COAXIAL

Medium High Power Amplifier

ZHL-2-12+
ZHL-2-12X+

50Ω 10 to 1200 MHz

FEATURES

- Wideband, 10 to 1200 MHz
- High Dynamic Range
- Low Noise Figure, 5 dB typ
- High IP3, +45 dBm typ.

Generic photo used for illustration purposes only

Model No.	ZHL-2-12+	ZHL-2-12X+▲
Case Style	T34	
Connectors	SMA	

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

APPLICATIONS

- VHF/UHF
- Cellular
- Instrumentation
- Laboratory

ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Condition (MHz)	ZHL-2-12+ ZHL-2-12X+▲ Min.	Typ.	Max.	Units
Frequency Range		10	—	1200	MHz
Gain	10-1200	24	26	30	dB
Gain Flatness	10-1200		±0.7	±1.2	dB
Output Power at 1dB compression	10-1200	28	29	—	dBm
Output Power at 3dB compression	10-1200	29	30	—	dBm
Noise Figure	10-1200	—	5	—	dB
Output third order intercept point	10-1200	—	45	—	dBm
Input VSWR	10-1200	—	—	2.2	:1
Output VSWR	10-1200	—	—	2.2	:1
DC Supply Voltage		—	24	—	V
Supply Current		—	—	0.75	A

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

▲Heat sink not included. Alternative heat sinking and heat removal must be provided by the user to limit maximum base-plate temperature to 65°C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heat sink to be 1.2°C/W max.

ABSOLUTE MAXIMUM RATINGS

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

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

REV. A
ECO-017840
ZHL-2-12+
MCL NY
230516

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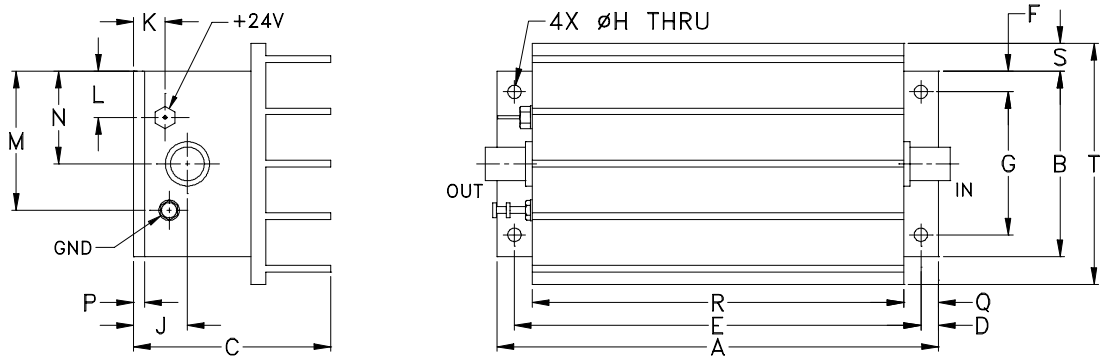
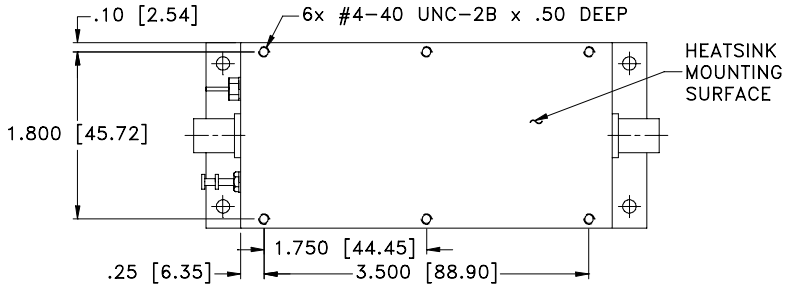
OUTLINE DRAWING FOR MODELS WITH HEATSINK



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK



OUTLINE DIMENSIONS (Inch / mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	wt
4.75	2.00	2.12	.19	4.375	.23	1.540	.144	.58	.34	.50	1.50	1.00	.12	.38	4.00	.30	2.60	grams*
120.65	50.80	53.85	4.83	111.13	5.84	39.12	3.66	14.73	8.64	12.70	38.10	25.40	3.05	9.65	101.60	7.62	66.04	440.0

*325 grams without heatsink

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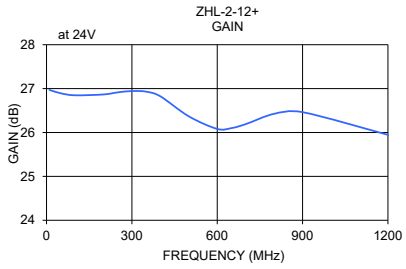
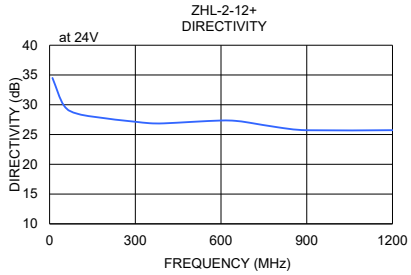
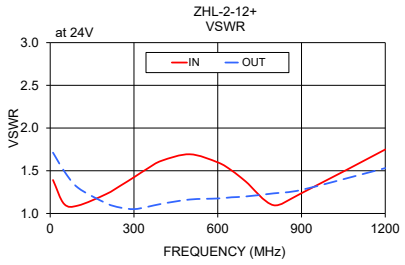
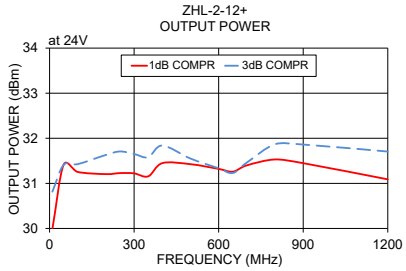
TYPICAL PERFORMANCE DATA/CURVES

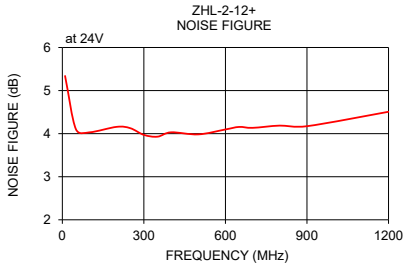
FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1)		POUT at 1 dB COMPR. (dBm)	NOISE FIGURE (dB)	IP3 (dBm)
	24V	24V	IN	OUT	24V	24V	24V
10	26.97	34.50	1.39	1.71	29.99	5.34	45.14
50	26.89	29.89	1.11	1.50	31.41	4.10	48.93
100	26.85	28.46	1.09	1.30	31.25	4.03	52.61
200	26.87	27.70	1.23	1.12	31.20	4.16	51.64
250	26.91	27.40	1.32	1.07	31.23	4.13	49.84
300	26.94	27.15	1.42	1.05	31.22	3.97	49.36
350	26.93	26.90	1.53	1.08	31.16	3.93	48.35
400	26.82	26.88	1.62	1.11	31.45	4.03	47.57
500	26.37	27.13	1.69	1.16	31.43	3.98	48.23
600	26.08	27.36	1.60	1.18	31.32	4.10	49.53
650	26.10	27.30	1.50	1.19	31.26	4.16	51.73
700	26.19	26.98	1.37	1.20	31.40	4.13	50.26
800	26.43	26.21	1.10	1.24	31.53	4.19	47.46
900	26.46	25.72	1.24	1.28	31.45	4.17	46.07
1200	25.95	25.73	1.75	1.53	31.09	4.51	44.77

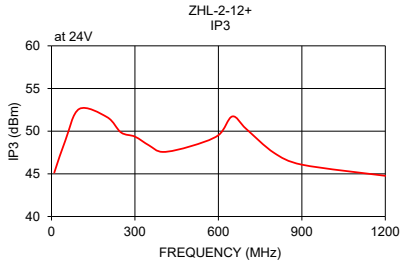












NOTES

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) 24V	DIRECTIVITY (dB) 24V	VSWR (:1) IN 24V	VSWR (:1) OUT 24V	NOISE FIGURE (dB) 24V	POUT @ 1 dB COMPRESSION (dBm) 24V	POUT @ 3 dB COMPRESSION (dBm) 24V	OUTPUT IP3 (dBm) 24V
10	26.97	34.50	1.39	1.71	5.34	29.99	30.82	45.14
50	26.89	29.89	1.11	1.50	4.10	31.41	31.41	48.93
100	26.85	28.46	1.09	1.30	4.03	31.25	31.43	52.61
200	26.87	27.70	1.23	1.12	4.16	31.20	31.63	51.64
250	26.91	27.40	1.32	1.07	4.13	31.23	31.71	49.84
300	26.94	27.15	1.42	1.05	3.97	31.22	31.65	49.36
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500	26.37	27.13	1.69	1.16	3.98	31.43	31.55	48.23
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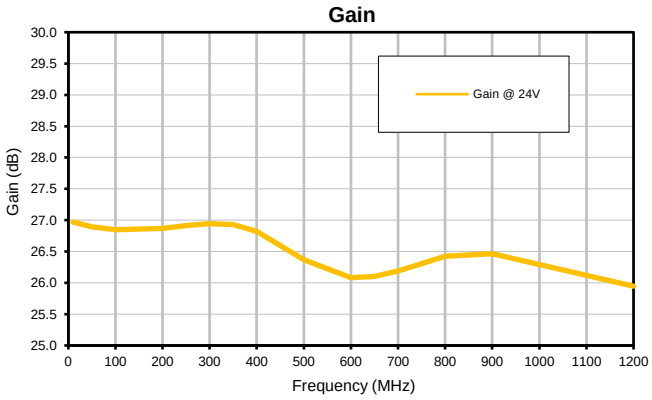
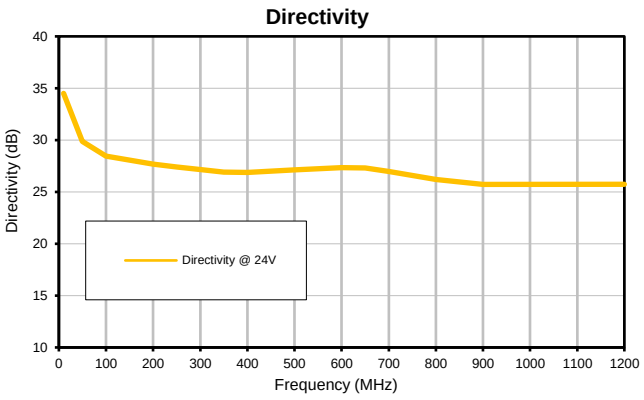
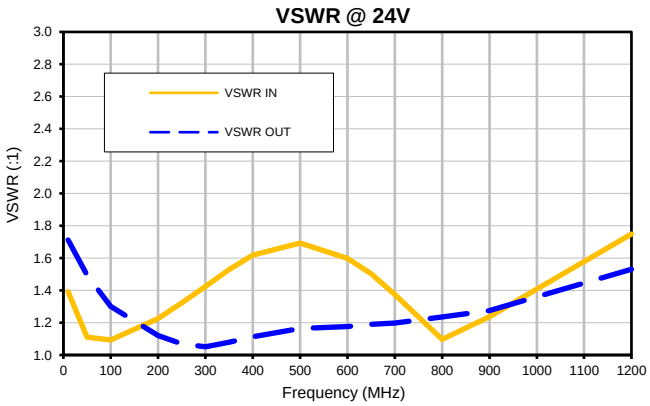
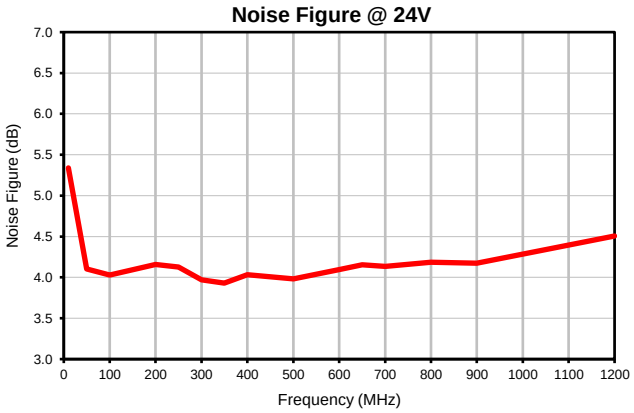
650	26.10	27.30	1.50	1.19	4.16	31.26	31.23	51.73
700	26.19	26.98	1.37	1.20	4.13	31.40	31.46	50.26
800	26.43	26.21	1.10	1.24	4.19	31.53	31.87	47.46
900	26.46	25.72	1.24	1.28	4.17	31.45	31.86	46.07
1200	25.95	25.73	1.75	1.53	4.51	31.09	31.71	44.77

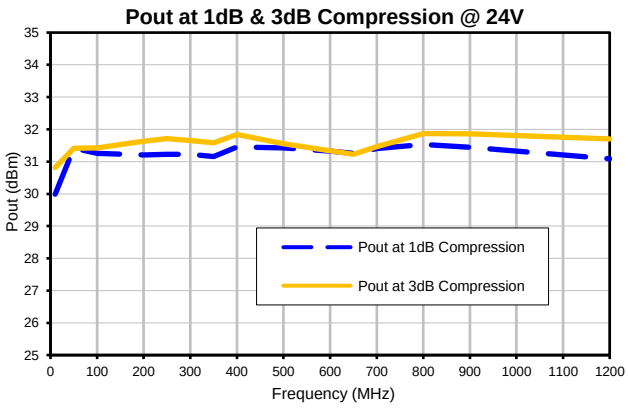
Typical Performance Curves

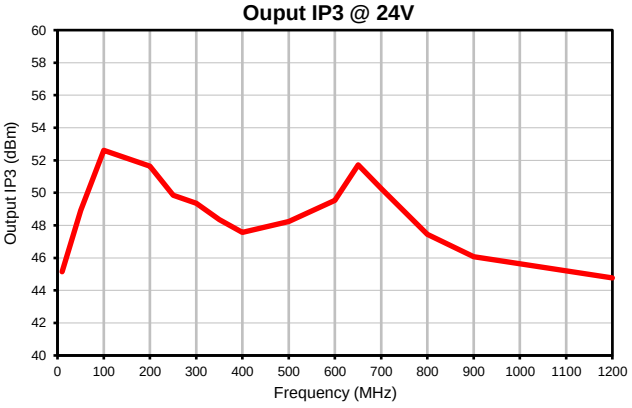








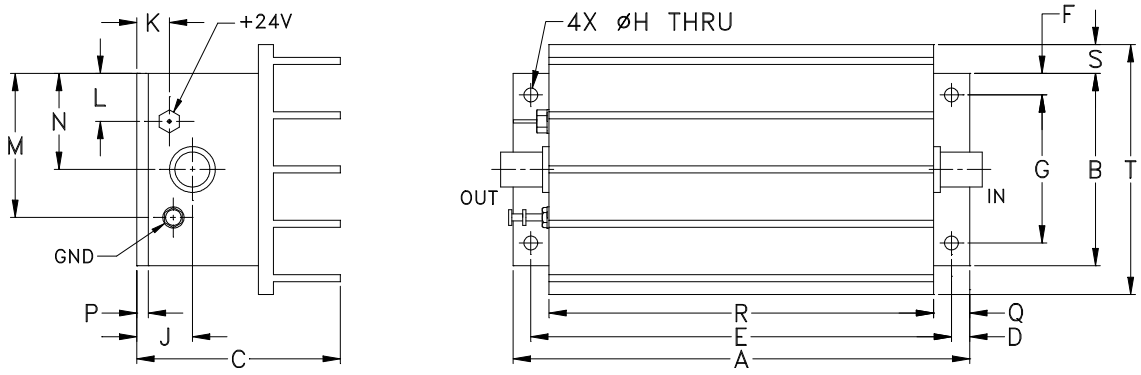




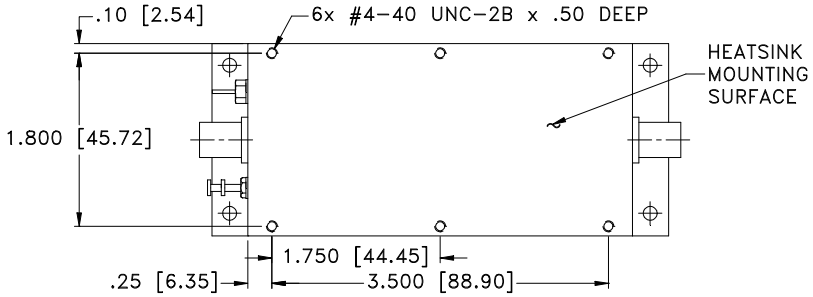
Case Style T

T34

Outline Dimensions



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
T34	4.75 (120.65)	2.00 (50.80)	2.12 (53.85)	.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
T34	.12 (3.05)	.38 (9.65)	4.00 (101.60)	.30 (7.62)	2.60 (66.04)	440.0	325.0

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

Notes:

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

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