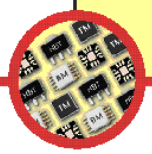
AMCOM COMMUNICATIONS
The RF Power House

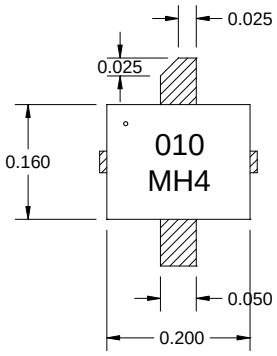
HiFET
High Voltage GaAs FET

AM010MH4-BI-R
Aug 2010
Rev 2



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 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 = 19dB @ 2.0GHz
- High Power: P_{1dB}=31dBm @ 2.0GHz
- High Linearity: IP3=46dBm @ 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_{dd} = 28V, V_{gs}=-0.95V)

Parameters	MIN	TYP
P_{1dB}* (dBm)	30	31
Eff @ P_{1dB}	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_{dd}	36
Gate-Source Voltage (V)	V_{gs}	-5
Drain Current (mA)	I_{dd}	320
Continuous Dissipation At Room Temp. (W)	P_t	6.3
Operating Temp. (^oC)	T_A	-55 – +85
Max. Channel Temp. (^oC)	T_{ch}	+175

DC PARAMETERS

Parameters	Conditions	MIN	TYP	MAX
Saturation Current I_{dss} (mA)	Vdd = 28V Vgs = 0V	180	250	320
Pinch-off Voltage V_p (V)	Vds = 3V Idd= 6mA	-2.6	-2	-1.2
Negative voltage current (mA)		10	14	18
Drain to Gate Breakdown Voltage BV_{gd} (V)		44	60	
Drain Voltage V_{dd} (V)	Mounted on Heat Sink		28	32
Thermal Resistance ($^oC/W$)	20			

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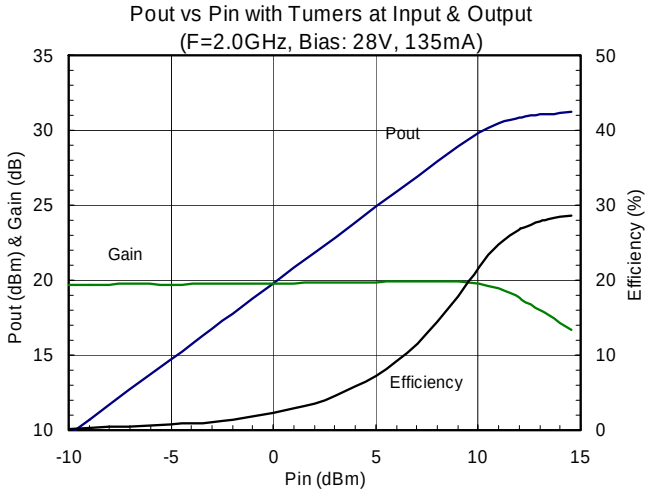
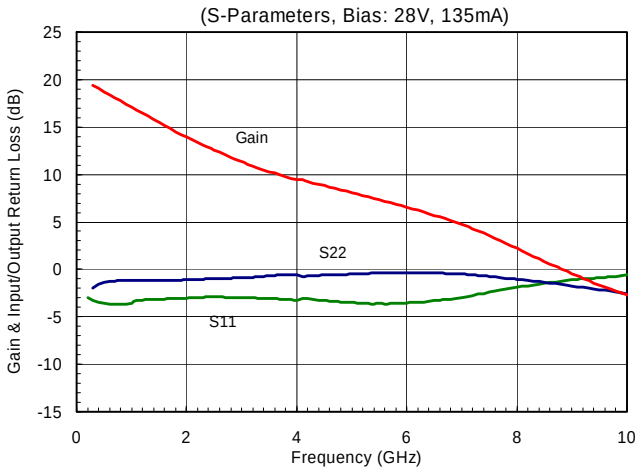
SMALL SIGNAL MEASUREMENTS

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

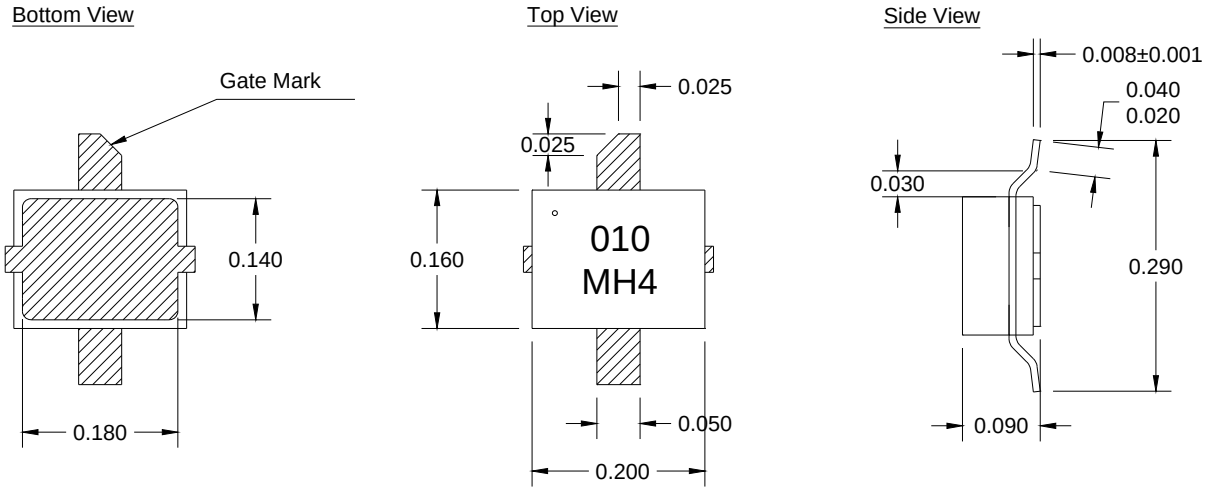
Freq (MHz)	MAG (S11)	ANG (S11)	MAG (S21)	ANG (S21)	MAG (S12)	ANG (S12)	MAG (S22)	ANG (S22)
200	0.714	-25.643	9.898	160.93	0.023	-34.352	0.745	2.313
300	0.688	-34.611	9.367	152.953	0.019	-44.947	0.801	-1.826
400	0.671	-43.137	8.956	146.063	0.015	-49.455	0.833	-6.917
500	0.662	-50.822	8.62	139.43	0.012	-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

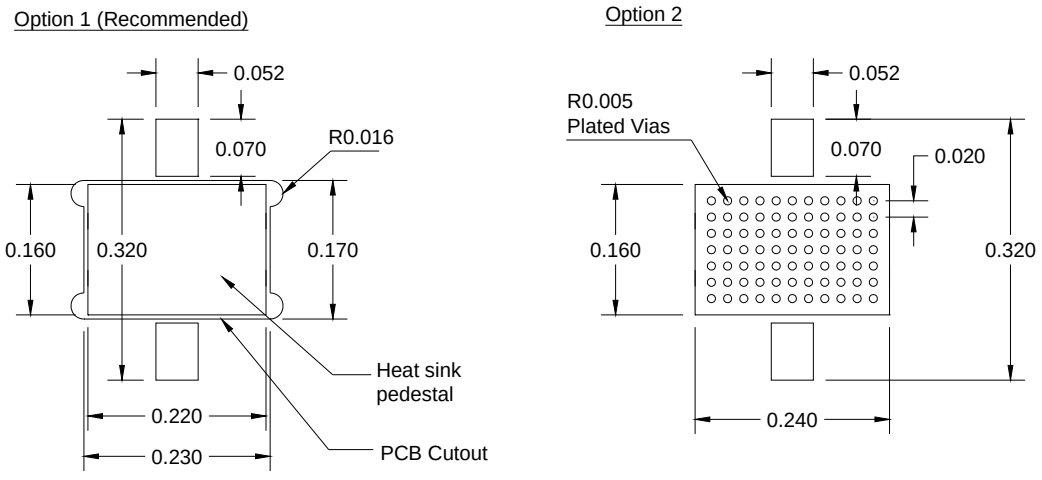
PACKAGE OUTLINE



* 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.



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