

Features

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

Description

The MACP-011045 is a 23 dB coupler in a low cost, surface mount package.

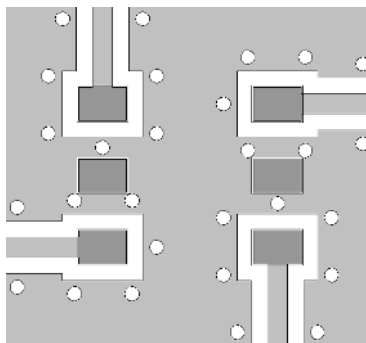
Ideally suited for wireless applications.

Ordering Information^{1,2}

| Part # | Package |
|----------------|----------------|
| MACP-011045 | 900 piece reel |
| MACP-011045-TB | Sample Board |

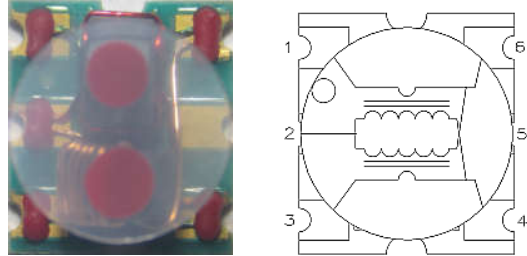
1. Reference Application Note M513 for reel size information.
2. All sample boards include 5 loose parts.

PCB Layout³



3. 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.

Functional Schematic

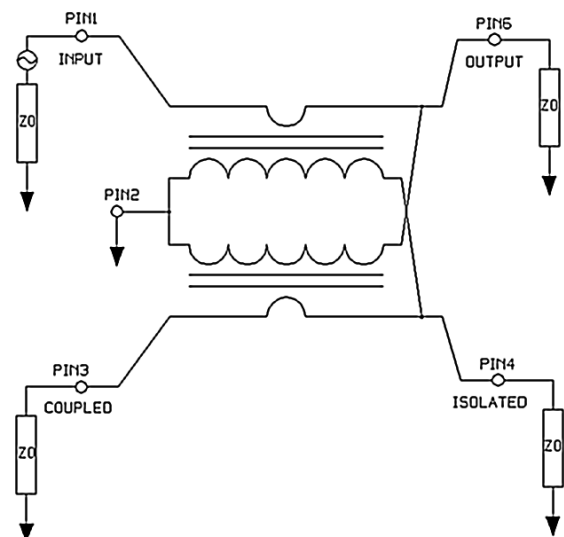


Pin Configuration⁴

| Pin# | Function |
|------|------------------------|
| 1 | Input |
| 2 | Ground |
| 3 | Coupled |
| 4 | Isolated |
| 5 | Ground (Not Connected) |
| 6 | Output |

4. MACOM recommends connecting unused package pins to ground.

Application Schematic



Electrical Specifications: Freq. = 5 - 1225 MHz, T_A = 25°C, Z₀ = 50 Ω, P_{IN} = 0 dBm

| Parameter | Test Conditions | Units | Min. | Typ. | Max. |
|--------------------------------|--|-------|------------------------------|--------------------------------------|---------------------------------|
| Coupling Ratio | — | dB | — | 23 | — |
| Coupling (Pin1-3) | 5 - 30 MHz 30 - 88 MHz 88 - 512 MHz 512 - 1225 MHz | dB | 24.2 24.2 25.0 27.5 | 23.8 23.8 23.6 23.4 | 23.0 23.5 22.0 20.5 |
| Main Line Loss (Pin1-6) | 5 - 30 MHz 30 - 88 MHz 88 - 512 MHz 512 - 1000 MHz 1000 - 1225 MHz | dB | — | 0.10 0.10 0.14 0.74 0.80 | 0.4 0.2 0.3 1.0 1.2 |
| Isolation (Pin1-4) | 5 - 30 MHz 30 - 88 MHz 88 - 512 MHz 512 - 1000 MHz 1000 - 1225 MHz | dB | 35 45 33 23 20 | 45 50 42 36 27 | — |
| Input Return Loss (Pin1) | 5 - 30 MHz 30 - 88 MHz 88 - 512 MHz 512 - 1000 MHz 1000 - 1225 MHz | dB | 10 20 22 18 16 | 23 35 34 30 27 | — |
| Output Return Loss (Pin6) | 5 - 30 MHz 30 - 88 MHz 88 - 512 MHz 512 - 1000 MHz 1000 - 1225 MHz | dB | 10 20 20 11 10 | 22 35 28 19 17 | — |
| Coupling Return Loss (Pin3) | 5 - 30 MHz 30 - 88 MHz 88 - 512 MHz 512 - 1000 MHz 1000 - 1225 MHz | dB | 10 20 21 12 10 | 22 37 34 20 17 | — |

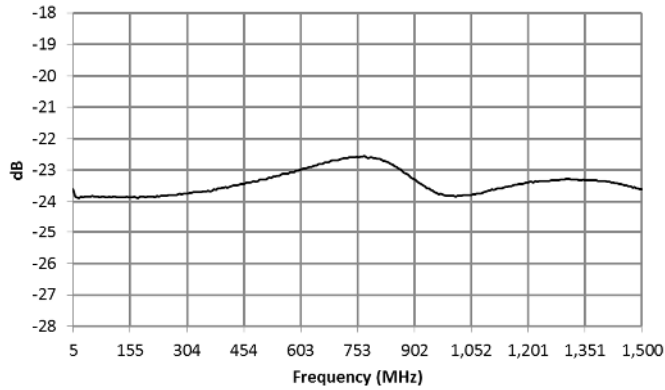
Absolute Maximum Ratings

| Parameter | Absolute Maximum |
|--------------------------|------------------|
| Input Power ⁵ | 10 W |
| DC Current | 500 mA |
| Operating Temperature | -40°C to +125°C |

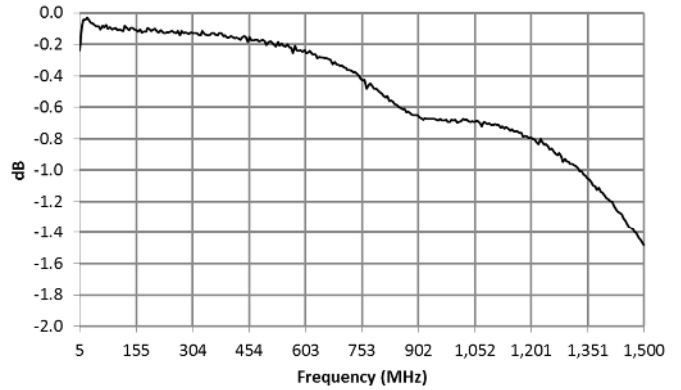
5. Appropriate thermal design is necessary for high power operation.

Typical Performance Curves⁶

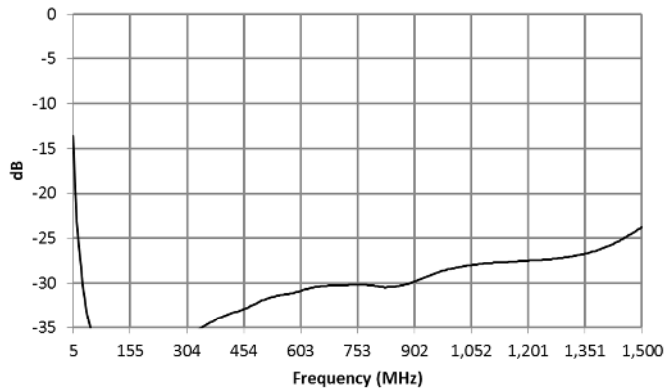
Coupling (Pin1-3)



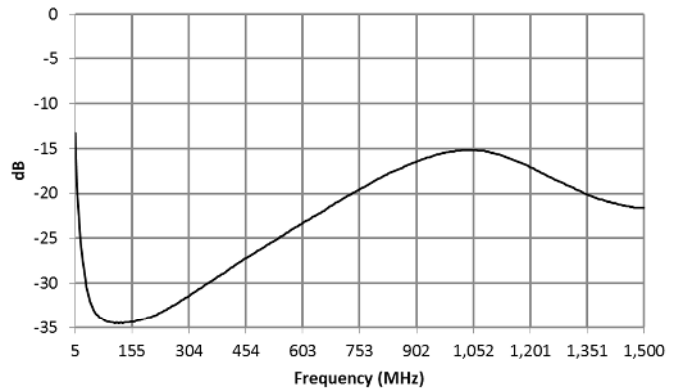
Main Line Loss (Pin1-6)



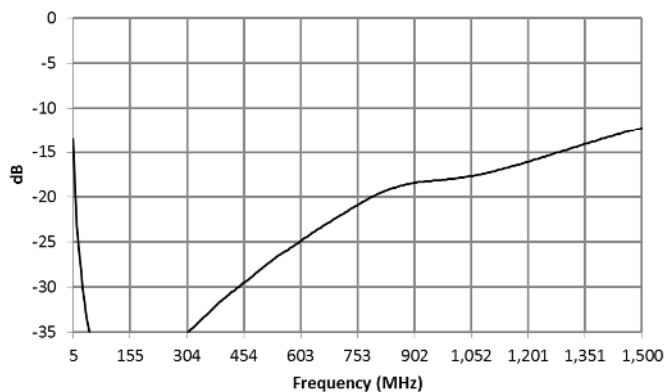
Return Loss: Input (Pin1)



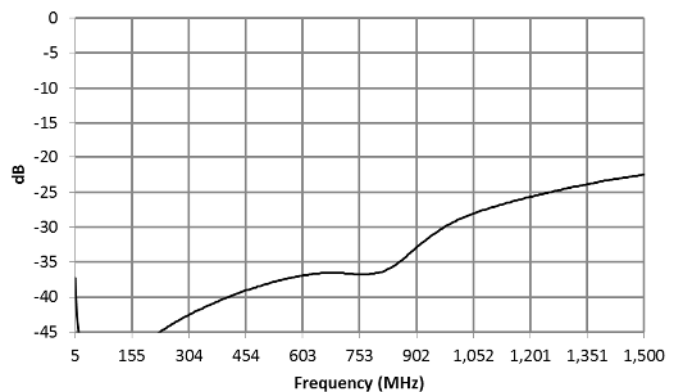
Return Loss: Output (Pin6)



Return Loss: Coupling (Pin3)

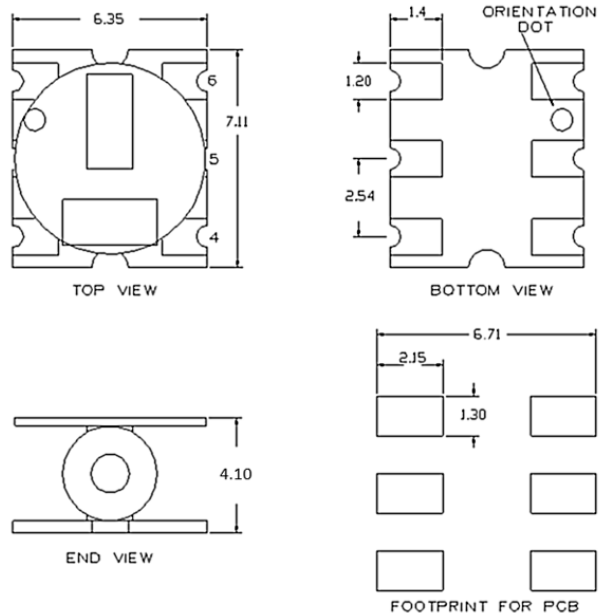


Isolation (Pin1-4)



6. Full temperature plots available on request.

Outline drawing^{7,8,9,10}

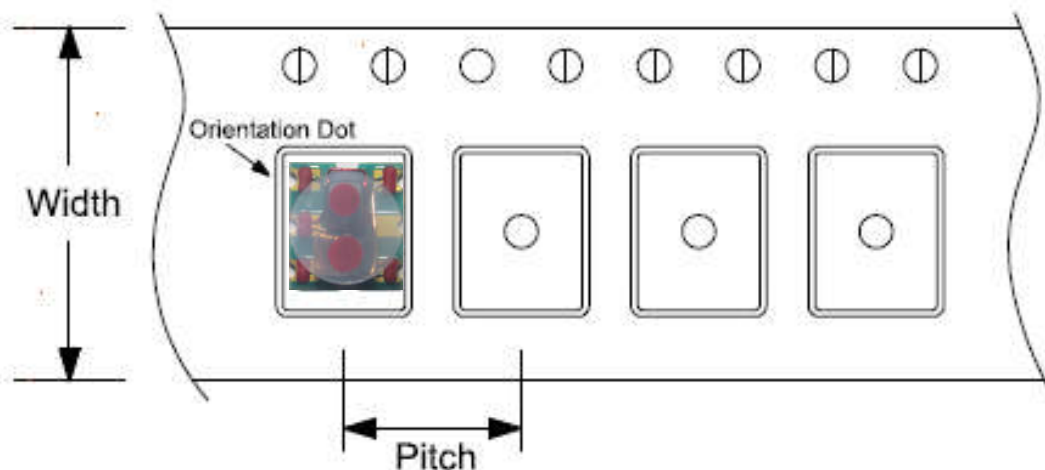


Tape & Reel Information

| Parameter | Units | Value |
|--|-------|-------|
| Qty per reel | - | 900 |
| Reel Size | mm | 330 |
| Tape Width | mm | 16.0 |
| Pitch | mm | 12.0 |
| Ao | mm | 6.65 |
| Bo | mm | 7.4 |
| Ko | mm | 4.4 |
| Orientation | - | F33 |
| Reference Application Note ANI-019 for orientation | | |

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

Carrier Tape Orientation



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