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MMA-020624-Q3

2000-6000 MHz Fully Matched High Dynamic Range Amplifier
 Preliminary Data Sheet
 June 2008

Features:

- Frequency Range: 2 to 6 GHz
- P1dB: +25 dBm
- OIP3: +40 dBm
- Pave: +18.5 dBm @ 2.5% EVM 802.16 / 64QAM
- Gain: 17 dB
- Single +8V Supply
- MTTF > 100 years @ 85°C ambient temperature
- RoHS Compliant Surface-Mount QFN 3X3mm Package

Applications:

- WiMax
- Instrumentation
- Point-to-Point Microwave Radio

Description:

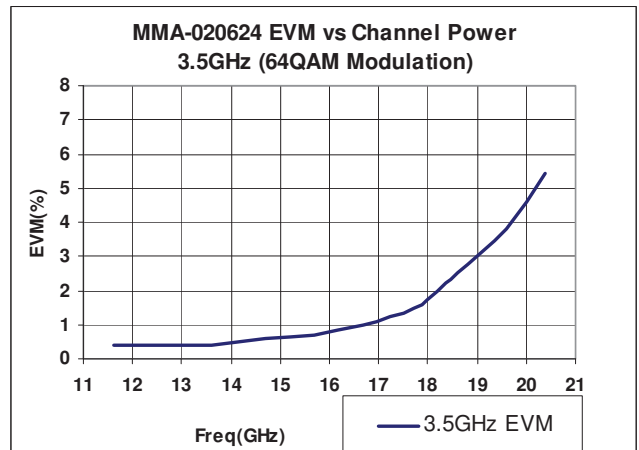
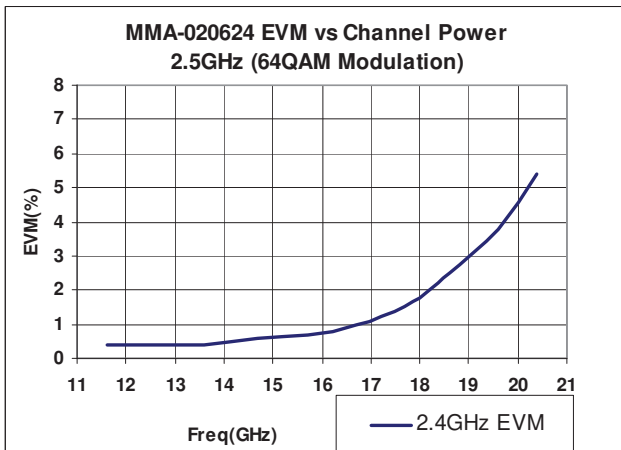
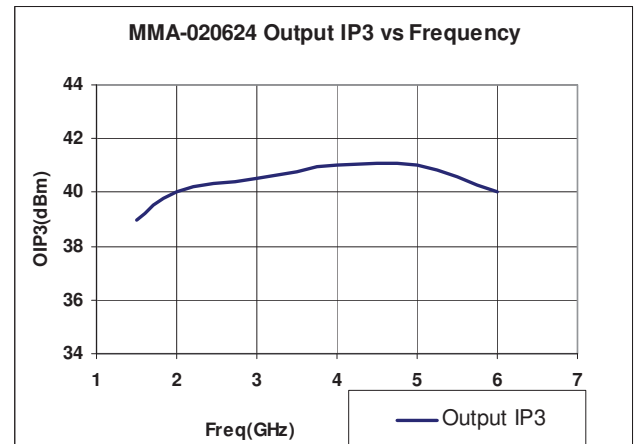
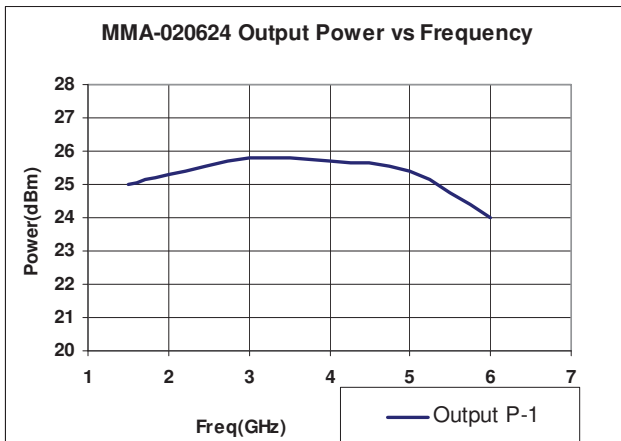
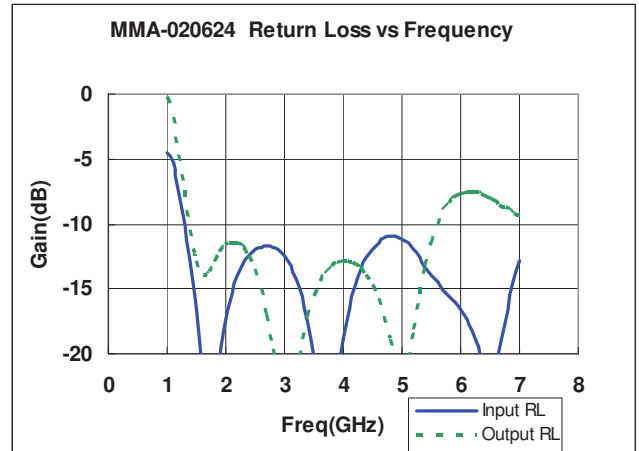
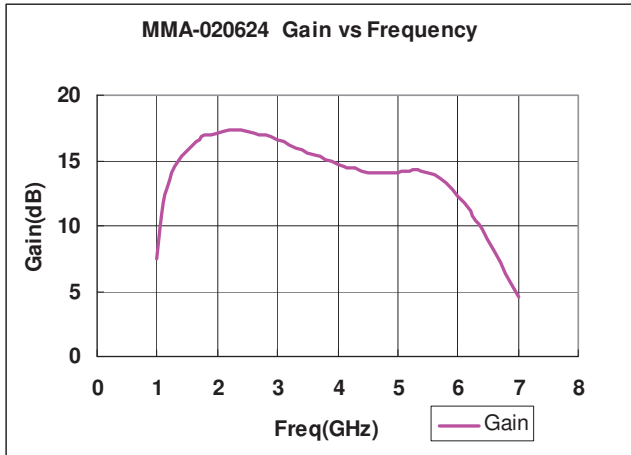
The MMA-020624-Q3 is a high linearity GaAs MESFET MMIC amplifier utilizing MwT's proprietary linear device technology. It is in a low cost QFN 3X3mm Green Package. Applications include the driver amplifiers in 3G cellular and WiMax/WLAN infrastructure base stations and access points. The third order intercept performance of the MMA-020624-Q3 is excellent, typically 15 dB above the 1 dB gain compression point. It provides +25 dBm P1dB, +40 dBm OIP3, +18.5 dBm Pave @ 2.5% EVM under 802.16/64 QAM input signal and 17 dB gain.

ELECTRICAL SPECIFICATIONS: *Vds=8.0V, Ids=250mA, Ta=25 °C Z0=50 ohm*

Parameter	Units	Typical Data	
Frequency Range	MHz	2000-4000	4000-6000
Gain (Typ / Min)	dB	17 / 15	13 / 11.5
Gain Flatness (Typ / Max)	+/-dB	1.0 / 1.5	1.3 / 1.5
Input Return Loss	dB	12	12
Output Return Loss	dB	12	10
Output P1dB	dBm	25	24
Output IP3 ⁽¹⁾	dBm	40	40
Pout @ 2.0% EVM	dBm		18
Noise Figure	dB		3.5
Operating Current Range (Typ / Max)	mA	250 / 300	
Thermal Resistance	°C / W	30	

(1) Output IP3 is measured with two tones at output power of 13 dBm/tone separated by 10 MHz.

Typical RF Performance: $V_{ds}=8V, I_{ds}=250mA, Z_0=50\text{ ohm}, T_a=25\text{ }^\circ C$



Absolute Maximum Ratings: *(Ta= 25 °C)**

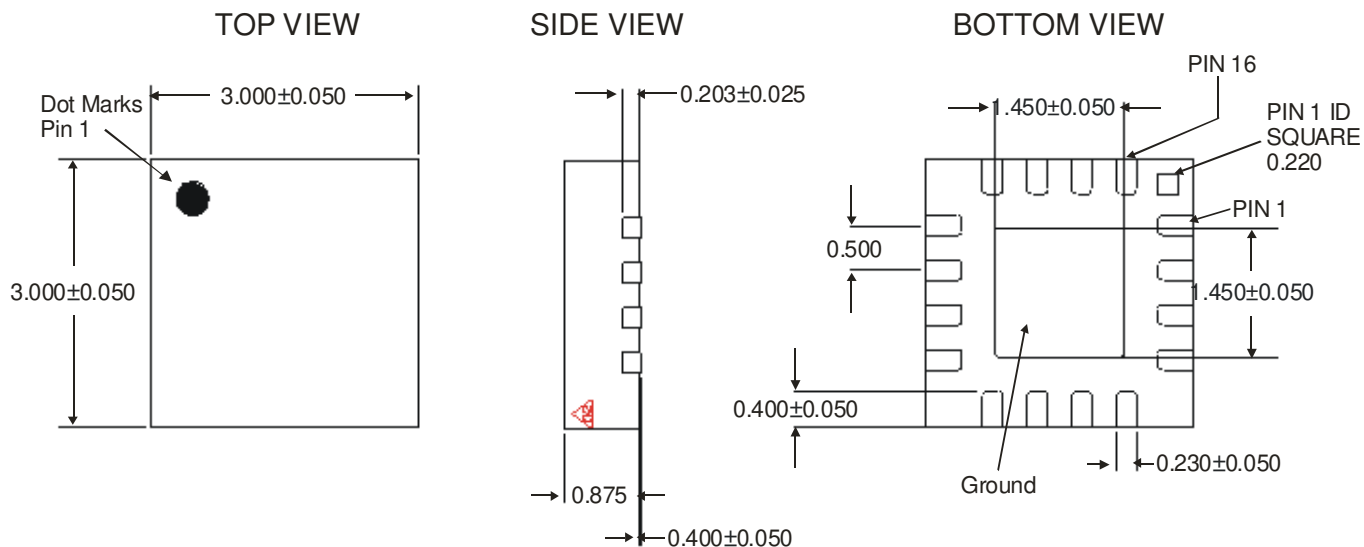
SYMBOL	PARAMETERS	UNITS	ABSOLUTE MAXIMUM
Vds	Drain-Source Voltage	V	9.0
I _{ds}	Drain Current	mA	300.0
P _{diss}	DC Power Dissipation	W	2.7
Pin max	RF Input Power	dBm	+24.0
T _{ch}	Channel Temperature	°C	150.0
T _{stg}	Storage Temperature	°C	-60.0 to 150.0

*Operation of this device above any one of these parameters may cause permanent damage.

Typical Scattering Parameters: *Vds=8.0V, I_{ds}=250mA, Z₀=50 ohm, Ta=25 °C*

Freq (GHz)	S11		S21		S12		S22	
	Mag	Ang	Mag	Ang	Mag	Ang	Mag	Ang
2.0	0.842	17.6	0.775	39.5	0.0179	-40.5	0.747	-1.97
2.2	0.805	-13.8	0.918	14.7	0.0198	-68.5	0.654	-38.9
2.4	0.758	-45.4	1.07	-6.5	0.0216	-94.2	0.542	-78.8
2.6	0.675	-76.6	1.38	-26.2	0.0241	-117	0.384	-122
2.8	0.579	-105	2.04	-53.7	0.0303	-139	0.202	-176
3.0	0.483	-127	2.82	-91.9	0.0407	-168	0.0817	65.2
3.2	0.459	-145	3.39	-135	0.0506	154	0.179	-29.5
3.4	0.471	-169	3.61	-175	0.0567	116	0.248	-70.2
3.6	0.467	163	3.71	147	0.0596	79.4	0.286	-99.8
3.8	0.442	131	3.8	111	0.0619	43.7	0.319	-127
4.0	0.396	96.8	3.88	75.8	0.0633	8.36	0.345	-156
4.2	0.328	56.9	3.9	40.4	0.0659	-25.8	0.354	173
4.4	0.25	5.93	3.81	5.06	0.0694	-61.5	0.342	142
4.6	0.206	-66.2	3.76	-30.6	0.0719	-98.3	0.294	111
4.8	0.26	-144	3.6	-67.5	0.0683	-136	0.21	81.2
5.0	0.384	160	3.35	-105	0.0657	-173	0.114	53
5.2	0.499	114	2.98	-142	0.0628	152	0.0246	62.6
5.4	0.584	72.7	2.59	-177	0.0593	118	0.0718	140
5.6	0.646	33.8	2.22	150	0.0559	85.3	0.132	116
5.8	0.69	-3.61	1.89	118	0.0507	53.1	0.177	85.3
6.0	0.732	-39.7	1.61	85.3	0.0458	22.7	0.213	52.4

Mechanical Information: *This Package is RoHS compliant*



All dimensions are in mm

Pin Assignment			
Pin #	Function	Pin #	Function
1	n/c	9	n/c
2	RF in	10	RF out
3	RF in	11	RF out
4	n/c	12	n/c
5	n/c	13	n/c
6	n/c	14	Vdd
7	n/c	15	Vdd
8	n/c	16	n/c