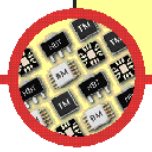
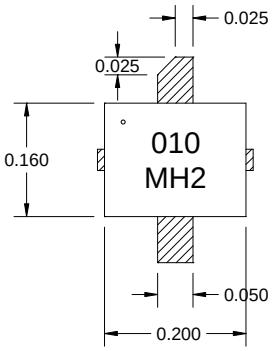
HiFET
High Voltage GaAs FET

AM010MH2-BI-R
Aug 2010
Rev 4



DESCRIPTION

AMCOM's AM010MH2-BI-R is a part of the BI series of GaAs HiFETs. The HiFET is a partially matched patented device configuration for high voltage, high power and broadband applications. This part has a total device periphery of 2mm. The AM010MH2-BI-R is designed for high power microwave applications, operating up to 6GHz. The BI series uses a specially designed ceramic package with straight leads in a drop-in mounting style. The flange at the bottom of the package serves simultaneously as DC ground, RF ground, and thermal path. A bent-lead version of the package is also available for SMT applications. This HiFET is RoHS compliant.



FEATURES

- 14 Volt Drain Bias
- Broadband Partial Matching: DC – 2.4GHz
- High Frequency Operation up to 6 GHz
- High Gain: G = 15dB @ 3.5GHz
- High Power: P_{1dB}= 28dBm @ 3.5GHz
- High Linearity: IP3 = 43dBm @ 3.5GHz
- Ceramic Package for Effective Heat Removal

APPLICATIONS

- Broadband Applications
- High Voltage 10 to 14V
- Wireless Local Loop Network
- PCS Base Stations
- WLAN, Repeaters & HYPERLAN
- C-Band VSAT
- Avionics Communications

RF PERFORMANCE @ 3.5GHz,(V_{dd} = 14V, V_{gs} =-0.78V)

Parameters	MIN	TYP
P_{1dB}* (dBm)	27	28
Eff @ P_{1dB}	35%	40%
Small Signal Gain (dB)	12	15
IP3 (dBm)	40	43

* Power typically remains the same as frequency changes.

ABSOLUTE MAXIMUM RATING

Parameters	Sym	Rating
Drain Voltage (V)	V_{dd}	18
Gate-Source Voltage (V)	V_{gs}	-5
Drain Current (mA)	I_{ds}	260
Continuous Dissipation At Room Temp. (W)	P_t	2.7
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 = 14V Vgs = 0V	180	250	320
Pinch-off Voltage V_p (V)	Vdd = 3V Idd = 18mA	-2.6	-2	-1.2
Negative Voltage Current (mA)		5	14	18
Drain to Gate Breakdown Voltage BV_{gd} (V)		22	30	
Drain Voltage V_{dd} (V)	Mounted on Heat Sink		14	16
Thermal Resistance ($^oC/W$)	53			

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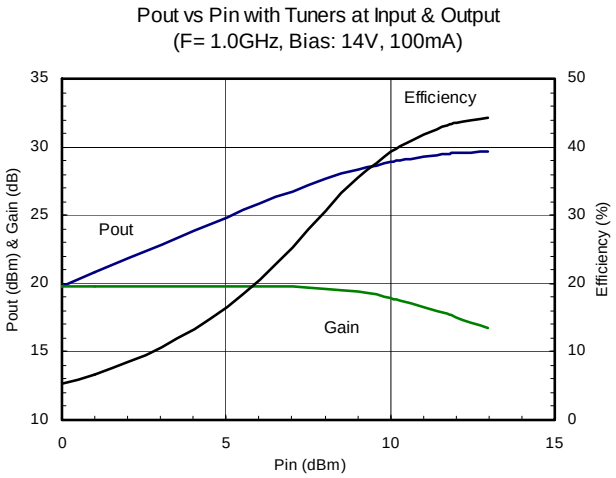
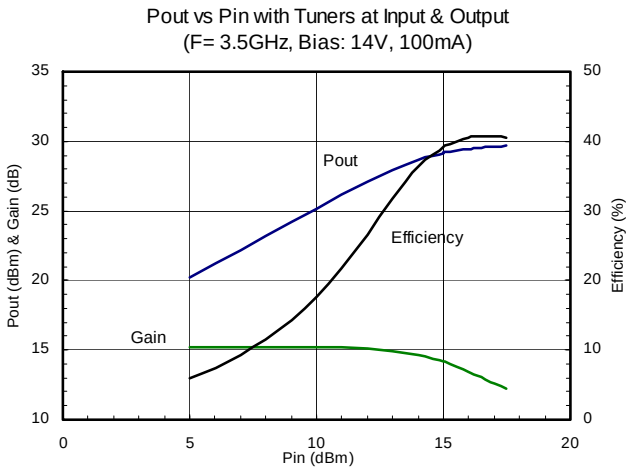
SMALL SIGNAL MEASUREMENTS

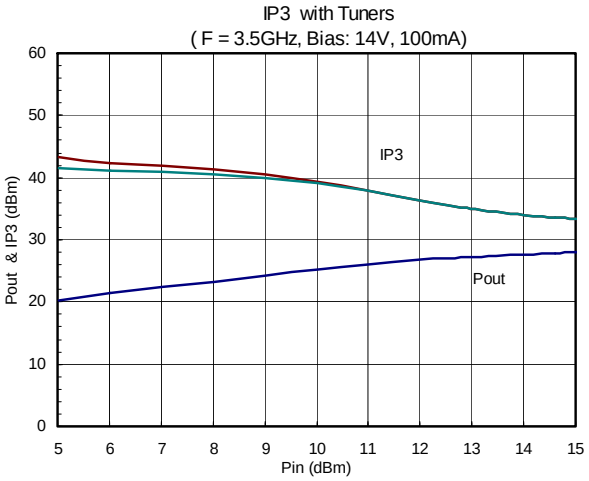
S-Parameters for AM010MH2-BI-R @ 14V / 100mA

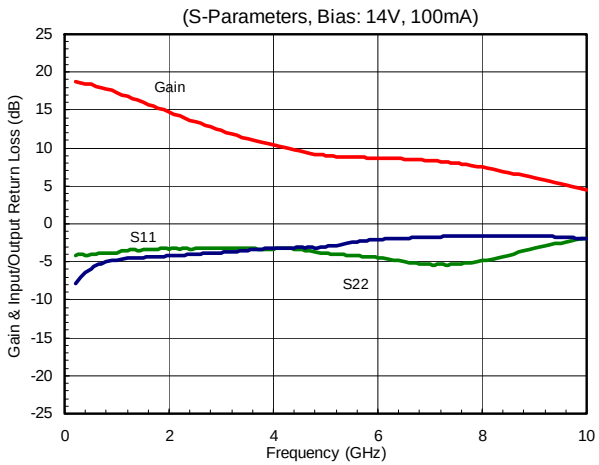
*Download the S2P files from website:http://www.amcomusa.com

Freq (MHz)	MAG (S11)	ANG (S11)	MAG (S21)	ANG (S21)	MAG (S12)	ANG (S12)	MAG (S22)	ANG (S22)
200	0.621	-18.621	8.642	167.68	0.045	-13.795	0.405	4.177
500	0.631	-43.6	8.277	149.531	0.036	-25.302	0.509	-3.917
1000	0.64	-80.941	7.365	121.484	0.028	-26.833	0.578	-25.813
1500	0.679	-107.195	6.336	98.301	0.025	-25.939	0.601	-44.057
2000	0.683	-130.367	5.444	76.973	0.024	-29.102	0.615	-60.441
3000	0.687	-167.484	4.115	39.754	0.02	-40.691	0.647	-88.875
4000	0.677	163.773	3.294	7.847	0.014	-56.361	0.692	-112.52
5000	0.641	137.336	2.805	-21.489	0.003	-153.734	0.706	-129.172
6000	0.599	105.863	2.726	-51.602	0.023	43.555	0.79	-146.367
7000	0.541	58.244	2.604	-87.004	0.037	7.578	0.817	-166.602
8000	0.571	0.882	2.359	-125.16	0.047	-25.074	0.839	172.109
9000	0.687	-45.787	2	-162.023	0.057	-52.545	0.83	150.031
10000	0.808	-78.57	1.688	163.75	0.069	-80.164	0.799	126.715



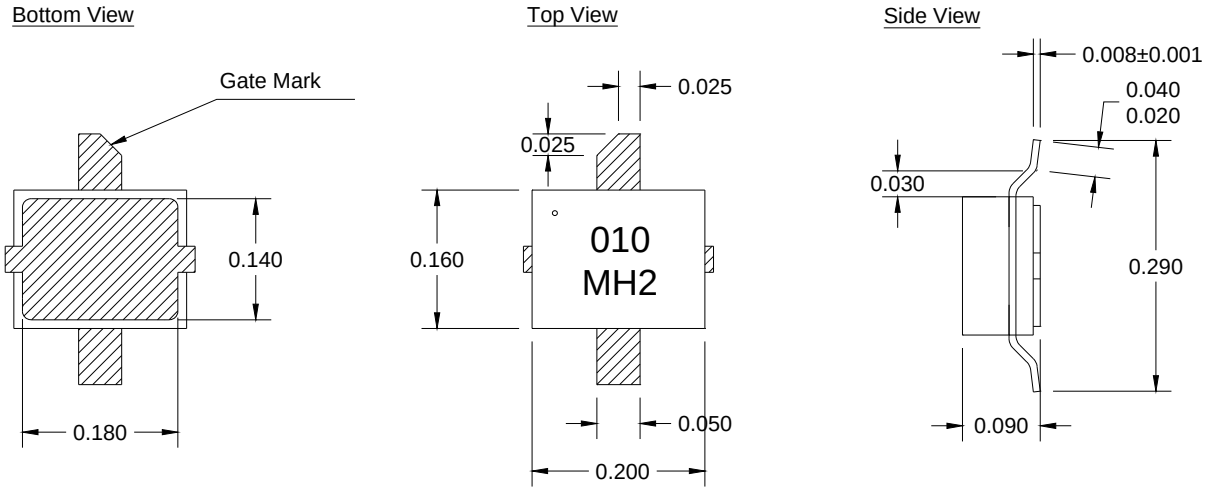






Specifications subject to change without notice.

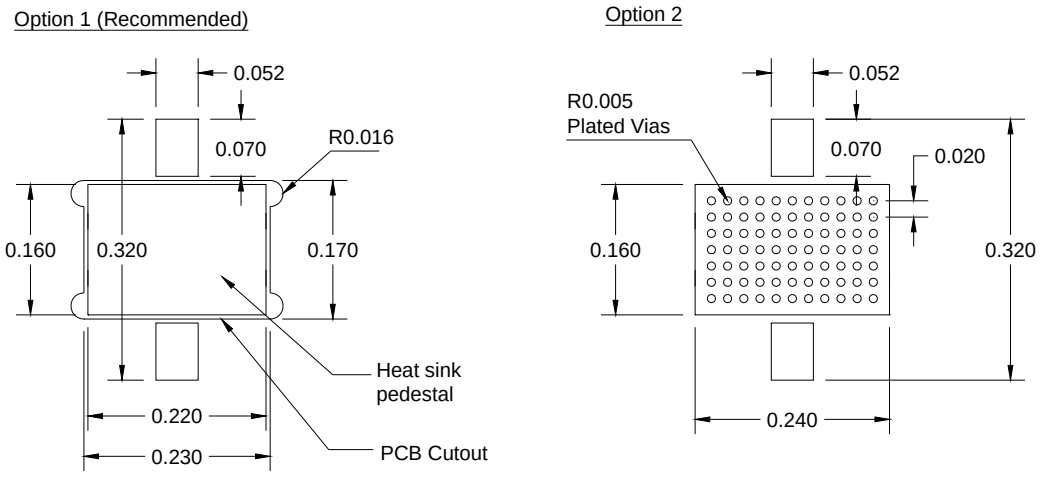
PACKAGE OUTLINE



* 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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