



Mini-Circuits

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Low Phase Noise Amplifier

ZX60-43LPN+

50Ω 0.5 to 4000 MHz SMA Female

KEY FEATURES

- Wide Bandwidth, 0.5 to 4000 MHz
- Output Power, +21 dBm Typ.
- Voltage Regulated Internally and Reverse Voltage Protected
- Low Additive Phase Noise, Typ. -167 dBc/Hz @10 KHz Offset
- Protected by US Patent 6,790,049 & 6,943,629

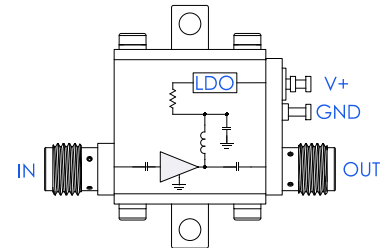
APPLICATIONS

- Microwave Point to Point Radios
- Military EW and Radar
- Satellite Systems



Generic photo used for illustration purposes only

FUNCTIONAL DIAGRAM



PRODUCT OVERVIEW

Mini-Circuits' ZX60-43LPN+ utilizes an advanced wideband amplifier fabricated using InGaP HBT technology that provides low additive phase noise and offers excellent gain over a broad frequency range. In addition, the ZX60-43LPN+ has medium output power and high linearity to support a wide range of applications where high performance is needed. Housed in a rugged, compact unibody 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.

ELECTRICAL SPECIFICATIONS AT +25°C BASEPLATE

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range		0.5		4000	MHz
Gain	0.5 - 1000	—	23	—	dB
	1000 - 2000	—	21	—	
	2000 - 4000	—	18	—	
Output Power at 1 dB Compression (P1dB)	100 - 4000	—	+21	—	dBm
Output Third Order Intercept Point (OIP3)	0.5 - 4000	—	+34	—	dBm
Input Return Loss	0.5 - 4000	—	18	—	dB
Output Return Loss	0.5 - 4000	—	9.5	—	dB
Directivity		—	7-9	—	dB
Additive Phase Noise @10 kHz Offset		—	-167	—	dBc/Hz
DC Supply Voltage (Vs)		+5.9	+6	+9	V
DC Current ¹		—	120	150	mA

1. DC Current at P1dB/Psat as applicable.





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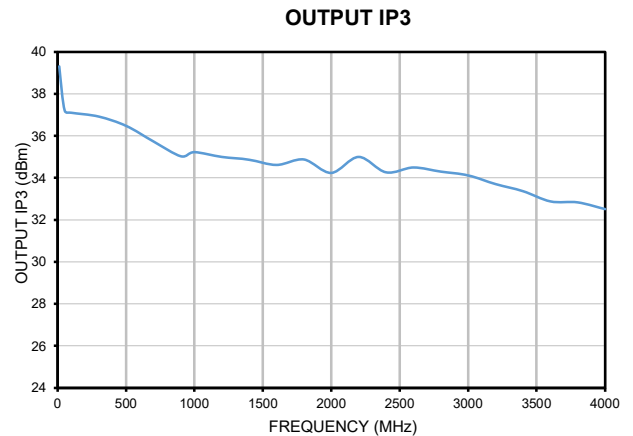
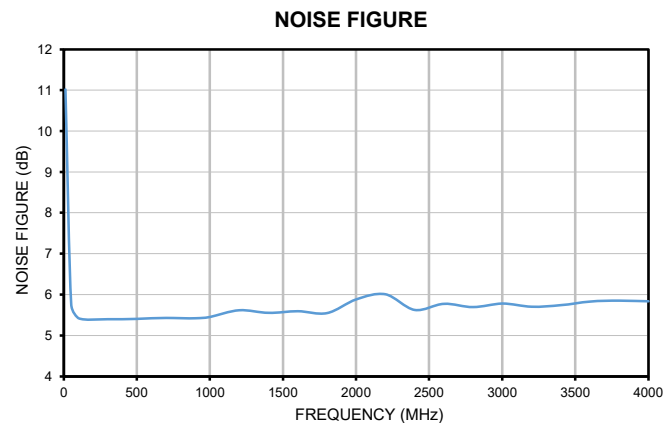
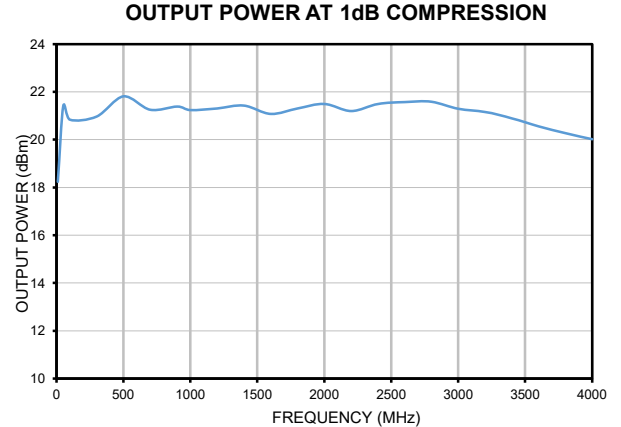
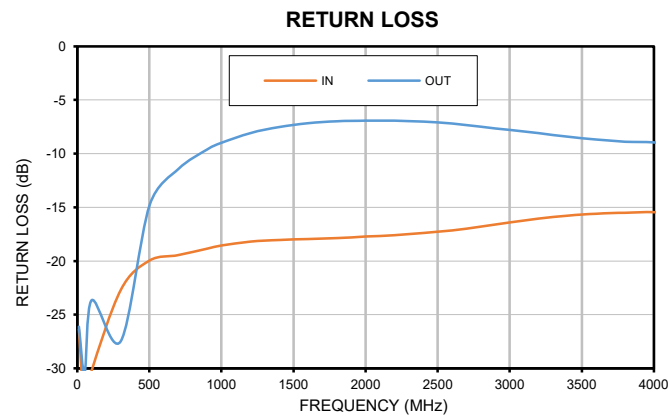
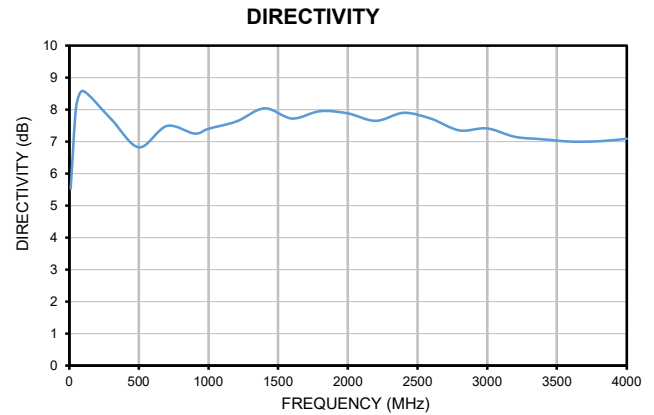
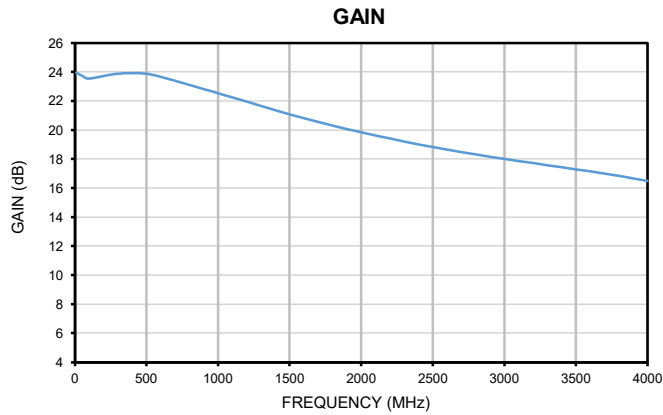
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TYPICAL PERFORMANCE GRAPHS





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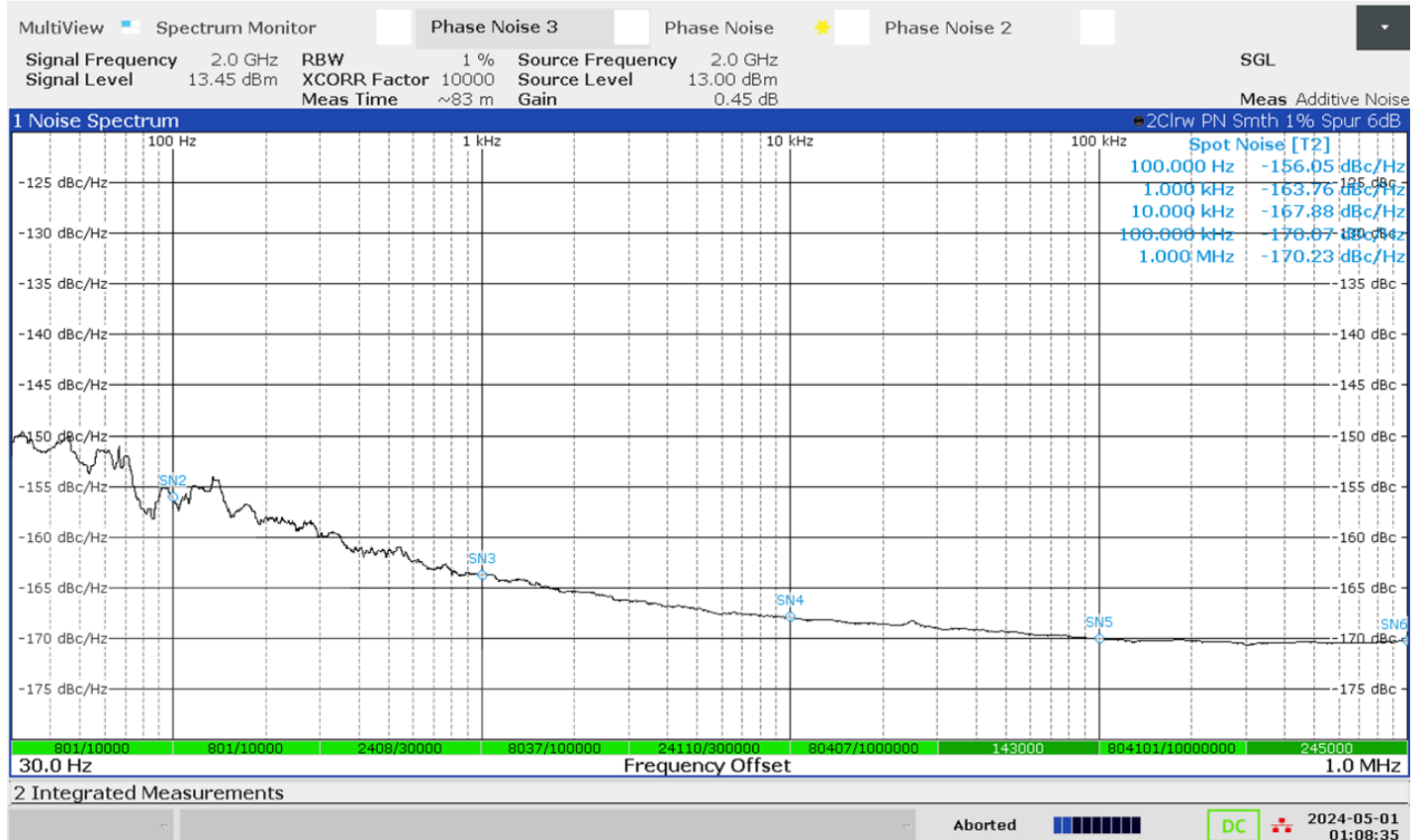
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ADDITIVE PHASE NOISE VS. OFFSET FREQUENCY



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ABSOLUTE MAXIMUM RATINGS²

Parameter	Ratings
Operating Temperature (Baseplate)	-40°C to +85°C
Storage Temperature	-55°C to +100°C
Total Power Dissipation	1.4 W
RF Input Power (CW) ³	+10 dBm
DC Operating Voltage (Vs)	+9.5 V

2. Continuous operation is not recommended at these extremes. Permanent damage may occur if any of these limits are exceeded.

3. Specified under matched load to 50 ohms.

DETERMINING MAXIMUM THERMAL RESISTANCE OF USERS' EXTERNAL HEAT SINK

$\text{MAXIMUM THERMAL RESISTANCE} = \frac{\text{MAXIMUM OPERATING CASE TEMP} - \text{MAXIMUM USER AMBIENT TEMP}}{\text{POWER DISSIPATION}}$	
Example:	MAXIMUM OPERATING CASE TEMP = +50 °C (CHECK MAXIMUM RATINGS TABLE FOR THIS VALUE) MAXIMUM USER AMBIENT TEMP = +30 °C (USER DEFINED) POWER DISSIPATION = 10 WATTS (CHECK MAXIMUM RATINGS TABLE FOR THIS VALUE) THEN MAXIMUM ALLOWABLE THERMAL RESISTANCE = 2 °C/W



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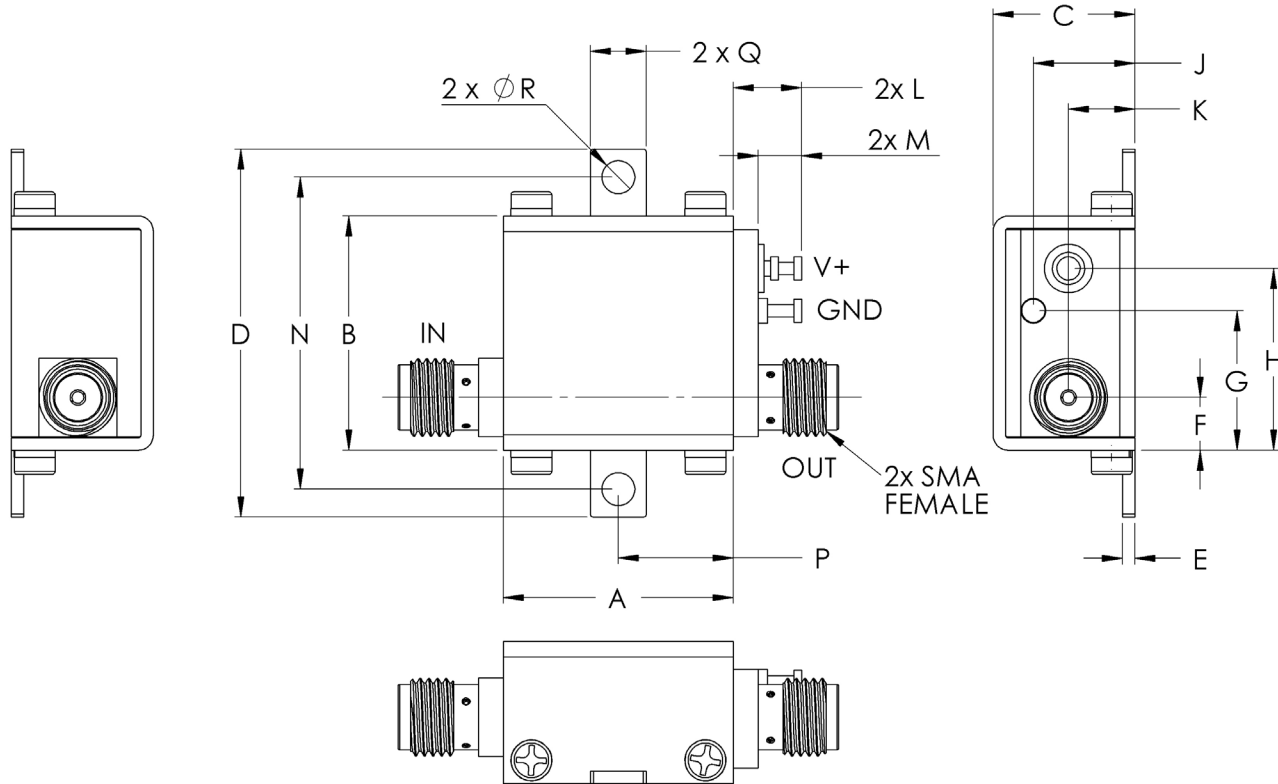
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CASE STYLE DRAWING



Weight: 23.0 grams

Dimensions are in inches [mm]. Tolerances: 2 Pl. ±.03; 3 Pl. ±.015 Inches

 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





ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD.

Performance Data & Graphs	Data
	Graphs
	S-Parameter (S2P Files) Data Set (.zip file)
RoHS Status	Compliant
Environmental Ratings	ENV23T10
Export Information	ECCN# EAR99

ORDERING INFORMATION

Model No. Link	ZX60-43LPN+
Case Style	GC957
Connector	IN SMA/Female / OUT SMA/Female

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-Circuits' 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

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