

## 9 dB Coupler 5 - 1225 MHz

Rev. V2

### Features

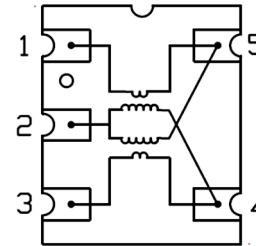
- 9 dB Coupling Ratio
- Surface Mount Package
- Available on Tape & Reel
- High Isolation from 100 - 700 MHz
- Excellent Temperature Stability
- RoHS Compliant and Pb Free
- 260°C Reflow Compatible

### Description

The MACP-011050 is a 9 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                      | Freq. Test Conditions (MHz)        | Units | Min.           | Typ.           | Max.         |
|--------------------------------|------------------------------------|-------|----------------|----------------|--------------|
| Coupling Ratio                 | —                                  | dB    | —              | 9              | —            |
| Coupling (Pin 1 - Pin 3)       | 5 - 1225                           | dB    | 8.5            | 9.0            | 9.5          |
| Main Line Loss (Pin 1 - Pin 5) | 5 - 700<br>700 - 1225              | dB    | —              | 1.4<br>1.7     | 1.65<br>1.90 |
| Isolation (Pin 5 - Pin 3)      | 5 - 100<br>100 - 700<br>700 - 1225 | dB    | 35<br>40<br>26 | 37<br>42<br>30 | —            |
| Input Return Loss (Pin 1)      | 5 - 700<br>700 - 1225              | dB    | 15<br>15       | 17<br>17       | —            |
| Output Return Loss (Pin 5)     | 5 - 700<br>700 - 1225              | dB    | 20<br>17       | 26<br>22       | —            |
| Coupling Return Loss (Pin 3)   | 5 - 700<br>700 - 1225              | dB    | 17<br>15       | 20<br>17       | —            |

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

| Part Number    | Package        |
|----------------|----------------|
| MACP-011050    | 900 piece reel |
| MACP-011050-TB | Sample Board   |

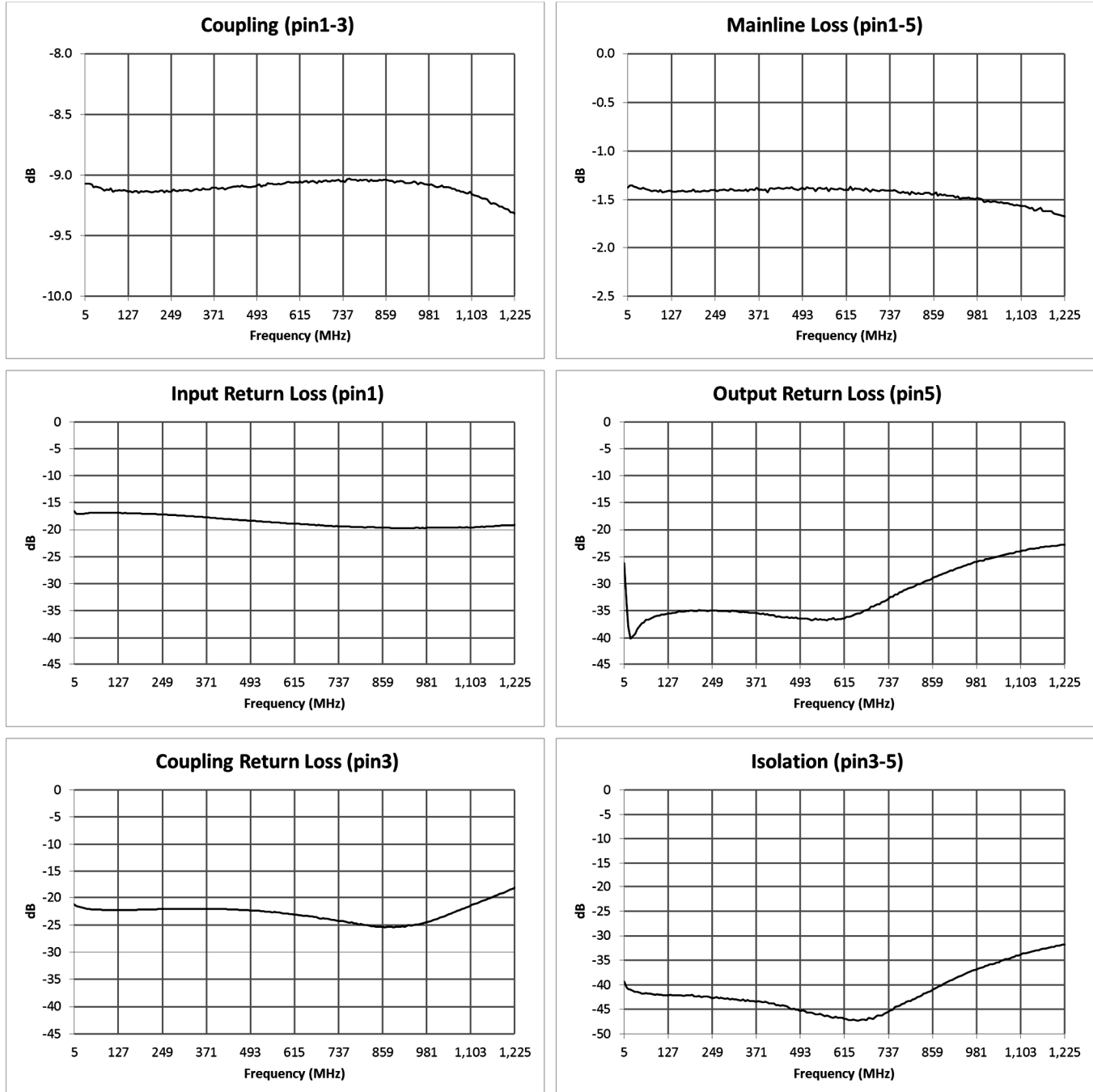
1. Reference Application Note M513 for reel size information.
2. All sample boards include 5 loose parts.

### 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   |

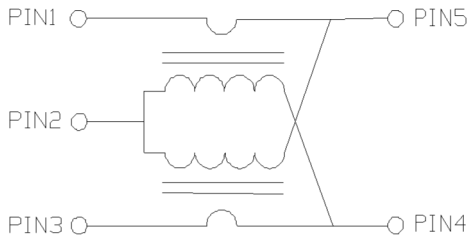
4. Exceeding any one or combination of these limits may cause permanent damage to this device.
5. MACOM does not recommend sustained operation near these survivability limits.

## Typical Performance Curves<sup>6</sup>

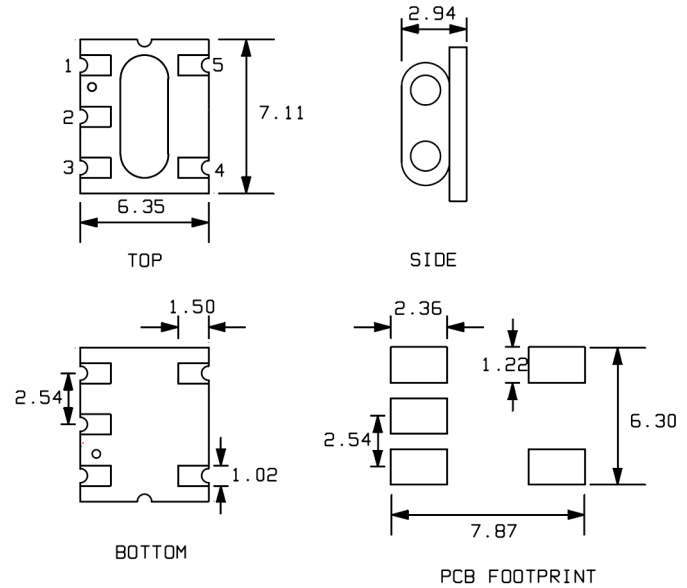


6. Full temperature plots available on request.

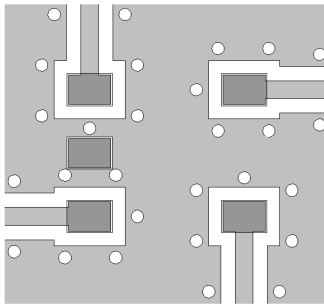
## Application Schematic



## Outline Drawing<sup>8,9,10,11</sup>



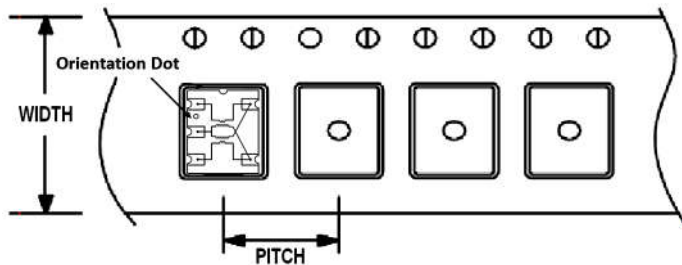
## Recommended Board Layout<sup>7</sup>



7. 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.

- 8. Dimensions in mm.
- 9. Tolerance:  $\pm 0.2$  mm unless otherwise noted.
- 10. Model number and lot code printed on reel.
- 11. 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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