

Solid State Personal Communication Power Amplifier

7071 - PCM3H3IDO
390 – 395 MHz / 20 Watts

The PCM3H3IDO (SKU 7071) is suitable for Ultra linear SMR & TETRA multi-channel repeater and MicroCell applications. Also suitable for other digital modulation applications, this amplifier utilizes proprietary DIP™ (Direct Injection Pre-D) circuit and linear LDMOS power devices that provide ample output power margins, 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. This rugged module is input overdrive and output isolator protected, and proprietary ALC circuits ensure stable, ripple free output power under multi-channel conditions. Empower RF's ISO9001 Quality Assurance Program assures consistent performance and the highest reliability.



- Solid-state linear design
- Small and lightweight
- Suitable for TETRA, SMR and other modulation standards
- 50 ohm input/output impedance
- High reliability and ruggedness
- Built in Output Isolator
- Built in control, monitoring and protection circuits

ELECTRICAL SPECIFICATIONS @ +28 VDC, 25°C, 50 Ω System

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	390		395	MHz
Output Power @ P1 dB Gain Compression Point	P _{1dB}	60			Watt
Reverse Power Handling	P _{REV}	25			Watt
Small Signal Gain	G _{SS}	50	-		dB
Small Signal Gain Flatness	ΔG		±0.75	±1.0	dB
Inter-modulation (4 Carriers @ +29 dBm/carrier) (ALC OFF)	IMD			-36	dBm
Gain Variation Over Temperature	ΔG _{TEMP}			±0.75	dB
Input/Output Return Loss	S ₁₁ /S ₂₂			-14	dB
Noise Figure @ Max Gain	NF		7	10	dB
Harmonics @ 20 W	H			-45	dBc
Spurious Signals	Spur			-36	dBm
Operating Voltage	V _{DC}	26	28	30	Volt
Supply Current @ 20 W	I _{DD}		4	6	Amp

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions	8.1 x 6.7 x 1.1	Inch	Max
Weight	3.5	lb.	Max
RF Connectors In/Out	SMA F / Type-N female		
DC Connectors / Controls	3 Pin Dsub Hybrid Male, 9 Pin Dsub Male		
Cooling	External Heatsink + airflow		

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	T _c	-25		+75	°C
Storage Temperature	T _{stg}	-40		+85	°C
Relative humidity (non-condensing)	RH			95	%
Altitude (MIL-STD-810F Method 500.4)	ALT	10,000		30,000	Feet
Shock / Vibration (MIL-STD-810F Method 516.5)	SH / VI		Airborne		

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PROTECTIONS

Input Overdrive (ALC Mode)	+10 dBm	Max
Over Power Shutdown	48 dBm	Min
EMI RFI @ max power all interface pins	-55 dBm	Max
Load VSWR @ 20 W Output Power	High VSWR Shutdown	Nom
Thermal Overload	85°C shutdown	Max

INTERFACE CONNECTORS

D-Sub, 9-Pin

Pin #	Description	Specifications
1	Forward Power Monitor	Continuous Analog voltage relative to forward power via RMS detector FWD: 28 – 48 dBm @ 0 – 5 V (180 mV/dB min)
2	Reverse Power Monitor	Continuous Analog voltage relative to reflected power via RMS detector REVM (Open/Short): 20 – 43 dBm @ 0 – 5 V (120 mV/dB min) REVM (50 Ohm): REVM (Open/Short), 12 dB dynamic range
3	ALC ON/OFF	ALC ON = TTL “Low” or “Open” ALC OFF = TTL “High”
4	ALC Level	Continuous adjustable range via analog input levels Setting Point (ASP): 36 – 48 dBm @ 0 – 5 V (200 mV/dB min) Error Range (AER): ±1.5 dB Input Impedance: > 50 KOhm Response Time (ART): 100 mS/dB
5	Mute	Amplifier Enable: TTL “Low” or “Open” Amplifier Disable: TTL “High”
6	N/C	Spare
7	N/C	Spare
8	N/C	Spare
9	N/C	Spare
LED	LED Indicator	Output Power level indicator referenced to ALC setting (Independent of ALC ON or OFF)

DC CONNECTOR- D-Sub, 3-Pin

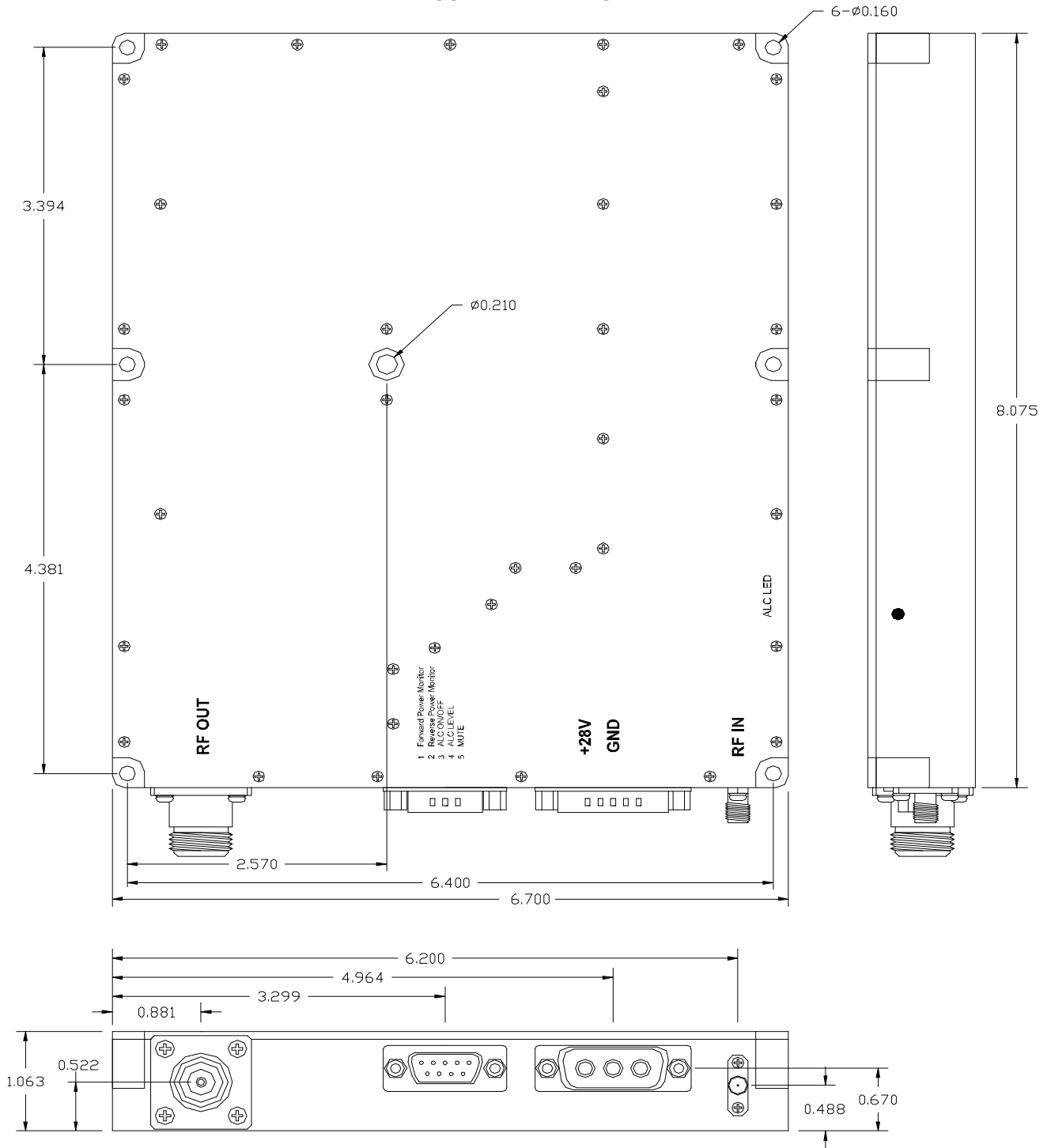
Pin #	Description	Specifications
A1	VDD	+28 ±2 V _{DC}
A2	GND	Ground
A3	N/C	Spare

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OUTLINE DRAWING



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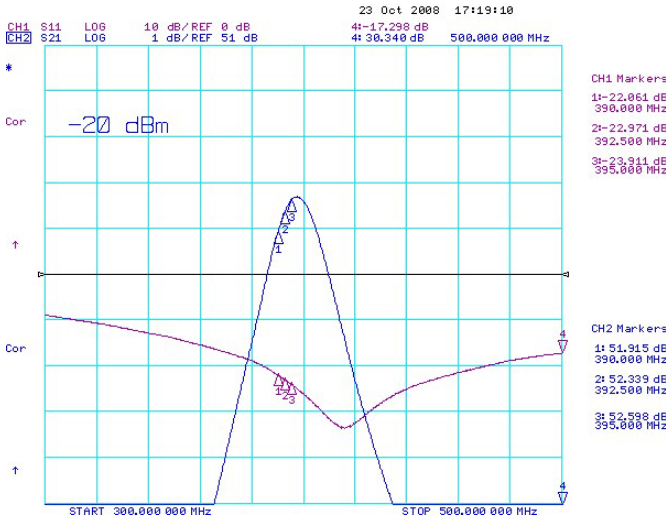
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PERFORMANCE PLOTS

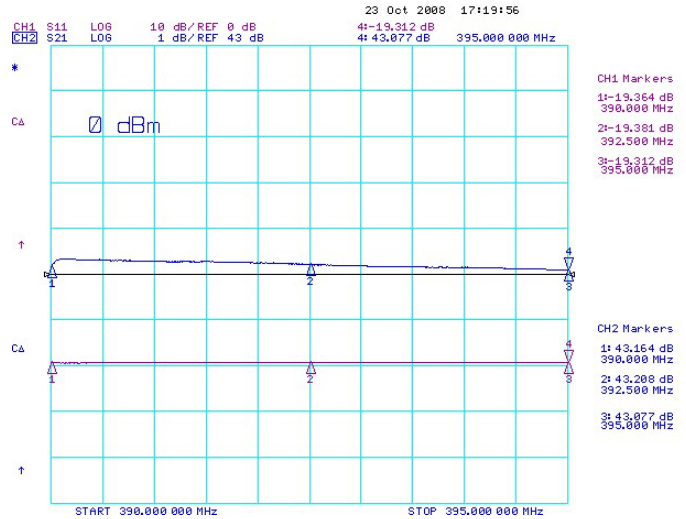
Plot 1 - Wide Band Frequency Response

Top Curve: Small Signal Gain @ $P_{IN} = -20\text{dBm}$
 Reference: 51dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



Plot 2 – ALC @ 20W

Top Curve: ALC @ 20W, $P_{IN} = 0\text{dBm}$
 Reference: 43dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.



Plot 3 – IMD @392.5MHz
 4 Tones, 29dBm/tone

