

Solid State General Communication Power Amplifier

3029 - GCM4Q5EIN
1800 – 2200 MHz / 60 Watts

The GCM4Q5EIN (SKU 3029) is suitable for linear applications and signal boosting in the PCS and UMTS frequency range. This amplifier utilizes Silicon LD MOS 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
- Suitable for CW, AM, and FM (Consult factory for other modulation types)
- 50 ohm input/output impedance
- Built in Control Circuits and Output Circulator
- High reliability and ruggedness

ELECTRICAL SPECIFICATIONS @ 28V_{DC}, 25°C, 50 Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	1800		2200	MHz
Output Power CW	P _{SAT}	60	70		Watt
Output Power @ P _{1dB} Gain Compression	P _{1dB}	45			Watt
Power Gain @ P _{1dB} Gain Compression	G _{1dB}	48			dB
Input Power for Rated P _{SAT}	P _{IN}		0		Watt
Gain Flatness	ΔG			±1.5	dB
Input Return Loss	S ₁₁			-14	dB
Noise Figure	NF		7	10	dB
Harmonics @ P _{OUT} = 45W	H		-40		dBc
Third Order Intercept Point	IP3		+57		dBm
2-Tone @ 37dBm/tone, 100kHz Spacing	Spur			-60	dBc
Operating Voltage	V _{DC}	26	28	30	Volt
Current Consumption @ P _{OUT} = 60W	I _{DD}			9.0	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimension	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 _C	0		+50	°C
Storage Temperature	T _{STG}	-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 1	VI/SH		Airborne		

LIMITS

Input RF drive level without damage		+6 dBm	Max
Load VSWR @ P _{OUT} = 60W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous		-
Thermal Overload		85°C shutdown	Max

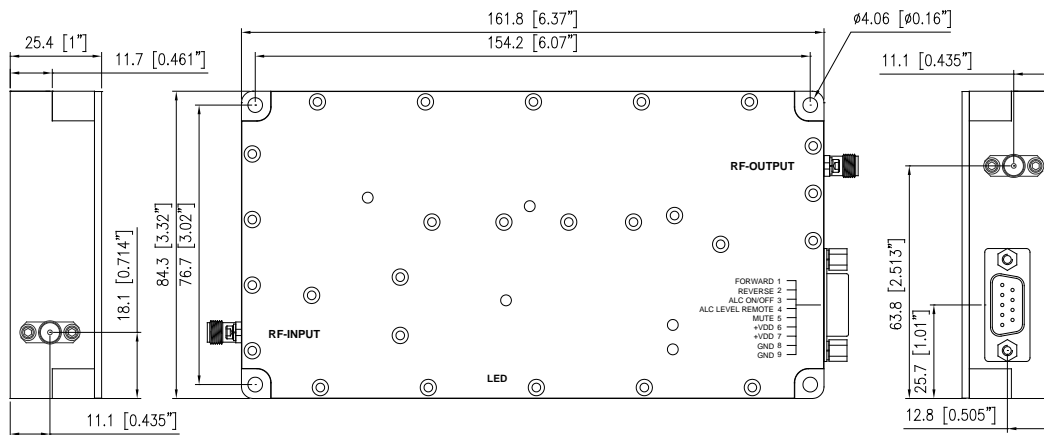
For ultra high linearity, band specific Cellular applications select from SKU # 7047, 7048, 7049

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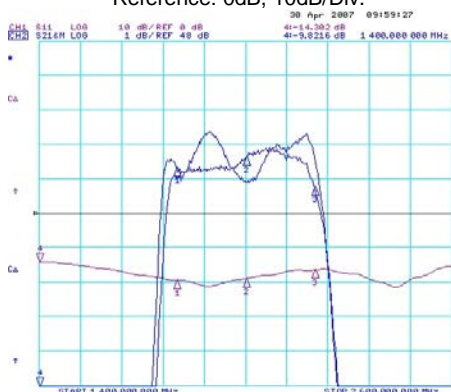
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DC INTERFACE CONNECTOR – D-Sub 9-Pin, Male

Pin #	Description	Specifications
1	Forward	Continuous Analog Voltage 0-5V _{DC} relative to Forward Power Level via Peak Detector
2	Reverse	Continuous Analog voltage 0-5V _{DC} relative to Reflected Power Level via Peak Detector (10dB minimum Directivity)
3	ALC On/OFF	ALC OFF: TTL Logic High (5V), (Internally Pulled-down)
4	ALC Level Remote	Continuous 30 – 48 dBm adjustable range via 0-5V _{DC} Analog levels Maximum Gain: 5V _{DC} , Minimum Gain: 0V _{DC}
5	Mute	Amplifier Disable: TTL Logic High (5V), (Internally Pulled-down)
6&7	VDD	+28.0V _{DC} ±2V
8&9	GND	Ground

LED	LED Indicator	Output Power level indicator referenced to ALC setting
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OUTLINE DRAWING

TYPICAL PERFORMANCE PLOTS
Plot 1 – Broadband Sweep 1400-2600MHz

Top curve: Small Signal Gain @ P_{IN} = -20dBm
 Middle Curve: Power Gain @ P_{1dB}, P_{IN} = 0dBm
 Reference: 48dB, 1dB/Div.
 Bottom curve: Input Return Loss
 Reference: 0dB, 10dB/Div.


Plot 2 – ALC Response

Top Curve: ALC @ P_{OUT} = 48dBm, P_{IN} = 0dBm (ALC ON)
 Bottom Curve: ALC @ P_{OUT} = 41dBm, P_{IN} = 0dBm (ALC ON)
 Reference: 45dB, 1dB/Div.
 Middle Curve: Input Return Loss
 Reference: 0dB, 10dB/Div.

