

Preliminary Data Sheet

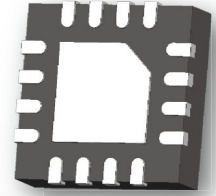
QF2500Q06A2

Quadrifilar Directional Coupler
2400 MHz-2600 MHz



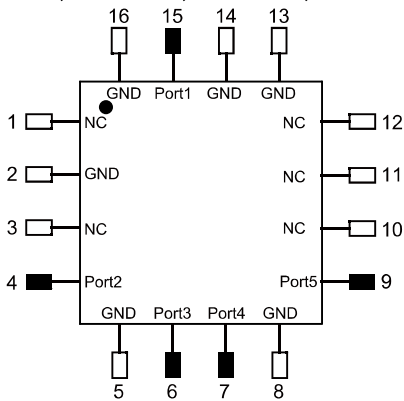
Features

- Ultra Small Size (3×3mm)
- 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°, 90°, 180°, 270°) of phase difference
- Quadrifilar Coupler, 4-Phased Antenna Feeder, Helicaled Antenna Feeder
- Operating Temperature: -40°C to +85°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) |
|-------------|----------------------------|-----------|---------------|--------------------------|-----------------------------|------------------------|-----------------------------|--------------------------------|
| QF2500Q06A2 | 2400-2600 | 5 | 3X3 | 12~40 | 1.0 | 8~15 | ±6 | ±0.6 |

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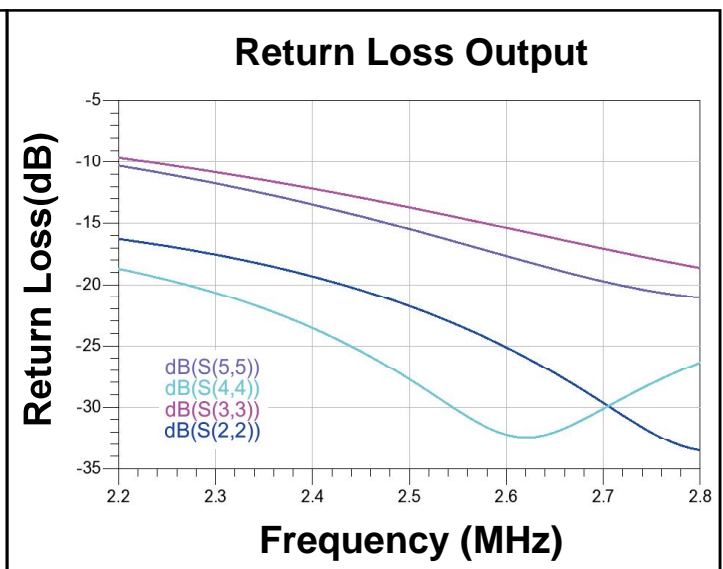
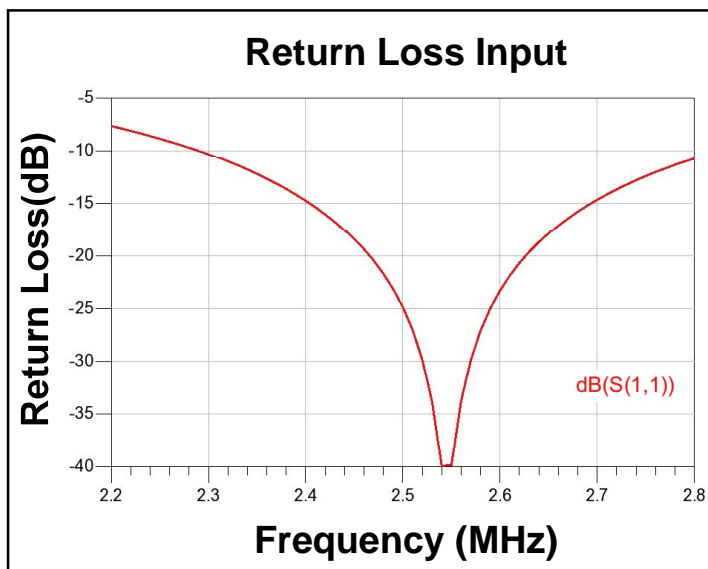
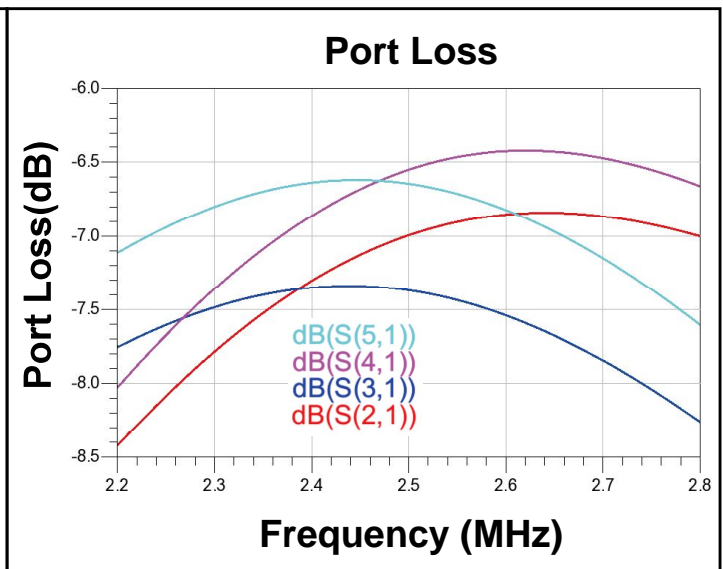
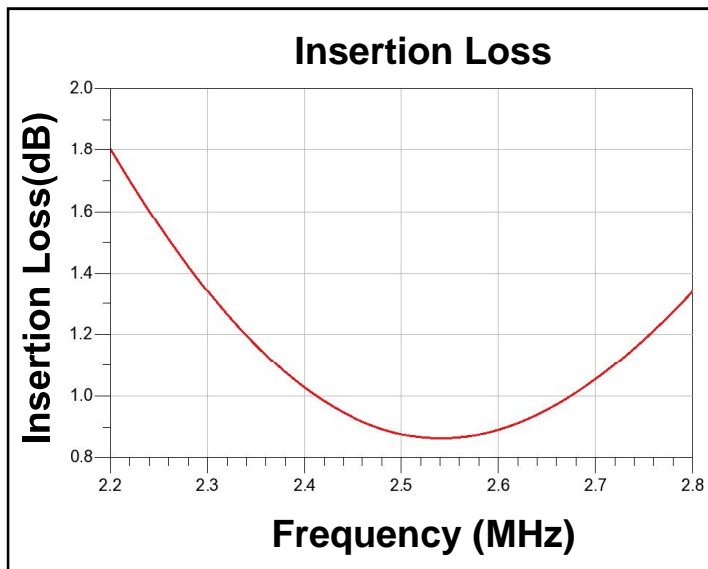
Add: 3F, Building 3, Southern District 2 of Zhongguan Honghualing Industrial Park, Xili, Nanshan, Shenzhen, China
Tel: 86-755-8355-1886 Fax: 86-755-8355-2533

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

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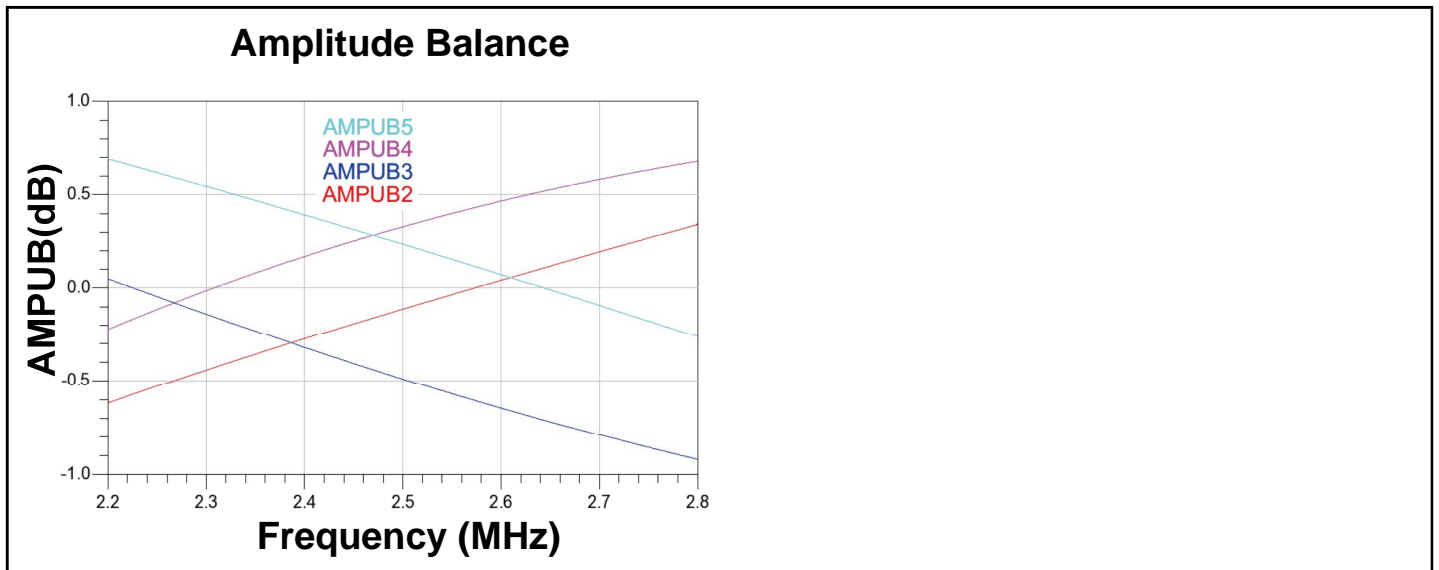
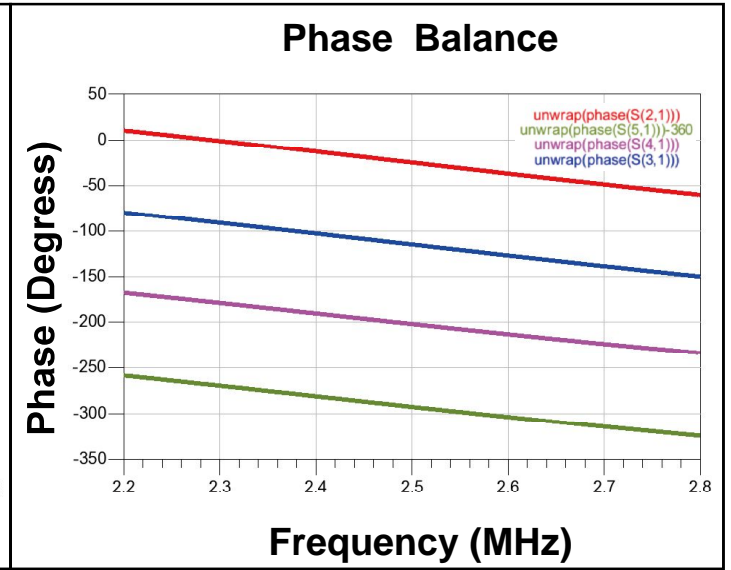
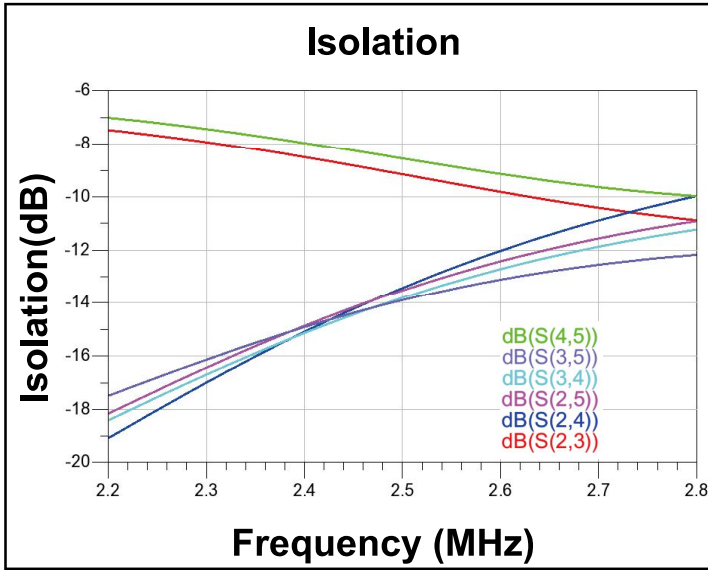
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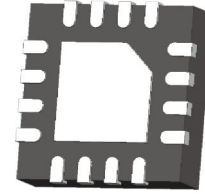
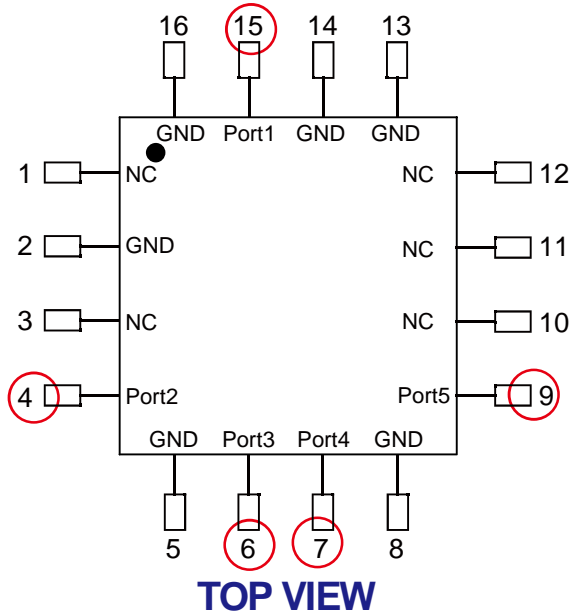
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Special Attenuation before Quadrifilar IC Soldering

1. A Package

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

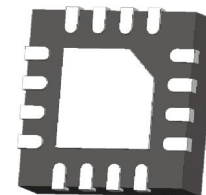
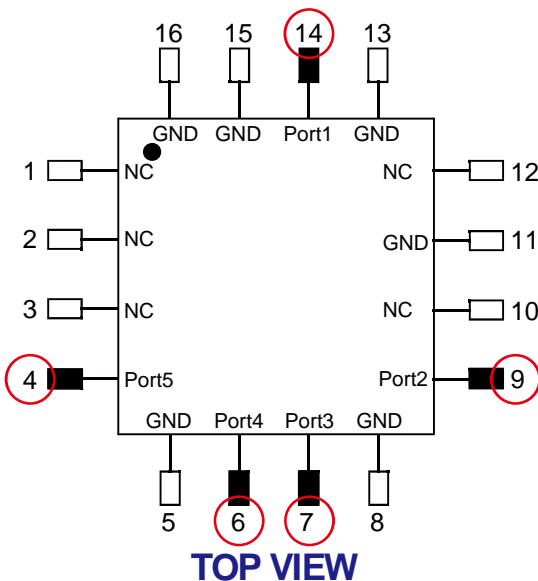


Attention: The 5 ports circled out should be soldered right to footprint pads accordingly to ensure accurate RF performance test.

| Port 1 | Port 2 | Port 3 | Port 4 | Port 5 |
|--------|----------------------|-----------------------|------------------------|------------------------|
| Input | Output 1 -6dB, 00 | Output 2 -6dB, -90 | Output 3 -6dB, -180 | Output 4 -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 | Port 4 | Port 5 |
|--------|----------------------|-----------------------|------------------------|------------------------|
| Input | Output 1 -6dB, 00 | Output 2 -6dB, -90 | Output 3 -6dB, -180 | Output 4 -6dB, -270 |

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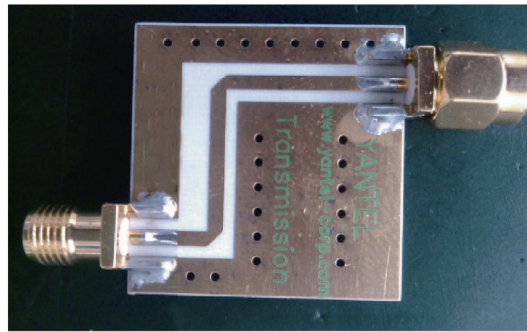
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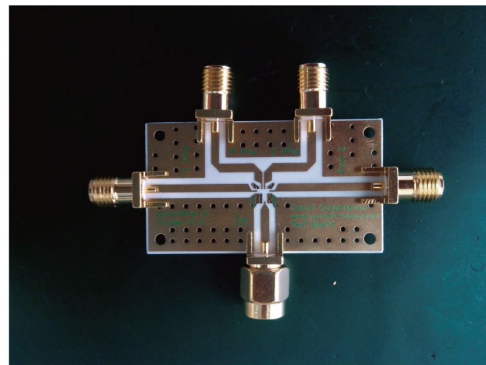
Quadrifilar IC Soldering, Testing and Calculation Instructions

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

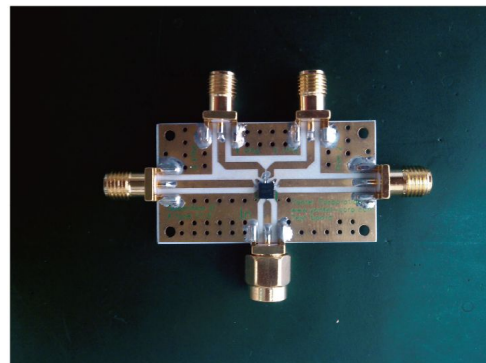


Transmission Board

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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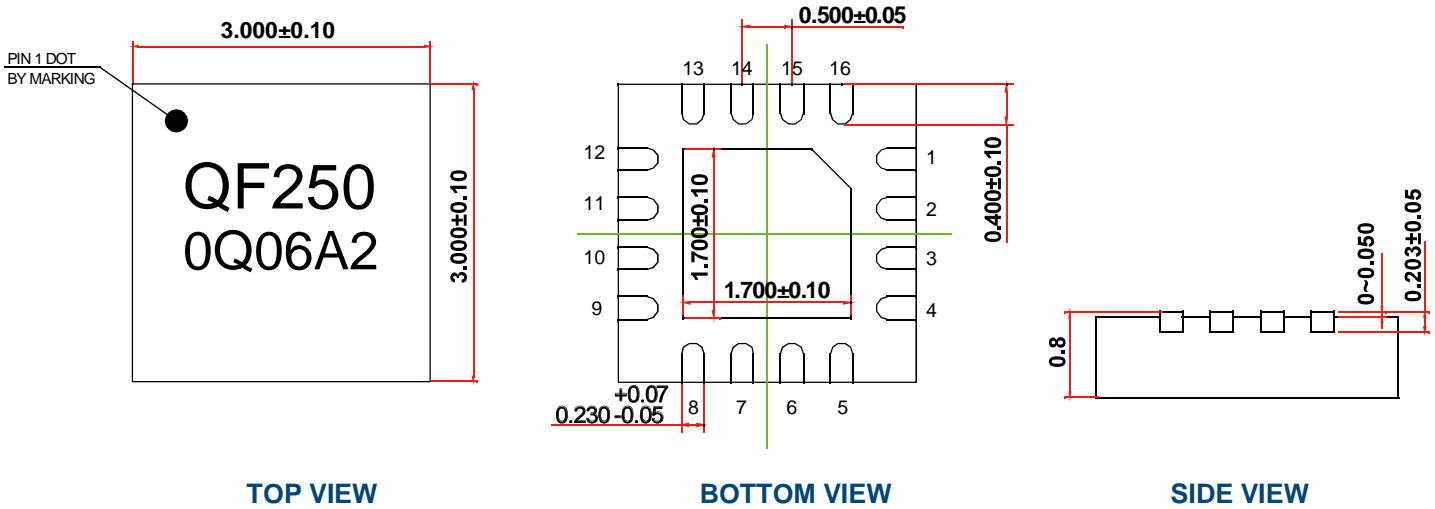
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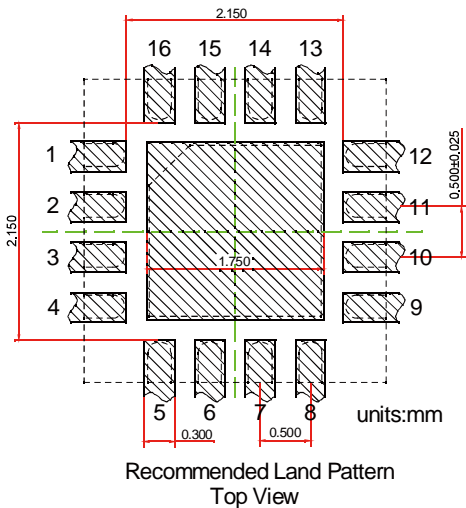
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Outline Drawing

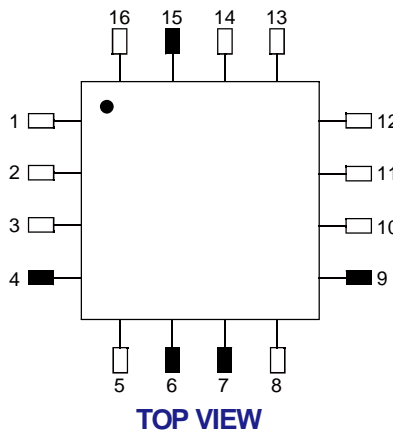


Land Pattern



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 guarantee 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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