



COAXIAL

# Medium High Power Amplifier

**ZHL-1W-63-S+**  
**ZHL-1W-63X-S+**

50Ω 1 W 600 to 6000 MHz SMA Female

## THE BIG DEAL

- Wideband, 600 to 6000 MHz
- High Gain, 35 dB Typ.
- High OIP3, +35 dBm Typ.

## APPLICATIONS

- Communication Systems
- Cellular
- Instrumentation
- Laboratory



Generic photo used for illustration purposes only

Model No.	ZHL-1W-63-S+	ZHL-1W-63X-S+ <sup>▲</sup>
Case Style	U2847	
Connectors	SMA female	

**+RoHS Compliant**  
 The +Suffix identifies RoHS Compliance.  
 See our website for methodologies and qualifications

## PRODUCT OVERVIEW

Mini-Circuits' ZHL-1W-63-S+ is a class AB medium-power connectorized amplifier with GaN output transistor supporting a wide range of applications from 600 to 6000 MHz, such as test instrumentation, SATCOM, and mobile communications systems, including those operating in the new telecom Band 71 allocation (617 to 698 MHz). This model provides +30 dBm output power at saturation. The amplifier operates on a +15 V DC supply and comes housed in compact aluminum alloy case (7.00x3.25x1.12") with SMA connectors, built-in bracket for mounting, and an optional heat sink for efficient cooling.

## KEY FEATURES

Feature	Advantages
Wideband, Usable from 500 to 6100 MHz	One amplifier supports a broad range of system and test lab applications. Extended bandwidth down to 600 MHz supports new telecom Band 71 allocation (617 to 698 MHz).
High Gain, 35 dB	Reduces the number of gain stages, lowering component count and overall system cost.
Medium Output Power, +30 dBm	Supports a wide range of power requirements.
High OIP3, +35 dBm	Provides highly linear performance with excellent sensitivity and two-tone spur-free dynamic range.





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## ELECTRICAL SPECIFICATIONS AT +25 °C

Parameter	Condition (MHz)	ZHL-1W-63-S+ ZHL-1W-63X-S+ <sup>▲</sup>			Units
		Min.	Typ.	Max.	
Frequency Range		600		6000	MHz
Gain	600-6000	29	35	46	dB
Gain Flatness	600-6000		±3.5		dB
Output Power at 3 dB Compression	600-6000		+28		dBm
Output Power at Saturation	600-6000	+28	+30		dBm
Noise Figure	600-6000		12		dB
Output Third Order Intercept Point	600-6000		+35		dBm
Input VSWR	600-6000		2.5		:1
Output VSWR	600-6000		3.5		:1
DC Supply Voltage			+15		V
Supply Current			1.0	1.5	A

▲ Heat sink 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 1.1°C/W max.

## ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	0 °C to +60 °C
Storage Temperature	-55 °C to +100 °C
DC Voltage	+20 V
Input RF Power (No Damage) at Load	+7 dBm
Input RF Power at OPEN / SHORT	-18 dBm

Permanent damage may occur if any of these limits are exceeded.





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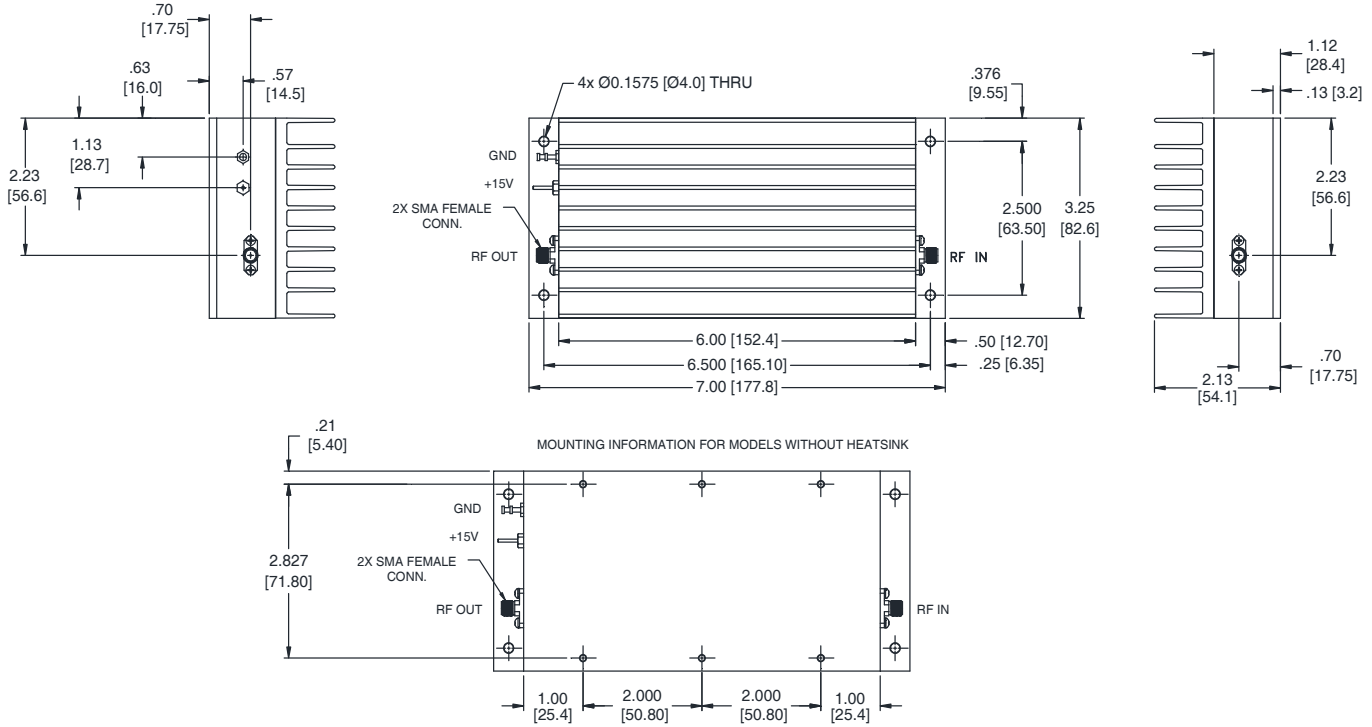
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## OUTLINE DRAWING



Dimensions are in inches (mm). Tolerances: 2 Pl. +.03; 3 Pl. + .015

Weight: 650 grams

950 grams with heatsink





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# Medium High Power Amplifier

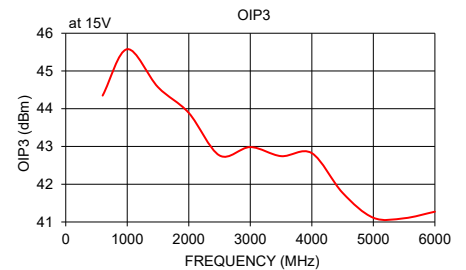
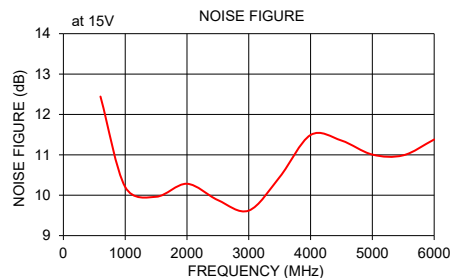
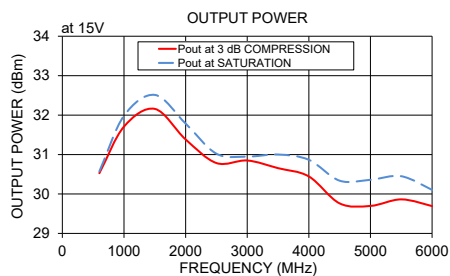
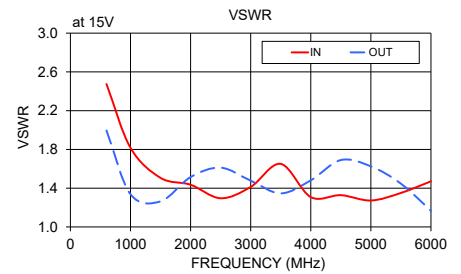
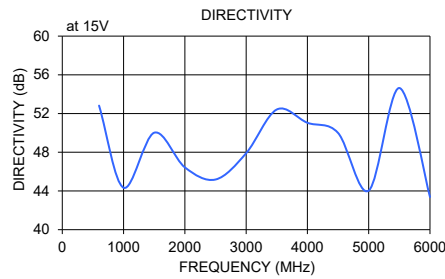
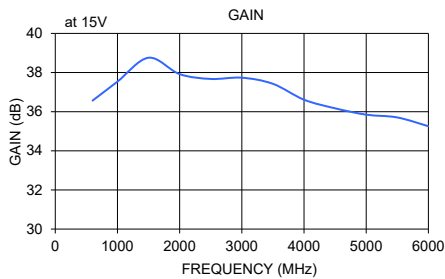
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### TYPICAL PERFORMANCE DATA/CURVES

FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1)		NOISE FIGURE (dB)	P <sub>OUT</sub> at 3 dB COMPR. (dBm)	P <sub>OUT</sub> at SATURATION (dBm)	OIP3 (dBm)
	+15 V	+15 V	IN	OUT	+15 V	+15 V	+15 V	+15 V
600	36.57	52.82	2.48	2.00	12.44	30.53	30.57	44.35
1000	37.54	44.33	1.82	1.34	10.20	31.71	31.98	45.58
1500	38.76	50.02	1.51	1.26	9.96	32.16	32.51	44.57
2000	37.92	46.44	1.44	1.51	10.28	31.38	31.79	43.89
2500	37.67	45.18	1.30	1.61	9.88	30.78	31.02	42.76
3000	37.74	47.90	1.41	1.48	9.62	30.85	30.95	42.98
3500	37.42	52.42	1.65	1.35	10.45	30.65	31.00	42.74
4000	36.61	51.04	1.31	1.48	11.49	30.44	30.87	42.82
4500	36.17	50.00	1.33	1.69	11.35	29.76	30.34	41.77
5000	35.85	44.03	1.27	1.63	11.01	29.70	30.36	41.11
5500	35.71	54.64	1.35	1.45	10.99	29.86	30.45	41.10
6000	35.26	43.38	1.47	1.17	11.38	29.69	30.10	41.27




#### 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 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/terms/viewterm.html](http://www.minicircuits.com/terms/viewterm.html)



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