SUPER ULTRA

Wideband Amplifier

ZVE-143-S+
ZVE-143X-S+

FEATURES

- Wideband, 8 to 14 GHz
- High Output IP3, +35 dBm typ.
- Rugged Compact Case
- Unconditionally Stable

Generic photo used for illustration purposes only

Model No.	ZVE-143-S+	ZVE-143X-S+▲
Option	With heatsink	Without heatsink
Case Style	AV243	
Connectors	SMA	

APPLICATIONS

- Radar and Military
- Test Instrumentation
- Satellite Repeaters
- Communication

+RoHS Compliant
The +Suffix identifies RoHS Compliance.
See our website for methodologies and qualifications

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.

REV. A
ECO-013026
ZVE-143-S+
SK/MM/CP/AM
220428

ELECTRICAL SPECIFICATIONS AT +25°C

Parameter	Condition (GHz)	ZVE-143-S+ ZVE-143X-S+▲ Min.	Typ.	Max.	Units
Frequency Range		8		14	GHz
Gain	8 - 14	16	19	22	dB
Gain Flatness	8 - 14	—	±0.8	±1.5	dB
Input VSWR	8 - 14	—	1.5	2.5	:1
Output VSWR	8 - 14	—	1.5	2.5	:1
Output Power at 1dB Compression	8 - 14	+26	+28	—	dBm
Output Power at 3 dB Compression	8 - 14	—	+35	—	dBm
Noise Figure	8 - 14	—	4.5	5.5	dB
DC Supply Voltage		+10	+12[1]	+17	V
Supply Current		—	350	450	mA

1. Recommended Operating Voltage.

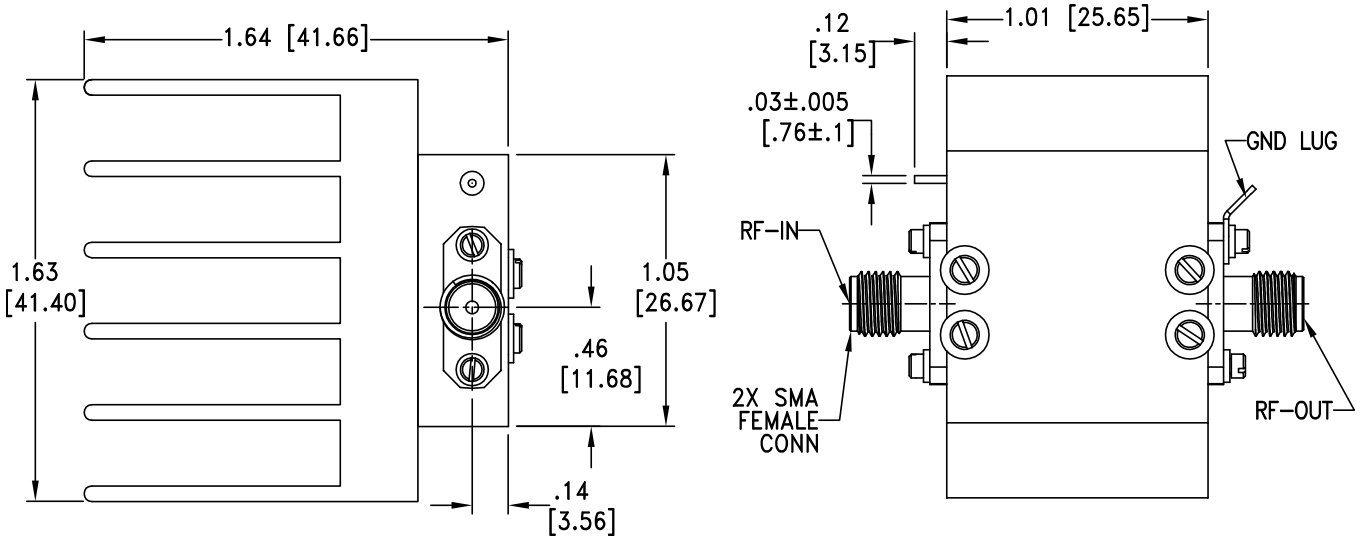
▲ Heat sink not included. Alternative heat sinking and heat removal must be provided by the user to limit maximum base-plate temperature to 85°C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heat sink to be 7.7°C/W max.

ABSOUTE MAXIMUM RATINGS

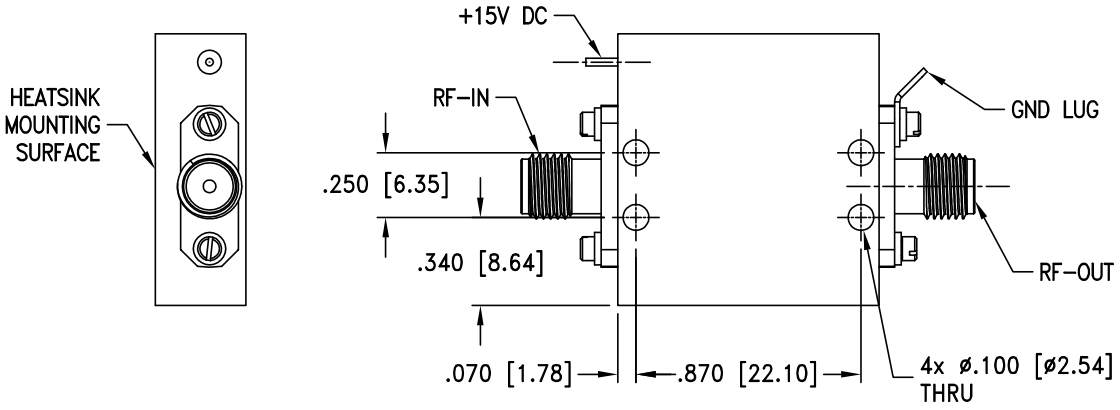
Parameter	Ratings
Operating Temperature	ZVE-143-S+ -40°C to +54°C ambient ZVE-143X-S+ -40°C to +85°C base plate temp.
Storage Temperature	-65°C to +125°C
DC Voltage	+17 V
CW Input RF Power (no damage)	+15 dBm

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

OUTLINE DRAWING FOR MODELS WITH HEATSINK (ZVE-143-S+)



MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK (ZVE-143X-S+)



Weight: 58 grams; Weight without heatsink: 17 grams

Dimensions are in inches [mm]

SUPER ULTRA

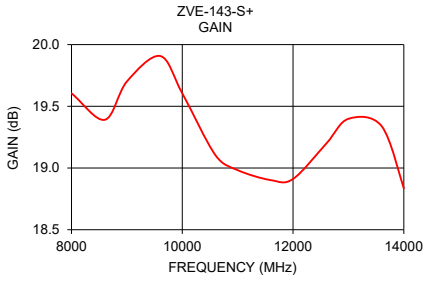
Wideband Amplifier

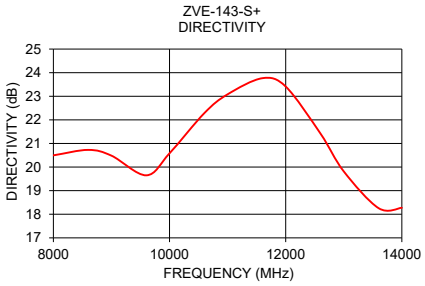
50Ω 8 to 14 GHz

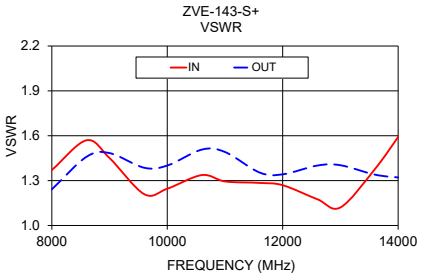
ZVE-143-S+
ZVE-143X-S+

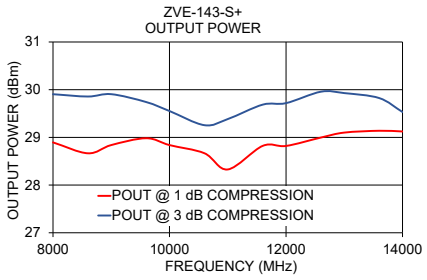
TYPICAL PERFORMANCE DATA/CURVES

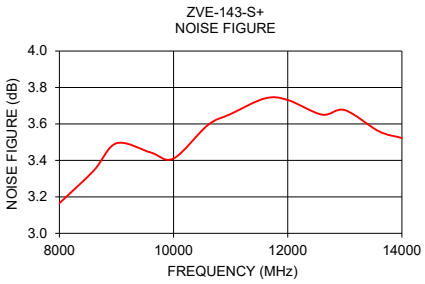
Frequency (MHz)	Gain (dB)	Directivity (dB)	VSWR (:1)		Pout at 1 dB Compr. (dBm)	Pout at 3 dB Compr. (dBm)	Noise Figure (dB)	OIP3 (dBm)
	12V	12V	IN	OUT	12V	12V	12V	12V
8000	19.61	20.50	1.37	1.24	28.89	29.91	3.16	36.94
8600	19.39	20.73	1.57	1.46	28.67	29.86	3.34	36.94
9000	19.70	20.48	1.45	1.48	28.84	29.91	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

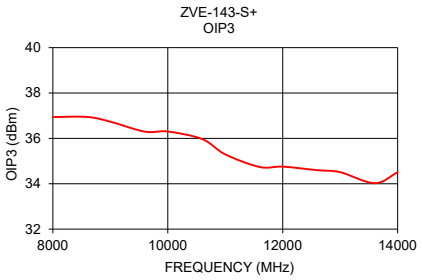












NOTES

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/terms/viewterm.html