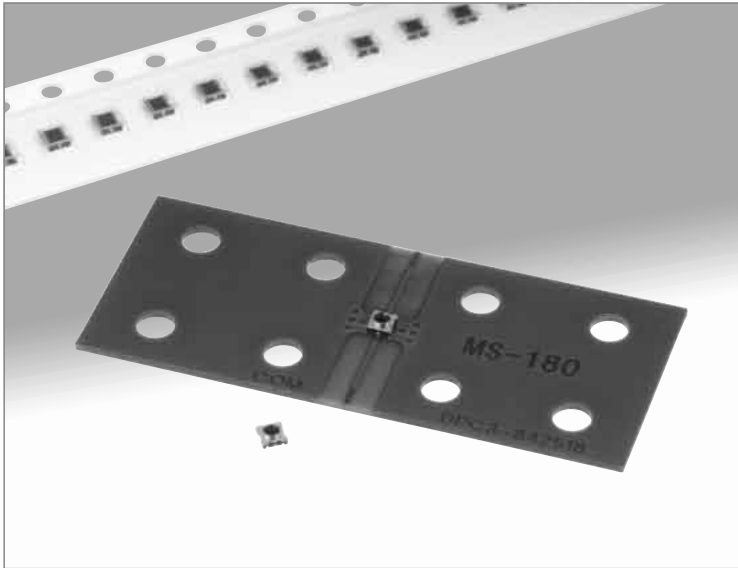


**NEW**

# Subminiature Coaxial Switch 0.85 mm High, DC to 11 GHz

MS-180 Series



## ■Features

### 1.Low insertion loss

- 0.1 dB typical at 3.0 GHz (not mated with the plug).
- 0.2 dB typical at 6 GHz (not mated with the plug).
- 0.3 dB typical at 11 GHz (not mated with the plug).

### 2.Space-saving and low profile design

- 1.8mm x 1.8mm occupied board space.
- 0.8mm protrusion above the board.

### 3.Performs over a wide frequency range

Applicable frequencies range over a wide band, from DC to 11 GHz.

### 4.Minimization of the non-implementable area and set aperture hole

The external diameter of the plug tip is as narrow as  $\phi 2.24\text{mm}$ , the non-implementable area and set aperture hole can be minimized.

### 5. Automatic board placement

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

### 6.Halogen Free

- Chlorine, and bromine are not used in the receptacles.
- \*Definition according to IEC 61249-2-21.
- Br 900 ppm max., Cl 900 ppm max., and Br + Cl 1500 ppm max.

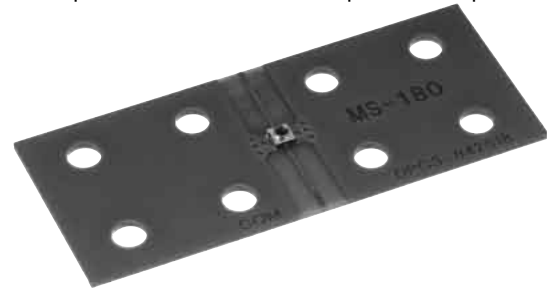
## ■Overview

Developed for inspection of high frequency circuits used in portable terminals. Verification of the circuit performance is accomplished by simply inserting the external plug in the board mounted receptacle. This action re-directs the circuit from normal condition to the plug side. Removing the plug restores circuit to its normal condition.

The plug connector has been also downsized and the diameter made slimmer than previous products, to give the test tool layout a degree of freedom.

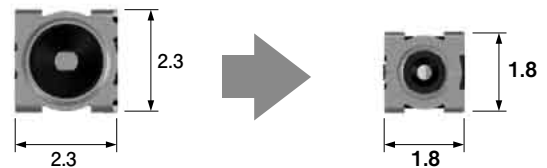
### Space-saving design

- Low profile -0.85mm protrusion above the board.
- Small space-1.8mm x 1.8mm occupied board space.



### Comparison with the existing MS-156C

#### ●Footprint



38.7% saving of space

#### ●Height



37% lower profile

#### ●Weight

0.016g → 0.007g

56.3% lighter weight

**MS-180 Series** ● **Subminiature Coaxial Switch 0.85 mm High, DC to 11 GHz**

## ■ Specifications

Operating temperature range	-40°C to +85°C	
Rated power	2W	
Frequency range	DC to 11GHz Not mated with the plug	DC to 8GHz Mated (MS-180-HRMJ-1)
V.S.W.R.	1.2 max. (DC to 3.0GHz)	1.2max. (DC to 3.0GHz)
	1.3 max. (3.0GHz to 6.0GHz)	1.3max. (3.0 to 8.0GHz)
	1.4 max. (6.0GHz to 11.0GHz)	
Insertion loss	0.1 dB max. (DC to 3.0GHz)	0.3 dB max. (DC to 3.0GHz)
	0.2 dB max. (3.0GHz to 6.0GHz)	0.5 dB max. (3.0GHz to 6.0GHz)
	0.3 dB max. (6.0GHz to 11.0GHz)	0.6 dB max. (6.0GHz to 8.0GHz)
Isolation	25 dB min. (DC to 3.0GHz)	
	20 dB min. (3.0GHz to 6.0GHz)	
	12 dB min. (6.0GHz to 11.0GHz)	

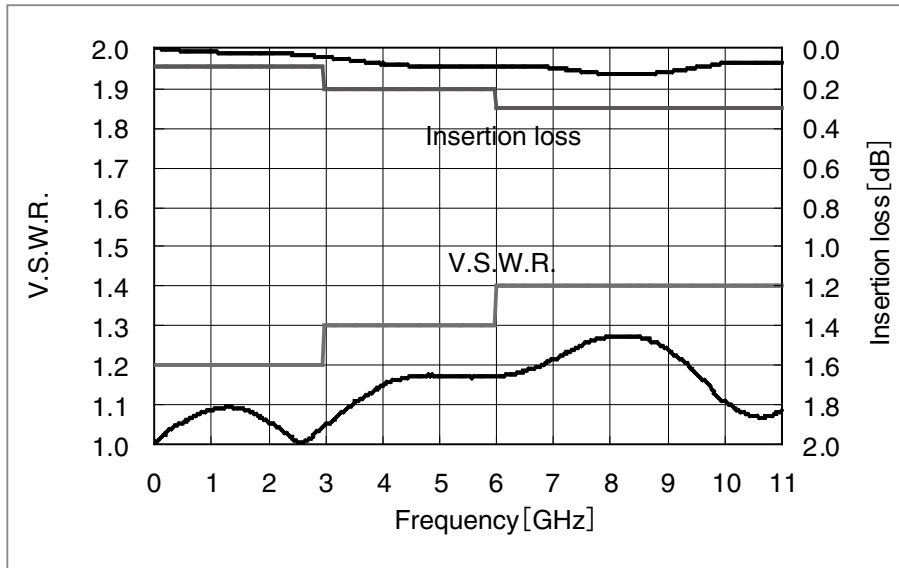
Item	Specification	Conditions
1. Contact resistance	100mΩ max.	100mA max.
2. Insulation resistance	1000MΩ min.	100V DC
3. Withstanding voltage	No flashover or insulation breakdown	100 V AC / 1 minute
4. Vibration	No electrical discontinuity of 1 μs or more	Frequency: 10 to 55 Hz, single amplitude of 0.75mm, 10 cycles in each of the 3 axis
5. Shock	No electrical discontinuity of 1 μs or more	Acceleration of 490m/s <sup>2</sup> , 11 ms duration, sine halfwave, 3 cycles in each of the 3 axis
6. Temperature cycle	Contact resistance: 100 mΩ max. Insulation resistance: 10 MΩ min.	Temperature : -55°C → +15°C to +35°C → +85°C → +15°C to +35°C Time: 30 → 2 to 3 → 30 → 2 to 3 minutes 100 cycles
7. High temperature exposure	Contact resistance: 100 mΩ max. Insulation resistance: 10 MΩ min.	96 hours at 85°C
8. Low temperature exposure	Contact resistance: 100 mΩ max. Insulation resistance: 10 MΩ min.	96 hours at -55°C
9. Humidity (Steady state)	Contact resistance: 100 mΩ max. Insulation resistance: 10 MΩ min.	96 hours at 40±2°C and humidity of 90 to 95%
10. Durability	Contact resistance: 100 mΩ max.	100 cycles

## ■ Materials

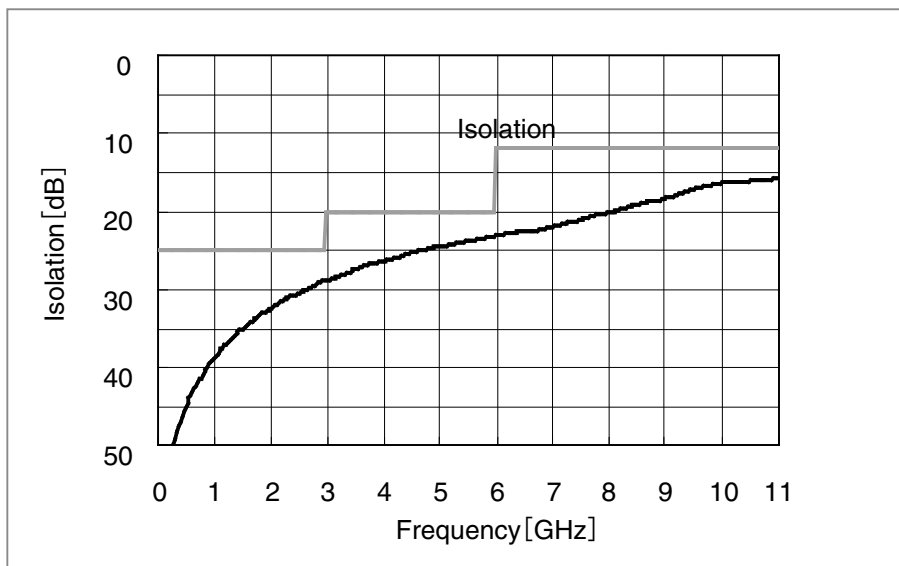
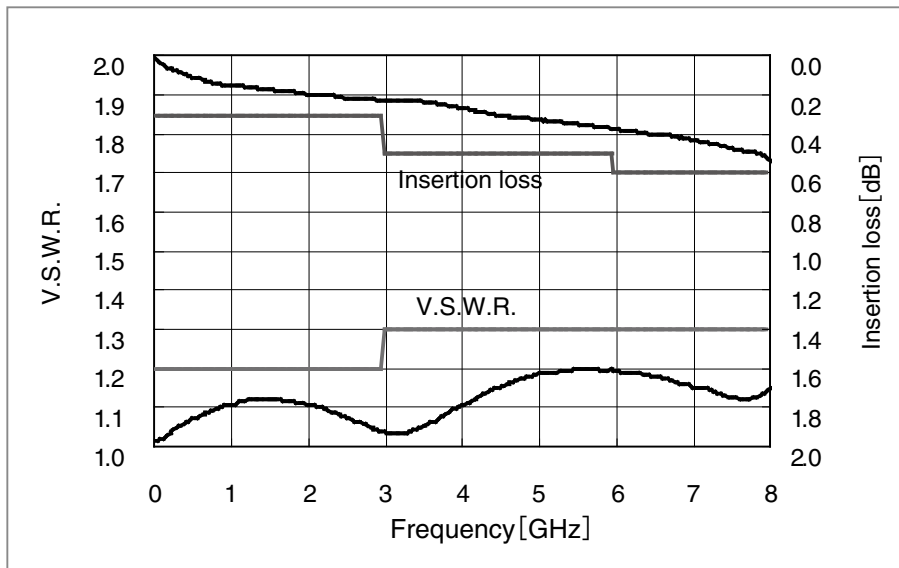
Part	Material	Finish	Remarks
Shell	Brass	Gold plated	—
Insulator	Polyamide	—	UL94HB
Common terminal	Cu-Ni-Si alloy	Selective gold plated	—
Antenna terminal	Phosphor bronze	Selective gold plated	—

## ■ Typical data

### ● NORMALLY CLOSED(Not Mated with the plug)

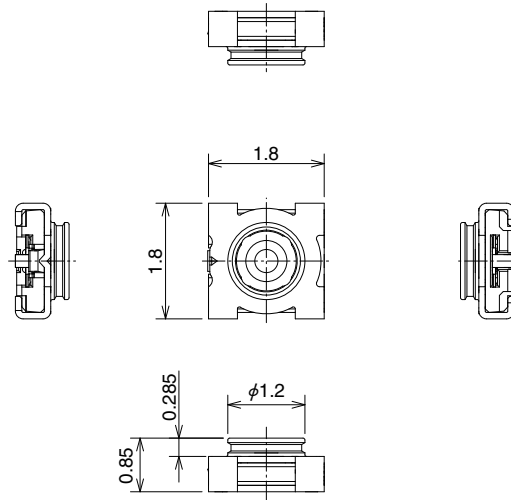
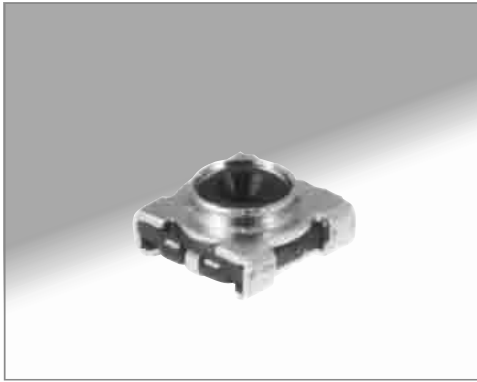


### ● NORMALLY OPEN(Mated with the plug)



**MS-180 Series** ● Subminiature Coaxial Switch 0.85 mm High, DC to 11 GHz

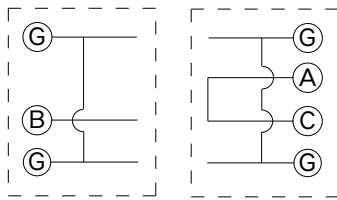
■ **Receptacle**



Part No.	CL No.	Packaging
MS-180	358-0265-7	15,000 pieces/reel
MS-180(20)	358-0265-7-20	3,000 pieces/reel

■ **Circuit diagram**

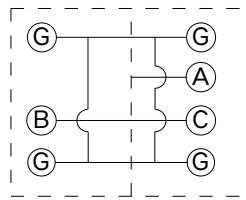
Not mated with the plug(N.C)



Plug

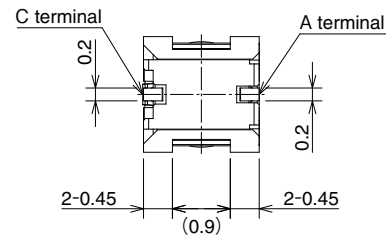
MS-180

Mated with the plug(N.O)

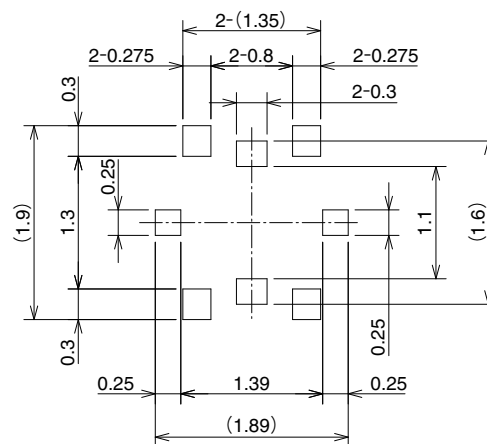
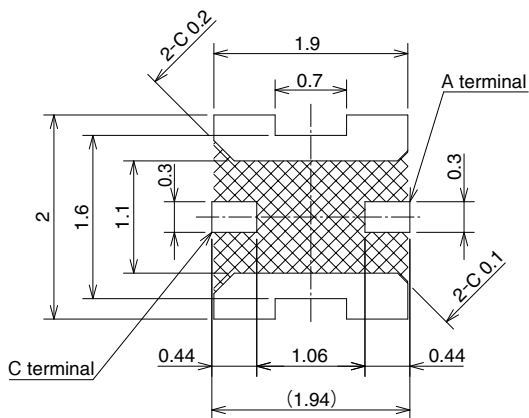


Plug

MS-180



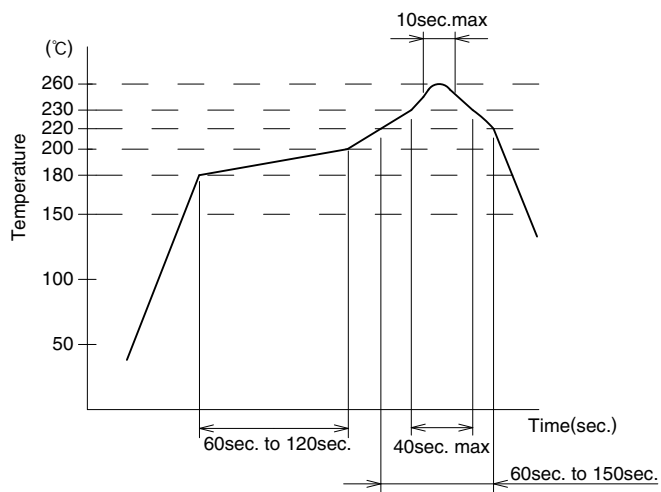
■ **PCB mounting pattern and metalmask dimensions**



: This area must be free of conductive traces and resist field.

Note. • This product is intended to be used for circuit inspection only. Consult us if any other application is considered.  
 • Do not use hand soldering for mounting of MS-180 Doing so could result in solder and flux wicking to the contact areas.

## Recommended Temperature Profile



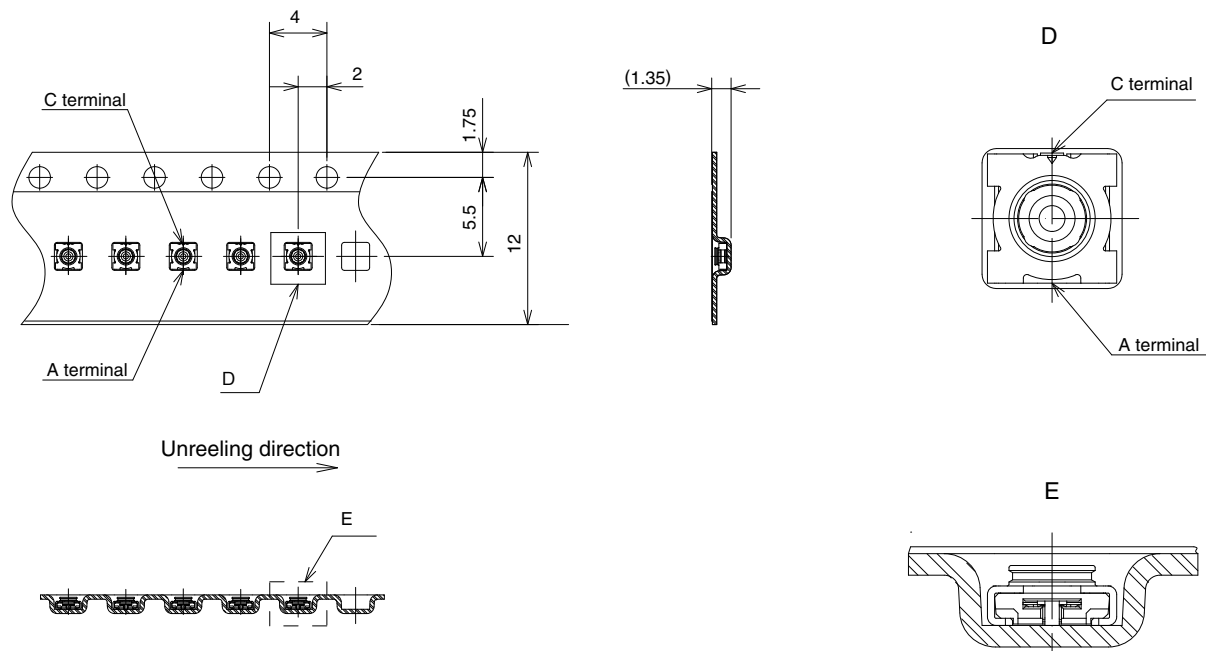
Using Lead-free Solder paste

① Maximum temperature	: 260°C
② Peak temperature time	: 10 sec. max.
③ 230°C min.	: 40 sec. max.
④ 220°C min.	: 60 sec. to 150 sec.
⑤ 180°C to 200°C	: 60 sec. to 120 sec.

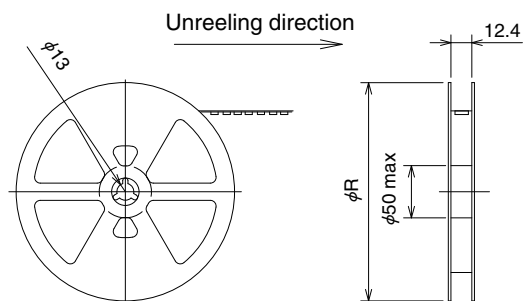
Metal mask thickness : 0.1 mm

Reflow cycles : 2 cycles

## Packaging Specifications



Reel dimensions



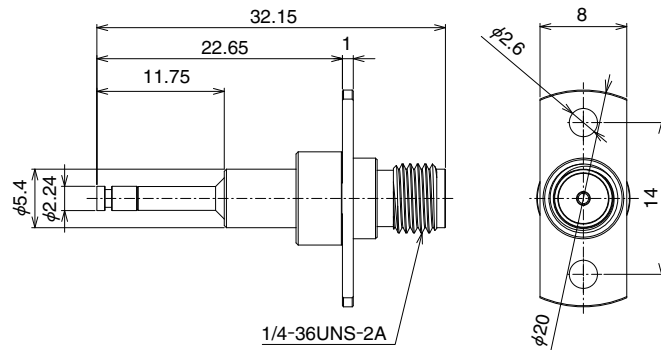
Part Number	Reel size	Packaging
MS-180	$\phi 380$ mm	15,000 pieces/reel
MS-180(20)	$\phi 180$ mm	3,000 pieces/reel

## ■ SMA Conversion Adapters

### ● Press down, with flange,



- Mates perpendicularly with the MS-180 and should be used with a load of 6 to 10 N applied.
- The service life has a plug connector single item guaranty and not the guaranty associated with the same receptacle.

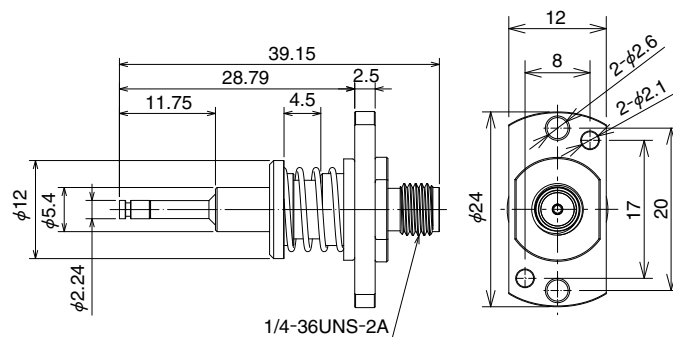


Part Number	CL No.	Durability
MS-180-HRMJ-1	358-0285-4	10,000 times

### ● Floating



- Mates perpendicularly with the MS-180 and should be used with a load of 6 to 10 N applied.
- The service life has a plug connector single item guaranty and not the guaranty associated with the same receptacle.

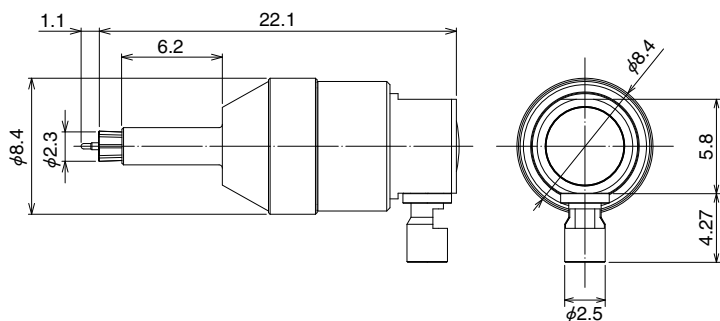


Part Number	CL No.	Durability
MS-180-HRMJ-F2	358-0286-7	100,000 times

### ● Simplified lock



- Equipped with an easy lock mechanism that can maintain mating with the MS-180, but should be used while maintaining a condition of mating perpendicularly.
- The service life has a plug connector single item guaranty and not the guaranty associated with the same receptacle.



Part Number	CL No.	Durability
MS-180-088LP-H1	358-0269-8	500 times

## ■ Precautions

1. Do not use the washing process.
2. This product is intended to be used for circuit inspection only. Consult us if any other application is considered.
3. Plugs can be roughly classified to two types.
  - For mass production line automatic check (Press down type)
  - For manual check (With retentive lock) : Unable to be used at production line.
4. Do not use hand soldering for mounting of MS-180.
  - Doing so could result in solder and flux wicking to the contact areas.
5. When using a heat gun, hot plate, or similar methods, limit the temperature to 260°C applied for 10 seconds max.
6. Cross-hatched area shown on the PCB mounting pattern must be free of any conductive traces.
  - Placing conductive traces in this area may affect performance and will void product warranties.
  - When the bottom surface of the product (i.e., the shaded area of the specified land dimensions diagram on the previous page) has been processed with a substrate copper trace and resist processing, Hirose Electric will not be able to warrant the product.
7. Please refrain from using the product in environments specifically affected by excessive vibration, shock, dust, high humidity, gases, very high temperatures and very low temperatures such as outdoor equipment. It might cause degradation or destruction of the product. Even if it endures during a short time, long time qualification is not guaranteed.
8. Exercise caution as not to allow any debris to enter the board mounted MS-180 when cutting PCB.

# Mouser Electronics

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