

# High Power Amplifier

## ZHL-30W-262+

50Ω 30W 2300 to 2550 MHz

### The Big Deal:

- High Power Output:30W
- Capable of operating at rated power into an open or short
- Integrated protection and alarm functions



**ZHL-30W-262-S+**  
Price: \$1995.00 (QTY 1-9)



**ZHL-30W-262X-S+**  
Price: \$1920.00 (QTY 1-9)

### Product Overview:

ZHL-30W-262+ is a ruggedized High Power Amplifier delivering 30W signals covering the 2400 MHz ISM, WLAN and S-Band radar bands. This amplifier supports a variety of applications from communication, radar to critical test and measurement systems and includes over-temperature self-protect and alarming circuits as well as internal protection circuits to prevent damage due to operation into an open or short under full RF power.

### Key Features

Feature	Advantages
Good gain flatness, $\pm 1.5$ dB	Predictable performance and signal level strength
Excellent Input and Output VSWR, 1.25:1	Well-matched for full power transmission
Over temperature shut down	The ZHL-30W-262+ includes internal temperature monitoring circuits to automatically shut down the amplifier in the event of over temperature operation. Set for approximately $+85^{\circ}\text{C}$ shutdown (with auto recovery at $70^{\circ}\text{C}$ ), this feature ensures that users whom have difficulty in controlling their thermal environment or need to operate in a remote mode and cannot monitor the amplifier real time, can function with the security that a thermal run-away condition will be avoided through this self management feature. Furthermore, the ZHL-30W-262+ provides a TTL output to indicate thermal shutdown for remote automated systems.
Output load protection	A high root cause for damage to power amplifiers is the operation into highly reflective loads. The ZHL-30W-262+ power amplifier includes circuits to enable the amplifier to operate without damage in the presence of an open or short over all phases.
Excellent Output Power: 30W	Providing 30W of output power at the WiFi bands, this amplifier is an ideal lab test amplifier operating over the entire 2.3 to 2.5 GHz band.

**Mini-Circuits®**  
ISO 9001 ISO 14001 AS 9100 CERTIFIED

For detailed performance specs & shopping online see web site

P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 The Design Engineers Search Engine  Provides ACTUAL Data Instantly at [minicircuits.com](http://minicircuits.com)

IF/RF MICROWAVE COMPONENTS

Notes: 1. Performance and quality attributes and conditions not expressly stated in this specification sheet are intended to be excluded and do not form a part of this specification sheet. 2. Electrical specifications and performance data contained herein are based on Mini-Circuit's applicable established test performance criteria and measurement instructions. 3. The parts covered by this specification sheet 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](http://www.minicircuits.com/MCLStore/terms.jsp).

# Coaxial High Power Amplifier

## ZHL-30W-262+

50Ω 30W 2300 to 2550 MHz

### Description

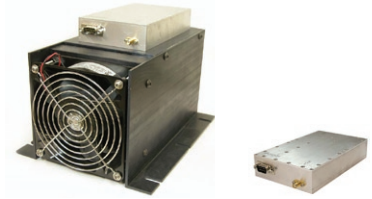
Mini-Circuits ZHL-30W-262+ is a ruggedized High Power Amplifier delivers 30W signals covering the ISM, WLAN and S-Band radar bands. It supports a variety of applications from communication or radar to critical test and measurement systems and includes over-temperature self-protect and alarming circuits as well as internal protection circuits to prevent damage due to operation into an open or short under full RF power.

### Features

- High power, 30Watt
- Low Current consumption, 3.2A typ.
- Usable over 2200 to 2600 MHz
- Good gain flatness, ±1.5 dB typ.
- Excellent VSWR, 1.25:1 typ.
- No damage with an open or short output load under full CW output power
- Shuts off when base plate temperature exceeds +80°C
- Accepts wide range of DC supply voltage +25 to +29V

### Applications

- WiFi
- Lab test



Model No.	ZHL-30W-262-S+   ZHL-30W-262X-S+▲
Case Style	BT1344
Connectors	SMA / D-Sub Male
Price (Qty.)	\$1995.00 ea. (1-9)   \$1920.00 ea. (1-9)

**+ RoHS compliant in accordance with EU Directive (2002/95/EC)**

The +Suffix has been added in order to identify RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications.

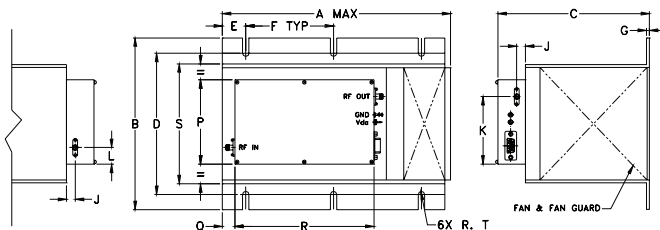
### Electrical Specifications

Parameter	Condition (MHz)	ZHL-30W-262-S+			ZHL-30W-262X-S+ ▲			Units
		Min.	Typ.	Max.	Min	Typ.	Max.	
Frequency Range		2300	—	2550	2300	—	2550	MHz
Gain	2300-2550	42	50	55	42	50	55	dB
	2400-2500	43	50	55	43	50	55	
Gain Flatness	2300-2550	—	—	±3.5	—	—	±3.5	dB
	2400-2500	—	—	±1.2	—	—	±1.2	
Output Power at 1dB compression	2300-2550	+41	+43	—	+41	+43	—	dBm
	2400-2500	+42	+43	—	+42	+43	—	
Saturated Output Power at 3dB compression	2300-2550	+43	+45	—	+43	+45	—	dBm
	2400-2500	+44	+45	—	+44	+45	—	
Noise Figure	2300-2550	—	7.0	—	—	7.0	—	dB
Output third order intercept point	2300-2550	—	+50	—	—	+50	—	dBm
	2400-2500	—	+51	—	—	+51	—	
Input VSWR	2300-2550	—	1.3	—	—	1.3	—	:1
	2400-2500	—	1.2	—	—	1.2	—	
Output VSWR	2300-2550	—	1.3	—	—	1.3	—	:1
	2400-2500	—	1.2	—	—	1.2	—	
DC Supply Voltage	2300-2550	—	28	29	—	28	29	V
Supply Current <sup>1</sup>	2300-2550	—	3.2	4.3	—	3.2	4.0	A

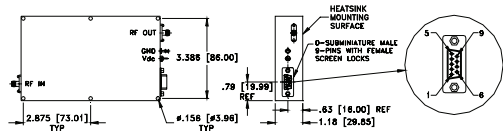
1. Power Supply should be capable of delivering 5.5A at start up.

▲ 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 60°C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heat sink to be 0.157°C/W max.

### Outline Drawing



#### MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK



### Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	J	K	L	P	Q	R	S	T	wt
9.85	7.3	6.5	6.00	1.00	3.75	.13	.37	2.87	.71	3.58	.5	5.95	5.1	.135	grams*
250.19	185.42	165.10	152.40	25.40	95.25	3.30	9.40	72.90	18.03	90.93	12.70	151.13	129.54	3.43	4265

\*580 grams without heatsink

### Maximum Ratings

Parameter	Ratings
Operating Temperature	-20°C to 41°C
Storage Temperature	-55°C to 100°C
Base Plate Temperature	-20°C to 60°C
Input RF Power (no damage)	+9 dBm

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

### D-Sub Male Connector Pin Connections\*\*

Pin Function	Label on unit	Pin #	Color	Gauge
None	N/C1, N/C2 N/C4, N/C5	1,2,4,5	None	None
Thermal Shut-Off Indication: Shut-Off: 2 to 5V Not Shut-Off: 0 to 0.8V	TTL Out	3	Orange	26 AWG
DC Input (+)	Vdc	6,7	Red	18 AWG
Ground	GND	8,9	Black	18 AWG

\*\*Each amplifier includes an additional D-Sub connector for mating with the amplifier.



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FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1)		NOISE FIGURE (dB)	P <sub>OUT</sub> (dBm) at 28V		OUTPUT IP <sub>3</sub> (dBm)
	28V	28V	IN	OUT		28V	1 dB Compr.	3 dB Compr.
2200.00	47.93	46.39	1.78	1.52	7.53	41.85	43.75	50.73
2250.00	48.55	38.56	1.67	1.36	7.62	43.19	44.86	51.03
2300.00	49.18	54.37	1.55	1.24	7.63	43.79	45.75	51.77
2350.00	49.79	59.76	1.46	1.16	7.60	43.86	46.04	51.93
2400.00	50.27	40.46	1.37	1.19	7.62	43.80	45.85	51.65
2420.00	50.36	46.57	1.34	1.21	7.60	43.61	45.90	51.44
2440.00	50.36	46.32	1.33	1.24	7.53	43.68	45.86	51.35
2460.00	50.28	42.92	1.31	1.27	7.59	43.88	45.99	51.40
2480.00	50.08	45.43	1.30	1.30	7.53	44.07	45.97	51.20
2500.00	49.70	45.12	1.29	1.32	7.51	43.84	45.84	51.12
2550.00	47.85	42.96	1.31	1.36	7.63	43.53	44.94	50.55

