

## Features

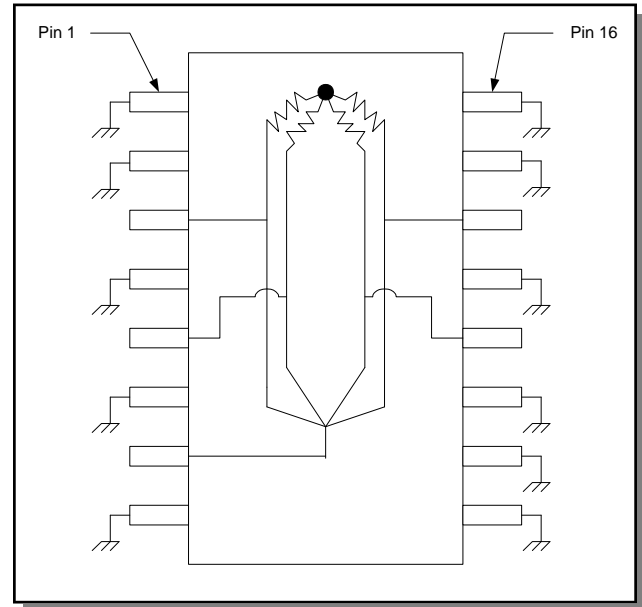
- Low Cost
- Small Size and Low Profile
- Industry Standard SOW-16 SMT Plastic Package
- Excellent Repeatability (Lot-to-Lot Variation)
- Typical Isolation: 23 dB
- Typical Amplitude Balance: 0.3 dB
- Typical Insertion Loss: 1.0 dB
- SOW-16 Package

## Description

M/A-COM's DS54-0001 is an IC-based monolithic power splitter/combiner in a low cost SOW-16 plastic package. This device is ideally suited for applications where PCB real estate is at a premium and standard packaging for automated assembly and low cost are critical. Typical applications include infrastructure, portables and peripheral devices (PCMCIA cards) for wireless standards such as GSM, AMPS, CDPD, RAM and ARDIS. Available in tape and reel.

The DS54-0001 is fabricated using a passive-integrated circuit process. The process features full-chip passivation for increased performance and reliability.

## Functional Diagram



## Ordering Information

| Part Number  | Package           |
|--------------|-------------------|
| DS54-0001    | Bulk Packaging    |
| DS54-0001-TR | 1000 piece reel   |
| DS54-0001SAM | Sample Test Board |

Note: Reference Application Note M513 for reel size information.

## Pin Configuration<sup>1</sup>

| Pin No. | Function  | Pin No. | Function  |
|---------|-----------|---------|-----------|
| 1       | GND       | 9       | GND       |
| 2       | GND       | 10      | GND       |
| 3       | RF2 (Out) | 11      | GND       |
| 4       | GND       | 12      | RF4 (Out) |
| 5       | RF1 (Out) | 13      | GND       |
| 6       | GND       | 14      | RF3 (Out) |
| 7       | RFIN      | 15      | GND       |
| 8       | GND       | 16      | GND       |

1. Pins 1,2,4,6,8,9,10,11,13,15 and 16 must be RF and DC grounded.

## Electrical Specifications: $T_A = 25^\circ\text{C}^2$

| Parameter                                      | Frequency     | Units | Min | Typ   | Max    |
|--|---------------|-------|-----|-------|--------|
| Insertion Loss "above 6.0 dB theoretical loss" | 824 - 960 MHz | dB    | —   | 1.0   | 1.2    |
| Isolation                                      | 824 - 960 MHz | dB    | 18  | 23    | —      |
| Input VSWR                                     | 824 - 960 MHz | Ratio | —   | 1.2:1 | 1.4:1  |
| Output VSWR                                    | 824 - 960 MHz | Ratio | —   | 1.4:1 | 1.75:1 |
| Amplitude Balance                              | 824 - 960 MHz | dB    | —   | 0.3   | 0.7    |
| Phase Balance                                  | 824 - 960 MHz | Deg   | —   | 2     | 4      |

2. All specifications apply with a 50-ohm source and load impedance.

## Absolute Maximum Ratings <sup>3,4</sup>

| Parameter                | Absolute Maximum |
|--------------------------|------------------|
| Input Power <sup>5</sup> | 1W 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.
- With internal load dissipation of 0.125W maximum.

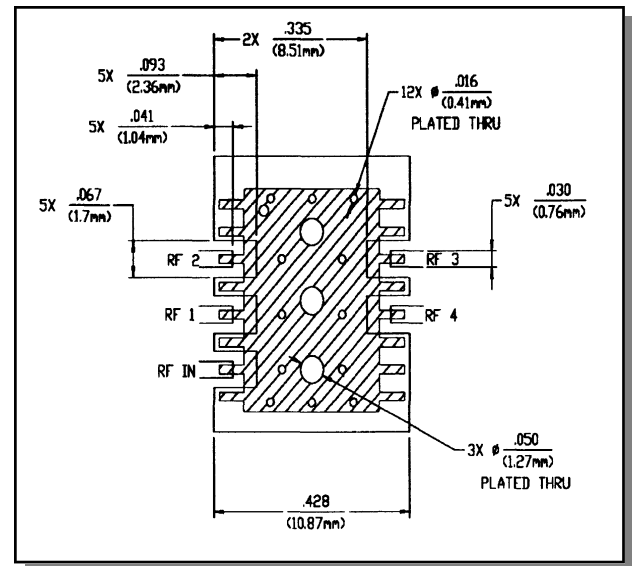
## Handling Procedures

Please observe the following precautions to avoid damage:

## Static Sensitivity

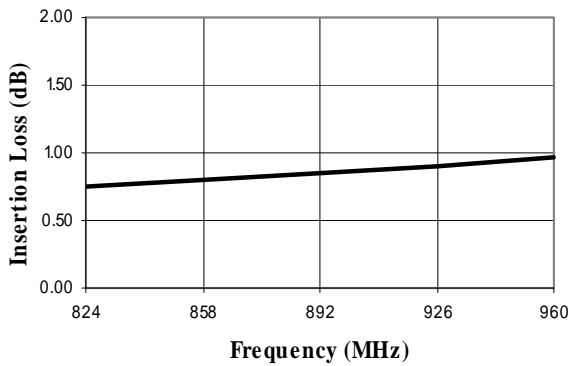
GMIC Circuits are sensitive to electrostatic discharge (ESD) and can be damaged by static electricity. Proper ESD control techniques should be used when handling these devices.

## Recommended PCB Configuration

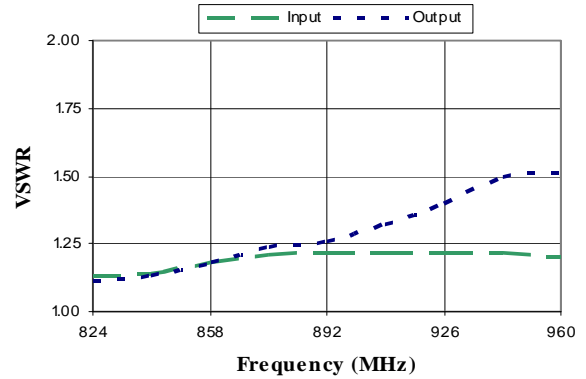


## Typical Performance Curves

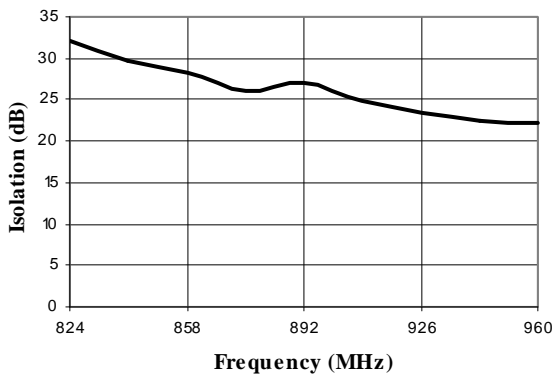
**Insertion Loss vs. Frequency**  
(above theoretical split loss)



**VSWR vs. Frequency**



**Isolation vs. Frequency**

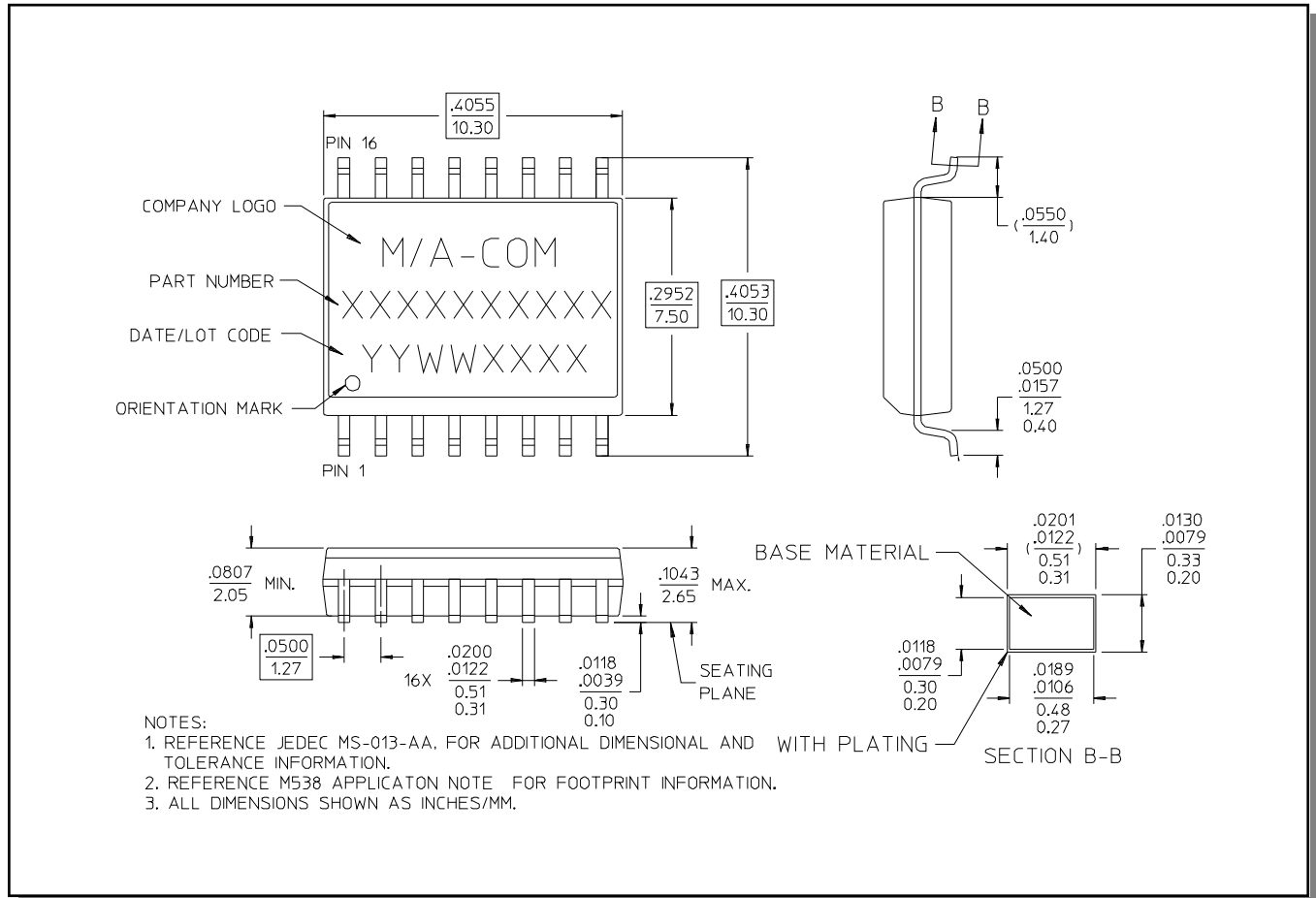


# DS54-0001

Low Cost Four-way SMT Power  
Splitter/Combiner, 824 - 960 MHz

Rev. V5

## SOW-16†



† Reference Application Note M538 for lead-free solder reflow recommendations.