

Solid State Personal Communication Power Amplifier

7006 - PCM3F3H7M - UHF

292 - 320MHz / 5Watts Composite

PRELIMINARY DATA

The PCM3F3H7M (Stock No. 7006) is suitable for Ultra Linear UHF SATCOM, and other UHF linear applications. Suitable for 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 CW, UHF SATCOM, SMR, TETRA
- 50 Ohm Input/Output impedance
- High reliability and ruggedness
- Built in control & monitoring circuit



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

Parameter	Symbol	Min	Typ	Max	Unit
Operating Frequency	BW	292		320	MHz
Output Power (7FA Composite)	P _{out}	5			Watt
Output Power @ 1dB G.C.P	P _{1dB}	25			Watt
Small Signal Gain	G _{ss}	45		46.5	dB
Small Signal Gain Flatness	ΔG		±0.5	±0.75	dB
3 rd Order Inter-Modulation Distortion (Rx Band 242-270MHz) 7-Tones, P _{out} = 5W Avg., Δ = 4.66MHz	IMD			-45	dBc
Operational Output Power Levels (30dB dynamic range)		0.005		5	Watts
Input/Output VSWR	S11/S22		1.2:1	1.5:1	-
Noise Figure	NF		7	10	dB
Harmonics @ P1dB G.C.P	H			-30	dBc
Spurious Signals	Spur		-70	-60	dBc
Operating Voltage	VDC	26	28	30	Volt
Supply Current (5W Avg @ 7FA Total Power)	IDD		2.0	3.0	Amp
HPA Phase Variation over any 50KHz				0.1°	Deg
HPA Phase Matching (unit to unit)				25	Deg
HPA Phase Tracking (unit to unit)				20	Deg

MECHANICAL SPECIFICATIONS

Parameter	Value	Units	Limits
Dimensions (L x W x H)	8.075 x 6.3 x 1.0	Inch	Max
Weight	3.0	lb.	Max
RF Connectors In/Out	SMA female		
DC Connectors	D-sub, Amphenol 717T B17W2P		
Cooling	External Heatsink		

Solid State Personal Communication Power Amplifier

7006 - PCM3F3H7M - UHF
292 - 320MHz / 5Watts Composite

ENVIRONMENTAL CHARACTERISTICS (Design to Meet)

Parameter	Symbol	Min	Typ	Max	Unit
Operating Case Temperature	Tc	0		+60	°C
Storage Temperature	Tstg	-40		+85	°C
Relative humidity w/o condensation	RH	95			%
Altitude	ALT	40,000			Feet
Shock & Vibration	SH / VI		Airborne		

PROTECTIONS

Input Overdrive		0dBm			Max
Over Power Shutdown (Optional)		45dBm			Min
Load VSWR @ 25W Output Power		∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase amplitude continuous			Nom
HPA Stability		Unconditionally stable into 3:1 load VSWR			
Thermal Overload		85°C shutdown			Max

INTERFACE CONNECTORS

D-Sub, Connector, Amphenol 717T B17W2P

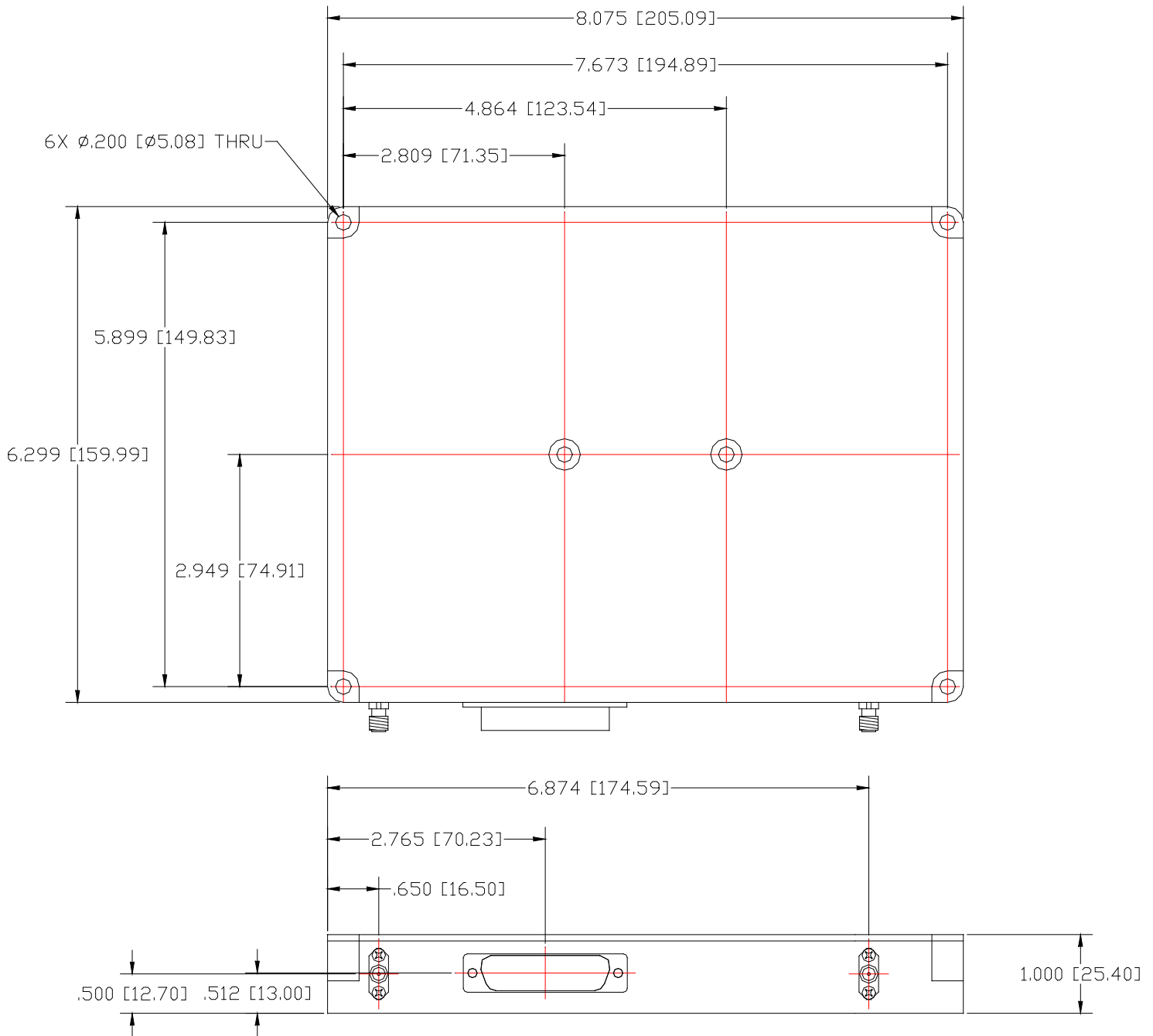
Pin #	Description	Specifications
A1	+VDD	+28 ± 1VDC
P1	Forward Power Monitor	Continuous Analog voltage relative to forward power via RMS detector FWD: 7 - 37dBm @ 0 - 5V (150mV/dB)
P2	N/C	
P3	Reverse Power Monitor	Continuous Analog voltage relative to reflected power via RMS detector REVM: 7 - 37dBm @ 0 - 5V (150mV/dB)
P4	N/C	
P5	Current Monitor	Continuous Analog voltage relative to current consumption Minimum Current: 0VDC Maximum Current: 5VDC
P6	N/C	
P7	Temperature Monitor	Continuous Analog voltage relative to temperature (10mV/°C x Temp) + 500mV
P8	Unit On/Off (Disable)	Enable: TTL "Low" Disable: TTL "High"
P9	Signal Ground	Return for Forward Power Monitor
P10	N/C	
P11	Signal Ground	Return for Reverse Power Monitor
P12	N/C	
P13	Signal Ground	Return for Current Monitor
P14	N/C	
P15	Signal Ground	Return for Temperature Monitor
A2	-VDD	Return for 28VDC

Solid State Personal Communication Power Amplifier

7006 - PCM3F3H7M - UHF

292 - 320MHz / 5Watts Composite

OUTLINE DRAWING



Solid State Personal Communication Power Amplifier

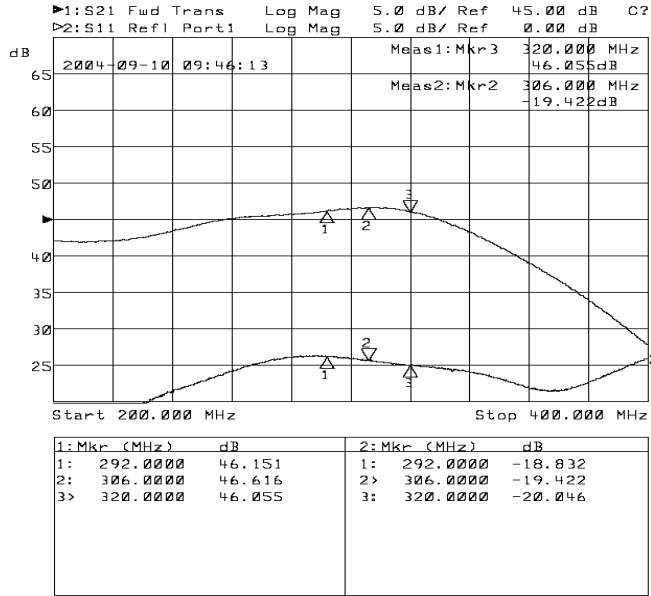
7006 - PCM3F3H7M - UHF

292 - 320MHz / 5Watts Composite

TYPICAL PERFORMANCE PLOTS

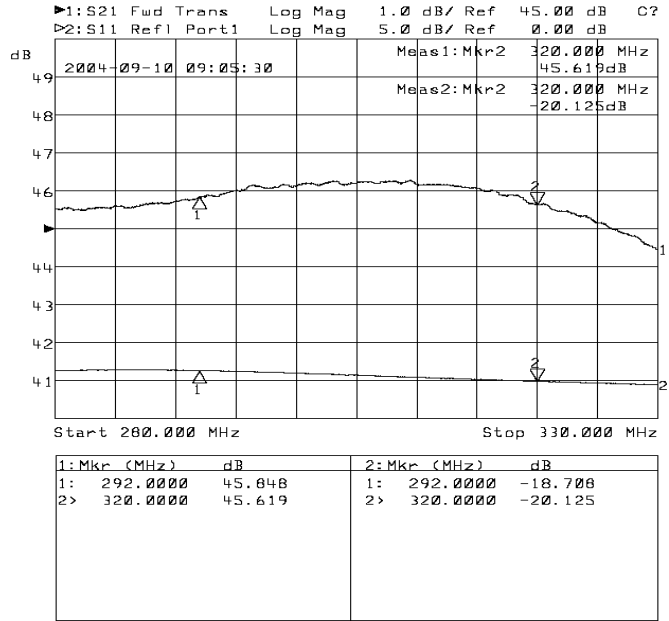
Plot 1 - Broadband Plot

200-400MHz
 Top curve: Small Signal Gain @ Pin = -8dBm
 Reference = 45dB, 5dB/div
 Bottom curve: Input VSWR



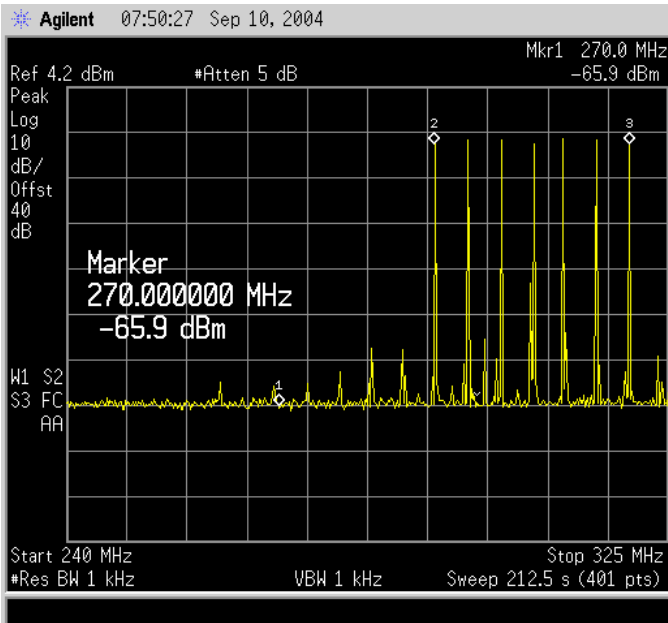
Plot 2 - Narrow Band Flatness

Top Curve: Gain @ Pout = 5W (Pin = -8dBm)
 Reference = 45dB, 1dB/div
 Bottom curve: Input VSWR



Plot 3 - Rx Band IMD

Pout = 5W with 7-tones @ Δ = 4.66MHz



Plot 4 - Phase Variation

Phase Variation over any 50KHz
 Reference = -165°, 10°/div

