Wideband

Low Noise Amplifier

ZX60-53LN+

50Ω 0.5 to 5 GHz

The Big Deal

- Very wideband, 500 MHz – 5 GHz
- Ultra-flat gain, ±0.7 dB from 500 to 2000 MHz
- Low NF over entire frequency band

CASE STYLE: GC957

Product Overview

Mini-Circuits ZX60-53LN+ is a low-noise amplifier offering industry-leading performance over its full frequency range from 500 MHz to 5 GHz. The internal MMIC amplifier ZX60-53LN+ utilizes E-PHEMT technology to achieve excellent noise figure performance in a unique cascade configuration enabling the combination of very wide band performance and flat gain. This design operates on a single 5V supply and comes in a rugged, compact unobody case (0.74 x 0.75 x 0.46") with SMA connectors, making it an excellent candidate for tough operating conditions and crowded system layouts.

Key Features

Feature	Advantages
Ultra-wideband: 500 MHz – 5 GHz	Ideal for a wide range of receiver applications including military, commercial wireless, and instrumentation.
Very flat gain	Ideal for broadband or multi-band applications. Just one, cost-efficient model required for multiple frequency usage.
High IP3: 32 dBm typ.	Provides enhanced linearity over broad frequency range.
High gain, 25 dB typ.	Reduces the number of gain stages, lowering components count and overalll system cost.
Low operating voltage, 5V	The amplifier features low operating voltage.
Rugged, unibody construction	Mini-Circuits unibody construction integrates the RF connector into the case body, providing high reliability and excellent survivability in critical applications.

Wideband

Low Noise Amplifier

ZX60-53LN+

50Ω 0.5 to 5 GHz

Features

- Wideband: 0.5-5 GHz
- Low Noise figure: 1.45 dB typ. at 2 GHz
- High Gain: 21.0 dB typ. at 2 GHz
- Ultra Flat Gain: ±0.7 dB from 0.5 to 2 GHz
- P1dB: +19.0 dBm typ. at 2 GHz
- Specified over full band operation

Generic photo used for illustration purposes only

CASE STYLE: GC957

Connectors	Model
SMA	ZX60-53LN+

+RoHS Compliant

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

Applications

- Wireless Base Station Systems
- Test and Measurement Systems
- Multi-Band Receivers

Electrical Specifications at 25°C, Zo=50Ω and 5V, unless noted

Parameter	Condition (GHz)	V_{DD}=5.0			Units
Frequency Range		0.5		5.0	GHz
Noise Figure	0.5		1.20		dB
	1.0		1.25		
	2.0		1.45		
	3.0		1.50		
	4.0		1.60		
	5.0		1.90		
Gain	0.5	19.5	22.0	23.9	dB
	1.0		22.0		
	2.0		21.0		
	3.0		20.0		
	4.0		19.0		
	5.0		18.0		
Gain Flatness	0.5 - 2.0		±0.7		dB
Input Return Loss	0.5		16.0		dB
	1.0		16.5		
	2.0		15.0		
	3.0		13.0		
	4.0		17.0		
	5.0		14.0		
Output Return Loss	0.5		13.0		dB
	1.0		15.0		
	2.0		20.0		
	3.0		15.0		
	4.0		15.0		
	5.0		12.0		
Output Power @1dB compression[1]	0.5		19.2		dBm
	1.0		19.1		
	2.0		18.9		
	3.0		19.1		
	4.0		19.5		
	5.0		18.2		
Output IP3	0.5		32.8		dBm
	1.0		35.0		
	2.0		31.5		
	3.0		31.0		
	4.0		32.0		
	5.0		30.9		
Active Directivity (Isolation-Gain)	0.5-2.0		4.5		dB
Device Operating Voltage (Vdd)		4.9	5.0	7.0	V
Device Operating Current (Id)			80	105	mA

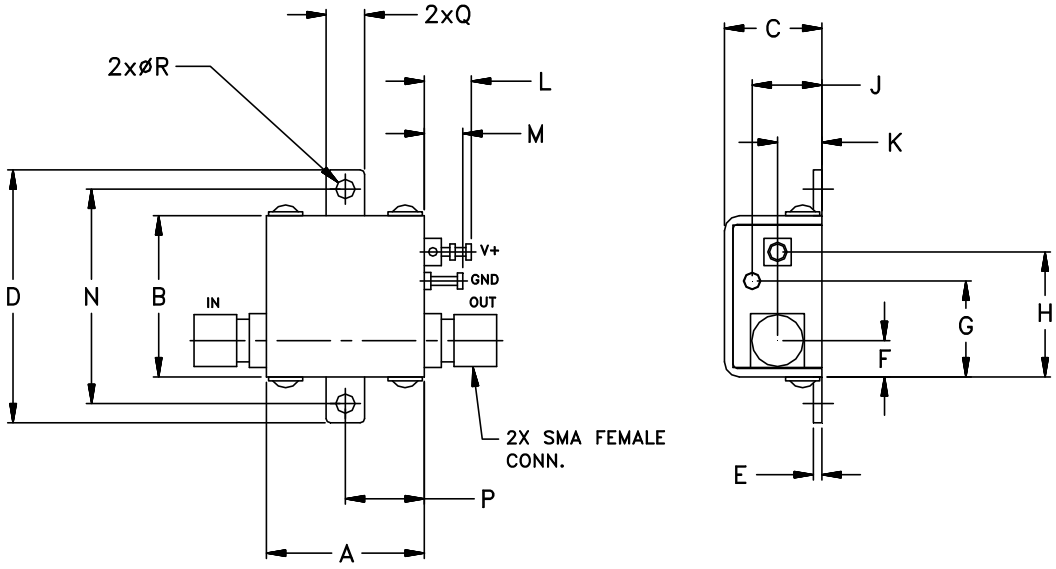
1. Current increases at P1dB.

Absolute Maximum Ratings[2]

Parameter	Ratings
Operating Temperature (ground lead)	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Total Power Dissipation	0.7 W
Input Power	8 dBm (continuous), 19 dBm (5 min max.)
DC Voltage Vdd	7.0 V

2. Permanent damage may occur if any of these limits are exceeded.
Electrical maximum ratings are not intended for continuous normal operation.

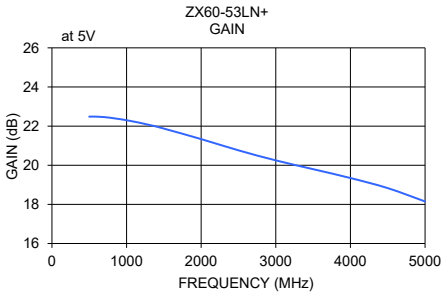
Outline Drawing

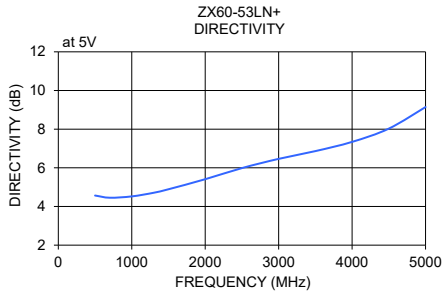


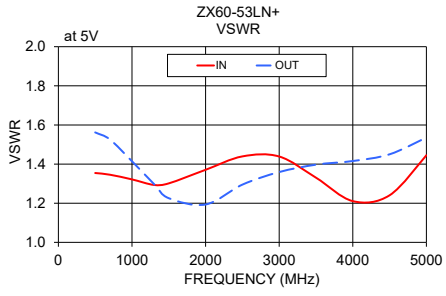
Outline Dimensions (inch / mm)

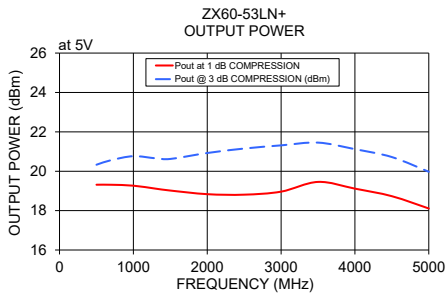
A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	wt
.74	.75	.46	1.18	.04	.17	.45	.59	.33	.21	.22	.18	1.00	.37	.18	.106	grams
18.80	19.05	11.68	29.97	1.02	4.32	11.43	14.99	8.38	5.33	5.59	4.57	25.40	9.40	4.57	2.69	23.0

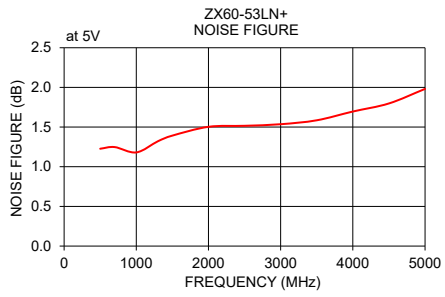
FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1)		POWER OUT @1 dB COMPR. (dBm)	NF (dB)	IP3 (dBm)
			IN	OUT			
500	22.49	4.57	1.35	1.56	19.32	1.23	35.04
700	22.46	4.45	1.35	1.53	19.31	1.25	36.42
1000	22.30	4.52	1.32	1.41	19.27	1.18	36.53
1300	22.06	4.71	1.29	1.30	19.12	1.32	36.03
1500	21.87	4.89	1.30	1.23	19.02	1.39	36.51
2000	21.34	5.41	1.37	1.19	18.84	1.50	34.34
2500	20.76	5.99	1.44	1.30	18.81	1.52	33.34
3000	20.25	6.46	1.44	1.36	18.96	1.54	32.15
3500	19.80	6.86	1.33	1.40	19.46	1.59	32.43
4000	19.35	7.34	1.21	1.42	19.12	1.70	32.88
4500	18.83	8.03	1.24	1.45	18.73	1.80	32.57
5000	18.15	9.14	1.45	1.54	18.11	1.98	32.05

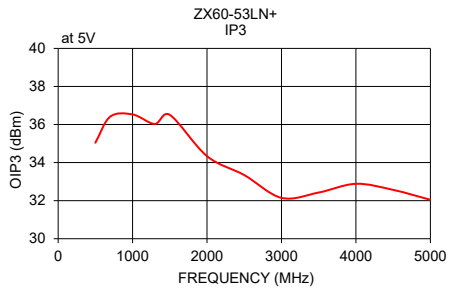












Additional Notes

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/MCLStore/terms.jsp

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Mini-Circuits:

ZX60-53LN+