

## 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 LD MOS 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, control, monitoring and protection circuits

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

Parameter	Symbol	Min	Typ	Max	Unit	
Operating Frequency	BW	390		395	MHz	
Output Power @ 1dB Gain Compression	P <sub>1dB</sub>	60			Watt	
Reverse Power Handling	P <sub>REV</sub>	25			Watt	
Small Signal Gain	G <sub>SS</sub>	50			dB	
Small Signal Gain Flatness	ΔG		±0.75	±1.0	dB	
Third Order Intercept Point 4-Tone @ 29dBm/Tone (ALC OFF)	ACP			-36	dBm	
Freq Offset						Phase
-150kHz						357
-50kHz						294
50kHz						108
150kHz	6					
Gain Variation Over Temperature	ΔG <sub>TEMP</sub>			±0.75	dB	
Input/Output Return Loss	S <sub>11</sub> /S <sub>22</sub>			-14	dB	
Noise Figure @ Max Gain	NF		7	10	dB	
Harmonics @ P <sub>OUT</sub> = 20W	H			-40	dBc	
Spurious Signals	Spur			-36	dBm	
Operating Voltage	V <sub>DC</sub>	26	28	30	Volt	
Current Consumption @ P <sub>OUT</sub> = 20W	I <sub>DD</sub>		6	8	Amp	

### MECHANICAL SPECIFICATIONS

Parameter	Value	Unit
Dimensions	8.1 x 6.7 x 1.1	Inch
Weight	3.5	Pound
RF Connectors Input / Output	Type-SMA Female / Type-N, Female	
DC Interface Connector	DC Power: Hybrid, D-sub 3-Pin, Male Control: D-sub 9-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 514.5516.5 – Proc I	VI / SH		Airborne		

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**PROTECTIONS**

Input Overdrive (ALC ON)	+10dBm	Max
Over Power Shutdown	48dBm	Min
EMI RFI @ Rated Power (all DC interface pins)	-55dBm	Max
Load VSWR @ P <sub>OUT</sub> = 25W	VSWR Shutdown	-
Thermal Overload	85°C shutdown	Max

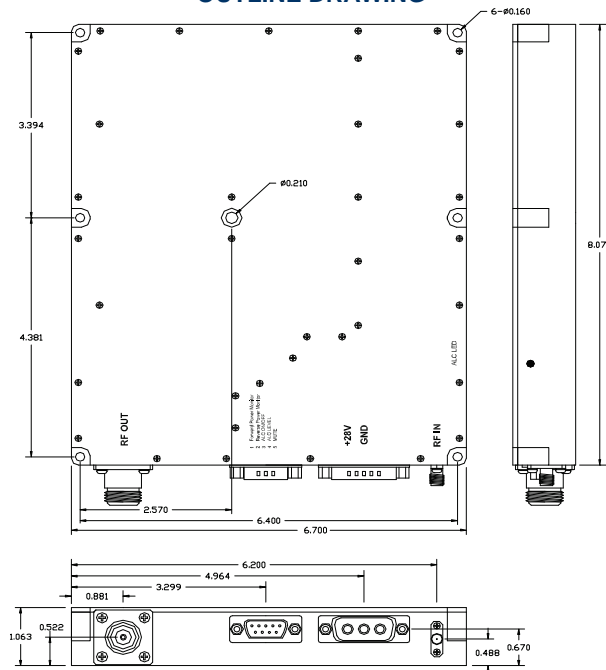
**DC POWER CONNECTOR – Hybrid, D-sub 3-Pin, Male**

Pin #	Description	Specification
A1	VDD	+26.0-30.0 V <sub>DC</sub>
A2	GND	Ground
A3	N/C	No Connection

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

Pin #	Description	Specification
1	Forward Power Monitor	Continuous Analog voltage relative to forward power level FWDM: 28-48dBm @ 0-5V <sub>DC</sub> (180mV/dB min)
2	Reverse Power Monitor	Continuous Analog voltage relative to reflected power level REVM (Open/Short): 20-43dBm @ 0-5V (120mV/dB min) REVM (50 Ohm): REVM (Open/Short), 12dB dynamic range
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): 36-48dBm @ 0-5V (200mV/dB min) Error Range (AER): ±1.5dB, Input Impedance: > 50k Ohm Response Time (ART): 100mS/dB
5	Mute	Amplifier Disable: TTL Logic High (5V) (Internally Pulled-low)
6-9	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**


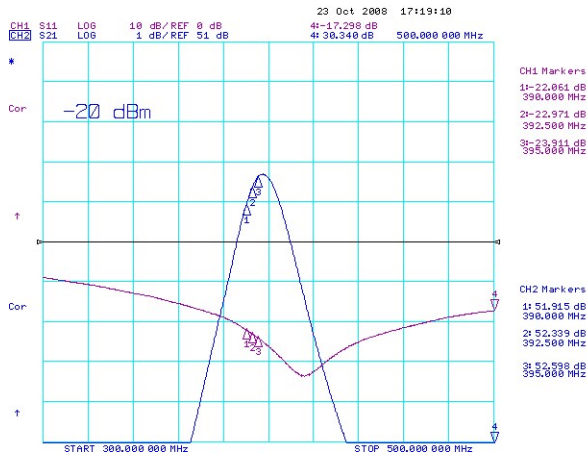
# Solid State Personal Communication Power Amplifier

7071 - PCM3H3ID0

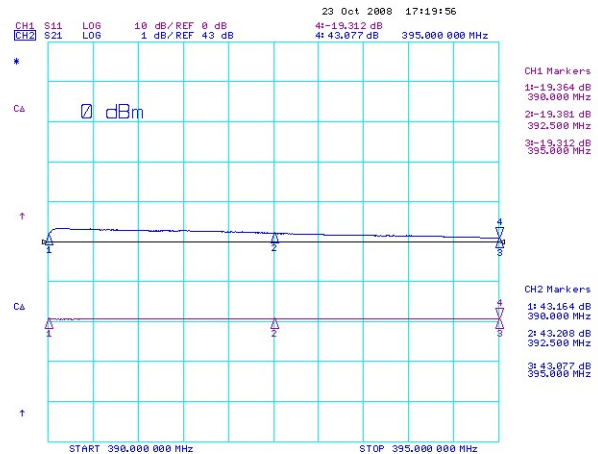
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## PERFORMANCE PLOTS

**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

