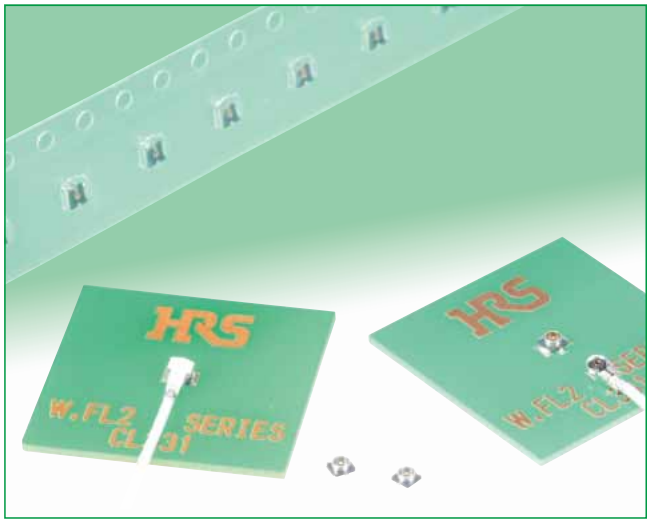
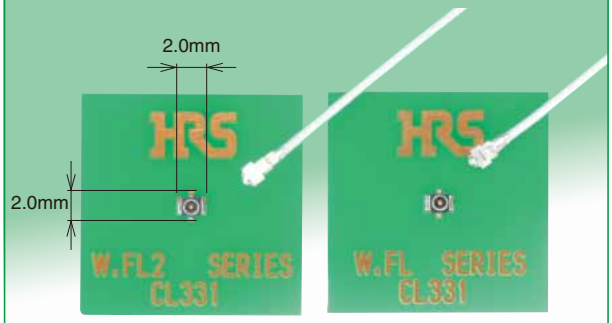
Ultra-Small Surface Mount Coaxial Connectors - 1.18mm Mated Height

W.FL2 Series



Occupied Mounting Area



W. FL2 Series **W. FL Series**

Features

1. Nominal mated height of 1.18 mm (Max. 1.3 mm)

2. Small board footprint

As with X.FL, W.FL Series, the receptacles occupies an area of 3.4 mm² and share the same land pattern.

Note: The W. FL2 Series is not compatible with X.FL, W.FL Series.

3. Extremely light weight

The world's smallest and lightest class of coaxial connectors.
Receptacle: 5.0mg
Right angle plug:16.7mg(062), 17.4mg(040), 15.3mg(032)

4. Frequency range up to 6 GHz

DC to 3 GHz: V.S.W.R. of 1.3 max.
3 GHz to 6 GHz: V.S.W.R. of 1.4 max.

5. Automatic board placement

Packaged on tape-and-reel the receptacles can be placed with vacuum nozzles of the automatic placement equipment.

6. Plugs are terminated with ultra-fine coaxial (fluorinated resin insulated) cable

The use of ultra-fine coaxial(fluorinated resin insulated)cables on these connectors offer the ability to complete connections in small, confined spaces with a smooth, easy operation.

7. Simple connector mating / un-mating

Use of the available mating / un-mating tools assures correct connection / disconnection of the plug and receptacle.

8. Halogen-free*(Receptacle, Plug(HF type))

*As defined by IEC61249-2-21
Br-900 ppm maximum, Cl-900 ppm maximum, Cl+Br combined-1,500 ppm maximum.

Mated height comparison (with W.FL Series)

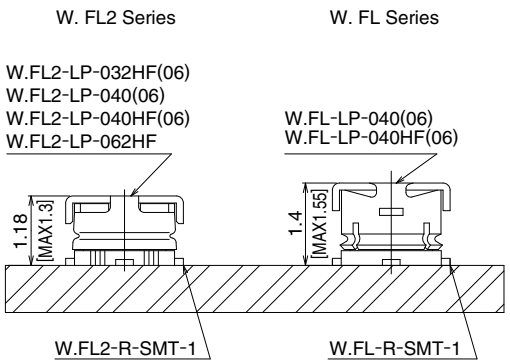


Fig.1

W. FL2 Plug and Receptacle

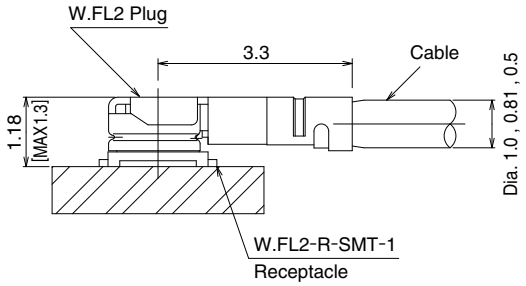


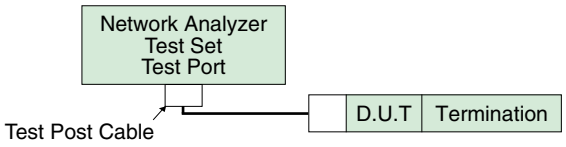
Fig.2

■Specifications

Rating	Nominal characteristic impedance	50Ω	Operating temperature range	-40°C to +90°C (90%RH max.)
	Frequency range	DC to 6 GHz	Storage temperature range	-30°C to +70°C (90%RH max.)Note 1

Item	Specification
1. Contact resistance	20 mΩ max. (center contact), l0 mΩ max. (outer contact)
2. Insulation resistance	500 MΩ min., 100 V DC
3. Withstanding voltage	200 V AC / 1 minute
4. V.S.W.R.	1.3 max. (DC to 3 GHz) 1.4 max. (3 GHz to 6 GHz)

∗ V.S.W.R. Measurement
as shown on the block diagram below.
Note: Verify connection and measurement setup.



Note1: Cable assembly measurements with SMA conversion adapters mated with W.FL2 plug at each end of the 100cm long ultra-fine coaxial cable.
Note2: Receptacles mounted on a 50 ohms glass epoxy board. Measurements were conducted with SMA conversion adapters attached.

Note1. The term “storage” refers to products stored for long period of time prior to mounting and use.

■Materials

●Plugs – Right Angle

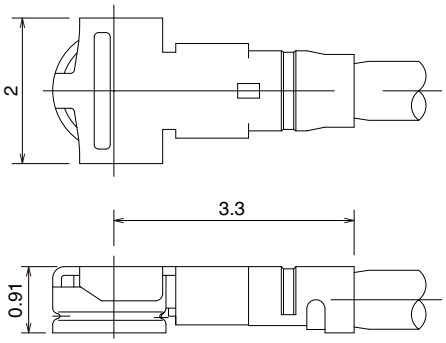
Part	Material	Finish
Shell	Phosphor bronze	Silver plated/Gold plated(062)
Insulator	PBT	Color: Black, UL94V-0
Insulator (HF type)	LCP	Color: Milky white, UL94V-0
Female center contact	Phosphor bronze	Gold plated

●Receptacle

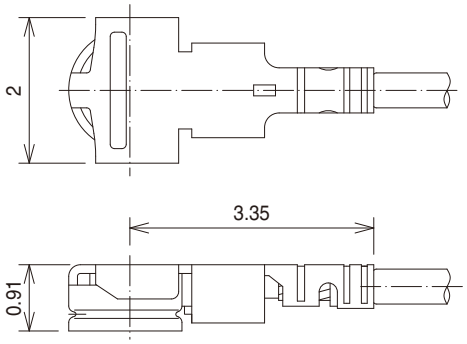
Part	Material	Finish
Shell	Phosphor bronze	Silver plated
Insulator	LCP	Color: Black, UL94V-0
Male center contact	Brass	Gold plated

■Cable Assembly(Plug)

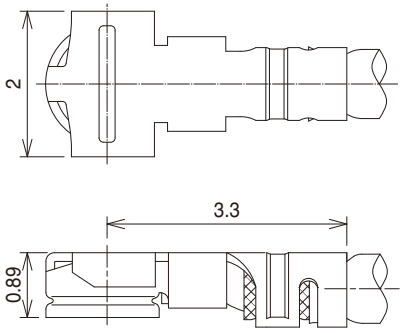
W.FL2-LP-040(06), W.FL2-LP-040HF(06) (Applicable cable : outer diameter 0.81)



W.FL2-LP-032HF(06) (Applicable cable : outer diameter 0.5)



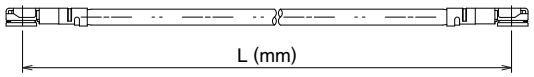
W.FL2-LP-062HF (Applicable cable : outer diameter 1.0)



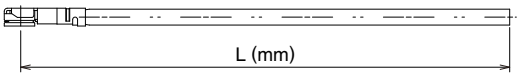
[Plugs can be ordered only as terminated cable assemblies.]

◆How to specify Cable Assembly

[Double-ended cable assembly]



[Single-ended cable assembly]



Ordering infometioan

■Ordering information

Used plug: W.FL2-LP-040(06), W.FL2-LP-040HF(06)

Double-Ended: **W.FL2 – 2LP – HF6 – 04N ⌜⌟ TV – A – (L)**
(1) (2) (3) (4) (5) (6) (7)

Single-Ended: **W.FL2 – LP – HF6 – 04N ⌜⌟ TV – A – (L)**
(1) (2) (3) (4) (5) (6) (7)

❶ Series name	: WFL2, W.FL2	❹ Cable type	04N: 0.81mm dia. ultra-fine coaxial cable
❷ Assembly type	LP: Single ended 2LP: Double ended	❺ Cable color	1: White, 2: Black
❸ Environmental compliant	HF6: Halogen-free 6: RoHS compliant	❻ Cable outer conductor	TV: Tin Plated braided wire
		❼ Total length (mm)	Length(L)

●Standard Tolerances for (L)

(L)mm	Standard tolerance(mm)
✻L=35 to 200	±4
L=200 to 500	±8
L=500 to 1000	±12
L=Longer than 1000mm	±1.5% of (L)

Note: Minimum available length(L) is 35mm.

Used plug: W.FL2-LP-032HF(06)

Double-Ended: **W.FL2 – 2LP – HF6 – 032N ⌜⌟ TS – A – (L)**
(1) (2) (3) (4) (5) (6) (7)

Single-Ended: **W.FL2 – LP – HF6 – 032N ⌜⌟ TS – A – (L)**
(1) (2) (3) (4) (5) (6) (7)

❶ Series name	: WFL2, W.FL2	❹ Cable type	032N: 0.5mm dia. ultra-fine coaxial cable
❷ Assembly type	LP: Single ended 2LP: Double ended	❺ Cable color	1: White, 2: Black
❸ Environmental compliant	HF6: Halogen-free	❻ Cable outer conductor	TS: Tin Plated fiber or paper covered copper winding wire
		❼ Total length (mm)	Length(L)

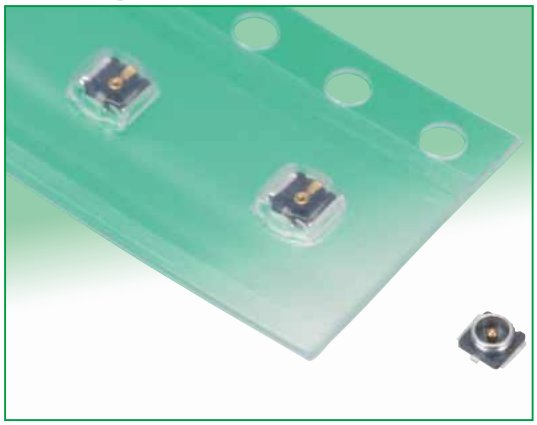
Used plug: W.FL2-LP-062HF

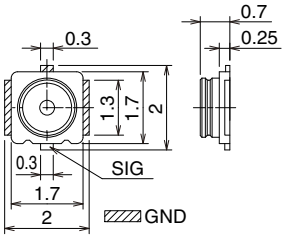
Double-Ended: **W.FL2 – 2LP – HF – 062N ⌜⌟ SC – A – (L)**
(1) (2) (3) (4) (5) (6) (7)

Single-Ended: **W.FL2 – LP – HF – 062N ⌜⌟ SC – A – (L)**
(1) (2) (3) (4) (5) (6) (7)

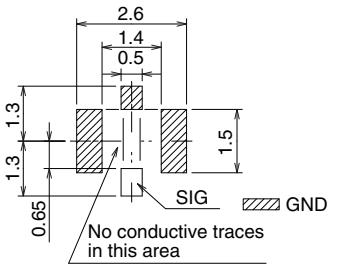
❶ Series name	: WFL2, W.FL2	❹ Cable type	062N: 1.0mm dia. ultra-fine coaxial cable
❷ Assembly type	LP: Single ended 2LP: Double ended	❺ Cable color	1: Gray, 2: Black, 3: White
❸ Environmental compliant	HF: Halogen-free	❻ Cable outer conductor	SC: Outer tin plated braided wire Inner conductor silver plated
		❼ Total length (mm)	Length(L)

■Receptacles





◆Recommended PCB mounting pattern (Note 1)



Note 1: The land pattern is the same as that of the X.FL, W.FL series connectors.

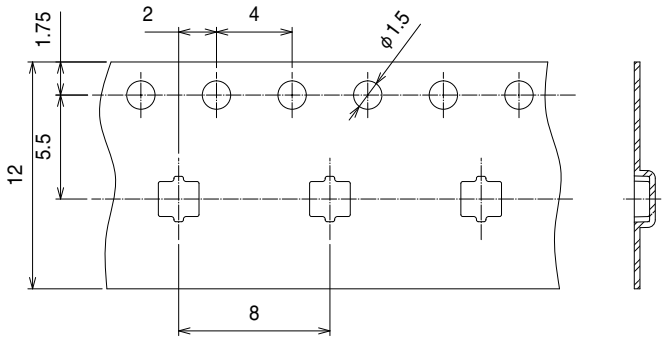
Part No.	HRS No.	Packaging	RoHS
W.FL2-R-SMT-1(60)	331-0315-4 60	Reel (5,000 pcs/reel)	Yes
W.FL2-R-SMT-1(80)	331-0315-4 80	Reel (10,000 pcs/reel)	

◆Embossed Carrier Tape Dimensions (IEC 60286-3 compliant)

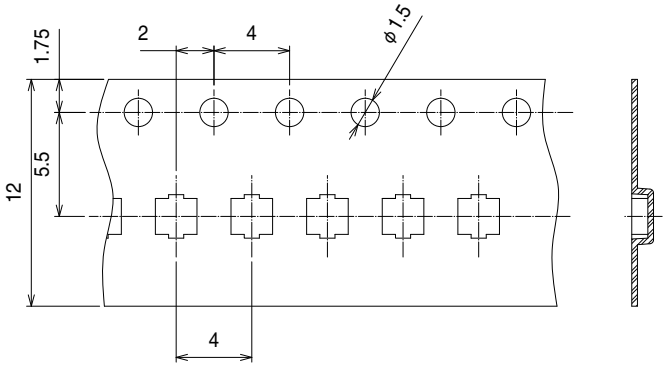
Embossed Carrier Tape Dimensions

●Embossed Carrier Tape Dimensions

(W.FL2-R-SMT-1(60) 8mm pitch)

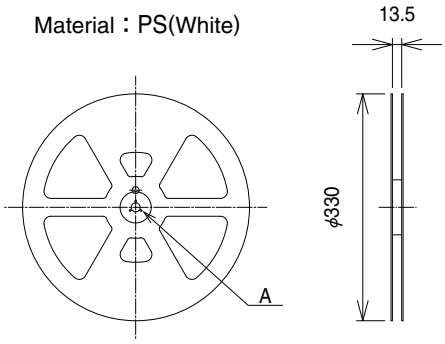


(W.FL2-R-SMT-1(80) 4mm pitch)

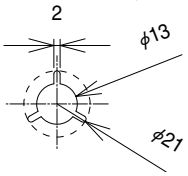


●Reel Dimensions

Material：PS(White)

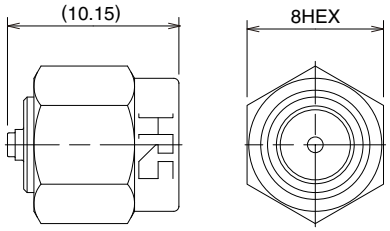


A(SCALE FREE)



■Conversion Adapters

●SMA Conversion Adapter (W.FL2 side jack – SMA side plug)

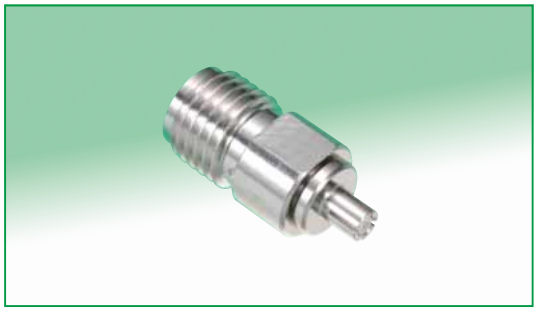


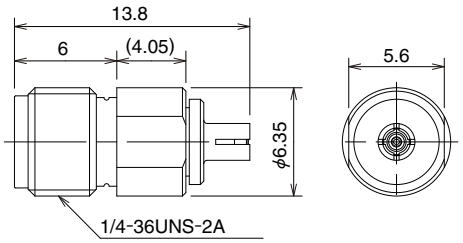
Note: Used for performance measurements only.
The W.FL2 mating side has lower retention force when mated with the corresponding part.

All dimensions: mm

Part No.	HRS No.	Packaging	RoHS
HRMP-W.FL2J	311-0394-6	1	Yes

●SMA Conversion Adapter (W.FL2/W.FL side plug – SMA side jack)



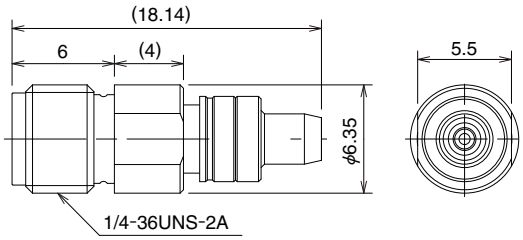


Note: Used for performance measurements only.
The W.FL/W.FL2 mating side has lower retention force when mated with the corresponding part.

All dimensions: mm

Part No.	HRS No.	Packaging	RoHS
HRMJ-W.FLP(40)	311-0368-6 40	1	Yes

●SMA Conversion Adapter



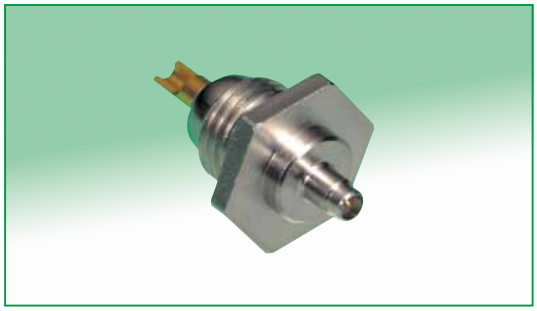
Note:When mating with corresponding part (W.FL2-R-SMT-1) must be pressed down and held to make complete connection.

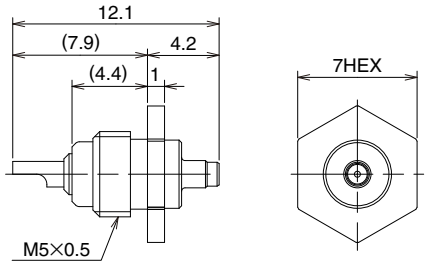
All dimensions: mm

Part No.	HRS No.	Packaging	RoHS
HRMJ-W.FL2P-ST3	311-0417-0	1	Yes

■Receptacle Inspection Adapter (W.FL2/W.FL)

Used for inspecting the performance parameters of the cable assembly.





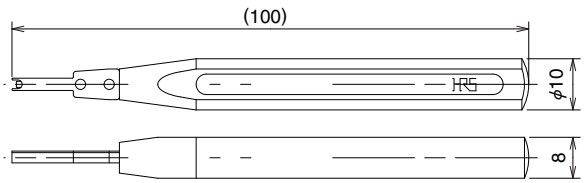
All dimensions: mm

Part No.	HRS No.	Packaging	RoHS
W.FL-R-1	331-0483-9	1	Yes

◆Tools

●Plug - Mating (Space saving type)

This tool is used for mating a plug.

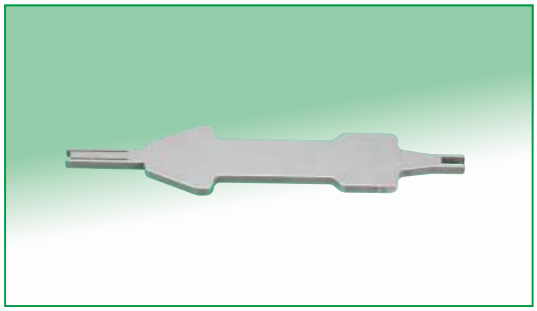


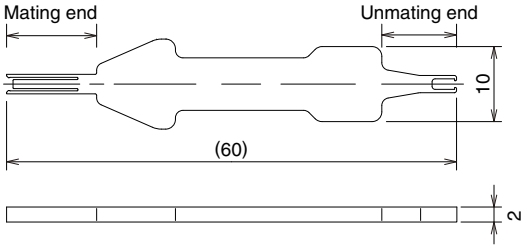
Part No.	HRS No.	RoHS
W.FL-LP-IN	331-0323-2	Yes

Note: Can be used with W.FL, X.FL plugs.

●Plug - Mating /Unmating (W.FL2-LP-040HF/032HF)

This tool is for mating and unmating a plug.

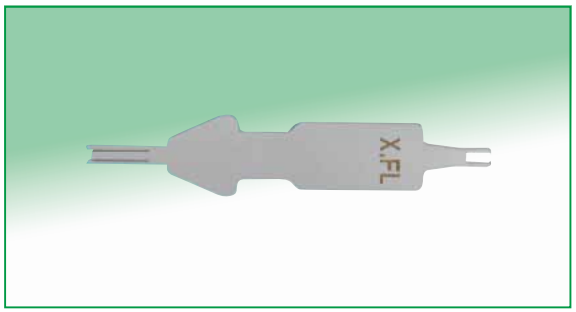


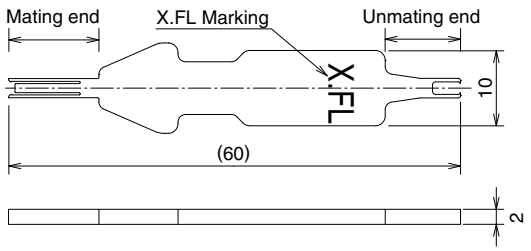


Part No.	HRS No.	RoHS
W.FL2-LP-IN.OUT	331-0321-7	Yes

●Plug-Mating/Unmating (W.FL2-LP-062HF)

This tool is for mating and unmating W.FL2-LP-062HF plug.



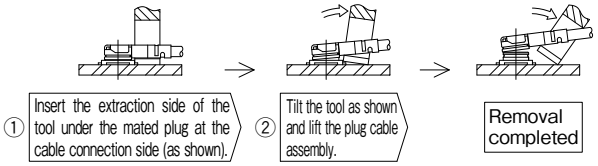
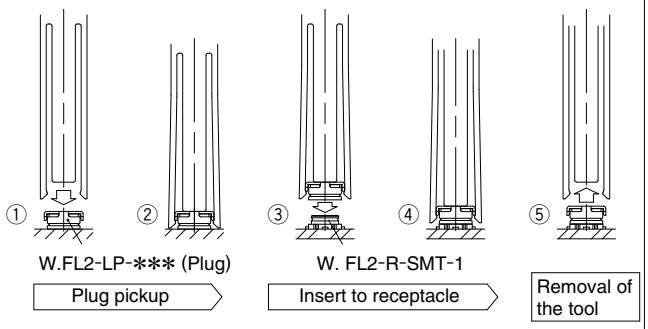
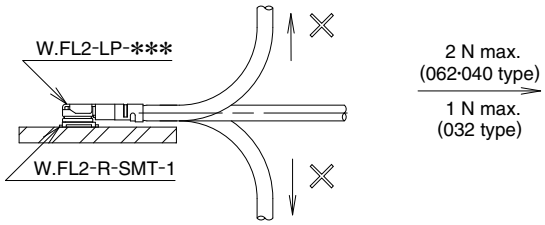


Part No.	HRS No.	RoHS
X.FL-LP-IN.OUT1	331-0715-2	Yes

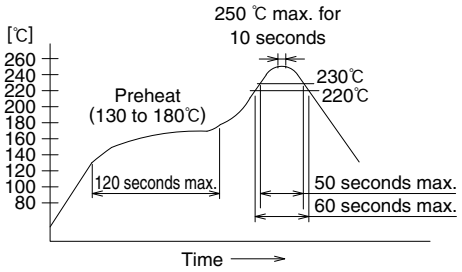
Note: Can be used with X.FL plug.

■Precautions

1. Plugs

(1) Mating / Unmating	①To disconnect connectors, insert the extraction side of insertion and extraction jig and perform as described in the diagram below. • **Unmating**  ●Use of the extraction tool is absolutely mandatory. Any attempt of unmating by pulling on the cable may result in damage and affect the mechanical / electrical performance. • **Mating** ① Align the mating axes of the plug and the receptacle. ② Confirm that the plug is positioned to be guided. (The both axes are aligned and the plug is positioned stably.) ③ Remove the tool by carefully pulling it up. 
(2) Pull forces on the cable after connectors are mated	Do not apply any pull forces after the bending of the cable. 
(3) Precautions	Do not twist connectors excessively during mating / unmating.

2. Receptacles

(1) Recommended reflow temperature profile	 ① The temperature of the printed circuit board surface temperature at the points of contact with the terminals. ② Reflow soldering should be performed at a printed circuit surface temperature of 250°C max. ③ In individual applications the actual temperature may vary, depending on the solder paste type, volume / thickness and board size / thickness. Consuly your solder paste and equipment manufacturer for specific recommendations.
(2) Recommended metal mask thickness	0.1 mm to 0.12 mm
(3) Reflow cycles	2 times

3. Operating environment and storage conditions

(1) Operating environment	The connectors are not designed to operate in the following environments: • Exposed to a excessive amounts of fine particles and dust • Regions and places having a high density of sulfur dioxide, hydrogen sulfide, nitrogen dioxide or other corrosive gasses. • Environments having large rapid variations in temperature.
(2) Storage conditions - Receptacle	Store in the Hirose Electric packaging. Temperature: -10 to +40℃, Humidity: 85% max. Use within 6 months of delivery. Receptacles for which the storage period has elapsed must be tested for solderability to the PC board mounting surface.

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