

Coaxial High Power Amplifier

ZHL-50W-63+

50Ω 50W 700 to 6000 MHz

The Big Deal

- Saturated power, 50W typ.
- Wide bandwidth, 700 to 6000 MHz
- High gain, 59 dB typ.
- Self-protected from overheating, reverse polarity and DC shorting/unshorting
- Withstands short and open circuit at output while delivering up to 40W



ZHL-50W-63+



ZHL-50W-63X+

Product Overview

The ZHL-50W-63+ is a Class AB, high-power amplifier providing 50W saturated power over the 700 to 6000 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 5 minutes into an OPEN or SHORT load (refer to the maximum input power specifications). Housed in a rugged aluminum alloy case measuring 5.9 x 9.1 x 1.2", the unit features SMA connectors and an optional heat sink and fan attachment for cooling.

Key Features

Feature	Advantages
Wideband, usable from 700 to 6000 MHz	Suitable for a broad range of high-power, wideband applications, including test setups, communications and defense applications.
High gain, 59 dB typ.	Enables signal amplification to 50W 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.

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Features

- Saturated power 50W typ.
- Wide bandwidth, 700 to 6000 MHz
- High gain, 59 dB typ.
- Unconditionally stable
- Self protected from overheating, reverse polarity and shorting/unshorting
- Can withstand short and open circuit at output while delivering 40W

Applications

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



Model No.	ZHL-50W-63+	ZHL-50W-63X+▲
Case Style	BT2533	
Connectors	IN-SMA, OUT-SMA	

+RoHS Compliant

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

Electrical Specifications at 25°C

Parameter	ZHL-50W-63+ ZHL-50W-63X+ ▲			Units
	Min.	Typ.	Max.	
Frequency Range	700	—	6000	MHz
Gain ¹	49	59	64	dB
Gain Flatness ¹	—	±4.0	±5.0	dB
Output Power at 1dB compression	—	+42 ⁴	—	dBm
Output Power at Saturation	+44.5	+47 ⁴	—	dBm
Noise Figure	—	11	16	dB
Output third order intercept point ²	+45	+53	—	dBm
Input VSWR ¹	—	1.5	—	:1
Output VSWR ¹	—	1.5	—	:1
DC Supply Voltage	—	40 ³	42	V
Supply Current	—	6.0	12.5	A

1. Small signal input power -50 dBm typ.

2. Two tones, 26 dBm/line, 1 MHz spacing.

3. Recommended Operating Voltage.

4. Power measured of fundamental tone only. Does not include power contribution of harmonic signals.

▲ Heat sink and fan not included. Alternative heat sinking and heat removal must be provided by the user to limit maximum base-plate temperature to 85°C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heat sink to be 0.08°C/W max.

Maximum Ratings⁵

Parameter	Ratings
Operating Ambient Temperature (With Mini-Circuits' heatsink and fan)	0°C to 60°C
Base Plate Temperature (With alternative heatsink)	+85°C
Storage Temperature	-55°C to 100°C
DC Voltage	42V
Input RF Power (no damage)	+5 dBm ⁶ -15 dBm ⁷

5. Specifications apply to CW signals only permanent damage may occur if any of these limits are exceeded.

6. Into 50 ohm load

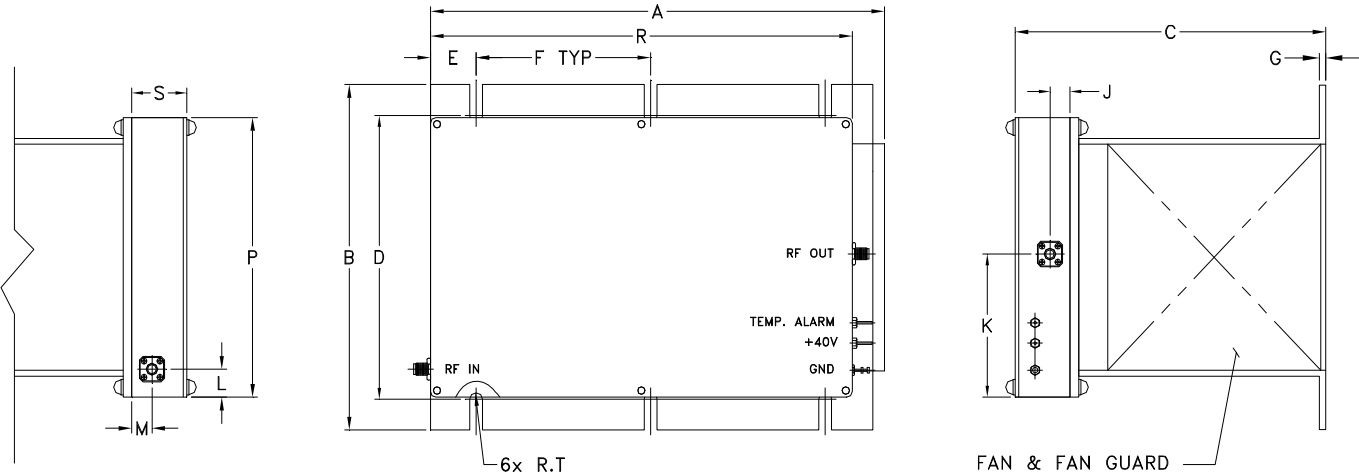
7. Into open or short load, for up to 5 minutes.



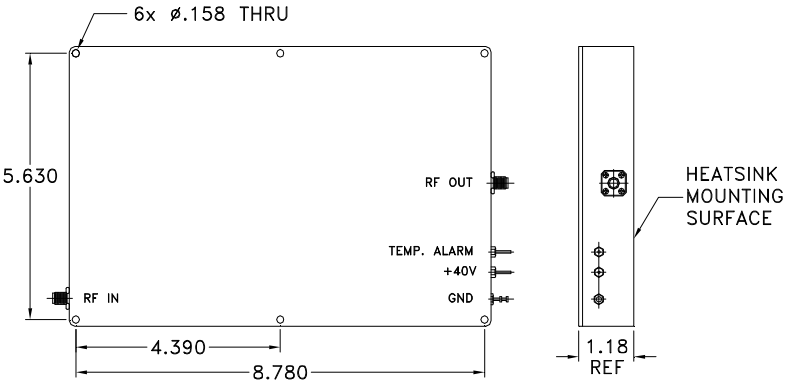
www.minicircuits.com P.O. Box 350166, Brooklyn, NY 11235-0003 (718) 934-4500 sales@minicircuits.com

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M170866
ZHL-50W-63+
SK/CP/AM
181105
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Outline Drawing for models with heatsink



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK

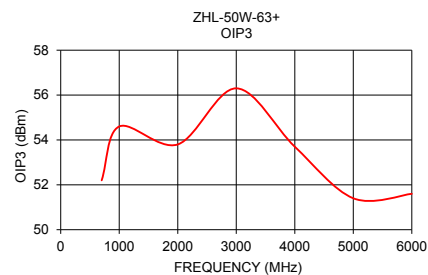
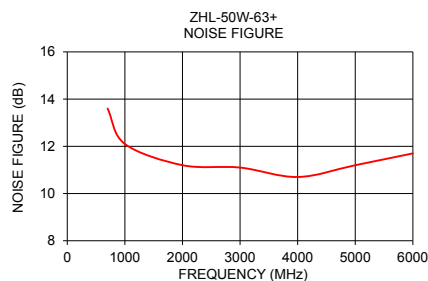
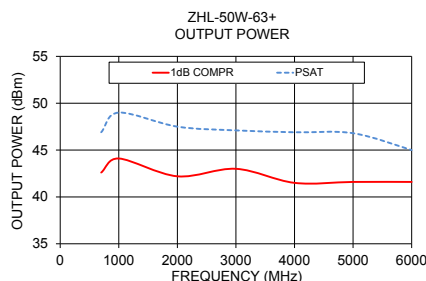
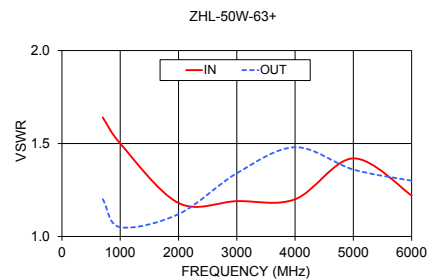
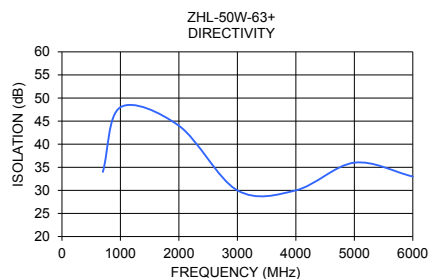
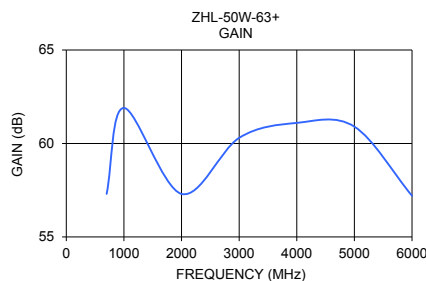


Outline Dimensions (inch mm)

A	B	C	D	E	F	G	J	K	L	M	P	Q	R	S	T	wt
9.85	7.30	6.60	6.00	0.98	3.75	0.13	0.43	3.02	0.59	0.43	5.91	--	9.06	1.18	0.14	grams*
250.19	185.42	167.64	152.4	24.89	95.25	3.30	11.00	76.70	15.00	11.00	150.00	--	230.00	30.00	3.43	5350

*1670 grams without heatsink

FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1)		POUT at 1 dB COMPR. (dBm)	POUT at Saturation (dBm)	NOISE FIGURE (dB)	OIP3 (dBm)
	40V	40V	IN	OUT	40V	40V	40V	40V
700	57.3	34	1.64	1.20	42.6	46.9	13.6	52.2
1000	61.9	48	1.50	1.05	44.1	49.0	12.1	54.6
2000	57.3	44	1.18	1.12	42.2	47.5	11.2	53.8
3000	60.3	30	1.19	1.34	43.0	47.1	11.1	56.3
4000	61.1	30	1.20	1.48	41.5	46.9	10.7	53.7
5000	60.9	36	1.42	1.36	41.6	46.8	11.2	51.4
6000	57.2	33	1.22	1.30	41.6	45.0	11.7	51.6



Additional Notes

- 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.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- 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 therein. 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