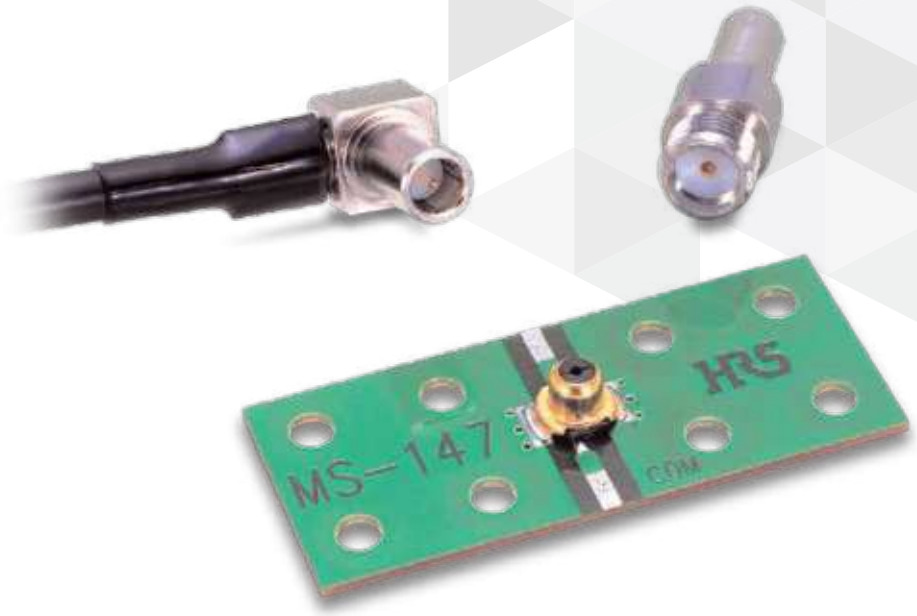
PRODUCT CATALOG

HIROSE ELECTRIC CO.,LTD.

MS-147 Series

DC to 6GHz, Ultra Miniature Coaxial Switch

Coax Switch | Compact | RF



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Product Page
https://www.hirose.com/en/product/series/MS-147

Feb. 2025

Overview

The ultra-small MS-147 coaxial switch series was developed for cellphone interfaces and for inspection of microwave boards (substrates) (DC to 6GHz) used at high frequencies.
To meet the demands of cellphone technology advancements and the increasing adoption of high-frequency applications up to 6GHz, this switch offers low insertion loss, a low profile, and a lightweight design.
When unmated, the common contact remains connected to the board circuit (NC), forming a closed circuit. Mating with a plug opens this connection.
The vertical type is designed for mobile devices and can be installed near the antenna for output inspection, external antenna switching, and other applications.

Features

1. Low Insertion Loss

When Unmated:
Typically, 0.08dB at 1GHz
Typically, 0.1dB at 2GHz

2. Space-Saving

Size: 5.8mm x 5.4mm

3. Low Profile

Height: 3.9mm

4. Light Weight

Weight: 0.11g

5. Long Product Life

Guaranteed for 12,000 mating cycles

6. Pick & Place Mounting

It supports pick & place mounting with embossed tape.

7. Wide Frequency Range

Operates over a broad frequency band, from DC to 6GHz

8. Prevents Flux Wicking

The design prevents flux wicking.

9. Self-Alignment

±0.5mm self-alignment range during mating

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Application

* Wireless communication
(Bluetooth, IEEE 802.11)
* Machines
(Cellphone, notebook PC, ETC, POS terminal, GPS terminal, PDA, etc.)
* Also suitable for other high-frequency machines.

Product Specifications

	Unmated	Mated (MS-147-HRMJ-1)
Operating Temperature	-30 to +85℃	-10 to +65℃
Rated Power	4W	4W
Frequency Range	DC to 6GHz	DC to 6GHz
Insertion Loss	0.15dB Max. (DC to 2GHz) 0.2dB Max. (2GHz to 3GHz) 0.4dB Max. (3GHz to 6GHz)	0.2dB Max. (DC to 2GHz) 0.3dB Max. (2GHz to 2.5GHz) 0.4dB Max. (2.5GHz to 3GHz) 0.8dB Max. (3GHz to 6GHz)
Isolation	25dB Min. (DC to 1GHz) 20dB Min. (1GHz to 3GHz) 14dB Min. (3GHz to 6GHz)	
V.S.W.R.	1.2 Max. (DC to 3GHz) 1.5 Max. (3GHz to 6GHz)	1.25 Max. (DC to 2GHz) 1.3 Max. (2GHz to 2.5GHz) 1.4 Max. (2.5GHz to 3GHz) 1.9 Max. (3GHz to 6GHz)

Item	Standard	Conditions
Contact Resistance	Center: 75mΩ Max. Outer: 50mΩ Max.	Measured at 100mA Max.
Insulation Resistance	1,000MΩ Min.	Measured at 100V DC
Withstanding Voltage	No insulation breakdown	100V AC for 1 min.
Vibration Resistance	No electrical discontinuity of 10 μs or more	Frequency 10 to 55Hz, Total amplitude 1.5mm for 3 directions 2 hours each.
Shock Resistance	No electrical discontinuity of 10 μs or more	Acceleration of 490^2, Half-sine wave, 3 cycles in 3 directions.
Humidity Resistance	Contact Resistance: Center: 100mΩ Max. Outer: 75mΩ Max. Insulation Resistance: 10MΩ Min.	Left for 96 hours at 40℃ and 90 to 95% RH
Heat Resistance	Contact Resistance: Center: 100mΩ Max. Outer: 75mΩ Max. Insulation Resistance: 10MΩ Min.	Temperature: -55 → +5 to +35 → +85 → +5 to +35℃ Time: 30 → 5 → 30 → 5 minutes 100 cycles
Corrosion Resistance	Contact Resistance: Center: 100mΩ Max. Outer: 75mΩ Max. No considerable corrosion	5% concentration salt water sprayed for 48 hours in mated connector condition. (at +35℃)
Mating Durability	Contact Resistance: Center: 100mΩ Max. Outer: 75 mΩ Max.	12,000 cycles

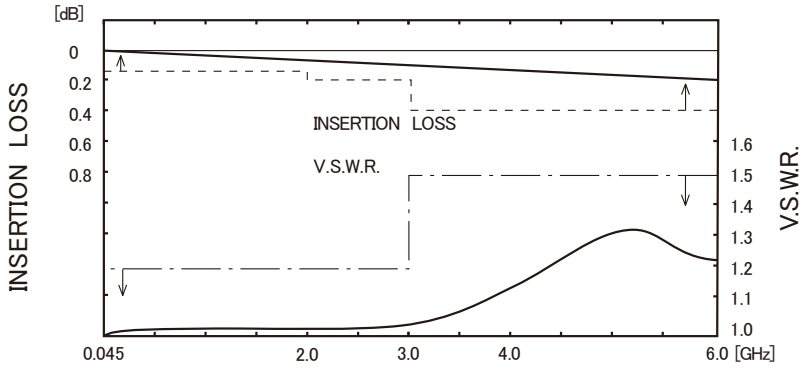
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Materials / Finish

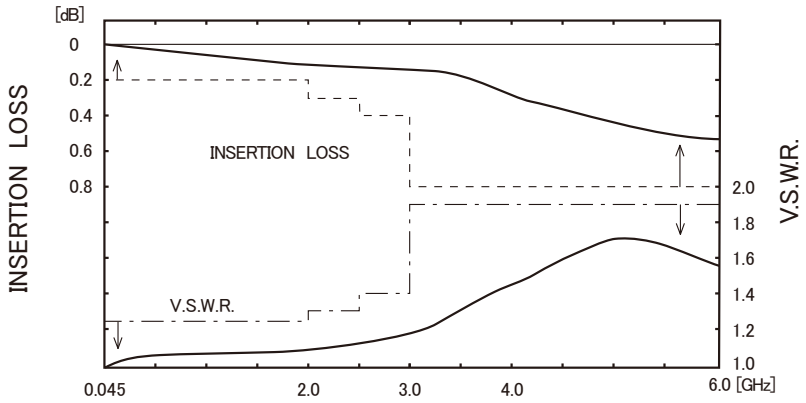
Part	Material	Finish	Remarks
Shell	Phosphor Bronze	Gold Plating	-
Insulator	Polyamide Resin	-	UL94HB
Common Contact	Berylium Copper	Gold Plating	-
Board Circuit Side (N.C) Terminal	Berylium Copper	Gold Plating	-

Frequency Characteristics (TYPICAL)

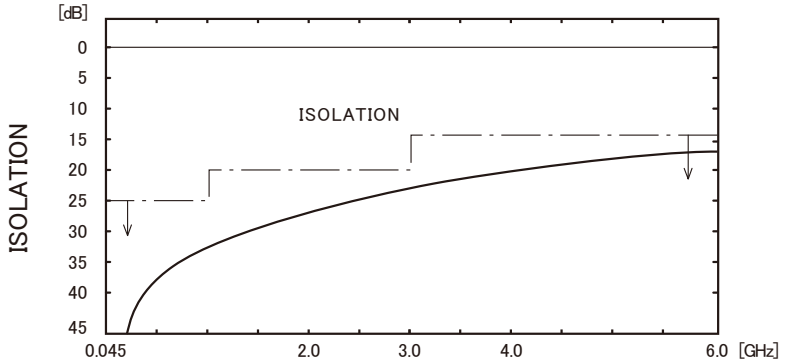
●NORMAL CLOSE (N.C)



● NORMAL OPEN (N.O)



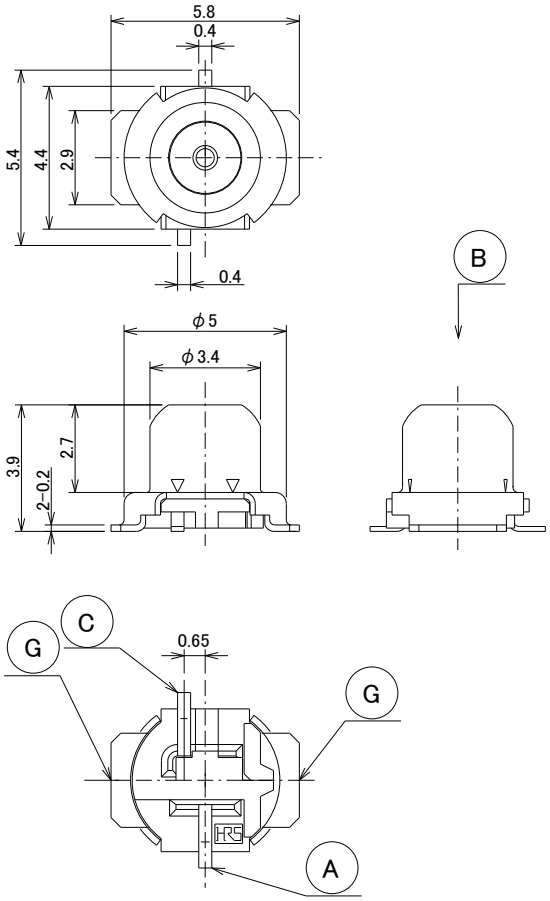
● ISOLATION



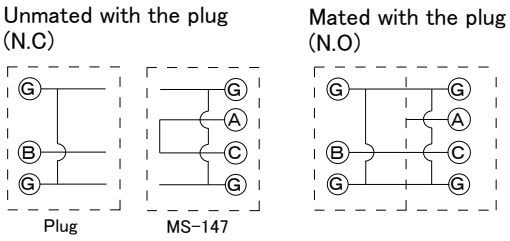
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Receptacle





Circuit Diagram



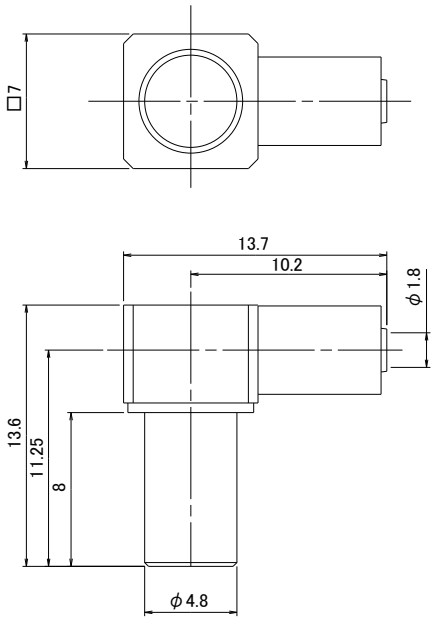
Part No.	HRS No.	Purchase Unit
MS-147(01)	CL0358-0150-5-01	50pcs per bag
MS-147(06)	CL0358-0150-5-06	1,500pcs per reel

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Plug

Cable Assembly Compatible Right Angle (1.5D-HQEW)





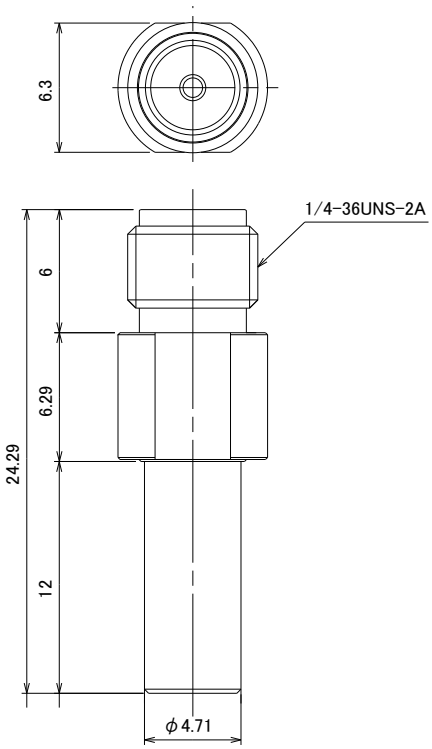
Part No.	HRS No.	Purchase Unit
MS-147-C(LP)-1	CL0358-0155-9-00	50pcs per tray

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Conversion Adapter

MS-147-SMA Jack Conversion Adapter

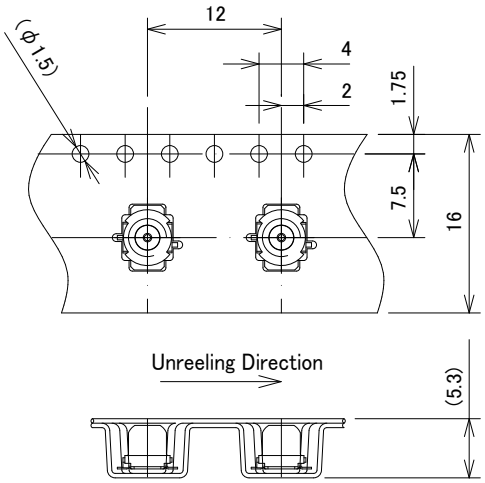




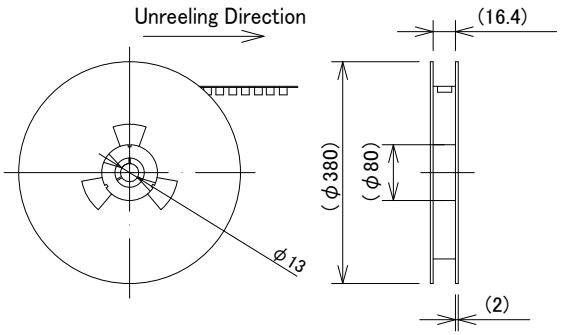
Part No.	HRS No.	Purchase Unit
MS-147-HRMJ-1	CL0358-0151-8-00	50pcs per tray

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Embossed Carrier Tape Dimensions (IEC 60286-3 / JIS C 0806 Compliant)

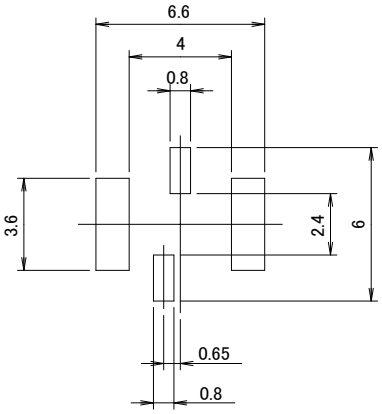


Packing Condition (1,500pcs per reel)

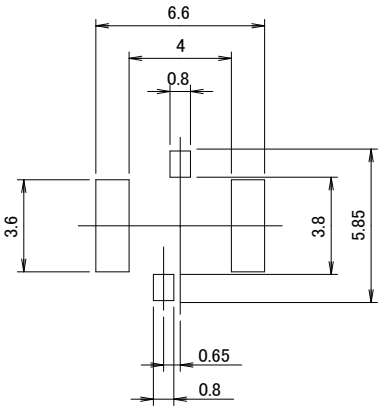


PCB Mounting Pattern Dimensions

When using lead-free solder



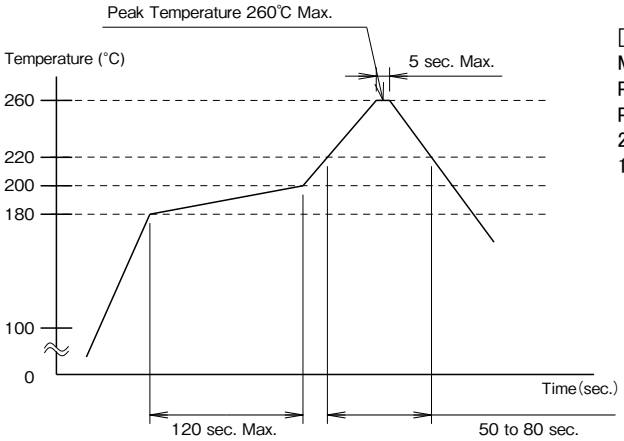
Metal Mask Dimensions (t 0.13)



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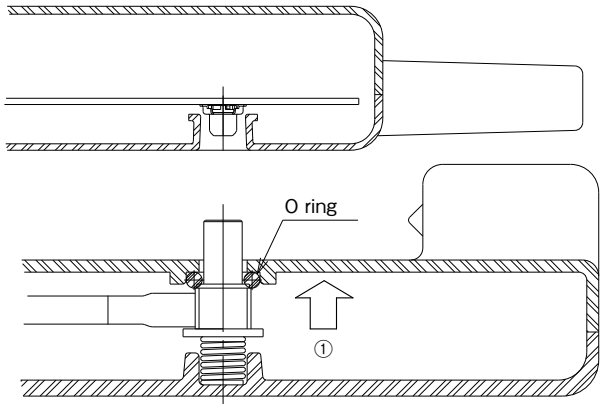
Recommended Reflow Conditions

Lead-free Solder Temperature Profile



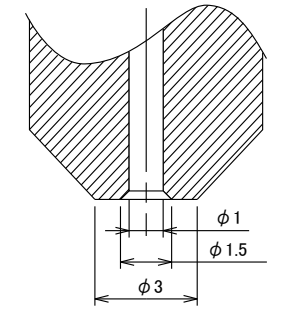
[Conditions]
Maximum Temperature: 260℃ Max.
Peak Temperature Time: 5 sec. Max.
Peak Temperature: 240 to 255℃
220℃ Min: 50 to 80 sec.
180 to 200℃: 120 sec. Max.

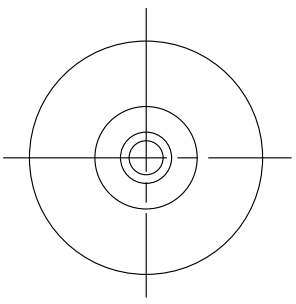
Example of Application



Note: Mounting example

Recommended Nozzle Dimensions

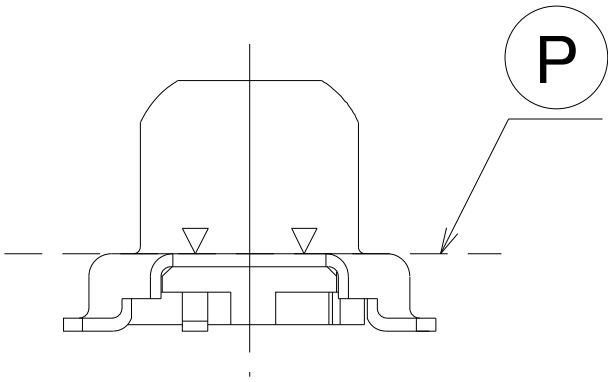




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Precautions

1. Plugs
   MS-147-C(LP)-1 (Plug harness type) Effective mating length: 0.87mm Min.
   MS-147-HRMJ-1 (SMA conversion adapter) Effective mating length: 0.87mm Min.
2. This product cannot be washed.
3. During design, make sure that the product will not be subjected to force from the panel when dropped while mounted to the board.
4. When using this product as an RF interface for mobile devices, secure a rubber cap to prevent dust from entering when the plug is not mated.
5. Before mating with the receptacle, make sure the plug is fully inserted to the (P) surface.



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While Taking into Consideration

Specifications mentioned in this catalog are reference values.
When considering to order or use this product, please review the Drawing and Product Specifications sheets.
Use an appropriate cable when using the connector in combination with cables.
If considering usage of a non-specified cable, please contact your sales representative.
If assembly process is done by jigs & tools which are not identified by Hirose, the warranty of the product may be affected.
If considering usage for below mentioned applications, please contact your sales representative.
In cases where the application will demand a high level of reliability, such as automotive, medical instruments, public infrastructure, aerospace/defense etc. Hirose must review before assurance of reliability can be given.

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https://www.hirose.com

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