

## Solid State Personal Communication Power Amplifier

**7028 - PCM5C5EFO**
**2110 – 2170 MHz / 30 Watts 3GPP W-CDMA**

### UMTS AMPLIFIER MODULE FOR SMALL BASE STATIONS AND REPEATERS

The PCM5C5EFO (SKU 7028) is designed for single and multi-channel 3GPP W-CDMA repeater applications in the UMTS 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, EMI/RFI filters, machined housings, and qualified components. Empower RF's ISO9001 Quality Assurance Program assures consistent performance and the highest reliability.



- Solid-state linearized design
- Small and lightweight
- Suitable for single & multi FA W-CDMA
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built-in Control & Monitoring Circuits
- Built-in High Dynamic range ALC circuit
- Built-in Output Isolator

#### ELECTRICAL SPECIFICATIONS @ +28V<sub>DC</sub>, 25°C, 50Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	2110		2170	MHz
Small Signal Gain	G <sub>SS</sub>	49	50	51	dB
Gain Flatness	ΔG		±0.75	±1.0	dB
Gain Flatness @ 45 dBm, P <sub>IN</sub> = 0 dBm (ALC ON)	ΔG <sub>ALC</sub>			±0.75	dB
Gain variation over operating temperature	ΔG <sub>TEMP</sub>			±0.75	dB
Input Power Range	P <sub>IN</sub>	-25		-5	dBm
Return Loss Input/Output	S <sub>11</sub> /S <sub>22</sub>			-14	dB
Power Output W-CDMA per 3 GPP standard	P <sub>WCDMA</sub>	30			Watt
ALC Range @ 45 dBm	Δ <sub>ALC</sub>	12			dB
ACLR @ P <sub>OUT</sub> = 45dBm ALC ON, P <sub>IN</sub> = 0dBm 1-Tone W-CDMA, 64 DPCH, BW = 3.84MHz Spectrum Analyzer Settings: Res BW = 30kHz, Video BW = 100Hz	Δ = 5MHz			-48	dBc
	Δ = 10MHz			-53	
ACLR @ P <sub>OUT</sub> = 42 dBm ALC ON, P <sub>IN</sub> = 0dBm 2-Tone W-CDMA, 64 DPCH BW = 3.84MHz, 5MHz Spacing Spectrum Analyzer Settings: Res BW = 30kHz, Video BW = 100Hz	Δ = 5MHz			-48	dBc
	Δ = 10MHz			-53	
Inter-modulation Distortion, ALC ON 2-Tone, 39dBm/Tone, Spacing = 25kHz – 3MHz	IP3			-46	dBc
Harmonics @ P <sub>OUT</sub> = 16W, 1FA W-CDMA	2 <sup>ND</sup> /3 <sup>RD</sup>			-45	dBc
Spurious Signals @ 16W	Spur			-36	dBm
Noise Figure @ Max Gain	NF		7	10	dB
Operating Voltage	V <sub>DD</sub>	26	28	30	Volt
Current Consumption @ P <sub>OUT</sub> = 16W W-CDMA	I <sub>DD</sub>		10		Amp

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### MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions	9.1" x 7.7" x 1.1"	Inch.
Weight	5.0	lb.
RF Connectors Input / Output	Type-SMA, Female/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 <sub>C</sub>	-25		+75	°C
Storage Temperature	T <sub>STG</sub>	-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		

### Limits

Over Power Shutdown	+49 dBm	Min
Load VSWR @ P <sub>OUT</sub> = 16W	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	-
Thermal Overload	85°C shutdown	Max

### CONTROL INTERFACE CONNECTOR – D-Sub 9-Pin, Male

Pin #	Description	Specifications
1	Forward Power Monitor	Continuous Analog voltage relative to forward power via RMS detector FWD <sub>M</sub> : 27 – 47 dBm @ 1.4 – 5 V, 180 mV/dB (Typical)
2	Reverse Power Monitor	Continuous Analog voltage relative to reflected power via RMS detector REV <sub>M</sub> : 19 – 40 dBm @ 0.5 – 5 V Open load, 120 mV/dB (typical)
3	ALC ON/OFF	ALC OFF = TTL Logic High (5V) (Internally Pulled-Low)
4	ALC Level	Continuous adjustable range via analog input levels Setting Point (ASP): 33 – 45 dBm @ 0 – 5 V (250 mV/dB typical) Error Range (AER): ±1.5 dB Input Impedance: > 50 KOhm Response Time (ART): 100 mS/dB
5	Mute	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-Low)
6, 7, 8	N/C	No Connection
9	GND	Ground

### DC POWER CONNECTOR – Hybrid, D-Sub 3-Pin, Male

Pin #	Description	Specifications
A1	VDD	+28.0V <sub>DC</sub> ±2.0V
A2	GND	Ground
A3	N/C	No Connection

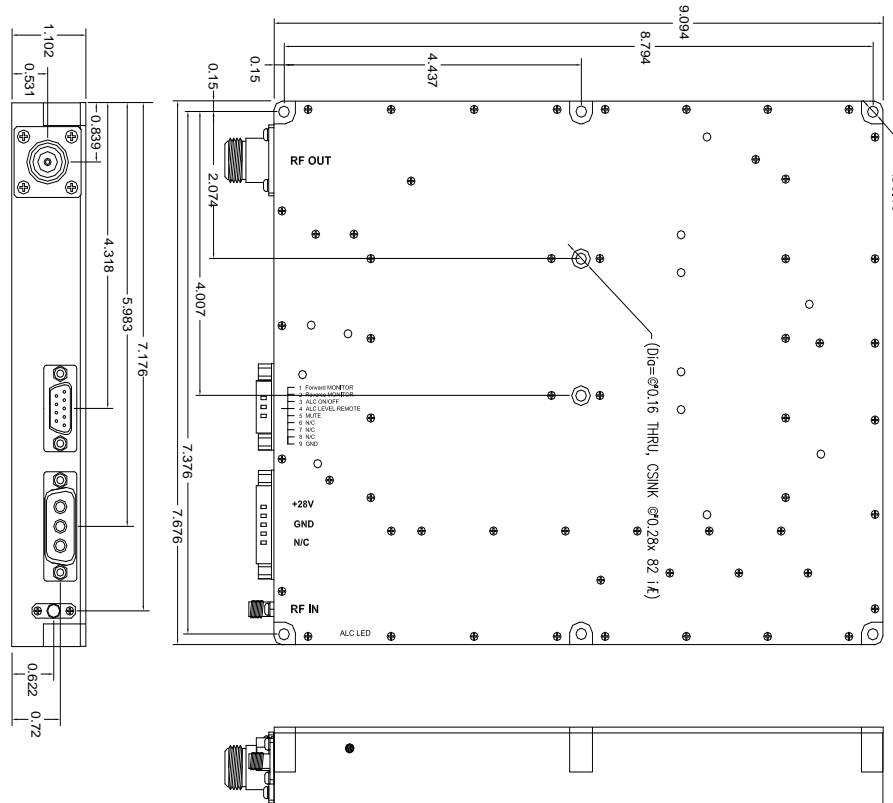
<b>LED</b>	LED Indicator	Output Power level indicator referenced to ALC setting (Independent of ALC ON or OFF)
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## OUTLINE DRAWING



## TYPICAL PERFORMANCE PLOTS

