Super Ultra

Wideband Amplifier

ZVE-143-S+

50Ω 8 to 14 GHz

The Big Deal

- Extremely wideband, 8 to 14 GHz
- Flat Gain, 19±0.8 dB typ.
- High OIP3, +35 dBm typ.
- +28 dBm Pout at 1dB compression

ZVE-143-S+

ZVE-143X-S+

Product Overview

Mini-Circuits' ZVE-143-S+ is a Class-A, two-stage, unconditionally stable amplifier providing flat gain over an extremely wide frequency range from 8 to 14 GHz. This model is capable of delivering up to 0.6W output power at P1dB with high output IP3 supporting a wide range of sensitive, high-dynamic range receiver applications and many systems where high performance over wideband is needed. It operates on a +12V supply and features built-in safety features including protection against reverse bias and immunity to accidental open or short loads for 2 minutes. The amplifier comes in a rugged, compact case (1.05 x 1.01 x0.35") with SMA connectors and an optional heat sink for efficient cooling.

Key Features

Feature	Advantages
Ultra-wideband, 8 to 14 GHz able to work from 5.0 to 14.5 GHz	Enables a single amplifier to be used in a wide range of applications.
Excellent gain flatness, ±0.8 dB typ. across full frequency range	Provides consistent performance across its operating frequency, minimizing the need for external equalizing networks in wideband applications.
High gain, 19 dB typ.	Reduces the number of gain stages, lowering component count and overall system cost.
Class A Amplifier	Provides good linearity with low signal distortion.
Low Noise and High IP3: • NF, 4.5 dB typ. • OIP3, +35 dBm typ.	The combination of low noise and high IP3 makes the ZVE-143-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 design	Built-in protection against reverse bias and accidental open and short loads provides added reliability for demanding operating conditions.

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Features

- Wideband, 8 to 14 GHz
- High Output IP3, 35 dBm typ.
- Rugged, compact case
- Unconditionally stable

Generic photo used for illustration purposes only

Applications

- Radar and military
- Test instrumentation
- Satellite repeaters
- Communication

Model No.	ZVE-143-S+	▲ ZVE-143X-S+
Case Style	AV243	
Connectors	SMA	

+RoHS Compliant

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

Electrical Specifications at 25°C

Parameter	Condition (GHz)	ZVE-143-S+ ▲ ZVE-143X-S+			Units
		Min.	Typ.	Max.	
Frequency Range		8		14	GHz
Gain	8 - 14	16	19	22	dB
Gain Flatness	8 - 14	—	±0.8	±1.5	dB
Output Power at 1dB compression	8 - 14	26	28	—	dBm
Noise Figure	8 - 14	—	4.5	5.5	dB
Output third order intercept point	8 - 14	—	35	—	dBm
Input VSWR	8 - 14	—	1.5	2.5	:1
Output VSWR	8 - 14	—	1.5	2.5	:1
DC Supply Voltage		10	12*	17	V
Supply Current		—	350	450	mA

* Recommended Operating Voltage.

▲ Heat sink not included. Alternative heat sinking and heat removal must be provided by the user to limit maximum base-plate temperature to 85°C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heat sink to be 7.7°C/W max.

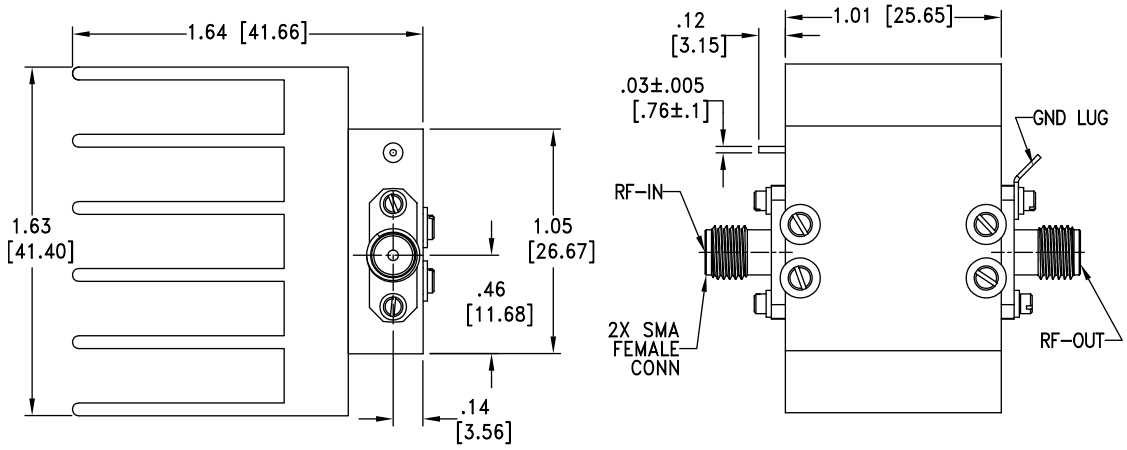
Maximum Ratings

Parameter	Ratings	
Operating Temperature	ZVE-143-S+	-40°C to 54°C ambient
	ZVE-143X-S+	-40°C to 85°C base plate temp.
Storage Temperature	-65°C to 125°C	
DC Voltage	17V	
CW Input RF Power (no damage)	+15 dBm	

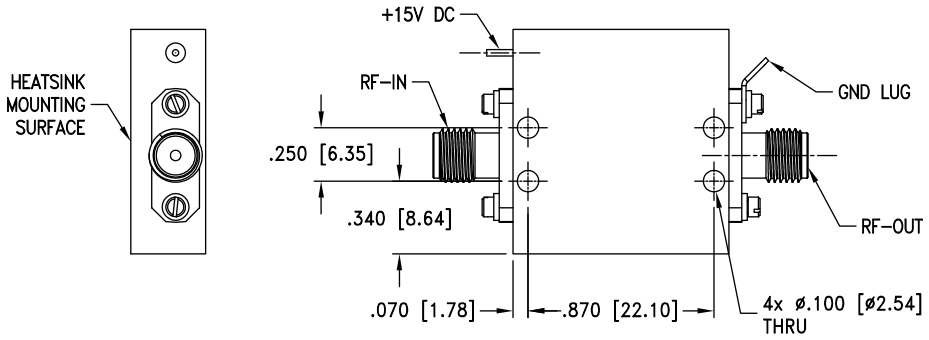
Permanent damage may occur if any of these limits are exceeded.

inch

Outline Drawing / Dimensions [mm] for models with heatsink

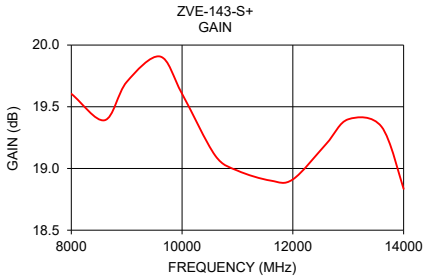


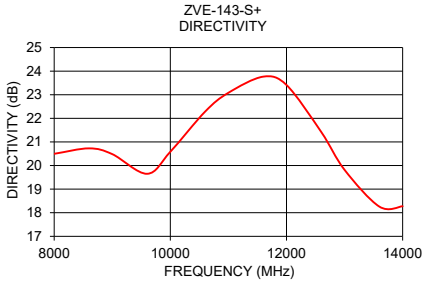
MOUNTING INFORMATION OF MODEL WITHOUT HEATSINK

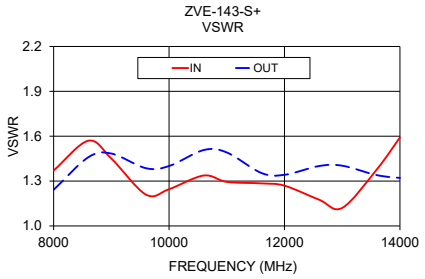


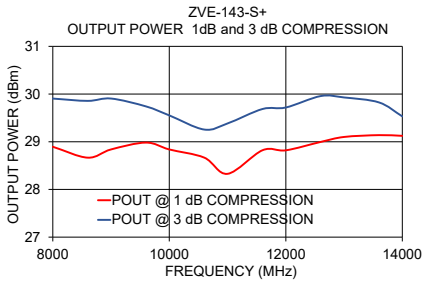
Weight: 58 grams; Weight without heatsink: 17 grams

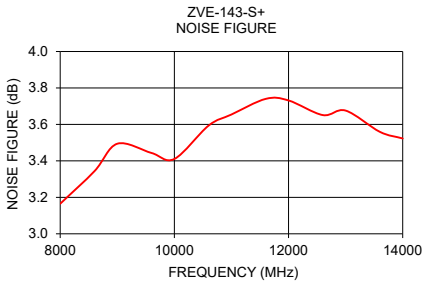
FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1)		POUT at 1 dB COMPR. (dBm)	POUT at 3 dB COMPR. (dBm)	NOISE FIGURE (dB)	OIP3 (dBm)
	12V	12V	IN	OUT	12V	12V	12V	12V
8000	19.61	20.50	1.37	1.24	28.89	29.91	3.16	36.94
8600	19.39	20.73	1.57	1.46	28.67	29.86	3.34	36.94
9000	19.70	20.48	1.45	1.48	28.84	29.91	3.49	36.73
9600	19.91	19.65	1.21	1.39	28.98	29.74	3.44	36.30
10000	19.61	20.58	1.25	1.40	28.84	29.55	3.41	36.30
10600	19.10	22.29	1.34	1.51	28.67	29.26	3.59	35.97
11000	18.98	23.08	1.29	1.49	28.33	29.38	3.65	35.29
11600	18.90	23.77	1.28	1.35	28.82	29.69	3.74	34.74
12000	18.91	23.41	1.27	1.34	28.82	29.72	3.73	34.75
12600	19.20	21.42	1.18	1.40	29.00	29.96	3.65	34.60
13000	19.40	19.82	1.12	1.40	29.10	29.93	3.68	34.51
13600	19.34	18.26	1.38	1.34	29.14	29.82	3.56	34.03
14000	18.83	18.28	1.59	1.32	29.12	29.53	3.52	34.51

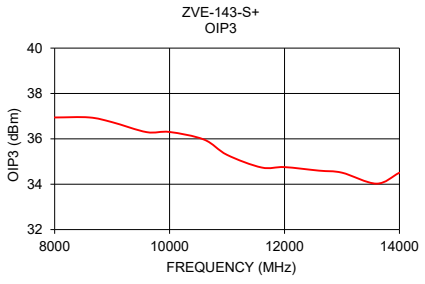












Additional Notes

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