

Solid State Personal Communication Power Amplifier

7040 - PCM3R3SAL
869 – 894 MHz / 12 Watts CDMA

The PCM3R3SAL (SKU 7040) is suitable for Ultra linear CDMA repeater and base station applications in the Cellular A&B frequency range. Also suitable for GSM and TDMA applications, this amplifier utilizes linear LDMOS power devices that provide 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 Pre-D linear design
- Small form factor and lightweight
- Suitable for Single & Multi-Carrier CDMA, GSM and TDMA Application
- 50 Ohm Input/Output impedance
- High reliability and ruggedness
- Built-in high dynamic range ALC circuit and control functions
- Built-in Output Circulator

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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	869		894	MHz
Output Power CW	P _{SAT}	50	80		Watt
Output Power @ 1dB Gain Compression	P _{1dB}		50		Watt
ACPR @ 12W CDMA Output Agilent Signal Generator: E4433B F _c ±885kHz @ 30kHz RBW, 100Hz VBW F _c ±1.98MHz @ 30kHz RBW, 100Hz VBW F _c ±3.125MHz @ 1MHz RBW	ACPR			-50	dBc
				-60	dBc
				-13	dBm
Third Order Intercept Point 2-Tone @ 38dBm/Tone, 500kHz Spacing	IP3	+62	+66		dBm
Small Signal Gain, P _{IN} = -20dBm	G _{SS}	44	46		dB
Small Signal Gain Flatness, P _{IN} = -20dBm	ΔG _{SS}		±0.5	±0.75	dB
Input/Output Return Loss	S ₁₁ / S ₂₂			-14	dB
Harmonics @ P _{OUT} = 12W	H			-45	dBc
Noise Figure	NF		7	10	dB
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V _{DD}	26	28	30	Volt
Current Consumption @ P _{OUT} = 50W CW	I _{DD}		7	10	Amp
Current Consumption @ P _{OUT} = 12W Composite	I _{DD}		4		Amp

ENVIRONMENTAL CHARACTERISTICS

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T _C	0		+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 / Vibration MIL-STD-810F - Method 514.5/516.5 – Proc I	VI / SH		Airborne		

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions	6.4 x 3.4 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)		

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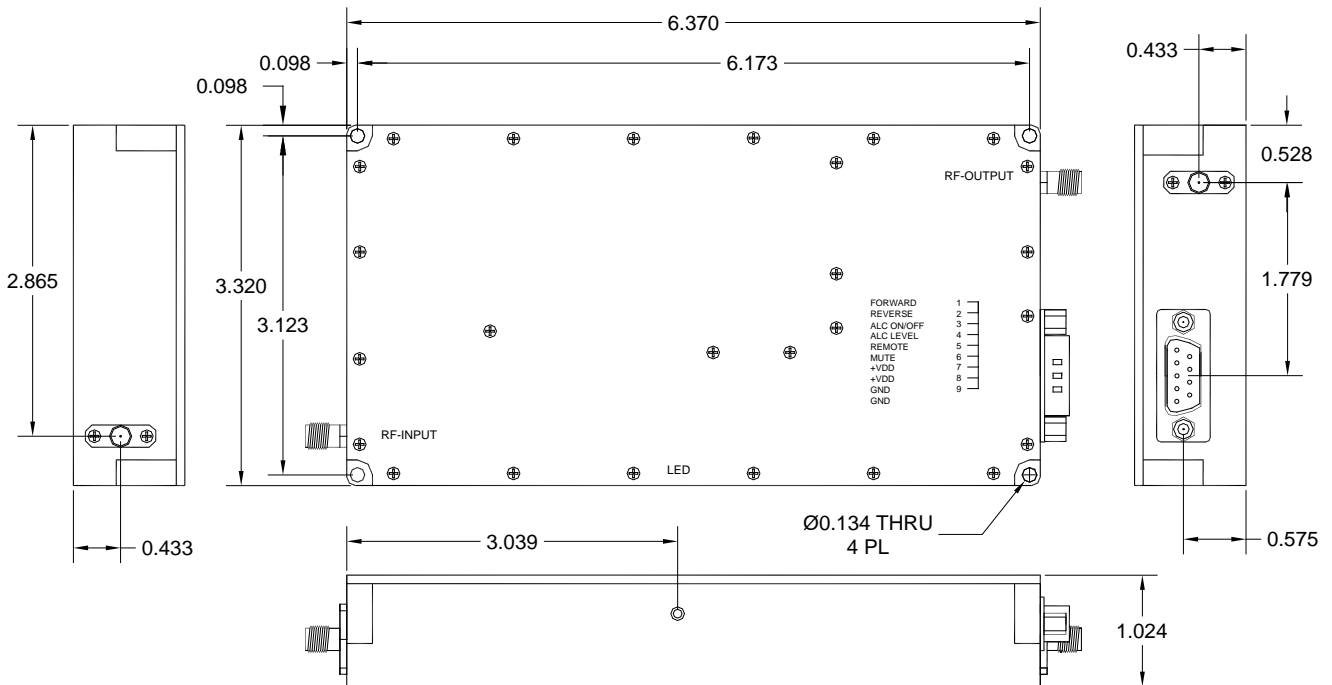
LIMITS

Input RF drive level without damage	10dBm	Max
Load VSWR @ P _{OUT} = 12W	High VSWR Shutdown (Built-in Circulator)	-
Thermal Overload	85°C shutdown	Max

INTERFACE CONNECTOR - Dsub, 9-Pin

Pin #	Description	Specifications
1	Forward Power Monitor	Continuous Analog voltage 0-5V _{DC} relative to forward power level FWD: 17-47dBm @ 0-5V (200mV/dB)
2	Reverse Power Monitor	Continuous Analog voltage 0-5V _{DC} relative to reflected power level REVM: 12-42dBm @ 0-5V _{DC} (150mV/dB)
3	ALC ON/OFF	ALC OFF = TTL Logic High (5V) <i>(Internally Pulled-low)</i>
4	ALC Level	Continuous adjustable range via analog input level Setting Point (ASP): 32-42dBm @ 0-5V (300mV/dB) Error Range (AER): ±1.5dB Response Time (ART): 100mS/dB
5	Mute	Amplifier Disable: TTL Logic High (5V) <i>(Internally Pulled-low)</i>
6&7	+VDD	+26.0-30.0V _{DC}
8&9	GND	Ground
LED	LED Indicator	Output Power level indicator referenced to ALC setting

OUTLINE DRAWING



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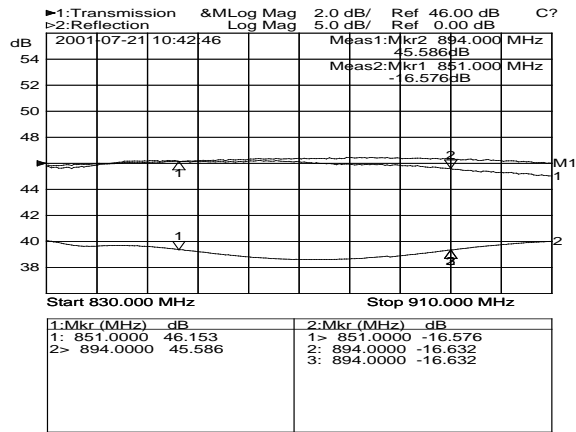
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TYPICAL PERFORMANCE PLOTS

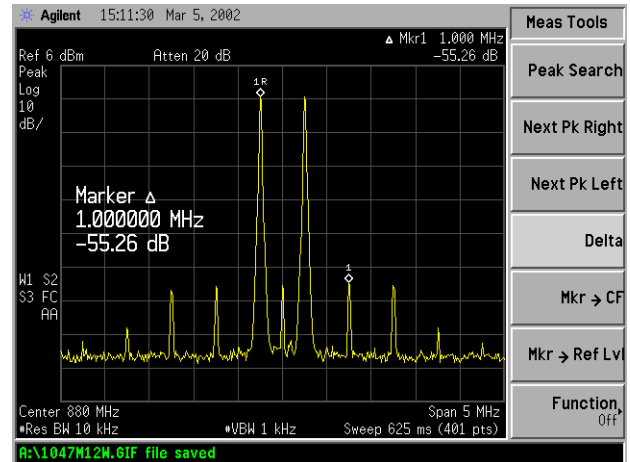
Plot 1 – Small Signal Gain and P_{1dB}

Top Curve: Small Signal Gain @ P_{IN} = -20dBm
 Middle Curve: Power Gain @ P_{1dB}, P_{IN} = +3dBm
 Reference: 46dB, 2dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 5dB/div.



Plot 2 – 2-Tone IMD

P_{OUT} = 12W Average
 Center Freq. = 880MHz



Plot 3 – CDMA

Center Freq: 881.5MHz
 P_{OUT} = 12W Average

