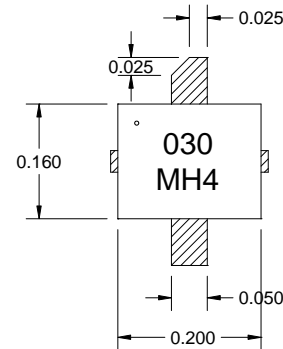


## DESCRIPTION

AMCOM's AM030MH4-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 AM030MH4-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

- 28 Volt Drain Bias
- Broadband Partial Matching: DC – 2.4GHz
- High Frequency Operation up to 3 GHz
- High Gain:  $G = 19\text{dB}$  @ 2GHz
- High Power:  $P_{1\text{dB}} = 35\text{dBm}$  @ 2.0GHz
- High Linearity:  $IP3 = 50\text{dBm}$  @ 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)	34	36
Eff @ $P_{1\text{dB}}$	30%	35%
Small Signal Gain (dB)	16	19
$IP3$ (dBm)	46	49

\* Power typically remains the same as frequency changes.

## ABSOLUTE MAXIMUM RATING

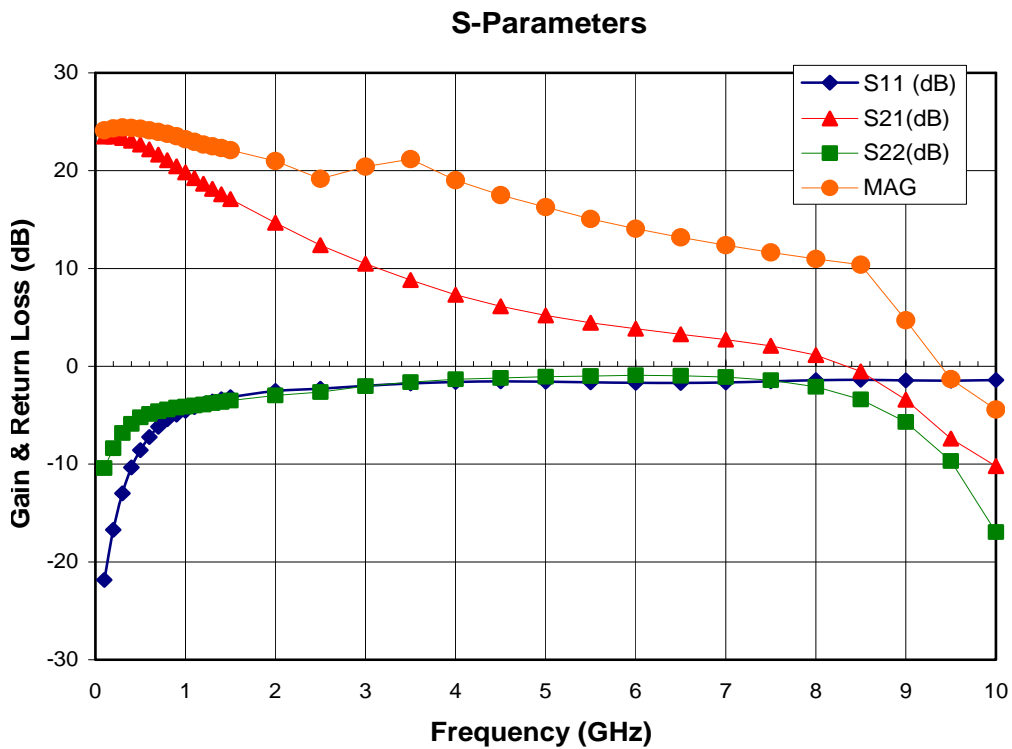
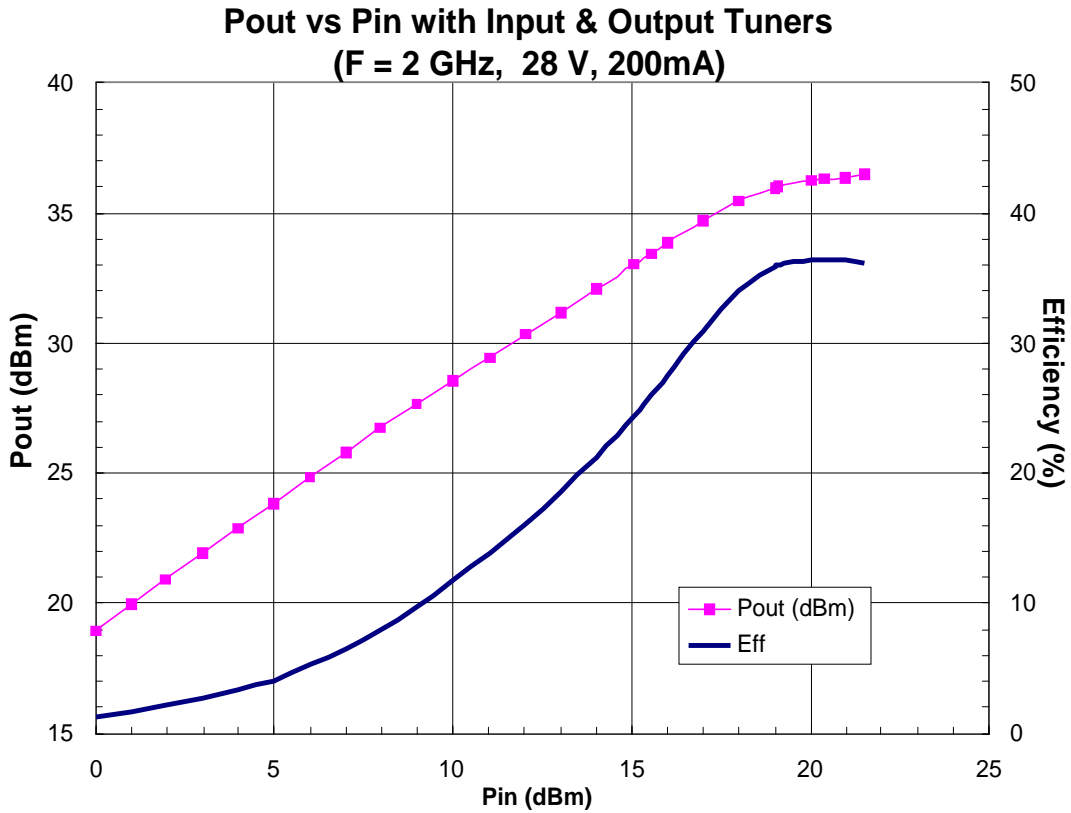
Parameters	Sym	Rating
Drain-Source Voltage (V)	$V_{\text{ds}}$	36
Gate-Source Voltage (V)	$V_{\text{gs}}$	-5
Drain Current (mA)	$I_{\text{ds}}$	960
Continuous Dissipation At Room Temp. (W)	$P_{\text{t}}$	16
Operating Temp. ( $^{\circ}\text{C}$ )	$T_{\text{A}}$	-55 to +85
Max. Channel Temp. ( $^{\circ}\text{C}$ )	$T_{\text{ch}}$	+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)		30	42	54
Drain Breakdown Voltage $BV_{\text{gd}}$ (V)		44	60	
Drain Voltage $V_{\text{dd}}$ (V)	Mounted on Heat Sink		28	32
Thermal Resistance ( $^{\circ}\text{C}/\text{W}$ )		6.7		

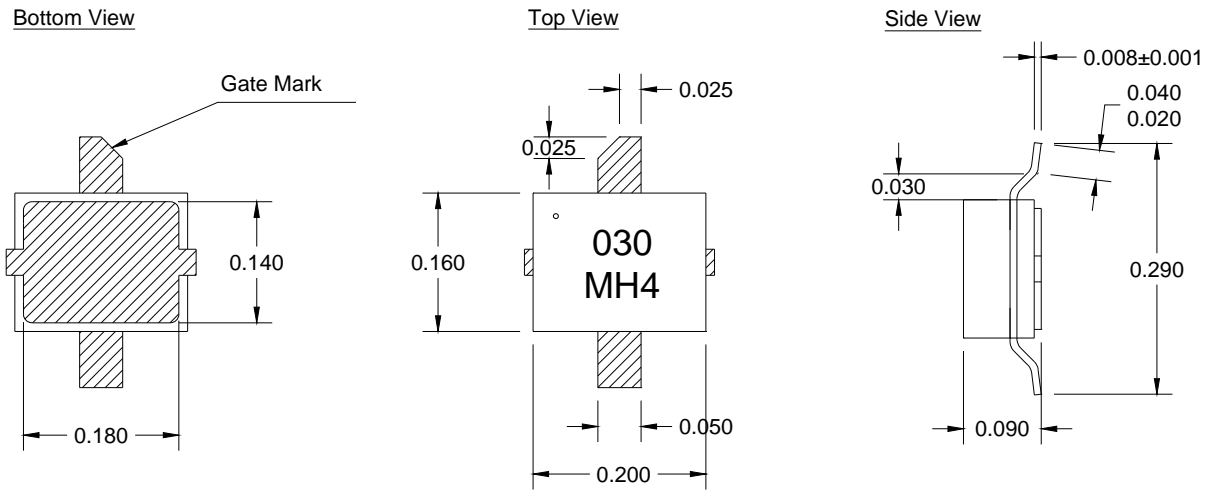
**S- Parameters for AM030MH4-BI-R @ 28V / 405mA (S2P file downloadable from the Web)**

Freq (GHz)	MAG (S11)	ANG (S11)	MAG (S21)	ANG (S21)	MAG (S12)	ANG (S12)	MAG (S22)	ANG (S22)
200	0.207	-67.4	14.334	161.6	0.040	-31.4	0.341	59.4
300	0.279	-80.5	14.135	151.5	0.034	-43.2	0.450	35.8
400	0.352	-92.3	13.690	141.5	0.028	-51.1	0.515	17.5
500	0.417	-102.1	13.096	132.0	0.024	-56.7	0.557	3.2
600	0.475	-110.7	12.396	123.2	0.020	-60.2	0.583	-8.9
700	0.521	-117.9	11.639	114.8	0.017	-63.1	0.600	-19.0
800	0.559	-124.0	10.877	107.1	0.015	-64.4	0.615	-28.0
900	0.594	-129.0	10.148	99.8	0.013	-65.4	0.625	-36.1
1000	0.625	-134.1	9.497	93.0	0.012	-67.3	0.637	-43.2
1100	0.669	-135.9	8.959	87.5	0.011	-69.5	0.648	-49.1
1200	0.689	-139.9	8.363	81.4	0.009	-72.0	0.657	-55.0
1300	0.708	-143.3	7.835	75.7	0.008	-76.2	0.665	-60.4
1400	0.722	-146.5	7.338	70.3	0.007	-80.7	0.674	-65.5
1500	0.738	-149.5	6.894	65.1	0.007	-88.9	0.685	-70.1
2000	0.793	-162.2	5.126	41.9	0.004	-165.9	0.738	-90.5
2500	0.838	-173.6	3.949	21.4	0.008	139.3	0.791	-107.1
3000	0.856	176.5	3.065	2.9	0.014	118.7	0.825	-120.6
3500	0.868	168.0	2.440	-13.6	0.020	106.0	0.862	-132.0
4000	0.878	160.8	1.983	-28.5	0.025	95.7	0.888	-142.0
4500	0.909	156.4	1.669	-42.4	0.031	87.3	0.877	-153.0
5000	0.910	148.2	1.423	-55.4	0.037	80.7	0.890	-159.4
5500	0.910	140.4	1.241	-68.0	0.042	74.0	0.898	-165.3
6000	0.906	133.0	1.101	-80.5	0.049	67.2	0.908	-171.2
6500	0.899	125.2	0.997	-93.0	0.055	60.4	0.912	-177.0
7000	0.886	116.5	0.911	-106.6	0.061	52.3	0.913	175.8
7500	0.873	106.2	0.839	-120.9	0.068	43.4	0.910	168.2
8000	0.857	93.6	0.767	-136.4	0.072	33.3	0.898	160.1
8500	0.833	79.7	0.687	-152.6	0.075	22.9	0.883	151.9
9000	0.813	65.8	0.607	-168.2	0.075	12.6	0.862	144.1
9500	0.792	52.7	0.538	177.0	0.075	2.70	0.845	135.9
10000	0.771	40.0	0.481	163.0	0.073	-7.90	0.826	127.4



Specifications subject to change without notice

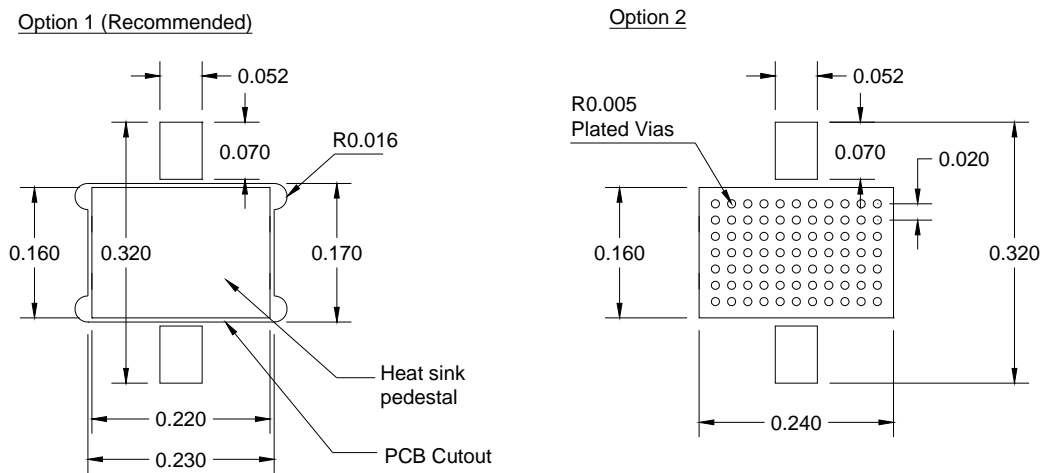
**PACKAGE OUTLINE**



\* 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