EMPOWER
RF SYSTEMS, INC.

Solid State Personal Communication Power Amplifier

7076 – PCM3H3JGM | 380 – 450 MHz / 40 Watts

The PCM3H3JGM (SKU 7076) is suitable for Ultra linear SMR & TETRA repeater and MicroCell applications. Also suitable for other digital modulation 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, SMR, TETRA
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built in output isolator
- Built in monitoring circuit

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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	380		450	MHz
Output Power CW	P_{SAT}	40	50		Watt
Output Power @ 1 dB Gain Compression Point	P_{1dB}	25			Watt
Small Signal Gain	G_{ss}	46	-	48	dB
Small Signal Gain Flatness	ΔG		±0.3	±0.5	dB
Third Order Intercept Point 2-Tones, Pout = 2 W Avg., Δ = 25 – 500 KHz	IP3	-42			dBc
Input Return loss	S11			-10	dB
Noise Figure	NF		7	10	dB
Harmonics @ P 1 dB Gain Compression Point	H			-45	dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	VDC	26	28	30	Volt
Supply Current @ Pout = 25 W CW	IDD		3.0	3.5	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	D-sub, 9 Pins, Male		
Cooling	External Heat sink		

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	Tc	-10		+75	°C
Storage Temperature	Tstg	-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 516.5)	SH / VI		Airborne		

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PROTECTIONS

Input Overdrive	+6 dBm	Max
Over Power Shutdown (Optional)	45 dBm	Min
Load VSWR @ 25 W 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 FWDM: 13 – 43 dBm @ 0 – 5 V (200 mV/dB) 28dBm output = V_{FWD} = 2.5 VDC
2	Reverse Power Monitor	Continuous Analog voltage relative to reflected power via RMS detector REVM: 6 – 36 dBm @ 0 – 5 V (150 mV/dB)
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): 26 – 40 dBm @ 0 – 5 V (250 mV/dB) Error Range (AER): ±1.5 dB Response Time (ART): 10 0mS/dB
5	Mute	Amplifier Enable: TTL "Low" or Open Amplifier Disable: TTL "High"
6	+VDD	+28 ± 2 VDC
7	+VDD	+28 ± 2 VDC
8	GND	Ground
9	GND	Ground

LED	LED Indicator	Output Power level indicator referenced to ALC setting (Independent of ALC ON or OFF)

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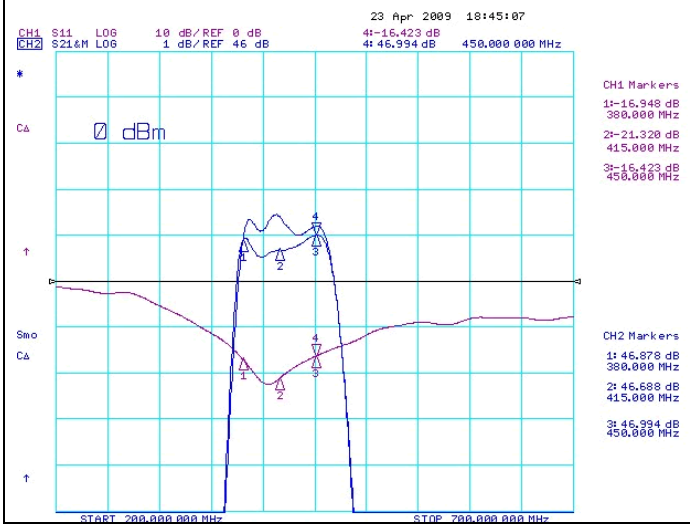
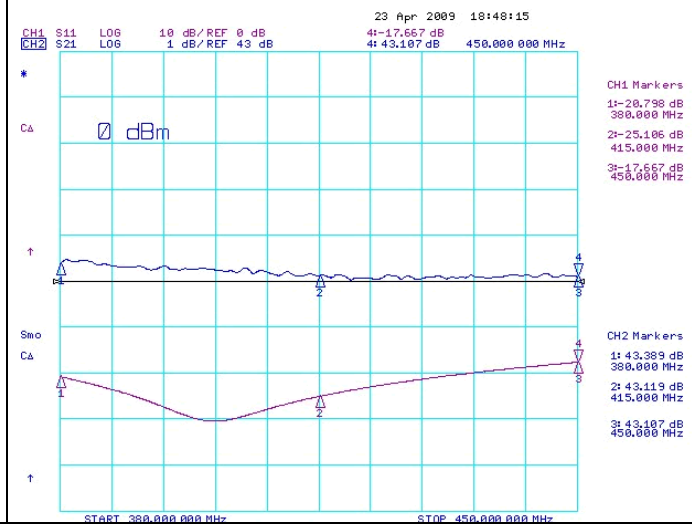
TYPICAL PERFORMANCE PLOTS

Plot 1 - Wide Band Frequency Response
Top Curve: Small Signal Gain @ P_{IN} = -20dBm
Middle Curve: Power Gain,P1dB @ P_{IN} = 0dBm
Reference: 46dB, 1dB/div.
Bottom Curve: Input VSWR
Reference: 0dB, 10dB/div.



Plot 2 – ALC @ 20W
Top Curve: ALC @ 20W, P_{IN} = 0dBm
Reference: 43dB, 1dB/div.
Bottom Curve: Input VSWR
Reference: 0dB, 10dB/div.



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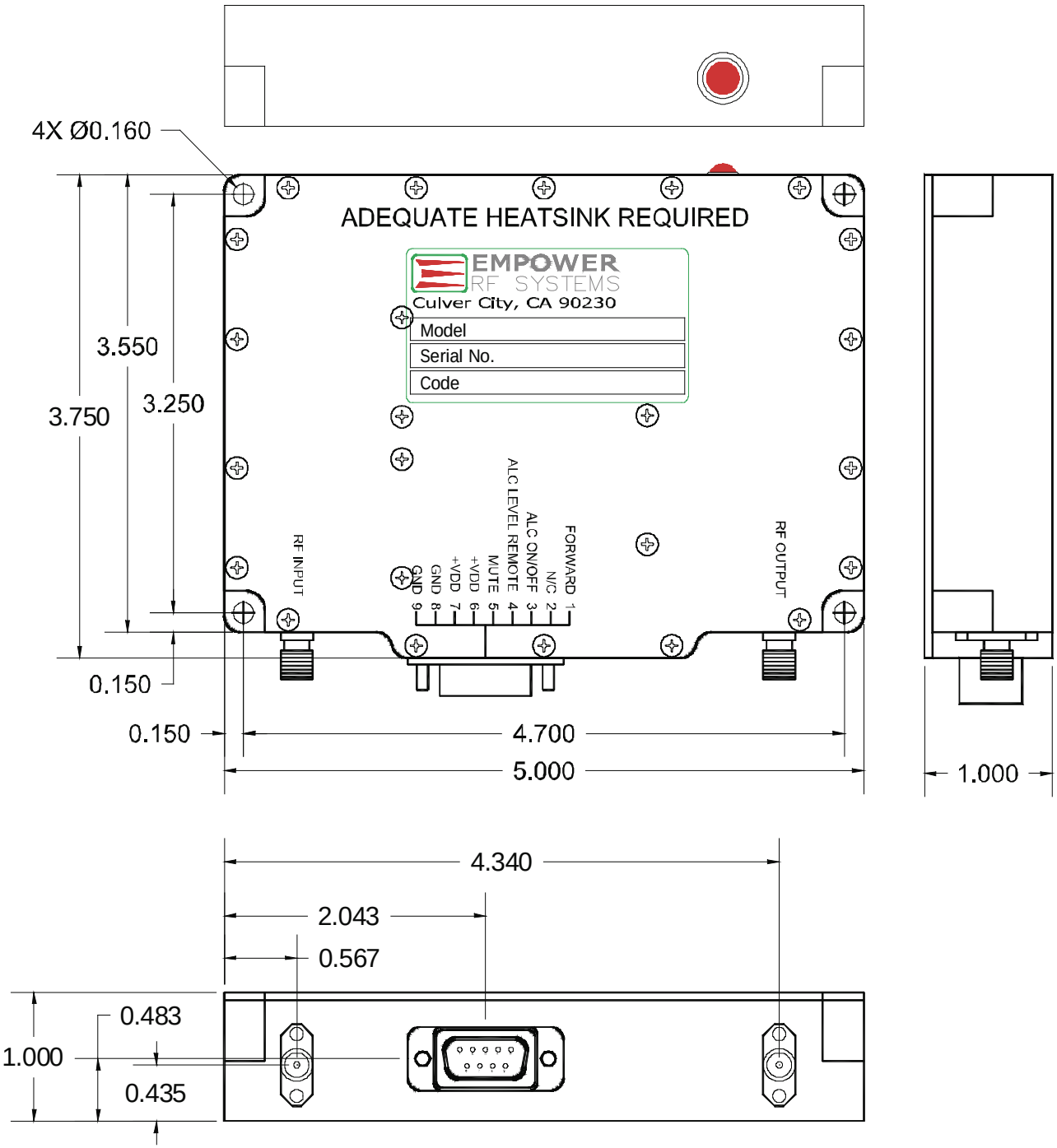
OUTLINE DRAWING



Design baseline Ref = PCM3J3KEM
List Price code = 4E