

## Solid State General Communication Power Amplifier

**3058 - GCM3Q4AGM**
**800 – 1000 MHz / 40 Watts**

The GCM3Q4AGM (SKU 3058) is suitable for high efficiency, linear applications in the Cellular frequency range. Also suitable for GSM, CDMA and TDMA digital modulations, this amplifier uses high power LDMOS devices that provide high gain, wide dynamic range, low distortions, excellent group delay and phase linearity. Exceptional performance, long-term reliability, and high efficiency are achieved by employing efficient broadband RF matching networks and combining techniques, EMI/RFI filters, machined housings, and qualified components. Empower RF's ISO9001 Quality Assurance Program assures consistent performance and the highest reliability.



- Solid-state broadband linear design
- Small and lightweight
- Suitable for CW, AM, and FM (Consult factory for other modulation types)
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built in Output Circulator
- Built in control Monitoring & Protection functions

### ELECTRICAL SPECIFICATIONS @ +28V<sub>DC</sub>, 25°C, 50 Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	800		1000	MHz
Output Power CW	P <sub>SAT</sub>	40	45		Watt
Output Power @ 1dB Gain Compression	P <sub>1dB</sub>	25			Watt
Power Gain @ 1dB Gain Compression	G <sub>1dB</sub>	46	48	50	dB
Input Power for Rated P <sub>SAT</sub>	P <sub>IN</sub>		0		dBm
Small Signal Gain Flatness	ΔG		±0.5	±0.75	dB
Third Order Intercept Point 2-Tone @ 37dBm/Tone, 100kHz Spacing	IP3		+57		dBm
Input Return Loss	S11			-14	dB
Noise Figure	NF		7	10	dB
Harmonics @ P <sub>OUT</sub> = 25W	H			-45	dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V <sub>DD</sub>	26	28	30	Volt
Current Consumption @ P <sub>OUT</sub> = 25W CW	I <sub>DD</sub>		3.0	3.8	Amp

### MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions	6.4 x 3.4 x 1.0	Inch	Max
Weight	1.0	lb.	Max
RF Connectors Input/Output	Type-SMA, Female		
DC Interface Connector	D-sub 9-Pin, Male		
Cooling	External Heatsink (Not Supplied)		

### ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T <sub>C</sub>	-5		+60	°C
Storage Temperature	T <sub>STG</sub>	-40		+85	°C
Relative Humidity (non-condensing)	RH			95	%
Altitude (MIL-STD-810F Method 500.4)	ALT			30,000	Feet
Vibration/Shock MIL-STD-810F - Method 514.5/516.5 – Proc I	VI/SH		Airborne		

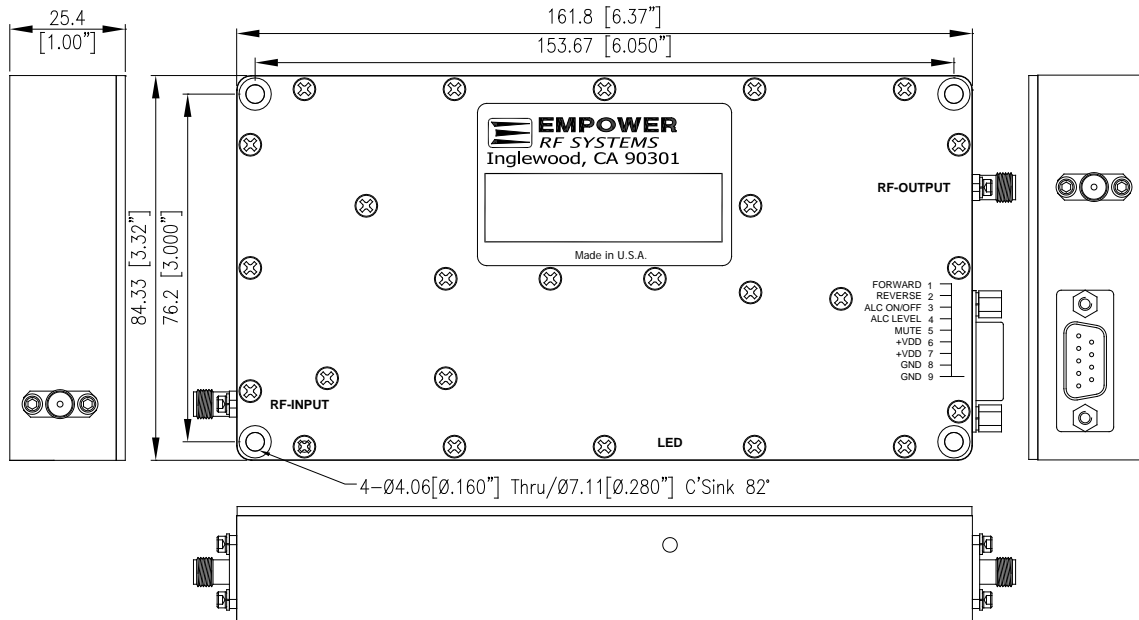
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**LIMITS**

Input RF drive level without damage	+6 dBm	Max
Load VSWR @ P <sub>OUT</sub> = 25 W (output Isolator)	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	85°C shutdown	Max

**DC INTERFACE CONNECTOR – D-Sub 9-Pin, Male**

Pin #	Description	Specifications
1	Forward	Analog voltage 0-5V <sub>DC</sub> relative to forward power level (200 mV/dB)
2	Reverse	Analog voltage 0-5V <sub>DC</sub> relative to reverse power level (200 mV/dB)
3	ALC ON/OFF	ALC ON = TTL Logic Low (0V) (Internally Pulled-high)
4	ALC Level	Continuous adjustable range via analog input levels Setting Point (ASP): 34 – 46 dBm @ 0 – 5 V (300 mV/dB) Error Range (AER): ±1.5 dB Response Time (ART): 100 mS/dB
5	Mute	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-Low)
6	VDD	+28.0V <sub>DC</sub> ±2V
7	VDD	+28.0V <sub>DC</sub> ±2V
8	GND	Ground
9	GND	Ground

**OUTLINE DRAWING**


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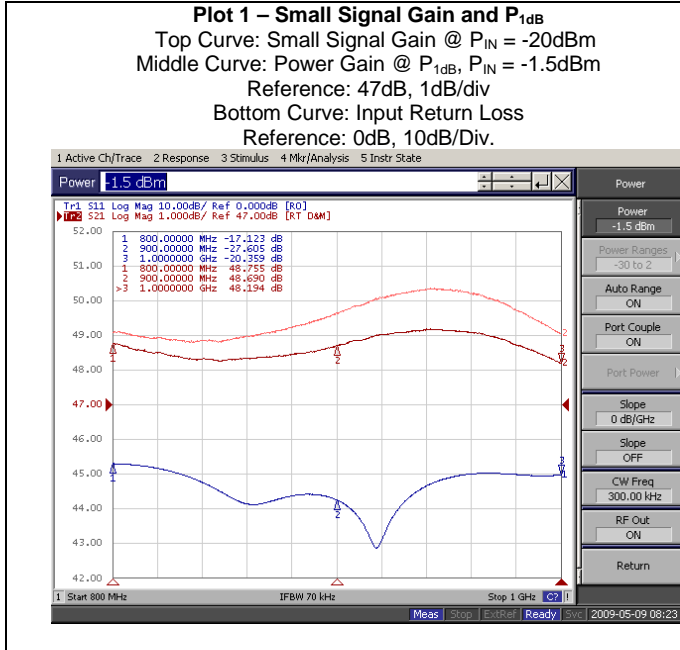
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## TYPICAL BROADBAND PERFORMANCE

**Plot 1 – Small Signal Gain and P<sub>1dB</sub>**

Top Curve: Small Signal Gain @ P<sub>IN</sub> = -20dBm  
 Middle Curve: Power Gain @ P<sub>1dB</sub>, P<sub>IN</sub> = -1.5dBm  
 Reference: 47dB, 1dB/div  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/Div.



**Plot 2 – Small Signal Gain and P<sub>SAT</sub>**

Top Curve: Small Signal Gain @ P<sub>IN</sub> = -20dBm  
 Middle Curve: Power Gain @ P<sub>SAT</sub>, P<sub>IN</sub> = 0.5dBm  
 Reference: 47dB, 1dB/div  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/Div.

