

# MHF<sup>®</sup> 4L

The M.2 industry standard, mated height of 1.2 mm, 1.4 mm, and 1.7 mm max., excellent electrical performance up to 12 GHz

**Product Specifications:**

Mated Height (mm max.)	(1) 1.2, (2) 1.4, (3) 1.7
Rece. SMT Size (mm)	2.0 x 2.0
Applicable Frequency	DC ~ 12 GHz
Characteristic Impedance	50 ohm
VSWR (L=100 mm)	DC~3 GHz (1) (2) (3) 1.3 max.
	3~6 GHz (1) (2) 1.45 max. (3) 1.4 max.
	6~9 GHz (1) (2) 1.6 max. (3) 1.5 max.
	9~12 GHz (1) (2) 1.9 max. (3) 1.6 max.

\* Cable size O.D. (1) 0.81 mm, 0.64 mm (2) 1.13 mm, 0.95 mm (3) 1.37 mm

**Applicable Cable Size:**

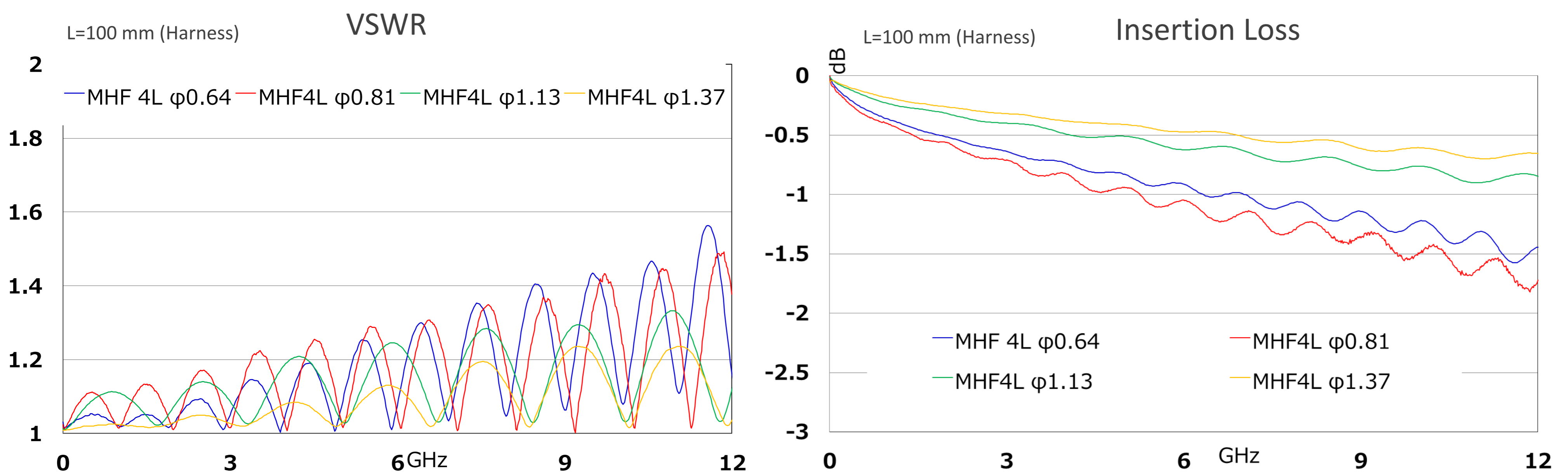
- (1) 20572-001R-08  
O.D. 0.81 mm, O.D. 0.64 mm / AWG 36
- (2) 20565-001R-13  
O.D. 1.13 mm / AWG 32  
O.D. 0.95 mm / AWG 33
- (3) 20632-001R-37  
O.D. 1.37 mm / AWG 30

**Applicable Standards (Reference Only):**

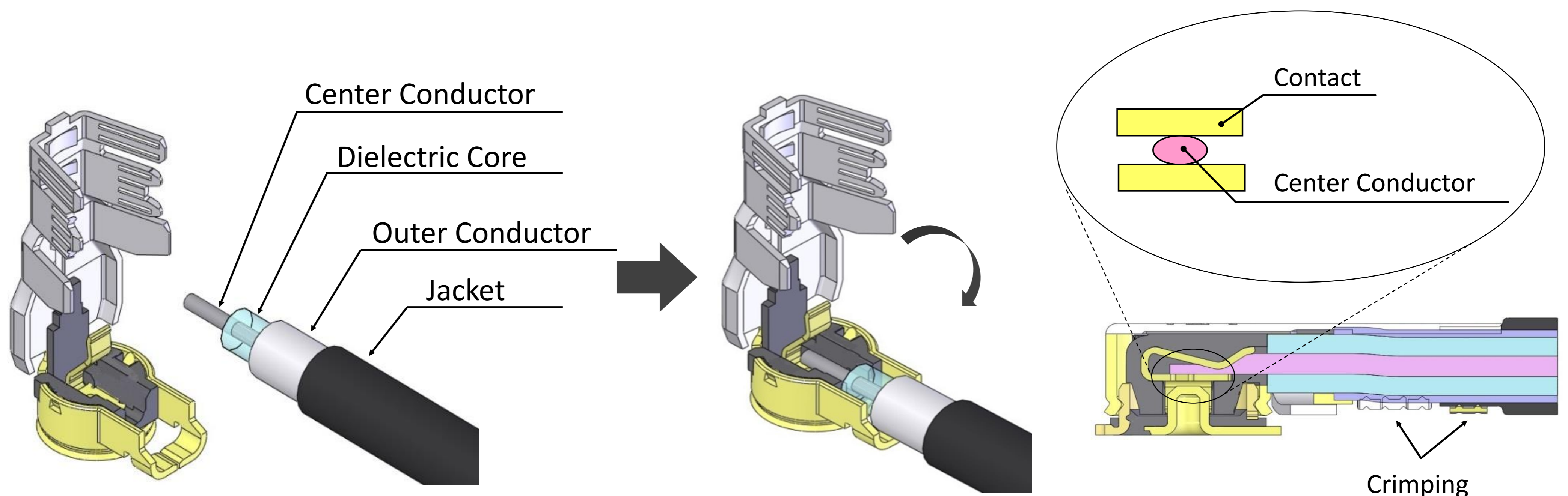
5G sub-6, Wi-Fi 6E, LTE/LTE-Advanced, LPWA, Bluetooth, GPS



## ▶ Small form factor with big performance through 12 GHz



## ▶ Solderless micro-coax termination technology "i-Fit<sup>®</sup>" provides consistent performance



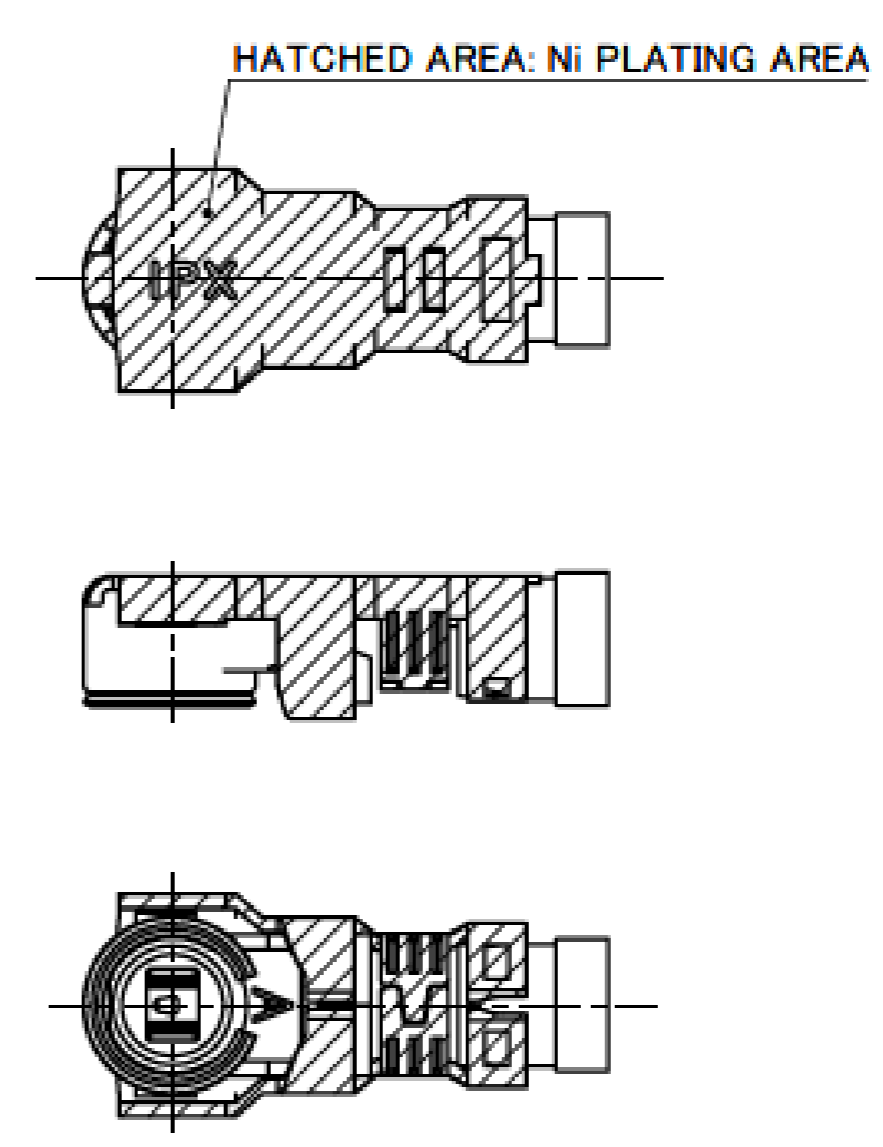
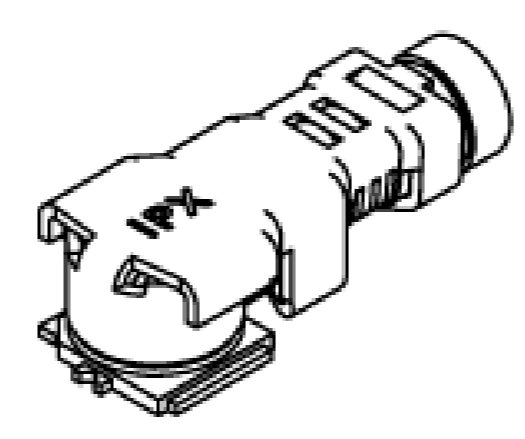
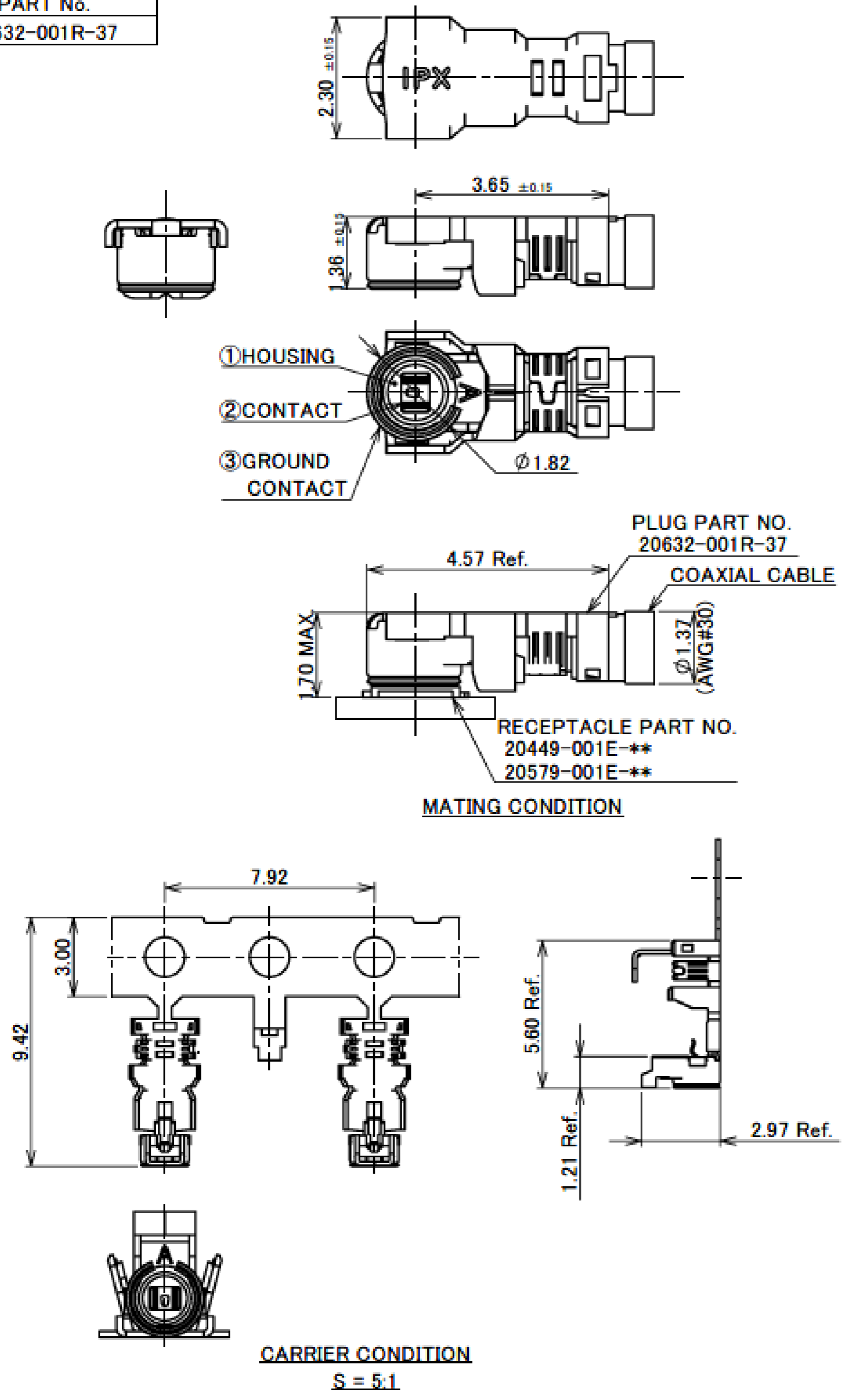
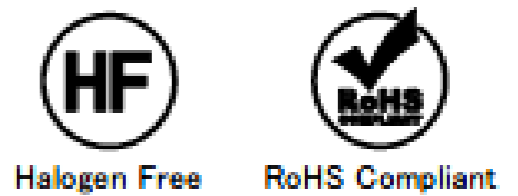
## ▶ MHF<sup>®</sup> 4L Plug available with various cable O.D. and additional locking option

	MHF <sup>®</sup> 4L LK	MHF <sup>®</sup> 4L	MHF <sup>®</sup> 4L	MHF <sup>®</sup> 4L	
Product name	MHF <sup>®</sup> 4L LK	MHF <sup>®</sup> 4L	MHF <sup>®</sup> 4L	MHF <sup>®</sup> 4L	
Lock	With Lock	Without Lock	Without Lock	Without Lock	
Mating Height	2.0 mm max.	1.7 mm max.	1.4 mm max.	1.2 mm max.	
Coax O.D. (Center Conductor AWG)	1.37 mm (AWG#30)	●	●		
	1.13 mm (AWG#32)		●		
	0.95 mm (AWG#33)			●	
	0.81 mm (AWG#36)				●
	0.64 mm (AWG#36)				●
Receptacle	MHF 4 receptacle (20449-001E-**) , MHF 4L receptacle (20579-001E)				

# Component Parts Details

## MHF<sup>®</sup> 4L plug Ni top (1.37)

Recommended P/N	20632-001R-37
PART No.	20632-001R-37



- NOTES.  
1. APPLICABLE CONNECTOR  
20449-001E-\*\*  
20579-001E-\*\*

NO.	DESCRIPTION	MATERIAL	FINISH , REMARKS
3	GROUND CONTACT	PHOSPHOR BRONZE	ALL OVER Ni 1.00 $\mu$ m MIN. CONTACT PART Au 0.05 $\mu$ m MIN. [Ni PLATING AREA] Ni ONLY
2	CONTACT	PHOSPHOR BRONZE	ALL OVER Ni 1.00 $\mu$ m MIN. CONTACT PART Au 0.10 $\mu$ m MIN.
1	HOUSING	PBT	UL94V-0, BLACK (GF 10%)

# MHF® 4L plug Ni top (1.37)

ITEMS	SPECIFICATION	
RECOMMENDED APPLICABLE CONNECTOR PART No.	20449-001E-**-	20579-001E-**-
RATING VOLTAGE	60 V AC (R.M.S)	
RATING FREQUENCY	DC~9 GHz	DC~12 GHz
OPERATING TEMPERATURE	233~363K (-40°C~+90°C)	
VSWR (MATED WITH SMA ADAPTER PART No. 90449-001)	1.30 MAX. AT 0.1~3 GHz, 1.40 MAX. AT 3~6 GHz, 1.50 MAX. AT 6~9 GHz, 1.60 MAX. AT 9~12 GHz	
MAIN CONTACT RESISTANCE	INITIAL: 20 mohm MAX. / AFTER TEST: $\Delta$ R 20 mohm MAX.	
GROUND CONTACT RESISTANCE	INITIAL: 20 mohm MAX. / AFTER TEST: $\Delta$ R 20 mohm MAX.	
INSULATION RESISTANCE	INITIAL: 500 Mohm MIN. / AFTER TEST: 100 Mohm MIN.	
DIELECTRIC WITHSTANDING VOLTAGE	200 V AC, 1 MINUTE	
DURABILITY	30 CYCLES	
MATING FORCE (INITIAL / AFTER TEST)	INITIAL: 30 N MAX. / AFTER TEST: 30 N MAX.	
UNMATING FORCE (INITIAL / AFTER TEST)	INITIAL: 20 N MAX. 5 N MIN. / AFTER TEST: 20 N MAX. 3 N MIN.	
PRODUCT SPECIFICATION	PRS-2008	PRS-1907
TEST REPORT	TR-14100	TR-14097
PACKING STANDARD	PST-12066	
INSTRUCTION MANUAL	HIM-16011	
APPEARANCE CRITERIA No.	QLS-A***	

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PART NO.	20632-001R-37		
APPLICABLE CABLE STRIP DIMENSION	<p>*DO NOT USE SOLDER COATED EITHER INNER OR OUTER CONDUCTOR CABLES.</p>		
REQUIREMENTS	CHARACTERISTIC IMPEDANCE: 50(±2) ohm BY TDR METHOD NOMINAL CAPACITANCE: 98pF/m CONDUCTOR RESISTANCE OF INNER CONDUCTOR: 320 ohm/km INSULATION RESISTANCE: 1500 Mega-ohm.km MIN. DIELECTRIC WITH STANCE VOLTAGE: NO BREAKDOWN AT 1500 V AC FOR 1 MINUTE.		
BRAIDED SHIELD OF OUTER CONDUCTOR	SINGLE BRAIDED SHIELD		
PART NO. OF SEMI AUTO TERMINATION MACHINE	90703-037		
CRIMP HEIGHT	<p>CH-1 (i-Fit® PART) 1.46~1.50</p>	<p>CH-2 (SHIELD PART) 1.16~1.20</p>	<p>CH-3 (JACKET PART) 1.27~1.31</p>
	※USE FOR POINT MICROMETER.		

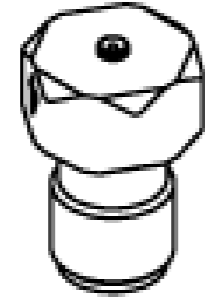
NOTES 2.

DESCRIPTION

INNER CONDUCTOR AWG#30 (7/0.102) SILVER PLATING ANNEALED COPPER WIRE  
 DIELECTRIC CORE FLUORO-PLASTICS, DIAMETER 0.88(+0.04/-0.02)mm NOMINAL THICKNESS 0.29mm  
 OUTER CONDUCTOR 16/5/0.05, NOMINAL DIAMETER 1.13mm TIN-COATED ANNEALED COPPER WIRE.  
 JACKET FLUORO-PLASTICS, DIAMETER 1.37±0.08mm NOMINAL THICKNESS 0.12mm

Rev.7

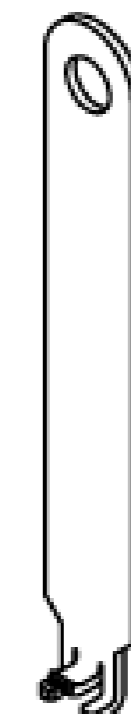
# Accessories for MHF<sup>®</sup> 4L plug Ni top (1.37)



MHF 4(4L) SMA ADAPTOR  
PART NO. 90449-001



MHF 4(4L) INSPECTION CONNECTOR  
PART NO. 90449-003-01

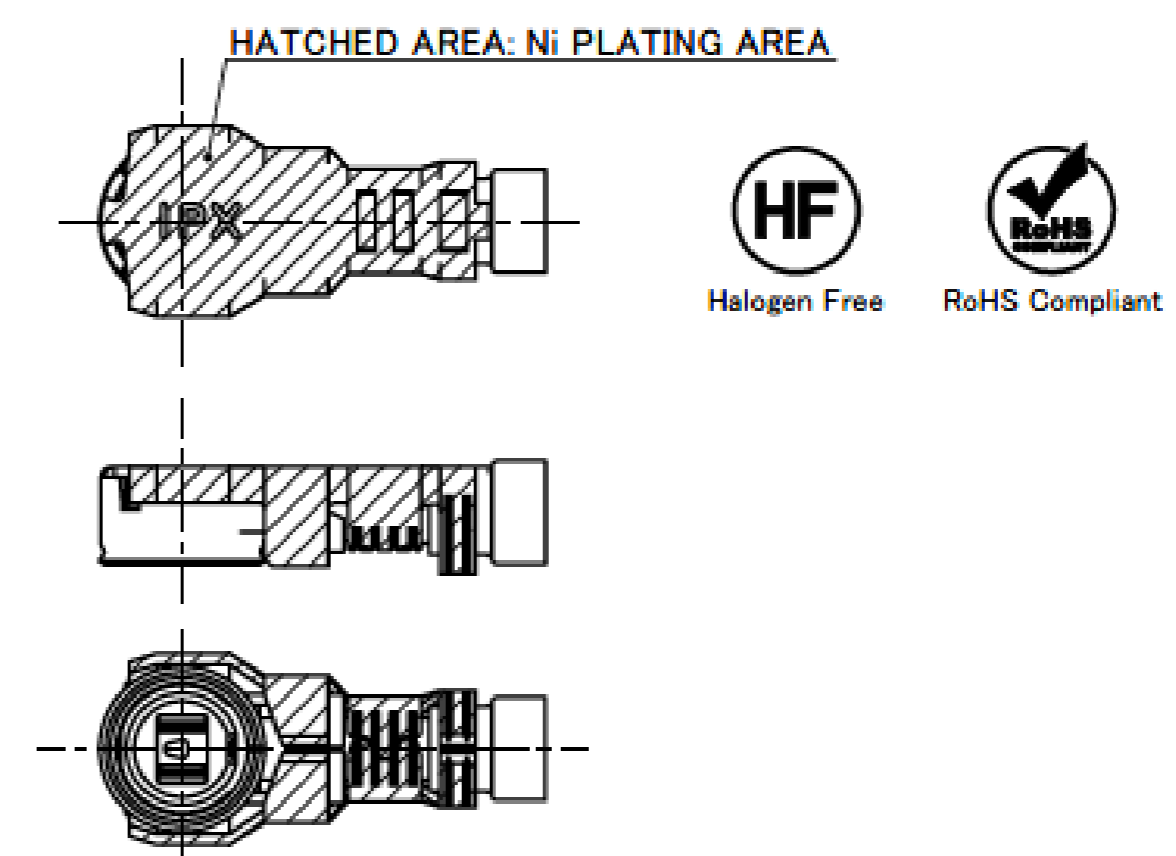
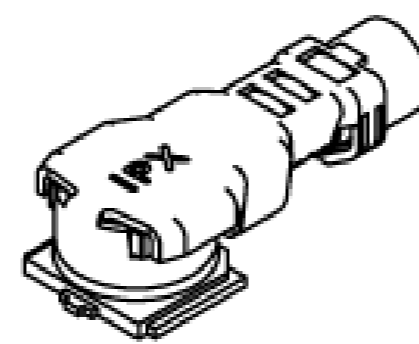
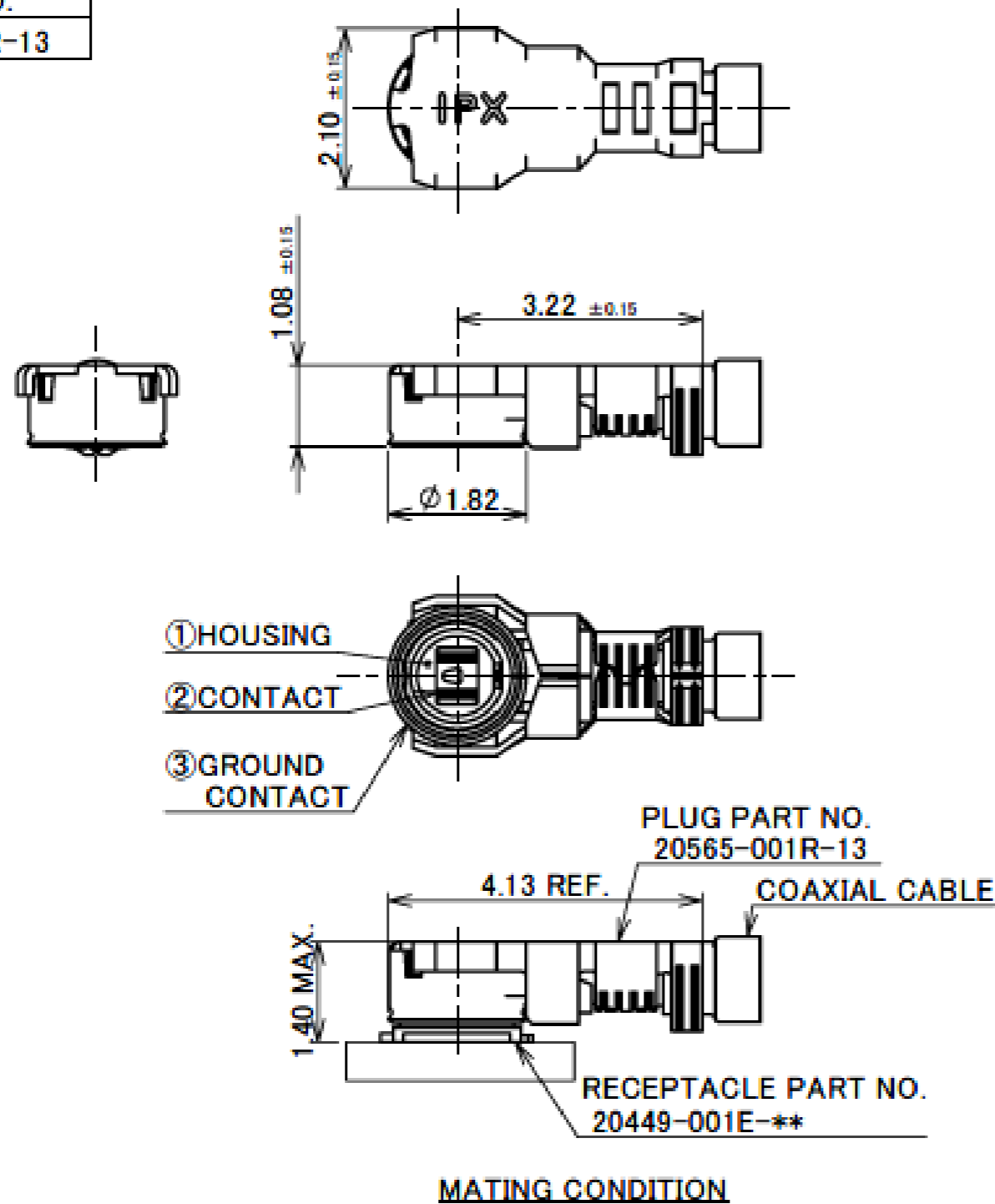


FRONT SIDE BACK SIDE  
MHF 4L (1.37) PUSHING AND PULLING TOOL  
PART NO. 90873-0001

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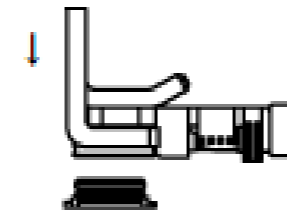
# MHF<sup>®</sup> 4L plug Ni top (1.13,0.95)

Recommended P/N	20565-001R-13
PART NO.	20565-001R-13

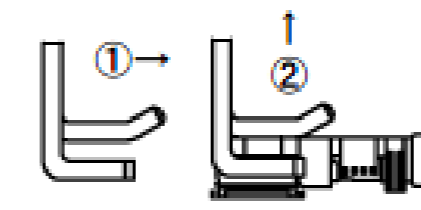


- NOTES
- APPLICABLE CONNECTOR  
20449-001E-\*\*\*  
20579-001E-\*\*\*
  - MATING AND UNMATING INSTRUCTION
    - MATING  
MATE THE CONNECTOR VERTICALLY AS MUCH AS POSSIBLE, ADJUSTING THE MATING AXIS OF PLUG AND RECEPTACLE. DO NOT SLANT MATE.
    - UNMATING INSTRUCTION
      - IN CASE OF UNMATING BY PULLING TOOL (PART NO. 90609-0001)  
USE THE PULLING TOOL AS THE FOLLOWING DRAWING, AND PULL PLUG TO VERTICAL DIRECTION AS DIRECTLY AS POSSIBLE.
      - IN CASE OF UNMATING DIRECTLY BY HAND  
CATCH THE CATCHING AREA OF PLUG, AND PULL PLUG TO VERTICAL DIRECTION AS DIRECTLY AS POSSIBLE.

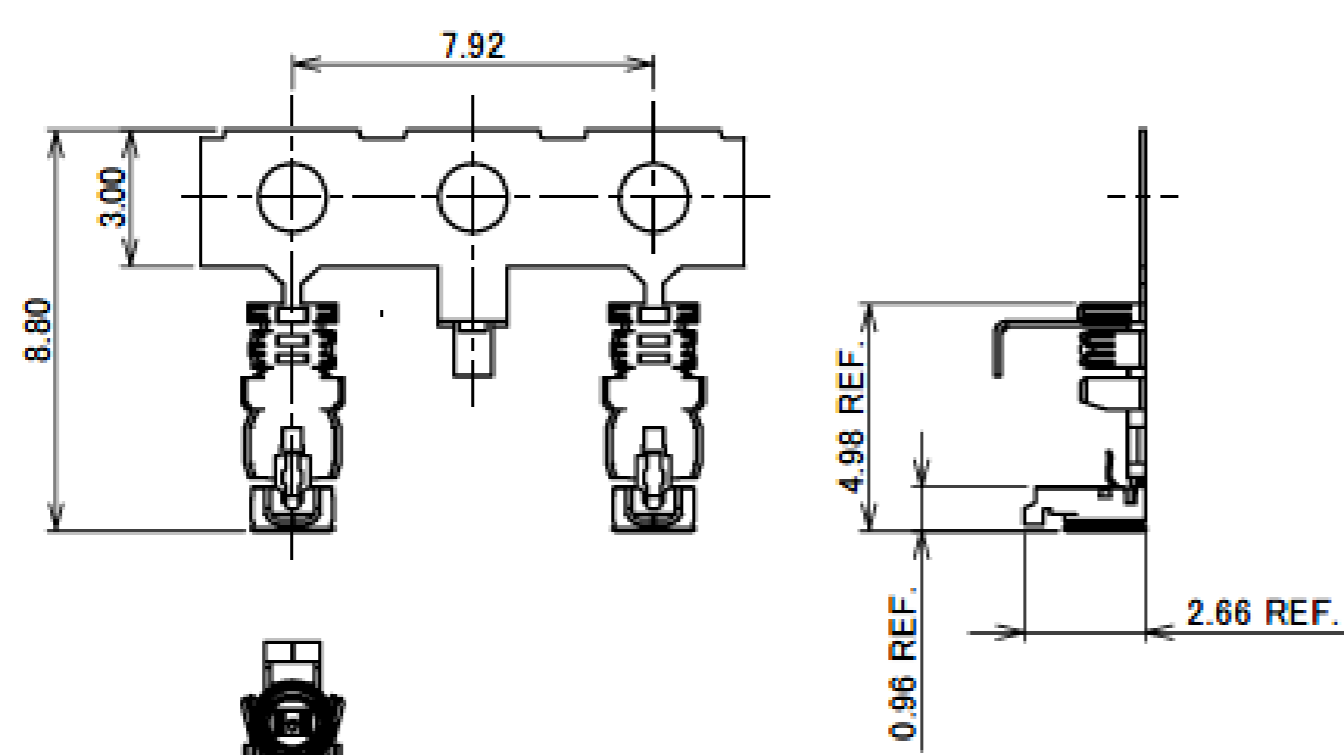
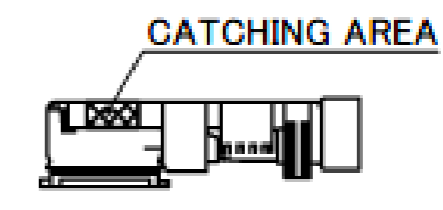
NOTE 2-1.



NOTE 2-2-1.



NOTE 2-2-2.



CARRIER CONDITION  
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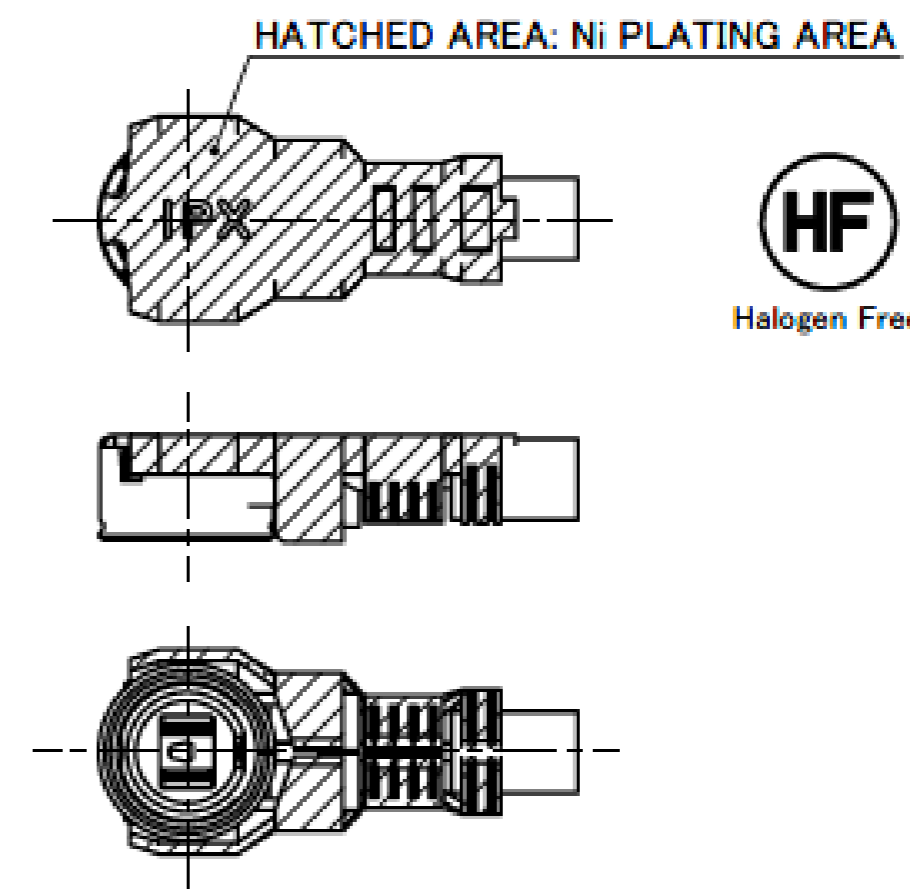
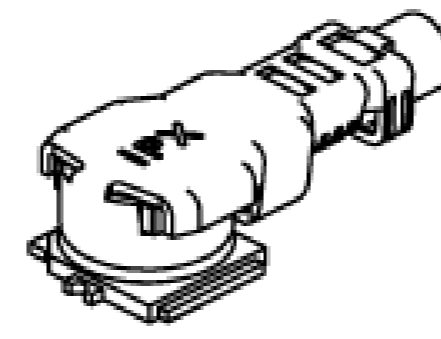
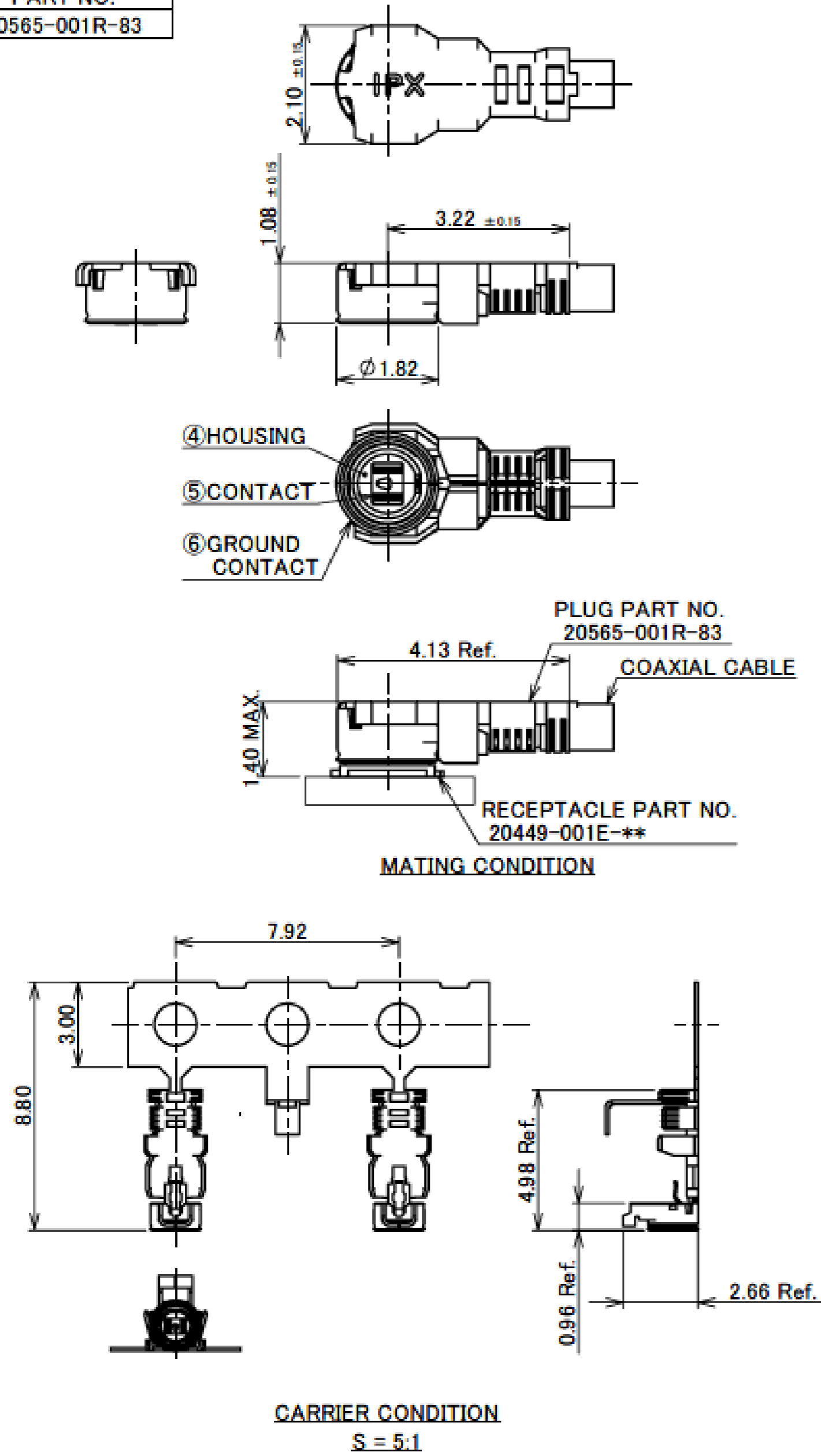
NO.	DESCRIPTION	MATERIAL	FINISH , REMARKS
3	GROUND CONTACT	PHOSPHOR BRONZE	ALL OVER Ni 1.00 μm MIN. CONTACT PART Au 0.05 μm MIN. [Ni PLATING AREA] Ni ONLY
2	CONTACT	PHOSPHOR BRONZE	ALL OVER Ni 1.00 μm MIN. CONTACT PART Au 0.10 μm MIN.
1	HOUSING	PBT	UL94V-0, BLACK

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# MHF® 4L plug Ni top (1.13,0.95)

Recommended P/N 20565-001R-83

PART NO.  
20565-001R-83



NOTES.

3. APPLICABLE CONNECTOR:  
20449-001E-\*\*  
20579-001E-\*\*

4. MATING AND UNMATING INSTRUCTION

4-1. MATING

MATE THE CONNECTOR VERTICALLY AS MUCH AS POSSIBLE, ADJUSTING THE MATING AXIS OF PLUG AND RECEPTACLE. DO NOT SLANT MATE.

4-2. UNMATING INSTRUCTION

4-2-1. IN CASE OF UNMATING BY PULLING TOOL (PART NO. 90609-0001) USE THE PULLING TOOL AS THE FOLLOWING DRAWING, AND PULL PLUG TO VERTICAL DIRECTION AS DIRECTLY AS POSSIBLE.

4-2-2. IN CASE OF UNMATING DIRECTLY BY HAND

CATCH THE CATCHING AREA OF PLUG, AND PULL PLUG TO VERTICAL DIRECTION AS DIRECTLY AS POSSIBLE.

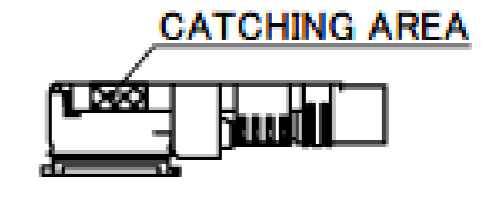
NOTE 4-1.



NOTE 4-2-1.



NOTE 4-2-2.



NO.	DISCRIPTION	MATERIAL	FINISH , REMARKS
6	GROUND CONTACT	PHOSPHOR BRONZE	ALL OVER Ni 1.00 μm MIN. CONTACT PART Au 0.05 μm MIN. [Ni PLATING AREA] Ni ONLY
5	CONTACT	PHOSPHOR BRONZE	CONTACT PART FINISH: Au 0.10 μm MIN. UNDER PLATE: Ni 1.00 μm MIN.
4	HOUSING	PBT	UL94V-0, BLACK

ITEMS	SPECIFICATION		
APPLICABLE CABLE	AWG#32 (1.13 O.D.)	AWG#33 (0.95 O.D.)	AWG#33 (0.83 O.D.)
RECOMMENDED APPLICABLE CONNECTOR PART No.	20449-001E-**		
RATING VOLTAGE	60 V AC (R.M.S)		
RATING FREQUENCY (MATED WITH MHF 4 RECEPTACLE PART No.20449-001E-**)	DC ~ 9GHz		
OPERATING TEMPERATURE	233 ~ 363 K (-40°C ~ +90°C)		
VSWR (MATED WITH SMA ADAPTER PART No. 90449-001)	1.30 MAX. AT 0.1~3GHz, 1.45 MAX. AT 3~6GHz, 1.60 MAX. AT 6~9GHz, 1.90 MAX. AT 9~12GHz		
MAIN CONTACT RESISTANCE	INITIAL: 20 mohm MAX. / AFTER TEST: ΔR 20 mohm MAX.		
GROUND CONTACT RESISTANCE	INITIAL: 20 mohm MAX. / AFTER TEST: ΔR 20 mohm MAX.		
INSULATION RESISTANCE	INITIAL: 500 Mohm MIN. / AFTER TEST: 100 Mohm MIN.		
DIELECTRIC WITHSTANDING VOLTAGE	200 V AC, 1 MINUTE		
DURABILITY	30 CYCLES		
MATING FORCE (INITIAL / AFTER TEST)	INITIAL: 30 N MAX. / AFTER TEST: 30 N MAX.		
UNMATING FORCE (INITIAL / AFTER TEST)	INITIAL: 20 N MAX. 5 N MIN. / AFTER TEST: 20 N MAX. 3 N MIN.		
PRODUCT SPECIFICATION	PRS-1772	PRS-2051	PRS-2062
TEST REPORT	TR-13011	TR-14142	TR-15011
PACKING STANDARD	PST-12066		
INSTRUCTION MANUAL	HIM-12012		
APPEARANCE CRITERIA No.	QLS-A***		

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# MHF® 4L plug Ni top (1.13,0.95)

PART NO.	20565-001R-13					
APPLICABLE CABLE STRIP DIMENSION						
	※DO NOT USE SOLDER COATED EITHER INNER OR OUTER CONDUCTOR CABLES.			※DO NOT USE SOLDER COATED EITHER INNER OR OUTER CONDUCTOR CABLES.		
	<p>REQUIREMENTS</p> <p>CHARACTERISTIC IMPEDANCE: 50 ohm by TDR METHOD</p> <p>NOMINAL CAPACITANCE (REFERENCE VALUE): 97pF/m</p> <p>CONDUCTOR RESISTANCE OF INNER CONDUCTOR AT 293K (REFERENCE VALUE): OD 1.13 TYPE... 520 ohm/km OD 0.95 TYPE... 752 ohm/km</p> <p>INSULATION RESISTANCE: OD1.13 TYPE... 1500 Mega-ohm.km MIN. OD0.95 TYPE... 1000 Mega-ohm.km MIN.</p> <p>DIELECTRIC WITHSTAND VOLTAGE: OD1.13 TYPE... NO BREAKDOWN AT AC1000V FOR 1 MINUTE. OD0.95 TYPE... NO BREAKDOWN AT AC500V FOR 1 MINUTE.</p>					
BRAIDED SHIELD OF OUTER CONDUCTOR	SINGLE BRAIDED SHIELD			SINGLE BRAIDED SHIELD		
PART NO. OF SEMI AUTO TERMINATION MACHINE	90600-013			90600-010		
CRIMP HEIGHT	※USE FOR POINT MICROMETER.			※USE FOR POINT MICROMETER.		
	CH-1 (i-Fit® PART) 1.07~1.11	CH-2 (SHIELD PART) 0.90~0.94	CH-3 (JACKET PART) 1.16~1.20	CH-1 (i-Fit® PART) 1.04~1.08	CH-2 (SHIELD PART) 0.92~0.96	CH-3 (JACKET PART) 1.16~1.20

Rev.10

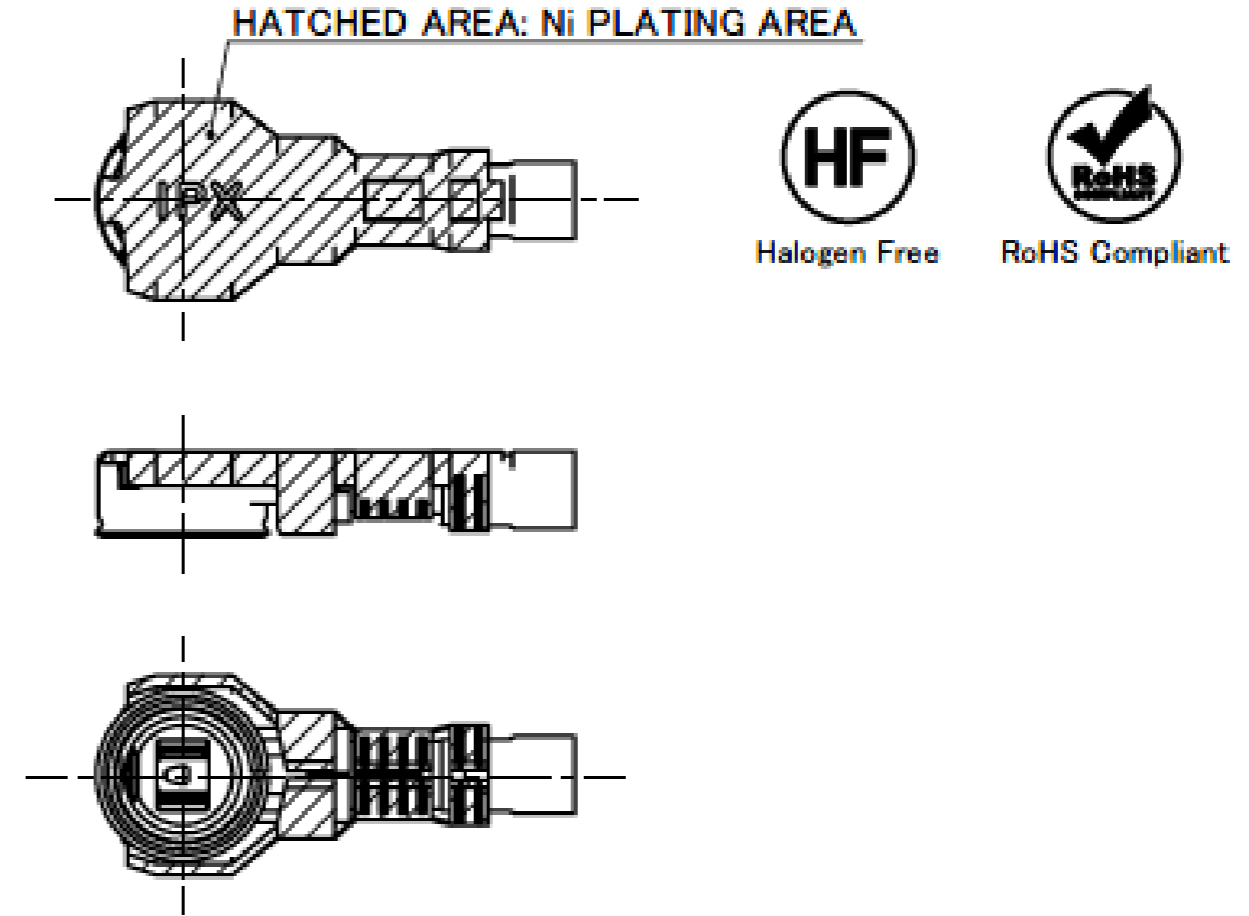
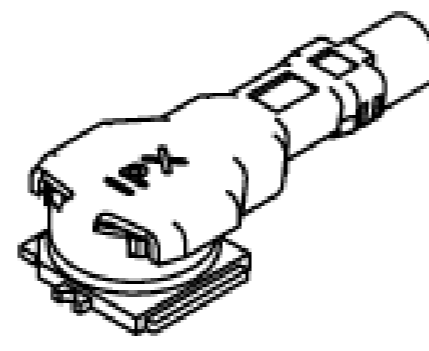
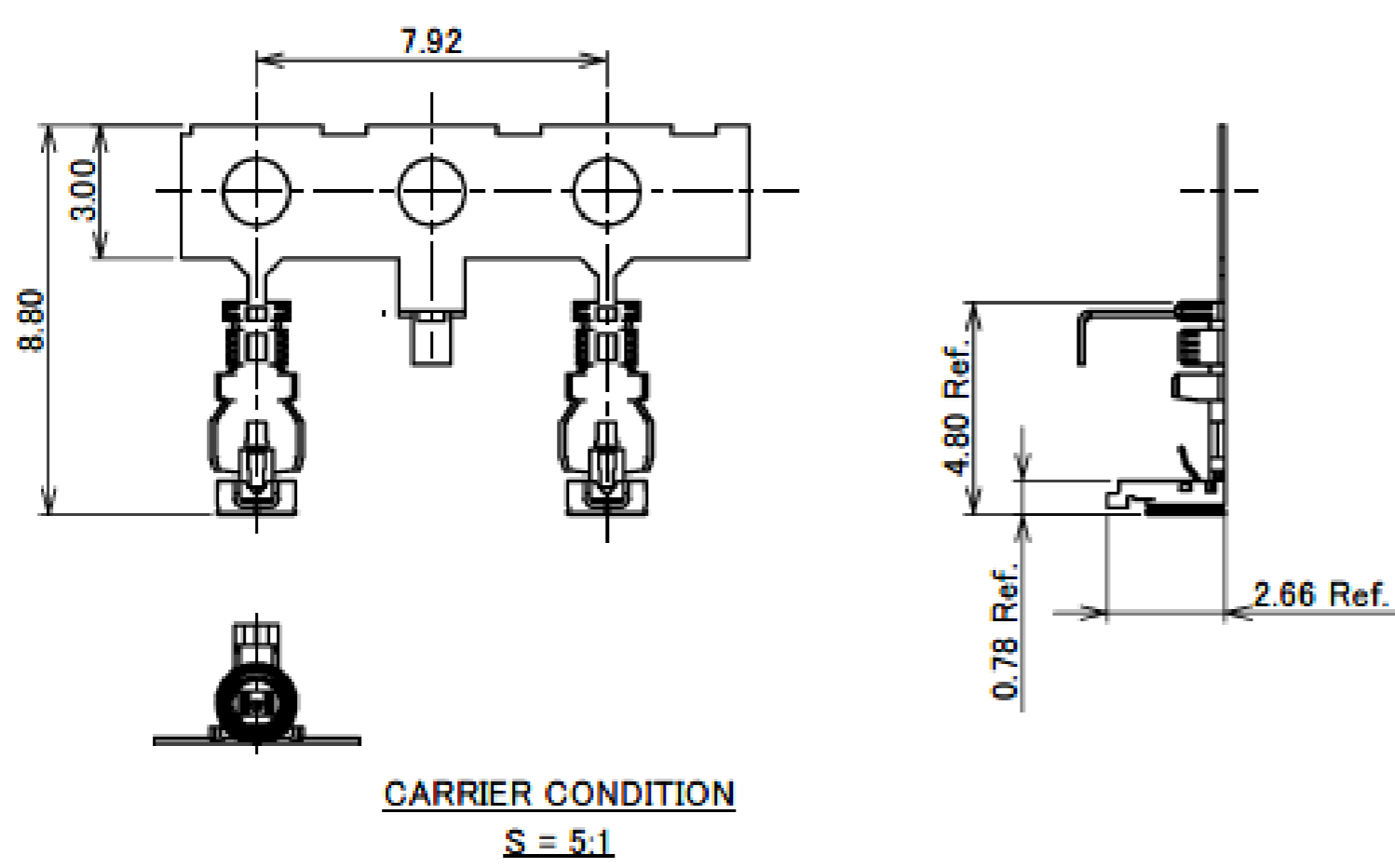
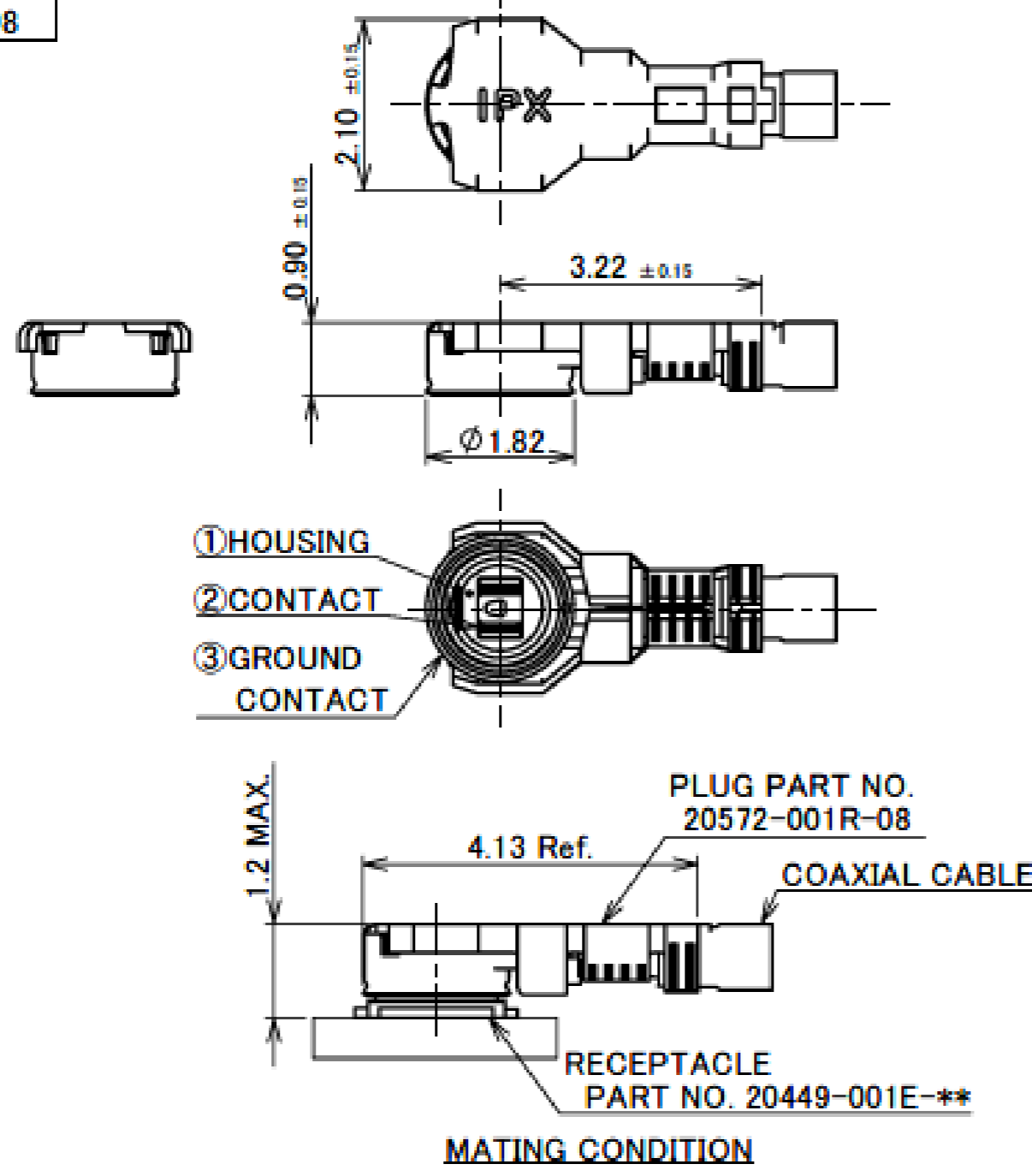
## Plug Housing Assembly

PART NO.	20565-001R-83		
APPLICABLE CABLE STRIP DIMENSION			
	※DO NOT USE SOLDER COATED EITHER INNER OR OUTER CONDUCTOR CABLES.		
	<p>REQUIREMENTS</p> <p>CHARACTERISTIC IMPEDANCE: 50 ohm BY TDR METHOD</p> <p>NOMINAL CAPACITANCE(REFERENCE VALUE): 96pF/m</p> <p>CONDUCTOR RESISTANCE OF INNER CONDUCTOR AT 293K (Reference value): 925 ohm/km</p> <p>INSULATION RESISTANCE: 1000 Mega-ohm.km MIN.</p> <p>DIELECTRIC WITH STANCE VOLTAGE: NO BREAKDOWN AT AC 1500V FOR 1 MINUTE.</p>		
BRAIDED SHIELD OF OUTER CONDUCTOR	SINGLE BRAIDED SHIELD		
PART NO. OF SEMI AUTO TERMINATION MACHINE	90600-083		
CRIMP HEIGHT	※USE FOR POINT MICROMETER.		
	CH-1 (i-Fit® PART) 0.91~0.95	CH-2 (SHIELD PART) 0.84~0.88	CH-3 (JACKET PART) 0.82~0.86

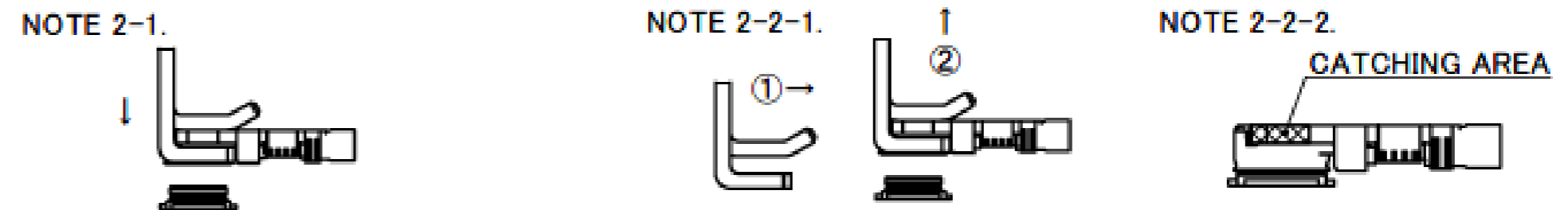
Rev.10

# MHF® 4L plug Ni top (0.81,0.64)

Recommended P/N	20572-001R-08
PART NO.	
20572-001R-08	



- NOTES.
- APPLICABLE CONNECTOR  
20449-001E-\*\*  
20579-001E-\*\*
  - MATING AND UNMATING INSTRUCTION
    - MATING  
MATE THE CONNECTOR VERTICALLY AS MUCH AS POSSIBLE, ADJUSTING THE MATING AXIS OF PLUG AND RECEPTACLE. DO NOT SLANT MATE.
    - UNMATING INSTRUCTION
      - IN CASE OF UNMATING BY PULLING TOOL (PART NO. 90609-0001)  
USE THE PULLING TOOL AS THE FOLLOWING DRAWING, AND PULL PLUG TO VERTICAL DIRECTION AS DIRECTLY AS POSSIBLE.
      - IN CASE OF UNMATING DIRECTLY BY HAND  
CATCH THE CATCHING AREA OF PLUG, AND PULL PLUG TO VERTICAL DIRECTION AS DIRECTLY AS POSSIBLE.

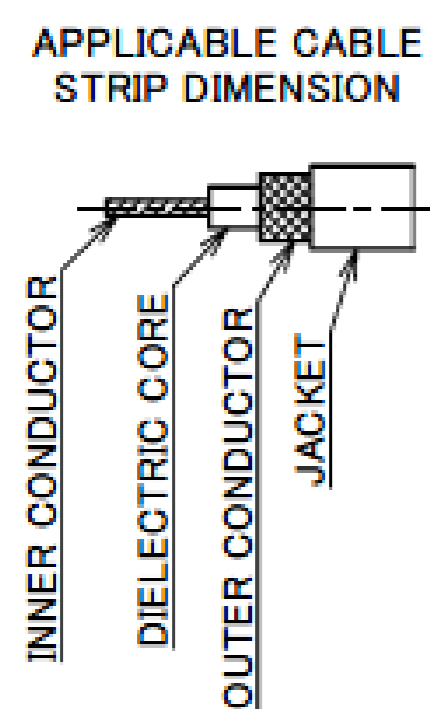
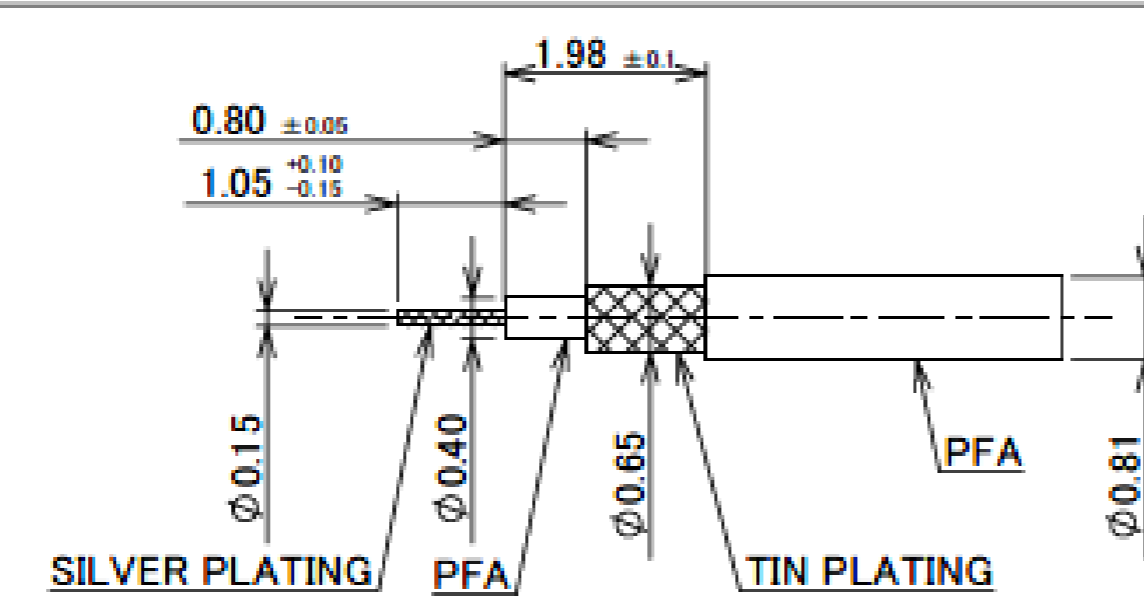
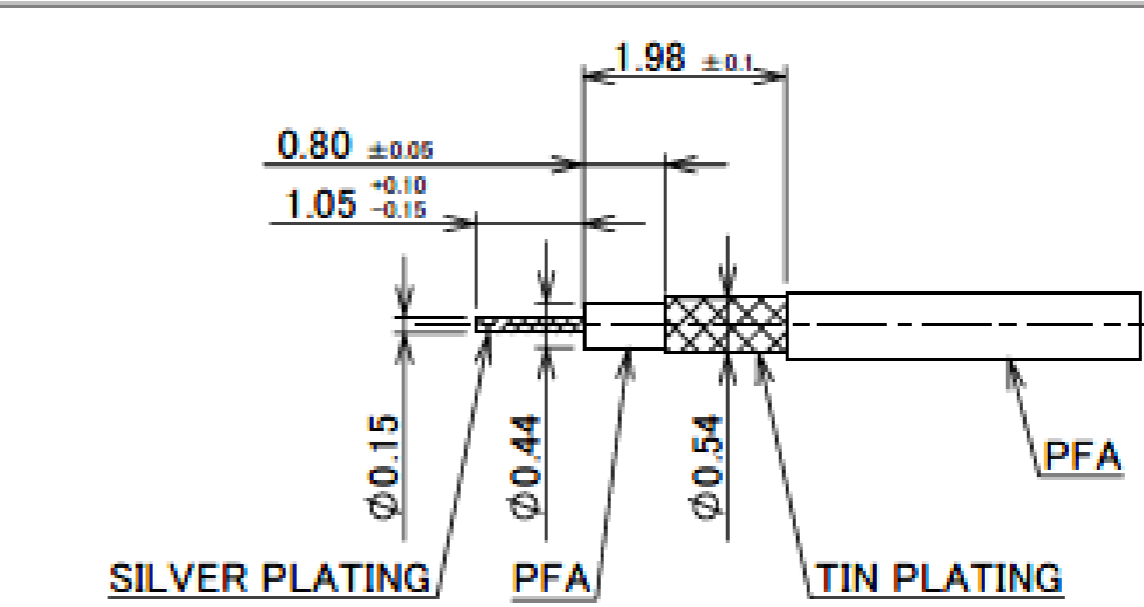
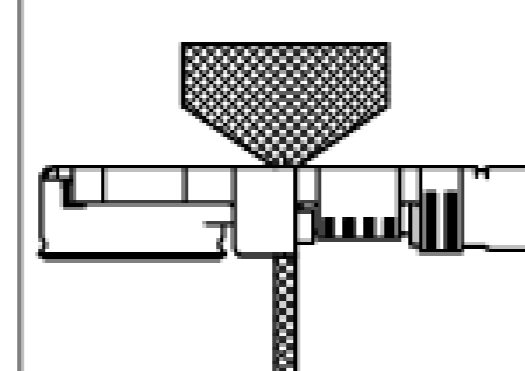
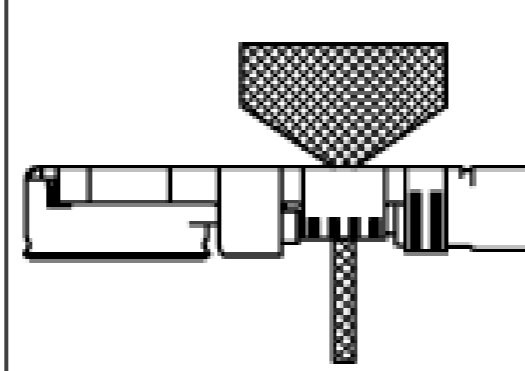
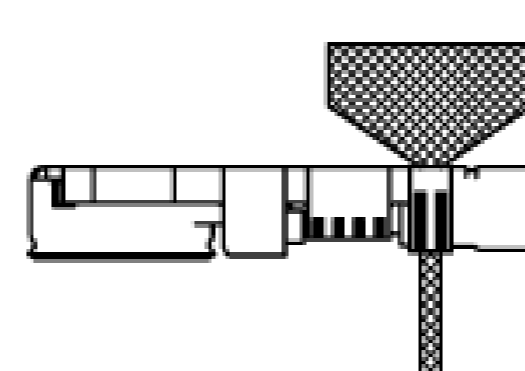
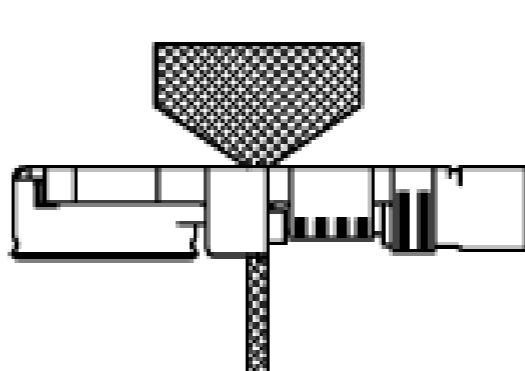
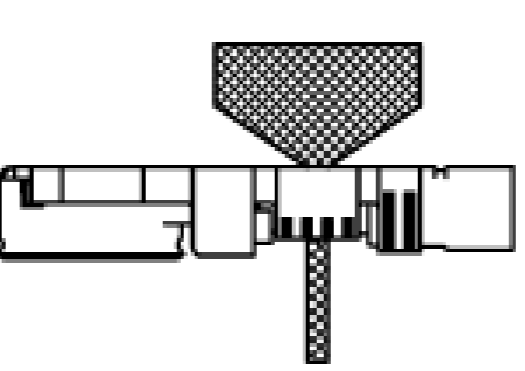
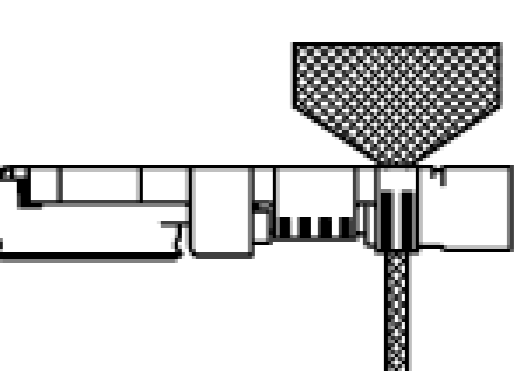


NO.	DESCRIPTION	MATERIAL	FINISH, REMARKS
3	GROUND CONTACT	PHOSPHOR BRONZE	ALL OVER Ni 1.00 μm MIN. CONTACT PART Au 0.05 μm MIN. [Ni PLATING AREA] Ni ONLY
2	CONTACT	PHOSPHOR BRONZE	ALL OVER Ni 1.00 μm MIN. CONTACT PART Au 0.10 μm MIN.
1	HOUSING	PBT	UL94V-0, BLACK

ITEMS	SPECIFICATION	
APPLICABLE CABLE	AWG#36 (0.81 O.D.)	AWG#36 (0.64 O.D.)
RECOMMENDED CONNECTOR PART No.	20449-001E-**	
RATING VOLTAGE	60 V AC (R.M.S)	
RATING FREQUENCY (MATED WITH MHF 4 RECEPTACLE PART No.20449-001E-**)	DC~9 GHz	
OPERATING TEMPERATURE	233~363K (-40°C~+90°C)	
VSWR (MATED WITH SMA ADAPTER PART No. 90449-001)	1.30 MAX. AT 0.1~3 GHz, 1.45 MAX. AT 3~6 GHz, 1.60 MAX. AT 6~9 GHz, 1.90 MAX. AT 9~12 GHz	
MAIN CONTACT RESISTANCE	INITIAL: 20 mohm MAX. / AFTER TEST: ΔR 20 mohm MAX.	
GROUND CONTACT RESISTANCE	INITIAL: 20 mohm MAX. / AFTER TEST: ΔR 20 mohm MAX.	
INSULATION RESISTANCE	INITIAL: 500 Mohm MIN. / AFTER TEST: 100 Mohm MIN.	
DIELECTRIC WITHSTANDING VOLTAGE	200 V AC, 1 MINUTE	
DURABILITY	30 CYCLES	
MATING FORCE (INITIAL / AFTER TEST)	INITIAL: 30 N MAX. / AFTER TEST: 30 N MAX.	
UNMATING FORCE (INITIAL / AFTER TEST)	INITIAL: 20 N MAX. 5 N MIN. / AFTER TEST: 20 N MAX. 3 N MIN.	
CRIMP STRENGTH	-	
PRODUCT SPECIFICATION	PRS-1772	PRS-1944
TEST REPORT	TR-13011	TR-14078
PACKING STANDARD	PST-12066	
INSTRUCTION MANUAL	HIM-12011	
APPEARANCE CRITERIA No.	QLS-A***	

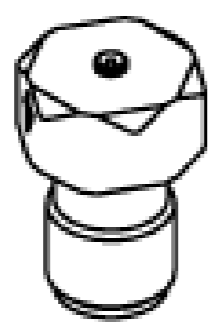
Rev.8

# MHF® 4L plug Ni top (0.81,0.64)

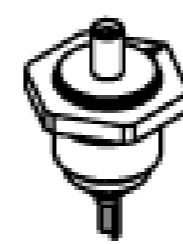
PART NO.	20572-001R-08					
 <p>APPLICABLE CABLE STRIP DIMENSION</p>	 <p>※DO NOT USE SOLDER COATED EITHER INNER OR OUTER CONDUCTOR CABLES.</p>	 <p>※DO NOT USE SOLDER COATED EITHER INNER OR OUTER CONDUCTOR CABLES.</p>				
	<p>NOTES</p> <p>3.REQUIREMENTS</p> <p>CHARACTERISTIC IMPEDANCE: 50(±3)ohm BY TDR METHOD</p> <p>NOMINAL CAPACITANCE (REFERENCE VALUE): 96pF/m</p> <p>CONDUCTOR RESISTANCE OF INNER CONDUCTOR AT 293 (REFERENCE): OD 0.81 TYPE/OD 0.64 TYPE...1400ohm/km</p> <p>INSULATION RESISTANCE: OD 0.81 TYPE/OD 0.64 TYPE... 1000Mega-ohm.km MIN.</p> <p>DIELECTRIC WITH STANCE VOLTAGE: OD 0.81 TYPE...NO BREAKDOWN AT AC 1500V FOR 1 MINUTES.</p> <p>OD 0.64 TYPE...NO BREAKDOWN AT AC 500V FOR 1 MINUTES.</p>					
BRAIDED SHIELD OF OUTER CONDUCTOR	SINGLE BRAIDED SHIELD	SINGLE SPIRAL SHIELD				
PART NO. OF SEMI AUTO TERMINATION MACHINE	90599-008	90599-006				
CRIMP HEIGHT	 <p>CH-1 (i-Fit® PART) 0.83~0.87</p>	 <p>CH-2 (SHIELD PART) 0.76~0.80</p>	 <p>CH-3 (JACKET PART) 0.92~0.96</p>	 <p>CH-1 (i-Fit® PART) 0.81~0.85</p>	 <p>CH-2 (SHIELD PART) 0.73~0.77</p>	 <p>CH-3 (JACKET PART) 0.71~0.75</p>
	※USE FOR POINT MICROMETER.			※USE FOR POINT MICROMETER.		

Rev.8

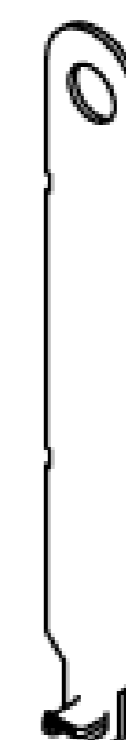
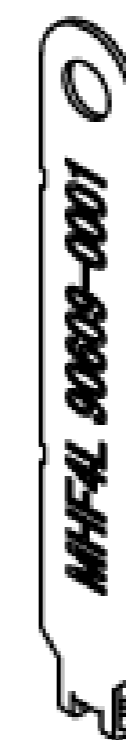
# Accessories for MHF® 4L (0.81,0.64,1.13,0.95)



MHF 4 (4L) SMA ADAPTOR  
PART NO. 90449-001



MHF 4 (4L) INSPECTION CONNECTOR  
PART NO. 90449-003-01



FRONT SIDE

BACK SIDE

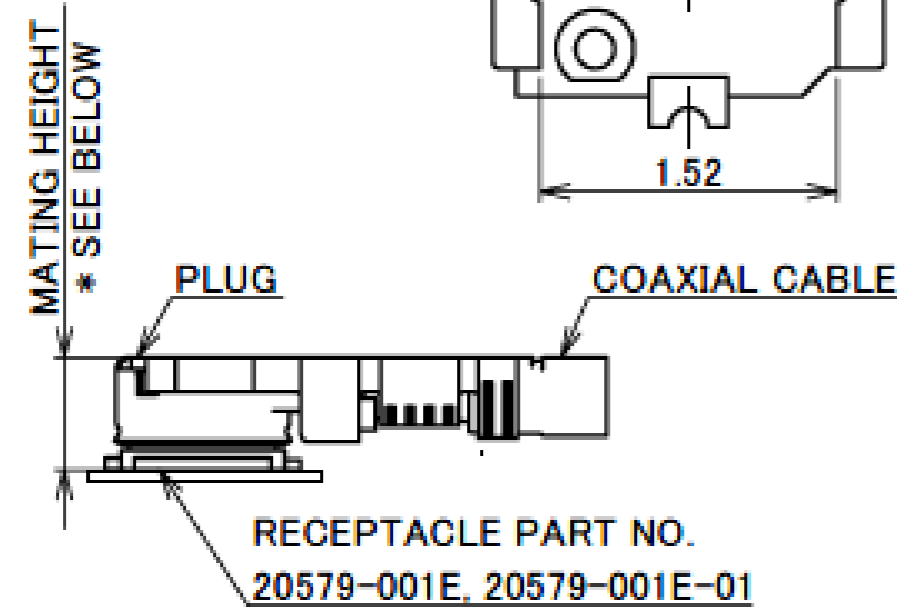
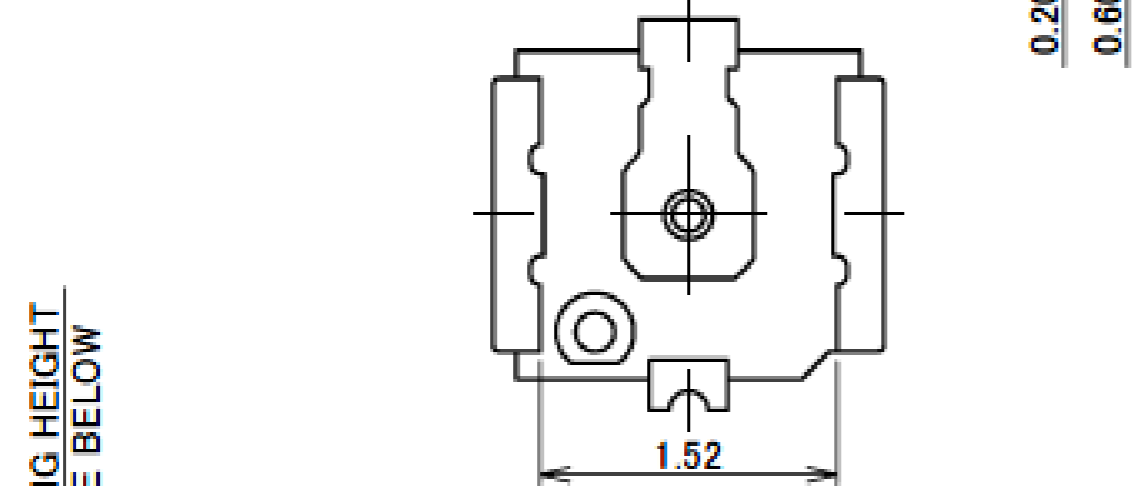
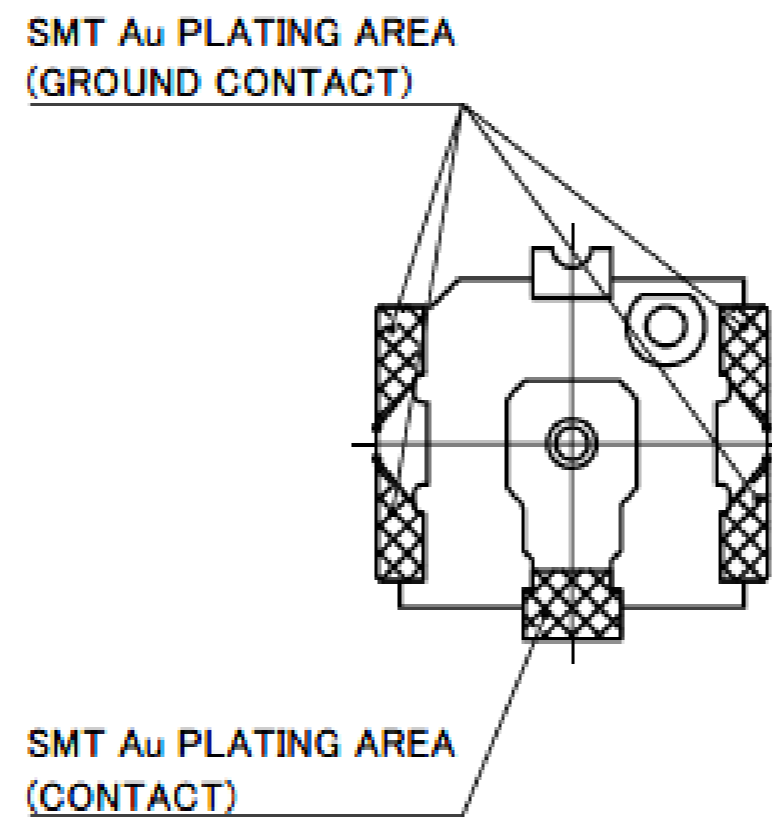
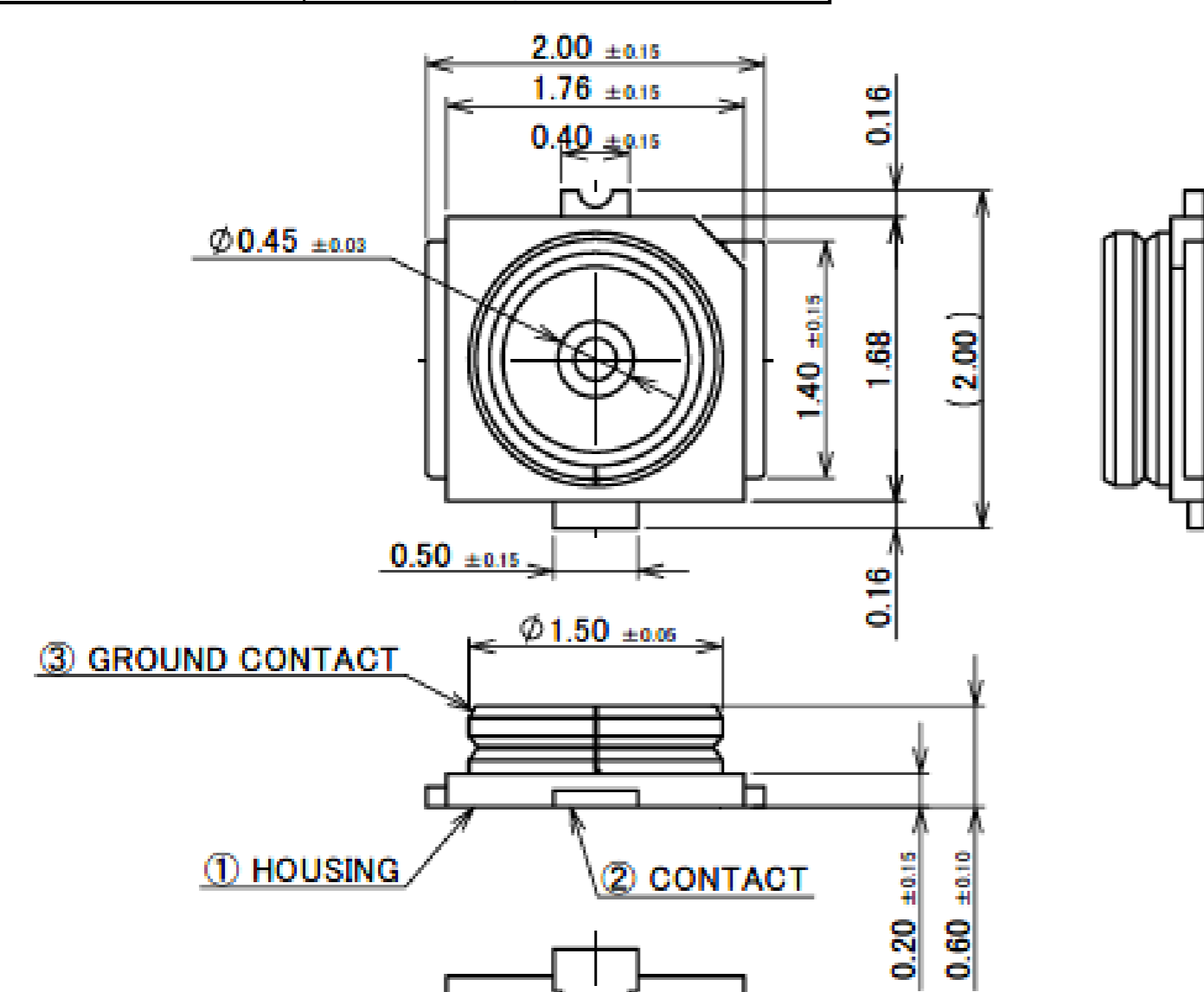
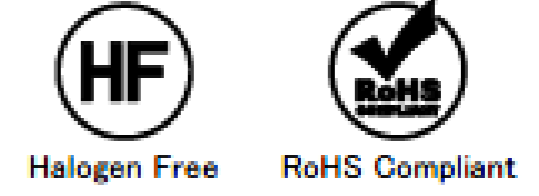
MHF 4L PUSHING AND PULLING TOOL  
PART NO. 90609-0001

Rev.8



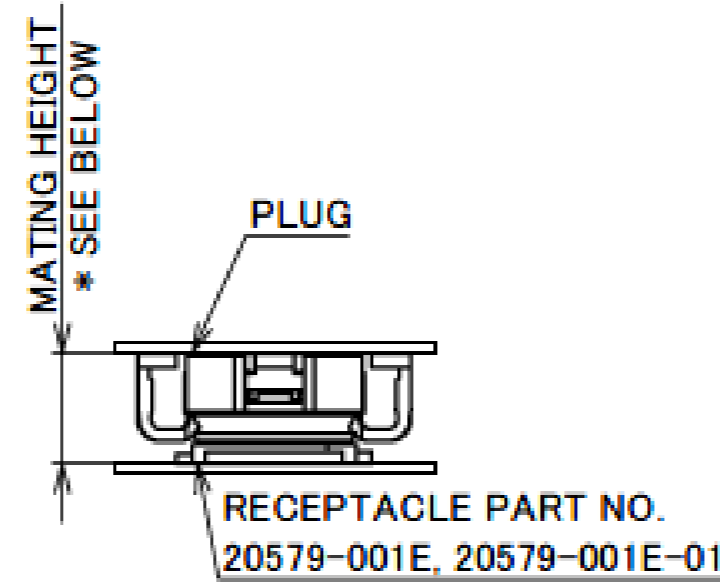
# MHF® 4L Receptacle

Recommended P/N		20579-001E
PART NO.	PACKING QUANTITY / REEL	
20579-001E	10,000 PCS.	
20579-001E-01	20,000 PCS.	



\* MATING HEIGHT  
 1.2 MAX. WITH 20611-001R, 20572-001R-08,  
 20448-00\*R-081, 20448-001R-081E  
 1.4 MAX. WITH 20565-001R-\*\*  
 1.7 MAX. WITH 20632-001R-37  
 (2.0 MAX. WITH MHF 4L LK LOCKED CONDITION)

MATING CONDITION  
 WITH MHF 4/MHF 4L PLUG  
 (S = 10/1)



\* MATING HEIGHT  
 1.2 MAX. WITH 20462-001E

MATING CONDITION  
 WITH MHF 4 SMT  
 (S = 10/1)

## NOTES.

- APPLICABLE CONNECTOR (CABLE SIZE)  
 MHF 4 PLUG: 20611-001R (Φ0.81)  
 20448-00\*R-081 (Φ0.81)  
 20448-001R-081E (Φ0.81)  
 MHF 4L PLUG: 20572-001R-08 (Φ0.64, Φ0.81)  
 20565-001R-\*\* (Φ0.83, Φ0.95, Φ1.13)  
 20632-001R-37 (Φ1.37)  
 MHF 4 SMT PLUG: 20462-001E  
 2. COPLANARITY: 0.1 mm MAX.

NO.	DESCRIPTION	MATERIAL	FINISH, REMARKS
3	GROUND CONTACT	PHOSPHOR BRONZE	ALL OVER Ni 1.00 μm MIN. CONTACT PART: Au 0.05 μm MIN., SOLDERING PART Au AREA: 0.03 μm MIN.
2	CONTACT	BRASS	ALL OVER Ni 1.00 μm MIN. CONTACT PART: Au 0.05 μm MIN. SOLDERING PART Au AREA: 0.03 μm MIN.
1	HOUSING	LGP	UL94V-0, BLACK

## FOR MHF 4L PLUG

ITEMS	SPECIFICATION	
	20572-001R-08 (CABLE Φ0.81 TYPE)	20565-001E-13 (CABLE Φ1.13 TYPE)
APPLICABLE CONNECTOR PART No.		
RATING VOLTAGE	60 V AC (R.M.S)/DC	
RATING FREQUENCY	DC ~ 12GHz	
OPERATING TEMPERATURE	233~363 K(-40°C~+90°C)	
VSWR (MATED WITH SMA ADAPTER PART No. 90449-002)	1.30 MAX. AT 0.1~3GHz, 1.40 MAX. AT 3~6GHz, 1.50 MAX. 6~9GHz, 1.65 MAX. AT 9~12GHz	
MAIN CONTACT RESISTANCE	INITIAL : 20 mohm MAX. / AFTER TEST : ΔR 20 mohm MAX.	
GROUND CONTACT RESISTANCE	INITIAL : 20 mohm MAX. / AFTER TEST : ΔR 20 mohm MAX.	
INSULATION RESISTANCE	INITIAL : 500 Mohm MIN. / AFTER TEST : 100 Mohm MIN.	
DIELECTRIC WITHSTANDING VOLTAGE	200 V AC 1 MINUTE	
DURABILITY	30 CYCLES	
MATING FORCE (INITIAL / AFTER TEST)	INITIAL : 30 N MAX. / AFTER TEST : 30 N MAX.	
UNMATING FORCE (INITIAL / AFTER TEST)	INITIAL : 20 N MAX. 5 N MIN. / AFTER TEST : 20 N MAX. 3 N MIN.	
PRODUCT SPECIFICATION	PRS-1907	
TEST REPORT	TR-14097	
PACKING STANDARD	20579-001E: PST-14004 20579-001E-01: PST-14067	
INSTRUCTION MANUAL	HIM-12011	HIM-12012
APPEARANCE CRITERIA No.	QLS-A***	

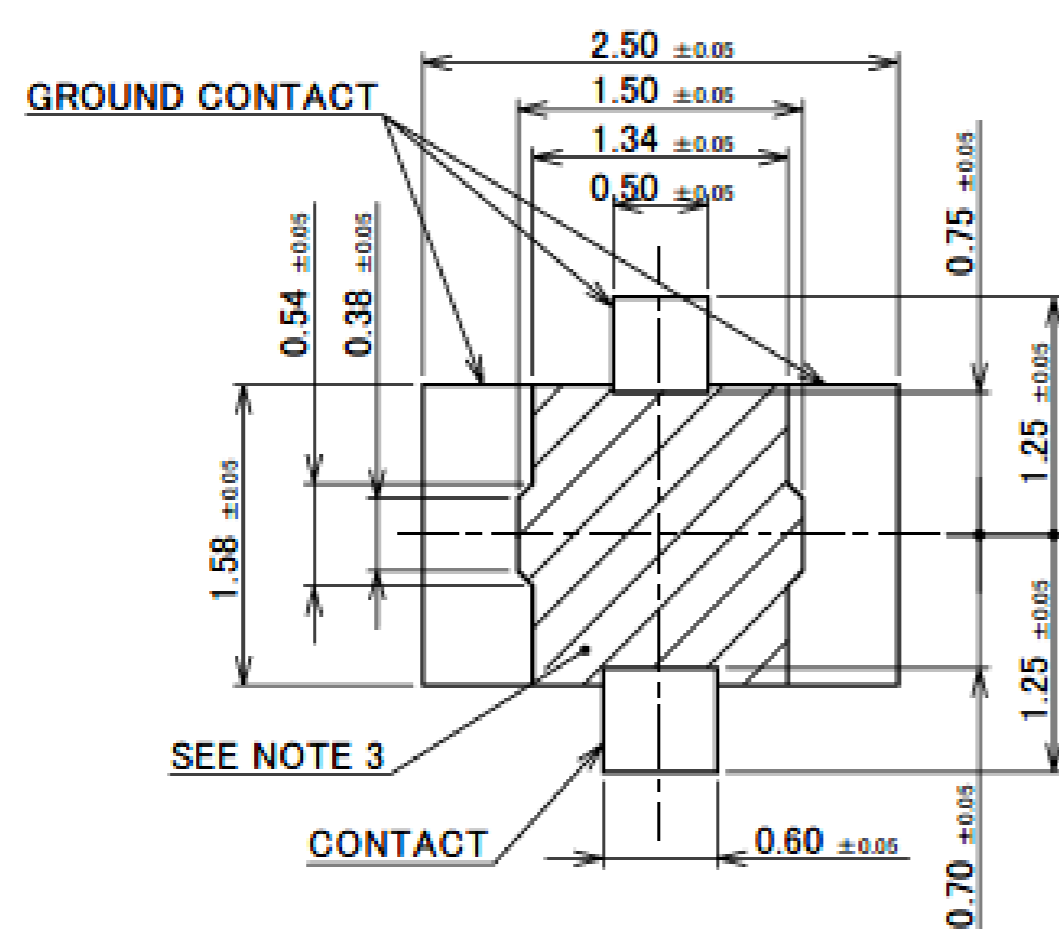
Rev.14

# MHF® 4L Receptacle

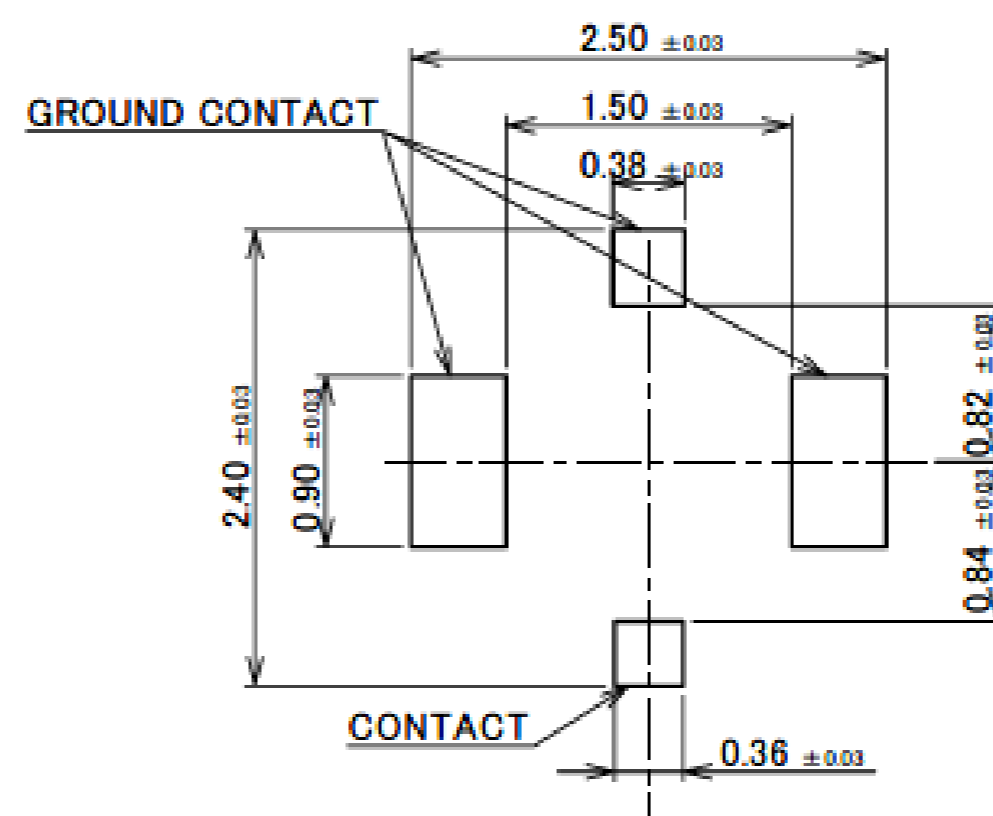
FOR MHF 4 SMT PLUG

ITEMS	SPECIFICATION
APPLICABLE CONNECTOR PART No.	20462-001E (MHF 4 SMT PLUG)
RATING VOLTAGE	60 V AC (R.M.S)/DC
RATING FREQUENCY	DC~12GHz
OPERATING TEMPERATURE	233~363 K(-40°C~+90°C)
VSWR (MATED WITH SMA ADAPTER PART No. 90449-002)	1.30 MAX. AT 0.1~3GHz, 1.40 MAX. AT 3~6GHz, 1.50 MAX. 6~9GHz, 1.65 MAX. AT 9~12GHz
MAIN CONTACT RESISTANCE	INITIAL : 20 mohm MAX. / AFTER TEST : $\Delta$ R 20 mohm MAX.
GROUND CONTACT RESISTANCE	INITIAL : 20 mohm MAX. / AFTER TEST : $\Delta$ R 20 mohm MAX.
INSULATION RESISTANCE	INITIAL : 500 Mohm MIN. AFTER TEST : 100 Mohm MIN.
DIELECTRIC WITHSTANDING VOLTAGE	200 V AC 1 MINUTE
DURABILITY	30 CYCLES
MATING FORCE (INITIAL / AFTER TEST)	INITIAL : 30 N MAX. / AFTER TEST : 15 N MAX.
UNMATING FORCE (INITIAL / AFTER TEST)	INITIAL : 4 N MIN. / AFTER TEST : 2 N MIN.
PRODUCT SPECIFICATION	PRS-1404
TEST REPORT	TR-08022
PACKING STANDARD	20579-001E: PST-14004 20579-001E-01: PST-14067
APPEARANCE CRITERIA No.	QLS-A***

Rev.14

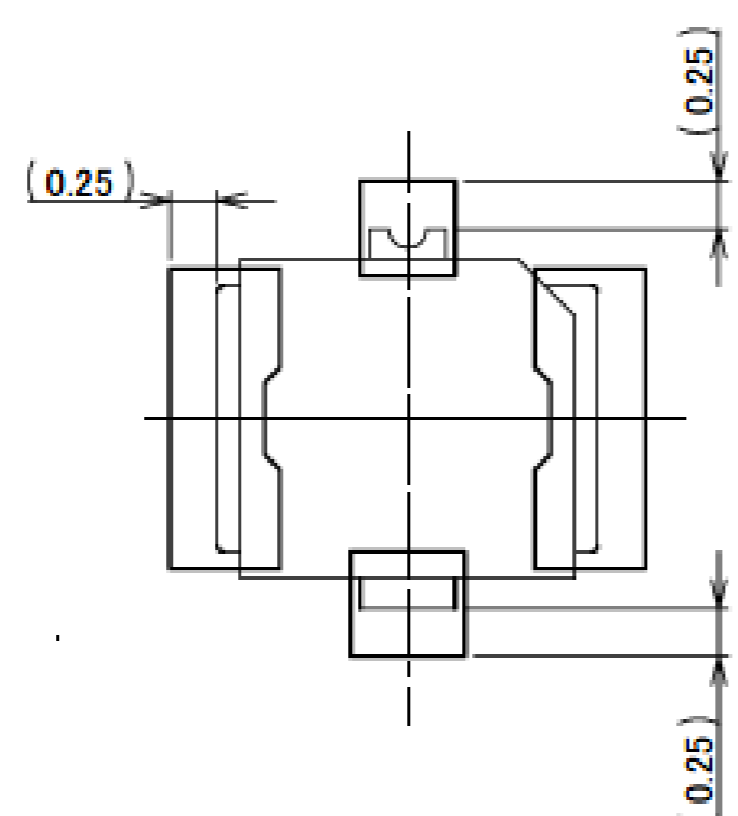


RECOMMENDED FOOTPRINT PATTERN

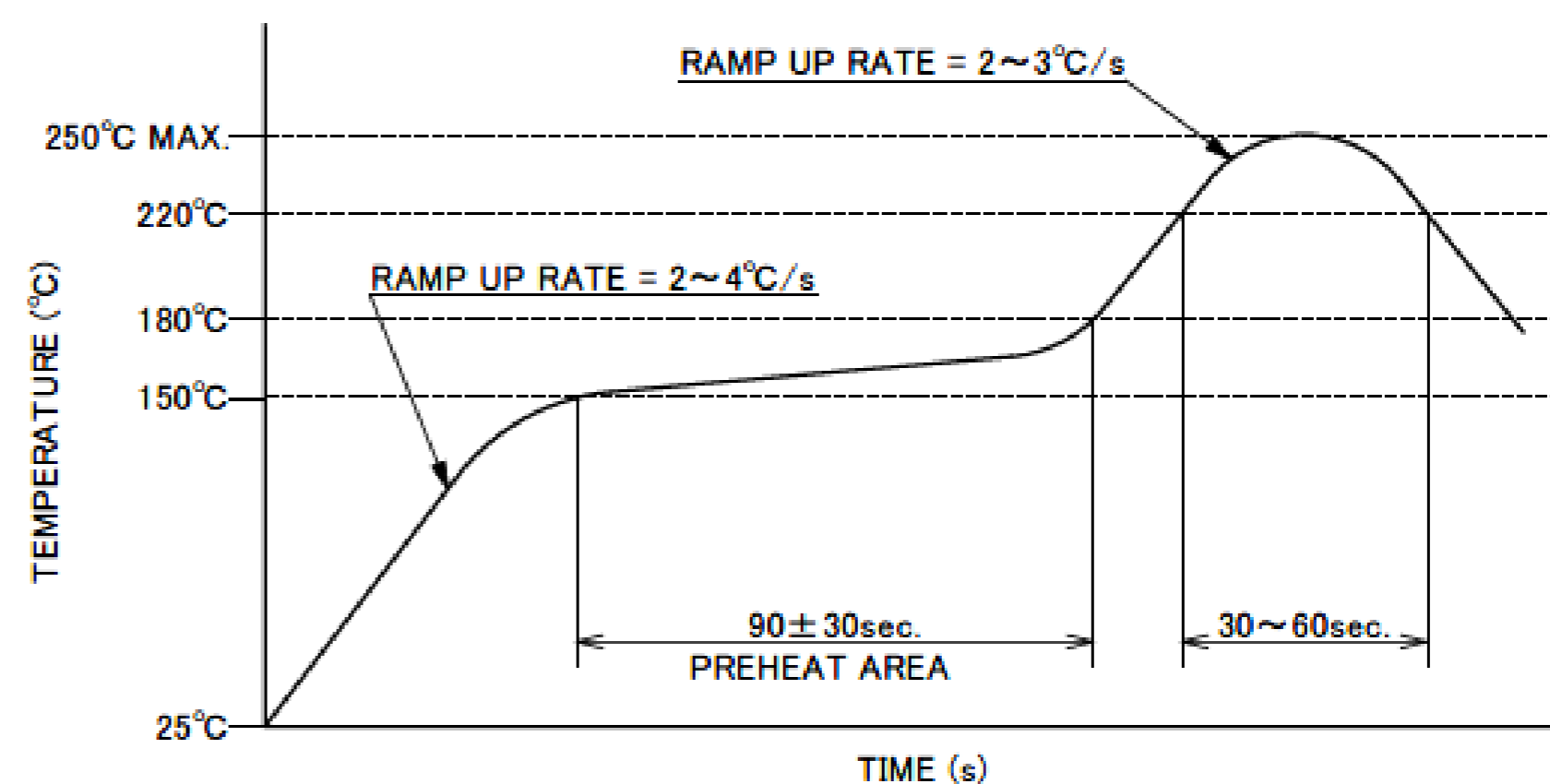


MASK THICKNESS: 0.12 mm

RECOMMENDED METAL MASK LAYOUT



CONNECTOR ON RECOMMENDED FOOTPRINT PATTERN



REFLOW TEMPERATURE PROFILE  
SENJU METAL INDUSTRY CO., LTD.: M705-SHF(Sn96.5 Ag3.0 Cu0.5)

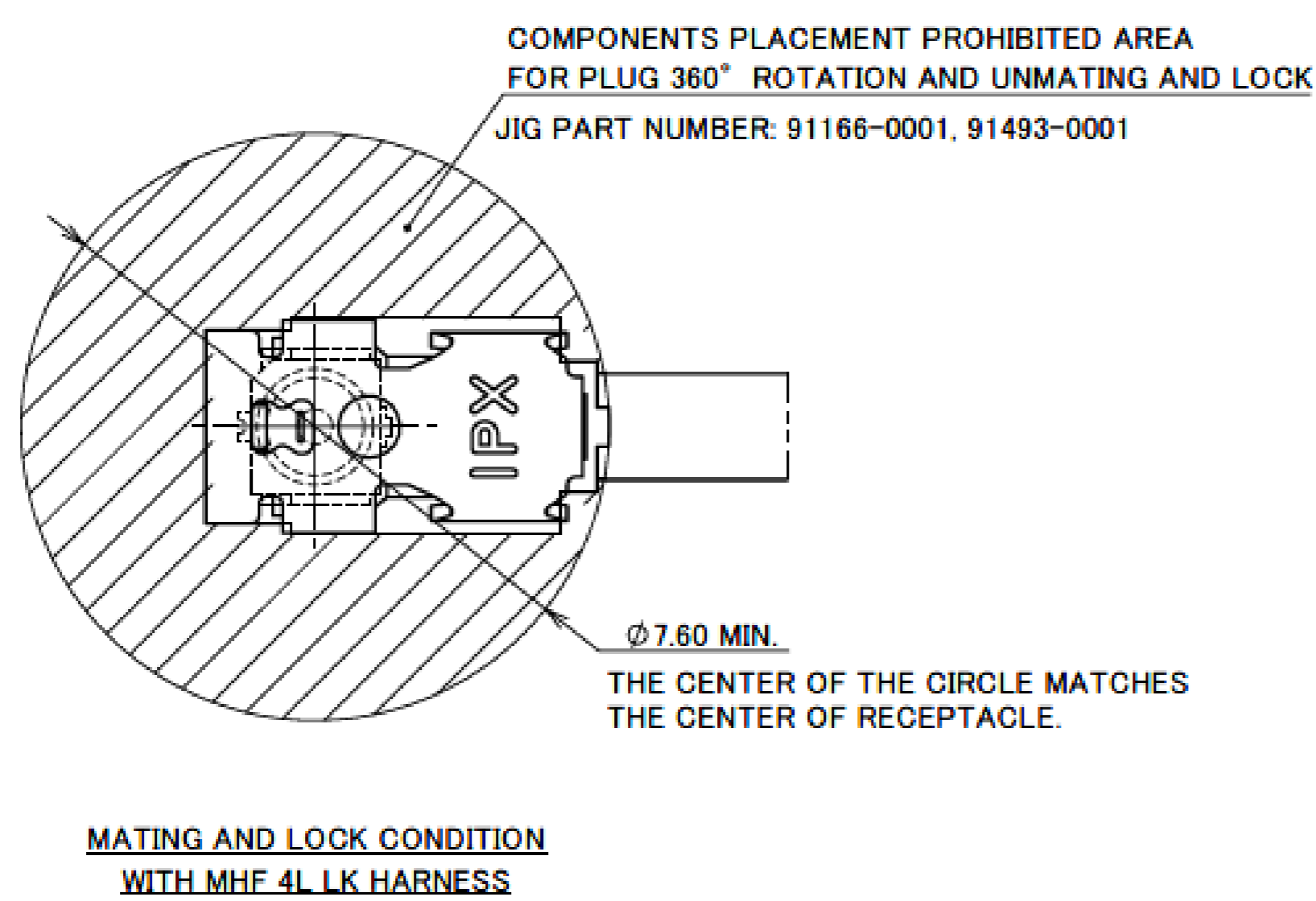
NOTE 3. NO GROUND, SIGNAL, AND RESIST IN THIS AREA.

Rev.14

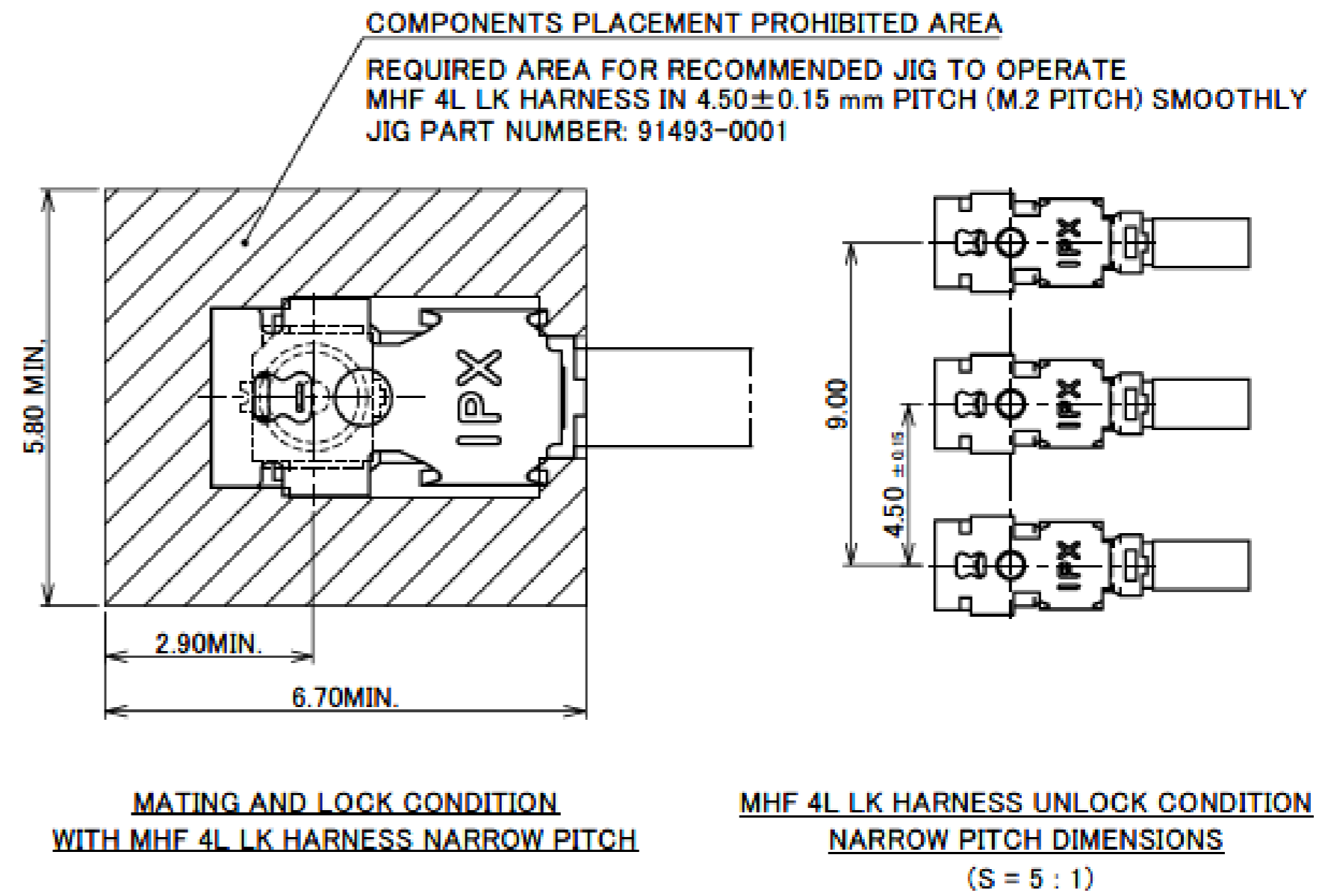
# MHF® 4L Receptacle

## COMPONENT PLACEMENT PROHIBITED AREA FOR MHF 4L RECEPTACLE MATED WITH MHF 4L LK HARNESS REQUIRED AREA FOR RECOMMENDED JIG TO OPERATE

### SINGLE CONNECTOR LAYOUT



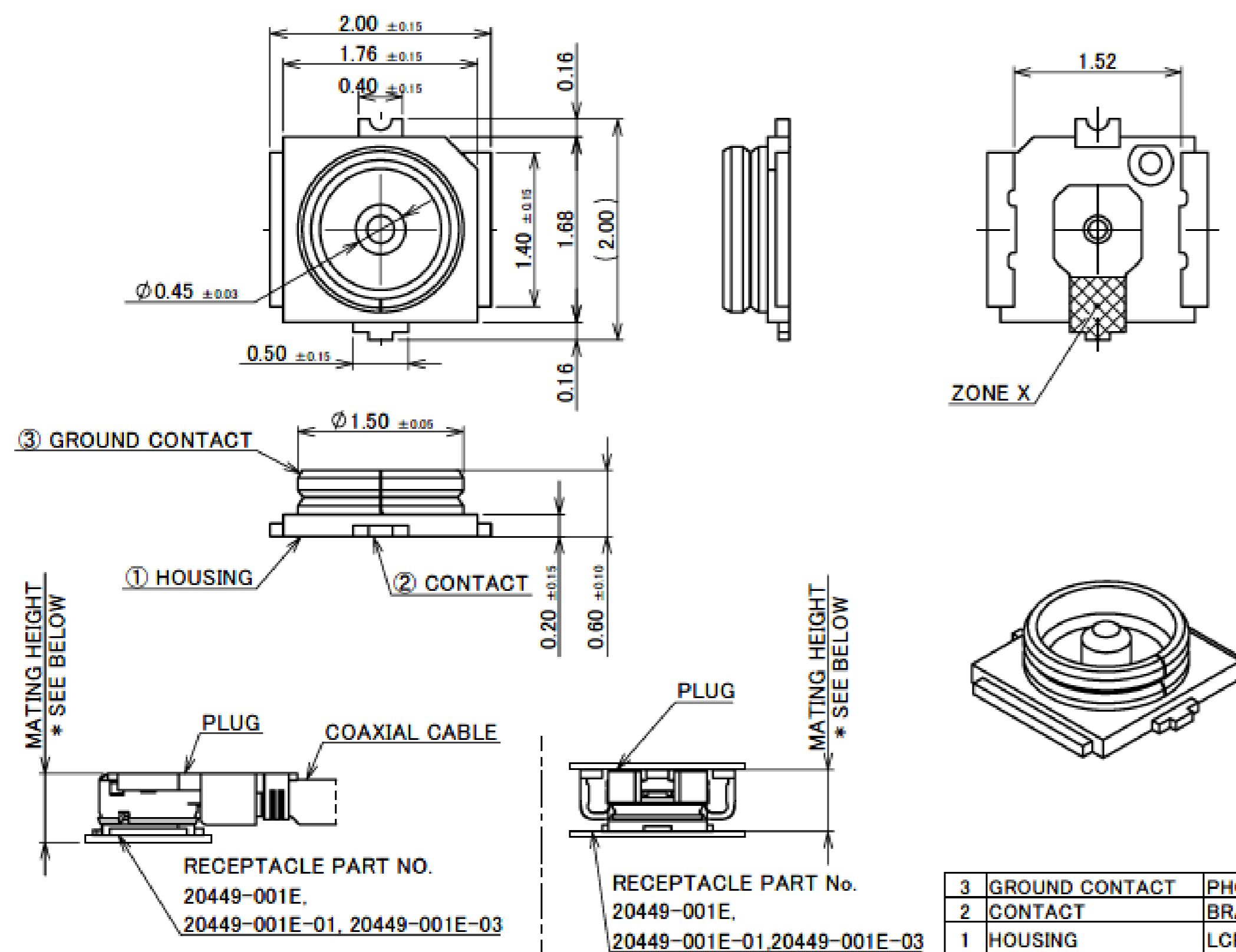
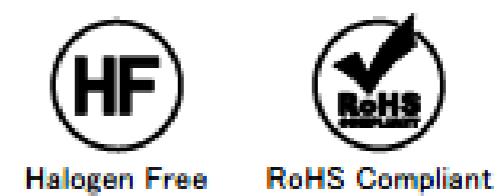
### MULTIPLE CONNECTORS LAYOUT



Rev.14

# MHF® 4 Receptacle

PART NO.	PACKING QUANTITY / REEL	CONTACT PLATING			GROUND CONTACT PLATING		
		CONTACT PART	SOLDERING PART	ALL OVER	CONTACT PART	SOLDERING PART	ALL OVER
20449-001E	10,000 PCS.	TOP: Au 0.05 µm MIN.	TOP OTHER: Au 0.01 µm MIN. ZONE X: Au 0.03 µm MIN.	Ni 1.00 µm MIN.	TOP: Au 0.03 µm MIN.	TOP: Au 0.01 µm MIN.	Ni 1.00 µm MIN.
20449-001E-01		TOP: Au 0.01 µm MIN. MIDDLE: Pd-Ni 0.02 µm MIN.	TOP: Au 0.01 µm MIN. MIDDLE: Pd-Ni 0.02 µm MIN.		TOP: Au 0.01 µm MIN. MIDDLE: Pd-Ni 0.02 µm MIN.	TOP: Au 0.01 µm MIN. MIDDLE: Pd-Ni 0.02 µm MIN.	
20449-001E-03							



- NOTES.
- APPLICABLE CONNECTOR (CABLE SIZE)  
MHF 4 PLUG: 20611-001R (Φ 0.81)  
20448-00\*R-081 (Φ 0.81)  
20448-001R-081E (Φ 0.81)  
MHF 4L PLUG: 20572-001R-08 (Φ 0.64, Φ 0.81)  
20565-001R-\*\* (Φ 0.83, Φ 0.95, Φ 1.13)  
20632-001R-37 (Φ 1.37)  
MHF 4 SMT PLUG: 20462-001E
  - COPLANARITY: 0.1 mm MAX.
  - THIS IS "Pb-FREE" CONNECTOR.
  - CHARACTERISTIC IMPEDANCE: 50 Ω (NOMINAL VALUE)

NO.	DESCRIPTION	MATERIAL	FINISH, REMARKS
3	GROUND CONTACT	PHOSPHOR BRONZE	SEE TABLE
2	CONTACT	BRASS	SEE TABLE
1	HOUSING	LCP	UL94V-0, BLACK

\* MATING HEIGHT  
1.2 MAX. WITH 20611-001R, 20572-001R-08,  
20448-00\*R-081, 20448-001R-081E  
1.4 MAX. WITH 20565-001R-\*\*  
1.7 MAX. WITH 20632-001R-37  
(2.0 MAX. WITH MHF 4L LK LOCKED CONDITION)  
MATING CONDITION WITH MHF 4/MHF 4L PLUG (S = 10 : 1)

\* MATING HEIGHT  
1.2 MAX. WITH 20462-001E  
MATING CONDITION WITH MHF 4 SMT (S = 10 : 1)

Rev.21

# MHF® 4 Receptacle

FOR MHF 4 PLUG

ITEMS	SPECIFICATION	
	20611-001R (CABLE Φ0.81 TYPE)	20448-001R (CABLE Φ0.81 TYPE)
APPLICABLE CONNECTOR PART No.		
RATING VOLTAGE	60 V AC (R.M.S)/DC	
RATING FREQUENCY	DC~9GHz	
OPERATING TEMPERATURE	233~363 K (-40°C~+90°C)	
CHARACTERISTIC IMPEDANCE	50 ohm (NOMINAL VALUE)	
VSWR (MATED WITH SMA ADAPTER PART No. 90449-002)	1.30 MAX. AT 0.1~3GHz, 1.40 MAX. AT 3~6GHz, 1.55 MAX. AT 6~9GHz	
MAIN CONTACT RESISTANCE	INITIAL : 20 mohm MAX. / AFTER TEST : ΔR 20 mohm MAX.	
GROUND CONTACT RESISTANCE	INITIAL : 20 mohm MAX. / AFTER TEST : ΔR 100 mohm MAX.	INITIAL : 20 mohm MAX. / AFTER TEST : ΔR 20 mohm MAX.
INSULATION RESISTANCE	INITIAL : 500 Mohm MIN. / AFTER TEST : 100 Mohm MIN.	
DIELECTRIC WITHSTANDING VOLTAGE	200 V AC 1 MINUTE	
DURABILITY	30 CYCLES	
MATING FORCE (INITIAL / AFTER TEST)	-	
UNMATING FORCE (INITIAL / AFTER TEST)	INITIAL : 4 N MIN. / AFTER TEST : 2 N MIN.	
PRODUCT SPECIFICATION	PRS-2530	PRS-1745
TEST REPORT	TR-18086	TR-12118
PACKING STANDARD	20449-001E-03: 300-604	
INSTRUCTION MANUAL	HIM-10003	
APPEARANCE CRITERIA No.	QLS-A***	

Rev.21

FOR MHF 4L PLUG

ITEMS	SPECIFICATION			
	20572-001R-08 (CABLE Φ0.64 TYPE) (CABLE Φ0.81 TYPE)	20565-001E-13 (CABLE Φ0.95 TYPE) (CABLE Φ1.13 TYPE)	20565-001R-83 (CABLE Φ0.83 TYPE)	20632-001R-37 (CABLE Φ1.37 TYPE)
APPLICABLE CONNECTOR PART No.				
RATING VOLTAGE	60 V AC (R.M.S)/DC			
RATING FREQUENCY	DC ~ 9GHz			
OPERATING TEMPERATURE	233~363 K (-40°C~+90°C)			
CHARACTERISTIC IMPEDANCE	50 ohm (NOMINAL VALUE)			
VSWR (MATED WITH SMA ADAPTER PART No. 90449-002)	1.30 MAX. AT 0.1~3GHz, 1.40 MAX. AT 3~6GHz, 1.55 MAX. AT 6~9GHz			
MAIN CONTACT RESISTANCE	INITIAL : 20 mohm MAX. / AFTER TEST : ΔR 20 mohm MAX.			
GROUND CONTACT RESISTANCE	INITIAL : 20 mohm MAX. / AFTER TEST : ΔR 20 mohm MAX.			
INSULATION RESISTANCE	INITIAL : 500 Mohm MIN. / AFTER TEST : 100 Mohm MIN.			
DIELECTRIC WITHSTANDING VOLTAGE	200 V AC 1 MINUTE			
DURABILITY	30 CYCLES			
MATING FORCE (INITIAL / AFTER TEST)	INITIAL : 30 N MAX. / AFTER TEST : 30 N MAX.			
UNMATING FORCE (INITIAL / AFTER TEST)	INITIAL : 20 N MAX. 5 N MIN. / AFTER TEST : 20 N MAX. 3 N MIN.			
PRODUCT SPECIFICATION	PRS-1944 (CABLE Φ0.64 TYPE) PRS-1772 (CABLE Φ0.81 TYPE)	PRS-2051 (CABLE Φ0.95 TYPE) PRS-1772 (CABLE Φ1.13 TYPE)	PRS-2062 (CABLE Φ0.83 TYPE)	PRS-2008 (CABLE Φ1.37 TYPE)
TEST REPORT	TR-14078 (CABLE Φ0.64 TYPE) TR-13011 (CABLE Φ0.81 TYPE)	TR-14142 (CABLE Φ0.95 TYPE) TR-13011 (CABLE Φ1.13 TYPE)	TR-15011 (CABLE Φ0.83 TYPE)	TR-14100 (CABLE Φ1.37 TYPE)
PACKING STANDARD	20449-001E-03: 300-604			
INSTRUCTION MANUAL	HIM-12011	HIM-12012	HIM-16011	
APPEARANCE CRITERIA No.	QLS-A***			

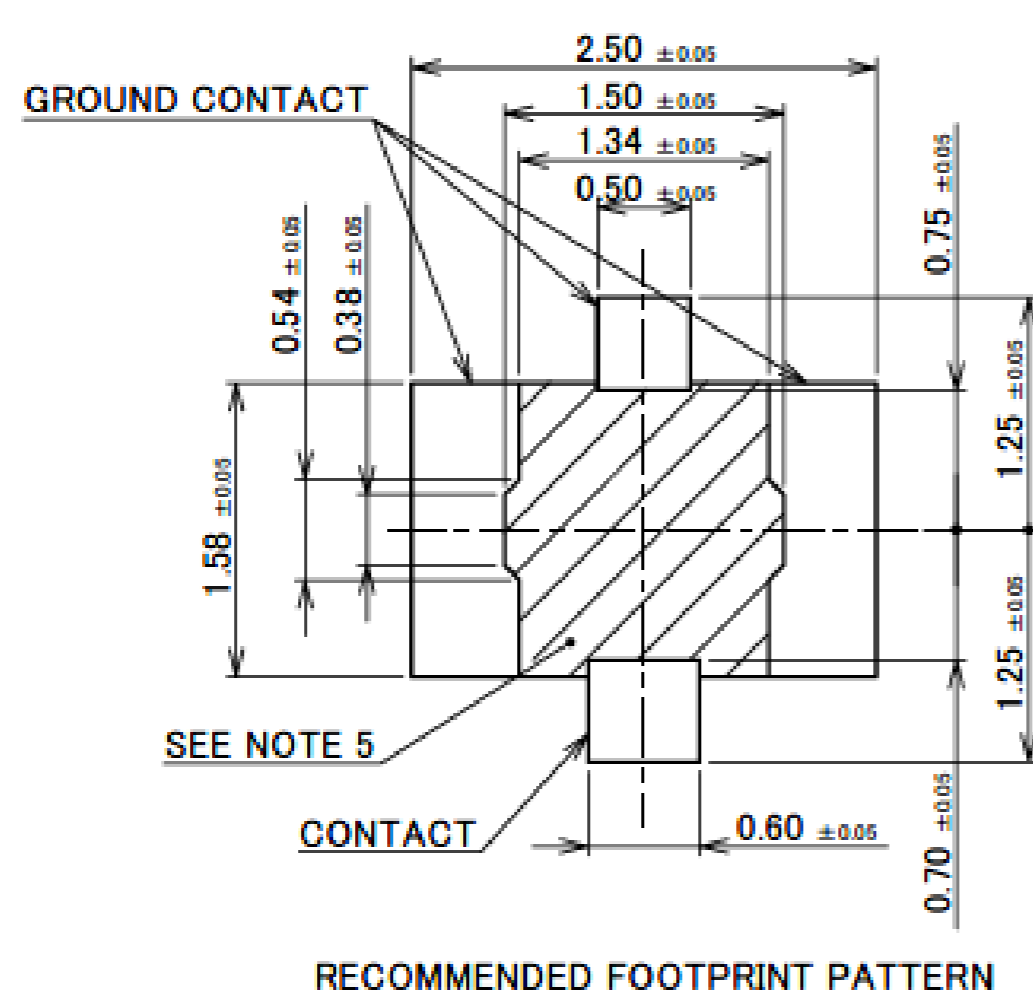
Rev.21

# MHF<sup>®</sup> 4 Receptacle

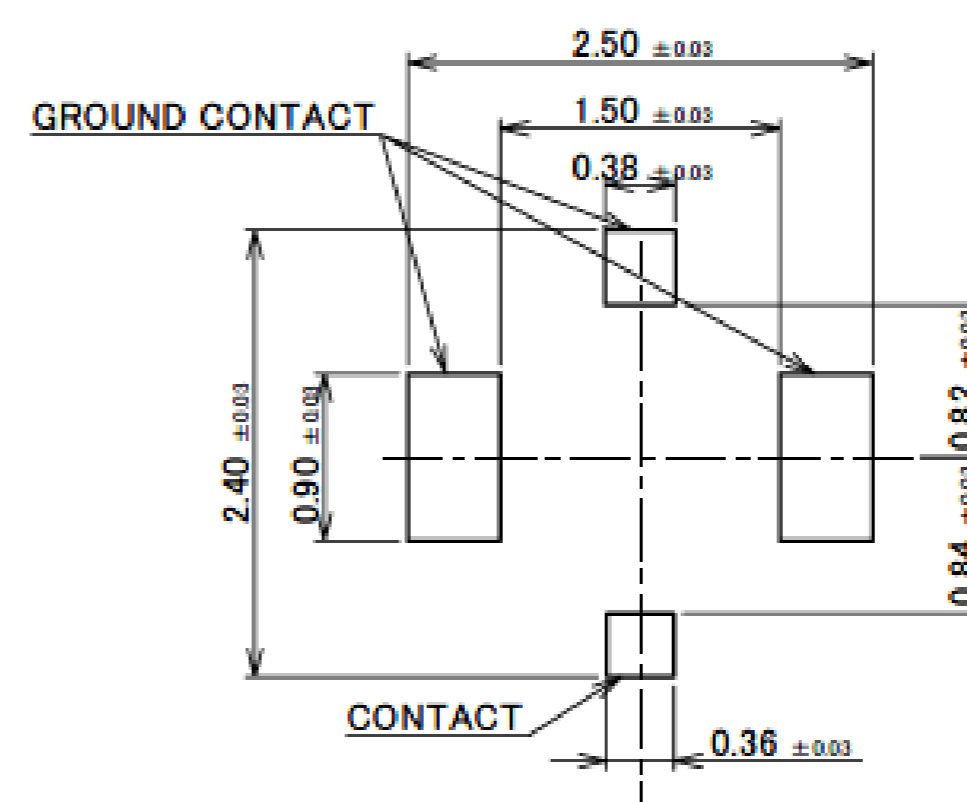
FOR MHF 4 SMT PLUG

ITEMS	SPECIFICATION
APPLICABLE CONNECTOR PART No.	20462-001E (MHF 4 SMT PLUG)
RATING VOLTAGE	60 V AC (R.M.S)/DC
RATING FREQUENCY	DC~9GHz
OPERATING TEMPERATURE	233~363 K(-40°C~+90°C)
CHARACTERISTIC IMPEDANCE	50 ohm (NOMINAL VALUE)
VSWR (MATED WITH SMA ADAPTER PART No. 90449-002)	1.30 MAX. AT 0.1~3GHz, 1.40 MAX. AT 3~6GHz, 1.55 MAX. AT 6~9GHz
MAIN CONTACT RESISTANCE	INITIAL : 20 mohm MAX. / AFTER TEST : $\angle$ R 20 mohm MAX.
GROUND CONTACT RESISTANCE	INITIAL : 20 mohm MAX. / AFTER TEST : $\angle$ R 20 mohm MAX.
INSULATION RESISTANCE	INITIAL : 500 Mohm MIN. / AFTER TEST : 100 Mohm MIN.
DIELECTRIC WITHSTANDING VOLTAGE	200 V AC 1 MINUTE
DURABILITY	30 CYCLES
MATING FORCE (INITIAL / AFTER TEST)	INITIAL : 30 N MAX. / AFTER TEST : 15 N MAX.
UNMATING FORCE (INITIAL / AFTER TEST)	INITIAL : 4 N MIN. / AFTER TEST : 2 N MIN.
PRODUCT SPECIFICATION	PRS-1404
TEST REPORT	TR-08022
PACKING STANDARD	20449-001E-03: 300-604
INSTRUCTION MANUAL	HIM-15005
APPEARANCE CRITERIA No.	QLS-A***

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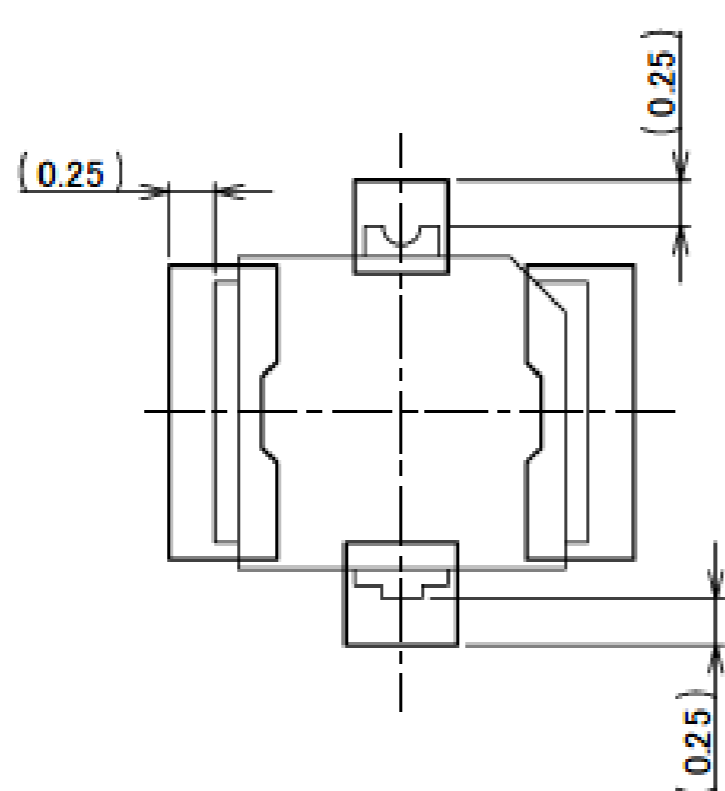


RECOMMENDED FOOTPRINT PATTERN

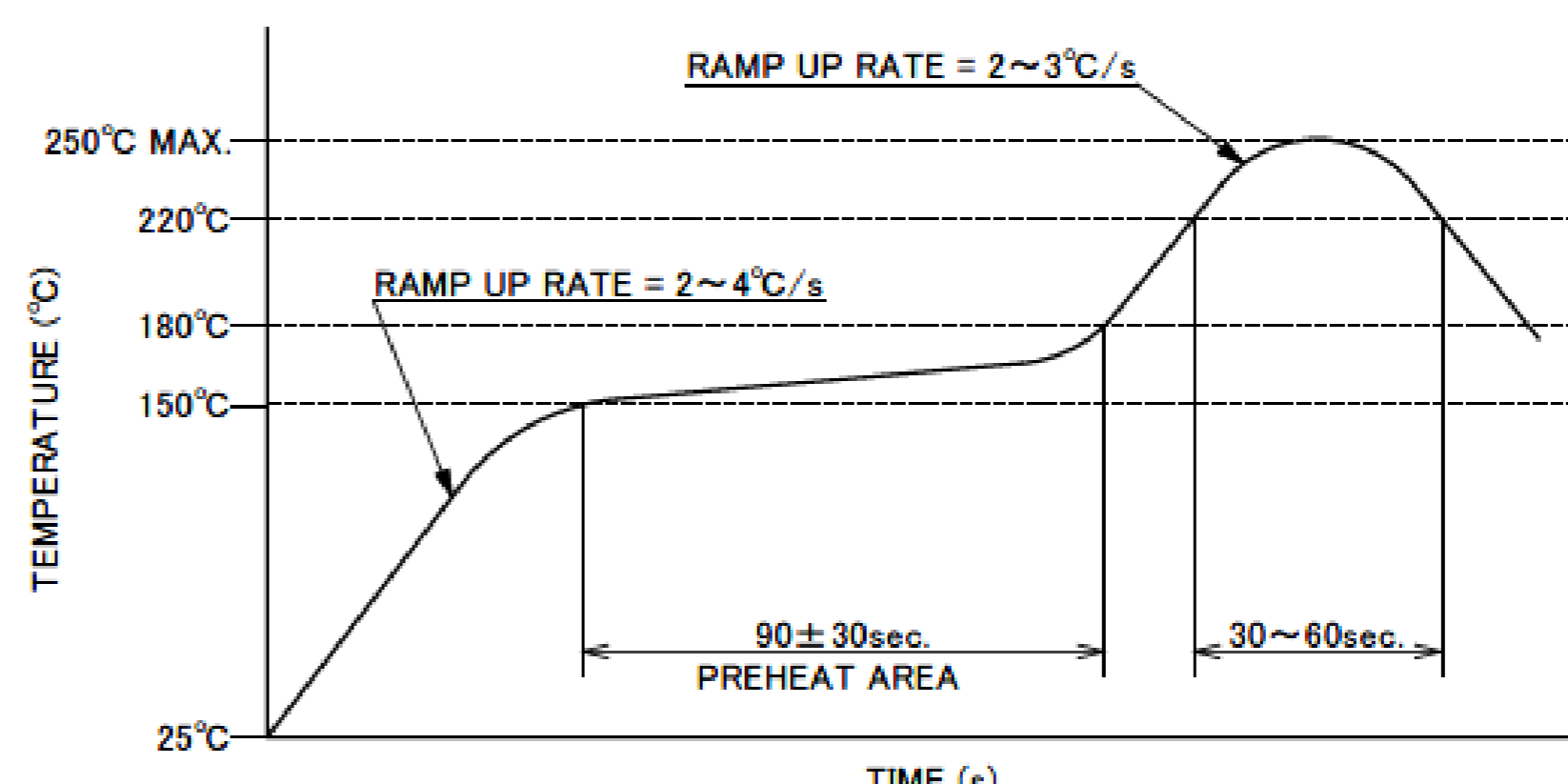


MASK THICKNESS: 0.12 mm

RECOMMENDED METAL MASK LAYOUT



CONNECTOR ON RECOMMENDED FOOTPRINT PATTERN



REFLOW TEMPERATURE PROFILE  
SENJU METAL INDUSTRY CO., LTD.: M705-SHF(Sn96.5 Ag3.0 Cu0.5)

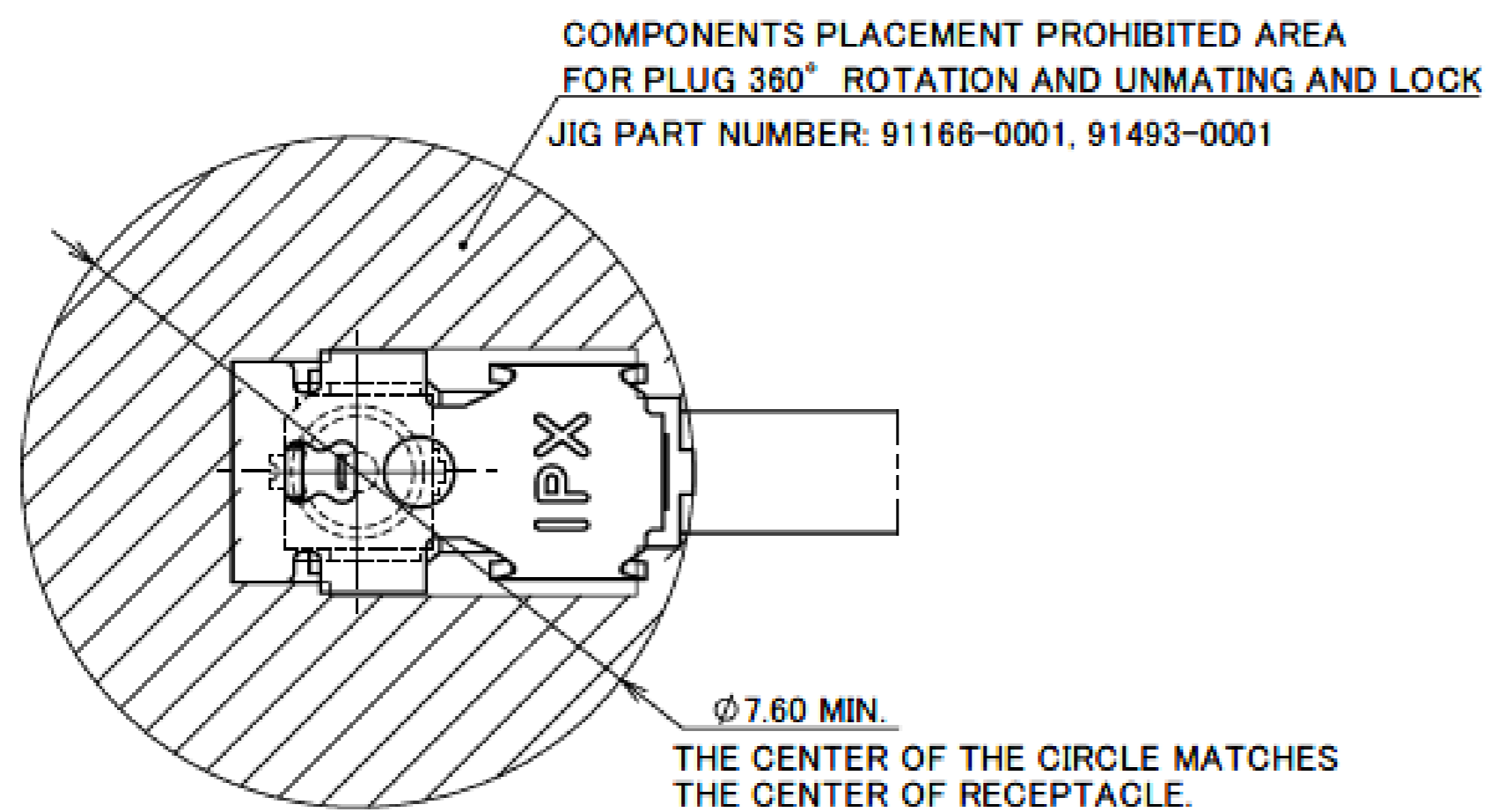
NOTE 5. NO GROUND, SIGNAL, AND RESIST IN THIS AREA.

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# MHF<sup>®</sup> 4 Receptacle

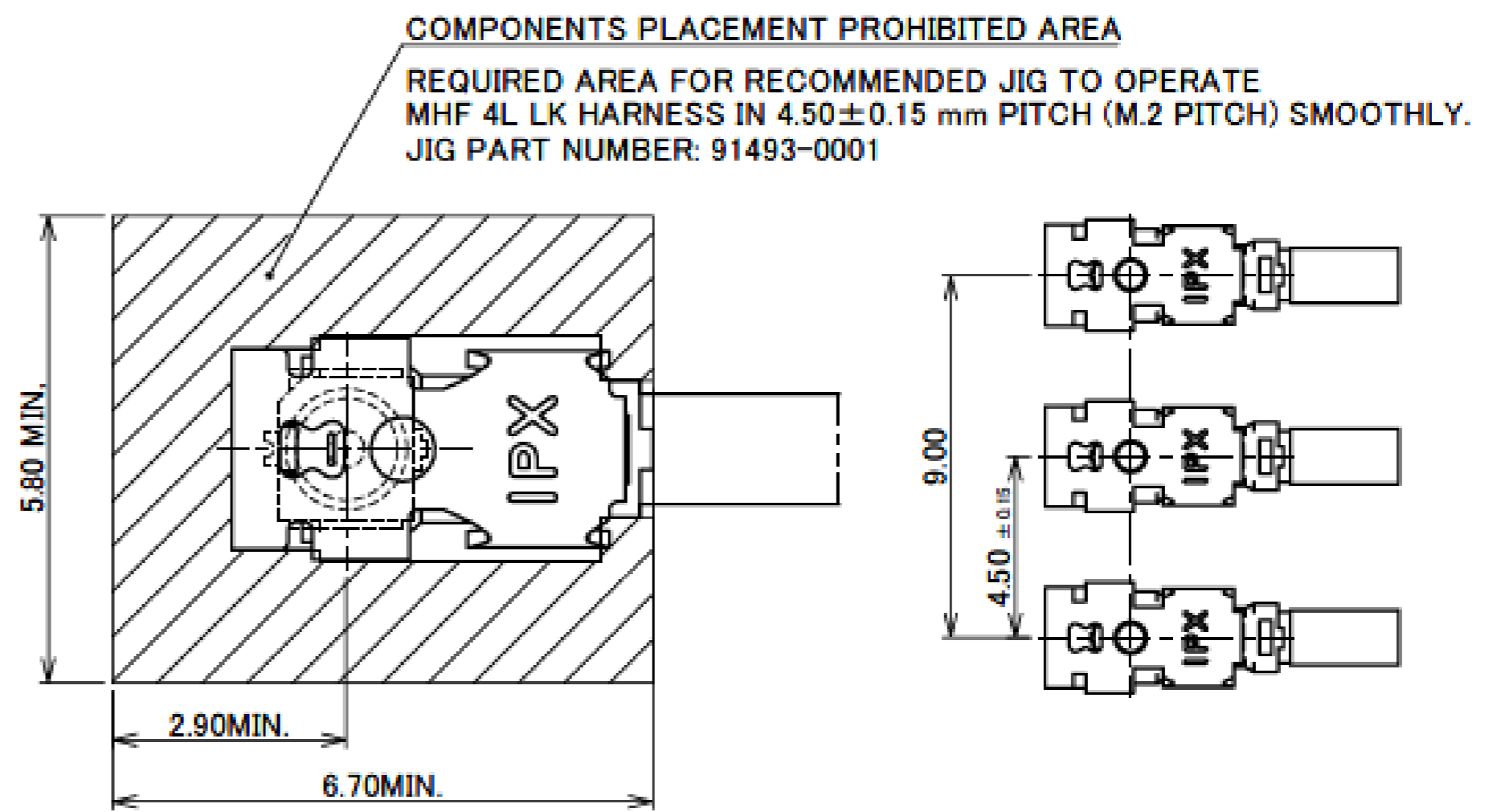
## COMPONENT PLACEMENT PROHIBITED AREA FOR MHF 4 RECEPTACLE MATED WITH MHF 4L LK HARNESS REQUIRED AREA FOR RECOMMENDED JIG TO OPERATE

### SINGLE CONNECTOR LAYOUT



MATING AND LOCK CONDITION WITH MHF 4L LK HARNESS

### MULTIPLE CONNECTORS LAYOUT

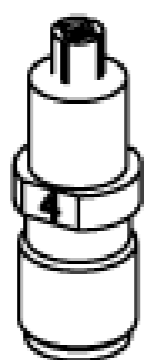


MATING AND LOCK CONDITION WITH MHF 4L LK HARNESS NARROW PITCH

MHF 4L LK HARNESS UNLOCK CONDITION NARROW PITCH DIMENSIONS (S = 5 : 1)

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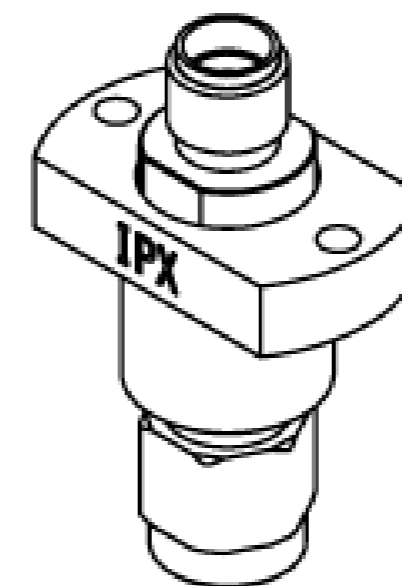
## Accessories for MHF<sup>®</sup> 4L Receptacle



MHF 4 (4L) SMA ADAPTER  
PART NO. 90449-002

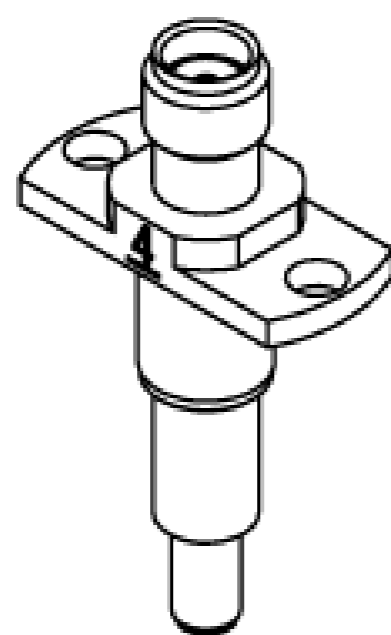


MHF 4 RECEPTACLE HIGH CYCLE ATTACHMENT  
PART NO. 90683-0001

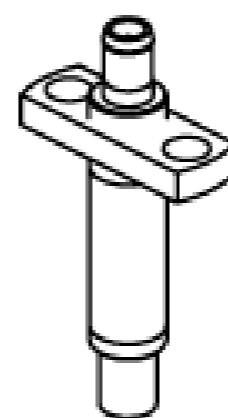


MHF SERIES HIGH CYCLE SMA ADAPTER BASE UNIT  
PART NO. 90684-0001

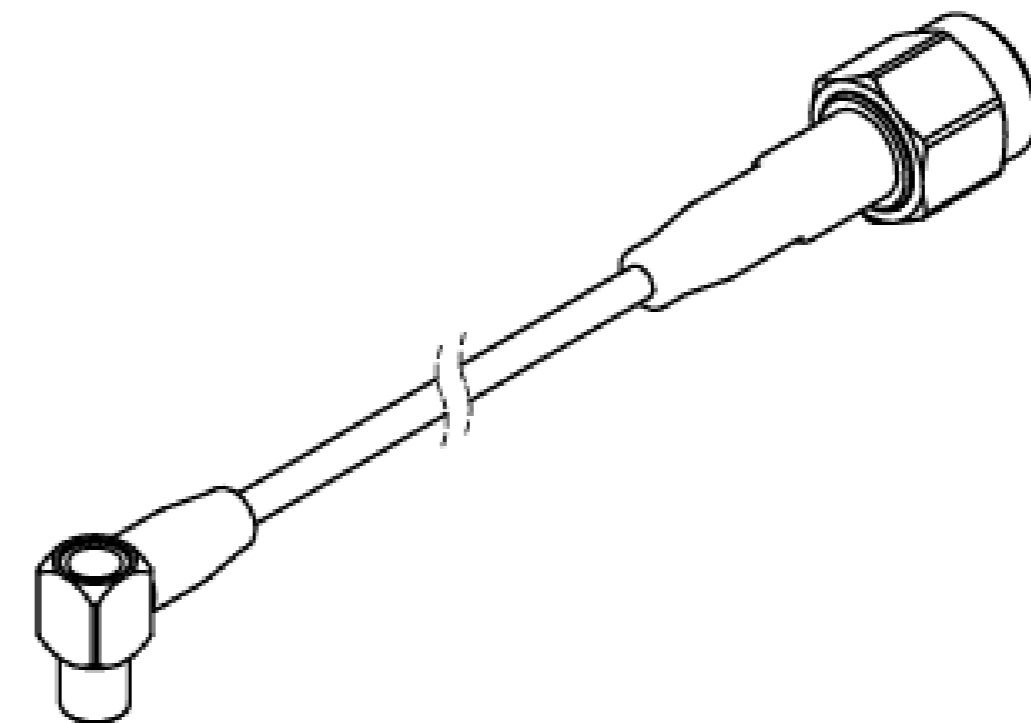
\* 90683-0001 AND 90684-0001 SHOULD BE USED TOGETHER.



MHF4(4L) RECEPTACLE HIGH CYCLE SMA ADAPTER  
PART NO. 90698-0001



MHF4(4L) RECEPTACLE HIGH CYCLE N45 C ADAPTER  
PART NO. 90576-0001



MHF SERIES N45 C TO SMA ADAPTER CABLE  
PART NO. 90577-\*\*\*\*

\* 90576-0001 AND 90577-\*\*\*\* SHOULD BE USED TOGETHER

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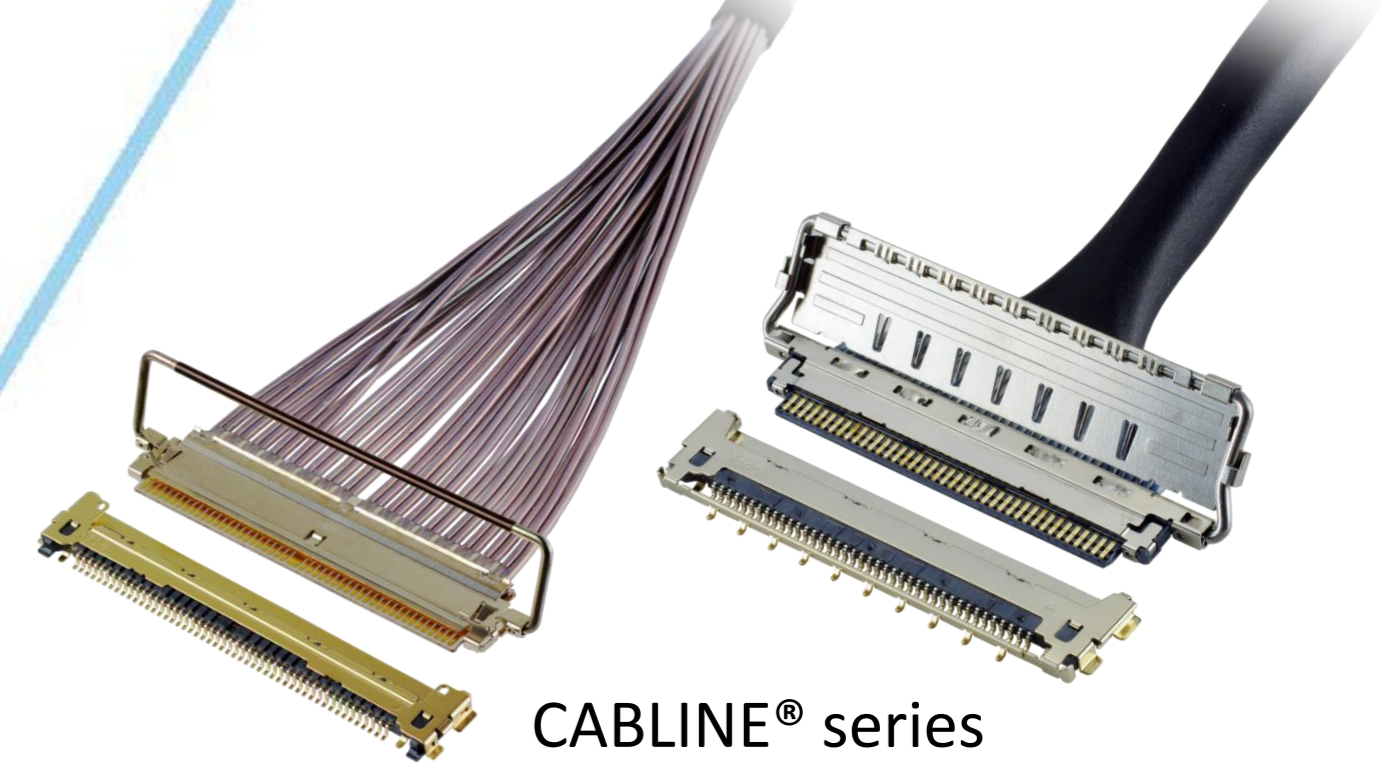
# Custom Products Available

## RF Connector

MHF® series



## Micro-coaxial/Twinax/ Discrete Wire Connector



CABLINE® series

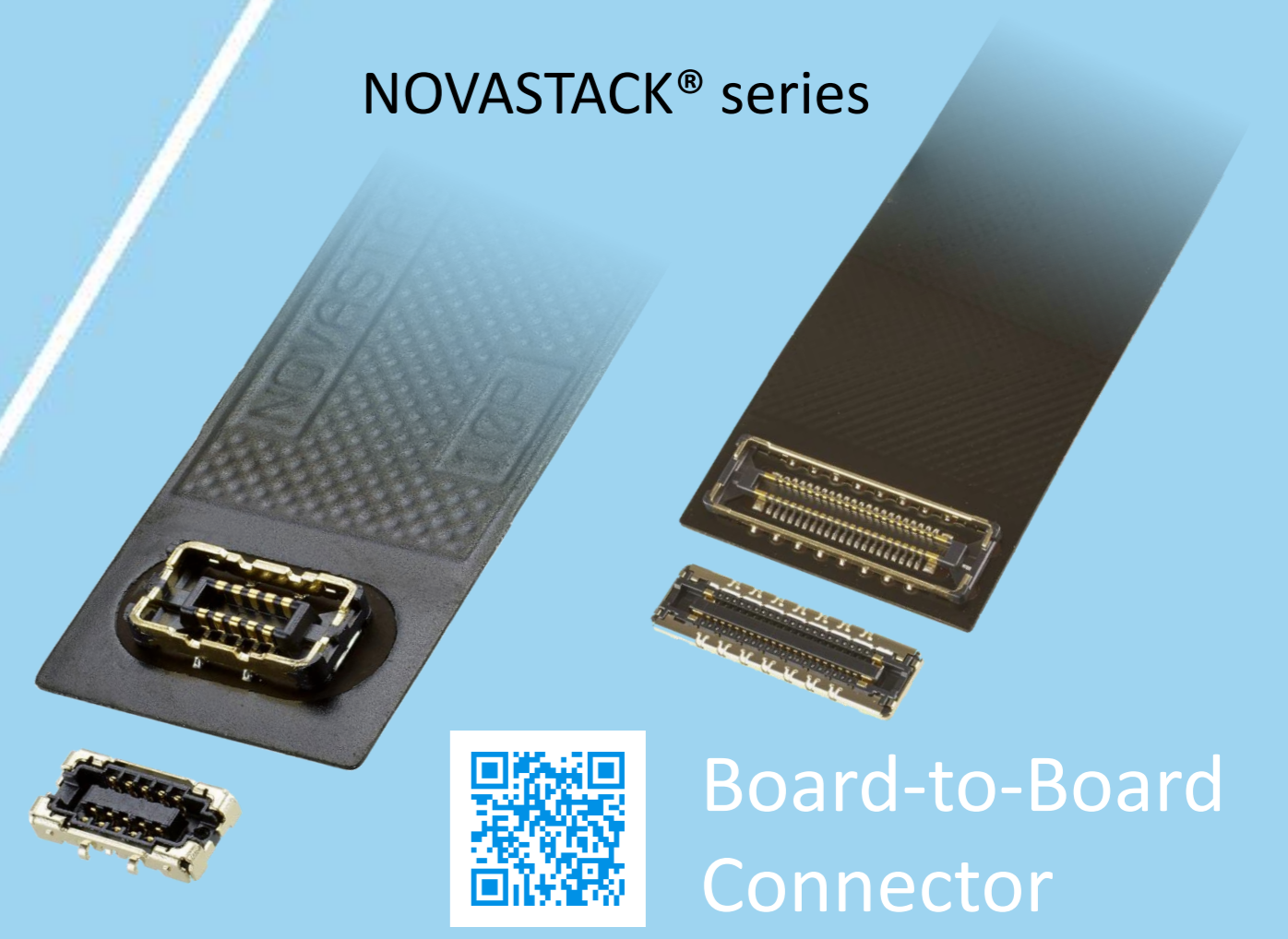


## Optical Module

LIGHTPASS® series



NOVASTACK® series



## Board-to-Board Connector



## Power Connector/ Terminal

AP series

ISH® series



MINIFLEX® series

EVAFLEX® series



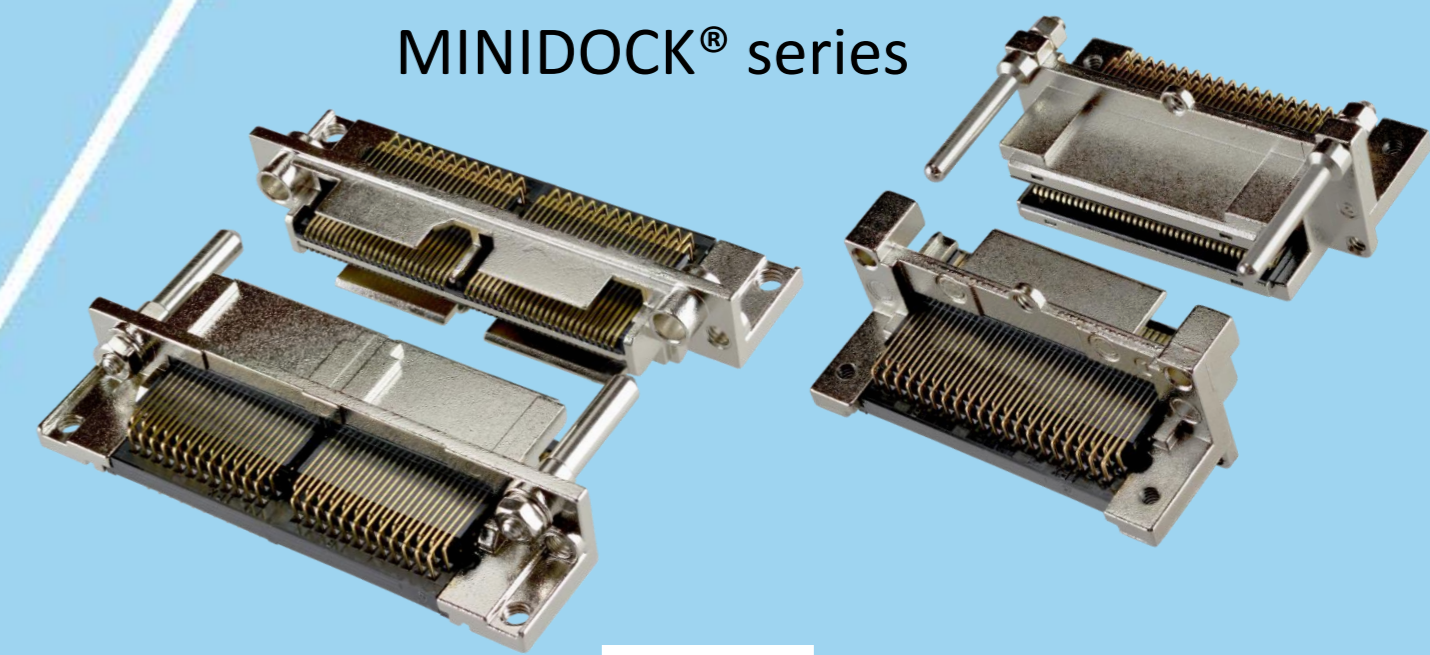
## FPC FFC Connector



Inquiry



MINIDOCK® series



## I/O Connector

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