

SPECIFICATION

承 認 書

客戶名稱 (CUSTOMER) 神基科技股份有限公司

客戶料號 (CUSTOMER P/N) 2.4G + 5G Pifa Ant / OD1.13mm 灰色

產品型號 (PRODUCT) 450mm / MHF Conn

料 號 (PART NO.) RFA-02-G01

日 期 (DATE) 2004 / 12 / 21

| 客戶承認 CUSTOMER APPROVED | 業 務 SALES BY | 核 准 APPROVED BY | 審 核 CHECKED BY | 檢 查 TESTED BY |
|------------------------------|-----------------|--------------------|-------------------|------------------|
| | Simon | Nick | Chris | Wason |



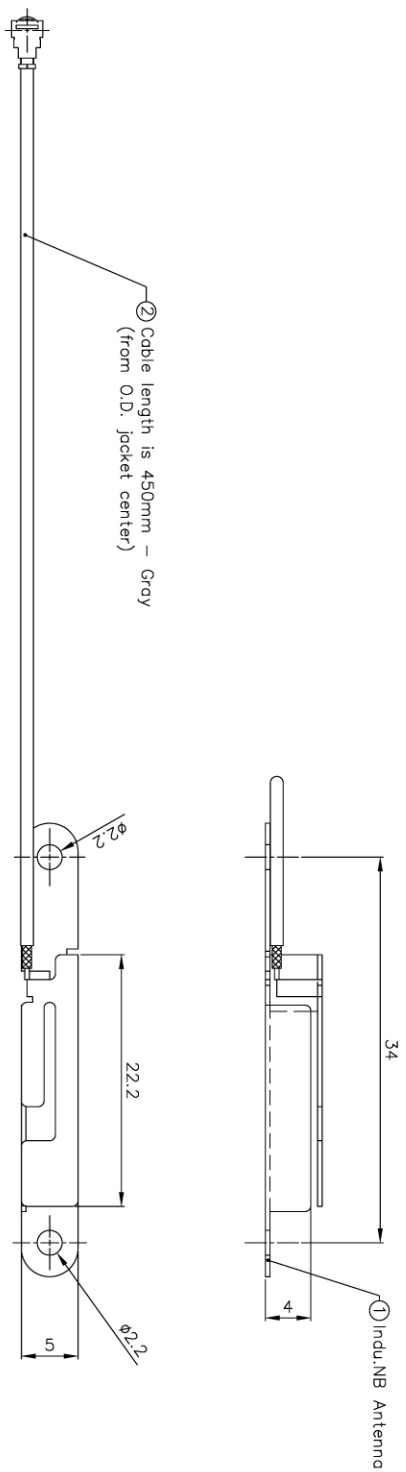
通耀電子股份有限公司
Tonyo Electronics Co., Ltd.

□ 台灣總公司 : 115臺北市南港區南港路一段287巷4弄8號5樓
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| REVISION | | 7 | 8 |
|----------|-------------|------|------|
| NO. | DESCRIPTION | DATE | REV. |
| | | | |




GENERAL TOLERANCE RANGE

| | |
|---|---------------------------|
| <input type="checkbox"/> PCB(电路板) | ±1MILL |
| <input type="checkbox"/> MACHINING(加工件) | X=±0.5 X.X=±0.2 X.XX=±0.1 |
| <input type="checkbox"/> STAMP(冲製件) | X=±0.6 X.X=±0.3 X.XX=±0.1 |
| <input type="checkbox"/> INJECTION(射出件) | X=±1 X.X=±0.5 X.XX=±0.15 |
| <input type="checkbox"/> CASTING(壓鑄件) | X=±1 X.X=±0.5 X.XX=±0.15 |
| <input type="checkbox"/> PACKING(包材) | X=±6 X.X=±3 X.XX=±1 |
| <input checked="" type="checkbox"/> ASSEMBLY(組合件) | X=±4 X.X=±2 X.XX=±0.5 |

ANGLES: X=±2° X.X=±1° X.XX=±0.5°


通耀電子股份有限公司
Tonyo Electronics Co., Ltd.

| | | |
|---|---------------|------------------------------------|
|  | UNIT: mm | TITLE: Indu. NB for Mitec ASSEMBLY |
| DRAWN BY Wason | DATE 04/07/16 | CUSTOMER |
| CHECKED BY Chris | DATE 04/07/16 | |
| APPROVED BY Nick | DATE 04/07/16 | |
| SALE BY | DATE | PART NO. RFA-02-GO2 |
| | | CUSTOMER P/N |
| | | SAMPLE NO. |
| | | REV. A |

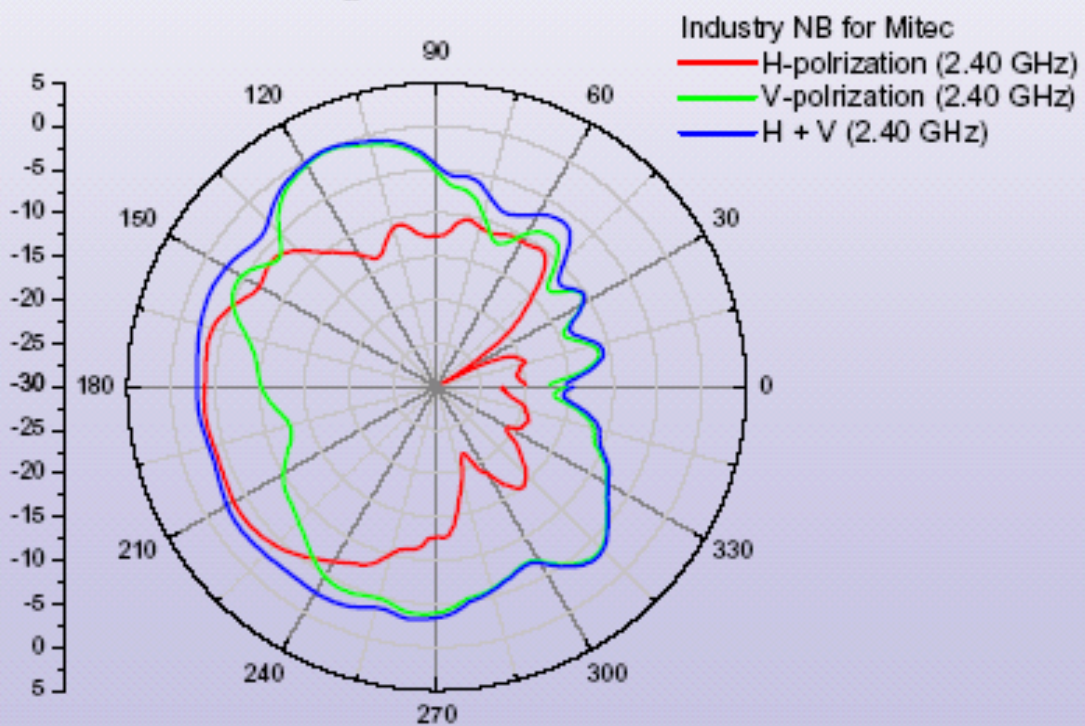
1 2 3 4 5 6 7 8

Antenna radiation pattern

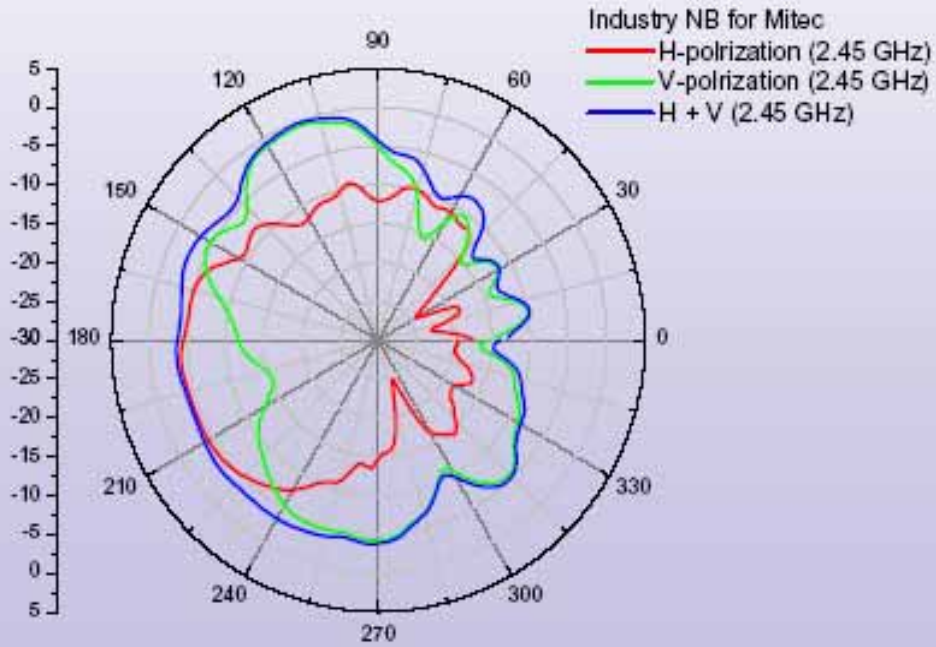
Gain Test: Right Antenna

| Frequency (MHz) | Peak Gain (dBi) | Average Gain (dBi) |
|-----------------|-----------------|--------------------|
| 2400 | 0.06 | -4.16 |
| 2450 | -0.12 | -4.82 |
| 2500 | -1.01 | -5.27 |
| | | |
| | | |
| | | |
| | | |
| | | |
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| | | |
| | | |

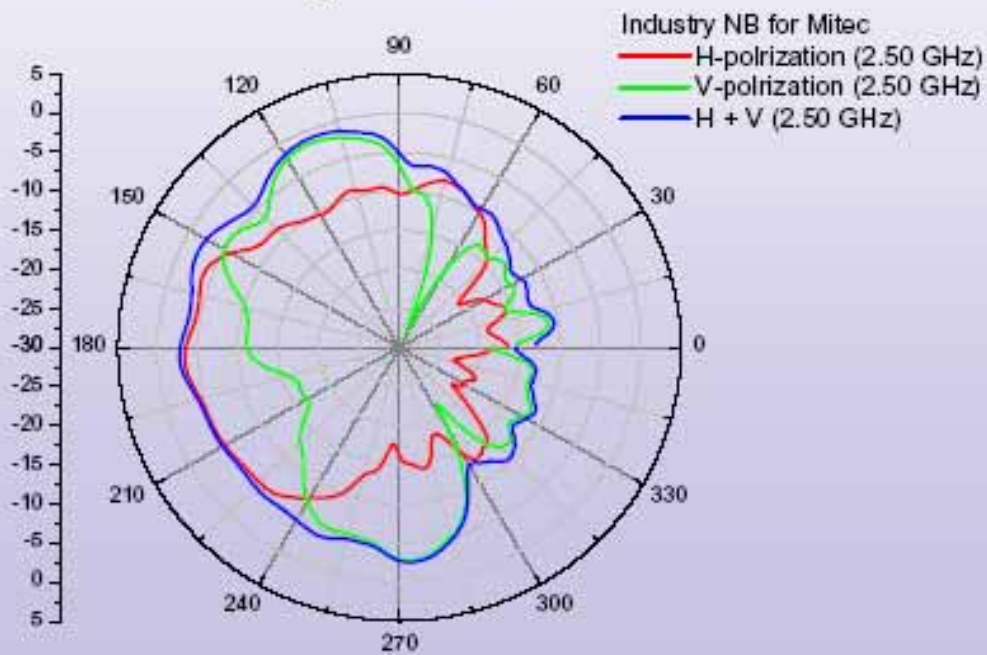
Right Antenna



Right Antenna



Right Antenna



KURABE INDUSTRIAL CO., LTD

| | | | |
|---------------------|--|---------|-----------|
| SP3830M-X | FEP INSULATED HIGH-FREQUENCY COAXIAL CABLE (FWS 5022) | PAGE | 1/4 |
| PRODUCT STANDARD | | ISSUED | 17-9-2001 |
| | | REVISED | |

1. SCOPE

This standard covers "FEP insulated High-Frequency coaxial cable".

2. CONSTRUCTION

Construction and dimensions of the cable are shown in Figure.1 and Table 1.

3. PERFORMANCE

Performance of the finished cable is shown in Table 2. The test methods are in accordance with applicable test methods described in JIS C 3005.

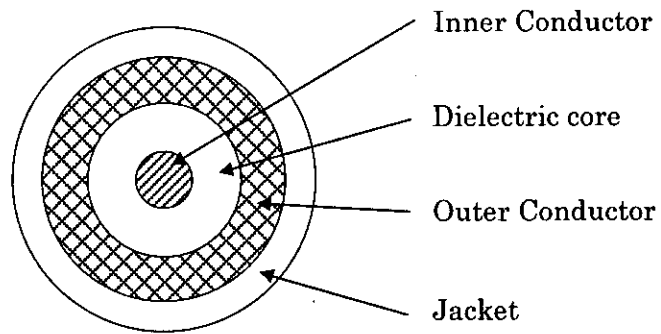


Figure 1.

| | | |
|--------|-----------|--------------------|
| NOTE : | MADE BY | <i>M. Ohba</i> |
| | APPROVALS | <i>J. Kawazawa</i> |

KURABE INDUSTRIAL CO., LTD

| | | | |
|---------------------|--|---------|-----------|
| SP3830M-X | FEP INSULATED HIGH-FREQUENCY COAXIAL CABLE (FWS 5022) | PAGE | 2/4 |
| PRODUCT STANDARD | | ISSUED | 17-9-2001 |
| | | REVISED | |

Table 1. Construction

| Item | Unit | Specified Value |
|--------------------|---------------|--|
| Inner Conductor | Material | — Silver coated annealed copper wire |
| | Stranding | No./mm 7/0.08 |
| | Dia.(approx.) | 0.24 |
| Dielectric Core | Material | — FEP |
| | Thick.(nom.) | mm 0.22 |
| | Dia. | mm 0.68±0.05 |
| | Color | — Natural |
| Outer Conductor | Material | — Silver coated annealed copper wire |
| | Type | — Braid (16/4/0.05) |
| | Dia.(approx) | mm 0.93 |
| Jacket | Material | — FEP |
| | Thick.(nom.) | mm 0.10 |
| | Dia. | mm 1.13 +0.10/-0.06 |
| | Color | — Standard colors are white,black,blue,brown,and gray. |

Table 2. Performance

| Item | Unit | Specified Value | Note |
|-------------------------------|-------|---|---------------------------------------|
| Appearance | — | Faultless in visible | — |
| Inner conductor resistance | Ω/km | Max.597 | at 20°C |
| Insulation resistance | MΩ·km | Min.1500 | at 20°C |
| Dielectric strength | — | Dielectric core: No breakdown at AC1.5kV for 0.15sec. | Spark test |
| | | Jacket: No breakdown at AC1.5kV for 0.15sec. | Spark test |
| | | No breakdown at AC500V for 1min. | Outer conductor to inner conductor |
| Heat resistance for solder | — | Shrink or expansion of dielectric core are not more than 0.5mm | ※ |
| Capacitance | pF/m | nom. 98 | at 1kHz |
| Characteristic impedance | Ω | 50±2 | TDR method |
| Attenuation (nom.) | dB/m | 2.0 | 1.0GHZ |
| | | 2.9 | 2.0GHZ |
| | | 3.6 | 3.0GHZ |
| | | 4.2 | 4.0GHZ |
| | | 4.7 | 5.0GHZ |
| | | 5.2 | 6.0GHZ |

※ After immersion of dielectric core, 10mm into soldering pot which is 230°C for 5 seconds, shrinkage or expansion of the dielectric core must not exceed 0.5mm.

| | | |
|--------|-----------|--------------------|
| NOTE : | MADE BY | <i>M. Ohba</i> |
| | APPROVALS | <i>J. Kawasumi</i> |

KURABE INDUSTRIAL CO., LTD

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| SP3830M-X | FEP INSULATED HIGH-FREQUENCY COAXIAL CABLE (FWS 5022) | PAGE | 3/4 |
| PRODUCT STANDARD | | ISSUED | 17-9-2001 |
| | | REVISED | |

4. INSPECTION

An inspection is took place in accordance with applicable test methods. The cable has to pass the specifications described Table 1 and Table 2.

5. TEST METHOD

The test methods are in accordance with applicable test methods described in JIS C 3005 (Test methods for rubber or plastic insulated wires and cables).

6. TEMPERATURE RATING

150 °C

7. VOLATGE LATING

250 V

8. MARKING ON TAG

Each reel of finished cable is tagged to indicate following information:

- (1) Designation of the cable,
- (2) Conductor size,
- (3) Length,
- (4) Date of manufacture or LOT No.,
- (5) Specification No., and
- (6) Manufacture's name.

9. PACKAGE

The finished cables are cut into a shipping length of 200 meters, reeled to paper bobbin and packed securely to prevent injuries during transportation. Odd length of the finished wires should be accepted for shipping according to the condition of mutual agreement.

In the case no agreement is found, the condition stated in quotation shall prevail.

10. APPLICATION NOTES

10-1. For use other than the use mutually agreed, compatibility should be carefully confirmed in each practical use by user.

10-2. It is recommended to make a trial run for each practical application.

| | | |
|--------|-----------|--------------------|
| NOTE : | MADE BY | <i>M. Ohba</i> |
| | APPROVALS | <i>T. Hamazawa</i> |

KURABE INDUSTRIAL CO., LTD

| | | | |
|---------------------|--|---------|-----------|
| SP3830M-X | FEP INSULATED HIGH-FREQUENCY COAXIAL CABLE (FWS 5022) | PAGE | 4/4 |
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| | | REVISED | |

10-3. In case a design for use of cable is changed, please contact our sales department, if necessary. Do not use under extreme mechanical stress such as hard bending, tightening, and twisting. The use under extreme mechanical stress may cause not only shortening the life span of cable but also troubles such as decline of dielectric strength.

10-4. Handling precautions

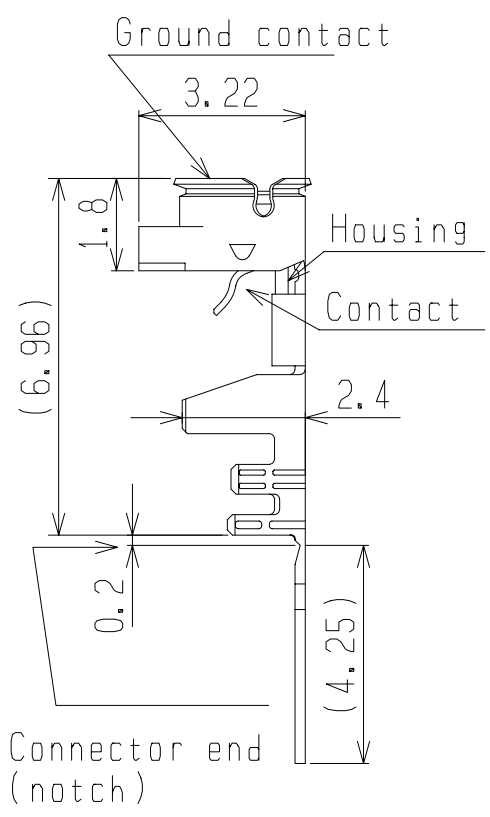
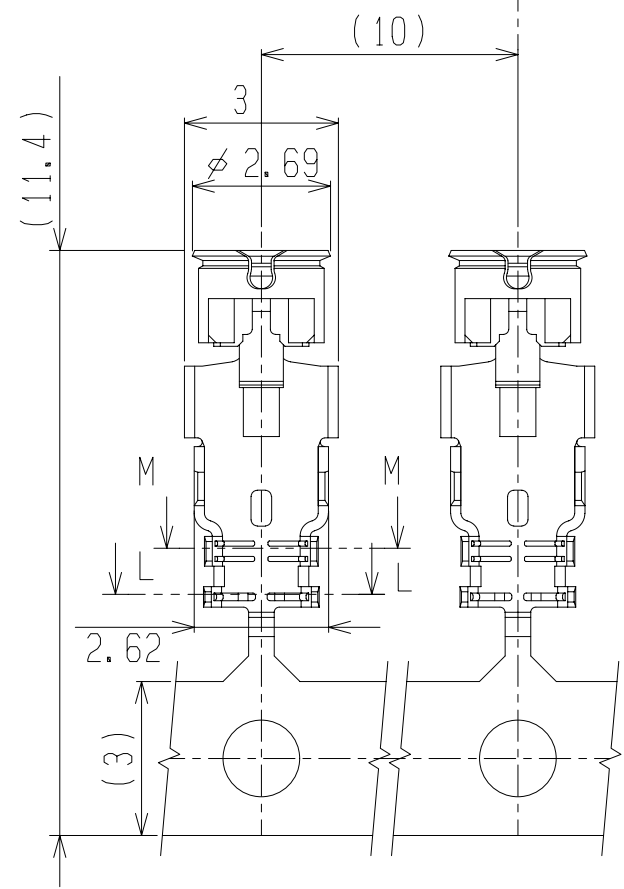
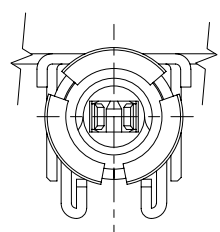
- ① Do not hurt the insulation and sheath of the cable by making holes and scratches. And avoid any sharp edge when wiring so as not to injure cables.
- ② Avoid unnecessary excessive force to cable, such as pulling, twisting, bending or tightening.

10-5. Storage precautions

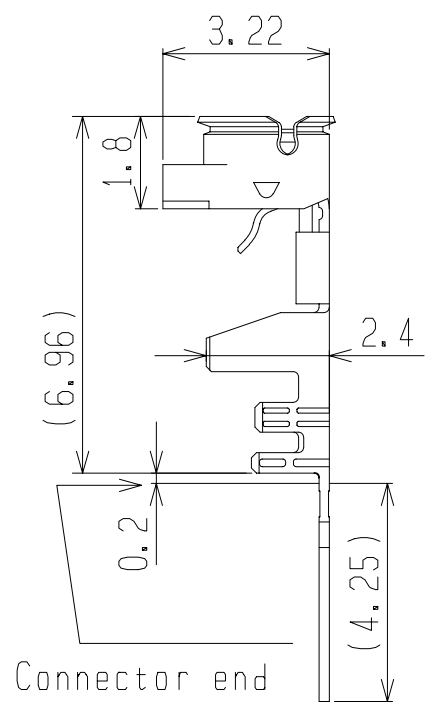
Avoid continuous exposure to sunlight.

| | | |
|--------|-----------|--------------------|
| NOTE : | MADE BY | <i>M. Ohba</i> |
| | APPROVALS | <i>T. Kawasaki</i> |

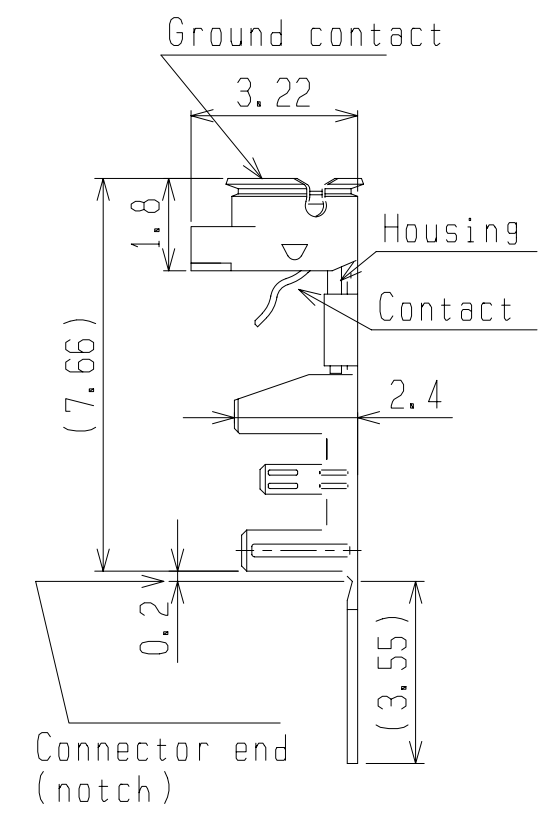
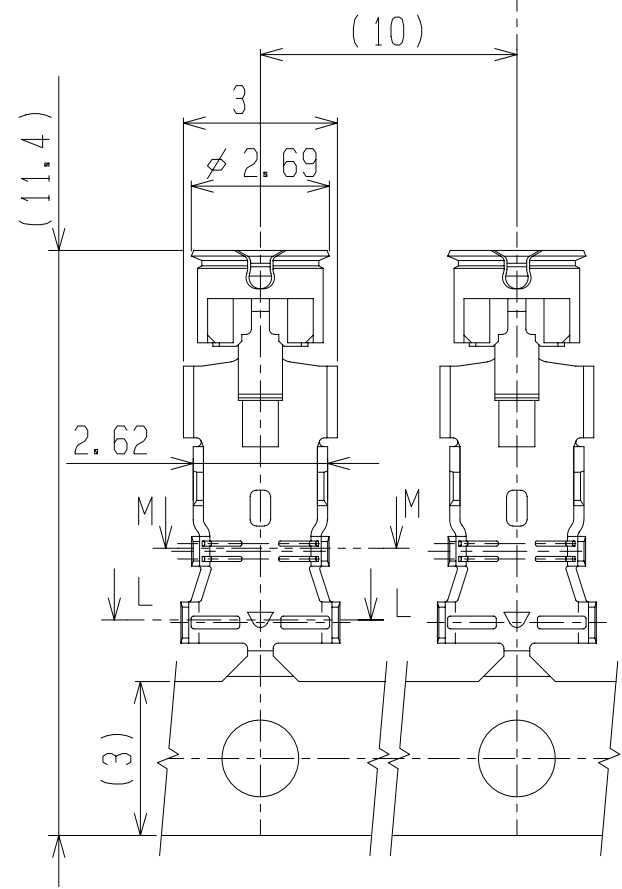
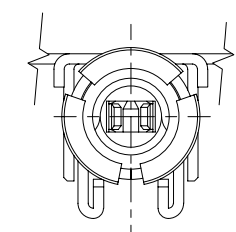
PART NO.
20278-**1R-**



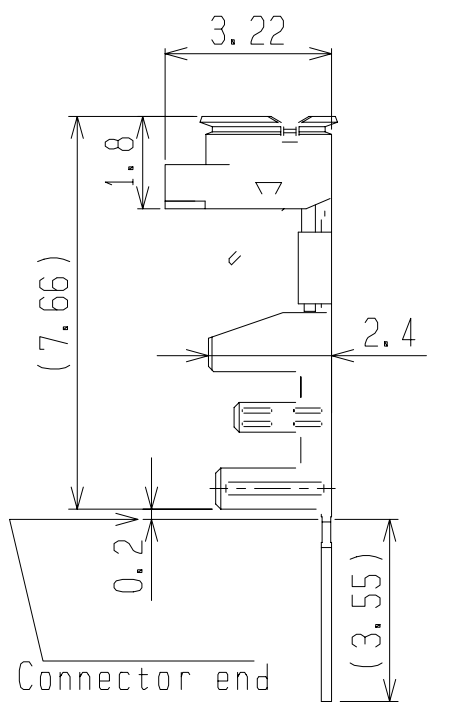
Part No. 20278-101R-08
20278-101R-13
20278-101R-32
For hand tool
(with notch)



Part No. 20278-111R-08
20278-111R-13
20278-111R-32
For semi auto
termination machine
(without notch)



Part No. 20278-101R-18
For hand tool
(with notch)



Part No. 20278-111R-18
For semi auto
termination machine
(without notch)

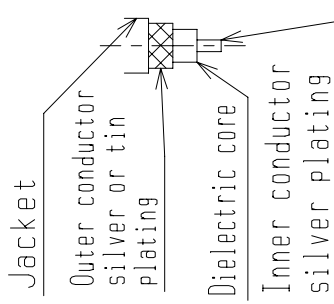
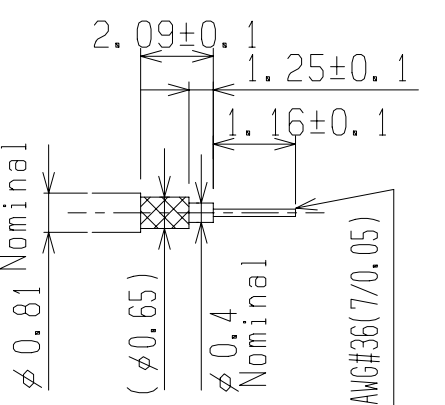
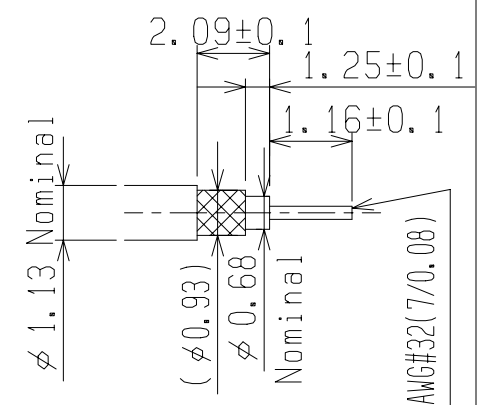
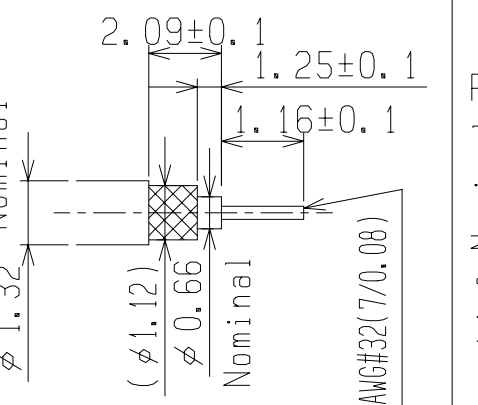
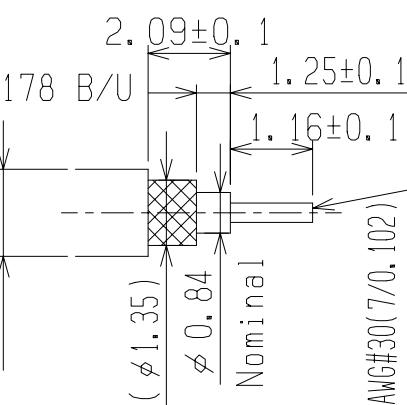
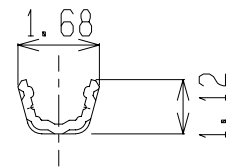
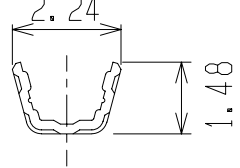
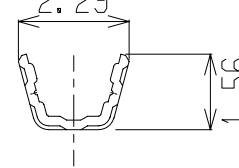
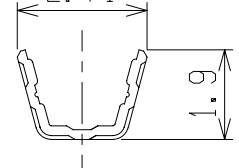
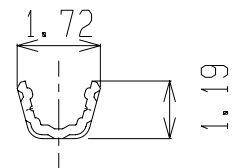
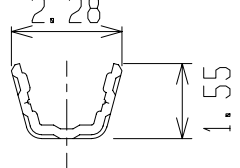
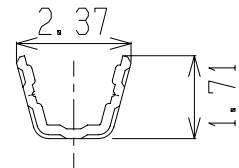
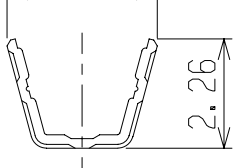
| GENERAL TOLERANCE | |
|-------------------|------|
| 6 MAX. | ±0.2 |
| 6 OVER MAX. 30 | ±0.3 |
| 30 OVER MAX. 120 | ±0.5 |
| ANGLE | ±2° |

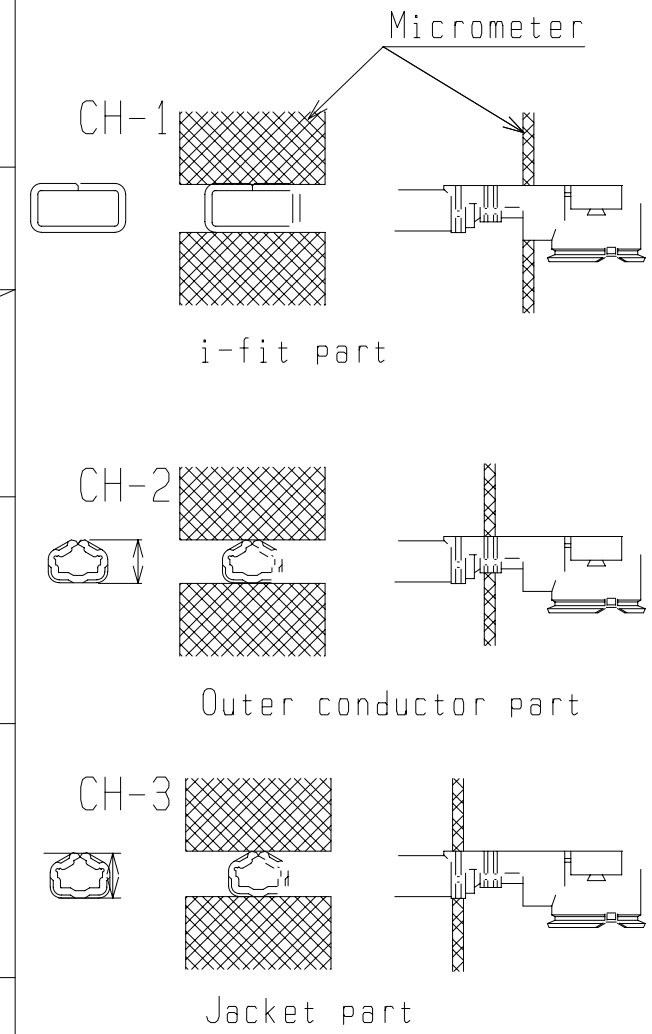
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|-----|-------|------|------------|------|-----|-------|------|-----------|------|-------------|-------|------|-----------|------|--|
| | | | | | 11C | Z3041 | K. O | Mar/24/03 | K. K | 4 | Z2023 | K. O | JAN/30/02 | E. K | |
| | | | | | 10C | Z3014 | K. O | JAN/31/03 | K. K | 3 | Z1256 | K. O | NOV/14/01 | K. K | |
| | | | | | 9C | Z2239 | K. O | NOV/15/02 | E. K | 2 | Z1197 | K. O | AUG/27/01 | K. K | |
| | | | | | 8C | Z2224 | K. O | OCT/17/02 | E. K | 1 | Z1118 | K. O | JUN/26/01 | K. K | |
| | | | | | 7B | Z2180 | K. O | JUL/29/02 | E. K | 0 | Z1109 | K. O | JUN/13/01 | | |
| 13C | Z3074 | A. H | May/22/'03 | K. K | 6B | Z2146 | K. O | JUN/24/02 | K. K | REV | ECN | BY | DATE | APP | |
| 12C | Z3052 | K. O | Apr/16/'03 | K. K | 5B | Z2117 | A. H | MAY/17/02 | K. K | REV. RECORD | | | | | |
| REV | ECN | BY | DATE | APP | REV | ECN | BY | DATE | APP | SERIES No. | 2814 | | | | |

| | |
|---------------|------------|
| DESIGN'D BY | DATE |
| K. Ohbayashi | JUN/13/01 |
| CHK'D BY | DATE |
| | |
| APP'D BY | DATE |
| K. Katabuchi | JUN/13/01 |
| CUSTOMER COPY | PROJECTION |
| | 6/1 |



| | | | |
|-------|------|---|-------|
| TITLE | | MHF series micro coaxial connector plug vertical (ground contact : gold plating) | |
| SCALE | UNIT | DWG. No. | SHEET |
| 6/1 | mm | 20278 | 1/3 |
| REV. | 13C | | |

| Part No. | 20278-101R-08 20278-111R-08 | 20278-101R-13 20278-111R-13 | 20278-101R-32 20278-111R-32 | 20278-101R-18 20278-111R-18 | |
|--|---|--|---|---|-----------|
| Applicable cable nominal dimension  |  |  |  |  | |
| | * NOTE-1 | * NOTE-1 | * NOTE-1 | * NOTE-1 | |
| Braided shield of Outer conductor 外部導体の編組 | Single / 1重編組 | Single / 1重編組 | Double / 2重編組 | Single / 1重編組 | |
| P/N of hand Tool | 90187-008C | 90187-013C | 90187-032C | 90233-018 | |
| P/N of semi auto termination machine | 90213-008C | 90213-013C | 90213-032C | 90232-018 | |
| Sect. M-M |  |  |  |  | |
| Sect. L-L |  |  |  |  | |
| Crimp Height | CH-1 | 1.34~1.40 | 1.34~1.40 | 1.34~1.40 | 1.34~1.40 |
| | CH-2 | 0.76~0.84 | 1.06~1.14 | 1.20~1.30 | 1.41~1.49 |
| | CH-3 | 0.85~0.97 | 1.15~1.35 | 1.26~1.46 | 1.70~1.80 |



Crimp Height

NOTE-1
中心導体, 外部導体への半田コーティングは不可
Must not use solder coated inner conductor and outer conductor.

| GENERAL TOLERANCE | |
|-------------------|------|
| 6 MAX. | ±0.2 |
| 6 OVER MAX. 30 | ±0.3 |
| 30 OVER MAX. 120 | ±0.5 |
| ANGLE | ±2° |

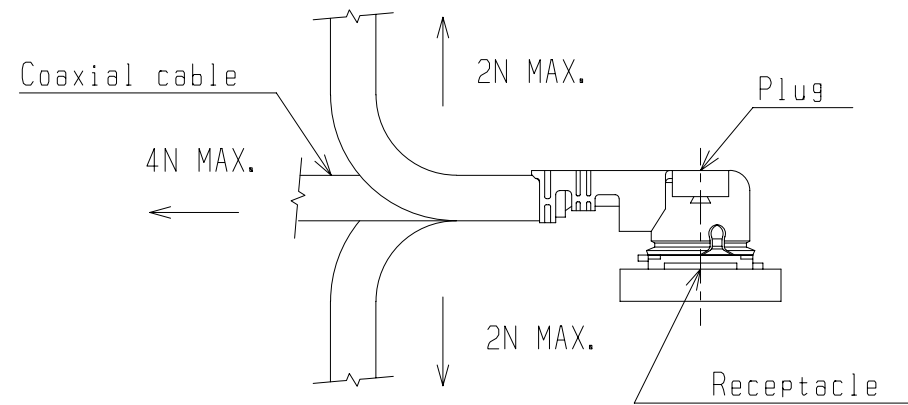
| | | | | |
|---------------|------|------------|------|-----|
| DESIGN' D BY | DATE | | | |
| CHK' D BY | DATE | | | |
| APP' D BY | DATE | | | |
| REV | ECN | BY | DATE | APP |
| REV. RECORD | | | | |
| SERIES No. | | 2814 | | |
| CUSTOMER COPY | | PROJECTION | | |

| | | | |
|--|------|--|------------|
| I-PEX | | Interconnect and Packaging Electronics TOKYO, JAPAN | |
| TITLE | | | |
| MHF series micro coaxial connector plug vertical (ground contact : gold plating) | | | |
| SCALE | UNIT | DWG. No. | SHEET REV. |
| -/- | mm | 20278 | 2/3 13C |

Notes

1. Material
 (1) Housing : PBT , UL94V-0 , black
 (2) Contact
 phosphor bronze
 gold plating 0.1 μ m MIN.
 over nickel 1.27 μ m MIN.
 (3) Ground contact
 phosphor bronze
 gold plating 0.05 μ m MIN.
 over nickel 1.27 μ m MIN.
 2. Packing : reel
 3. Mating partner part No.
 : 20279-001E-01
 4. Permissible load of cable at mating

1. 材料
 (1) ハウジング:PBT, UL94V-0, 黒色
 (2) コンタクト
 いん青銅
 金メッキ0.1 μ m MIN.
 下地 ニッケル1.27 μ m MIN.
 (3) グランドコンタクト
 いん青銅
 金メッキ0.05 μ m MIN.
 下地 ニッケル1.27 μ m MIN.
 2. 梱包 : リール
 3. かん合相手 part No.
 : 20279-001E-01
 4. コネクタかん合後のケーブルに対する荷重

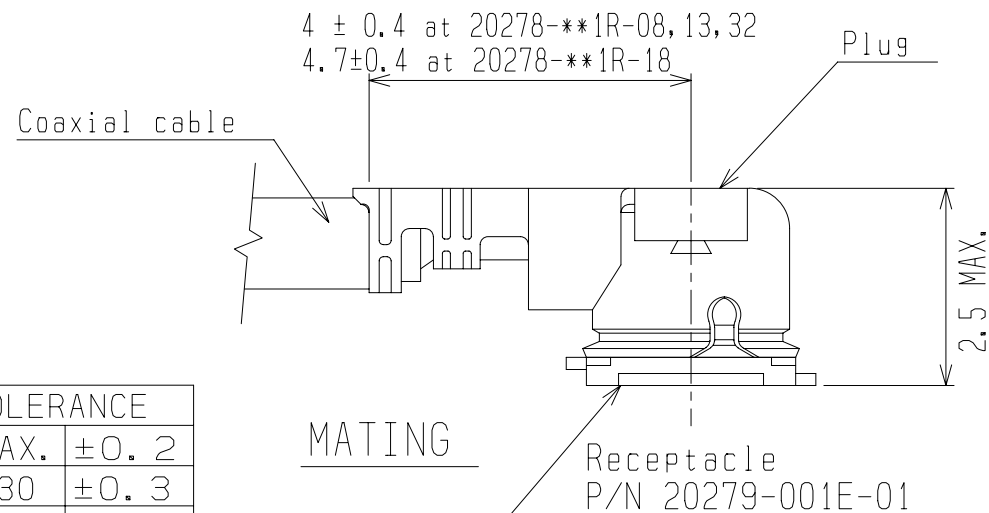


5. Suggestions for mating & unmating operation.

5. コネクタかん合時および抜去時の注意

5-1 Mating.
 Please mate the connector straightly to vertical direction as much as possible, adjusting the mating axis of plug and receptacle. As excessive slant angle mating may break the connector , please don't do it.

5-1 コネクタ挿入時
 PlugとReceptacleのかん合軸を合わせ、できるだけ垂直に挿入して下さい。極端な斜め挿入は行わないで下さい。コネクタ破損の原因となりますので、過度なこじり挿抜は行わないで下さい。



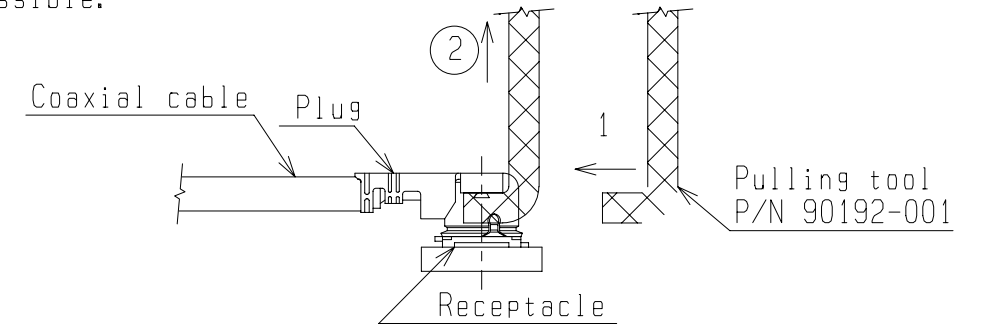
| GENERAL TOLERANCE | |
|-------------------|------|
| 6 MAX. | ±0.2 |
| 6 OVER MAX. 30 | ±0.3 |
| 30 OVER MAX. 120 | ±0.5 |
| ANGLE | ±2° |

5-2 Unmating.

5-2 コネクタ抜去時

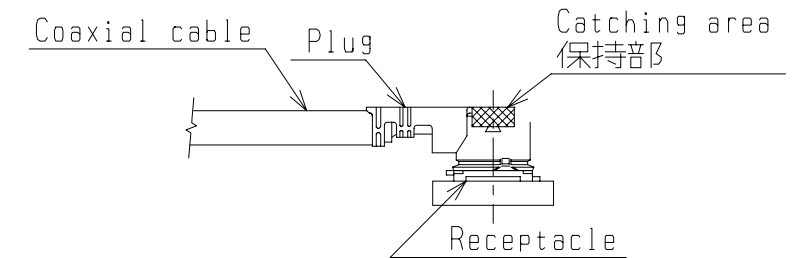
(1) In case of unmating by pulling tool.
 Please use the pulling tool as the following drawing, and please pull plug to vertical direction as directly as possible.

(1) 抜去ジグを用いる場合
 下図のようにできるだけ垂直に引き抜いて下さい。



(2) In case of unmating directly by hand
 Please catch the catching area of plug , and please pull plug to vertical direction as directly as possible.

(2) 手で直接引き抜く場合
 下図の保持部をつかみ、できるだけ垂直に引き抜いて下さい。



5-3 Crimp over standards of outer conductor

Standards: Less than 10% from total numbers of outer conductor
 (Numbers of outer conductor's crimp over from outer conductor's barrel)

5-3 外部導体はみ出し量

外部導体はみ出し量規定
 : 外部導体トータル本数の10%以下
 (外部導体バレルの外にはみ出した量)

5-4 Caution about Heat shrinkage tubes

Please be careful not to melt housing when using heat shrinkage tubes. It will become cause of open circuit.

5-4 熱収縮チューブについての注意
 熱収縮チューブで外部導体を覆う場合は、導通不良の原因になりますので、熱によりハウジングを溶融させないよう注意してください。

| | | | | | | | | | |
|--------------|------|---|--|---------------|------------|------|----------|-------|------|
| DESIGN' D BY | DATE | Interconnect and Packaging Electronics TOKYO, JAPAN | TITLE | | | | | | |
| CHK' D BY | DATE | | MHF series micro coaxial connector plug vertical (ground contact : gold plating) | | | | | | |
| APP' D BY | DATE | | REV. RECORD | CUSTOMER COPY | PROJECTION | | | | |
| REV. | ECN | BY | DATE | APP | SCALE | UNIT | DWG. No. | SHEET | REV. |
| | | | 2814 | | -/- | mm | 20278 | 3/3 | 13C |