

12 dB Coupler 5 - 1250 MHz

Rev. V4

Features

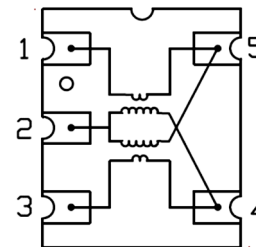
- 12 dB Coupling Ratio
- Surface Mount
- Available on Tape and Reel
- Excellent Temperature Stability
- RoHS Compliant and Pb Free
- 260°C Reflow Compatible

Description

The MACP-011059 is a 12 dB coupler in a low cost, surface mount package.

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

Functional Schematic



Pin Configuration³

| Pin # | Function | Pin # | Function |
|-------|----------|-------|----------------------|
| 1 | Input | 4 | External 75 Ω |
| 2 | Ground | 5 | Output |
| 3 | Coupled | | |

3. MACOM recommends connecting unused package pins to ground.

Electrical Specifications: Freq. = 5 - 1250 MHz, $T_A = 25^\circ\text{C}$, $Z_0 = 75 \Omega$, $P_{IN} = 0 \text{ dBm}$

| Parameter | Conditions | Units | Min. | Typ. | Max. |
|----------------------------------|-------------------------------|-------|----------|--------------|------------|
| Coupling Ratio | — | dB | — | 12 | — |
| Coupling (Pin 1- Pin 3) | 5 - 1250 MHz | dB | 11.5 | 12 | 12.5 |
| Main Line Loss (Pin 1- Pin 5) | 5 - 700 MHz 700 - 1250 MHz | dB | — | 0.75 0.95 | 0.9 1.2 |
| Isolation (Pin 5- Pin 3) | 5 - 700 MHz 700 - 1250 MHz | dB | 28 20 | 32 23 | — |
| Input Return Loss (Pin 1) | 5 - 1250 MHz | dB | 18 | 22 | — |
| Output Return Loss (Pin 5) | 5 - 1250 MHz | dB | 18 | 26 | — |
| Coupling Return Loss (Pin 3) | 5 - 1250 MHz | dB | 18 | 25 | — |

Ordering Information^{1,2}

| Part Number | Package |
|----------------|----------------|
| MACP-011059 | 900 piece reel |
| MACP-011059-TB | Sample Board |

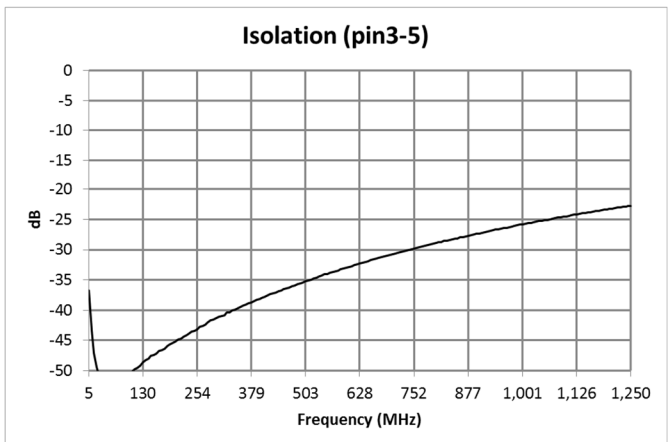
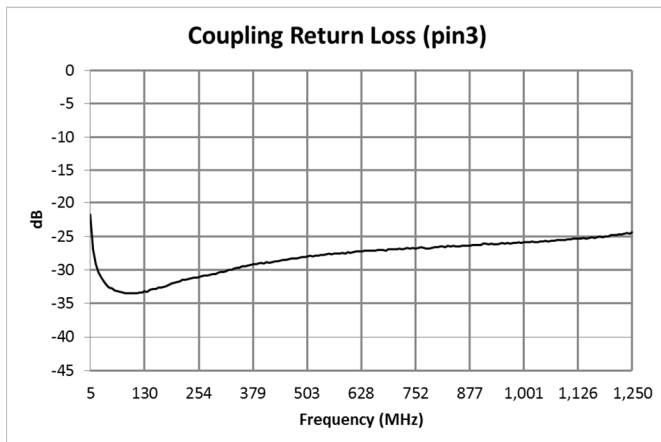
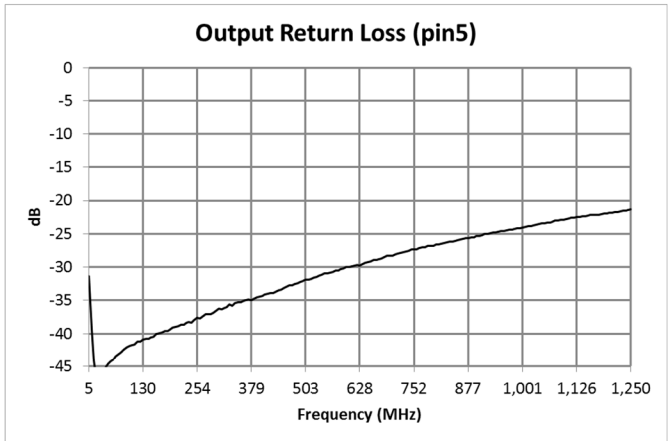
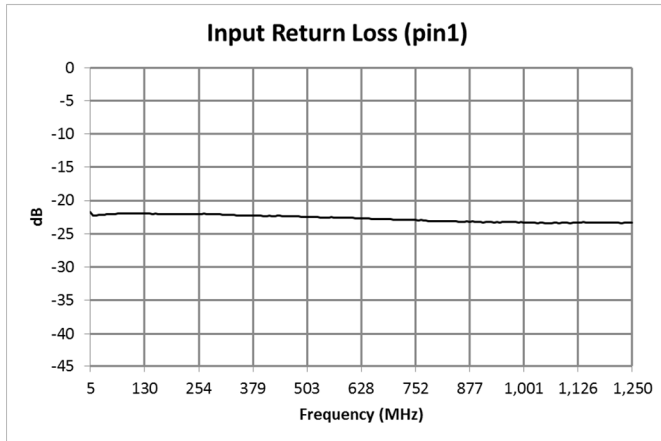
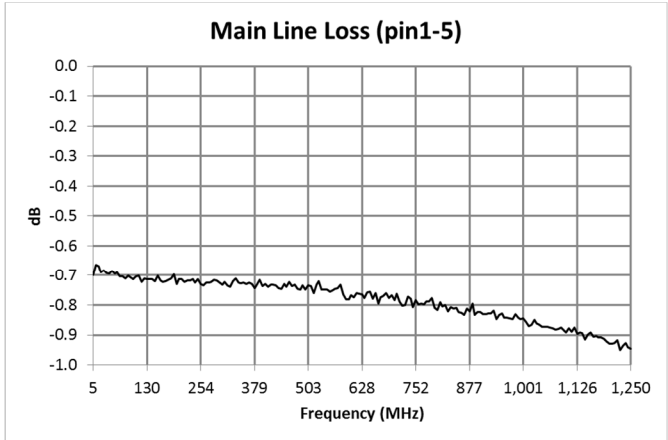
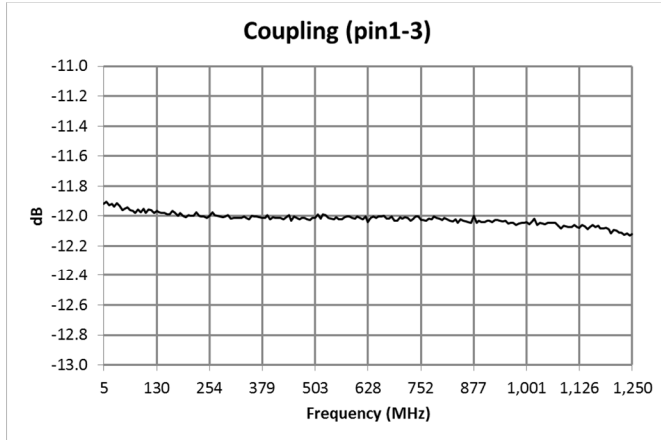
1. Reference Application Note M513 for reel size information.
2. All sample boards include 5 loose parts.

Absolute Maximum Ratings^{4,5}

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

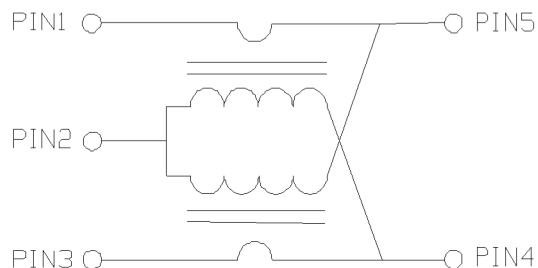
4. Exceeding any one or combination of these limits may cause permanent damage to this device.
5. MACOM does not recommend sustained operation near these survivability limits.

Typical Performance Curves⁶

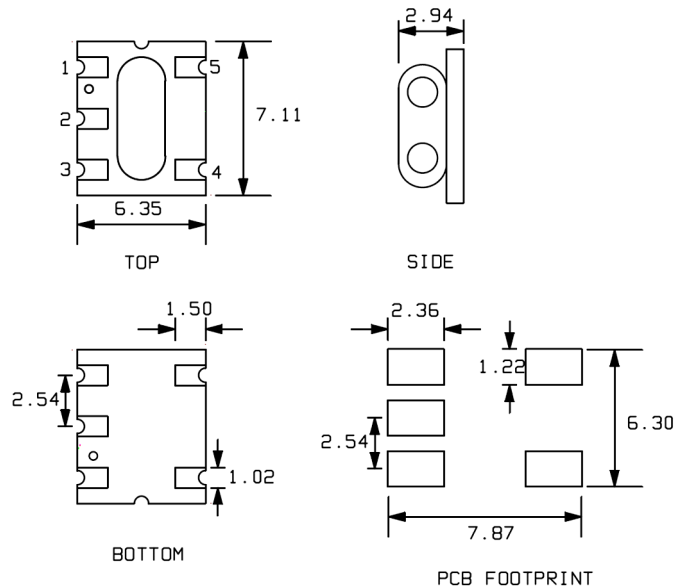


6. Full temperature plots available on request.

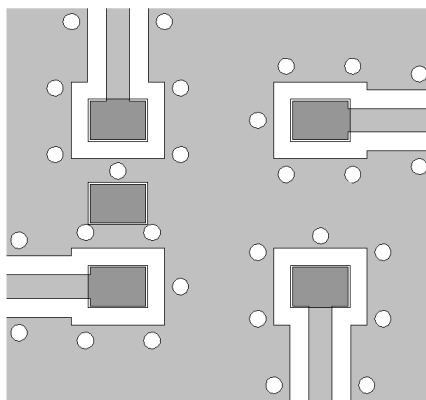
Application Schematic



Outline Drawing^{8,9,10,11}



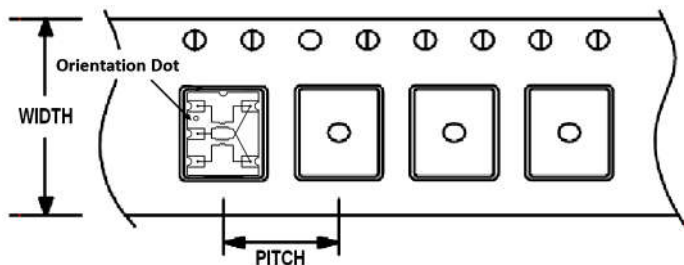
Recommended Board Layout⁷



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

- 8. Dimensions in mm.
- 9. Tolerance: ± 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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