EMPOWER RF SYSTEMS, INC.

Solid State Personal Communication Power Amplifier

7116 – PCM5M5OGJ | 2620 – 2690MHz / 40 Watts LTE

The PCM5M5OGJ (SKU 7116) is suitable for single and LTE repeater applications in cellular frequency range. This amplifier utilizes linear LDMOS power devices that provide high gain, wide dynamic range, low distortions, and excellent group delay and phase linearity. Exceptional performance, long term reliability, and high efficiency are achieved by employing Direct Injection Pre-D™, advanced matching networks and combining techniques(Doherty Design), EMI/RFI filters, machined housings, and qualified components. Empower RF's ISO9001 Quality Assurance Program assures consistent performance and the highest reliability.

- Solid-state Pre-D linear design
- Small form factor and lightweight
- Suitable for single & multi FA LTE
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built-in control, monitoring circuits & output isolator
- High efficiency
- Doherty Design

Preliminary

ELECTRICAL SPECIFICATIONS @ +28V_{DC}, 25°C, 50Ω System, PAR 8.5 dB @ CCDF 0.01%

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	2620		2690	MHz
Small Signal Gain	G_{SS}		40	43	dB
Gain Flatness	ΔG		±0.5	±0.75	dB
Gain Variation over operating temperature range	ΔG_{TEMP}		±0.5		dB
Input/Output Return Loss	S_{11}/S_{22}			-14	dB
Noise Figure	NF			10	dB
Power Output LTE 10MHz/FA		40			Watt
ACLR @ P_{OUT} = 46 dBm 1-Tone, 1.4MHz to 20MHz at 40W 100kHz RBW	±3MHz			-45	dBc
				-45	
	±8MHz			-50	
				-50	
Harmonics @ P_{OUT} = 40W CW	H	-40			dBc
Spurious Signals @ 40W	Spur			-70	dBc
Operating Voltage	V_{DD}	27	28	29	Volt
Current Consumption @ P_{OUT} = 40W	I_{DD}		6.0	6.3	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit	Limit
Dimensions	5.0 x 6.8 x 1.1	inch	Max
Weight	4.4	lbs.	Max
RF Connectors Input / Output	Type-SMA, 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	-10		+70	°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
Shock & Vibration MIL-STD-810F Method 516.5/514.5	SH / VI		Airborne		

PROTECTIONS

Load VSWR @ P_{OUT} = 40W	∞ @ all load phase & amplitude, Built-in Isolator	-
Thermal Overload	85°C shutdown	Max

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I/O CONTROL INTERFACE CONNECTOR – D-sub 9-pin, Male

Pin #	Description	Specifications
1	GND	Ground
2	Over Power Alarm	TTL Logic High (5V): 47dBm, ±0.5dB
3	VSWR Alarm	TTL Logic High (5V): ≥3:1 VSWR
4	Temperature Monitor	Analog voltage relative to unit temperature @ 10mV/°C with $0.5V_{OFFSET}$ Formula: $(V_{MEASURED}$ - 0.5V)/0.01= °C, Example; (0.88V - 0.5V)/0.01= 38°C
5	Over Temp Alarm	TTL Logic High (5V): ≥85°C shutdown, auto-restart @ 75°C
6	Shutdown	Amplifier Enable: TTL Logic Low (0V) (*Internally Pulled-high*)
7	GND	Ground
8	Forward Power Monitor	+4V @ 46dBm, 0.1V/dB with $0.6V_{OFFSET}$, $[(0.1 \times RF_{OUT}) - 0.6]= V_{FWD}$ or $(V_{MEASURED} + 0.6) / 0.1= RF_{P\_OUT}$, Example; (3.6V + 0.6)/0.1 = 42dBm Monitor range: 16 - 46dBm
9	N/C	No Connection

DC POWER CONNECTOR – Hybrid, D-sub 3-pin, Male

Pin #	Description	Specifications
A1	VDD	$+27.0\text{-}29.0V_{DC}$
A2	GND	Ground
A3	N/C	No Connection

OUTLINE DRAWING