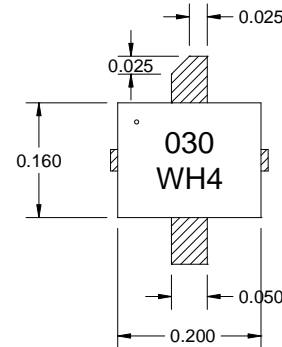


## DESCRIPTION

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

## DC PARAMETERS

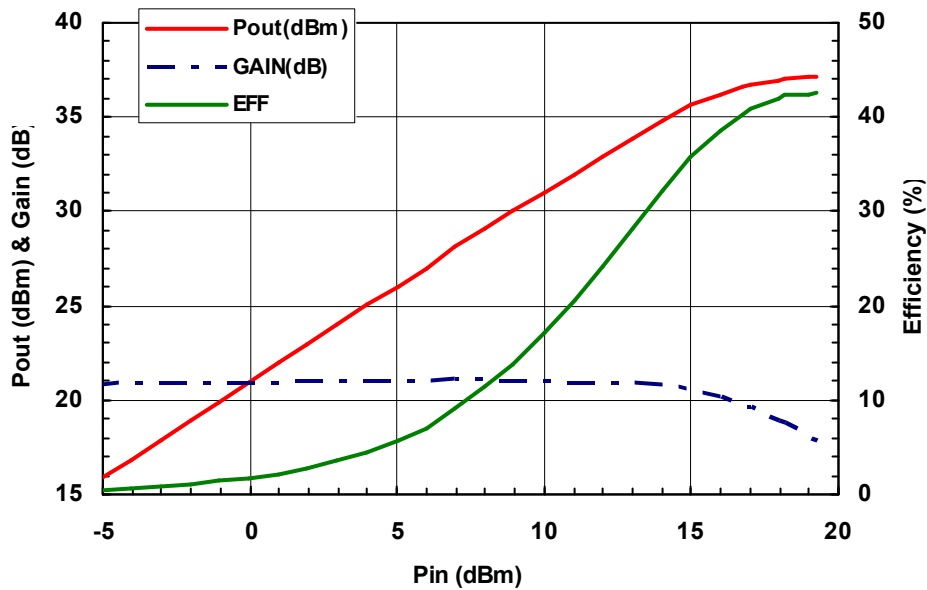
Parameters	Conditions	MIN	TYP	MAX
Saturation Current $I_{\text{dss}}$ (mA)	$V_{\text{dd}} = 28\text{V}$ $V_{\text{gs}} = 0\text{V}$	540	750	960
Pinch-off Voltage $V_{\text{p}}$ (V)	$V_{\text{dd}} = 3\text{V}$ $I_{\text{dd}} = 18\text{mA}$	-2.6	-2	-1.2
Negative Voltage Current (mA)		0.0	3	10
Drain Breakdown Voltage $BV_{\text{gd}}$ (V)		50	60	
Drain Voltage $V_{\text{dd}}$ (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)**

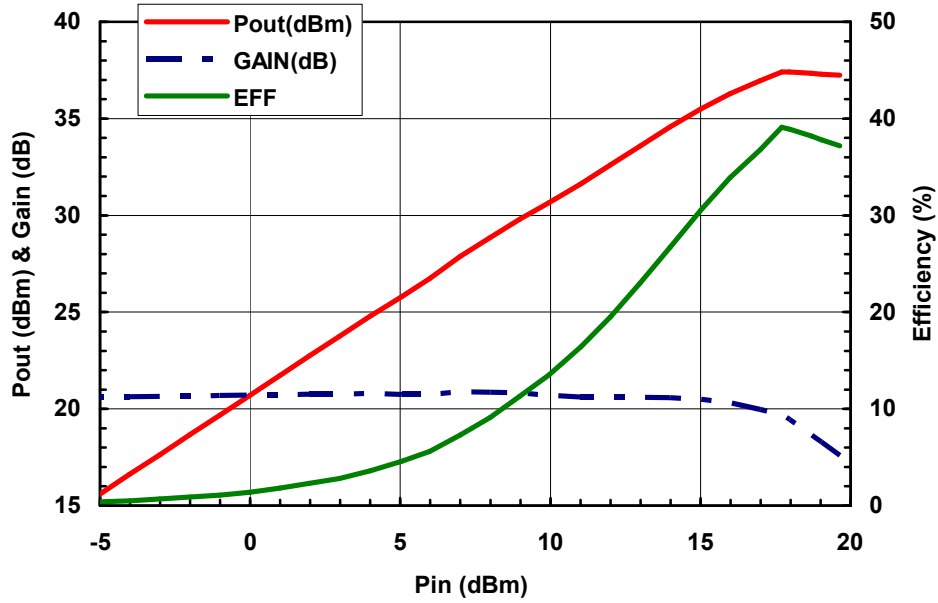
Freq(GHz)	MAG(S11)	ANG(S11)	MAG(S21)	ANG(S21)	MAG(S12)	ANG(S12)	MAG(S22)	ANG(S22)
200	0.962	-54.9	47.688	144.8	0.004	41.0	0.59	-14.5
500	0.900	-103.7	32.188	109.8	0.005	-1.3	0.591	-23.0
1000	0.891	-138.7	18.549	75.6	0.003	-14.5	0.674	-46.3
1500	0.890	-155.2	12.269	52.5	0.001	16.4	0.731	-66.0
2000	0.893	-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**

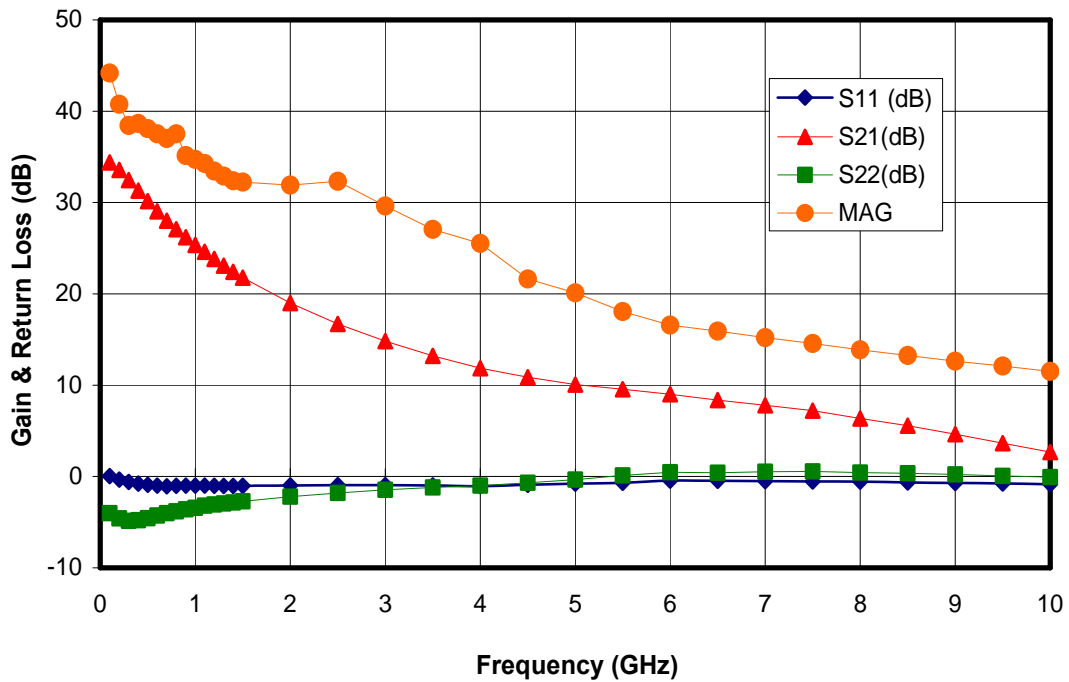
Test Circuit at 2.4GHz (Bias: 24V, 300mA)



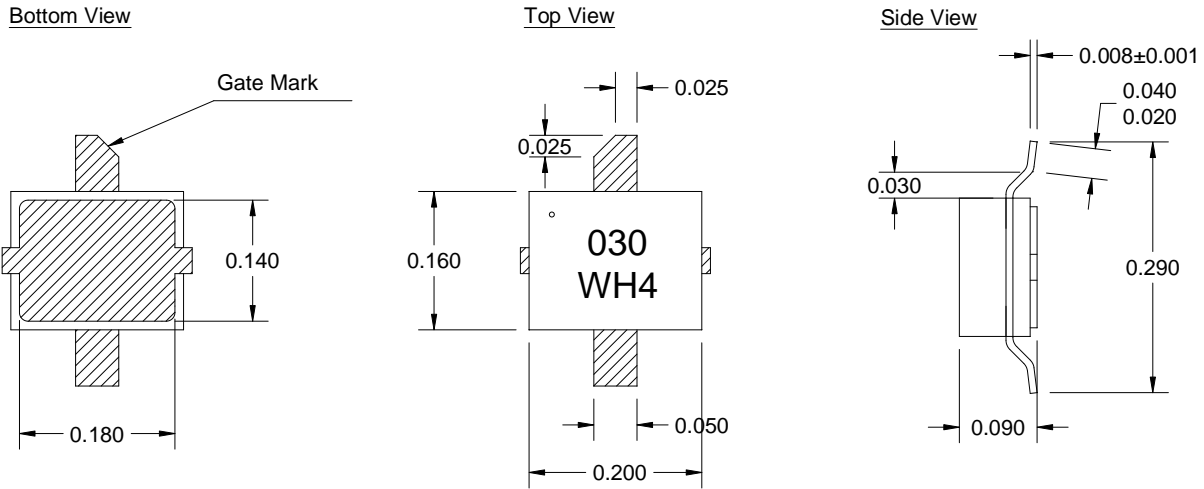
Test Circuit at 2.4GHz (Bias: 28V, 300mA)



S-Parameters



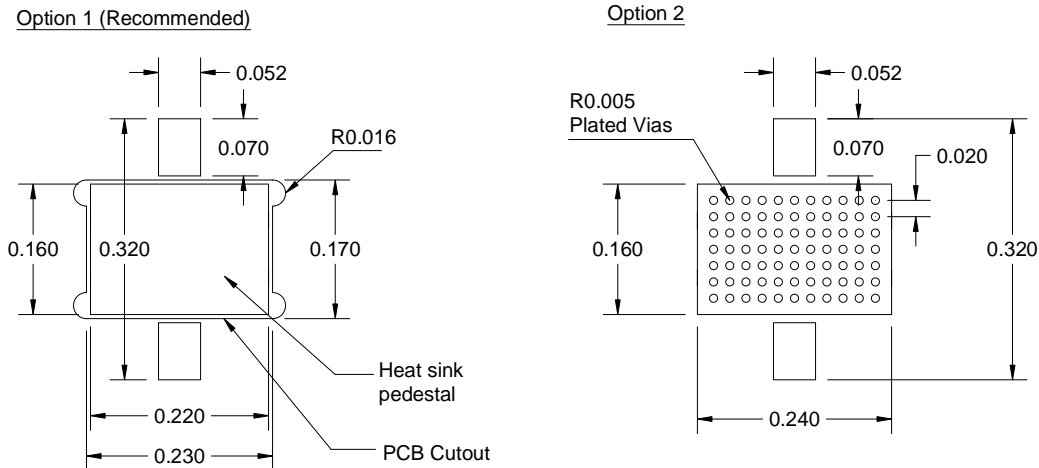
**PACKAGE OUTLINE**



\* 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