COAXIAL

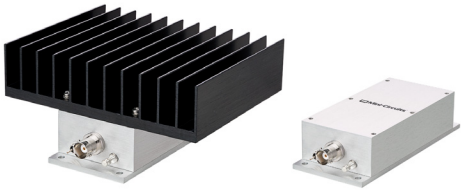
High Power Amplifier

ZHL-1-2W+
ZHL-1-2WX+

50Ω 2 W 5 to 500 MHz BNC/SMA/N-Type Connectors

FEATURES

- Wideband, 5 to 500 MHz
- High Power Output, +33 dBm Typ., +32.5 dBm Min.
- High Gain, 32 dB Typ., 29 dB Min.
- High OIP3, +44 dBm Typ.
- Good Matching VSWR, 1.5:1



Generic photo used for illustration purposes only

Case Style: T35

Connectors	Model No
BNC	ZHL-1-2W+ (Shown)
BNC	ZHL-1-2WX+ (Shown)
SMA	ZHL-1-2W-S+
SMA	ZHL-1-2WX-S+
N-TYPE	ZHL-1-2W-N+
N-TYPE	ZHL-1-2WX-N+

APPLICATIONS

- VHF/UHF
- Instrumentation
- Laboratory

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

ELECTRICAL SPECIFICATIONS AT +25 °C

Parameter	Condition (MHz)	ZHL-1-2W+ ZHL-1-2WX+▲ Min.	Typ.	Max.	Units
Frequency Range		5		500	MHz
Gain	5-500	29	32		dB
Gain Flatness	5-500			±1.0	dB
Output Power at 1 dB Compression	5-500	+32.5	+33		dBm
Noise Figure	5-500		7.0		dB
Output Third Order Intercept Point	5-500		+44		dBm
Input VSWR	5-500		1.5		:1
Output VSWR	5-500		1.5		:1
DC Supply Voltage			+24		V
Supply Current				0.9	A

Open load is not recommended, potentially can cause damage.
With no load, derate max. input power by 20 dB.

▲ Heatsink not included. Alternative heat sinking and heat removal must be provided by the user to limit maximum baseplate temperature to +85 °C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heatsink to be 1.0 °C/W max.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-20 °C to +65 °C
Storage Temperature	-55 °C to +100 °C
DC Voltage	+25 V
Input RF Power (No Damage)	+10 dBm

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

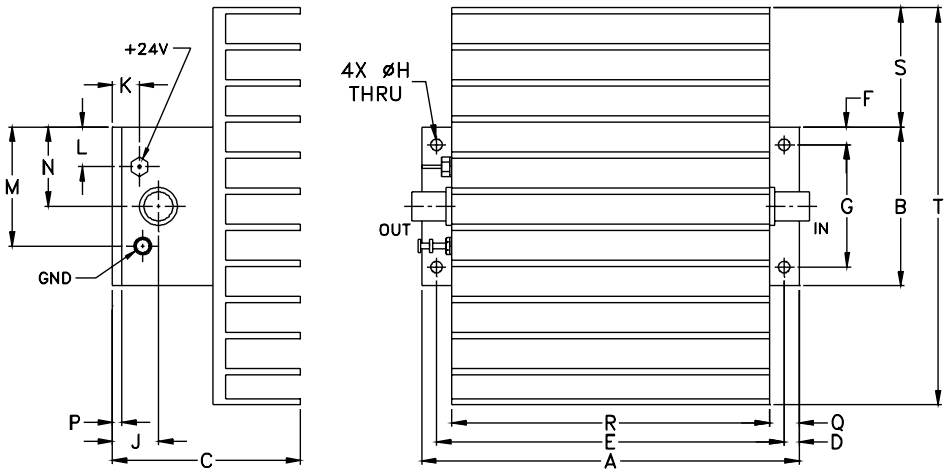
REV. G
ECO-025117
ZHL-1-2W(X)+
MCL NY
260220

High Power Amplifier

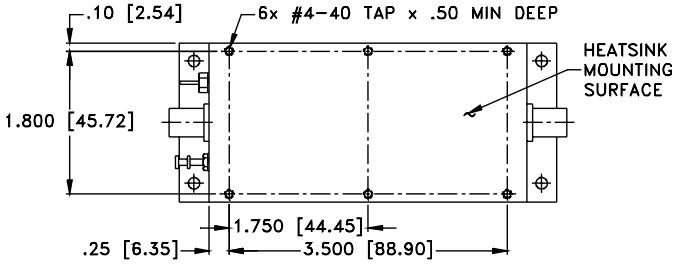
ZHL-1-2W+
ZHL-1-2WX+

50Ω 2 W 5 to 500 MHz BNC/SMA/N-Type Connectors

OUTLINE DRAWING FOR MODELS WITH HEATSINK



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
4.75	2.00	2.37	.19	4.375	.23	1.540	.144	.58	.34	.50	1.50	1.00	.13	.38	4.00	1.50	5.0	grams*
120.65	50.80	60.20	4.83	111.13	5.84	39.12	3.66	14.73	8.64	12.70	38.10	25.40	3.30	9.65	101.60	38.10	127.00	700

*300 grams without heatsink

COAXIAL

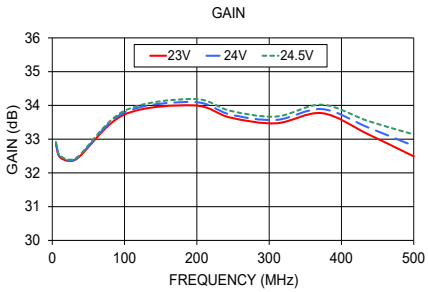
High Power Amplifier

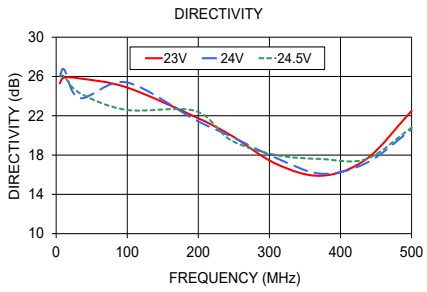
ZHL-1-2W+
ZHL-1-2WX+

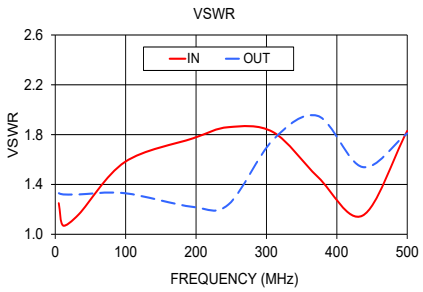
50Ω 2 W 5 to 500 MHz BNC/SMA/N-Type Connectors

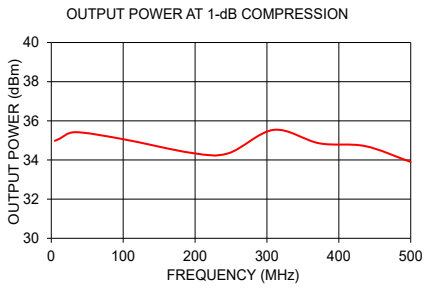
TYPICAL PERFORMANCE DATA/CURVES

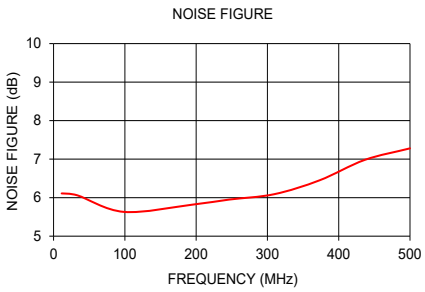
FREQUENCY (MHz)	GAIN (dB)			DIRECTIVITY (dB)			VSWR (:1)		NOISE FIGURE (dB)	P_{OUT} at 1 dB COMPR. (dBm)
	+23 V	+24 V	+24.5 V	+23 V	+24 V	+24.5 V	IN	OUT	+24 V	+24 V
5.0	32.84	32.87	32.92	25.30	26.00	26.10	1.12	1.51		34.98
11.3	32.45	32.47	32.50	25.90	26.70	26.00	1.10	1.49	6.11	35.08
33.4	32.41	32.42	32.45	25.80	23.80	24.30	1.16	1.49	6.06	35.42
98.8	33.72	33.78	33.83	24.90	25.40	22.60	1.28	1.43	5.63	35.07
195.4	34.00	34.10	34.19	21.90	21.60	22.50	1.41	1.18	5.82	34.36
246.2	33.64	33.73	33.84	20.00	19.90	19.50	1.45	1.11	5.95	34.34
309.6	33.47	33.57	33.67	17.10	17.70	18.00	1.48	1.19	6.09	35.54
373.1	33.77	33.89	34.02	15.90	16.10	17.60	1.51	1.29	6.45	34.85
436.5	33.15	33.35	33.54	17.60	17.20	17.60	1.56	1.37	6.98	34.71
500.0	32.49	32.80	33.14	22.50	20.60	20.80	1.59	1.57	7.28	33.90











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

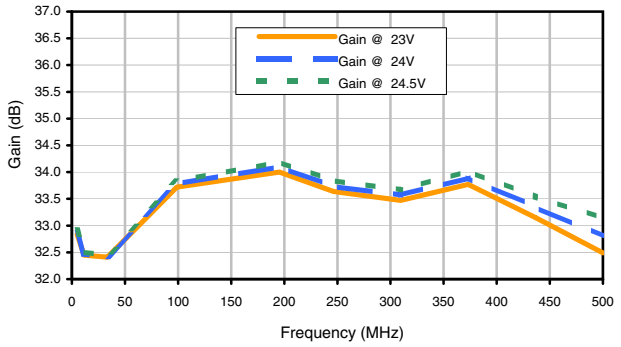
Typical Performance Data

FREQUENCY (MHz)	GAIN (dB)			DIRECTIVITY (dB)			VSWR IN (:1)	VSWR OUT (:1)	NOISE FIGURE (dB)	Pout at 1dB Comp. (dBm)
	23V	24V	24.5V	23V	24V	24.5V	24V	24V	24V	24V
5.0	32.84	32.87	32.92	25.30	26.00	26.10	1.25	1.33		34.98
11.3	32.45	32.47	32.50	25.90	26.70	26.00	1.07	1.32	6.11	35.08
33.4	32.41	32.42	32.45	25.80	23.80	24.30	1.16	1.32	6.06	35.42
98.8	33.72	33.78	33.83	24.90	25.40	22.60	1.58	1.33	5.63	35.07
195.4	34.00	34.10	34.19	21.90	21.60	22.50	1.77	1.22	5.82	34.36
246.2	33.64	33.73	33.84	20.00	19.90	19.50	1.86	1.24	5.95	34.34
309.6	33.47	33.57	33.67	17.10	17.70	18.00	1.82	1.76	6.09	35.54
373.1	33.77	33.89	34.02	15.90	16.10	17.60	1.46	1.95	6.45	34.85
436.5	33.15	33.35	33.54	17.60	17.20	17.60	1.15	1.54	6.98	34.71
500.0	32.49	32.80	33.14	22.50	20.60	20.80	1.83	1.81	7.28	33.90

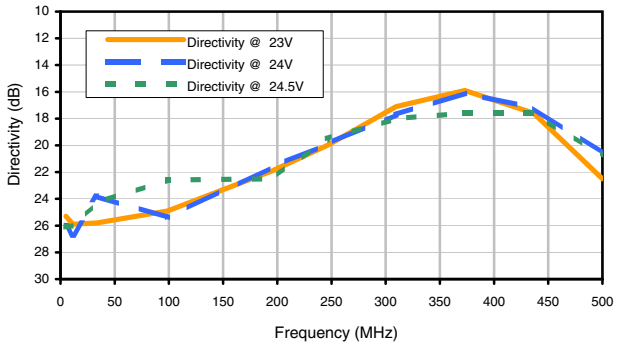
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Typical Performance Curves

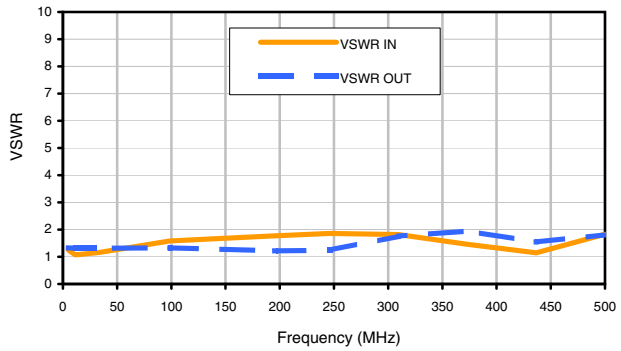
Gain



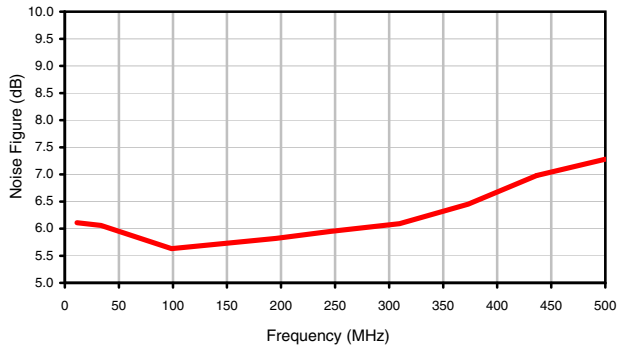
Directivity



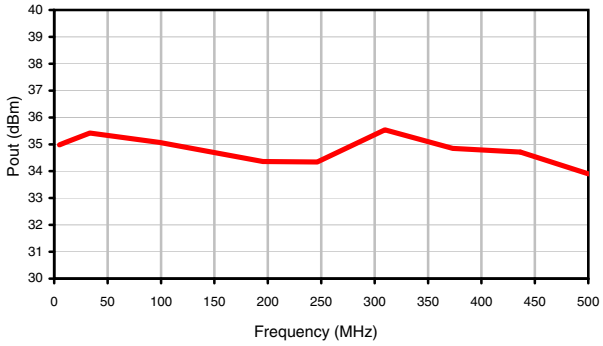
VSWR @ 24V



Noise Figure @ 24V



Pout at 1dB Compression @ 24V

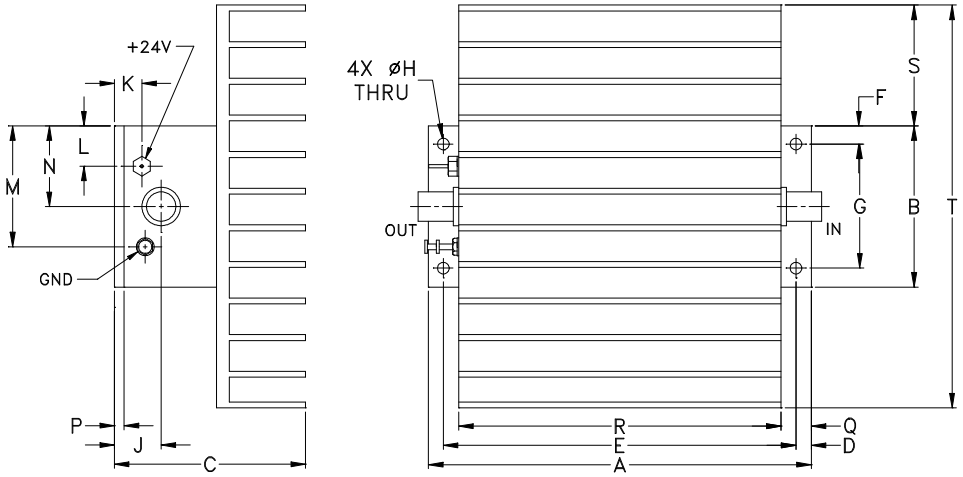


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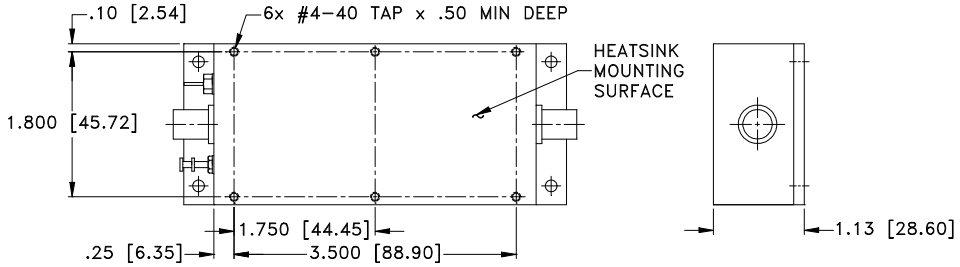
Case Style T

T35

Outline Dimensions



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
T35	4.75 (120.65)	2.00 (50.80)	2.37 (60.20)	.19 (4.83)	4.375 (111.13)	.23 (5.84)	1.540 (39.12)	.144 (3.66)	.58 (14.73)	.34 (8.64)	.50 (12.70)	1.50 (38.10)	1.00 (25.40)

CASE#	P	Q	R	S	T	WT. GRAMS	WT. WITHOUT HEATSINK GRAMS
T35	.13 (3.30)	.38 (9.65)	4.00 (101.60)	1.50 (38.10)	5.00 (127.00)	700.0	300.0

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

Notes:

1. Case material: Aluminum alloy.
2. Case finish, mounting bracket finish, and baseplate finish:
   For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
3. Heat sink finish: Black anodize if supplied with heat sink..

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Mini-Circuits

Environmental Specifications **ENV23T3**

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

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