

Low Cost SMT 17 dB Bi-Directional Coupler 1700 – 2000 MHz

Rev. V3

Features

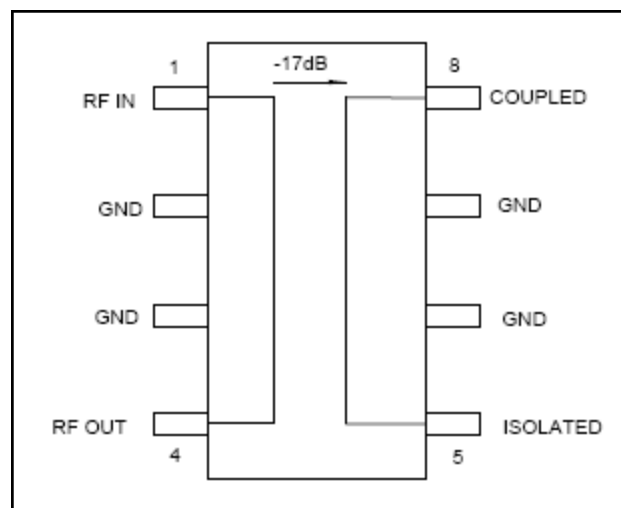
- Device is Bi-Directional
- Small Size and Low Profile
- Superior Repeatability
- Typical Insertion Loss 0.3 dB
- Typical Directivity 17 dB
- 2 Watt Power Handling
- SOIC-8 Package

Description

M/A-COM's CH20-0033-17G is an IC based monolithic bi-directional coupler in a low cost SOIC-8 plastic package. This 17 dB coupler is ideally suited for applications where power monitoring, small size, low insertion loss, superior repeatability, and low cost are required. Typical applications include personal communication systems and other communication applications where size and PCB real estate is a premium. Available in tape and reel.

The CH20-0033-17G is fabricated using a passive-integrated circuit process. The process features passivation for increased performance and reliability.

Functional Diagram¹



1. Pins 2, 3, 6 and 7 must be RF and DC grounded.

Ordering Information

Part Number	Package
CH20-0033-17G	Bulk Packaging
CH20-0033-17G-TR	1000 piece reel
CH20-0033-17GSAM	Sample Test Board

Note: Reference Application Note M513 for reel size information.

Pin Configuration

Pin No.	Function	Pin No.	Function
1	RF IN	5	ISOLATED
2	GND	6	GND
3	GND	7	GND
4	RF OUT	8	COUPLED

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Electrical Specifications: $T_A = 25^\circ\text{C}$, $Z_0 = 50\Omega$

Parameter	Units	Min	Typ	Max
Insertion Loss	dB	—	0.3	0.5
VSWR	—	—	1.3:1	1.7:1
Coupling	dB	—	17 $\pm$ 2	—
Coupling Flatness	dB	—	1.2	1.5
Directivity	dB	12	17	—

Absolute Maximum Ratings^{2,3}

Parameter	Absolute Maximum
Input Power	2W CW
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C

- Exceeding any one or combination of these limits may cause permanent damage to this device.
- M/A-COM does not recommend sustained operation near these survivability limits.

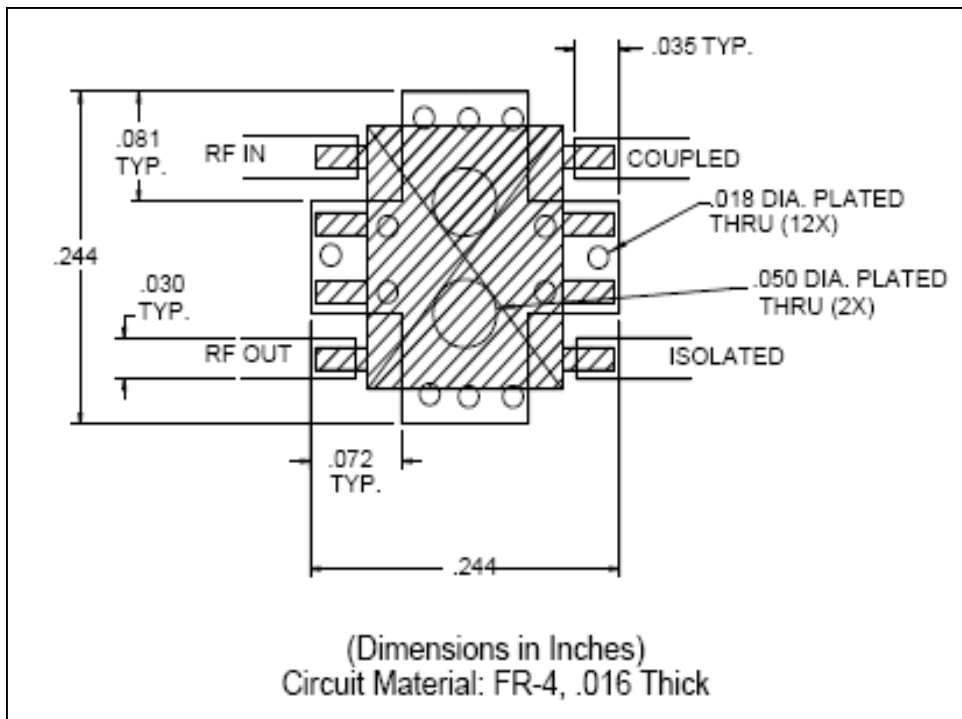
Handling Procedures

Please observe the following precautions to avoid damage:

Static Sensitivity

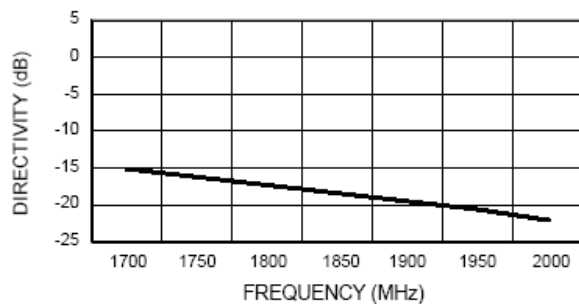
GMIC Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

Recommended PCB Configuration

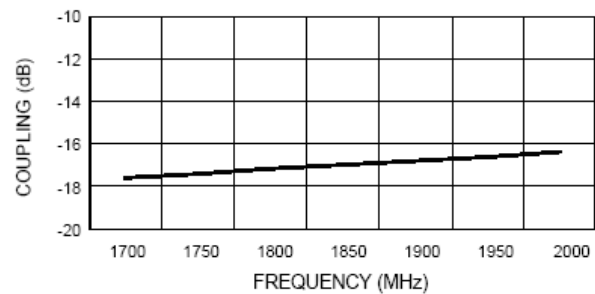


Typical Performance Curves

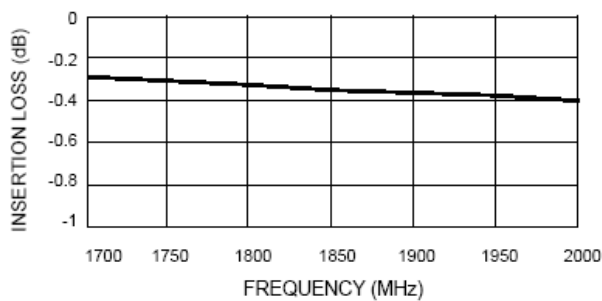
Directivity vs. Frequency



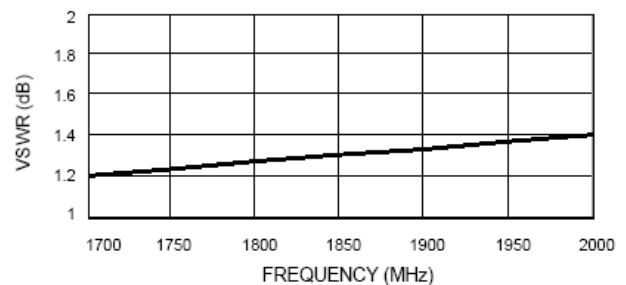
Coupling vs. Frequency



Insertion Loss vs. Frequency

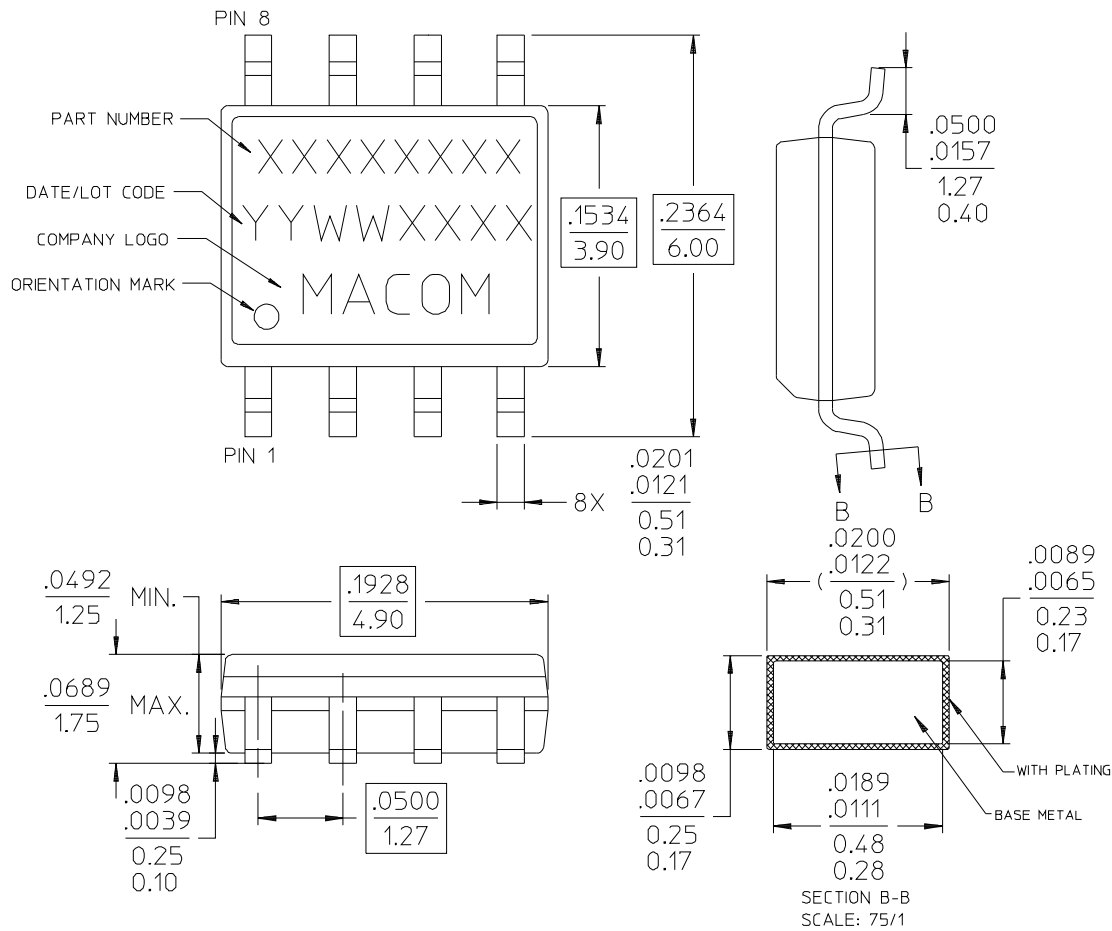


VSWR vs. Frequency



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SOIC-8[†]

NOTES:

1. REFERENCE JEDEC MS-012-AA, FOR ADDITIONAL DIMENSIONAL AND TOLERANCE INFORMATION.
2. REFERENCE M538 APPLICATION NOTE FOR FOOTPRINT INFORMATION.
3. ALL DIMENSIONS SHOWN AS INCHES/MM.

[†] Reference Application Note M538 for solder reflow recommendations.