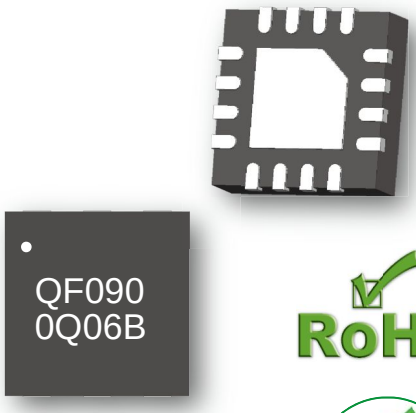
Data Sheet
QF0900Q06B
Quadrifilar Directional Coupler
865 MHz-930 MHz

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℃ to +85℃
- Tape & Reel

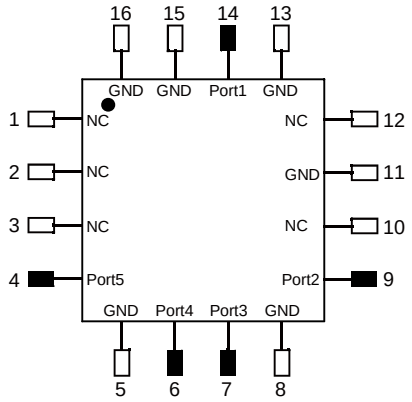


RoHS

REACH COMPLIANT

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, 00	Output2 -6dB, -90	Output3 -6dB, -180	Output4 -6dB, -270

Electrical Specifications at 25º 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)
QF0900Q06B	865-930	5	3X3	11-30	1.25	10-17	90±5	±0.5
	910-930	5	3X3	12-30	1.10	11-16	90±5	±0.3

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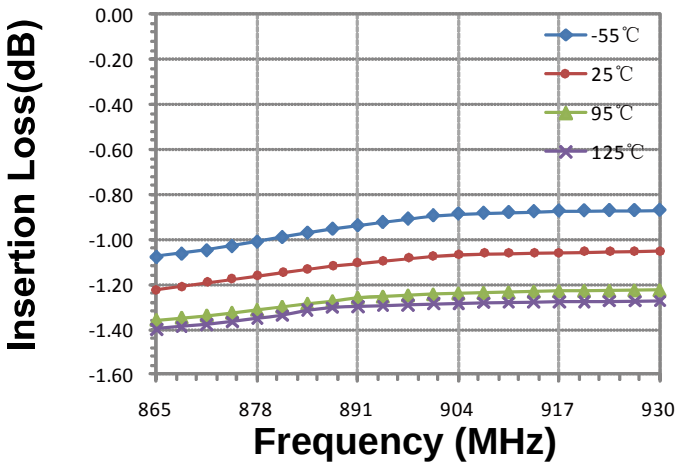
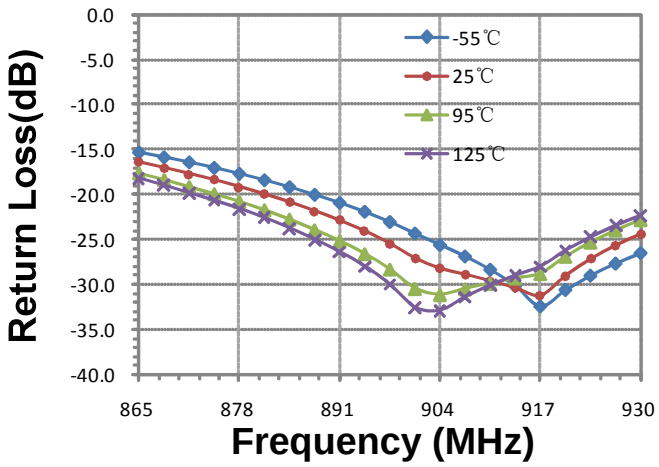
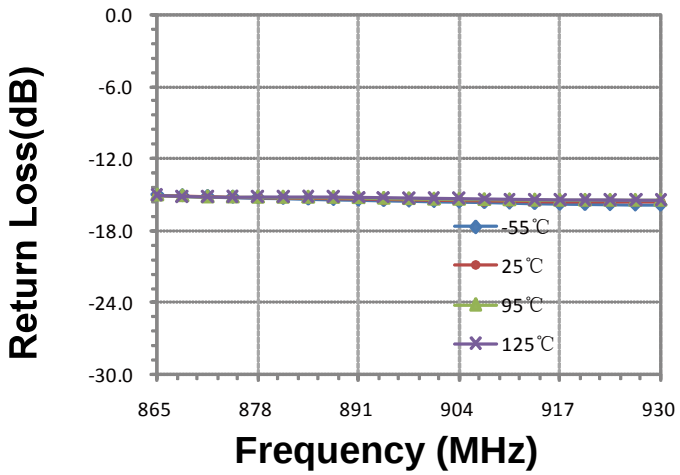
Insertion Loss



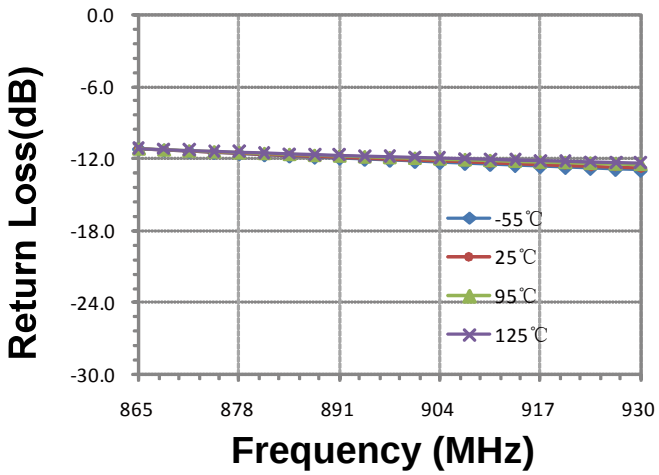
Return Loss (dB(S(1,1))



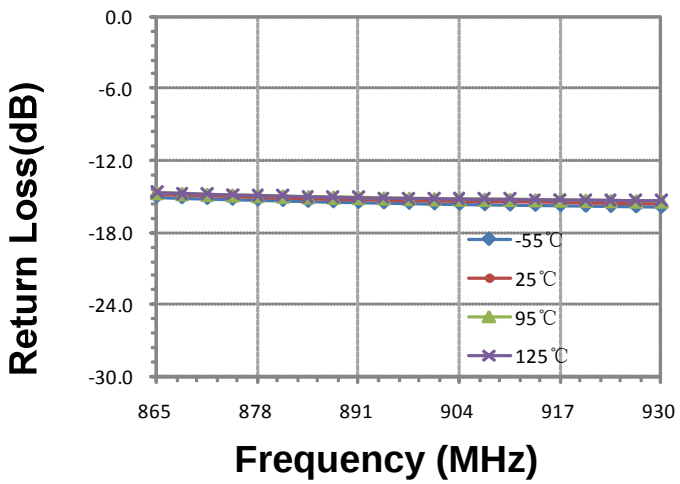
Return Loss (dB(S(2,2))



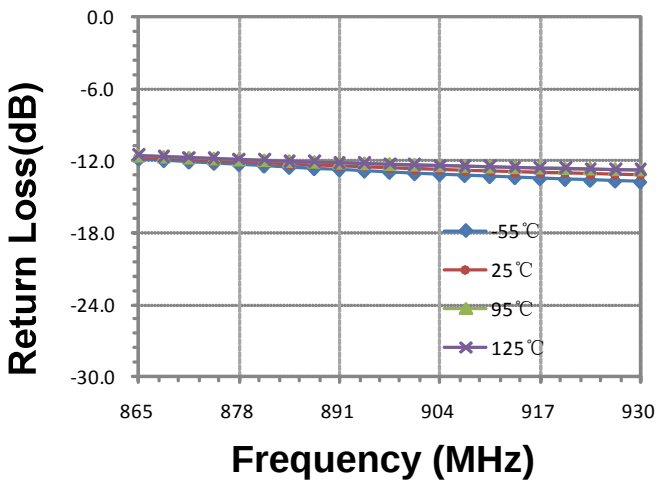
Return Loss (dB(S(3,3))



Return Loss (dB(S(4,4))



Return Loss (dB(S(5,5))



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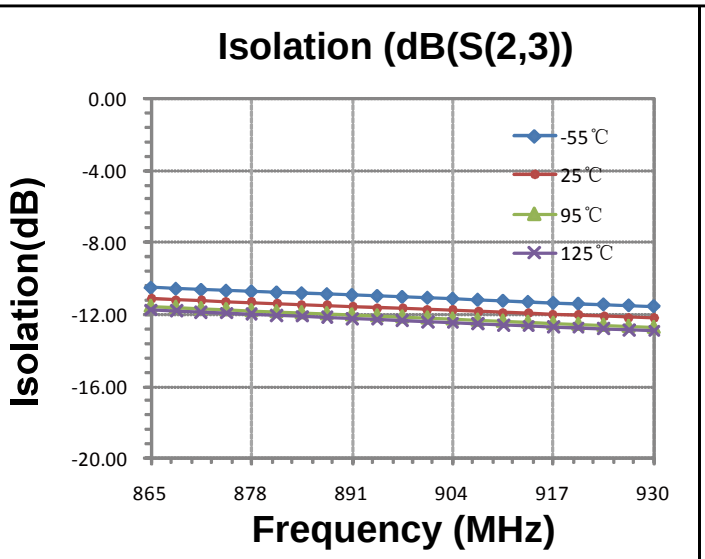

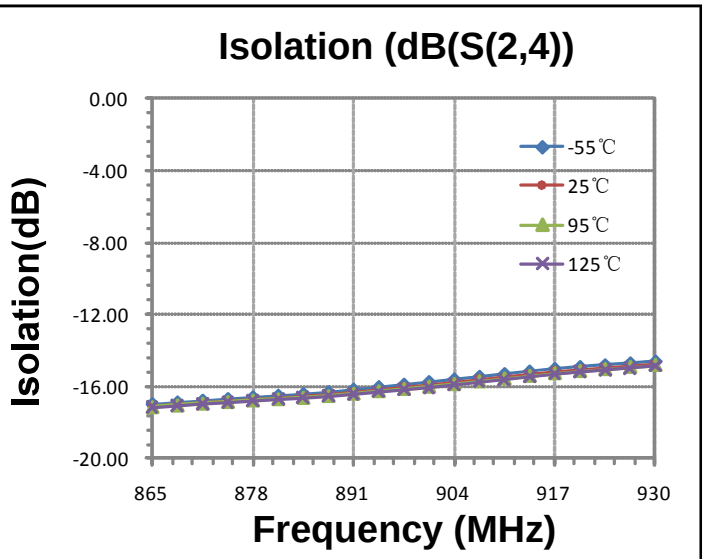

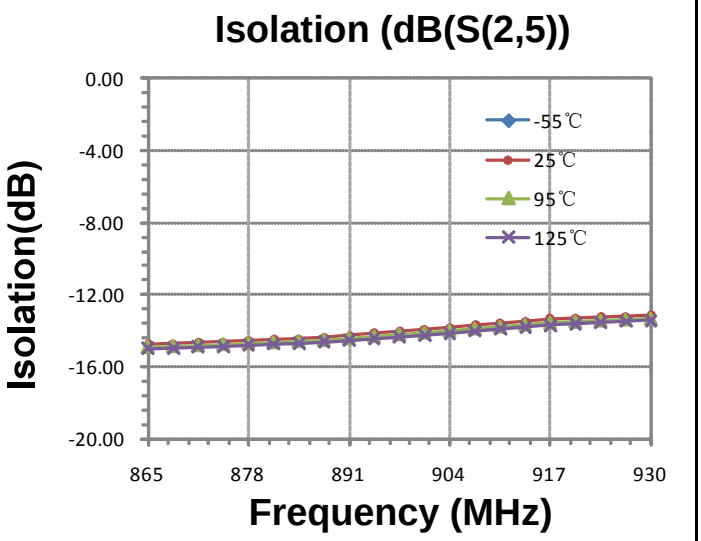

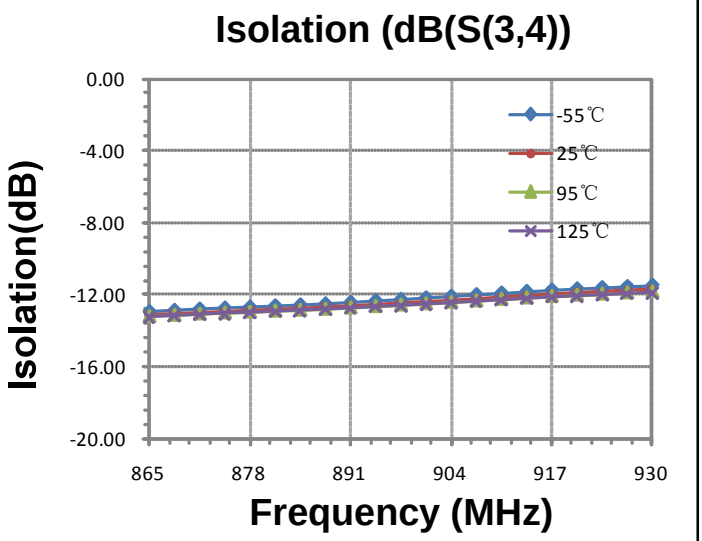

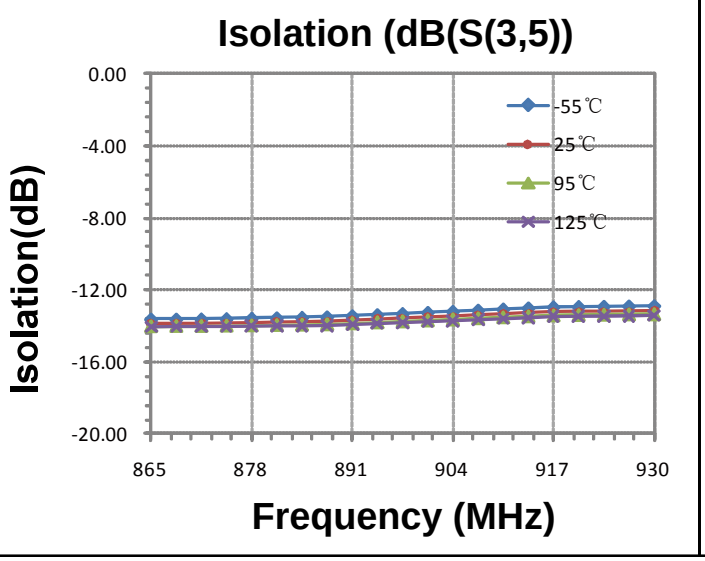

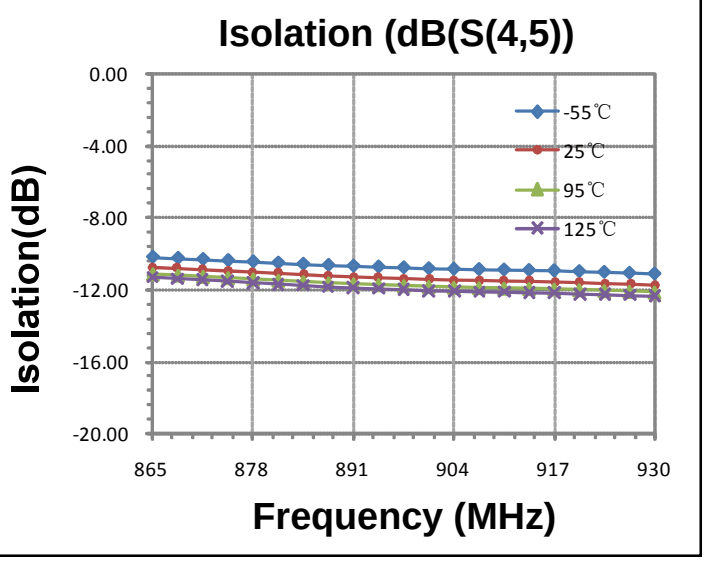

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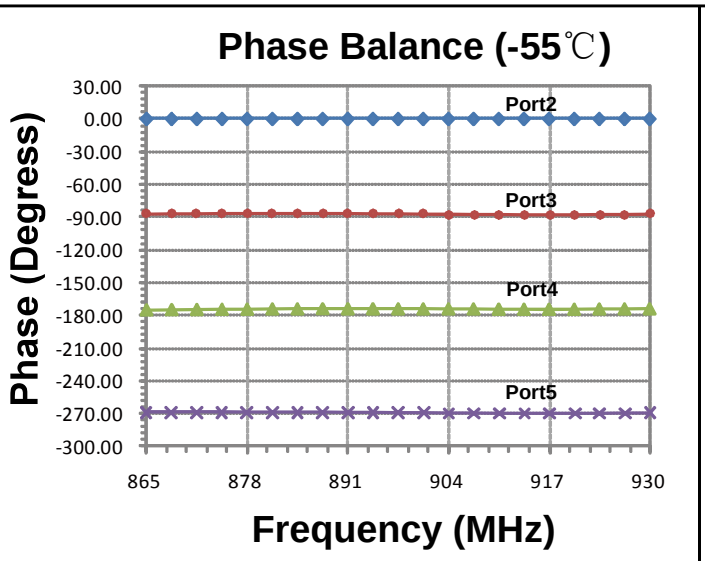

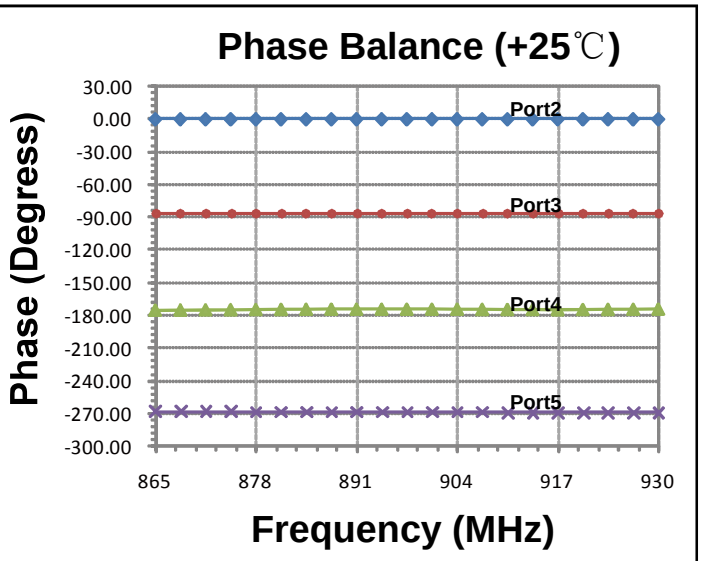

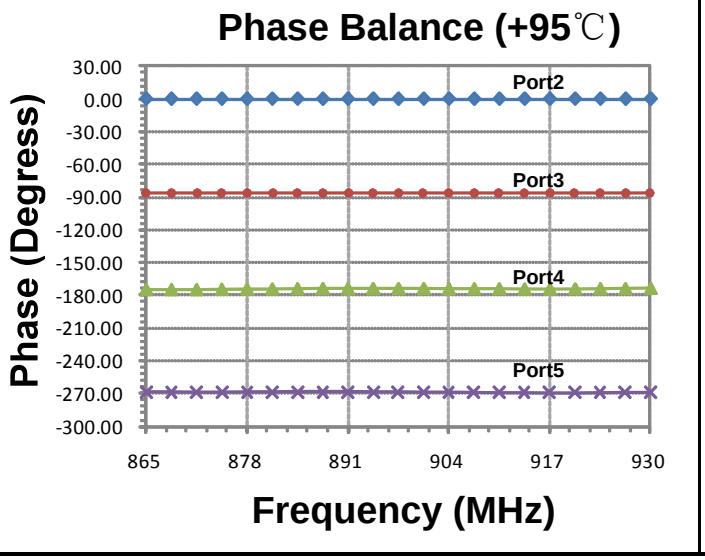

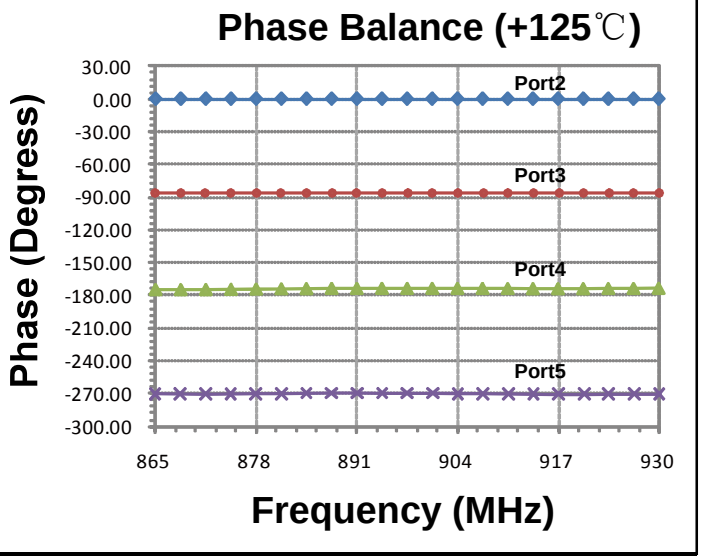

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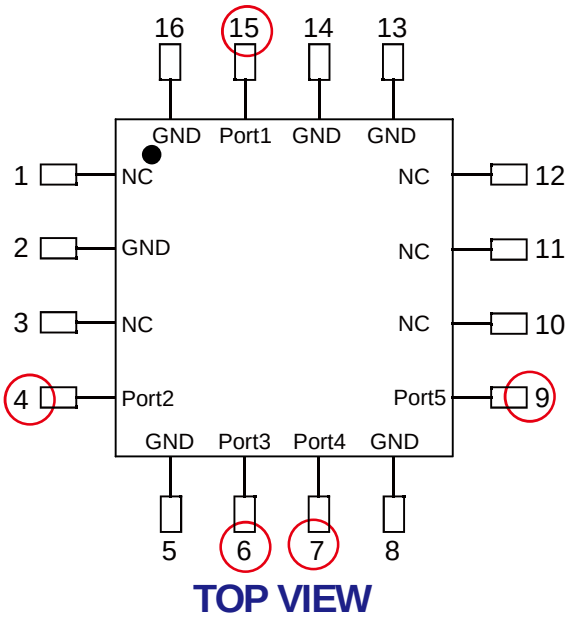
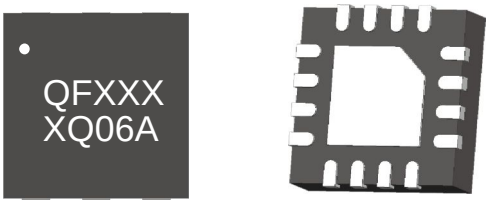
Special Attenuation before Quadrifilar IC Soldering

1. A Package

Applicable P/N: QF0900Q06A, QF1200Q06A, QF1600Q06A, QF2100Q06A, QF2500Q06A



TOP VIEW

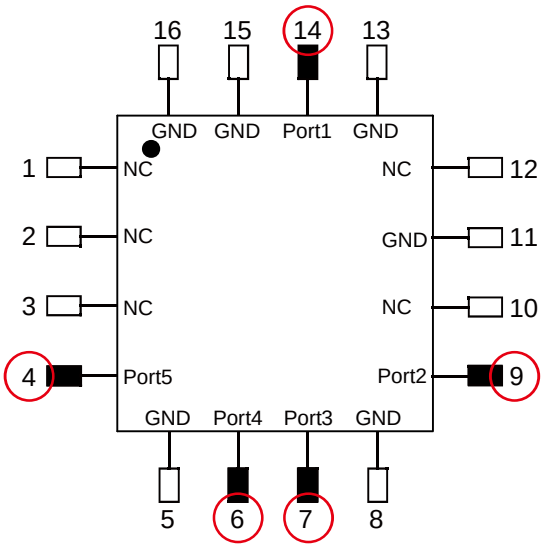


Attention: The 5 ports circled out should be soldered right to footprint pads accordingly to ensure accurate RF performance test.

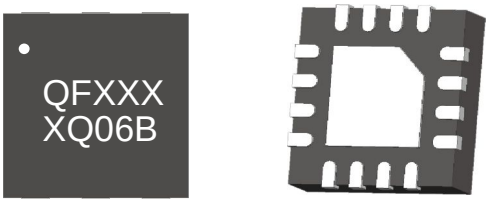
Port 1	Port 2	Port 3	Port4	Port 5
Input	Output1 -6dB, 00	Output2 -6dB, -90	Output3 -6dB, -180	Output4 -6dB, -270

2. B Package

Applicable P/N: QF0900Q06B, QF1200Q06B, QF1600Q06B, QF2100Q06B, QF2500Q06B



TOP VIEW



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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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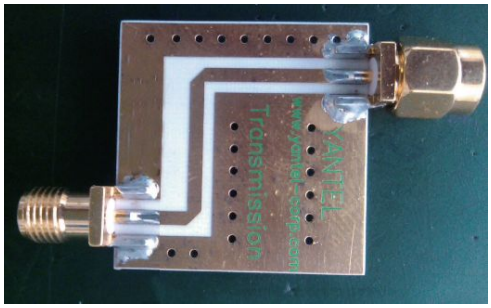
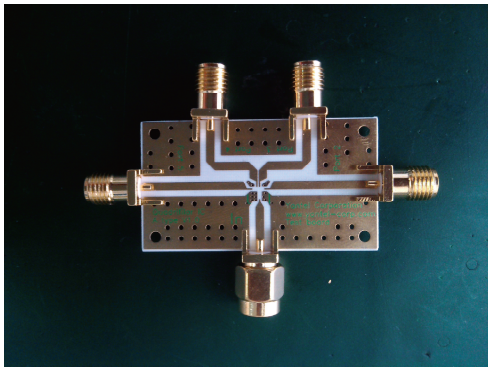
Quadrifilar IC Soldering, Testing and Calculation Instructions

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

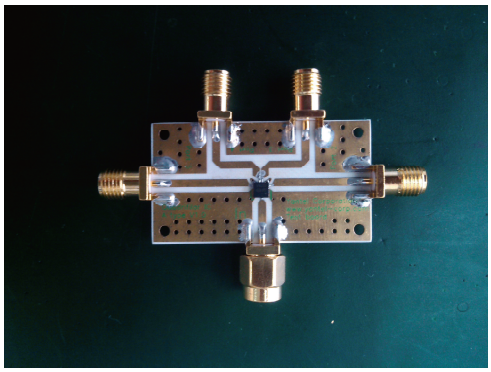


Transmission Board

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	$10 \cdot \log\left(\frac{P_{Out\,1}}{P_{in}}\right)$
Output2	S31	$10 \cdot \log\left(\frac{P_{Out\,2}}{P_{in}}\right)$
Output3	S41	$10 \cdot \log\left(\frac{P_{Out\,3}}{P_{in}}\right)$
Output4	S51	$10 \cdot \log\left(\frac{P_{Out\,4}}{P_{in}}\right)$
Insertion Loss		$10 \cdot \log\left(\frac{P_{in}}{P_{Out\,1}\quad P_{Out\,2}\quad P_{Out\,3}\quad P_{Out\,4}}\right)$
Amplitude Balance		$10 \cdot \log\left(P_{Out1\sim Out4} \Big/ \frac{P_{Out\,1}\quad P_{Out\,2}\quad P_{Out\,3}\quad P_{Out\,4}}{4}\right)$
Isolation1	S23	$10 \cdot \log\left(\frac{P_{Out\,3}}{P_{Out\,2}}\right)$
Isolation2	S24	$10 \cdot \log\left(\frac{P_{Out\,4}}{P_{Out\,2}}\right)$
Isolation3	S25	$10 \cdot \log\left(\frac{P_{Out\,5}}{P_{Out\,2}}\right)$
Isolation4	S34	$10 \cdot \log\left(\frac{P_{Out\,4}}{P_{Out\,3}}\right)$
Isolation5	S35	$10 \cdot \log\left(\frac{P_{Out\,5}}{P_{Out\,3}}\right)$
Isolation6	S45	$10 \cdot \log\left(\frac{P_{Out\,5}}{P_{Out\,4}}\right)$
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
$P_{Out\,1}$: Power of Output Port2
$P_{Out\,2}$: Power of Output Port3
$P_{Out\,3}$: Power of Output Port4
$P_{Out\,4}$: Power of Output Port5

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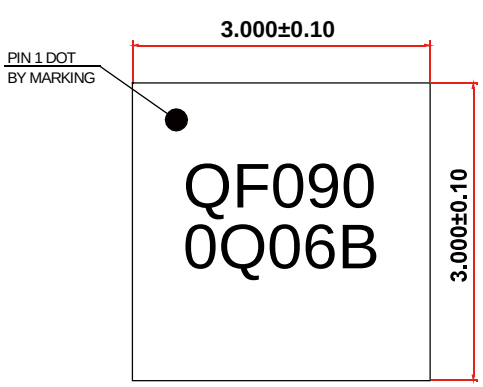
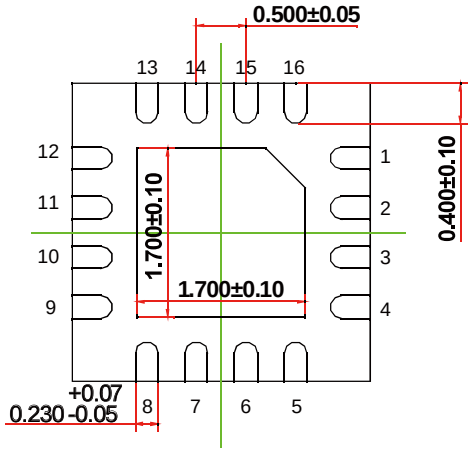
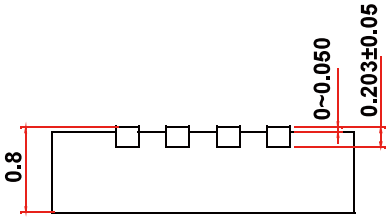
Outline Drawing



TOP VIEW

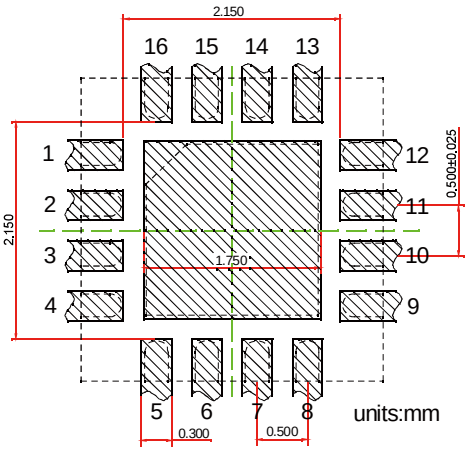


BOTTOM VIEW



SIDE VIEW

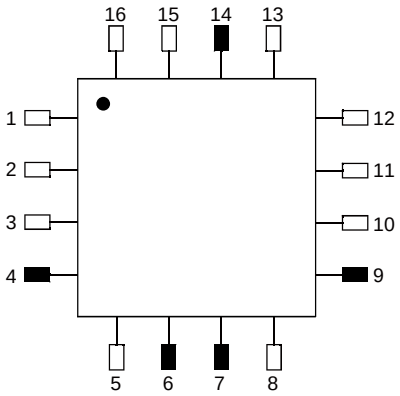
Land Pattern



Recommended Land Pattern
Top View

Notes: All dimensions show in millimeters

Pin Out



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 gurante -eparts normal work.
2.This part has passed through 100% RF test.

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

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