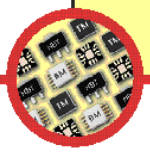
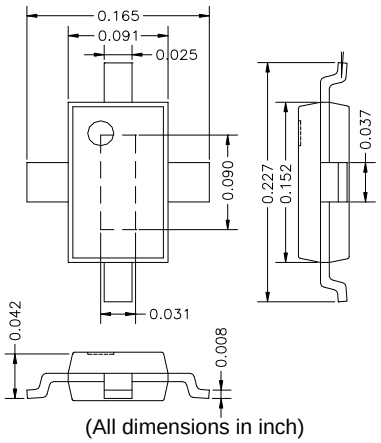
Plastic Packaged GaAs Power FET

AM006MX-QG-R
March 2010
Rev 2



DESCRIPTION

AMCOM's AM006MX-QG-R is a part of the QG series of GaAs MESFETs. This part has a total gate width of 0.6mm. The AM006MX-QG-R is designed for high power microwave applications, operating up to 6GHz. The QG series is in a plastic package with all leads bent in a surface mounting style on PC Board. The bottom of the package serves simultaneously as DC ground, RF ground, and thermal path. For frequencies above 5GHz, we recommend to mount the device directly on a metal heat sink, which is also RF ground, to avoid the inductance of via holes on PCB. This FET is RoHS Compliant.



(All dimensions in inch)

FEATURES

- High Frequency Operation up to 6GHz
- High Gain and High Power, P_{1dB}=22dBm @3.5GHz
- Plastic Package for Low Cost
- 3 Heat Sink Paths for Effective Heat Removal

APPLICATIONS

- Wireless Local Loop Network
- PCS Base Stations
- WLAN, Repeaters & HYPERLAN
- C-Band VSAT

RF PERFORMANCE @ 3.5GHz, (V_{ds} = 5V, I_{ds} = 0.5 I_{dss})

Parameters	MIN	TYP
P_{1dB}* (dBm)	21	22
Eff @ P_{1dB}	38%	42%
Small Signal Gain (dB)	11	13
IP3 (dBm)	32	34

* Power typically remains the same as frequency changes.

ABSOLUTE MAXIMUM RATING

Parameters	Sym	Rating
Drain-Source Voltage (V)	V_{ds}	8
Gate-Source Voltage (V)	V_{gs}	-5
Drain Current (mA)	I_{ds}	180
Continuous Dissipation At Room Temp. (W)	P_t	1.1
Operating Temp. (^oC)	T_A	-55 to +85
Max. Channel Temp. (^oC)	T_{ch}	+175

DC PARAMETERS

Parameters	Conditions	MIN	TYP	MAX
Saturation Current I_{dss} (mA)	Vds = 3V Vgs = 0V	100	140	180
Pinch-off Voltage V_p (V)	Vds = 3V Ids= 2.5% Idss	-2.6	-2	-1.0
Drain to Gate Breakdown Voltage BV_{gd} (V)	Idg = 0.1mA/mm	11	15	
Drain to Source Voltage V_{ds} (V)	Mounted on PCB		5	
Drain to Source Voltage V_{ds} (V)	Mounted on Heat Sink		7	
Thermal Resistance (^oC/W)	134			

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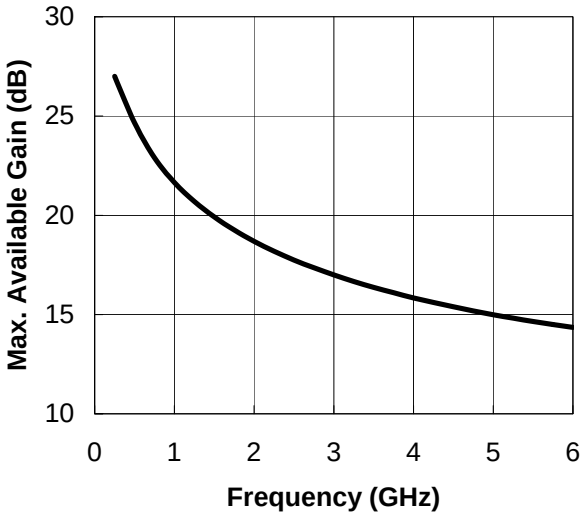
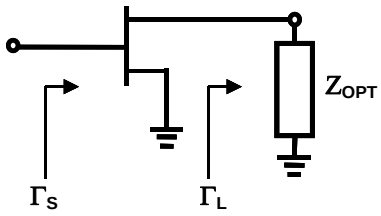
S-Parameters for AM006MX-QG-R @ 5V / 0.5 I_{dss} (s2p file downloadable from the web)

Freq (MHz)	MAG (S11)	ANG(S11)	MAG (S21)	ANG(S21)	MAG (S12)	ANG(S12)	MAG (S22)	ANG(S22)
1000	0.956	-49.676	5.73	142.289	0.048	57.207	0.455	-40.35
2000	0.892	-88.047	4.711	112.578	0.076	32.648	0.421	-70.406
3000	0.822	-121.023	3.888	87.52	0.09	11.68	0.405	-94.664
4000	0.777	-147.898	3.255	66.344	0.094	-6.786	0.397	-113.898
5000	0.75	-166.984	2.801	48.27	0.084	-19.591	0.382	-125.887
6000	0.747	175.805	2.562	31.927	0.083	-28.639	0.381	-135.82

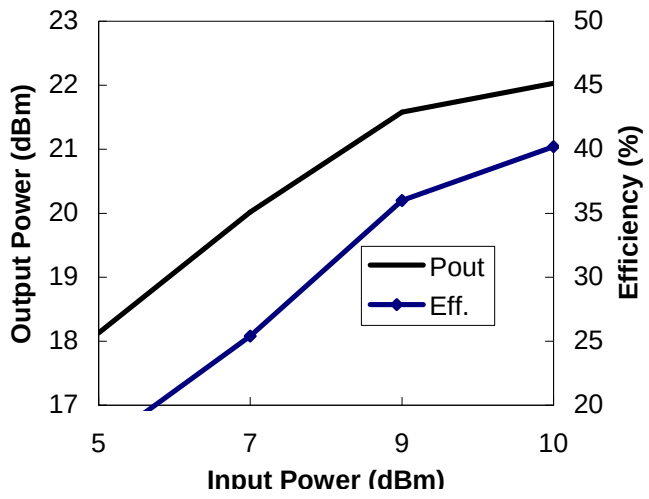




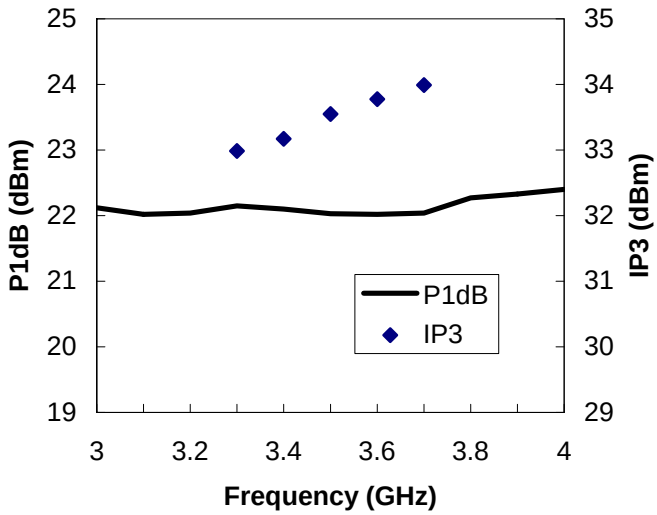
OPTIMUM LOADS

Freq GHz	Γ_S MAG	Γ_S ANG	Γ_L MAG	Γ_L ANG
1	0.979	-66.63	0.121	51.13
2	0.951	-111.2	0.181	79.18
3	0.934	-139.4	0.245	96.79
4	0.923	-159.5	0.303	110.2
5	0.912	-175.6	0.352	121.5
6	0.902	169.9	0.392	131.5

Vds=5V, Ids=0.5 I_{dss} @ 3.5 GHz



Vds=5V, Ids=0.5 I_{dss}, Test CKT @ 3.5 GHz



Specifications subject to change without notice.