

Solid State Personal Communication Power Amplifier

7049 - PCM5C5EAL
2110 – 2170 MHz / 10 Watts W-CDMA

The PCM5C5EAL (SKU 7049) is designed for single and multi-channel W-CDMA repeater applications in the UMTS frequency range. 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 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 Output Isolator
- Built-in monitoring & High Dynamic range ALC circuits

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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	2110		2170	MHz
Power Output CW	P _{SAT}	50			Watt
Power Output W-CDMA per 3 GPP standard	P _{WCDMA}	10			Watt
RF Input Range @ 1FA, W-CDMA	P _{IN}	-24		-4	dBm
ACLR @ P _{OUT} = 40 dBm (ALC ON) 1-Tone W-CDMA, 64 DPCH BW = 3.84 MHz, P _{IN} = 0 dBm Spectrum Analyzer Settings: Res BW = 30 KHz, Video BW = 100 Hz	Δ = 5MHz	-47			dBc
	Δ = 10MHz	-54			
ACLR @ P _{OUT} = 37 dBm (ALC ON) 2-Tone W-CDMA, 64 DPCH BW = 3.84 MHz, Δ = 5 MHz, P _{IN} = 0 dBm Spectrum Analyzer Settings: Res BW = 30 KHz, Video BW = 100 Hz	Δ = 5MHz	-47			dBc
	Δ = 10MHz	-48			
Small Signal Gain	G _{SS}	44	46	48	dB
Small Signal Gain Flatness	ΔG		±0.75	±1.0	dB
Gain variation over operating temperature range	ΔG _{TEMP}			±0.75	dB
Input/Output Return Loss	S ₁₁ / S ₂₂			-14	db
Harmonics @ 10W, 1FA, WCDMA	H			-45	dBc
Noise Figure	NF		7	10	dB
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	V _{DD}	26	28	30	Volt
Supply Current @ P _{OUT} = 10W, 1F, WCDMA	I _{DD}		4	5	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions	5.5 x 4.5 x 1.0	Inch	Max
Weight	2.0	lb.	Max
RF Connectors Input/Output	Type-SMA, Female		
DC Interface Connector	D-Sub 9-Pin, Male		
Cooling	External Heatsink Required (Not Supplied)		

PROTECTIONS

Input Overdrive	0 dBm	Max
Load VSWR @ P _{OUT} = 10W	∞ @ all load phase and amplitude	-
Thermal Overload	85°C shutdown	Max

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ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

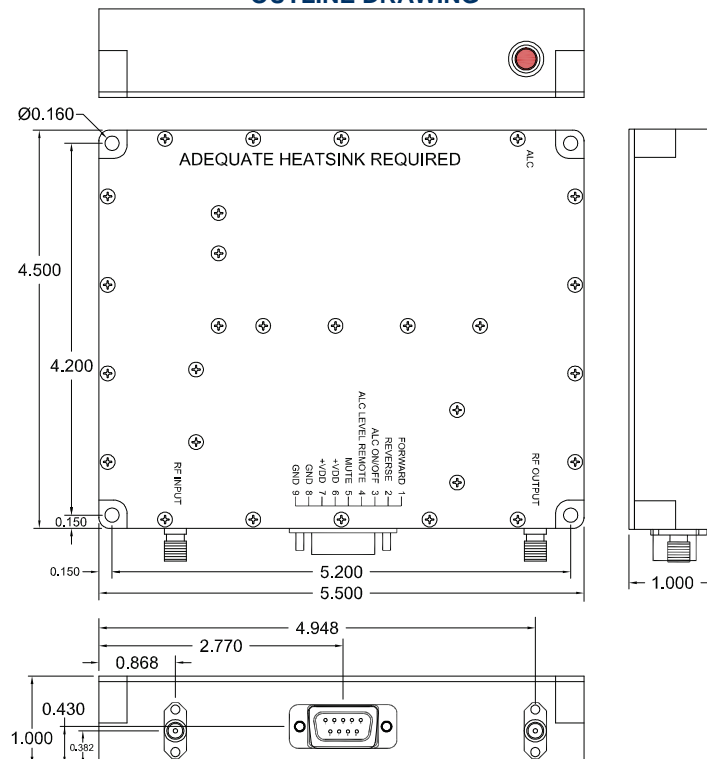
Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T _C	-10		+60	°C
Storage Temperature	T _{STG}	-40		+85	°C
Relative Humidity (non-condensing)	RH			95	%
Altitude (MIL-STD-810F Method 500.4)	ALT			30,000	Feet
Vibration/Shock MIL-STD-810F - Method 514.5/516.5 – Proc I	VI/SH		Airborne		

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

Pin #	Description	Specifications
1	Forward	Continuous Analog voltage relative to forward power level FWDM: 23 – 45dBm @ 0-5V (200mV/dB ±1.5dB) → 1FA WCDMA
2	Reverse	Continuous Analog voltage relative to reflected power level REVM: 18 – 38dBm @ 0-5V (150mV/dB ±1.5dB) → 1FA WCDMA
3	ALC ON/OFF	ALC OFF: TTL Logic High (5V) (Internally Pulled-low)
4	ALC Level	Continuous analog input levels: Setting Point (ASP): 26 – 40dBm @ 0-5V (250mV/dB) Error Range (AER): ±1.5dB, Input impedance > 50KΩ, Response Time (ART): 100mS/dB → 1FA WCDMA
5	Mute	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-Low)
6&7	+VDD	+28.0V _{DC} ±2V
8&9	GND	Ground

LED	LED Indicator	Output Power level indicator referenced to ALC setting (Independent of ALC ON or OFF)
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OUTLINE DRAWING

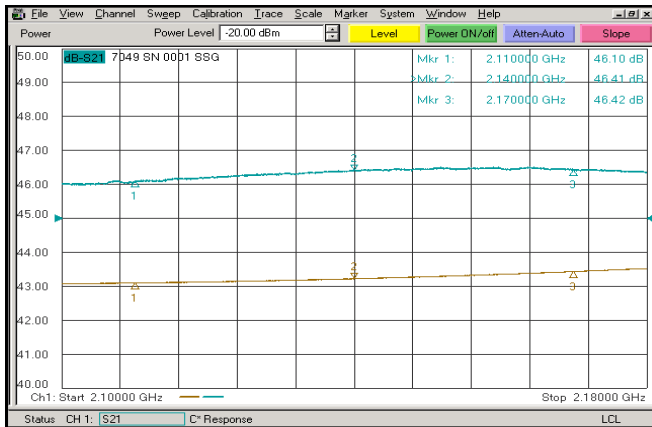


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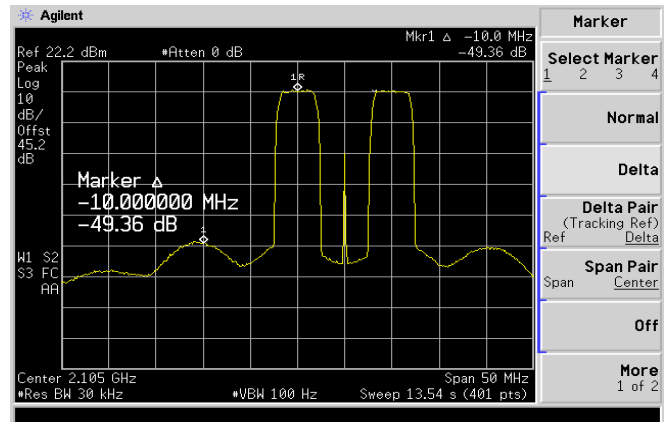
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Typical Performance Plots

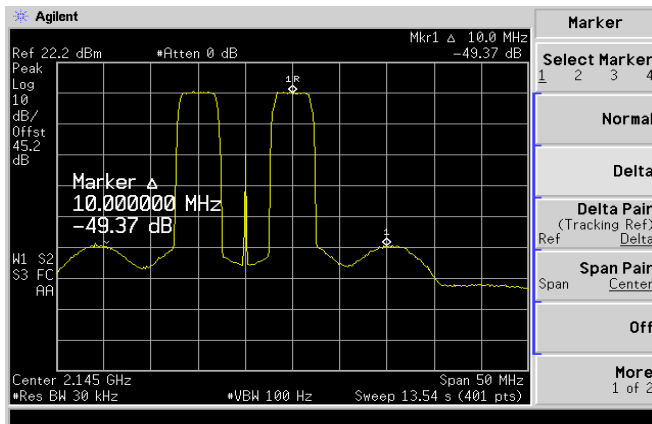
Top Curve: Small Signal Gain @ $P_{IN} = -20\text{dBm}$
 Reference: 45dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



2-Tone W-CDMA, 64DPCH @ $P_{out} = 5\text{W}$, 2.11GHz



2-Tone W-CDMA, 64DPCH @ $P_{out} = 5\text{W}$, 2.14GHz



2-Tone W-CDMA, 64DPCH @ $P_{out} = 5\text{W}$, 2.17GHz

