

MQCN-1216

3dB 90° Hybrid Coupler 1150~1650MHz

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3dB 90° Hybrid Coupler

For 1150-1650MHz

MQCN-1216

3.2 x 1.6mm [EIA 1206]

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Applications

- 1, Circular Polarized Antenna
- 2, Balanced amplifiers
- 3, Small Cell & Pico

Features

- 1, Low Insertion Loss
- 2, High Isolation, 22 dB typ.
- 3, Excellent high-power capacity up to 15W
- 4, RoHS compliance (Pb-Free)

Description

The MQCN-1216 is a low cost, high performance 3 dB coupler in an easy to used surface mount package. The MQCN-1216 is ideal for Doherty power amplifier, circular polarized antenna and other applications where low insertion loss and tight amplitude and phase balance are required. All components are 100% RF tested.

Maximum Rating

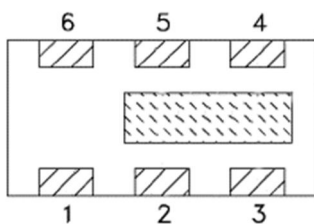
Parameter	Ratings	Units
RF Power (sum)	15	W
Operating Temperature Range	-55~+105	°C
Storage Temperature Range	-55~+105	°C
Moisture Sensitivity Levels	3	MSL

Characteristics

Item	Min.	Typ.	Max.	Units
Frequency Range	1150	-	1650	MHz
Phase Unbalance	-3		+3	degrees
Insertion Loss		0.15	0.35	dB
Amplitude	-0.35		+0.35	dB
VSWR		1.15	1.25	:1
Characteristics Impedance	50 (Nominal)			

- Ta: +25±5°C

Port Configurations



Terminal Functions	
1	Sum Port
4	Port1 0°
6	Port2 90°
2/5	GND
3	50 Ω Term External

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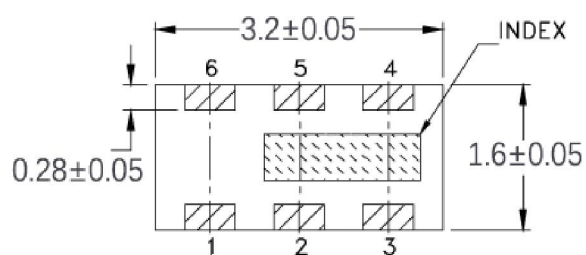
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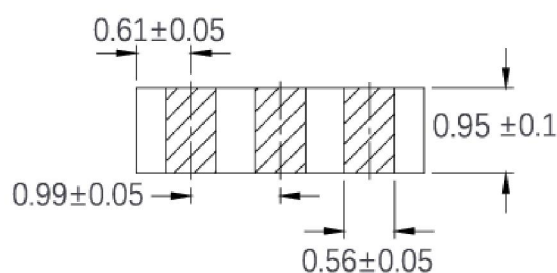
Configuration	Port 1	Port 2	Port 3	Port 4
Case1.	Input	Isolated	Output -3dB, -90°	Coupling -3dB, 0°
Case2.	Isolated	Input	Coupling -3dB, 0°	Output -3dB, -90°
Case3.	Output -3dB, -90°	Coupling -3dB, 0°	Input	Isolated
Case4.	Coupling -3dB, 0°	Output -3dB, -90°	Isolated	Input

Shapes and Dimensions

Top View



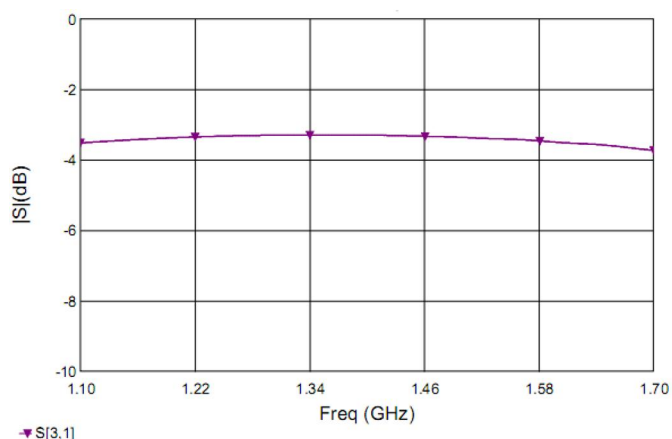
Side View



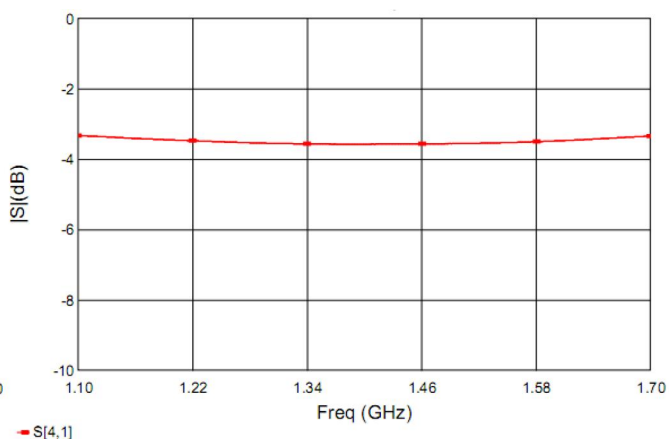
Unit: mm

Typical Performance (25°C, 1150-1650 MHz)

MQCN-1216 Coupling



MQCN-1216 Transmission



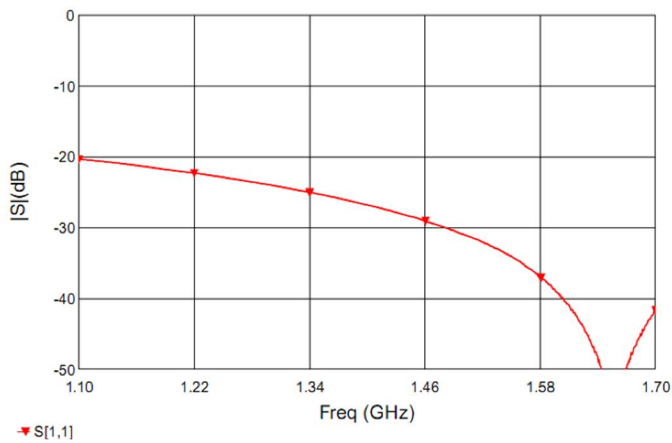
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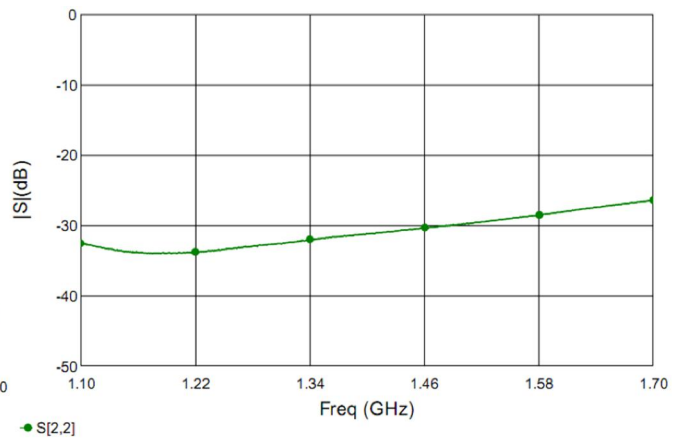
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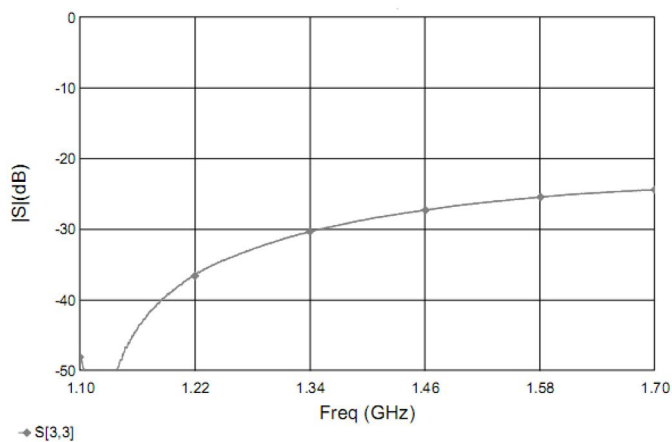
MQCN-1216 Return Loss (S11)



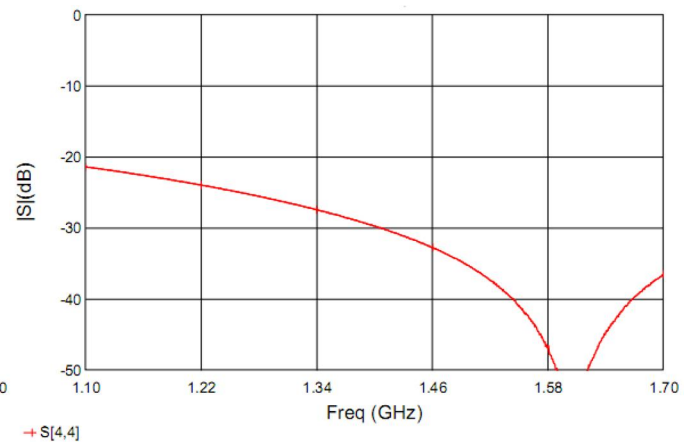
MQCN-1216 Return Loss (S22)



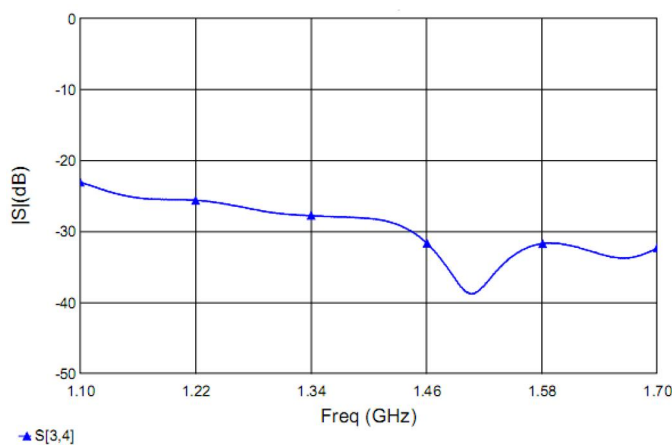
MQCN-1216 Return Loss (S11)



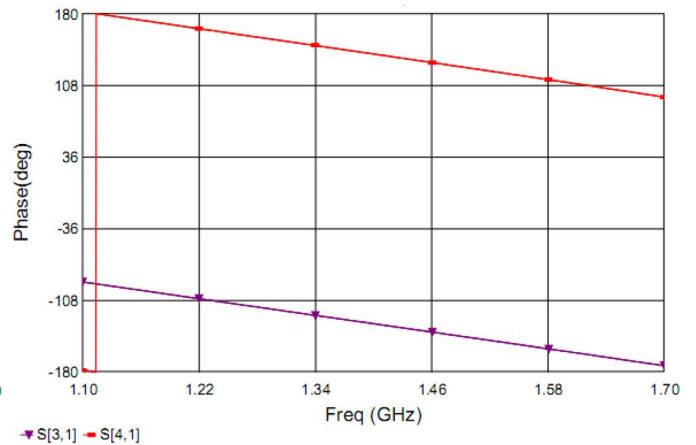
MQCN-1216 Return Loss (S22)



MQCN-1216 Isolation



MQCN-1216 Phase



Definition of Measured Specifications

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Shenzhen Megsine technology co., ltd www.megsine.com sales@megsine.com may contain us for future information
Feb. 03, 2024

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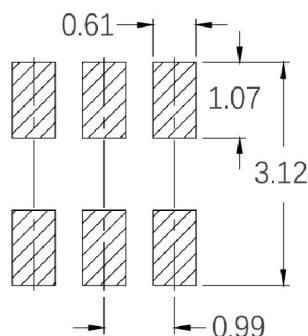
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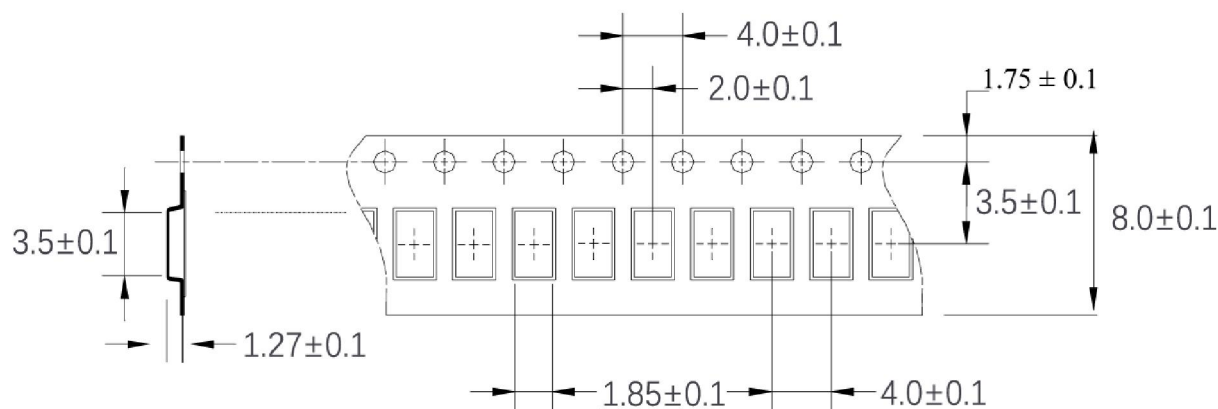
Mathematical Formula for the MQCN-1216 Parameters

Parameter	Definition	Mathematical Representation
VSWR (Voltage Standing Wave Ratio)	The impedance match of the coupler to a 50W system. A VSWR of 1:1 is optimal.	$VSWR = \frac{V_{max}}{V_{min}}$ $V_{max} = \text{voltage maxima of a standing wave}$ $V_{min} = \text{voltage minima of a standing wave}$
Return Loss	The impedance match of the coupler to a 50W system. Return Loss is an alternate means to express VSWR.	$\text{Return Loss (dB)} = 20 \log \frac{VSWR+1}{VSWR-1}$
Insertion Loss	The input power divided by the sum of the power at the two output ports.	$\text{Insertion Loss (dB)} = 10 \log \frac{P_{in}}{P_{cp1} + P_{transmission}}$
Isolation	The input power divided by the power at the isolated port.	$\text{Isolation (dB)} = 10 \log \frac{P_{in}}{P_{iso}}$
Phase Balance	The difference in phase angle between the two output ports.	Phase at coupled port – Phase at transmission port
Amplitude Balance	The power at each output divided by the average power of the two outputs.	$10 \log \frac{P_{cp1}}{P_{cp1} + P_{transmission} / 2} \text{ and}$ $10 \log \frac{P_{transmission}}{P_{cp1} + P_{transmission} / 2}$

Recommended Land Pattern



Packaging and Ordering Information

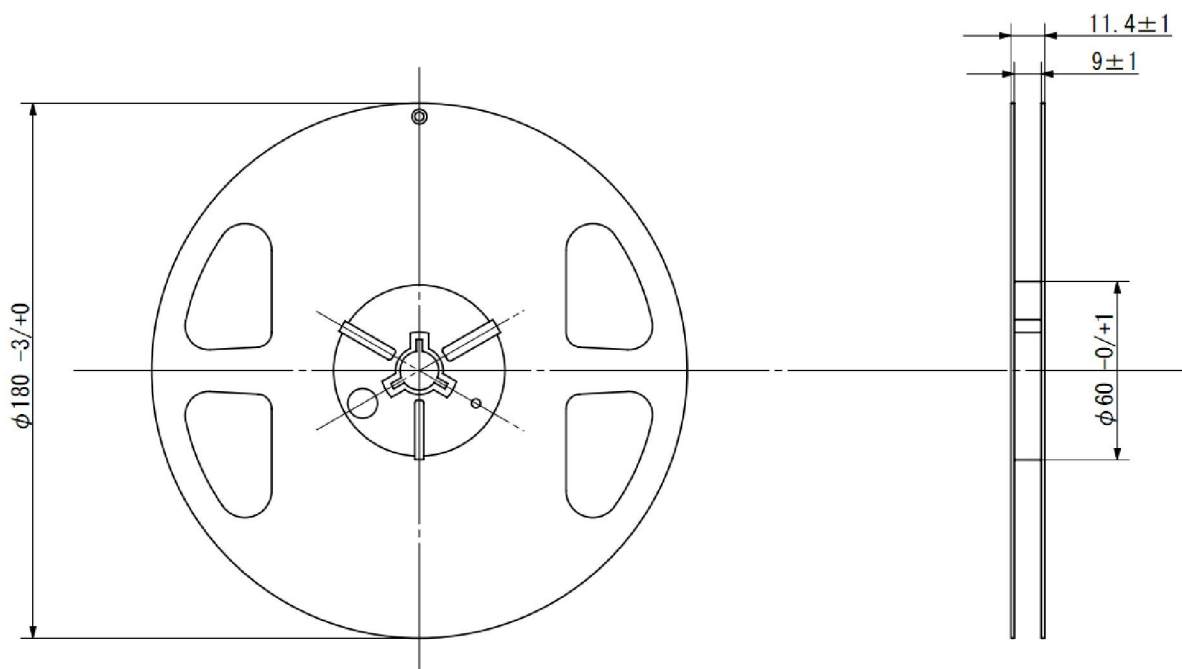


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Device	Package	Reel	Shipping
MQCN-1216	3.2*1.6mm	7"	3000 Reel

Revision	Description	Date
Rev0	Preliminary	2020/3/29
Rev1	Update	2022/12/9
Rev1.1	Power	2024/7/25

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