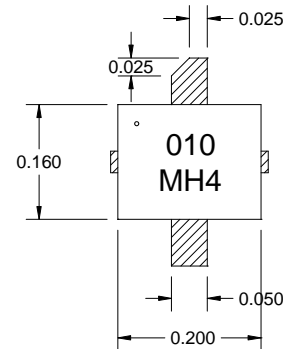


## DESCRIPTION

AMCOM's AM010MH4-BI-R is part of the BI series of GaAs HiFETs. The HiFET is a partially matched patented device configuration for high voltage, high power, high linearity, and broadband applications. This part has a total device periphery of 4mm. The AM010MH4-BI-R is designed for high power microwave applications, operating up to 3GHz. The BI series uses a specially designed ceramic package with bent or straight leads and flange in a drop-in mounting style. The flange at the bottom of the package serves simultaneously as DC ground, RF ground and thermal path. This HiFET is RoHS compliant.



## FEATURES

- 28V Drain Bias
- Broadband Partial Matching: DC – 2.4GHz
- High Frequency Operation up to 3 GHz
- High Gain:  $G = 19\text{dB}$  @ 2.0GHz
- High Power:  $P_{1\text{dB}} = 31\text{dBm}$  @ 2.0GHz
- High Linearity:  $IP3 = 46\text{dBm}$  @ 2.0GHz
- Ceramic Package for Effective Heat Removal

## APPLICATIONS

- Broadband Applications
- High Voltage 20 to 28V
- Wireless Local Loop Network
- PCS Base Stations
- WLAN, Repeaters & HYPERLAN
- C-Band VSAT
- Avionics Communications

## RF PERFORMANCE @ 2.0GHz, ( $V_{\text{dd}} = 28\text{V}$ , $V_{\text{gs}} = -0.95\text{V}$ )

| Parameters               | MIN | TYP |
|--------------------------|-----|-----|
| $P_{1\text{dB}}$ * (dBm) | 30  | 31  |
| Eff @ $P_{1\text{dB}}$   | 25% | 30% |
| Small Signal Gain (dB)   | 16  | 19  |
| IP3 (dBm)                | 43  | 46  |

\* Power typically remains the same as frequency changes.

## ABSOLUTE MAXIMUM RATING

| Parameters                                | Sym             | Rating    |
|---|-----------------|-----------|
| Drain-Source Voltage (V)                  | $V_{\text{dd}}$ | 36        |
| Gate-Source Voltage (V)                   | $V_{\text{gs}}$ | -5        |
| Drain Current (mA)                        | $I_{\text{dd}}$ | 320       |
| Continuous Dissipation At Room Temp. (W)  | $P_{\text{t}}$  | 6.3       |
| Operating Temp. ( $^{\circ}\text{C}$ )    | $T_{\text{A}}$  | -55 – +85 |
| Max. Channel Temp. ( $^{\circ}\text{C}$ ) | $T_{\text{ch}}$ | +175      |

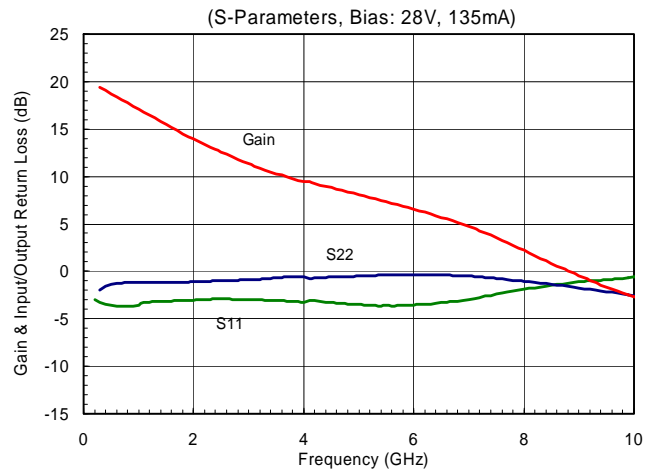
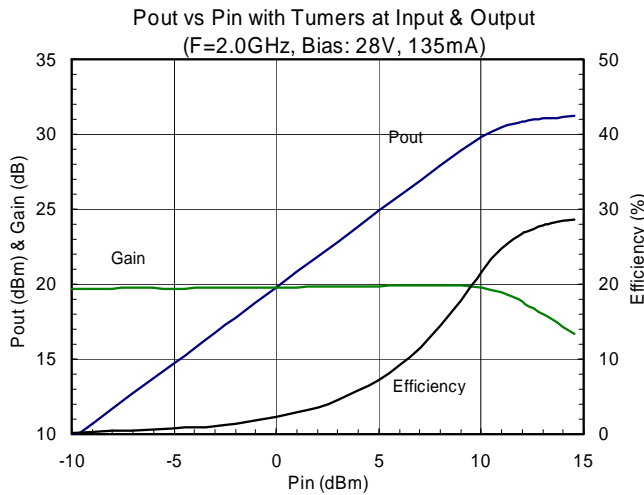
## DC PARAMETERS

| Parameters   | Conditions  | MIN  | TYP | MAX  |
|--|---|------|-----|------|
| Saturation Current $I_{\text{dss}}$ (mA)             | $V_{\text{dd}} = 28\text{V}$<br>$V_{\text{gs}} = 0\text{V}$ | 180  | 250 | 320  |
| Pinch-off Voltage $V_{\text{p}}$ (V)                 | $V_{\text{ds}} = 3\text{V}$<br>$I_{\text{dd}} = 6\text{mA}$ | -2.6 | -2  | -1.2 |
| Negative voltage current (mA)                        |   | 10   | 14  | 18   |
| Drain to Gate Breakdown Voltage $BV_{\text{gd}}$ (V) |   | 44   | 60  |      |
| Drain Voltage $V_{\text{dd}}$ (V)                    | Mounted on Heat Sink  |      | 28  | 32   |
| Thermal Resistance ( $^{\circ}\text{C}/\text{W}$ )   |   | 20   |     |      |

**SMALL SIGNAL MEASUREMENTS**

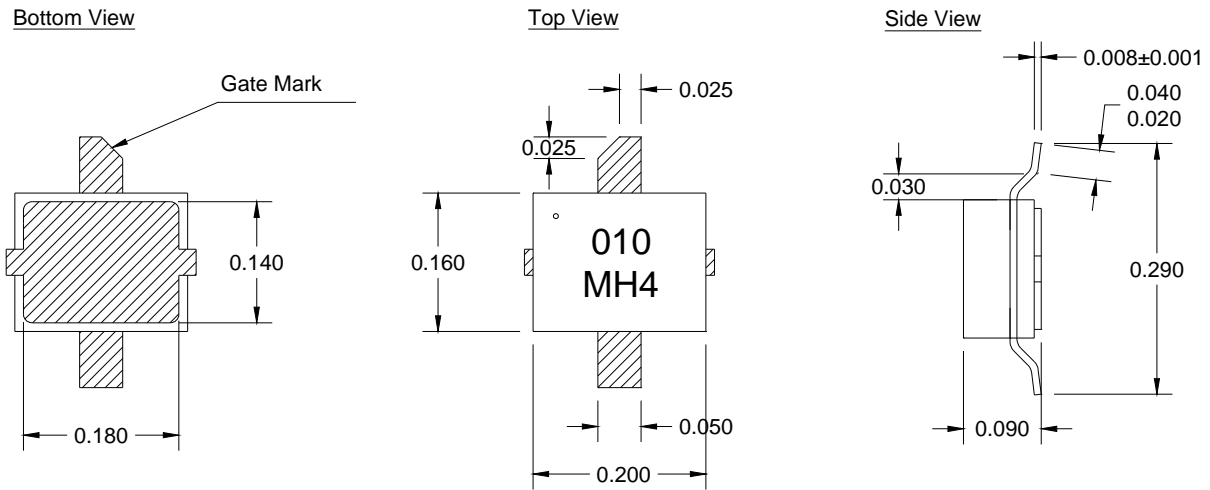
S-Parameters for AM010MH4-BI-R @ 28V / 135mA \*Download S2P file from website: <http://www.amcomusa.com>

| Freq (MHz) | MAG (S11) | ANG (S11) | MAG (S21) | ANG (S21) | MAG (S12) | ANG (S12) | MAG (S22) | ANG (S22) |
|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 200        | 0.714     | -25.643   | 9.898     | 160.93    | 0.023     | -34.352   | 0.745     | 2.313     |
| 300        | 0.688     | -34.611   | 9.367     | 152.953   | 0.019     | -44.947   | 0.801     | -1.826    |
| 400        | 0.671     | -43.137   | 8.956     | 146.063   | 0.015     | -49.455   | 0.833     | -6.917    |
| 500        | 0.662     | -50.822   | 8.62      | 139.43    | 0.012     | -51.531   | 0.853     | -11.66    |
| 1000       | 0.66      | -85.211   | 7.167     | 109.211   | 0.006     | -34.432   | 0.871     | -31.667   |
| 1500       | 0.697     | -108.762  | 5.945     | 84.012    | 0.006     | -27.938   | 0.873     | -46.4     |
| 2000       | 0.705     | -129.016  | 4.969     | 60.756    | 0.003     | -37.758   | 0.88      | -58.943   |
| 3000       | 0.709     | -162.531  | 3.688     | 18.992    | 0.004     | 134.758   | 0.904     | -80.875   |
| 4000       | 0.69      | 166.586   | 2.962     | -19.765   | 0.015     | 101.41    | 0.939     | -101.109  |
| 5000       | 0.667     | 128.344   | 2.538     | -59.475   | 0.027     | 84.762    | 0.945     | -119.113  |
| 6000       | 0.664     | 75.891    | 2.126     | -101.207  | 0.04      | 56.555    | 0.959     | -133.039  |
| 7000       | 0.713     | 20.563    | 1.721     | -144.688  | 0.048     | 26.887    | 0.946     | -147.977  |
| 8000       | 0.804     | -25.477   | 1.29      | 172.148   | 0.049     | -0.17     | 0.888     | -167.023  |
| 10000      | 0.933     | -77.676   | 0.738     | 95.055    | 0.058     | -50.771   | 0.744     | 137.148   |



Specifications subject to change without notice

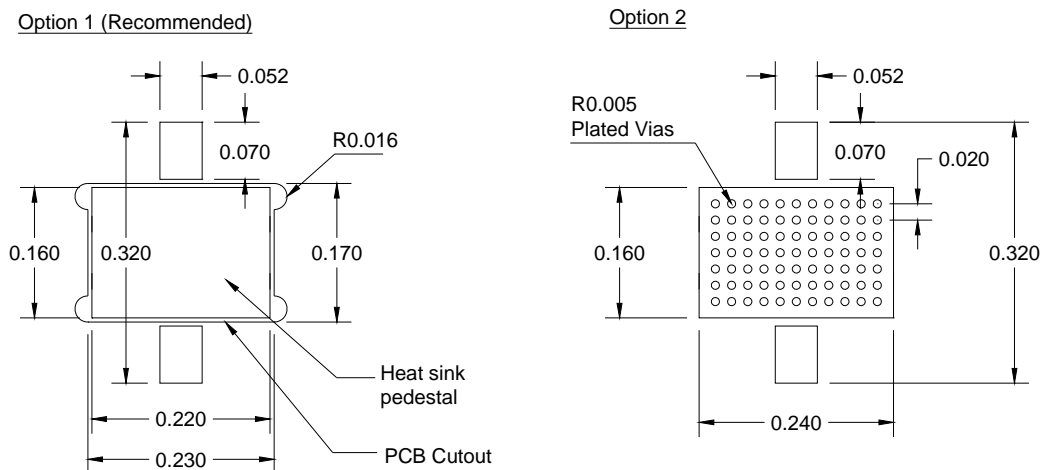
**PACKAGE OUTLINE**



\* All Dimensions are in inches

**MOUNTING INSTRUCTIONS**

The device may dissipate several watts of power. It is important to provide a good heat sink to dissipate the heat. There are two options of mounting the device, as shown below. The most effective way is to mount the device to a heat sink pedestal (Option 1). We strongly recommend this way for high power device. The other option, which is mounted directly on PCB, is to add sufficient number of plated through via holes to the PCB. The base of the device is soldered to the PCB (Option 2). The via hole wall should be plated by at least 1 oz thick (1.5 mil) of high thermal conductivity copper to conduct the heat from the top of PCB to the bottom of PCB. Also fill the via holes with solder to help conducting the heat.



\* All Dimensions are in inch