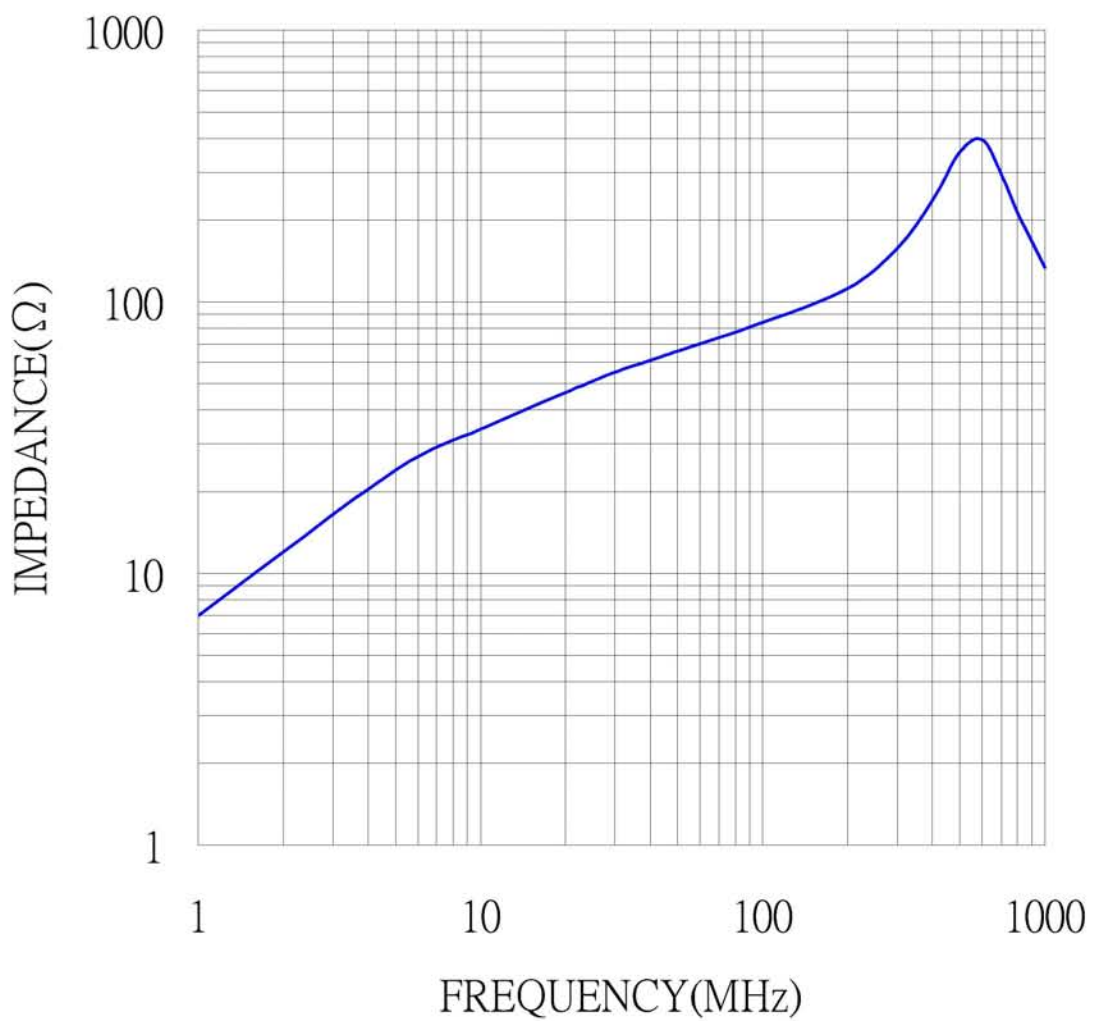


King Core Electronics Inc.  
 Tel: 886-3-4782511 (Rep.)  
 Fax: 886-3-4759923  
 E-mail : [kc@mail.kingcore.com.tw](mailto:kc@mail.kingcore.com.tw)

ER011B

## K5B RH 4x10x2

### PS0404IA



King Core Electronics Inc.

Tel: 886-3-4782511 (Rep.)

Fax: 886-3-4759923

E-mail: [kc@mail.kingcore.com.tw](mailto:kc@mail.kingcore.com.tw)



## PRODUCT SPECIFICATION

### HAMBURG H-2(CB) 環保阻燃熱收縮套管(薄品)

Environmentally friendly, flexible, ultra thin-wall, flame-retardant polyolefin tubing

#### ■ 應用

HAMBURG H-2(CB)系柔軟、阻燃、輻照交聯聚烯烴復合物制成之環保超薄型熱收縮套管，通過 UL 及 CSA 認證。H-2(CB)系超薄設計，快速收縮，特別適用於空間緊張和對溫度敏感的場合。例如，高密度連接器的應力解除，輕、薄、小、熱敏元件的絕緣保護等。H-2(CB)不含 PCBs、PCPs、PBBs、PBBOs、PBDEs、PBDEs 等對環境有害的物質、符合環保要求。

#### ■ 特點

收縮比 2 : 1  
低溫收縮、快速收縮  
柔軟、高阻燃  
優異的物理、化學及電學性能  
不含 PCBs、PCPs、PBBs、PBBOs、PBDEs、PBDEs 等對環境有害的物質，符合歐洲 RoHS 環保指令及 SONY SS00259 標準的要求。  
可提供多種規格及顏色

#### ■ 溫度範圍

連續使用溫度：-55 ~125  
最低起始收縮溫度：60  
最低完全收縮溫度：100

#### ■ 認證 / 符合標準

UL224 E255394 125 300V VW-1  
CSA C22.2 229705 125 150V VW-1

#### ■ Application

HAMBURG H-2(CB) is environmentally friendly, flexible, ultra thin-wall, flexible, flame-retardant, irradiated crosslinking heat-shrinkable modified polyolefin tubing. It is designed for applications that require an ultra thin wall for rapid shrinking and space saving. Low shrink temperature further reduces installation time and the risk of damage to temperature-sensitive components.

#### ■ Features/Benefits

Shrink ration:2:1  
Low shrink temperature  
Ultra thin-wall, rapid shrinking.  
Very flexible, flame-retardant  
Free of PCBs, PCPs, polybrominated biphenyls (PBBs), polybrominated biphenyl oxides and others (PBBOs, PBDEs, and PBDEs) and toxic heavy metal (Pb, Cd, Hg, Cr6+) compounds, which are classified as environmentally hazardous substances. Conforms to European RoHS environmental directive.  
Wide range of sizes and colors

#### ■ Operation Temperature Range

Operating temperature range: -55 ~125  
Minimum shrink temperature: 60  
Minimum full recovery temperature: 100

#### ■ Standards/Approvals

UL224 E255394 125 300V VW-1  
CSA C22.2 229705 125 150V VW-1

HAMBURG H-2 (CB)



# HAMBURG INDUSTRIES CO.,LTD

6FL, No.12, Lane 270, Sec.3, Pei Shen Rd., Shen Keng Hsiang, Taipei Hsien, Taiwan 222

## ■ 性能指標 Specification values

| 特性                 | 項目<br>Property                                              | 指標要求<br>Requirement                  | 測試方法<br>Test method | 曲型值<br>Typical data              |
|--------------------|-------------------------------------------------------------|--------------------------------------|---------------------|----------------------------------|
| 物理特性<br>Physical   | 軸向收縮率                                                       | 5%max                                | ASTM D 2671         | 5%                               |
|                    | 同心度<br>Concentricity                                        | 70%min                               | ASTM D 2671         | 70%                              |
|                    | 抗張強度<br>Tensile strength                                    | 10.4Mpa min                          | ASTM D 638          | 14.0MPa                          |
|                    | 斷裂伸長率<br>Elongation                                         | 200%min                              | ASTM D 638          | 400%                             |
|                    | 熱沖擊<br>Heat shock                                           | 無裂痕<br>No cracking                   | ASTM D 2671         | 通過<br>Pass                       |
|                    | 低溫柔軟性(-55 ,4 小時)<br>Low temperature<br>flexibility-55 ,4hrs | 無裂痕<br>No cracking                   | ASTM D 2671         | 通過<br>Pass                       |
|                    | 熱老化 158 ,168 小時                                             |                                      |                     | 通過<br>Pass                       |
|                    | 老化后抗張強度<br>Tensile strength after aging                     | 初始值的 70%以上<br>70% of original min    | ASTM D 638          | 90%                              |
|                    | 老化后斷裂伸長率<br>Elongation after aging                          | 100%min                              | ASTM D 638          | 300%                             |
| 電學特性<br>Electrical | 絕緣耐壓和擊穿<br>Dielectric voltage<br>withstand                  | 2500V,60sec,不擊穿<br>No Breakdown      | UL224               | 通過<br>Pass                       |
|                    | 絕緣強度<br>Dielectric strength                                 | 19.7KV/mm min                        | ASTM D 2671         | 25KV/mm                          |
|                    | 體積電阻率<br>Volume resistivity                                 | $10^{14} \Omega \cdot \text{cm}$ min | ASTM D 876          | $10^{14} \Omega \cdot \text{cm}$ |
| 化學特性<br>Chemical   | 銅腐蝕<br>Corrosion                                            | 無裂痕<br>No cracking                   | ASTM D 2671         | 通過<br>Pass                       |
|                    | 銅穩定性                                                        | 伸長率 100%                             | ASTM D 2671         | 通過                               |
|                    | 阻燃性<br>Flammability                                         | VW-1                                 | UL224               | 通過<br>Pass                       |

HAMBURG H-2 (CB)

For further information, please contact:

Tel: 886 2 2662 8882 Fax: 886 2 2662 7201~2 E-mail: [Taipei@hamburg.com.tw](mailto:Taipei@hamburg.com.tw) URL: <http://www.hamburg.com.tw>



# HAMBURG INDUSTRIES CO.,LTD

6FL, No.12, Lane 270, Sec.3, Pei Shen Rd., Shen Keng Hsiang, Taipei Hsien, Taiwan 222

## 規格尺寸 Product sizes

| 規格<br>Size(mm) | 收縮前(mm)<br>As supplied |                      | 收縮后(mm)<br>After recovery       |                                | 包裝<br>Standard<br>length<br>(M/卷) |
|----------------|------------------------|----------------------|---------------------------------|--------------------------------|-----------------------------------|
|                | 內徑<br>Inside diameter  | 壁厚<br>Wall thickness | 內徑<br>Inside diameter<br>(max.) | 壁厚<br>Wall thickness<br>(min.) |                                   |
| Φ0.8           | 1.0 ± 0.2              | 0.10 ± 0.03          | 0.5                             | 0.20                           | 200                               |
| Φ1.0           | 1.4 ± 0.2              | 0.10 ± 0.03          | 0.6                             | 0.20                           | 200                               |
| Φ1.5           | 1.9 ± 0.2              | 0.10 ± 0.03          | 0.75                            | 0.20                           | 200                               |
| Φ2.0           | 2.4 ± 0.2              | 0.12 ± 0.03          | 1.0                             | 0.20                           | 200                               |
| Φ2.5           | 2.8 ± 0.3              | 0.13 ± 0.05          | 1.25                            | 0.25                           | 200                               |
| Φ3.0           | 3.4 ± 0.3              | 0.13 ± 0.05          | 1.5                             | 0.25                           | 200                               |
| Φ3.5           | 3.9 ± 0.3              | 0.13 ± 0.05          | 1.75                            | 0.25                           | 200                               |
| Φ4.0           | 4.4 ± 0.3              | 0.15 ± 0.05          | 2.0                             | 0.25                           | 200                               |
| Φ5.0           | 5.5 ± 0.3              | 0.15 ± 0.05          | 2.5                             | 0.25                           | 100                               |
| Φ6.0           | 6.5 ± 0.3              | 0.15 ± 0.05          | 3.0                             | 0.28                           | 100                               |
| Φ7.0           | 7.5 ± 0.3              | 0.15 ± 0.05          | 3.5                             | 0.28                           | 100                               |
| Φ8.0           | 8.6 ± 0.4              | 0.15 ± 0.05          | 4.0                             | 0.28                           | 100                               |
| Φ9.0           | 9.6 ± 0.4              | 0.15 ± 0.05          | 4.5                             | 0.28                           | 100                               |
| Φ10.0          | 10.6 ± 0.4             | 0.15 ± 0.05          | 5.0                             | 0.28                           | 100                               |
| Φ11.0          | 11.6 ± 0.4             | 0.18 ± 0.05          | 5.5                             | 0.28                           | 100                               |
| Φ12.0          | 12.6 ± 0.4             | 0.20 ± 0.05          | 6.0                             | 0.28                           | 100                               |
| Φ13.0          | 13.6 ± 0.4             | 0.20 ± 0.05          | 6.5                             | 0.30                           | 100                               |
| Φ14.0          | 14.6 ± 0.4             | 0.20 ± 0.05          | 7.0                             | 0.30                           | 100                               |
| Φ15.0          | 15.6 ± 0.5             | 0.20 ± 0.05          | 7.5                             | 0.32                           | 100                               |
| Φ16.0          | 16.6 ± 0.5             | 0.20 ± 0.05          | 8.0                             | 0.36                           | 100                               |
| Φ18.0          | 18.6 ± 0.5             | 0.22 ± 0.05          | 9.0                             | 0.36                           | 100                               |
| Φ20.0          | 21.0 ± 1.0             | 0.25 ± 0.05          | 10.0                            | 0.36                           | 50                                |
| Φ22.0          | 23.0 ± 1.0             | 0.25 ± 0.05          | 11.0                            | 0.40                           | 50                                |
| Φ25.0          | 26.0 ± 1.0             | 0.25 ± 0.05          | 12.5                            | 0.40                           | 50                                |

HAMBURG H-2 (CB)

### Ordering Information

Color

Standard: Black (-BK), White(-WH), Red(-RD), Blue(-BL), Yellow(-YL), Green(-GR),

Nonstandard: Available upon request.

Nonstandard size: Special sizes are available upon request.

Standard packaging: On spools, Cut pieces are available upon request.

Ordering description: Specify product type, size(mm or inch)and color.

For further information, please contact:

Tel: 886 2 2662 8882 Fax: 886 2 2662 7201~2 E-mail: [Taipei@hamburg.com.tw](mailto:Taipei@hamburg.com.tw) URL: <http://www.hamburg.com.tw>

## UL Online Certifications Directory

### YDPU2.E255394 Tubing, Extruded Insulating - Component

[Page Bottom](#)

### Tubing, Extruded Insulating - Component

[See General Information for Tubing, Extruded Insulating - Component](#)

**HAMBURG INDUSTRIES CO LTD**

E255394

6TH FL

12 LANE 270 PEI SHEN RD, SEC 3

SHEN KENG HSIANG, TAIPEI HSIEN 222 TAIWAN

| Cat. No.                                           | Max V | Max Oper Temp | Shrinkdown Class | Col Recognized  | Max Temp Rated Oil Resistance * C | VW-1 Rated # |
|----------------------------------------------------|-------|---------------|------------------|-----------------|-----------------------------------|--------------|
| <b>Flexible Heat Shrinkable Polyolefin tubing.</b> |       |               |                  |                 |                                   |              |
| H-2(+)                                             | 600   | 125           | I                | All except CL   | None                              | Yes##        |
| H-2 (CB)                                           | 150   | 125           | I                | Black and White | None                              | Yes          |

#Tubing is considered to comply with the optional VW-1 flammability requirements only if it is so marked.

## VW-1 flammability rating limited to Black color only.

+ in the designation represents CTMS/TMS.

(CB) - Indicates 150V rated thin-walled tubing with a wall thickness in accordance with UL 224.

Marking: Company name Recognized Component Mark, the catalog designation, temperature rating in degrees C, and voltage rating appear on tags attached to both ends of the tubing or on the shipping spool label or smallest unit container.

[Last Updated](#) on 2006-06-30

[Questions?](#)

[Notice of Disclaimer](#)

[Page Top](#)

Copyright © 2006 Underwriters Laboratories Inc.®

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL's Follow-Up Service. Only those products bearing the UL Mark should be considered to be Listed and covered under UL's Follow-Up Service. Always look for the Mark on the product.

UL permits the reproduction of the material contained in the Online Certification Directory subject to the following conditions: 1. The Guide Information, Designs and/or Listings (files) must be presented in their entirety and in a non-misleading manner, without any manipulation of the data (or drawings). 2. The statement "Reprinted from the Online Certifications Directory with permission from Underwriters Laboratories Inc." must appear adjacent to the extracted material. In addition, the reprinted material must include a copyright notice in the following format: "Copyright © 2006 Underwriters Laboratories Inc.®"

An independent organization working for a safer world with integrity, precision and knowledge





# Certificate of Compliance

Certificate: 229705

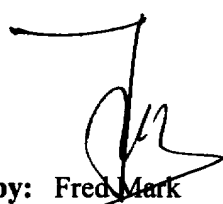
Project: 1661899M

Date Issued: April 28, 2005

Issued to: Hamburg Industries Co., Ltd.  
6F., No. 12, Lane 270, Sec. 3,  
Pei Shen Rd., Shen Keng Hsiang,  
Taipei Hsien, Taiwan

*The products listed below are eligible to bear the CSA Mark shown*



Authorized by:   
Director, Far East Operation

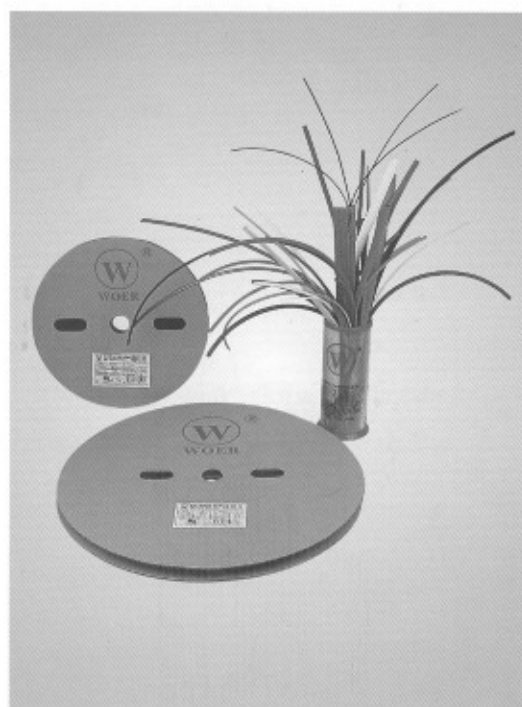
## PRODUCTS

CLASS 9032 01 - INSULATING DEVICES AND MATERIALS Insulating Tubing and Sleeving

- Flexible, heat-shrinkable, Cross-linked polyolefin tubing:

| Cat No      | Voltage Rating (V) | Temp Rating (C) | Trade Size (mm) | Notes |
|-------------|--------------------|-----------------|-----------------|-------|
| HAMBURG H-2 | 600                | 125             | 1.0-30          | 1     |

Note: In all colours except clear or translucent.



安规标准: UL224 VW-1  
C-UL CSA C 22.2 OFT

**WOER RSFR (H) 系列** H无卤环保阻燃热缩套管采用优质高聚物, 经科学配方、机械共混成高聚合物合金, 产品成型后经电子加速器辐照交联、连续扩张而成。产品具有环保、柔软、阻燃、收缩快、性能稳定等优点。广泛应用于电线连接、焊点保护、电线端部、线束及电子元器件的防护和绝缘处理; 健身器材零部件和钢结构表面防护; 相关产品的防锈、防腐处理; 电线和其它产品的标识等。

特点:

- ①八大元素、卤素元素通过SGS检测;
- ②不含有机锡化合物(三丁基锡类/三苯基锡类)、石棉(Asbestos)、烟雾剂(AzoCompounds)及限制其释放的物质-甲醛;
- ③适用范围:  $-55^{\circ}\text{C} \sim 125^{\circ}\text{C}$ ;
- ④起始收缩温度 $70^{\circ}\text{C}$ , 超薄型完全收缩温度 $110^{\circ}\text{C}$ , 普通型完全收缩温度 $120^{\circ}\text{C}$ , 轴向收缩率 $\leq 5\%$ ;
- ⑤柔软、阻燃;
- ⑥规格齐全,  $\phi 0.6 \sim \phi 180$ , 并可定制特殊规格;
- ⑦使用方便, 用烘箱和热风枪加热即可收缩。
- ⑧环保性能符合Sony与欧盟RoHS等环保标准。

标准颜色: 见标准颜色表, 其中“+”表示比色卡颜色偏深, “-”表示比色卡颜色偏浅。黑、白、红、黄、绿、蓝色为基本颜色, 常备库存, 其它颜色不备库存, 需定做。

## H管标准颜色

| 标准颜色     | 黑色 | 白色 | 红色   | 黄色   | 绿色    | 蓝色   | 紫色    | 灰色   | 棕色                | 铁红                |
|----------|----|----|------|------|-------|------|-------|------|-------------------|-------------------|
| 产品颜色标识   |    |    | 186U | 114U | 3288U | 646U | 2735U | 427U | 483U <sup>-</sup> | 484U <sup>-</sup> |
| H管彩色颜色色标 |    |    |      |      |       |      |       |      |                   |                   |

## 性能特性

| 性能   |                                    | 测试方法                    | 性能指标                    |
|------|------------------------------------|-------------------------|-------------------------|
| 物理特性 | 拉伸强度 (MPa)                         | GB/T1040                | $\geq 10.4$             |
|      | 断裂伸长率 (%)                          | GB/T1040                | $\geq 200$              |
|      | 热老化后拉伸强度 (MPa)                     | UL 224<br>158°C x 168hr | $\geq 7.3$              |
|      | 热老化后断裂伸长率 (%)                      | UL 224<br>158°C x 168hr | $\geq 100$              |
|      | 耐热冲击                               | UL 224<br>250°C x 4hr   | 不发粘<br>不龟裂              |
|      | 抗冷弯曲                               | UL 224<br>-30°C x 4hr   | 不龟裂                     |
| 电气特性 | 击穿强度 (kv/mm)                       | GB/T1408                | $\geq 15$               |
|      | 耐压                                 | 150V<br>UL 224          | 1500V不击穿                |
|      |                                    | 600V<br>UL 224          | 2500V不击穿                |
| 化学特性 | 体积电阻率 ( $\Omega \cdot \text{cm}$ ) | GB/T1410                | $\geq 1 \times 10^{14}$ |
|      | 抗腐蚀性                               | UL 224<br>158°C x 168hr | PASS                    |
|      | 铜安定性                               | UL 224<br>158°C x 168hr | PASS                    |
|      | 阻燃性                                | UL 224                  | VW-1                    |

## 环保特性

| 有害元素名称 | 测试方法                | 指标(mg/kg)   | 有害元素名称       | 测试方法              | 指标(mg/kg)  |
|--------|---------------------|-------------|--------------|-------------------|------------|
| 镉 (Cd) | EN1122:2001Method B | $\leq 5$    | 硒 (Se)       | EPA 3052          | $\leq 25$  |
| 铅 (Pb) | EPA 3050 B          | $\leq 90$   | 氟 (F)        | EN 14582 Method B | $\leq 200$ |
| 锑 (Sb) | EPA 3050 B          | $\leq 60$   | 氯 (Cl)       | EN 14582 Method B | $\leq 800$ |
| 钡 (Ba) | EPA 3050 B          | $\leq 1000$ | 溴 (Br)       | EN 14582 Method B | $\leq 800$ |
| 铬 (Cr) | EPA 3050 B          | $\leq 5$    | 碘 (I)        | EN 14582 Method B | $\leq 200$ |
| 汞 (Hg) | EPA 3052            | $\leq 5$    | 其中多溴联苯 (PBB) | EPA3540C或3550C    | 禁用         |
| 砷 (As) | EPA 3052            | $\leq 50$   | 多溴联苯醚 (PBDE) | EPA3540C或3550C    | 禁用         |

H管(无卤环保阻燃热缩套管)产品规格

| 规格<br>(mm) | 收缩前尺寸 (mm) |           | 收缩后尺寸 (mm) |           | 标准包装 |     |            | 适用范围<br>(mm) |
|------------|------------|-----------|------------|-----------|------|-----|------------|--------------|
|            | 内径         | 壁厚        | 内径         | 壁厚        | 米/盘  | 盘/箱 | 包装箱规格(cm)  |              |
| Φ0.6       | 0.9±0.2    | 0.15±0.05 | ≤0.40      | 0.22±0.10 | 200  | 23  | 31×31×44.5 | 0.5~0.7      |
| Φ0.8       | 1.1±0.2    | 0.15±0.05 | ≤0.50      | 0.22±0.10 | 200  | 23  | 31×31×44.5 | 0.6~0.8      |
| Φ1.0       | 1.5±0.2    | 0.15±0.05 | ≤0.65      | 0.28±0.10 | 200  | 16  | 31×31×44.5 | 0.75~0.9     |
| Φ1.5       | 2.0±0.2    | 0.18±0.05 | ≤0.85      | 0.32±0.10 | 200  | 12  | 31×31×44.5 | 0.95~1.4     |
| Φ2.0       | 2.5±0.2    | 0.18±0.05 | ≤1.00      | 0.35±0.10 | 200  | 15  | 46×46×44.5 | 1.1~1.8      |
| Φ2.5       | 3.0±0.2    | 0.18±0.05 | ≤1.30      | 0.38±0.10 | 200  | 13  | 46×46×44.5 | 1.4~2.3      |
| Φ3.0       | 3.5±0.2    | 0.18±0.05 | ≤1.50      | 0.40±0.10 | 200  | 11  | 46×46×44.5 | 1.6~2.7      |
| Φ3.5       | 4.0±0.2    | 0.22±0.05 | ≤1.80      | 0.42±0.10 | 200  | 9   | 46×46×44.5 | 1.9~3.2      |
| Φ4.0       | 4.5±0.2    | 0.25±0.05 | ≤2.00      | 0.45±0.10 | 200  | 7   | 46×46×44.5 | 2.1~3.6      |
| Φ4.5       | 5.0±0.2    | 0.25±0.05 | ≤2.30      | 0.50±0.10 | 100  | 10  | 46×46×44.5 | 2.4~4.0      |
| Φ5.0       | 5.5±0.2    | 0.25±0.05 | ≤2.5       | 0.55±0.10 | 100  | 9   | 46×46×44.5 | 2.6~4.5      |
| Φ5.5       | 6.0±0.2    | 0.25±0.05 | ≤2.75      | 0.55±0.10 | 100  | 8   | 46×46×44.5 | 2.85~5.0     |
| Φ6.0       | 6.5±0.2    | 0.28±0.05 | ≤3.0       | 0.55±0.10 | 100  | 7   | 46×46×44.5 | 3.1~5.4      |
| Φ7.0       | 7.5±0.3    | 0.28±0.05 | ≤3.5       | 0.55±0.10 | 100  | 14  | 46×46×31   | 3.7~6.3      |
| Φ8.0       | 8.5±0.3    | 0.28±0.05 | ≤4.0       | 0.60±0.10 | 100  | 13  | 46×46×31   | 4.2~7.2      |
| Φ9.0       | 9.5±0.3    | 0.30±0.08 | ≤4.5       | 0.60±0.10 | 100  | 12  | 46×46×31   | 4.7~8.0      |
| Φ10        | 10.5±0.3   | 0.30±0.08 | ≤5.0       | 0.60±0.10 | 100  | 11  | 46×46×31   | 5.2~9.0      |
| Φ11        | 11.5±0.3   | 0.30±0.08 | ≤5.5       | 0.60±0.10 | 100  | 11  | 46×46×31   | 5.7~10       |
| Φ12        | 12.5±0.3   | 0.30±0.08 | ≤6.0       | 0.60±0.10 | 100  | 10  | 46×46×31   | 6.2~11       |
| Φ13        | 13.5±0.3   | 0.35±0.10 | ≤6.5       | 0.65±0.10 | 100  | 9   | 46×46×29.5 | 6.7~12       |
| Φ14        | 14.5±0.3   | 0.35±0.10 | ≤7.0       | 0.65±0.10 | 100  | 9   | 46×46×31   | 7.3~13       |
| Φ15        | 15.5±0.4   | 0.40±0.12 | ≤7.5       | 0.70±0.10 | 100  | 8   | 46×46×29.5 | 7.8~14       |
| Φ16        | 16.5±0.4   | 0.40±0.12 | ≤8.0       | 0.70±0.10 | 100  | 8   | 46×46×31   | 8.3~15       |
| Φ17        | 17.5±0.4   | 0.40±0.12 | ≤8.5       | 0.70±0.10 | 100  | 7   | 46×46×29.5 | 8.8~16       |
| Φ18        | 19.0±0.5   | 0.40±0.15 | ≤9.0       | 0.80±0.15 | 100  | 7   | 46×46×29.5 | 9.3~17       |
| Φ20        | 21.0±0.5   | 0.40±0.15 | ≤10.0      | 0.80±0.15 | 100  | 6   | 46×46×29.5 | 10.4~19      |
| Φ22        | 23.0±0.5   | 0.40±0.15 | ≤11.0      | 0.80±0.15 | 100  | 6   | 46×46×31   | 11.4~21      |
| Φ25        | 26.0±0.5   | 0.50±0.15 | ≤12.5      | 0.90±0.15 | 50   | 6   | 46×46×31   | 12.9~24      |
| Φ28        | 29.0±0.5   | 0.50±0.15 | ≤14.0      | 0.90±0.15 | 50   | 5   | 46×46×29.5 | 14.4~27      |
| Φ30        | 31.5±1.0   | 0.50±0.15 | ≤15.0      | 0.95±0.15 | 50   | 5   | 46×46×31   | 16~29        |
| Φ35        | 36.5±1.0   | 0.50±0.15 | ≤17.5      | 1.00±0.15 | 50   | 4   | 46×46×29.5 | 18~34        |
| Φ40        | 41.5±1.0   | 0.55±0.15 | ≤20.0      | 1.00±0.15 | 50   | 4   | 46×46×31   | 21~39        |
| Φ45        | 46.5±1.0   | 0.55±0.15 | ≤22.5      | 1.00±0.15 | 25   | 5   | 31×31×40.5 | 23.5~44      |
| Φ50        | ≥50        | 0.55±0.15 | ≤25.0      | 1.00±0.15 | 25   | 5   | 31×31×44.5 | 26~49        |
| Φ60        | ≥60        | 0.60±0.15 | ≤31.0      | 1.30±0.20 | 25   | 4   | 31×31×42   | 35~55        |
| Φ70        | ≥70        | 0.65±0.15 | ≤36.0      | 1.30±0.20 | 25   | 3   | 31×31×37   | 40~65        |
| Φ80        | ≥80        | 0.65±0.15 | ≤41.0      | 1.46±0.20 | 25   | 3   | 31×31×42   | 45~75        |
| Φ90        | ≥90        | 0.65±0.15 | ≤46.0      | 1.46±0.20 | 25   | 2   | 31×31×32   | 50~85        |
| Φ100       | ≥100       | 0.65±0.20 | ≤51.0      | 1.46±0.20 | 25   | 2   | 31×31×34.5 | 55~95        |
| Φ120       | ≥120       | 0.65±0.20 | ≤61.0      | 1.56±0.20 | 15   | 2   | 31×31×40.5 | 65~115       |
| Φ150       | ≥150       | 0.65±0.20 | ≤76.0      | 1.56±0.20 | 15   | 2   | 31×31×49.5 | 80~145       |
| Φ180       | ≥180       | 0.65±0.30 | ≤91.0      | 1.56±0.20 | 15   | 1   | 31×31×31   | 95~175       |

H管(无卤环保阻燃热缩套管)产品规格(英制)

| 英寸<br>Inch | 规格<br>(mm) | 收缩前尺寸 (mm) |           | 收缩后尺寸 (mm) |           | 标准包装 |     |            | 适用范围<br>(mm) |
|------------|------------|------------|-----------|------------|-----------|------|-----|------------|--------------|
|            |            | 内径         | 壁厚        | 内径         | 壁厚        | 米/盘  | 盘/箱 | 包装箱规格(cm)  |              |
| 3/64       | Φ0.8       | 1.1±0.2    | 0.15±0.05 | ≤0.50      | 0.22±0.10 | 200  | 23  | 31×31×44.5 | 0.6~0.8      |
| 1/16       | Φ1.0       | 1.5±0.2    | 0.15±0.05 | ≤0.65      | 0.28±0.10 | 200  | 16  | 31×31×44.5 | 0.75~0.9     |
| 3/32       | Φ2.0       | 2.5±0.2    | 0.18±0.05 | ≤1.00      | 0.35±0.10 | 200  | 15  | 46×46×44.5 | 1.1~1.8      |
| 1/8        | Φ3.0       | 3.5±0.2    | 0.18±0.05 | ≤1.50      | 0.40±0.10 | 200  | 11  | 46×46×44.5 | 1.6~2.7      |
| 3/16       | Φ4.5       | 5.0±0.2    | 0.25±0.05 | ≤2.30      | 0.50±0.10 | 100  | 10  | 46×46×44.5 | 2.4~4.0      |
| 1/4        | Φ6.0       | 6.5±0.2    | 0.28±0.05 | ≤3.0       | 0.55±0.10 | 100  | 7   | 46×46×44.5 | 3.1~5.4      |
| 3/8        | Φ9.0       | 9.5±0.3    | 0.30±0.08 | ≤4.5       | 0.60±0.10 | 100  | 12  | 46×46×31   | 4.7~8.0      |
| 1/2        | Φ12        | 12.5±0.3   | 0.30±0.08 | ≤6.0       | 0.60±0.10 | 100  | 10  | 46×46×31   | 6.2~11       |
| 3/4        | Φ18        | 19.0±0.5   | 0.40±0.15 | ≤9.0       | 0.80±0.15 | 100  | 7   | 46×46×29.5 | 9.3~17       |
| 1          | Φ25        | 26.0±0.5   | 0.50±0.15 | ≤12.5      | 0.90±0.15 | 50   | 6   | 46×46×31   | 12.9~24      |
| 1-1/4      | Φ28        | 29.0±0.5   | 0.50±0.15 | ≤14.0      | 0.90±0.15 | 50   | 5   | 46×46×29.5 | 14.4~27      |
| 1-1/2      | Φ40        | 41.5±1.0   | 0.55±0.15 | ≤20.0      | 1.00±0.15 | 50   | 4   | 46×46×31   | 21~39        |
| 2          | Φ50        | ≥50        | 0.55±0.15 | ≤25.0      | 1.00±0.15 | 25   | 5   | 46×46×44.5 | 26~49        |
| 3          | Φ80        | ≥80        | 0.65±0.15 | ≤41.0      | 1.46±0.20 | 25   | 3   | 31×31×42   | 45~75        |
| 4          | Φ100       | ≥100       | 0.65±0.20 | ≤51.0      | 1.46±0.20 | 25   | 2   | 31×31×34.5 | 55~95        |
| 5          | Φ120       | ≥120       | 0.65±0.20 | ≤61.0      | 1.56±0.20 | 15   | 2   | 31×31×40.5 | 65~115       |

## H-CB管(无卤环保阻燃超薄型热缩套管)产品规格

| 规格<br>(mm) | 收缩前尺寸 (mm) |           | 收缩后尺寸 (mm) |           | 标准包装 |     |            | 适用范围<br>(mm) |
|------------|------------|-----------|------------|-----------|------|-----|------------|--------------|
|            | 内径         | 平均壁厚      | 最大内径       | 平均壁厚      | 米/盘  | 盘/箱 | 包装箱规格(cm)  |              |
| Φ1.0CB     | 1.40±0.2   | 0.13±0.05 | ≤0.65      | 0.20±0.10 | 200  | 19  | 31×31×44.5 | 0.7~1.0      |
| Φ1.5CB     | 1.90±0.2   | 0.13±0.05 | ≤0.85      | 0.20±0.10 | 200  | 13  | 31×31×44.5 | 0.9~1.4      |
| Φ2.0CB     | 2.40±0.2   | 0.13±0.05 | ≤1.00      | 0.22±0.10 | 200  | 18  | 46×46×44.5 | 1.1~1.8      |
| Φ2.5CB     | 2.90±0.2   | 0.13±0.05 | ≤1.30      | 0.25±0.10 | 200  | 15  | 46×46×44.5 | 1.4~2.3      |
| Φ3.0CB     | 3.40±0.2   | 0.13±0.05 | ≤1.50      | 0.28±0.10 | 200  | 13  | 46×46×44.5 | 1.6~2.7      |
| Φ3.5CB     | 3.90±0.2   | 0.13±0.05 | ≤1.80      | 0.28±0.10 | 200  | 10  | 46×46×44.5 | 1.9~3.2      |
| Φ4.0CB     | 4.40±0.2   | 0.15±0.05 | ≤2.00      | 0.30±0.10 | 200  | 8   | 46×46×44.5 | 2.1~3.6      |
| Φ4.5CB     | 4.90±0.2   | 0.15±0.05 | ≤2.30      | 0.30±0.10 | 100  | 10  | 46×46×44.5 | 2.4~4.0      |
| Φ5.0CB     | 5.50±0.2   | 0.15±0.05 | ≤2.5       | 0.32±0.10 | 100  | 10  | 46×46×44.5 | 2.6~4.5      |
| Φ6.0CB     | 6.50±0.2   | 0.15±0.05 | ≤3.0       | 0.32±0.10 | 100  | 8   | 46×46×44.5 | 3.1~5.4      |
| Φ7.0CB     | 7.5±0.3    | 0.15±0.05 | ≤3.5       | 0.32±0.10 | 100  | 20  | 31×31×44.5 | 3.7~6.3      |
| Φ8.0CB     | 8.5±0.3    | 0.15±0.05 | ≤4.0       | 0.32±0.10 | 100  | 18  | 31×31×44.5 | 4.2~7.2      |
| Φ9.0CB     | 9.5±0.3    | 0.15±0.05 | ≤4.5       | 0.35±0.10 | 100  | 18  | 31×31×44.5 | 4.7~8.0      |
| Φ10CB      | 10.5±0.3   | 0.15±0.05 | ≤5.0       | 0.35±0.10 | 100  | 16  | 31×31×44.5 | 5.2~9.0      |
| Φ11CB      | 11.5±0.3   | 0.18±0.05 | ≤5.5       | 0.40±0.10 | 100  | 15  | 31×31×44.5 | 5.7~10.0     |
| Φ12CB      | 12.5±0.3   | 0.20±0.05 | ≤6.0       | 0.40±0.10 | 100  | 10  | 46×46×31   | 6.2~11.0     |
| Φ13CB      | 13.5±0.3   | 0.20±0.05 | ≤6.5       | 0.40±0.10 | 100  | 9   | 46×46×29.5 | 6.7~12.0     |
| Φ14CB      | 14.5±0.3   | 0.20±0.05 | ≤7.0       | 0.40±0.10 | 100  | 9   | 46×46×29.5 | 7.3~13.0     |
| Φ15CB      | 15.5±0.4   | 0.20±0.05 | ≤7.5       | 0.40±0.10 | 100  | 8   | 46×46×29.5 | 7.8~14.0     |
| Φ16CB      | 16.5±0.4   | 0.22±0.05 | ≤8.0       | 0.40±0.10 | 100  | 8   | 46×46×31   | 8.3~15.0     |
| Φ17CB      | 17.5±0.4   | 0.22±0.05 | ≤8.5       | 0.40±0.10 | 100  | 8   | 46×46×29.5 | 8.8~16.0     |
| Φ18CB      | 18.5±0.4   | 0.22±0.05 | ≤9.0       | 0.42±0.10 | 100  | 7   | 46×46×29.5 | 9.3~17.0     |
| Φ20CB      | 20.5±0.5   | 0.25±0.05 | ≤10.0      | 0.45±0.10 | 100  | 6   | 46×46×29.5 | 10.5~19.0    |
| Φ22CB      | 22.5±0.5   | 0.25±0.05 | ≤11.0      | 0.45±0.10 | 100  | 6   | 46×46×29.5 | 11.5~20.5    |
| Φ25CB      | 25.5±0.5   | 0.25±0.05 | ≤12.5      | 0.45±0.10 | 50   | 6   | 46×46×31   | 13.0~24.0    |

## H-CB管(无卤环保阻燃超薄型热缩套管)产品规格(英制)

| 英寸<br>Inch | 规格<br>(mm) | 收缩前尺寸 (mm) |           | 收缩后尺寸 (mm) |           | 标准包装 |     |            | 适用范围<br>(mm) |
|------------|------------|------------|-----------|------------|-----------|------|-----|------------|--------------|
|            |            | 内径         | 平均壁厚      | 内径         | 平均壁厚      | 米/盘  | 盘/箱 | 包装箱规格(cm)  |              |
| 1/16       | Φ1.0 CB    | 1.40±0.20  | 0.13±0.05 | ≤0.65      | 0.20±0.10 | 200  | 19  | 31×31×44.5 | 0.7~1.0      |
| 3/32       | Φ2.0 CB    | 2.40±0.20  | 0.13±0.05 | ≤1.00      | 0.22±0.10 | 200  | 18  | 46×46×44.5 | 1.1~1.8      |
| 1/8        | Φ3.0 CB    | 3.40±0.20  | 0.13±0.05 | ≤1.50      | 0.28±0.10 | 200  | 13  | 46×46×44.5 | 1.6~2.7      |
| 3/16       | Φ4.5 CB    | 4.90±0.20  | 0.15±0.05 | ≤2.30      | 0.30±0.10 | 100  | 10  | 46×46×44.5 | 2.4~4.0      |
| 1/4        | Φ6.0 CB    | 6.50±0.20  | 0.15±0.05 | ≤3.0       | 0.32±0.10 | 100  | 8   | 46×46×44.5 | 3.1~5.4      |
| 3/8        | Φ9.0 CB    | 9.50±0.30  | 0.15±0.05 | ≤4.5       | 0.35±0.10 | 100  | 18  | 31×31×44.5 | 4.7~8.0      |
| 1/2        | Φ12.0 CB   | 12.5±0.30  | 0.20±0.05 | ≤6.0       | 0.40±0.10 | 100  | 10  | 46×46×31   | 6.2~11.0     |
| 3/4        | Φ18.0 CB   | 18.5±0.40  | 0.22±0.05 | ≤9.0       | 0.42±0.10 | 100  | 7   | 46×46×29.5 | 9.3~17.0     |
| 1          | Φ25.0 CB   | 25.5±0.50  | 0.25±0.05 | ≤12.5      | 0.45±0.10 | 50   | 6   | 46×46×31   | 12.5~25.5    |



## YDPU8.E203950 Tubing, Extruded Insulating Certified for Canada - Component

[Page Bottom](#)

### Tubing, Extruded Insulating Certified for Canada - Component

[See General Information for Tubing, Extruded Insulating Certified for Canada - Component](#)

SHENZHEN WOER HEAT-SHRINKABLE MATERIAL CO LTD

E203950

XINWEI INDUSTRIAL PARK, WOER MANSION

NANSHAN DISTRICT, XILI

SHENZHEN, GUANGDONG 518052 CHINA

| Cat. No.                                                     | Max V | Max Temp C | Col Recognized   | Max Temp Rated Oil Resistance C | VW-1 Rated # |
|--------------------------------------------------------------|-------|------------|------------------|---------------------------------|--------------|
| <b>Heat-Shrinkable Polyolefin Tubing</b>                     |       |            |                  |                                 |              |
| RSFR-x                                                       | 600   | 125        | Black            | None                            | Yes          |
| RSFR-x                                                       | 600   | 125        | White            | None                            | Yes          |
| WKZM-x-yz                                                    | 600   | 125        | White            | None                            | No           |
| RSFR-H                                                       | 600   | 125        | All except Clear | None                            | Yes          |
| RSFR(CB)                                                     | 300   | 125        | All except Clear | None                            | Yes          |
| <b>Not Heat-Shrinkable PTFE Tubing</b>                       |       |            |                  |                                 |              |
| WF                                                           | 600   | 200        | Natural          | None                            | Yes          |
| <b>Heat-Shrinkable Polyolefin Tubing with Meltable Liner</b> |       |            |                  |                                 |              |
| SBRS                                                         | 600   | 105        | All except Clear | None                            | Yes          |
| <b>Not Heat-Shrinkable Standard Wall Silicone Tubing</b>     |       |            |                  |                                 |              |
| WST-600                                                      | 600   | 150        | White            | None                            | @            |

x - Designated tubing expanded ID. For Black color tubing, x represents expanded ID of 2 mm - 8 mm. For White color tubing, x represents expanded ID of 1mm - 50 mm.

yz - Represents any alpha and/or numeric combination for internal client code.

# - Tubing is considered to comply with the optional VW-1 flammability requirements only if it is so marked.

@ - VW-1 rated for internal diameter sizes 6.50 - 15.00 mm only.

Marking: Company name or file number "E203950", catalog number, voltage rating, temperature rating in degrees C, inside diameter (before and after recovery), date of manufacture and the Recognized Component Mark for Canada  on tags attached to both ends of the tubing or on the shipping spool label or smallest unit container.

[Last Updated](#) on 2007-09-25

[Questions?](#)

[Notice of Dislaimer](#)

[Page Top](#)

Copyright © 2007 Underwriters Laboratories Inc.®

The appearance of a company's name or product in this database does not in itself assure that products so identified have been manufactured under UL's Follow-Up Service. Only those products bearing the UL Mark should be considered to be Listed and covered under UL's Follow-Up Service. Always look for the Mark on the product.

UL permits the reproduction of the material contained in the Online Certification Directory subject to the following conditions: 1. The Guide Information, Designs and/or Listings (files) must be presented in their entirety and in a non-misleading manner, without any manipulation of the data (or drawings). 2. The statement "Reprinted from the Online Certifications Directory with permission from Underwriters Laboratories Inc."

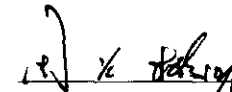
樣品檢驗記錄表

編號: SSR-209371

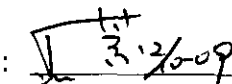
| 詳裕料號/<br>專案代號 |                | C037-511026-A      |       | 品名/規格    |     | RF Cable Assembly |     | 數量  |   | Spec |   | 日期 |          | 09.12.10                                                |                                                                    |                                                                    |
|---------------|----------------|--------------------|-------|----------|-----|-------------------|-----|-----|---|------|---|----|----------|---------------------------------------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------|
| 檢驗<br>項目      | Item           | 公差                 | 樣品編號  |          |     |                   |     |     |   |      |   |    | 量測<br>工具 | 判定                                                      |                                                                    |                                                                    |
|               |                |                    | 1     | 2        | 3   | 4                 | 5   | 6   | 7 | 8    | 9 | 10 |          |                                                         |                                                                    |                                                                    |
| 尺寸            | 1              | 110                | ±3    | 110      | 110 | 111               | 110 | 110 |   |      |   |    |          |                                                         | A                                                                  | <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG |
|               | 2              |                    |       |          |     |                   |     |     |   |      |   |    |          |                                                         |                                                                    | <input type="checkbox"/> OK <input type="checkbox"/> NG            |
|               | 3              |                    |       |          |     |                   |     |     |   |      |   |    |          |                                                         |                                                                    | <input type="checkbox"/> OK <input type="checkbox"/> NG            |
|               | 4              |                    |       |          |     |                   |     |     |   |      |   |    |          |                                                         |                                                                    | <input type="checkbox"/> OK <input type="checkbox"/> NG            |
|               | 5              |                    |       |          |     |                   |     |     |   |      |   |    |          |                                                         |                                                                    | <input type="checkbox"/> OK <input type="checkbox"/> NG            |
|               | 6              |                    |       |          |     |                   |     |     |   |      |   |    |          |                                                         |                                                                    | <input type="checkbox"/> OK <input type="checkbox"/> NG            |
|               | 7              |                    |       |          |     |                   |     |     |   |      |   |    |          |                                                         |                                                                    | <input type="checkbox"/> OK <input type="checkbox"/> NG            |
|               | 8              |                    |       |          |     |                   |     |     |   |      |   |    |          |                                                         |                                                                    | <input type="checkbox"/> OK <input type="checkbox"/> NG            |
| 外觀            | 1              | 咬花                 | 樣品或規格 |          |     |                   |     |     |   |      |   |    |          | 目視                                                      | <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG |                                                                    |
|               | 2              | 配色                 | 樣品或規格 |          |     |                   |     |     |   |      |   |    |          | 目視                                                      | <input type="checkbox"/> OK <input type="checkbox"/> NG            |                                                                    |
|               | 3              | 印刷                 | 樣品或規格 |          |     |                   |     |     |   |      |   |    |          | 目視                                                      | <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG |                                                                    |
|               | 4              | 亮霧度                | 樣品或規格 |          |     |                   |     |     |   |      |   |    |          | 目視                                                      | <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG |                                                                    |
| 電氣<br>特性      | 1              | VSWR               |       | 2.4185   |     |                   |     |     |   |      |   |    |          | NA                                                      | <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG |                                                                    |
|               | 2              | <del>S21</del> S21 |       | -66473dB |     |                   |     |     |   |      |   |    |          | NA                                                      | <input checked="" type="checkbox"/> OK <input type="checkbox"/> NG |                                                                    |
|               | 3              | Gain               |       |          |     |                   |     |     |   |      |   |    |          | chamber                                                 | <input type="checkbox"/> OK <input type="checkbox"/> NG            |                                                                    |
| 零件組<br>配性     | 各零件組配<br>性狀況   | 樣品或規格              |       |          |     |                   |     |     |   |      |   |    |          | <input type="checkbox"/> OK <input type="checkbox"/> NG |                                                                    |                                                                    |
| 材料選<br>用確認    | 是否依照成<br>品圖之材料 |                    |       |          |     |                   |     |     |   |      |   |    |          | <input type="checkbox"/> OK <input type="checkbox"/> NG |                                                                    |                                                                    |
| 備注:           |                |                    |       |          |     |                   |     |     |   |      |   |    |          |                                                         |                                                                    |                                                                    |

※量測工具: a游標卡尺 b塞規 c深度規 d工具顯微鏡 e厚薄規 f分厘卡 g扭力計 h拉拔測試機 i組配

尺寸檢驗:標注在附圖Mark表示

核 準: 

審 核: 

工 程 師:  3.12.09

QE-R/D-0036B

