

Solid State Personal Communication Power Amplifier

7114 – PCM3R3SAJ
851 – 870MHz / 10 Watts TETRA

The PCM3R3SAJ (SKU 7114) is suitable for Ultra linear SMR & TETRA repeater. Also suitable for other digital modulation applications, this amplifier utilizes 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. Empower RF's ISO9001 Quality Assurance Program assures consistent performance and the highest reliability.

- Solid-state linear design
- Small form factor and lightweight
- Suitable for TETRA
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built-in Control & Monitoring Circuits
- Built in output isolator

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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	851		870	MHz
Small Signal Gain	G _{SS}	39	40	41	dB
Gain Flatness	ΔG			±0.5	dB
Gain Variation over operating temperature range	ΔG _{TEMP}		±0.5		dB
Input/Output Return Loss	S ₁₁ /S ₂₂			-18	dB
Power Output		10			W
Inter-modulation 2 tones CW f1-851MHz +37dBm, f=2 866MHz +37dBm	±5MHz	-60			dBc
Inter-modulation 2 tones CW f1-860.4MHz +37dBm, f=2 860.7MHz +37dBm	±10MHz	-60			dBc
Harmonics @ 10 Watt	H	-40			dBc
Spurious Signals @ 10Watts	Spur			-36	dBc
Operating Voltage	V _{DD}	27	28	29	Volt
Supply Current @ P _{OUT} = 10W	I _{DD}		3.5	4.0	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Unit	Limit
Dimensions	200 x 110 x 35	mm	Max
Weight	3.5	lbs.	Max
RF Connectors Input / Output	SMA Female	-	-
Interface and Alarms / DC	9-Pin D-Sub Male	-	-
Cooling	External heatsink + forced air	-	-

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T _c	-20		+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)	SH / VI		Airborne		

PROTECTIONS

Load VSWR @ 10 W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	Nom
Thermal Overload	90°C shutdown	Max

INTERFACE CONNECTORS

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D-Sub, 9-Pin - Control

Pin #	Description	Specifications
1	UART Tx	
2	UART Rx	
3	Forward Power Monitor	
4	+VDD	+28.0V _{DC} ±1.0 V
5	+VDD	+28.0V _{DC} ±1.0 V
6	+VDD	+28.0V _{DC} ±1.0 V
7	GND	Ground
8	GND	Ground
9	GND	Ground

OUTLINE DRAWING

