EMPOWER
RF SYSTEMS, INC.

Solid State Personal Communication Power Amplifier

7069 - PCM3I3JDO

420 - 430MHz / 20Watts UHF

The PCM3I3JDO (Stock No. 7069) is suitable for Ultra linear SMR & TETRA repeater and MicroCell applications. Also suitable for other digital modulation applications, this amplifier utilizes proprietary DIP^{TM} (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 monitoring circuits and Output Isolator

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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	420		430	MHz
Output Power @ 1dB Gain Compression	P_{1dB}	60			Watt
Reverse Power Handling	P_{REV}	25			Watt
Small Signal Gain	G_{SS}	50	-		dB
Small Signal Gain Flatness	ΔG_{SS}		±0.75	±1.0	dB
Third Order Intercept Point 2-Tone @ 40dBm/Tone, 25kHz-3MHz Spacing	IP3		+66		dBm
Gain Variation Over Temperature	ΔG_{TEMP}		±0.75		dB
Input/Output Return Loss	S_{11}/S_{22}			-14	dB
Noise Figure @ Max Gain	NF		7	10	dB
Harmonics @ P_{OUT} = 20W (ALC ON)	H			-50	dBc
Spurious Signals	Spur			-36	dBm
Operating Voltage	V_{DD}	26	28	30	Volt
Current Consumption @ P_{OUT} = 20W Composite	I_{DD}		5	6	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions	8.1 x 6.7 x 1.1	Inch	Max
Weight	3.5	lb.	Max
RF Connectors Input/Output	Input: Type-SMA, Female Output: Type-N, Female		
DC Interface Connectors	Control: D-sub 9-pin, Male DC Power: Hybrid, D-sub 3-pin, Male		
Cooling	External Heatsink (not supplied)		

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T_C	-25		+75	°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 I	SH / VI		Airborne		

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LIMITS

Input RF drive level without damage (ALC Mode)	+10dBm	Max
Over Power Shutdown	48dBm	Min
EMI RFI @ max power all interface pins	-55dBm	Max
Load VSWR @ P_{OUT}= 20W	High VSWR Shutdown (Built-in Isolator)	-
Thermal Overload	85°C shutdown	Max

CONTROL INTERFACE CONNECTOR – D-sub 9-pin, Male

Pin #	Description	Specifications
1	Forward Power Monitor	Continuous Analog voltage 0-5V_{DC} relative to forward power level 48dBm= 4.7V_{DC}, 28-48dBm range @ 180mV/dB
2	Reverse Power Monitor	Continuous Analog voltage 0-5V_{DC} relative to reflected power level 43dBm= 4.7V_{DC}, 20-43dBm range @ 120mV/dB
3	ALC ON/OFF	ALC OFF= TTL Logic High (5V) (*Internally Pulled-low*)
4	ALC Level	Continuous adjustable range via analog input levels, Input Impedance: ≥50KOhm Setting Point (ASP): 28-48dBm @ 0-5V 200mV/dB Error Range (AER): ±1.5dB, Response Time (ART): 100mS/dB
5	Mute	Amplifier Disable: TTL Logic High (5V) (*Internally Pulled-low*)
6-9	N/C	No Connection

DC POWER – Hybrid, D-sub 3-pin, Male

Pin #	Description	Specifications
A1	VDD	26.0-30.0V_{DC}
A2	GND	Ground
A3	N/C	No Connection

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

OUTLINE DRAWING