COAXIAL

Low Noise Amplifier ZX60-33LNR-S+

50Ω 50 to 3000 MHz SMA Female

THE BIG DEAL

- Wide Bandwidth, 50 to 3000 MHz
- Low Noise Figure, 1.1 dB Typ.
- Output Power, Up to +19 dBm Typ.
- High OIP3, Up to +35 dBm, Typ.
- Protected by US Patent 6,790,049



Generic photo used for illustration purposes only

Model No.	ZX60-33LNR-S+
Case Style	GC957
Connectors	SMA female

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

APPLICATIONS

- Front-End Amplifier
- Cellular
- GPS
- Bluetooth
- Lab
- Instrumentation
- Test Equipment

PRODUCT OVERVIEW

Mini-Circuits' ZX60-33LNR-S+ is a wideband low noise connectorized amplifier providing a unique combination of low noise figure, and high IP3 over a wide frequency range, supporting a wide range of sensitive, high-dynamic range receiver applications and many systems where high performance over wideband is needed. This design operates on a single +5 V supply and comes in a rugged, compact unibody case (0.74x0.75x0.46") with SMA connectors, making it an excellent candidate for tough operating conditions and crowded system layouts.

KEY FEATURES

Feature	Advantages
Wideband 50 to 3000 MHz Able to Work from 20 to 3300 MHz	Enables a single amplifier to be used in a wide range of applications including cellular, GPS, bluetooth, defense, instrumentation and more.
Low Noise Over the Whole Band, 1.1 dB Typ.	Enables lower system noise figure performance.
High Gain, 17.5 dB Typ.	Reduces the number of gain stages, lowering component count and overall system cost.
High IP3, Up to +35 dBm Typ.	The combination of low noise and high IP3 makes the ZX60-33LNR-S+ ideal for use in low noise receiver front end (RFE) as it gives the user the advantages of sensitivity and two-tone IM performance at both ends of the dynamic range.
Rugged, Unibody Construction	Mini-Circuits unibody construction integrates the RF connector into the case body, providing high reliability and excellent survivability in critical applications.

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ZX60-33LNR-S+
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ELECTRICAL SPECIFICATIONS AT +25 °C

Parameter	Condition (MHz)	Min	Typ.	Max.	Units
Frequency		50		3000	MHz
Noise Figure			1.1		dB
Gain	100	13	24.7		dB
	1000		18.7		
	2000		14.1		
	3000		11.4		
Output Power at 1 dB Compression		+14.5	+19		dBm
Output Third Order Intercept Point			+35		dBm
Input VSWR			2.0		:1
Output VSWR			1.6		:1
DC Supply Voltage			+5		V
Supply Current			70	80	mA

ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40 °C to +85 °C Case
Storage Temperature	-55 °C to +100 °C
DC Voltage	+5.5 V
Input RF Power (No Damage)	+13 dBm
Power Dissipation	0.44 W

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

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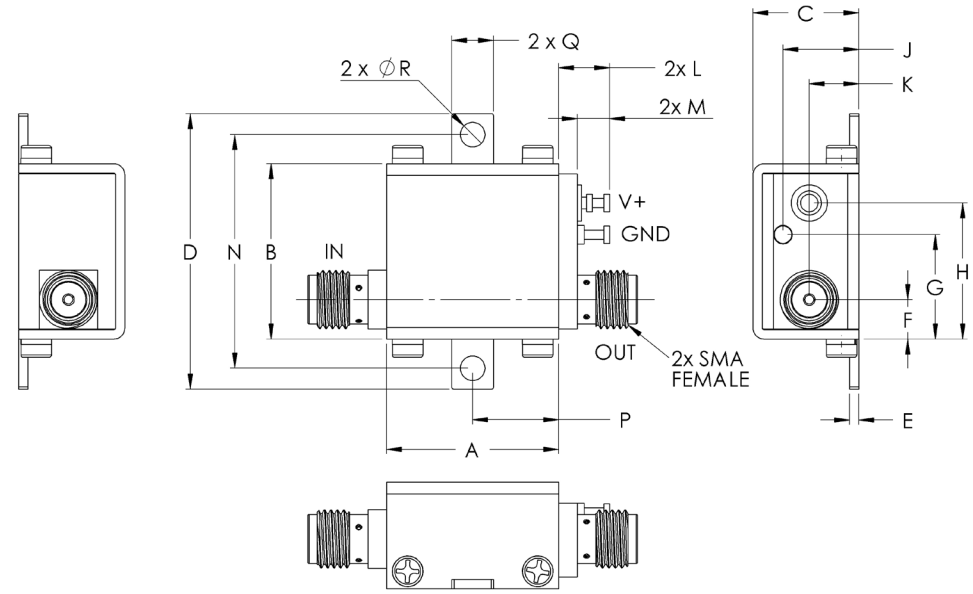
OUTLINE DRAWING



NOTE: When soldering the DC connections, caution must be used to avoid overheating the DC terminal.
See Application Note. AN-40-010.

OUTLINE DIMENSIONS (Inches / mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	wt
.74	.75	.46	1.18	.04	.17	.45	.59	.33	.21	.22	.14	1.00	.37	.18	.106	grams
18.80	19.1	11.68	30.0	1.02	4.32	11.4	14.99	8.38	5.33	5.59	3.56	25.40	9.40	4.57	2.69	23.0

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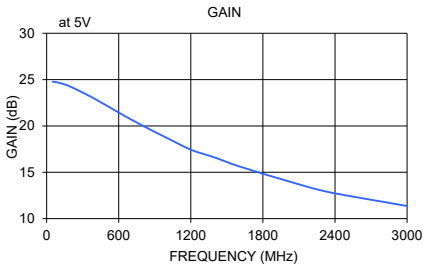
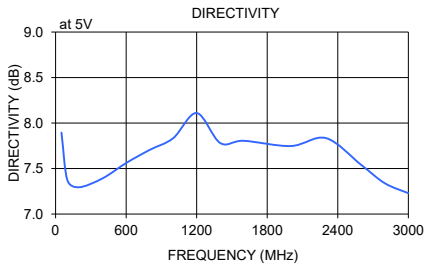
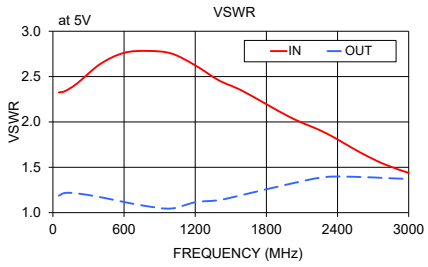
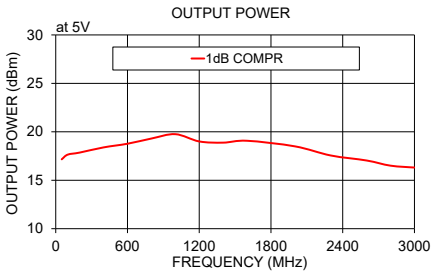
TYPICAL PERFORMANCE DATA/CURVES

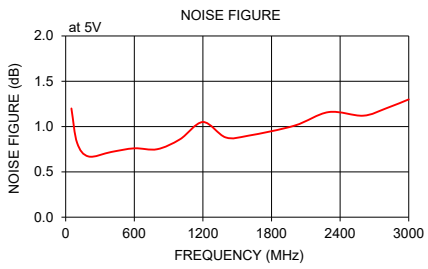
Frequency (MHz)	Gain (dB) +5 V	Directivity (dB) +5 V	VSVR (:1) IN	VSVR (:1) OUT	P_{OUT} at 1 dB Compr. (dBm) +5 V	Noise Figure (dB) +5 V	OIP3 (dBm) +5 V
50	24.77	7.89	2.33	1.19	17.16	1.20	27.42
100	24.67	7.37	2.34	1.22	17.64	0.82	27.19
200	24.23	7.29	2.42	1.21	17.85	0.67	28.33
400	22.93	7.39	2.64	1.17	18.39	0.72	29.99
600	21.44	7.56	2.76	1.12	18.77	0.76	31.15
800	20.02	7.70	2.78	1.07	19.31	0.75	32.15
1000	18.71	7.83	2.75	1.05	19.76	0.86	32.38
1200	17.44	8.11	2.62	1.11	19.01	1.05	33.33
1400	16.59	7.78	2.46	1.14	18.88	0.88	33.59
1600	15.65	7.80	2.34	1.20	19.08	0.90	34.03
2000	14.08	7.75	2.05	1.32	18.50	1.01	34.38
2300	13.00	7.83	1.88	1.39	17.56	1.16	34.78
2600	12.26	7.54	1.66	1.39	17.04	1.12	35.65
2800	11.81	7.34	1.53	1.38	16.50	1.20	36.01
3000	11.36	7.23	1.44	1.37	16.31	1.30	35.45

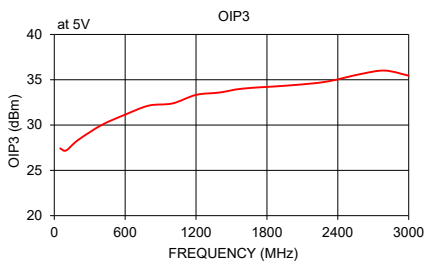












NOTES

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