EMPOWER
RF SYSTEMS, INC.

Solid State Personal Communication Power Amplifier

7051 - PCM4S5A6M

1930 – 1990 MHz / 4Watts CDMA, 25Watts CW

The PCM4S5A6M (SKU 7051) is designed for PCS & CDMA single & multi-channel repeater applications. Also suitable for GSM, and TDMA digital modulations, this amplifier provides 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 efficient broadband RF 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 and lightweight
- Suitable for CW, CDMA, GSM, TDMA & multi-FA
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built in Output Isolator
- Built in monitoring circuit

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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	1930		1990	MHz
Output Power CW	P_{SAT}		30		Watt
Output Power @ 1dB Gain Compression	P_{1dB}	25			Watt
Output Power CDMA	P_{CDMA}	4			Watt
Power Gain @ 4W composite	G_p	46	-		dB
Small Signal Gain Flatness	ΔG		±0.25	±0.5	dB
ACPR @ 4 Watt CDMA with HP E4433B source fc ±885 KHz @ 30 KHz RBW, 100Hz VBW fc ±1.98 MHz @ 30 KHz RBW, 100Hz VBW fc ±3.125 MHz @ 1 MHz RBW	ACPR			 -50 -60 -13	 dBc dBc dBm
Third Order Intercept Point 2-Tone @ 33dBm/tone, 500kHz Spacing	IP3		+58		dBm
Input/Output Return Loss	S_{11} / S_{22}			-14	dB
Noise Figure	NF		7	10	dB
Harmonics @ P_{OUT} = 4W	H			-45	dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V_{DC}	26	28	30	Volt
Current Consumption @ P_{OUT} = 25W CW	I_{DD}		3.0		Amp
Current Consumption @ P_{OUT} = 4W Composite	I_{DD}		1.6	2.0	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 Input/Output	Type-SMA, Female		
DC Interface Connector	D-Sub 9-Pin, Male		
Cooling	External Heatsink (Not Supplied)		

ENVIRONMENTAL CHARACTERISTICS (Design 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			30,000	Feet
Vibration/Shock MIL-STD-810F - Method 514.5/516.5 – Proc I	VI/SH		Airborne		

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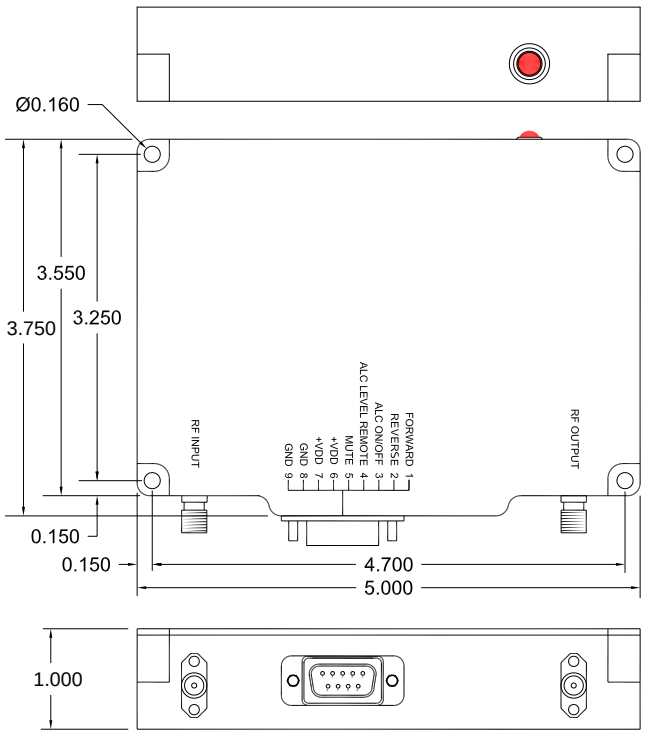
PROTECTIONS

Input Overdrive	+6 dBm	Max
Load VSWR @ P_{OUT} = 25W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	85°C shutdown	Max

DC INTERFACE CONNECTOR – D-Sub 9-Pin, Male

Pin #	Description	Specifications
1	Forward Power Monitor	Continuous Analog voltage relative to forward power level FWDM: 23 – 43dBm @ 0 – 5V (200mV/dB), 28dBm output, V_{FWD} = 2.5V_{DC}
2	Reverse Power Monitor	Continuous Analog voltage relative to reflected power level REVM: 16 – 36 dBm @ 0 – 5V (150 mV/dB)
3	ALC ON/OFF	ALC ON = TTL Logic Low (0V) (*Internally Pulled-High*)
4	ALC Level	Continuous adjustable range via analog input levels Setting Point (ASP): 31 – 41dBm @ 0 – 5V (300 mV/dB) Error Range (AER): ±1.5dB Response Time (ART): 100mS/dB
5	Mute	Amplifier Disable: TTL Logic High (5V) (*Internally Pulled-Low*)
6	+VDD	+28.0V_{DC} ±2V
7	+VDD	+28.0V_{DC} ±2V
8	GND	Ground
9	GND	Ground
LED	LED Indicator	Output Power level indicator referenced to ALC setting

OUTLINE DRAWING



TYPICAL PERFORMANCE PLOT

Plot 1 – Small Signal Gain and P_{1dB}
Top Curve: Small Signal Gain @ P_{IN} = -20dBm
Middle Curve: Power Gain @ P_{1dB}, P_{IN} = -1.0dBm
Reference: 44dB, 1dB/div.
Bottom Curve: Input Return Loss
Reference: 0dB, 10dB/div.