

## 7.5 dB Coupler 5 - 1225 MHz

Rev. V3

### Features

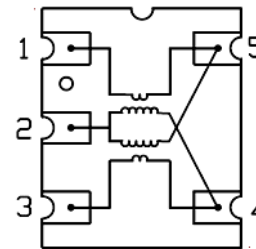
- 7.5 dB Coupling Ratio
- Surface Mount Package
- Available on Tape & Reel
- High isolation from 100 - 700 MHz
- Excellent Temperature Stability
- RoHS Compliant and Pb Free
- 260°C Reflow Compatible

### Description

The MACP-011051 is a 7.5 dB coupler in a surface mount package.

Ideally suited for CATV, Full Duplex and DOCSIS 3.1 applications.

### Functional Schematic



### Pin Configuration<sup>3</sup>

Pin #	Function	Pin #	Function
1	Input	4	External 75 $\Omega$
2	Ground	5	Output
3	Coupled		

3. MACOM recommends connecting unused package pins to ground.

### Electrical Specifications: Freq. = 5 - 1225 MHz, $T_A = 25^\circ\text{C}$ , $Z_0 = 75 \Omega$ , $P_{IN} = 0 \text{ dBm}$

Parameter	Test Conditions	Units	Min.	Typ.	Max.
Coupling Ratio	—	dB	—	7.5	—
Coupling (Pin 1 - Pin 3)	5 - 1225	dB	7.0	7.5	8.0
Main Line Loss (Pin 1 - Pin 5)	5 - 700 700 - 1225	dB	—	1.8 2.0	2.0 2.2
Isolation (Pin 5 - Pin 3)	5 - 100 100 - 700 700 - 1225	dB	28 40 26	35 42 29	—
Input Return Loss (Pin 1)	5 - 700 700 - 1225	dB	15 15	17 16	—
Output Return Loss (Pin 5)	5 - 700 700 - 1225	dB	18 18	26 20	—
Coupling Return Loss (Pin 3)	5 - 700 700 - 1225	dB	15 15	18 16	—

### Ordering Information<sup>1,2</sup>

Part Number	Package
MACP-011051	900 piece reel
MACP-011051-TB	Sample Board

1. Reference Application Note M513 for reel size information.
2. All sample boards include 5 loose parts.

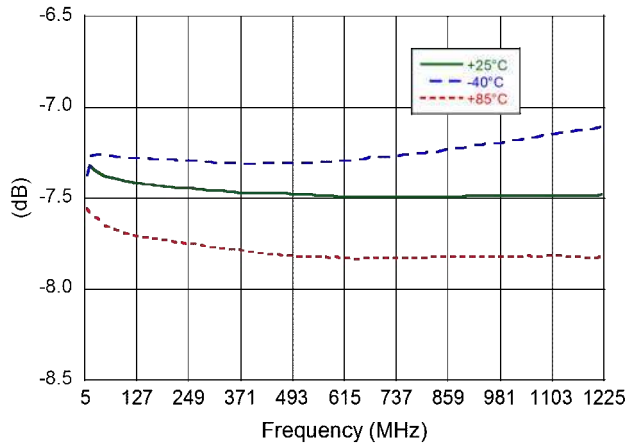
### Absolute Maximum Ratings<sup>4,5</sup>

Parameter	Absolute Maximum
Input Power	2 W
DC Current	500 mA
Operating Temperature	-40°C to +85°C

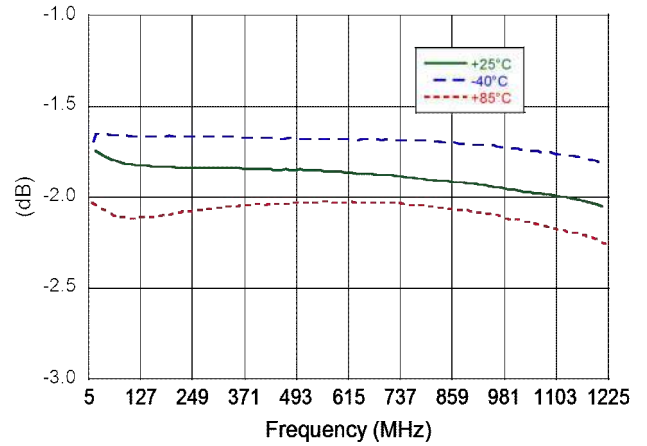
4. Exceeding any one or combination of these limits may cause permanent damage to this device.
5. MACOM does not recommend sustained operation near these survivability limits.

## Typical Performance Curves

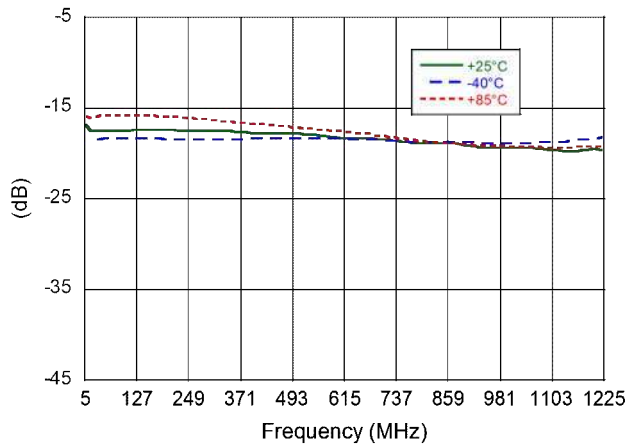
**Coupling (pin 1 - 3)**



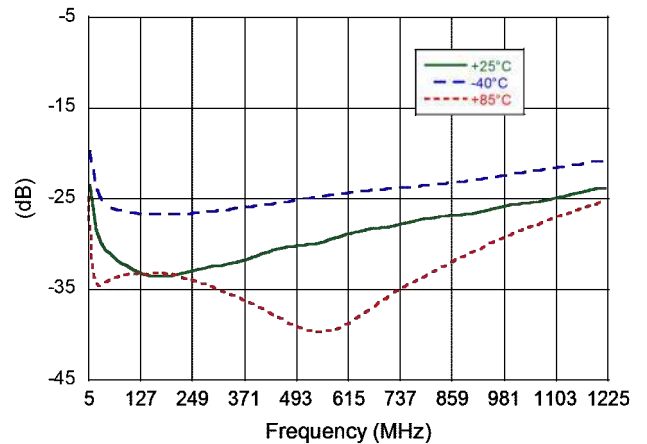
**Mainline Loss (pin 1 - 5)**



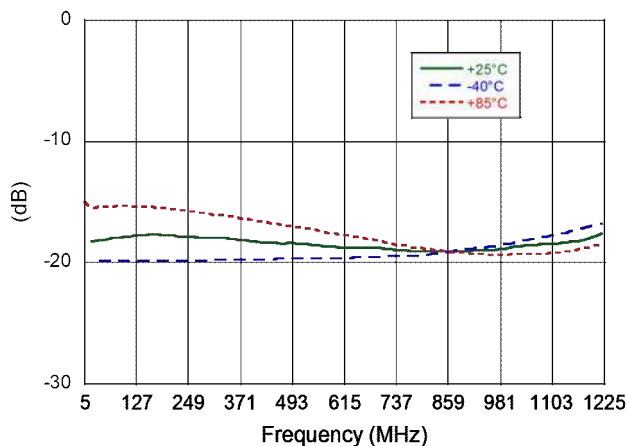
**Input Return Loss (pin 1)**



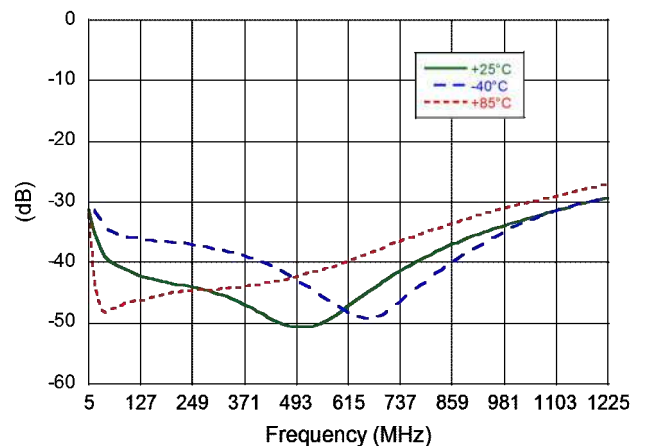
**Output Return Loss (pin 5)**



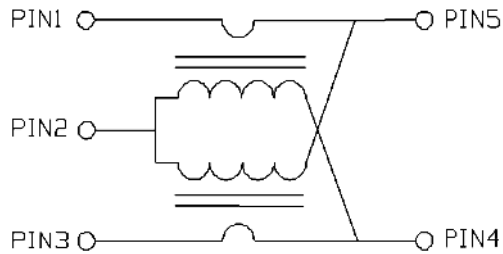
**Coupling Return Loss (pin 3)**



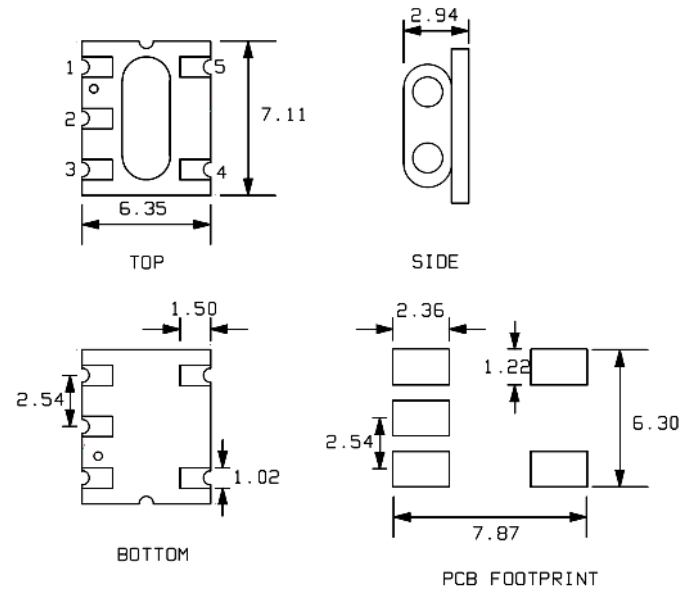
**Isolation (pin 3 - 5)**



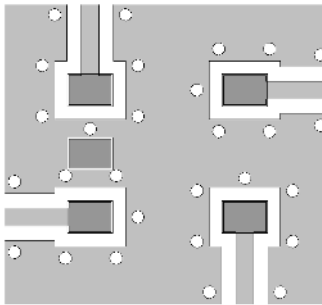
## Application Schematic



## Outline Drawing<sup>7,8,9,10</sup>



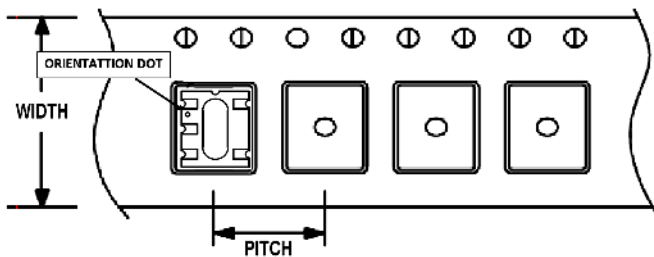
## Recommended Board Layout<sup>6</sup>



6. Recommended PCB layout shown above uses 1.6 mm FR4, Grounded coplanar wave guide, transmission line width 0.70 mm and gap 0.57 mm.

- 7. Dimensions in mm.
- 8. Tolerance:  $\pm 0.2$  mm unless otherwise noted.
- 9. Model number and lot code printed on reel.
- 10. Finish: Electroless Nickel Immersion Gold.

## Carrier Tape Orientation



## Tape & Reel Information

Parameter	Units	Value
Qty per reel	—	900
Reel Size	mm	330
Tape Width	mm	16.0
Pitch	mm	12.0
Orientation	—	F33
Reference Application Note ANI-019 for orientation		

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