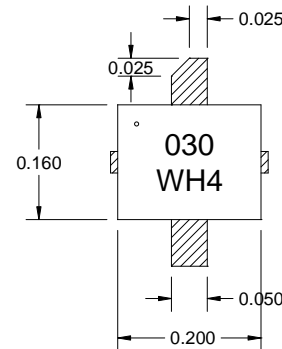


DESCRIPTION

AMCOM's AM030WH4-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 12mm. The AM030WH4-BI-R is designed for high power microwave applications, operating up to 6GHz. The BI series uses a specially designed ceramic package with straight or bent 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

- 20 to 32 Volt Drain Bias
- High Frequency Operation up to 6GHz
- High Gain: $G = 19\text{dB}$ @ 2GHz
- High Power: $P_{1\text{dB}} = 37\text{dBm}$ @ 2.4GHz
- High Linearity: $\text{IP3} = 50\text{dBm}$ @ 2.4GHz
- Ceramic Package for Effective Heat Removal

APPLICATIONS

- Broadband Applications
- High Voltage 20 to 32V
- Wireless Local Loop Network
- PCS Base Stations
- WLAN, Repeaters & HYPERLAN
- C-Band VSAT
- Avionics Communications

RF PERFORMANCE @ 2.4GHz, ($V_{\text{dd}} = 28\text{V}$, $V_{\text{gs}} = -0.95\text{V}$)

| Parameters | MIN | TYP |
|--------------------------|-----|-----|
| $P_{1\text{dB}}$ * (dBm) | 36 | 37 |
| Eff @ $P_{1\text{dB}}$ | 30% | 40% |
| Small Signal Gain (dB) | 16 | 21 |
| IP3 (dBm) | 46 | 49 |

* Specifications subject to change without notice

ABSOLUTE MAXIMUM RATING

| Parameters | Sym | Rating |
|---|-----------------|------------|
| Drain-Source Voltage (V) | V_{ds} | 40 |
| Gate-Source Voltage (V) | V_{gs} | -5 |
| Drain Current (mA) | I_{ds} | 960 |
| Continuous Dissipation At Room Temp. (W) | P_{t} | 15 |
| Operating Temp. ($^{\circ}\text{C}$) | T_{A} | -55 to +85 |
| Max. Channel Temp. ($^{\circ}\text{C}$) | T_{ch} | +175 |

DC PARAMETERS

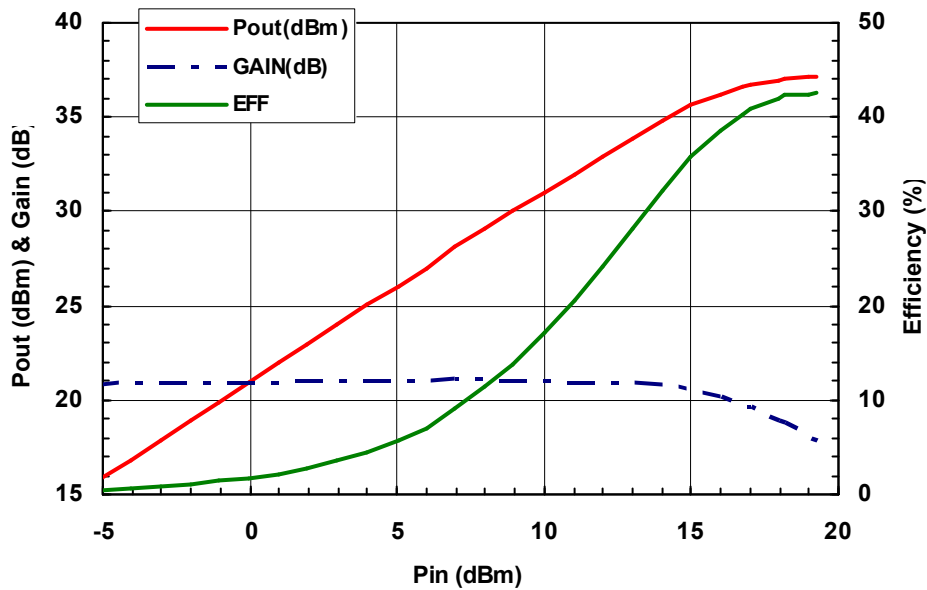
| Parameters | Conditions | MIN | TYP | MAX |
|--|--|------|-----|------|
| Saturation Current I_{dss} (mA) | $V_{\text{dd}} = 28\text{V}$ $V_{\text{gs}} = 0\text{V}$ | 540 | 750 | 960 |
| Pinch-off Voltage V_{p} (V) | $V_{\text{dd}} = 3\text{V}$ $I_{\text{dd}} = 18\text{mA}$ | -2.6 | -2 | -1.2 |
| Negative Voltage Current (mA) | | 0.0 | 3 | 10 |
| Drain Breakdown Voltage BV_{gd} (V) | | 50 | 60 | |
| Drain Voltage V_{dd} (V) | Mounted on Heat Sink | | 28 | 32 |
| Thermal Resistance ($^{\circ}\text{C}/\text{W}$) | | 6.7 | | |

S- Parameters for AM030WH4-BI-R @ 28V / 300mA (S2P file downloadable from the Web)

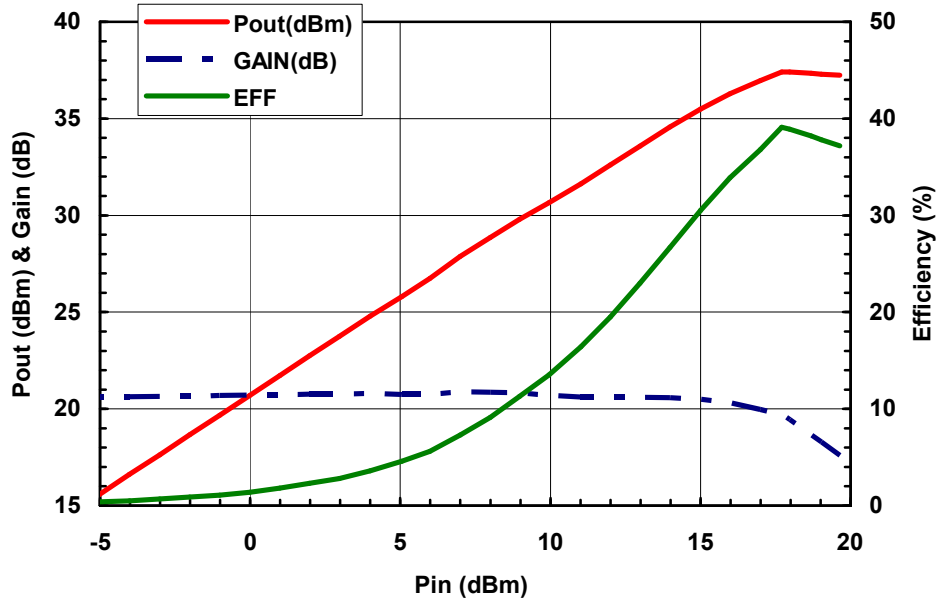
| Freq(GHz) | MAG(S11) | ANG(S11) | MAG(S21) | ANG(S21) | MAG(S12) | ANG(S12) | MAG(S22) | ANG(S22) |
|-----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 200 | 0.962 | -54.9 | 47.688 | 144.8 | 0.004 | 41.0 | 0.59 | -14.5 |
| 500 | 0.900 | -103.7 | 32.188 | 109.8 | 0.005 | -1.3 | 0.591 | -23.0 |
| 1000 | 0.891 | -138.7 | 18.549 | 75.6 | 0.003 | -14.5 | 0.674 | -46.3 |
| 1500 | 0.890 | -155.2 | 12.269 | 52.5 | 0.001 | 16.4 | 0.731 | -66.0 |
| 2000 | 0.893 | -165.3 | 8.900 | 33.3 | 0.002 | 96.2 | 0.776 | -82.4 |
| 3000 | 0.897 | -179.3 | 5.505 | 0.8 | 0.006 | 118.8 | 0.845 | -108.3 |
| 4000 | 0.886 | 169.5 | 3.918 | -28.3 | 0.011 | 128.6 | 0.892 | -129.6 |
| 5000 | 0.915 | 152.1 | 3.185 | -56.8 | 0.031 | 112.7 | 0.962 | -142.3 |
| 6000 | 0.949 | 129.8 | 2.820 | -88.9 | 0.062 | 83.3 | 1.054 | -159.9 |
| 7000 | 0.943 | 103.2 | 2.454 | -123.3 | 0.074 | 52.8 | 1.061 | 178.7 |
| 8000 | 0.937 | 74.5 | 2.076 | -161.1 | 0.085 | 24.3 | 1.05 | 152.6 |
| 9000 | 0.921 | 45.2 | 1.706 | 159.7 | 0.093 | -4.6 | 1.027 | 123.8 |
| 10000 | 0.906 | 16.1 | 1.362 | 119.6 | 0.096 | -33.3 | 0.993 | 92.9 |

POWER DATA

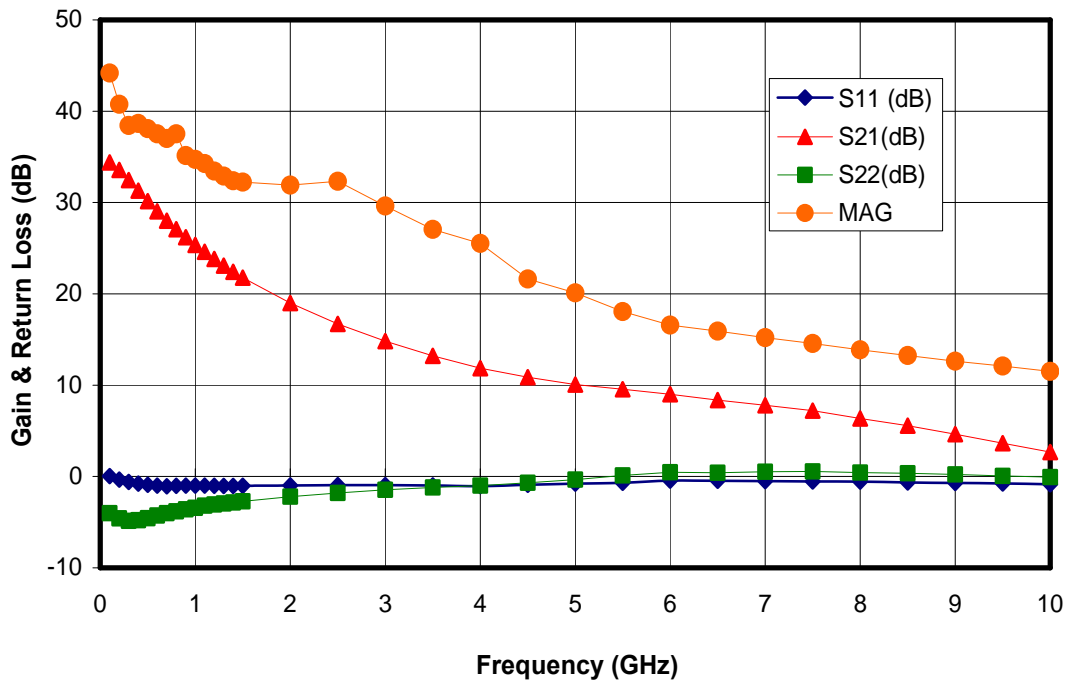
Test Circuit at 2.4GHz (Bias: 24V, 300mA)



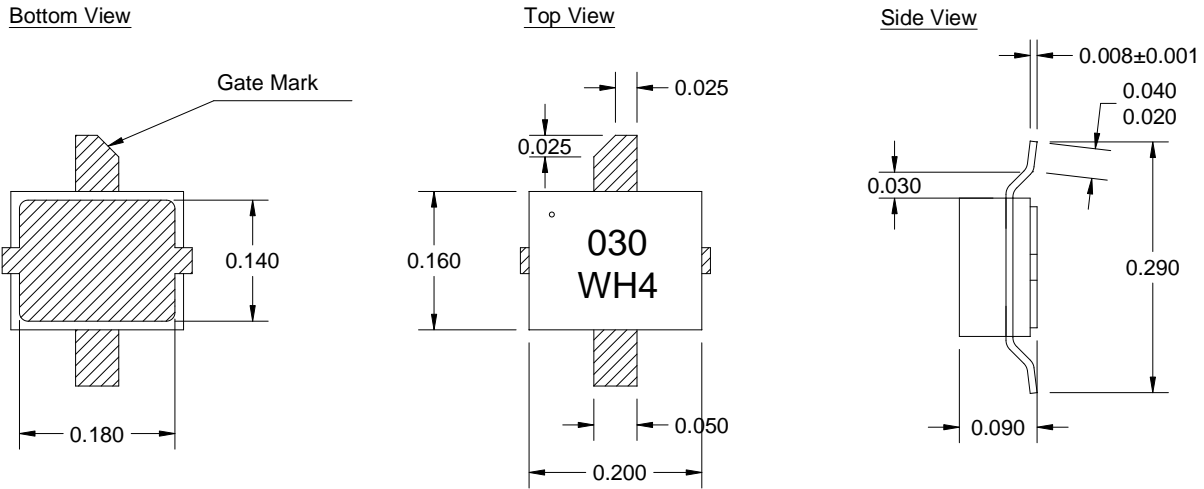
Test Circuit at 2.4GHz (Bias: 28V, 300mA)



S-Parameters



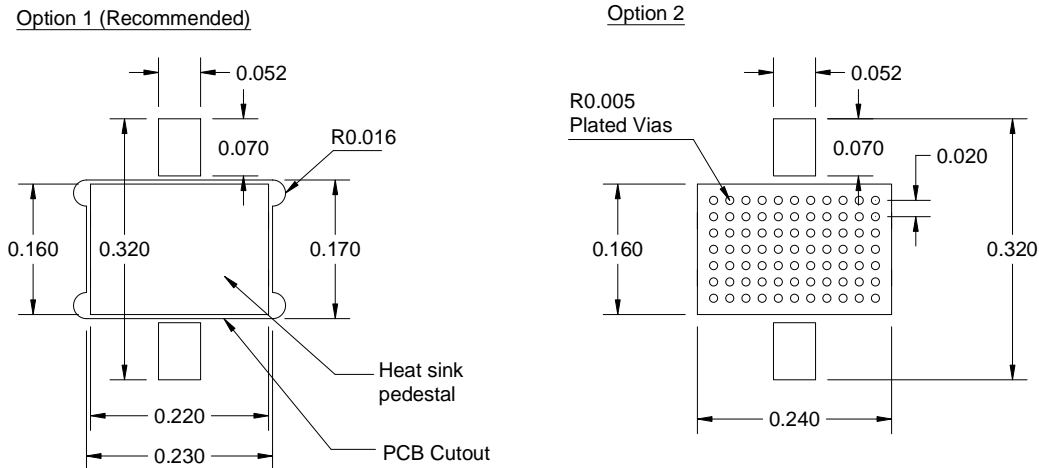
PACKAGE OUTLINE



* 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