

MIL Grade High Power Amplifier

This amplifier operates from 20 MHz to 1000 MHz, ideal for broadband military platforms as well as commercial applications because it is robust and offers high power over a multi-octave bandwidth. It was designed for broad band jamming and communication systems platforms and its bandwidth can be extended to 1200 MHz+ with similar performance. It is packaged in a modular housing that is approximately 3.4" (width) by 6.4" (long) by 1.0" (height). This amplifier has a typical P3dB of 100 watts at room temperature.

Noise figure at room temperature is 10.0 dB typical. It offers a typical gain of 58 dB with a typical gain flatness of ± 2.0 dB. The power and gain flatness across the band is extremely flat for the bandwidth. Input VSWR is 2.0:1 maximum. Class AB quiescent current is ~2.0 amps typical employing a +28 Vdc supply. This PA operates from a +28 Vdc input voltage. Typical harmonic values can be found on the next page of this data sheet. It operates from -40C to +85C base plate



- Gallium Nitride Broadband Power Amplifier
- Operation from 20 MHz to 1000 MHz min
- Small Signal Gain 58 dB typical
- 40 to 60% Typical Power Added Efficiency
- 100 Watts P3dB typical

Electrical Specifications					
PARAMETER	MIN.	TYP.	MAX	UNITS	SYMBOL
Operating Frequency	20		1000	MHz	BW
Output Power CW	25			Watt	P _{SAT}
Output Power @ 1 dB Gain Compression Point	10			Watt	P _{1dB}
Power Gain @ 1 dB Gain Compression Point	46		50	dB	G _{1dB}
Input Power for Rated P _{OUT}		0		dBm	P _{IN}
Switching Speed, 1kHz TTL @ P _{IN} = 0dBm			20	uSec	T _{ON/OFF}
Small Signal Gain Flatness		± 1.5	± 2.0	dB	ΔG
Third Order Intercept Point 2-Tones, 33dBm/Tone., $\Delta = 100$ KHz		+48		dBm	IP3
Input Return Loss			-10	dB	S ₁₁
Noise Figure@ minimum attenuation			10	dB	NF
Harmonics @ Rated P _{1dB} = 10W			-20	dBc	H
Spurious Signals			-60	dBc	Spur
Operating Voltage	26	28	30	Volt	Vdc



ZHM20-1000/100

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Supply Current @ P _{OUT} = 25 W CW			6	Amp	I _{DD}
Quiescent Current			4.0	Amp	I _{DQ}
Current Consumption @ Shutdown		3000		mA	I _{SD}

Mechanical Specifications			
PARAMETER	VALUE	UNITS	LIMITS
Dimensions	5.75" X 3.75" X 1.2"	Inch	Max
Weight	2.0	lb	Max
RF Connectors In/Out	SMA Female		
DC Connectors			
Cooling	External Heatsink (Not Supplied)		

Environmental Characteristics (Design to Meet)					
PARAMETER	MIN.	TYP.	MAX	UNITS	SYMBOL
Operating Case Temperature	-20		+80	°C	T _c
Storage Temperature	-40		+85	°C	T _{stg}
Relative humidity (non-condensing)			95	%	RH
Altitude (MIL-STD-810F Method 500.4)	10,000		30,000	Feet	ALT
Shock / Vibration (MIL-STD-810F Method 516.5)		Airborne			SH / VI

Protections		
Input Overdrive	+15 dBm	Max
Load VSWR @ 25 W output power	∞ @ all load phase & amplitude for duration of 1 minute 3:1 @ all load phase & amplitude continuous	Nom

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TYPICAL PERFORMANCE PLOTS

Small Signal Gain and P_{1dB}
 Top Curve: Small Signal Gain @ $P_{IN} = -20dBm$
 Middle Curve: Power Gain @ P_{1dB} , $P_{IN} = -7.0dBm$
 Reference: 47dB, 1dB/div.
 Bottom Curve: Input Return Loss
 Reference: 0dB, 10dB/div.

