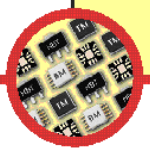
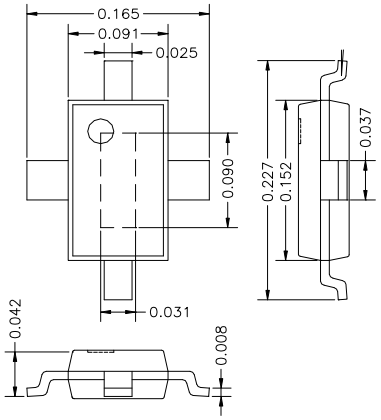
Plastic Packaged GaAs Power FET

AM048MX-QG-R
March 2010
Rev 2



DESCRIPTION

AMCOM's AM048MX-QG-R is a part of the QG series of GaAs MESFETs. This part has a total gate width of 4.8mm. The AM048MX-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}=31dBm @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)	30	31
Eff @ P_{1dB}	38%	42%
Small Signal Gain (dB)	10	11
IP3 (dBm)	41	43

* 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}	1440
Continuous Dissipation At Room Temp. (W)	P_t	8
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	800	1120	1440
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 ($^oC/W$)	18			

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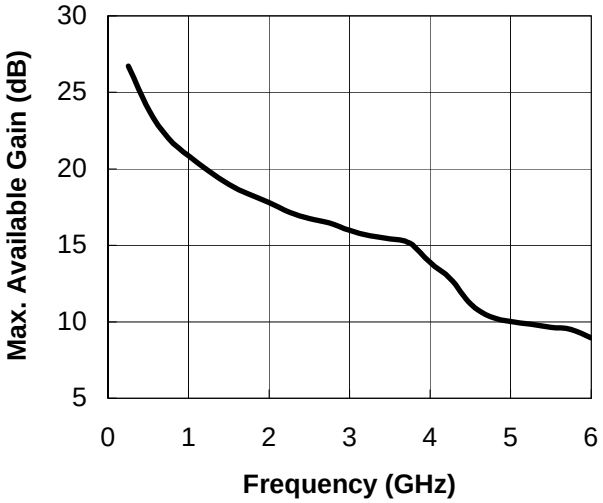
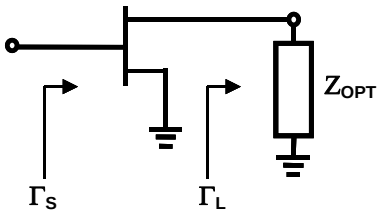
S-Parameters for AM048MX-QG-R @ 5V / 0.5 I_{dss} (s2p file downloadable from the web)

Freq (MHz)	MAG (S11)	ANG(S11)	MAG (S21)	ANG(S21)	MAG (S12)	ANG(S12)	MAG (S22)	ANG(S22)
1000	0.931	-158.383	4.345	90.195	0.029	17.981	0.732	176.313
2000	0.934	179.555	2.24	69.168	0.03	13.806	0.734	165.352
3000	0.931	164.32	1.478	53.469	0.03	13.734	0.758	159.773
4000	0.939	154.375	1.102	40.912	0.028	18.141	0.782	154.813
5000	0.935	148.539	0.892	29.265	0.037	29.841	0.767	148.523
6000	0.928	141.523	0.798	17.616	0.044	22.999	0.776	142.734

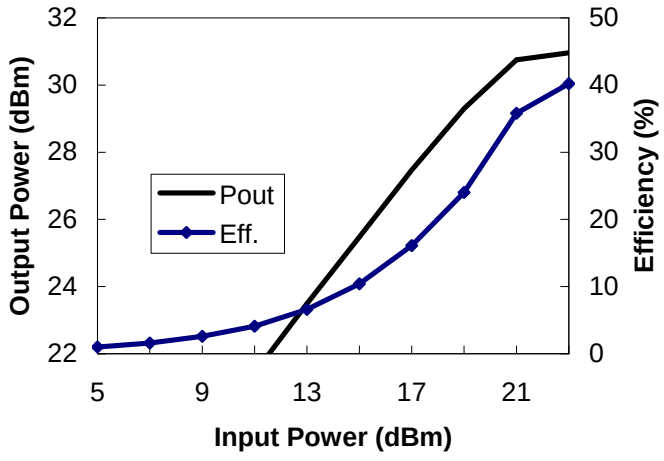




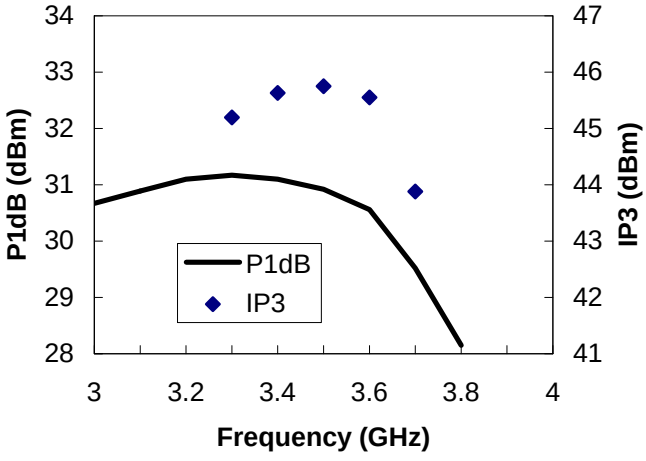
OPTIMUM LOADS

Freq GHz	Γ_S MAG	Γ_S ANG	Γ_L MAG	Γ_L ANG
1	0.957	-159.6	0.740	-175.7
2	0.954	-179	0.741	-171.2
3	0.953	170.1	0.744	-166.6
4	0.951	161.2	0.747	-161.7
5	0.949	152.8	0.751	-156.3
6	0.946	144.3	0.753	-150.5

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.