

Solid State Personal Communication Power Amplifier

7046 - PCM3Q4AEM
935 – 960 MHz / 25Watts CW, 4Watts CDMA

The PCM3Q4AEM (SKU 7046) is suitable for Ultra linear Cellular GSM repeaters and MicroCell applications. Also suitable for CDMA and TDMA applications, this amplifier utilizes proprietary DIP™ (Direct Injection Pre-D) circuit and linear LDMOS power devices that provide ample output power margins, high gain, wide dynamic range, and excellent group delay and phase linearity. Exceptional performance, long term reliability, and high efficiency are achieved by employing advanced matching networks and combining techniques, EMI/RFI filters, machined housings, and qualified components. This rugged module is input overdrive and output isolator protected, and proprietary ALC circuits ensure stable, ripple free output power under multi-channel conditions. Empower RF's ISO9001 Quality Assurance Program assures consistent performance and the highest reliability.



- Solid-state linear design
- Small and lightweight
- Suitable for CW, GSM, ESMR, iDEN, TDMA & multi FA CDMA
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built in Output Isolator
- Built in monitoring circuit

ELECTRICAL SPECIFICATIONS @ +28 VDC, 25°C, 50 Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	935		960	MHz
Output Power CW	P _{SAT}	40			Watt
Output Power @ 1 dB Gain Compression Point	P _{1dB}	25			Watt
Output Power CDMA	P _{CDMA}	4			Watt
Small Signal Gain	G _{SS}	44	46	48	dB
Gain Flatness (ALC On)	ΔG			±0.5	dB
Third Order Intercept Point 2-Tones, P _{OUT} = 4 W Avg., Δ = 500 KHz	IP3	+56	+58		dBm
Input/Output Return Loss	S ₁₁ / S ₂₂			-14	dB
Noise Figure	NF		7	10	dB
Harmonics @ P1 dB Gain Compression Point	H			-45	dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V _{DC}	26	28	30	Volt
Supply Current @ P _{OUT} = 25 W CW	I _{DD}		3.0		Amp
Supply Current @ P _{OUT} = 4 W with 2-tones	I _{DD}		2.0	2.5	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions	5.0 x 3.75 x 1.0	Inch	Max
Weight	1.0	lb.	Max
RF Connectors In/Out	SMA female		
DC Connectors	Dsub, 9 Pins, Male		
Cooling	External Heatsink		

ENVIRONMENTAL CHARACTERISTICS (Designed to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T _c	-10		+50	°C
Storage Temperature	T _{stg}	-40		+85	°C
Relative humidity (non-condensing)	RH			95	%
Altitude (MIL-STD-810F Method 500.4)	ALT	10,000		30,000	Feet
Shock / Vibration (MIL-STD-810F Method	SH / VI		Airborne		

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516.5)
PROTECTIONS

Input Overdrive	+6 dBm	Max
Over Power Shutdown	45 dBm	Min
Load VSWR @ 25W output power	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	Nom
Thermal Overload	85°C shutdown	Max

INTERFACE CONNECTORS
D-Sub, 9-Pin

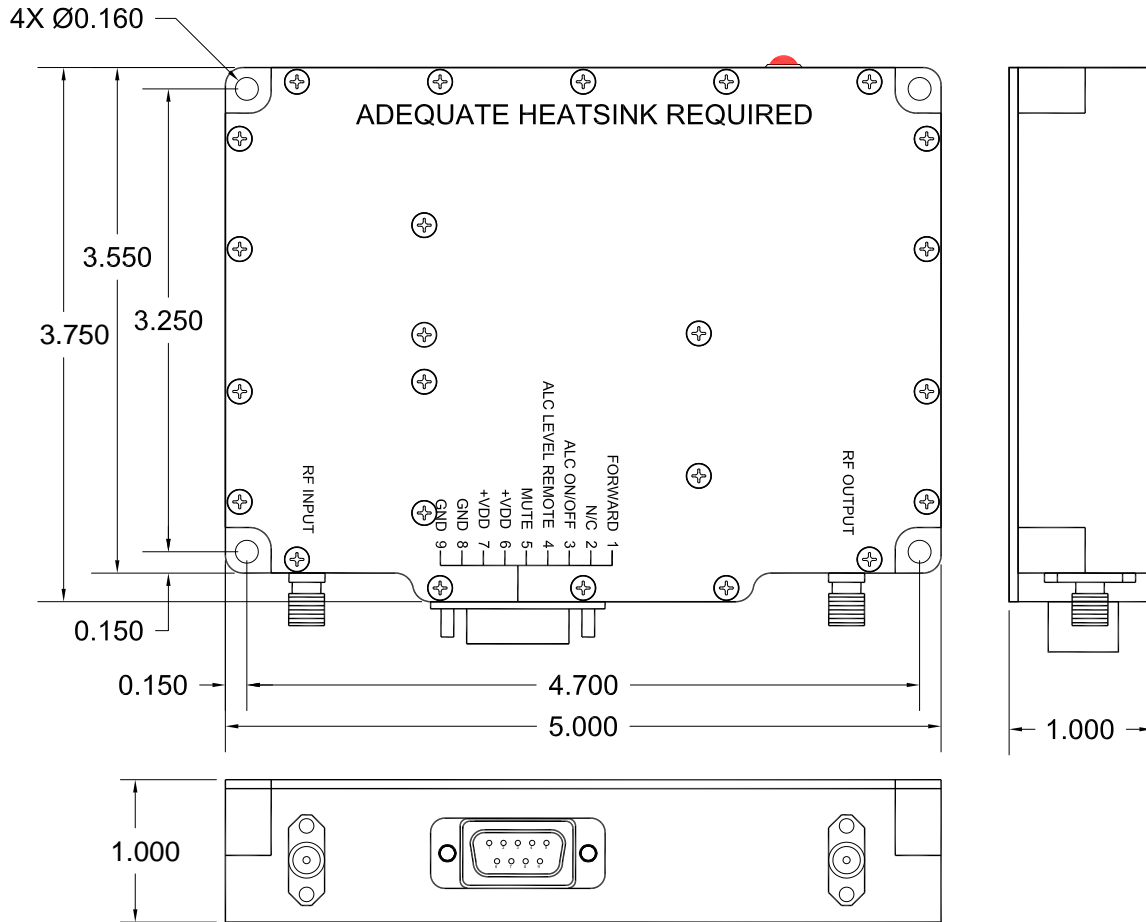
Pin #	Description	Specifications
1	Forward Power Monitor	Continuous Analog voltage relative to forward power via RMS detector FWD: 13 – 43 dBm @ 0 – 5 V (200 mV/dB) 28dBm output = $V_{FWD} = 2.5 V_{DC}$
2	Reverse Power Monitor	Continuous Analog voltage relative to reflected power REVM: 6 – 36dBm @ 0.5 - 5V (150mV/dB) typical
3	ALC ON/OFF	ALC ON = TTL “Low” ALC OFF = TTL “High”
4	ALC Level	Continuous adjustable range via analog input levels Setting Point (ASP): 31 – 41 dBm @ 0 – 5 V (300 mV/dB) Error Range (AER): ±1.5 dB Response Time (ART): 100 mS/dB
5	Mute	Amplifier Enable: TTL “Low” or Open Amplifier Disable: TTL “High”
6	+VDD	+28 ± 2 V _{DC}
7	+VDD	+28 ± 2 V _{DC}
8	GND	Ground
9	GND	Ground
LED	LED Indicator	Output Power level indicator referenced to ALC setting

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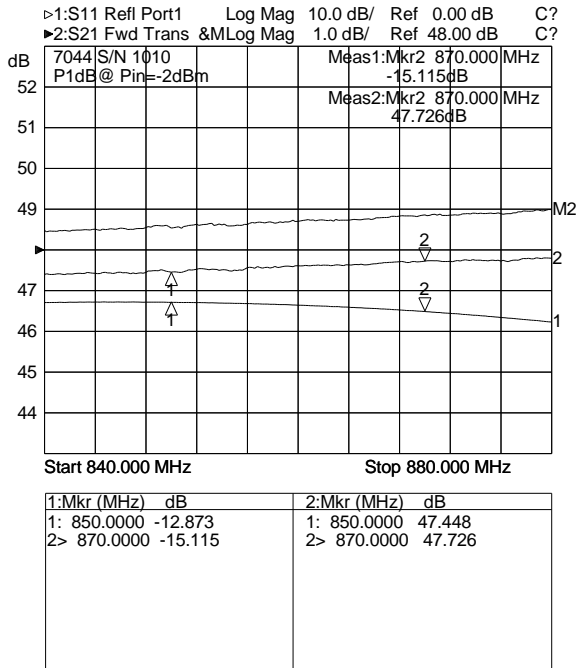
OUTLINE DRAWING



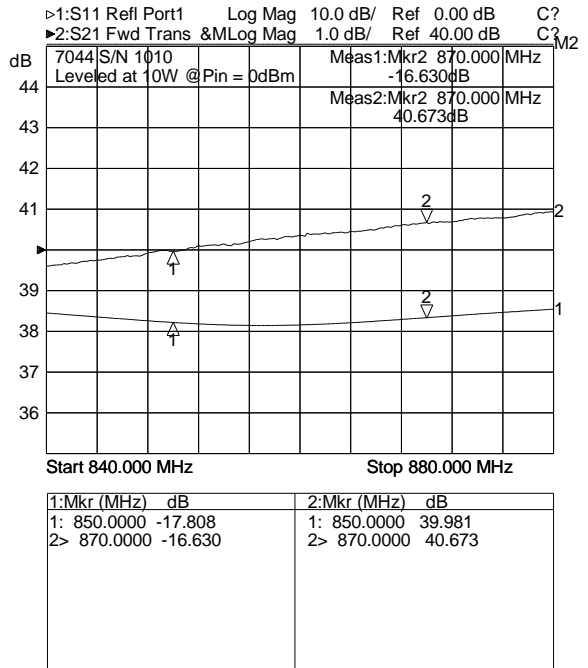
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TYPICAL PERFORMANCE PLOTS

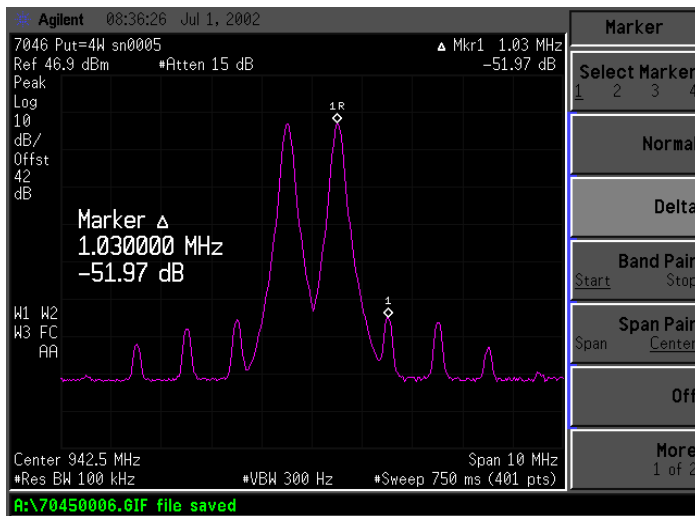
Top curve: Small signal gain @ Pin = -20dBm
 Middle: Pout with Pin = -2dBm
 Reference = 48dB
 Bottom: Input Return Loss



Top Curve: ALC Leveled @ Pout = 10W, Pin = 0dBm
 Reference = 40dB
 Bottom Curve: Input Return Loss



2-tone test @ Pout = 4W, Fc = 860MHz
 Id = 1.8A



2-tone test @ Pout = 1.25W (31dBm), Fc = 953MHz
 Id = 1.17A

