

Solid State Personal Communication Power Amplifier

7010 - PCM4S5ADO
1930 – 1990 MHz / 30 Watts CDMA

The PCM4S5ADO (SKU 7010) is suitable for Ultra linear single and multi-carrier repeater and base applications in the PCS 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 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 form factor and lightweight
- Suitable for Multi-Carrier CDMA, GSM, and TDMA application
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built-in Control Circuits and Output Isolator

ELECTRICAL SPECIFICATIONS @ +27V_{DC}, 25°C, 50Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	1930		1990	MHz
Power Output Multi-Carrier (Peak-Envelope-Power)	P _{SAT}		250		Watt
Power Output @ 1 dB Gain Compression (Peak-Envelope-Power)	P _{1dB}		150		Watt
Power Output Per IS-97 Standard, single carrier	CDMA		-20		dBm
Small Signal Gain	G _{SS}	50			dB
Input Power for Rated P _{OUT} , IS-97 Standard	P _{IN}		20		dBm
Small Signal Gain Flatness	ΔG		±1.0	±1.5	dB
Gain @ Shutdown @ P _{IN} = -10dBm	G _{MUTE}		-25		dB
Input Return Loss	S ₁₁			-10	dB
ACPR @ 30W, Single Carrier	ACPR ₁		[fc ±885 KHz @ 30 KHz RBW, 100 Hz VBW] -45 [fc ±1.98 MHz @ 30 KHz RBW, 100 Hz VBW] -65		dBc
ACPR @ 20W Four Carrier	ACPR ₄		[fc ±885 KHz @ 30 KHz RBW, 100 Hz VBW] -50 [fc ±1.98 MHz @ 30 KHz RBW, 100 Hz VBW] -55		dBc
Inter-Modulation Distortion @ 2-tone @ P _{OUT} = 30W _{AVERAGE}	IMD			-52	dBc
2-tone @ 44dBm/Tone	IP3	+58			dBm
Harmonics @ P _{OUT} = 30W	2 ND			-40	dBc
	3 RD			-60	dBc
Spurious Signals	Spur		[fc ±2.25 MHz @ BW = 1 MHz] -72		dBc
Noise Figure	NF			16	dB
Operating Voltage	V _{DD}	26	27	28	Volt
Current Consumption @ P _{OUT} = 30W Composite	I _{DD}			10	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limit
Dimensions	6.7" x 8.1" x 1.1"	Inch	Max
Weight	3.5	lb.	Max
RF Connectors Input / Output	Input: Type-SMA, Female Output: 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)		

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ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T _C	-10		+85	°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		

LIMITS

Input RF drive level without damage		+6 dBm	Max
Load VSWR @ P _{OUT} = 30W	∞ @ all load phase & amplitude (Built-in Isolator)		-
Thermal Overload		85°C shutdown	Max

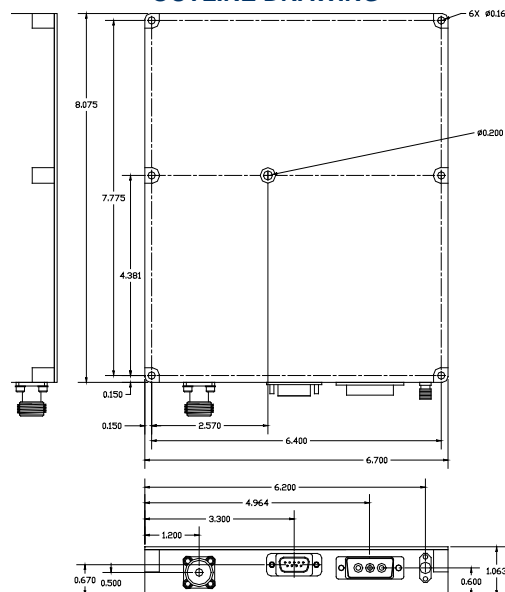
CONTROL INTERFACE CONNECTOR – D-sub 9-pin, Male

Pin #	Description	Specifications
1	GND	Ground
2	Over Power Alarm	TTL Logic High (5V) @ +48dBm, ±0.5dB (60W)
3	VSWR Alarm	TTL Logic High (5V) @ 3:1 VSWR
4	Temperature Monitor	Analog voltage relative to module temperature @ 10mV/°C (0.5V _{OFFSET}) Formula: (V _{MEASURED} - 0.5)/0.01 = °C, Example: (0.75V-0.5V)/0.01 = 25°C
5	Over Temp Shutdown	Over Temp Alarm= TTL Logic High (5V) @ 85°C, unit shutdown and resume operation @ 65°C
6	Shutdown	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-low)
7	GND	Ground
8	Forward Power Monitor	Analog voltage relative to Output power level: 44.8dBm = +4.0V, 0.1V/dB
9	N/C	No Connection

DC POWER CONNECTOR – Hybrid, D-sub 3-pin, Male

Pin #	Description	Specifications
A1	VDD	+26.0-28.0V _{DC}
A2	GND	Ground
A3	N/C	No Connection

OUTLINE DRAWING



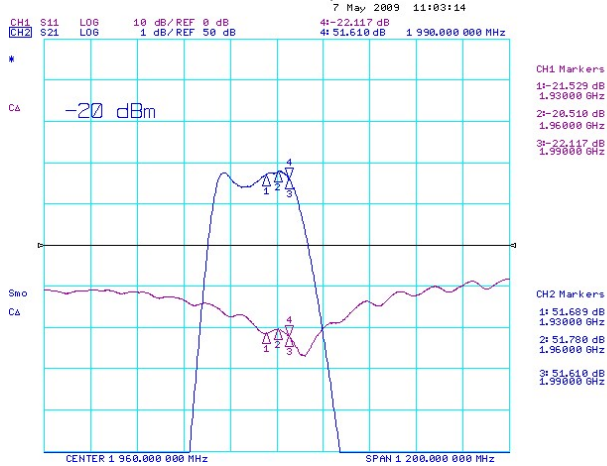
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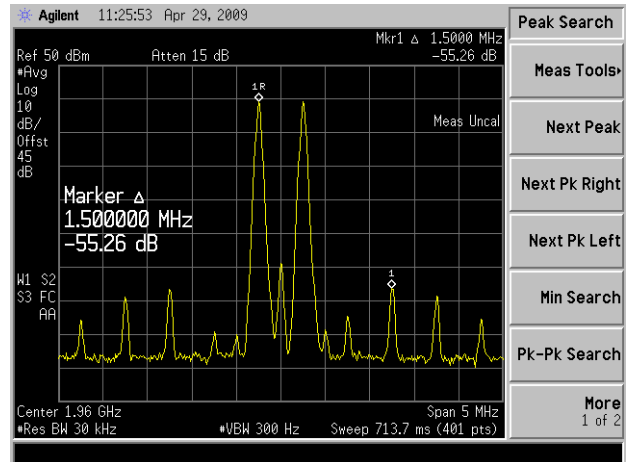
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PERFORMANCE PLOTS

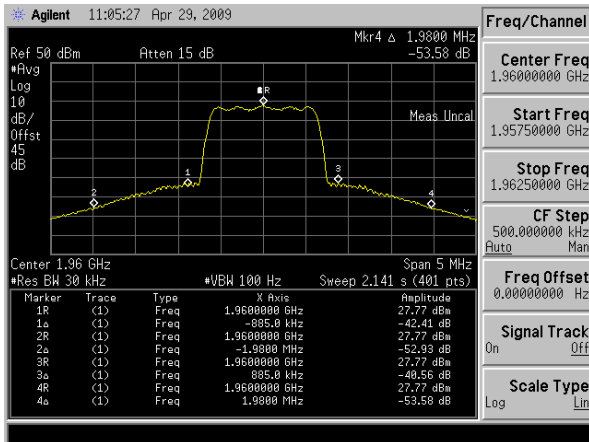
Plot 1 – Broadband Plot 1360-2560MHz
 Small Signal Gain @ P_{IN} = -20dBm
 Reference:50dB, 1dB/div
 Bottom curve: Input Return Loss



Plot 2 – 2-Tone @ 40dBm/Tone
 Center Frequency: 1960MHz, 500kHz Spacing



Plot 3 – CDMA, 1FA @ 30W Average
 Center Frequency: 1960MHz



Plot 4 – CDMA, 4FA @ 20W Average
 Center Frequency: 1960MHz

