



COAXIAL

High Power Amplifier

ZHL-20W-83-S+ ZHL-20W-83X-S+

Mini-Circuits

50Ω 20W 4000 to 8000 MHz

THE BIG DEAL

- Saturated power, 20W typ.
- Wide bandwidth, 4000 to 8000 MHz
- High gain, 56 dB typ.
- Self-protected from overheating, reverse polarity and DC shorting/unshorting

APPLICATIONS

- High power test sets
- Burn-in set-ups
- Communications
- Radar



Generic photo used for illustration purposes only

Model No.	ZHL-20W-83-S+	ZHL-20W-83X-S+▲
Case Style	CP2548-2	
Connectors	IN-SMA, OUT-SMA	

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

PRODUCT OVERVIEW

The ZHL-20W-83-S+ is a Class AB, high-power amplifier providing 20W saturated power over the 4000 to 8000 MHz band, ideal for a variety of high-power test setups as well as applications including communications, radar and more. The ruggedly-designed amplifier provides unconditional stability and built-in self-protection against reverse polarity and overheating. The amplifier's output stage is further protected in the event of a fault condition, allowing high power operation for up to 2 minutes into an OPEN or SHORT up to 15W output power. Housed in a rugged aluminum alloy case measuring 4.3 x 6.7 x 1.4", the unit features SMA connectors and optional heat sink and fan attachment for cooling.

KEY FEATURES

Feature	Advantages
Wideband, usable from 4000 to 8000 MHz	Suitable for a broad range of high-power, wideband applications, including test setups, communications and defense applications.
High gain, 56 dB typ.	Enables signal amplification to 20W output without the need for multiple gain stages.
Built-in self-protection	In instances of potentially-damaging overheating within the housing an automatic sensing feature signals the unit to power down.
Unconditional stability	Provides reliable performance independent of input and load conditions.
Ruggedness	Able to operate into an open and short for 2 minutes at 15W output power.

REV. A
ECO-008295
ZHL-20W-83-S+
SK/CP/PS
210616





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ELECTRICAL SPECIFICATIONS AT T_(HEATSINK MOUNTING SURFACE)=25°C

Parameter	ZHL-20W-83-S+ ZHL-20W-83X-S+ ▲			Units
	Min.	Typ.	Max.	
Frequency Range	4000		8000	MHz
Gain ¹	44.5	56	60.5	dB
Gain Flatness ¹		3.2	5.5	dB
Output Power at 1dB compression ⁴	34.5	39		dBm
Output Power at Saturation ⁴	41.5	44		dBm
Noise Figure		11		dB
Output third order intercept point ²	39.5	50		dBm
Input VSWR ¹		1.6		:1
Output VSWR ¹		1.7		:1
DC Supply Voltage ³	26	28	29	V
Supply Current		4	8	A

1. Small signal input power -50 dBm typ.
2. Two tones, 35 dBm/tone, 1 MHz spacing.
3. Typical spec is recommended operating voltage.
4. Power measured of fundamental tone only. Does not include power contribution of harmonic signals.

▲ Heat sink not included. Alternative heat sinking and heat removal must be provided by the user to limit maximum base-plate temperature to 80°C, in order to ensure proper performance.

MAXIMUM RATINGS⁵

Parameter	Ratings
Operating Heatsink Mounting Surface Temperature	0°C to 80°C
Storage Temperature	-55°C to 100°C
DC Voltage	29V
Input RF Power (no damage)	+5 dBm ⁶

5. Specifications apply to CW signals only permanent damage may occur if any of these limits are exceeded.
6. Into 50 ohm load



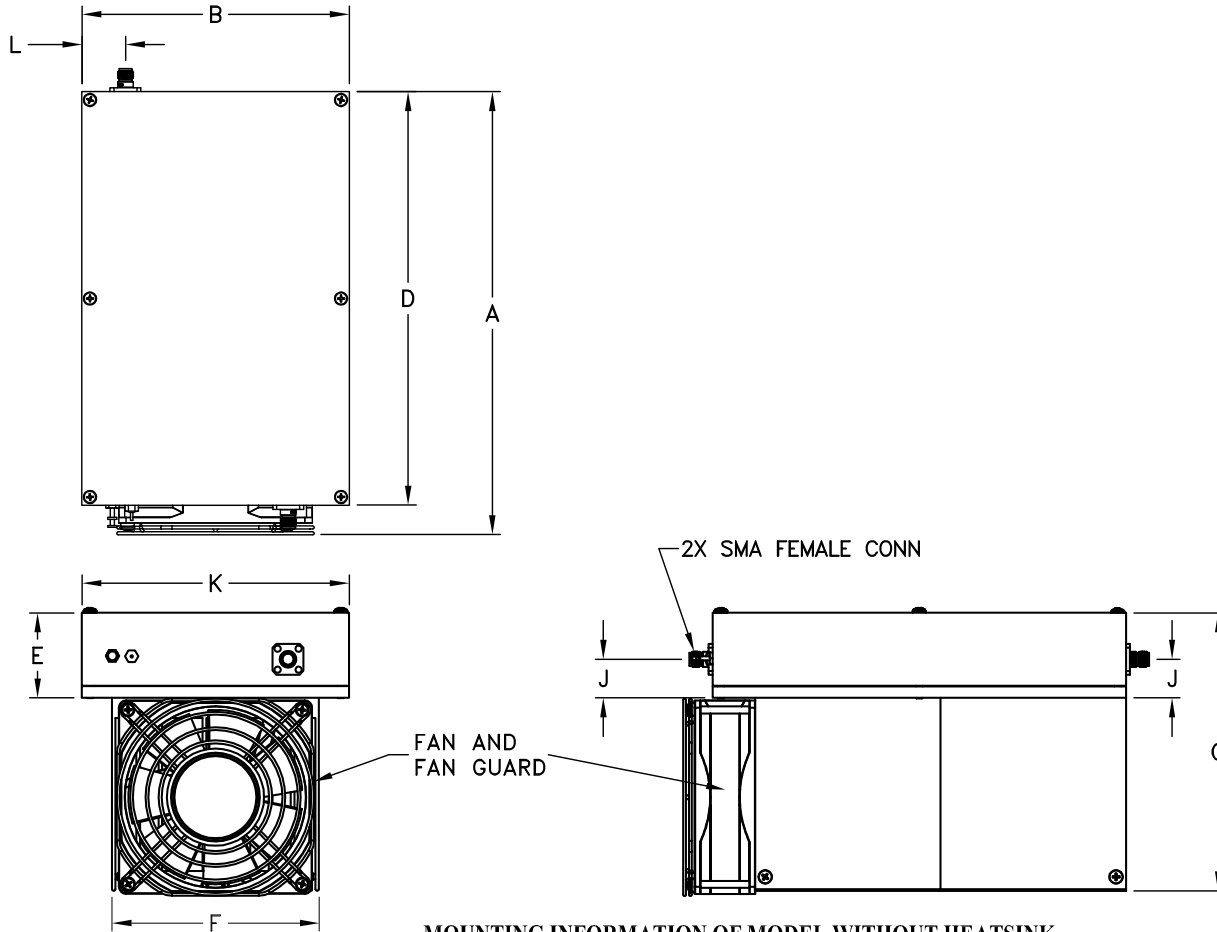


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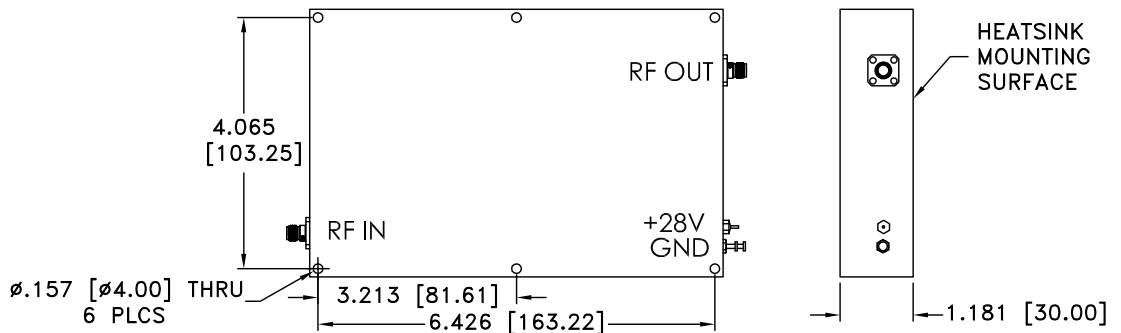
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OUTLINE DRAWING FOR MODELS WITH HEATSINK



MOUNTING INFORMATION OF MODEL WITHOUT HEATSINK



OUTLINE DIMENSIONS (INCH/MM)

A	B	C	D	E	F	G	H	J	K	L	wt
7.25	4.33	4.58	6.69	1.38	3.36	--	--	.62	3.34	.71	grams*
184.15	110.0	116.33	170	35.05	85.34	--	--	15.75	84.84	18.03	2041

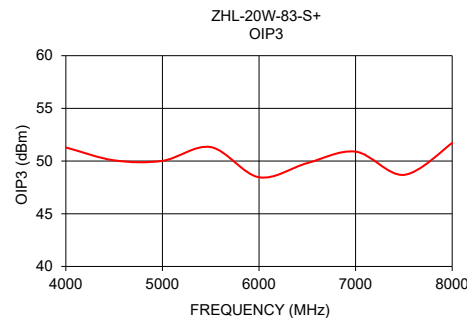
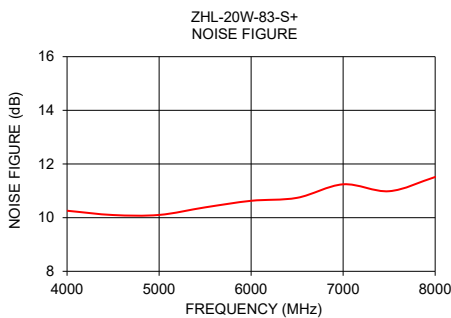
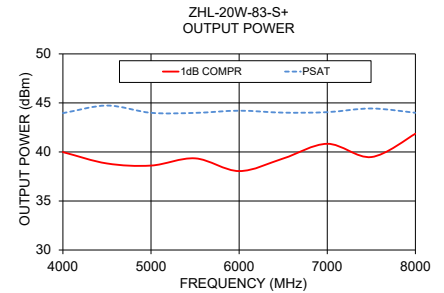
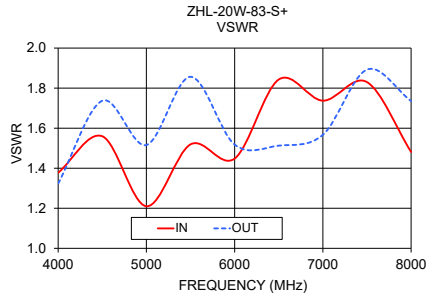
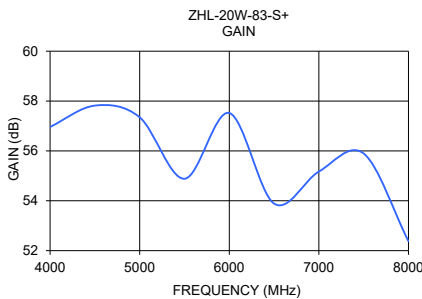
*880 grams without heatsink





TYPICAL PERFORMANCE DATA/CURVES

Frequency (MHz)	Gain (dB)	VSWR (:1)		POUT at 1 dB (dBm)	PSAT (dBm)	NOISE FIGURE (dB)	IP3
		IN	OUT				
4000	57.0	1.38	1.32	39.99	43.96	10.26	51.29
4500	57.8	1.56	1.74	38.83	44.73	10.10	50.07
5000	57.3	1.21	1.52	38.61	43.99	10.10	50.02
5500	54.9	1.52	1.86	39.35	43.98	10.38	51.33
6000	57.5	1.45	1.52	38.05	44.21	10.63	48.46
6500	53.9	1.84	1.51	39.33	44.01	10.74	49.81
7000	55.2	1.74	1.57	40.83	44.06	11.24	50.89
7500	55.90	1.83	1.89	39.48	44.43	10.99	48.69
8000	52.38	1.48	1.74	41.86	43.99	11.51	51.72



NOTES

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained there in. For a full statement of the standard. Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp