Wideband

Low Noise Bypass Amplifier

ZX60-53LNB-S+

50Ω 0.5 to 5 GHz

The Big Deal

- Very wideband, 500 MHz – 5 GHz
- Ultra-flat gain, ±0.6 dB from 700 to 2000 MHz
- Low NF over entire frequency band
- Internal bypass switching extends useable dynamic range

CASE STYLE: GD958

Product Overview

Mini-Circuits ZX60-53LNB-S+ is a low-noise amplifier offering industry-leading performance over its full frequency range from 500 MHz to 5 GHz. It contains internal switching, allowing the user control of the amplifier to handle both high and low signal levels by bypassing the LNA in the presence of large signals. The internal MMIC amplifier ZX60-53LNB-S+ 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 model comes in a 48X30mm small connectorized package.

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: 48 dBm typ. (bypass mode)	Provides enhanced linearity over broad frequency range under high signal conditions.
Internal bypass switch feature	Unique design handles low to high signal levels with minimal noise distortion.
Small size: 1.88" x 1.18"	This unique unibody size and construction enables the ZX60-53LNB-S+ to be used in compact connectorized applications.

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Features

- Wideband: 0.5-5 GHz
- Built-in Bypass switching
- Low Noise figure: 1.28 dB typ. at 2 GHz
- High Gain: 21.3 dB typ. at 2 GHz
- Ultra Flat Gain: ±0.6 dB from 0.7 to 2 GHz
- P1dB: +21.6 dBm typ. at 2 GHz
- Specified over full band operation

Applications

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

Generic photo used for illustration purposes only

CASE STYLE: GD958

Connectors	Model
SMA	ZX60-53LNB-S+

+RoHS Compliant

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

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

Parameter	Condition (GHz)	Amplifier-ON			Amplifier-Bypass	Units
		Min.	Typ.	Max.	Typ.	
Frequency Range		0.5		5.0	0.5-5.0	GHz
Noise Figure	0.5		1.12		—	dB
	1.0		1.16		—	
	2.0		1.28		—	
	3.0		1.4		—	
	4.0		1.46		—	
	5.0		1.63		—	
Gain	0.5	—	22.0	—	-0.84	dB
	1.0	—	21.9	—	-0.96	
	2.0	19.5	21.2	23.9	-1.15	
	3.0	—	20.2	—	-1.4	
	4.0	—	19.0	—	-1.8	
	5.0	—	17.9	—	-1.8	
Gain Flatness	0.7 - 2.0		±0.6		±0.19	dB
Input VSWR	0.5	—	1.44	—	1.18	:1
	1.0	—	1.42	—	1.33	
	2.0	—	1.34	1.85	1.55	
	3.0	—	1.37	—	1.59	
	4.0	—	1.28	—	1.75	
	5.0	—	1.38	—	1.84	
Output VSWR	0.5		1.81		1.21	:1
	1.0		1.68		1.37	
	2.0		1.31		1.54	
	3.0		1.30		1.47	
	4.0		1.87		1.71	
	5.0		2.43		2.04	
Output Power @1dB compression AMP-ON[1] Input Power @1dB compression AMP-Bypass[1]	0.5		20.8		32.0	dBm
	1.0		21.0		—	
	2.0		20.9		33.0	
	3.0		20.0		—	
	4.0		19.8		—	
	5.0		19.0		27.0	
Output IP3	0.5		35.3		45.4	dBm
	1.0		33.3		46.9	
	2.0		34.8		45.5	
	3.0		35.4		—	
	4.0		34.0		—	
	5.0		31.5		40.2	
Active Directivity (Isolation-Gain)	0.7-2.0		4.5		—	dB
Device Operating Voltage (Vdd)		4.8	5.0	5.2	4.8-5.2 (5.0 typ.)	V
Device Operating Current (Id)		—	95	105	2	mA
Enable Voltage (Ve)		—	5.0		0	V
Enable Control Current (Ie)		—	2.0		0	mA
DC Current (Id) Variation Vs. Temperature[2]		—	-19		—	µA/°C
DC Current (Id) Variation Vs. Voltage		—	0.008		—	mA/mV

1. Current increases at P1dB.
2. (Current at 85°C - Current at -45°C)/130

Absolute Maximum Ratings[3]

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	Amplifier-ON	8 dBm (continuous), 19 dBm (5 min max.)
	Amplifier Bypass	16 dBm (continuous), 29 dBm (5 min max.)
DC Voltage Vdd		7.0 V
DC Voltage Enable		7.0 V

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

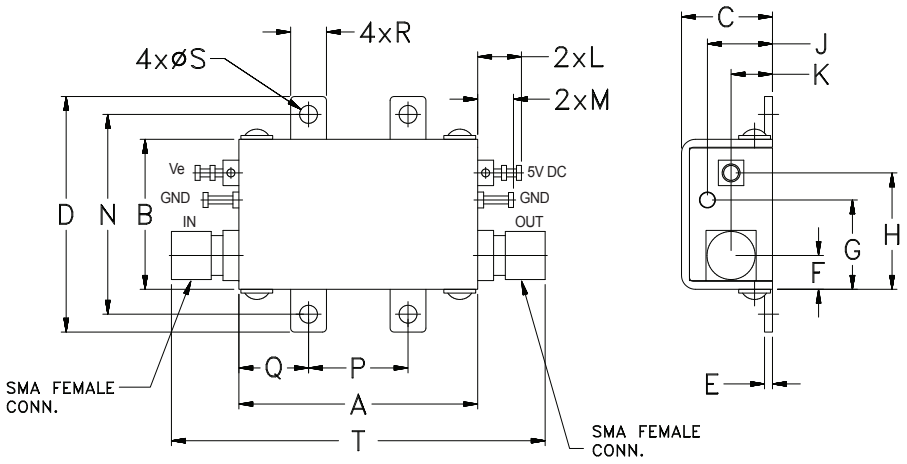
Enable Voltage (Ve)

	Min.	Typ.	Max.	Units
Amplifier-ON	4.5	5.0	5.5	V
Amplifier-Bypass	0	—	0.5	V

Switching Specifications (Rise/Fall Time)

Parameter		Min.	Typ.	Max.	Units
Amplifier ON to Bypass	OFF TIME (50% Control to 10% RF)	—	50	—	ns
	FALL TIME (90 to 10% RF)	—	12	—	
Amplifier Bypass to ON	ON TIME (50% Control to 90% RF)	—	740	—	ns
	RISE TIME (10% to 90% RF)	—	240	—	
Control Voltage Leakage		—	65	—	mV

Outline Drawing



Outline Dimensions (inch / mm)

A	B	C	D	E	F	G	H	J	K
1.20	.75	.46	1.18	.04	.17	.45	.58	.33	.21
30.48	19.05	11.68	29.97	1.02	4.32	11.43	14.73	8.38	5.33

L	M	N	P	Q	R	S	T	wt
.22	.14	1.00	.50	.35	.18	.106	1.88	grams
5.59	3.56	25.40	12.70	8.89	4.57	2.69	47.75	35.0