COAXIAL

Low Noise Amplifier ZHL-1217MLN+

50Ω 1200 to 1700 MHz SMA Female

THE BIG DEAL

- Low Noise Figure, 1.5 dB Max.
- High IP3, +36 dBm
- High Gain, 29 dB Min.
- Good Gain Flatness, ±1.0 dB



Generic photo used for illustration purposes only

Model No.	ZHL-1217MLN+
Case Style	S32
Connectors	SMA female

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

APPLICATIONS

- GPS
- Mar Sat
- Communication Systems

PRODUCT OVERVIEW

Mini-Circuits' ZHL-1217MLN+ is a coaxial, low-noise amplifier supporting applications from 1200 to 1700 MHz. This model provides a combination of low noise, high IP3 and high gain with excellent gain flatness. The amplifier operates on a +15 V supply with low current consumption (380 mA) and comes housed in an aluminum alloy case (3.75x2.0x1.8") with SMA connectors and heatsink for efficient cooling.

KEY FEATURES

Feature	Advantages
Low Noise, 1.5 dB Max.	Excellent noise figure performance increases signal to noise ratio.
High OIP3, +36 dBm	Provides highly linear performance with excellent sensitivity and high dynamic range.
High Gain, 29 dB Min.	Reduces the number of gain stages, lowering component count and overall system cost.
Good Gain Flatness, ±1.0 dB	Provides consistent performance across its operating frequency, minimizing the need for external equalizing networks in wideband applications.

REV. C
ECO-028560
ZHL-1217MLN+
MCL NY
260223

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ELECTRICAL SPECIFICATIONS

Parameter	Frequency (MHz)	Min.	Typ.	Max.	Units
Frequency Range		1200		1700	MHz
Noise Figure	1200-1700		1.1	1.5	dB
Gain	1200-1700	29.0	34.5		dB
Gain Flatness	1200-1700			±1.0	dB
Output Power at 1 dB Compression	1200-1700		+22		dBm
Output Third Order Intercept Point	1200-1700		+36		dBm
Input VSWR	1200-1700			1.8	:1
Output VSWR	1200-1700			1.8	:1
DC Supply Voltage			+15		V
Supply Current				380	mA

Noise Figure specified at room temperature, increases to 2.3 dB max. at +65 °C.
Open load is not recommended, potentially can cause damage.
With no load, derate max input power by 20 dB.

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-20 °C to +65 °C
Storage Temperature	-55 °C to +100 °C
DC Voltage	+17 V
Input RF Power (No Damage)	0 dBm

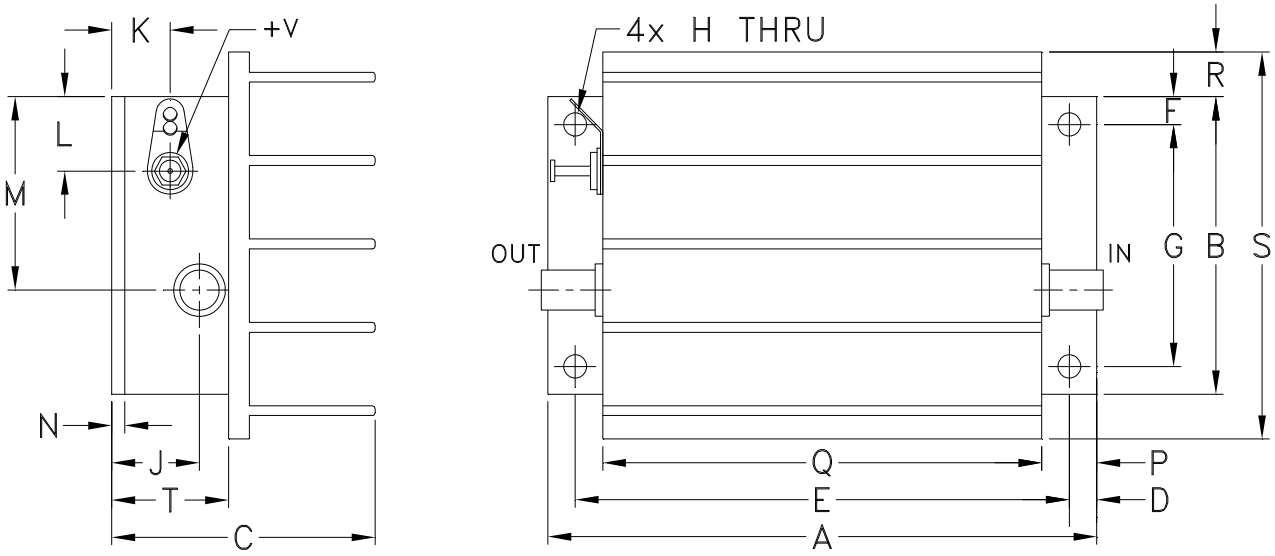
Permanent damage may occur if any of these limits are exceeded.

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OUTLINE DRAWING



OUTLINE DIMENSIONS (Inch / mm)

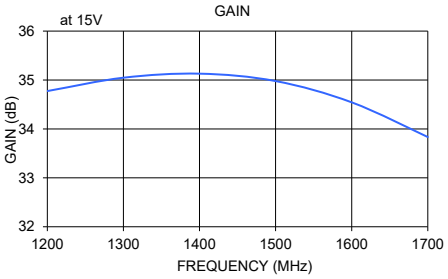
A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T	wt
3.75	2.00	1.80	.19	3.375	.19	1.625	.144	.50	.40	.50	1.30	.10	.38	3.00	.30	2.60	.80	grams
95.25	50.80	45.72	4.83	85.73	4.83	41.28	3.66	12.70	10.16	12.70	33.02	2.54	9.65	76.20	7.62	66.04	20.32	220.0
																wt. w/o heat sink		150

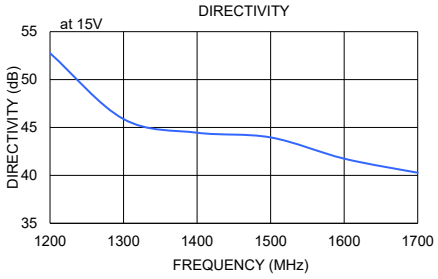
Low Noise Amplifier ZHL-1217MLN+

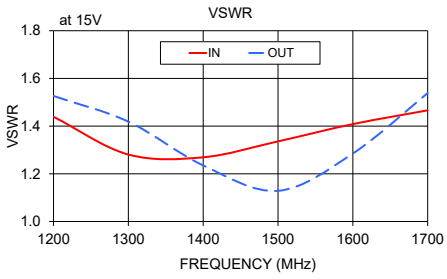
50Ω 1200 to 1700 MHz SMA Female

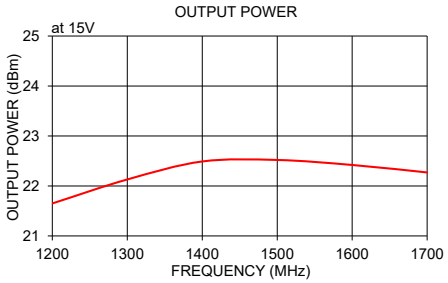
TYPICAL PERFORMANCE DATA/CURVES

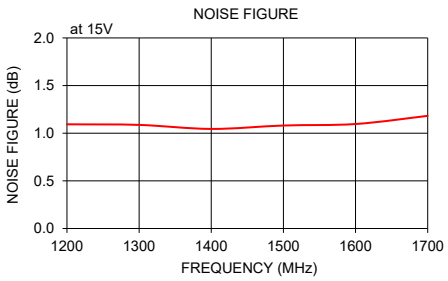
FREQ. (MHz)	GAIN (dB) +15 V	DIRECTIVITY (dB) +15 V	VSWR (:1) IN	VSWR (:1) OUT	NOISE FIGURE (dB) +15 V	P_{OUT} at 1 dB COMPR. (dBm) +15 V	OUTPUT IP3 (dBm) +15 V
1200	34.77	52.76	1.44	1.53	1.09	21.65	35.09
1300	35.05	45.88	1.28	1.42	1.09	22.13	35.58
1400	35.13	44.45	1.27	1.24	1.04	22.49	36.18
1500	34.98	43.96	1.34	1.13	1.08	22.52	36.16
1600	34.54	41.75	1.41	1.29	1.10	22.42	36.38
1700	33.83	40.28	1.47	1.54	1.18	22.27	36.23

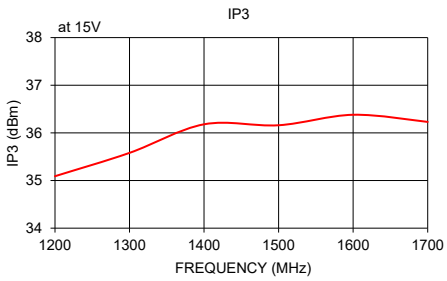












NOTES

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

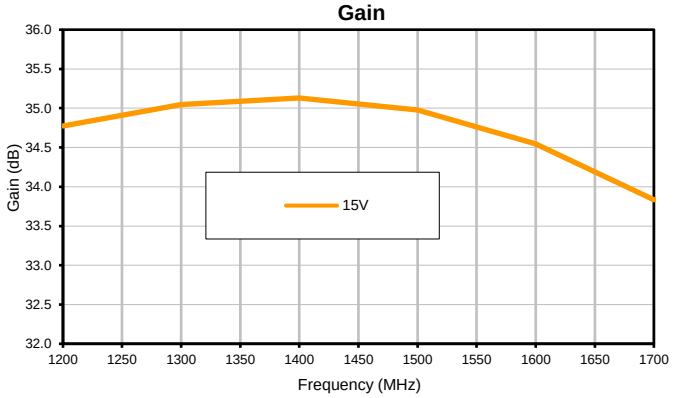
Low Noise Amplifier ZHL-1217MLN+

Typical Performance Data

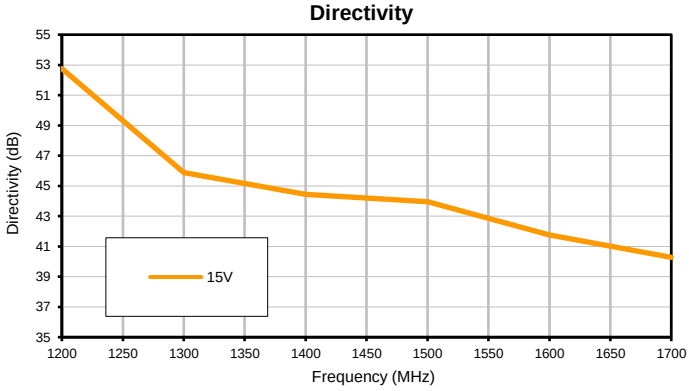
FREQUENCY (MHz)	GAIN (dB) 15V	DIRECTIVITY (dB) 15V	VSWR (:1) IN 15V	VSWR (:1) OUT 15V	NOISE FIGURE (dB) 15V	POUT @ 1 dB COMPRESSION (dBm) 15V	OUTPUT IP3 (dBm) 15V
1200	34.77	52.76	1.44	1.53	1.09	21.65	35.09
1300	35.05	45.88	1.28	1.42	1.09	22.13	35.58
1400	35.13	44.45	1.27	1.24	1.04	22.49	36.18
1500	34.98	43.96	1.34	1.13	1.08	22.52	36.16
1600	34.54	41.75	1.41	1.29	1.10	22.42	36.38
1700	33.83	40.28	1.47	1.54	1.18	22.27	36.23

Typical Performance Curves

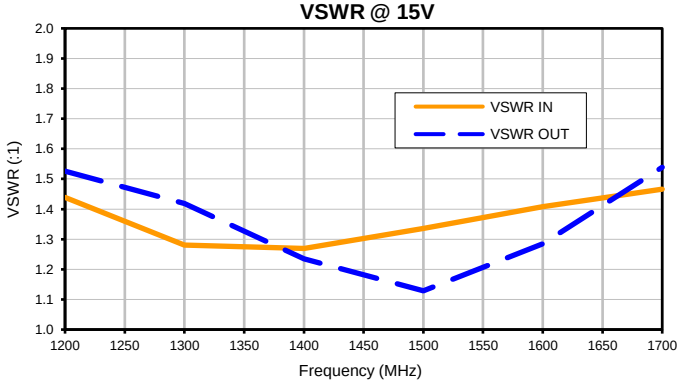
Gain



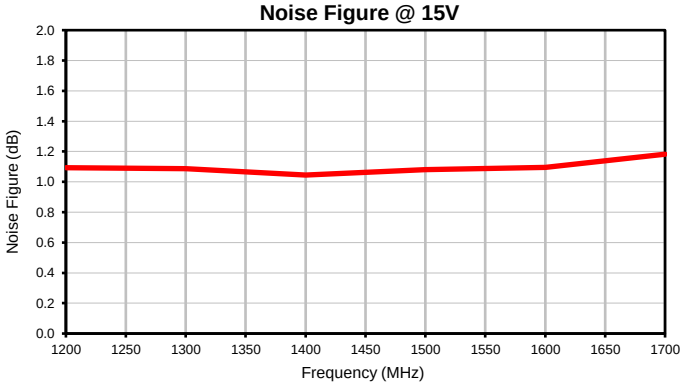
Directivity



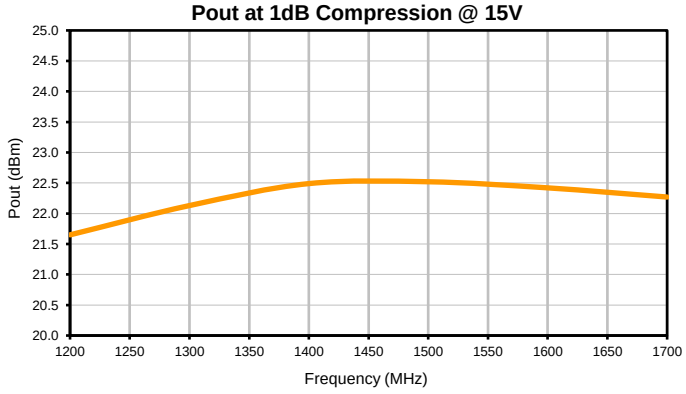
VSWR @ 15V



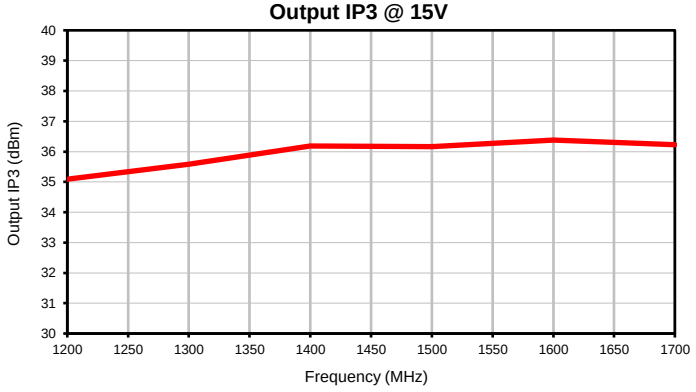
Noise Figure @ 15V



Pout at 1dB Compression @ 15V



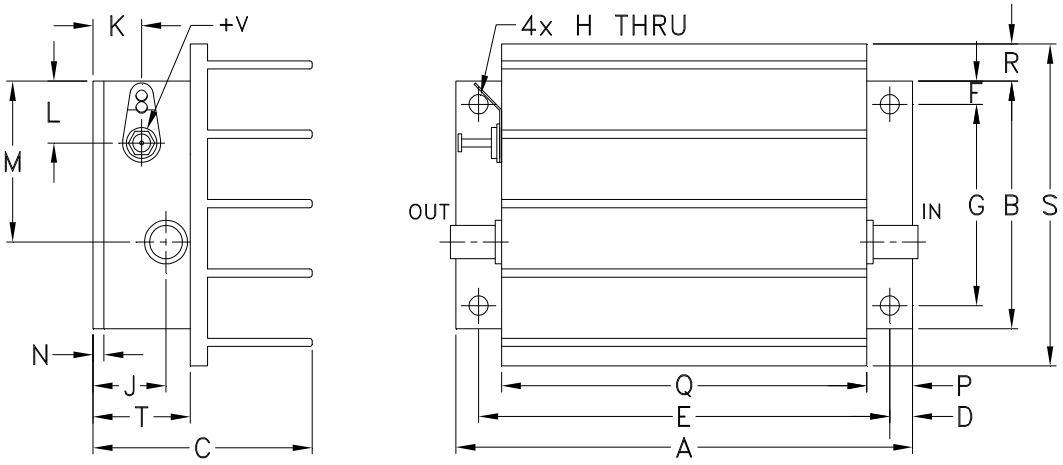
Output IP3 @ 15V



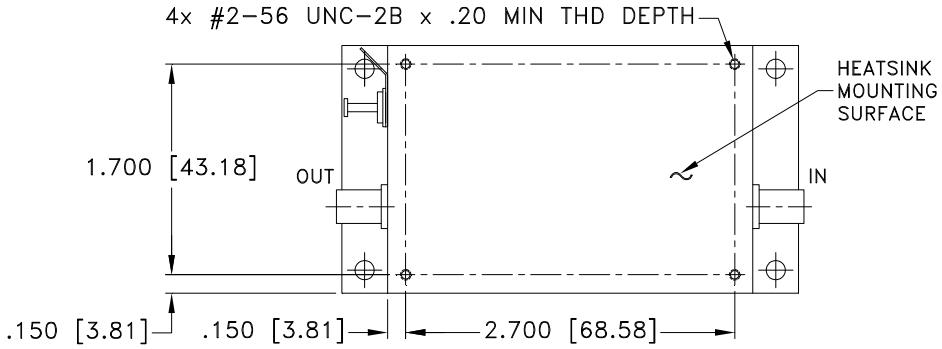
Case Style S

S32

Outline Dimensions



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
S32	3.75 (95.25)	2.00 (50.80)	1.80 (45.72)	.19 (4.83)	3.375 (85.73)	.19 (4.83)	1.625 (41.28)	.144 (3.66)	.50 (12.70)	.40 (10.16)	.50 (12.70)	1.30 (33.02)	.10 (2.54)

CASE#	P	Q	R	S	T	WT. GRAMS	WT. WITHOUT HEATSINK GRAMS
S32	.38 (9.65)	3.00 (76.20)	.30 (7.62)	2.60 (66.04)	.80 (20.32)	220.0	150.0

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

Notes:

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

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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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