

## Solid State General Communication Power Amplifier

**3014 – GCM4Q5EFM**
**1800 – 2200 MHz / 30 Watts**

The GCM4Q5EFM (SKU 3014) is suitable for linear applications and signal boosting in the PCS and UMTS frequency range. This amplifier utilizes Silicon LDMOS high power devices that provide high gain, wide dynamic range, low distortions and good linearity. Exceptional performance, long-term reliability and high efficiency are achieved by employing advanced 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 Class AB linear design
- Instantaneous broadband
- Small form factor and lightweight
- Suitable for CW, Am, and FM (Consult factory for other modulation types)
- 50 ohm input/output impedance
- Built in Control Circuits and Protection circuits
- High reliability and ruggedness

### ELECTRICAL SPECIFICATIONS @ +28.0V<sub>DC</sub>, 25°C, 50 Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	1800		2200	MHz
Output Power CW	P <sub>SAT</sub>	30	35		Watt
Output Power @ 1dB Gain Compression	P <sub>1dB</sub>	25			Watt
Power Gain 1dB Gain Compression	G <sub>1dB</sub>	46			dB
Input Power for Rated P <sub>SAT</sub>	P <sub>IN</sub>		0		Watt
Gain Flatness	ΔG			±1.5	dB
Input/Output Return Loss	S <sub>11</sub> / S <sub>22</sub>			-10	dB
Noise Figure	NF		7	10	dB
Harmonics @ P <sub>OUT</sub> = 25W	H		-40		dBc
Third Order Intercept Point 2-Tone @ 34dBm/Tone, 100kHz Spacing	IP3		+54		dBm
Spurious Signals	Spur			-60	dBc
Operating Voltage	V <sub>DC</sub>	26	28	30	Volt
Current Consumption @ P <sub>OUT</sub> = 30W	I <sub>DD</sub>			4.0	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>	0		+5	°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

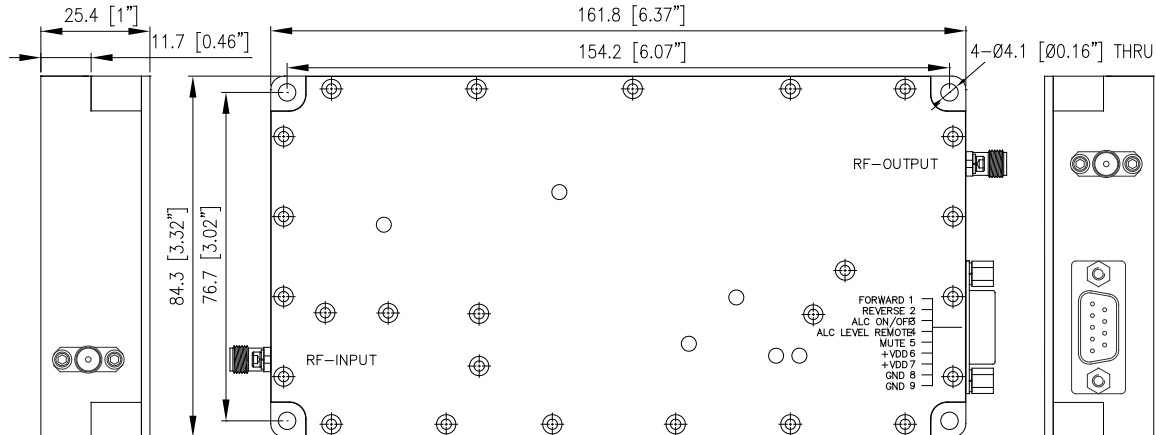
Input RF drive level without damage	+6 dBm	Max
Load VSWR @ P <sub>OUT</sub> = 30W	∞ @ all phase & amplitude for duration of 1 minute 3:1 @all load phase & amplitude continuous	-
Thermal Overload	85 °C shutdown	Max

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

Pin #	Description	Specifications
1	Forward	Continuous Analog voltage 0-5V <sub>DC</sub> relative to forward power level
2	Reverse	Continuous Analog voltage 0-5V <sub>DC</sub> relative to reflected power level
3	ALC ON/OFF	ALC OFF = TTL Logic High (5V) (Internally Pulled-low)
4	ALC Level	Continuous 27 – 45 dBm adjustable range via 0 – 5 V <sub>DC</sub> Analog levels Maximum Gain: 5V <sub>DC</sub> , Minimum Gain: 0V <sub>DC</sub>
5	Mute	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-Low)
6&7	VDD	+28.0V <sub>DC</sub> ±2V
8&9	GND	Ground

<b>LED</b>	LED Indicator	Output Power level indicator referenced to ALC setting
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### OUTLINE DRAWING



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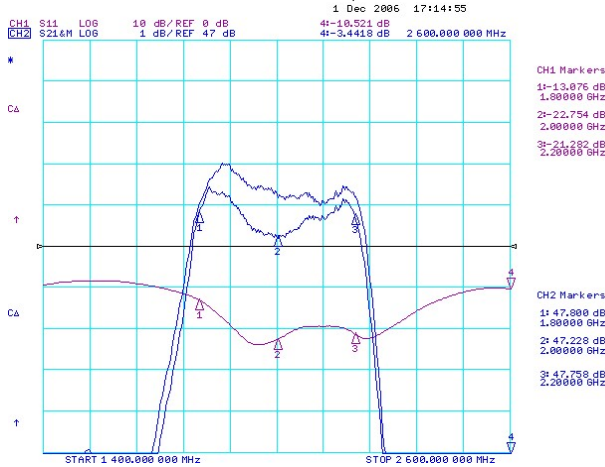
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## TYPICAL PERFORMANCE PLOTS

**Plot 1 – Small Signal Gain and  $P_{1dB}$**

Top curve: Small Signal Gain @  $P_{IN} = -20dBm$   
 Middle Curve: Power Gain @  $P_{1dB}$ ,  $P_{IN} = -2dBm$   
 Reference: 47dB, 1dB/div.  
 Bottom curve: Input Return Loss  
 Reference: 0dB, 10dB/div.



**Plot 2 – ALC Flatness Response**

Top Curve: ALC Flatness @ 45dBm,  $P_{IN} = 0dBm$   
 Middle Curve: ALC Flatness @ 38dBm,  $P_{IN} = 0dBm$   
 Reference: 41dB, 1dB/div.  
 Bottom Curve: Input Return Loss  
 Reference: 0dB, 10dB/div.

