

# Flat Gain Wideband Amplifier

## ZVA-443X+

50Ω      0.050 to 43500 MHz

### The Big Deal

- Excellent gain flatness,  $\pm 1.5$  dB
- Single +5V supply with 80mA typ. current
- Small package



Case Style: AV2578

### Product Overview

Mini-Circuits' ZVA-443X+ is a coaxial, ultra-wideband amplifier offering flat gain across an extremely wide frequency range from 50 kHz to 43.5 GHz. This model operates on a single +5V supply with just 80mA typical current consumption, and has exceptional noise figure performance of 4 dB typ. from 500 MHz to 26 GHz and less than 5 dB typ. to 43.5 GHz. The amplifier comes in a rugged, compact case (0.84 x 0.96 x 0.36") with 2.4mm RF connectors.

### Key Features

Feature	Advantages
Ultra-wideband, 50 kHz to 43.5 GHz	Enables a single amplifier to be used in a wide range of applications from 5G to satellite, military systems, fiber-optic equipment, test and measurement, and more.
Excellent gain flatness, $\pm 1.5$ dB across full frequency range	Provides consistent performance across its operating frequency, minimizing the need for external equalizing networks in wideband applications.
Single +5V supply	Avoids the requirement for dual supply voltage common among other amplifiers of similar bandwidth, simplifying system design, saving cost and space.
Small package, 0.84 x 0.96 x 0.36"	Saves space in tight system layouts.

# Flat Gain Wideband Amplifier

## ZVA-443X+

50Ω 0.050 to 43500 MHz

### Features

- Excellent gain flatness, ±1.5 dB typ.
- Uses a single +5V power supply

### Applications

- very wideband test instrumentation
- lab use
- 5G systems
- optical communications



Case Style: AV2578

Connectors	Model No.
2.4mm	ZVA-443X+

### +RoHS Compliant

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

### Electrical Specifications at 25°C, V<sub>dd</sub>=+5.0V, unless noted

Parameter	Condition (MHz)	Min.	Typ.	Max.	Units
Frequency Range		0.05		43500	MHz
Gain <sup>1</sup>	50 - 7500	10.7	12.0	—	dB
	7500 - 15000	10.0	11.5	—	
	15000 - 30000	8.2	11.0	—	
	30000 - 43500	8.0	10.5	—	
Noise Figure <sup>2</sup>	50 - 500	—	6.0	—	dB
	500 - 2000	—	4.5	—	
	2000 - 20000	—	3.5	—	
	20000 - 26500	—	4.5	—	
Input Return Loss	50 - 5000	11.0	14.0	—	dB
	5000 - 18000	8.5	12.0	—	
	18000 - 43500	7.0	10.0	—	
Output Return Loss	50 - 18000	9.0	12.0	—	dB
	18000 - 43500	7.0	9.5	—	
Output Power at 1dB Compression	50 - 22000	—	12.0	—	dBm
	22000 - 43500	—	10.0	—	
Output IP3	50 - 43500	—	22.0	—	dBm
Device Operating Current		50.0	80.0	150.0	mA

1. This model is measured down to 50 MHz but the performance is usable to 50 KHz.

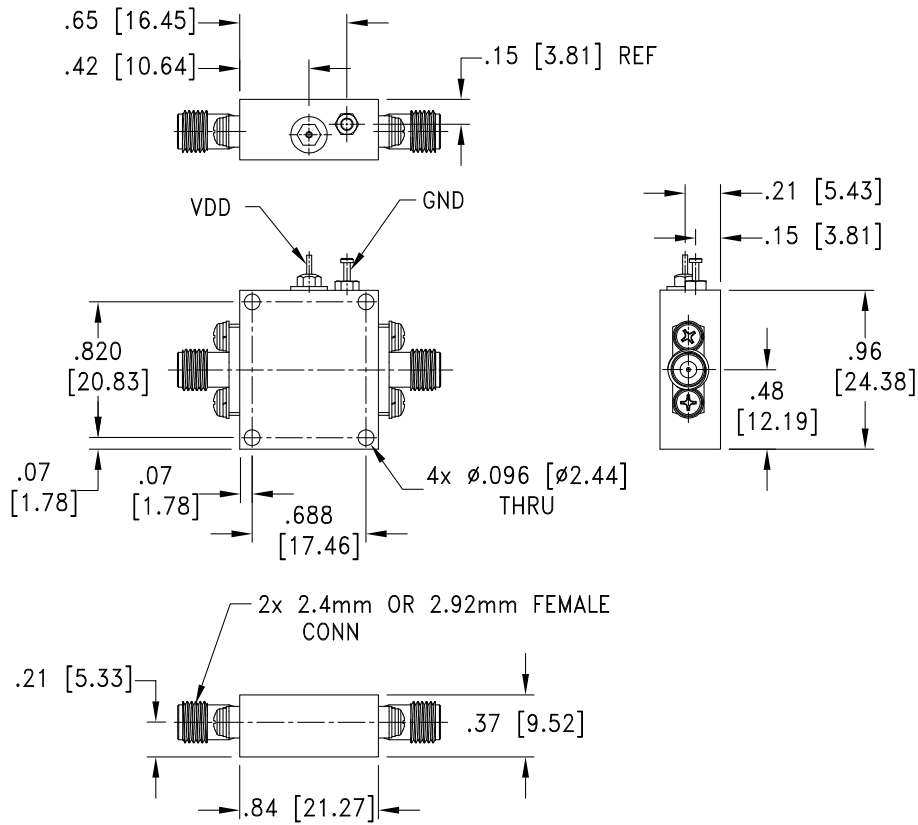
2. The Noise Figure is measured up to 26.5 GHz but the performance is usable to 43.5 GHz.

### Absolute Maximum Ratings

Parameter	Ratings
Operating Temperature (baseplate)	-10°C to 85°C
Storage Temperature	-55°C to 100°C
Total Power Dissipation	0.75W
Input Power (CW), V <sub>dd</sub> =5V	+4 dBm
DC Voltage	6V



Outline Drawing



Weight: 45 grams

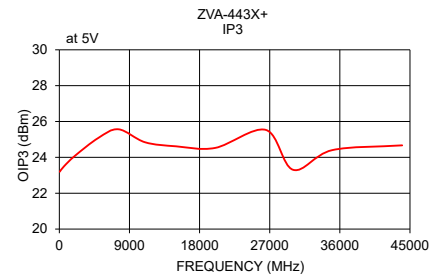
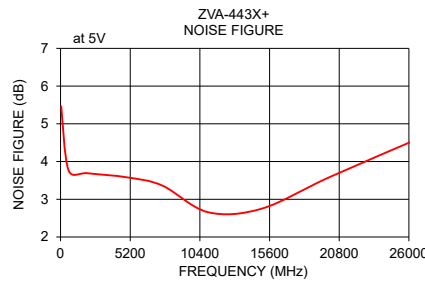
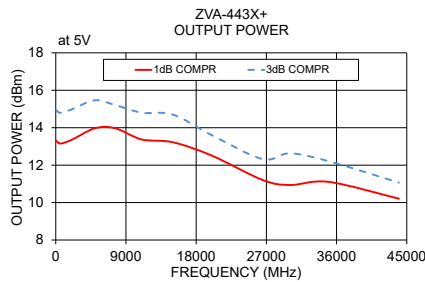
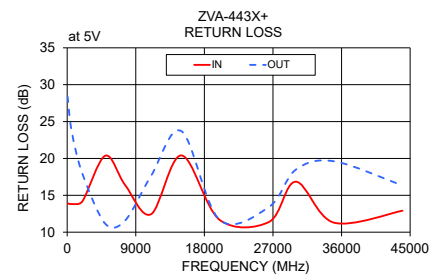
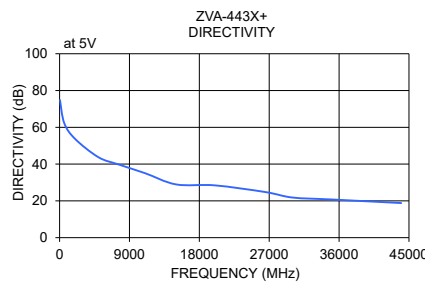
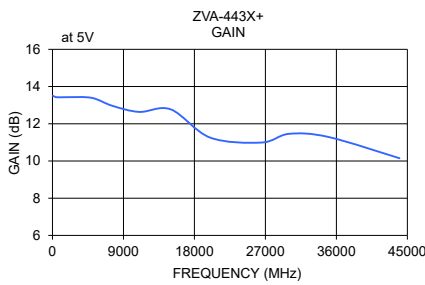
Dimensions are in inches (mm). Tolerances: 2 Pl.  $\pm$ .03; 3 Pl.  $\pm$ .015

Coaxial Connections

J1	RF IN (DC BLOCKED)
J2	RF OUT (DC BLOCKED)
J3	VDD
J4	GROUND

Typical Performance Data

FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	RETURN LOSS (dB)		POUT at 1 dB COMPR. (dBm)	POUT at 3 dB COMPR. (dBm)	NOISE FIGURE (dB)	IP3 (dBm)
			IN	OUT				
50	13.50	74.80	13.90	28.40	13.31	14.93	5.46	23.20
600	13.42	62.25	13.82	23.63	13.15	14.80	3.77	23.50
2000	13.43	53.67	14.19	17.92	13.35	14.97	3.69	24.09
5000	13.39	43.74	20.37	11.14	13.97	15.46	3.58	25.08
7600	12.96	39.78	16.39	11.57	13.97	15.21	3.36	25.57
11000	12.64	35.07	12.43	17.62	13.37	14.80	2.66	24.84
15000	12.77	28.95	20.41	23.69	13.22	14.70	2.75	24.62
20000	11.26	28.43	11.67	11.67	12.51	13.60	3.57	24.53
26500	10.99	24.80	11.40	13.44	11.21	12.33	4.57	25.53
30000	11.46	21.81	16.84	18.48	10.94	12.63		23.31
35000	11.29	20.76	11.29	19.62	11.10	12.21		24.40
44000	10.15	18.81	12.91	16.32	10.21	11.07		24.67



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](http://www.minicircuits.com/MCLStore/terms.jsp)

