



Mini-Circuits®

COAXIAL

High Power Amplifier

ZHL-1000-3W+
ZHL-1000-3WX+

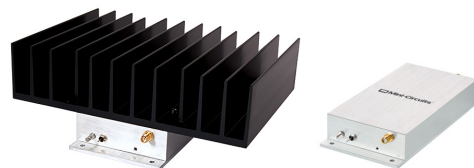
50Ω 3W 500 to 1000 MHz

FEATURES

- High Power, 3 Watt
- Wideband, 500 to 1000 MHz
- High Power Output, +35dBm Min.
- High IP3, +45 dBm typ.
- High Gain, 43 dB typ.
- Protected by US Patent, 6,943,629

APPLICATIONS

- VHF
- Cellular
- Instrumentation
- Laboratory



Generic photo used for illustration purposes only

Model No.	ZHL-1000-3W+	ZHL-1000-3WX+▲
Case Style	DDD131	
Connectors	SMA	

+RoHS Compliant

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

ELECTRICAL SPECIFICATIONS

Parameter	Min.	Typ.	Max.	Units
Frequency Range	500	—	1000	MHz
Gain	38	—	—	dB
Gain Flatness ¹	—	—	±1.0	dB
Output Power at 1dB compression	+35	+37	—	dBm
Noise Figure	—	3.5	—	dB
Output third order intercept point	—	+45	—	dBm
Input VSWR	—	2.0	—	:1
Output VSWR	—	2.5	—	:1
DC Supply Voltage	—	24	—	V
Supply Current	—	—	2.25	A

1. 1.5 dB over temperature range -20°C to +65°C.

▲ Heat sink not included. Alternative heat sinking and heat removal must be provided by the user to limit maximum base-plate temperature to 75°C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heat sink to be 0.8°C/W max.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-20°C to +65°C
Storage Temperature	-55°C to +100°C
Base Plate Temperature	+75°C
DC Voltage	+25V
Input RF Power (no damage)	0 dBm

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

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ZHL-1000-3W+
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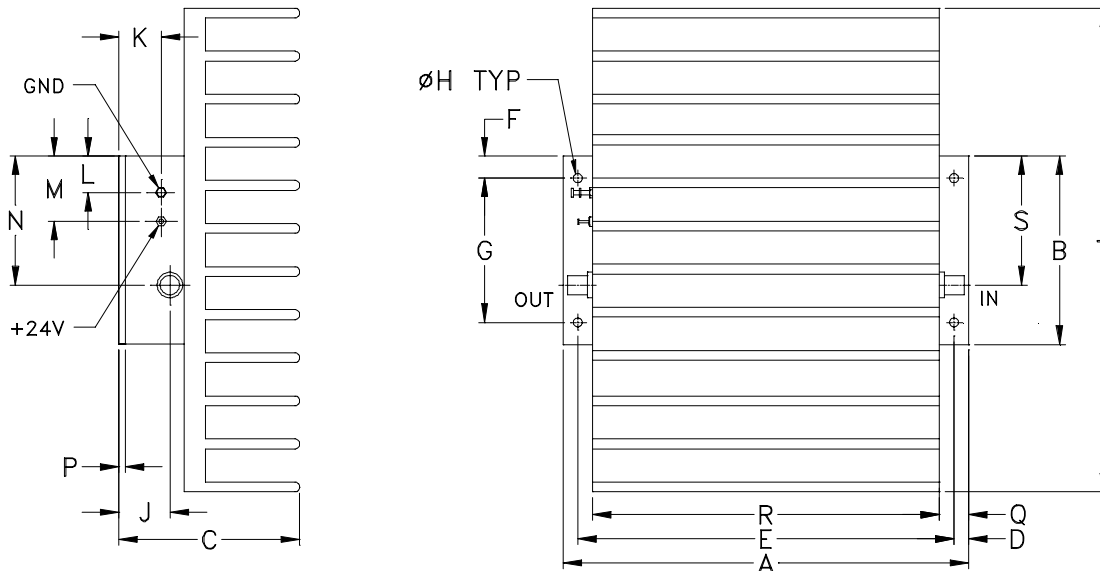
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High Power Amplifier

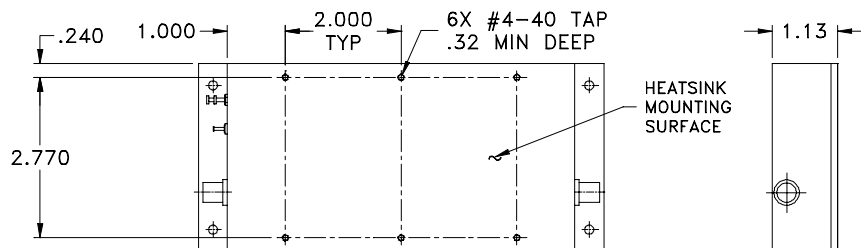
ZHL-1000-3W+
ZHL-1000-3WX+

50Ω 3W 500 to 1000 MHz

OUTLINE DRAWING



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK



OUTLINE DIMENSIONS (Inch mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	wt
7.00	3.25	3.13	.25	6.500	.38	2.500	.156	.88	.43	.62	1.00	2.63	.125	.50	6.00	2.23	8.35	grams*
177.80	82.55	79.50	6.35	165.10	9.65	63.50	3.96	22.35	10.92	15.75	25.40	66.80	3.18	12.70	152.40	56.64	212.09	1780

*510 grams without heatsink





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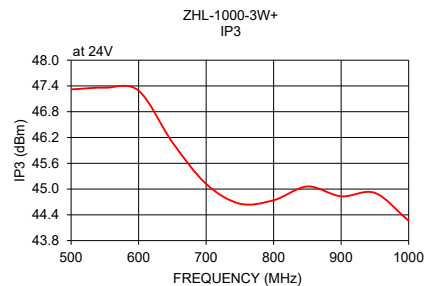
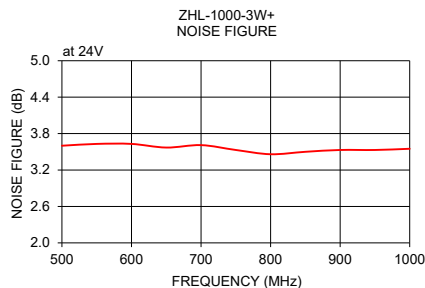
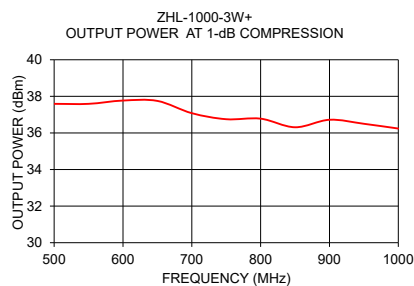
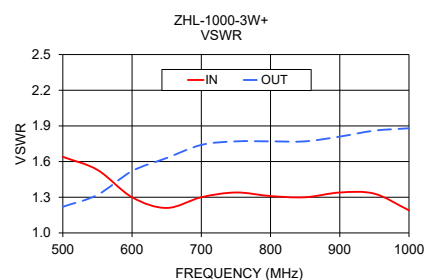
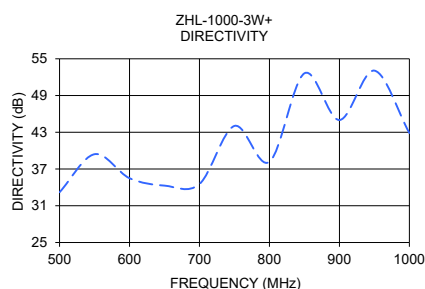
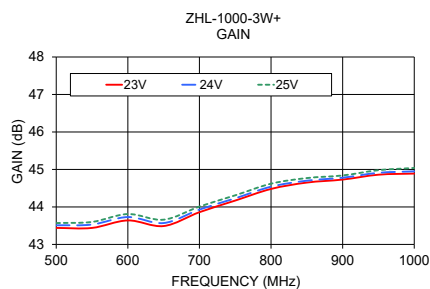
High Power Amplifier

ZHL-1000-3W+
ZHL-1000-3WX+

50Ω 3W 500 to 1000 MHz

TYPICAL PERFORMANCE DATA AND CHARTS

FREQUENCY (MHz)	GAIN (dB)			DIRECTIVITY (dB)	VSWR (:1)		NOISE FIGURE (dB)	P _{OUT} at 1 dB COMPR. (dBm)	IP ₃ (dBm)
	23V	24V	24.5V		IN	OUT			
500.00	43.44	43.51	43.57	33.21	1.64	1.22	3.60	37.59	47.32
550.00	43.44	43.53	43.60	39.42	1.53	1.32	3.63	37.59	47.36
600.00	43.64	43.73	43.81	35.50	1.30	1.52	3.63	37.77	47.29
650.00	43.49	43.57	43.66	34.29	1.21	1.63	3.57	37.75	46.09
700.00	43.86	43.93	44.01	34.55	1.30	1.74	3.61	37.08	45.12
750.00	44.17	44.23	44.31	44.04	1.34	1.77	3.53	36.75	44.66
800.00	44.48	44.54	44.62	38.17	1.31	1.77	3.46	36.78	44.74
850.00	44.65	44.70	44.77	52.63	1.30	1.77	3.50	36.31	45.06
900.00	44.73	44.78	44.84	45.00	1.34	1.81	3.53	36.72	44.83
950.00	44.86	44.91	44.98	53.07	1.33	1.86	3.53	36.50	44.91
1000.00	44.89	44.95	45.04	42.88	1.19	1.88	3.55	36.24	44.26



NOTES

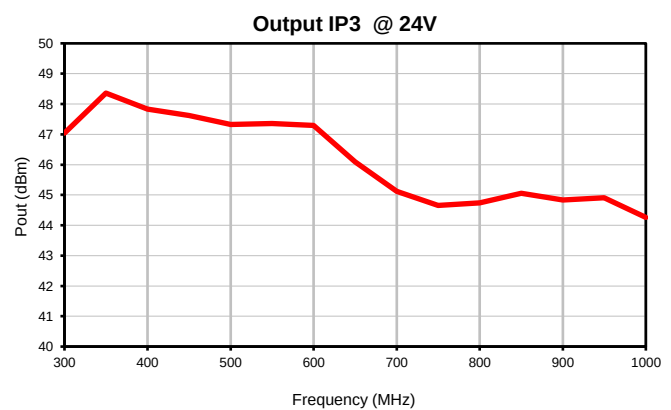
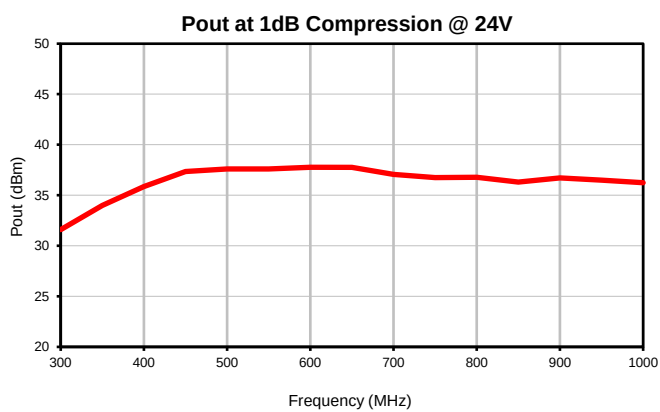
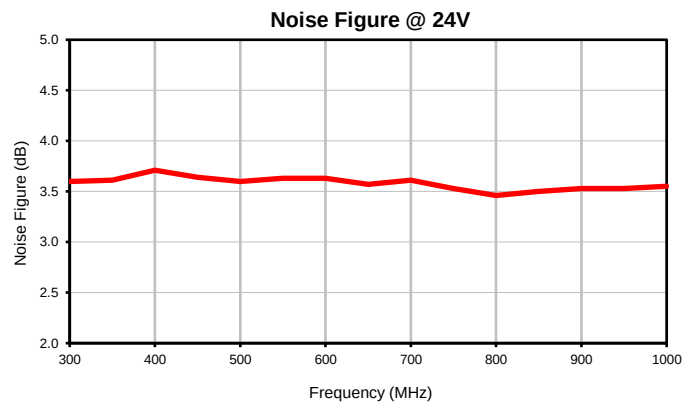
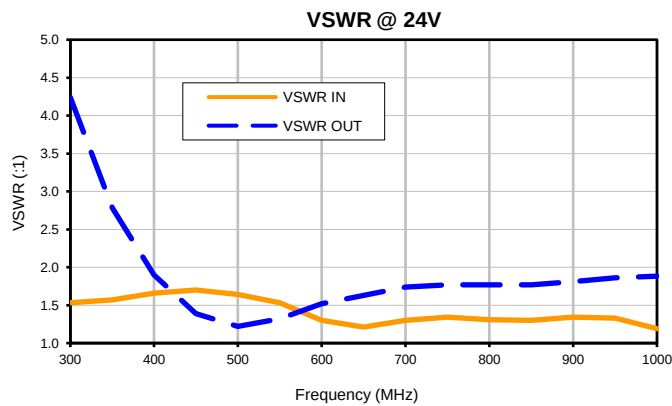
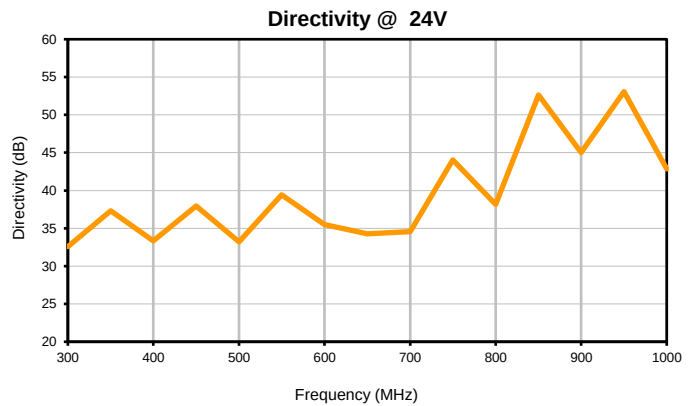
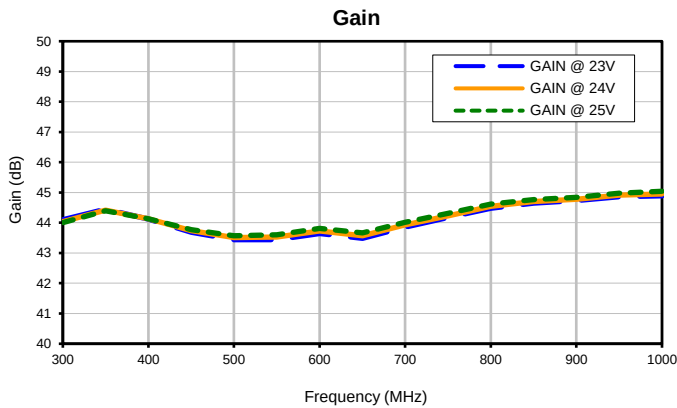
- Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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/terms/viewterm.html



Typical Performance Data

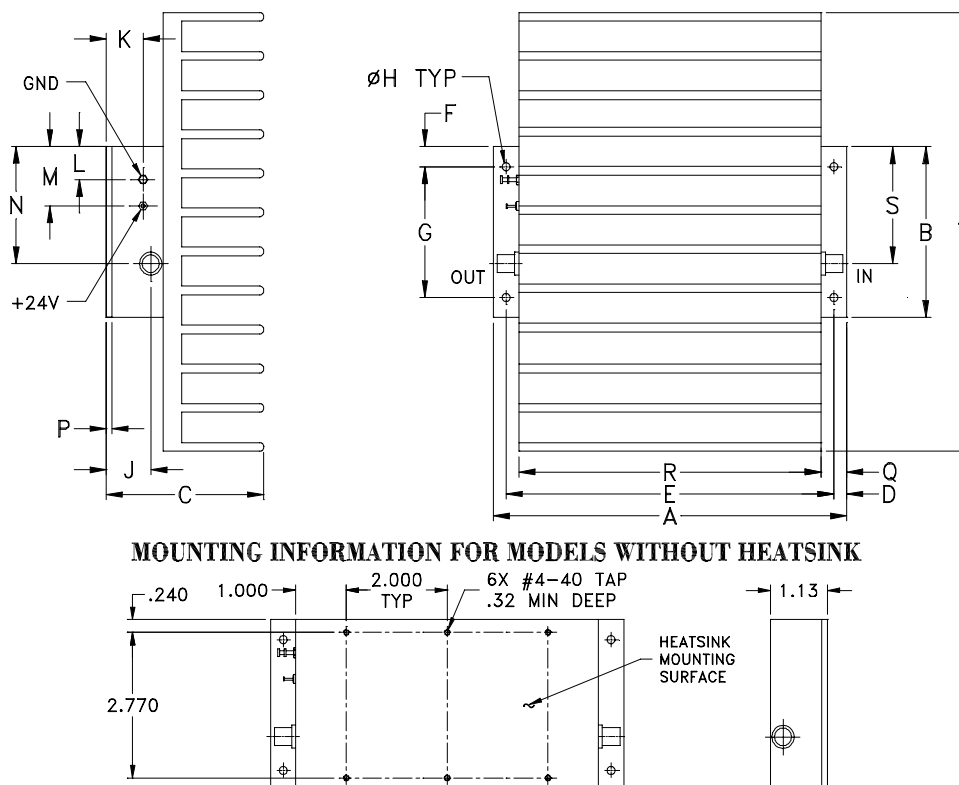
FREQ. (MHz)	GAIN (dB)			DIRECTIVITY 24V	VSWR (:1)		NOISE FIGURE (dB) 24V	POUT @ 1 dB COMPRESSION (dBm) 24V	OUTPUT IP3 (dBm) 24V
	23V	24V	25V		IN 24V	OUT 24V			
300	44.10	44.04	44.00	32.58	1.53	4.24	3.60	31.60	47.04
350	44.45	44.42	44.40	37.32	1.57	2.78	3.61	33.99	48.36
400	44.12	44.13	44.13	33.32	1.66	1.90	3.71	35.86	47.83
450	43.69	43.74	43.77	37.94	1.70	1.39	3.64	37.36	47.62
500	43.44	43.51	43.57	33.21	1.64	1.22	3.60	37.59	47.32
550	43.44	43.53	43.60	39.42	1.53	1.32	3.63	37.59	47.36
600	43.64	43.73	43.81	35.50	1.30	1.52	3.63	37.77	47.29
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800	44.48	44.54	44.62	38.17	1.31	1.77	3.46	36.78	44.74
850	44.65	44.70	44.77	52.63	1.30	1.77	3.50	36.31	45.06
900	44.73	44.78	44.84	45.00	1.34	1.81	3.53	36.72	44.83
950	44.86	44.91	44.98	53.07	1.33	1.86	3.53	36.50	44.91
1000	44.89	44.95	45.04	42.88	1.19	1.88	3.55	36.24	44.26

Typical Performance Curves



Outline Dimensions

DDD131



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK

CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
DDD131	7.00 (177.80)	3.25 (82.55)	3.13 (79.50)	.25 (6.35)	6.500 (165.10)	.38 (9.65)	2.500 (63.50)	.156 (3.96)	.88 (22.35)	.43 (10.92)	.62 (15.75)	1.00 (25.40)	2.63 (66.68)

CASE#	P	Q	R	S	T	WT. GRAMS	WT. WITHOUT HEATSINK GRAMS
DDD131	.125 (3.18)	.50 (12.70)	6.00 (152.40)	2.23 (56.64)	8.35 (212.09)	1780	510

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

Notes:

- Case material: Aluminum alloy.
- Case finish:
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
- Heatsink finish: Black anodize if supplied with heatsink.
- Refer to the individual model data sheet for the type of connectors available.



INTERNET <http://www.minicircuits.com>

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Mini-Circuits ISO 9001 & ISO 14001 Certified



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-20° to 65° C Ambient Environment	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Stabilization Bake	(non-operating) 125°C, 24 hours	- - -
Burn-in at Elevated Temp.	(DC on) 160 hours at 85° C	MIL-STD-202, Method 108
Thermal Shock	-55° to 100°C, 5 cycles	MIL-STD-202, Method 107, Condition A, except 100°C