

Preliminary Data Sheet

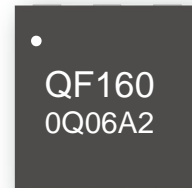
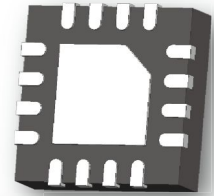
QF1600Q06A2

Quadrifilar Directional Coupler
1520 MHz-1660 MHz



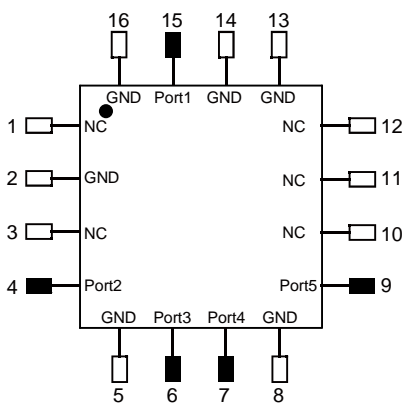
Features

- Ultra Small Size (3x3mm)
- Excellent phase & amplitude balance
- Excellent repeatability
- Passive RF IC, no need external DC power supply
- With internal 50 ohm termination (no need external termination)
- Built with leading edge RFIC design technology
- Have one Input port and four Output ports that have -6dB $-(0^\circ, 90^\circ, 180^\circ, 270^\circ)$ of phase difference
- Quadrifilar Coupler, 4-Phased Antenna Feeder, Helicaded Antenna Feeder
- Operating Temperature: -40°C to $+85^\circ\text{C}$
- Tape & Reel



Applications

- Realizing the World's Most Compact High Precision GNSS Antenna (GPS, Beidou, Galileo, Glonass)



TOP VIEW

Notes:

- 1.Require to add Capacitors of DC Blocker between Pins (with black color) and external circuit to prevent DC signal entry to guranteeparts normal work.
- 2.This part has passed through 100% RF test.

Port 1	Port 2	Port 3	Port4	Port 5
Input	Output1 -6dB, 0°	Output2 -6dB, -90°	Output3 -6dB, -180°	Output4 -6dB, -270°

Electrical Specifications at 25°C

Part No.	Freq. Range (MHz) FL~FU	Power (W)	Size LxW (mm)	Typical Return Loss (dB)	Typical Insertion Loss (dB)	Typical Isolation (dB)	Typical Phase Balance (deg)	Typical Amplitude Balance (dB)
QF1600Q06A2	1520-1660	5	3X3	11-23	0.6	9-15	± 6	± 0.45

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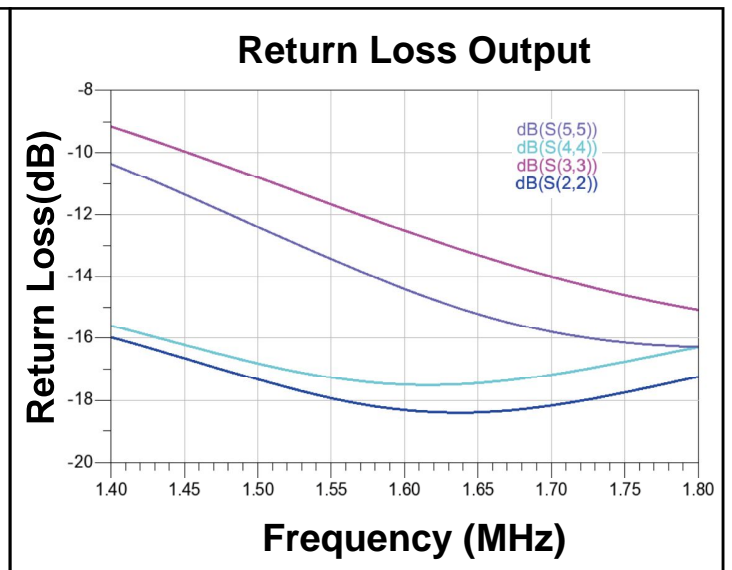
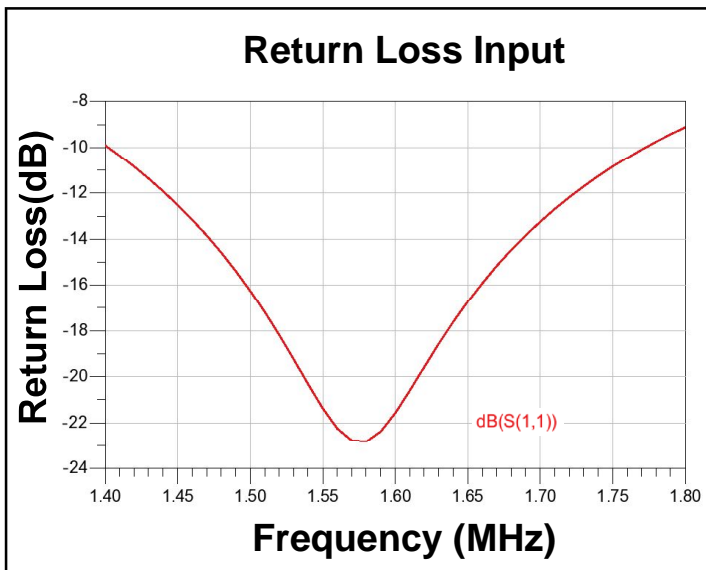
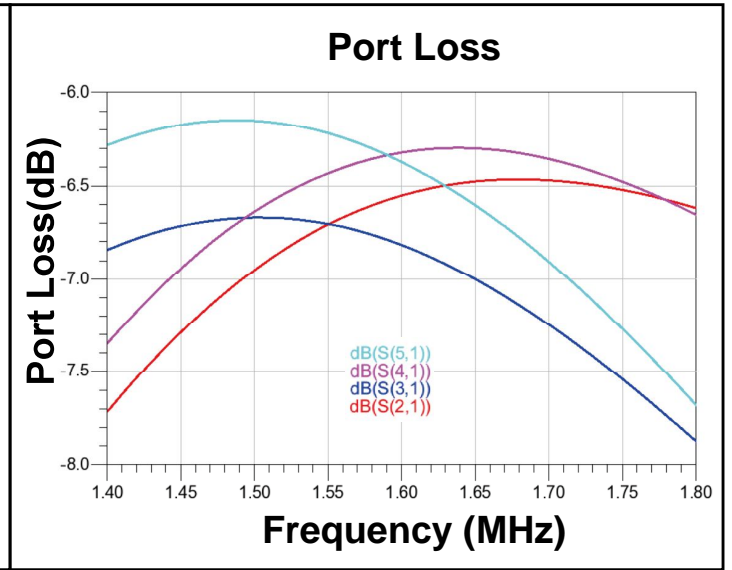
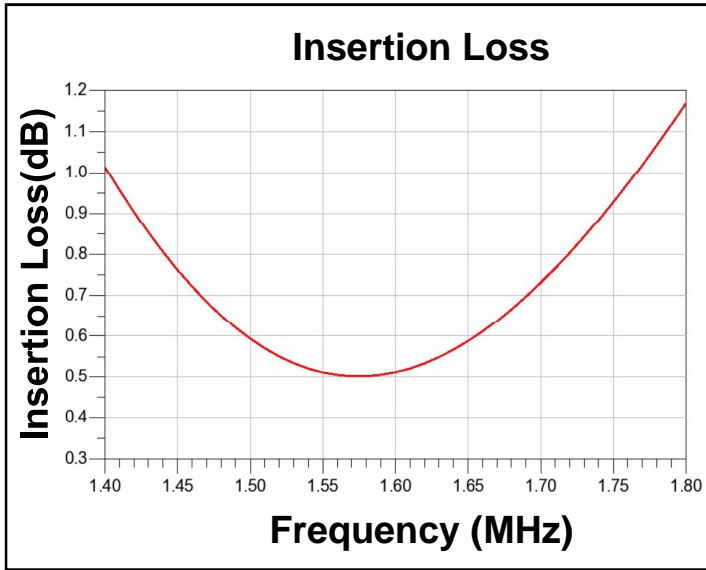
For detailed performance specs & shopping online see Yantel web site : www.yantel-corp.com

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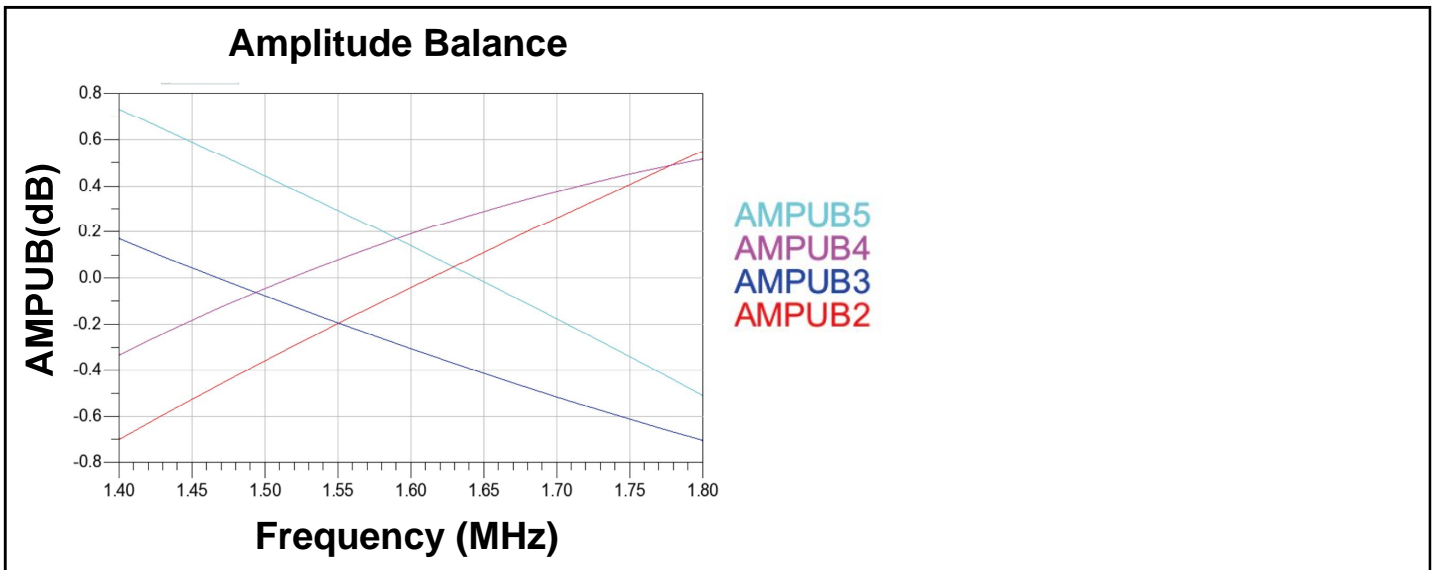
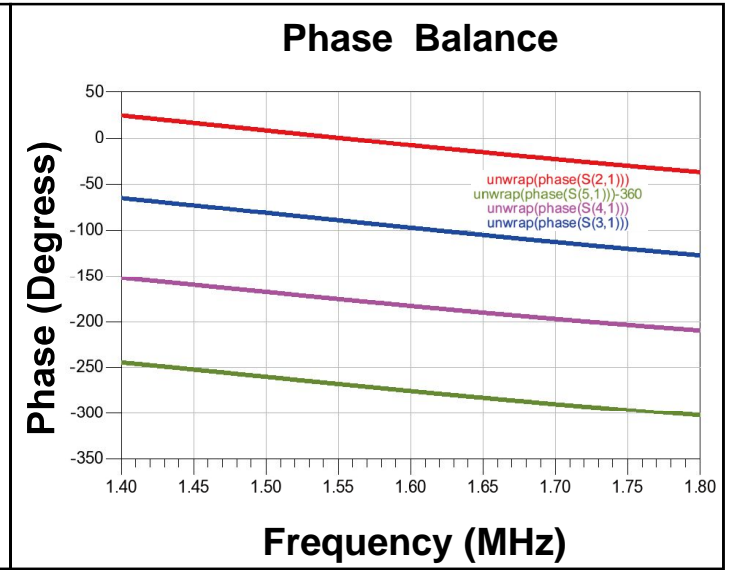
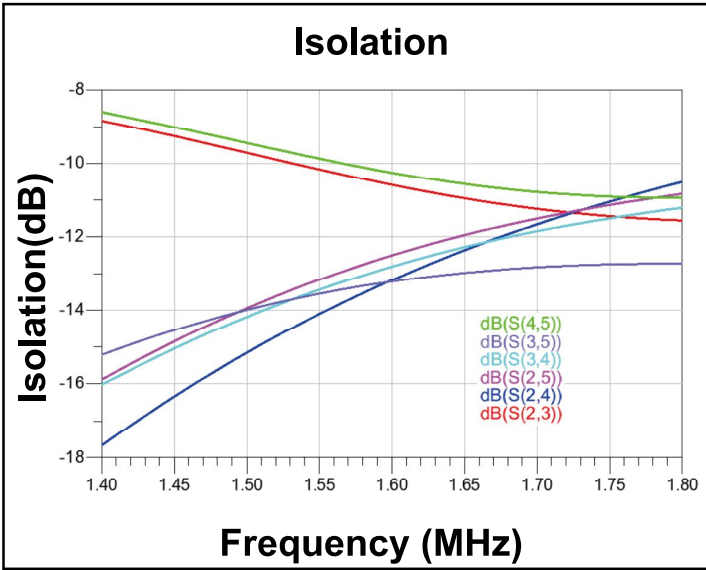
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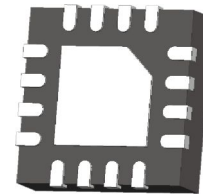
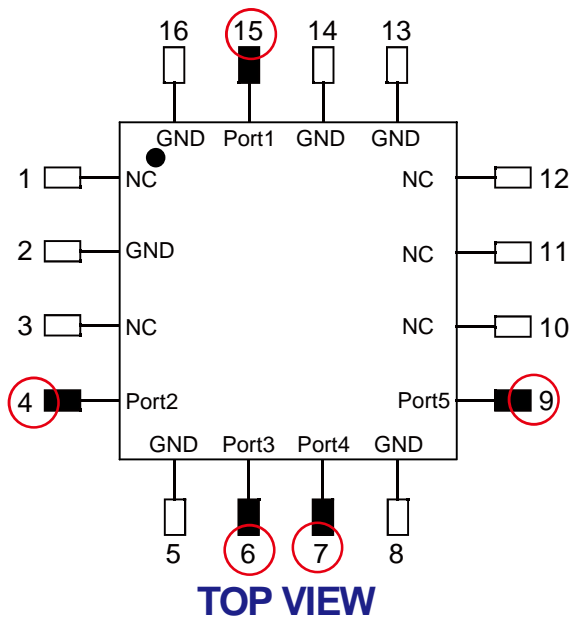
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Special Attenuation before Quadrifilar IC Soldering

1. A Package

Applicable P/N: QF0900Q06A2, QF1200Q06A2, QF1600Q06A2, QF2100Q06A2, QF2500Q06A2

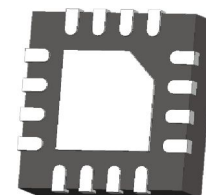
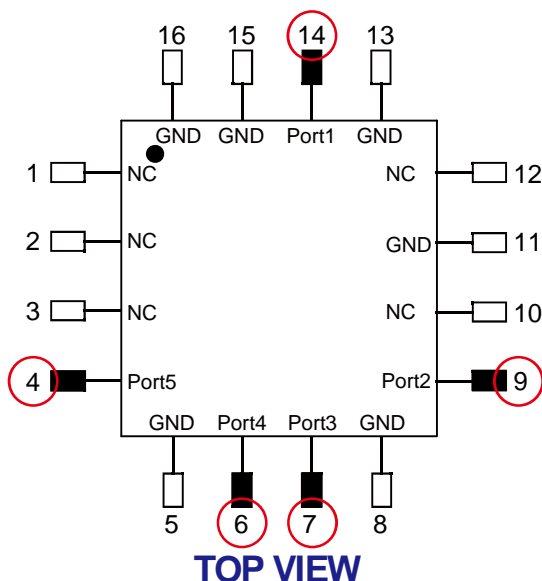


Attention: The 5 ports circled out should be soldered right to footprint pads accordingly to ensure accurate RF performance test.

Port 1	Port 2	Port 3	Port4	Port 5
Input	Output1 -6dB, 00	Output2 -6dB, -90	Output3 -6dB, -180	Output4 -6dB, -270

2. B Package

Applicable P/N: QF0900Q06B2, QF1200Q06B2, QF1600Q06B2, QF2100Q06B2, QF2500Q06B2



Attention: The 5 ports circled out should be soldered right to footprint pads accordingly to ensure accurate RF performance test.

Port 1	Port 2	Port 3	Port4	Port 5
Input	Output1 -6dB, 00	Output2 -6dB, -90	Output3 -6dB, -180	Output4 -6dB, -270

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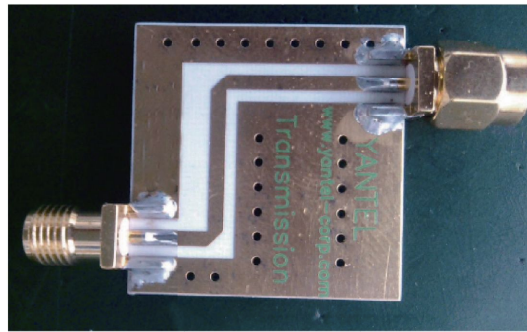
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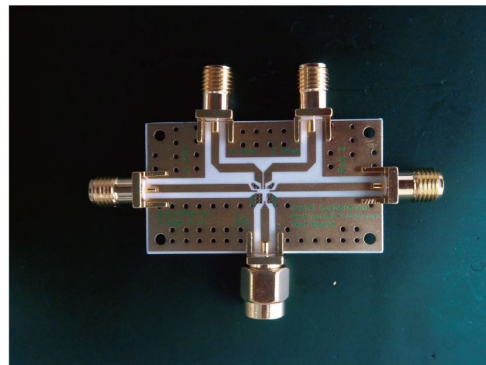
Quadrifilar IC Soldering, Testing and Calculation Instructions

First, transmission board is used to connect to VNA and calculate its IL.

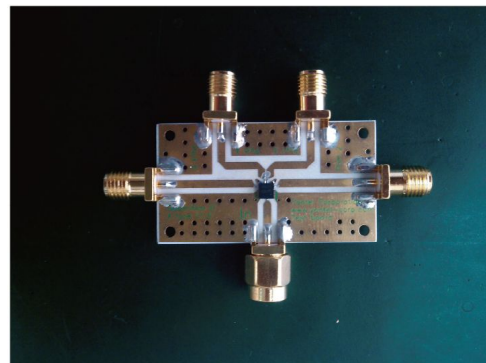


Transmission Board

Second, use Yantel EVB or customers' designed PCB and follow soldering instructions by soldering ports to right footprint pads.



EVB



EVB with part mounted on

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Test Method

	S-Parameter[dB]	Power Method[dB]
Output1	S21	$10 \cdot \log \left(\frac{P_{Out1}}{P_{in}} \right)$
Output2	S31	$10 \cdot \log \left(\frac{P_{Out2}}{P_{in}} \right)$
Output3	S41	$10 \cdot \log \left(\frac{P_{Out3}}{P_{in}} \right)$
Output4	S51	$10 \cdot \log \left(\frac{P_{Out4}}{P_{in}} \right)$
Insertion Loss		$10 \cdot \log \left(\frac{P_{in}}{P_{Out1} P_{Out2} P_{Out3} P_{Out4}} \right)$
Amplitude Balance		$10 \cdot \log \left(\frac{P_{Out1 \sim Out4}}{\frac{P_{Out1} P_{Out2} P_{Out3} P_{Out4}}{4}} \right)$
Isolation1	S23	$10 \cdot \log \left(\frac{P_{Out3}}{P_{Out2}} \right)$
Isolation2	S24	$10 \cdot \log \left(\frac{P_{Out4}}{P_{Out2}} \right)$
Isolation3	S25	$10 \cdot \log \left(\frac{P_{Out5}}{P_{Out2}} \right)$
Isolation4	S34	$10 \cdot \log \left(\frac{P_{Out4}}{P_{Out3}} \right)$
Isolation5	S35	$10 \cdot \log \left(\frac{P_{Out5}}{P_{Out3}} \right)$
Isolation6	S45	$10 \cdot \log \left(\frac{P_{Out5}}{P_{Out4}} \right)$
Phase Balance1(0°)	Phase _(S21)	
Phase Balance2(-90°)	Phase _(S31) -Phase _(S21)	
Phase Balance3(-180°)	Phase _(S41) -Phase _(S21)	
Phase Balance4(-270°)	Phase _(S51) -Phase _(S21)	

P_{in} : Power of Input Port1 P_{Out1} : Power of Output Port2
 P_{Out2} : Power of Output Port3 P_{Out3} : Power of Output Port4
 P_{Out4} : Power of Output Port5

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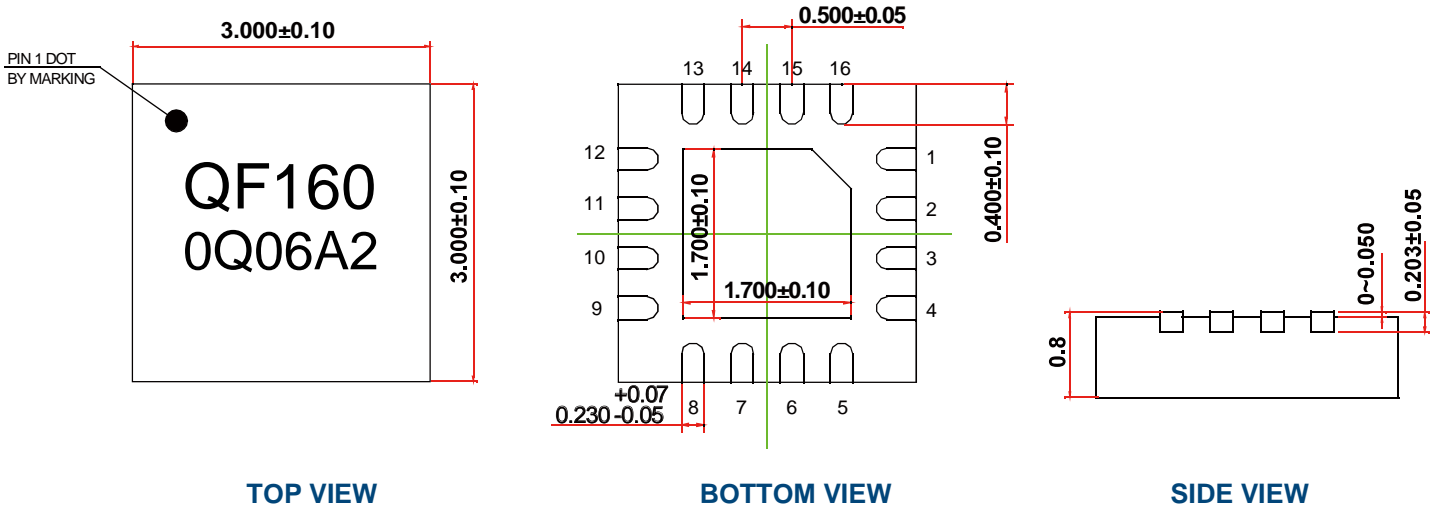
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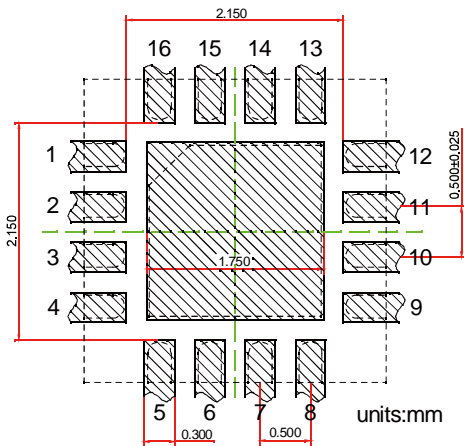
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Outline Drawing

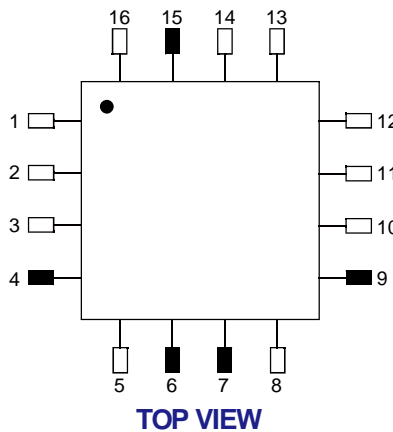


Land Pattern



Notes: All dimensions show in millimeters

Pin Out



Notes:

1. Require to add Capacitors of DC Blocker between Pins(with black color) and external circuit to prevent DC signal entry to gurante -eparts normal work.
2. This part has passed through 100% RF test.

Pin #	Connection
1	NC
2	GND
3	NC
4	PORT 2(-6dB, 0°)
5	GND
6	PORT 3(-6dB, -90°)
7	PORT 4(-6dB, -180°)
8	GND
9	PORT 5(-6dB, -270°)
10	NC
11	NC
12	NC
13	GND
14	GND
15	PORT 1(Input)
16	GND
Center Pad	GND

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