MEDIUM POWER, HIGH GAIN

Wideband Amplifier

50Ω 18 to 45 GHz

ZVE-453+
ZVE-453X+

THE BIG DEAL

- High gain 33 dB typ. over the entire operating band
- Excellent gain flatness, ±2.5 dB typ.
- Saturated output power = +29 dBm typ.
- Adjustable DC voltage, +10 to +15 V

Generic photo used for illustration purposes only

APPLICATIONS

- Wideband Test and Instrumentation
- 5G mmW
- SATCOM
- Wireless Infrastructure

Model No.	ZVE-453+	ZVE-453X+
Option	With heatsink & fan	Without heatsink & fan
Case Style	VN3071-4	
Connectors	2.4mm Female	

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

PRODUCT OVERVIEW

Mini-Circuits' ZVE-453+ is a coaxial, ¾ Watt wideband high gain amplifier, operating from 18 to 45 GHz. This model operates over a single positive supply range of +10 to +15 V, allowing users to choose their desired operating voltage. Internal DC-DC conversion circuitry maintains constant efficiency over the full input voltage range. The amplifier incorporates several DC-protection features, such as over-voltage, reverse voltage and in-rush current, that protect the amplifier from damage if mishandled during operation. The wideband operation combined with high output power makes this amplifier an ideal choice for testing and instrumentation applications.

KEY FEATURES

Feature	Advantages
Wide-band amplifier, 18 to 45 GHz	A single amplifier serves the need for applications including 5G bands (24 to 39 GHz), SATCOM, Test & Instrumentation, etc.
Integrated fan assembly	Model ZVE-453+ utilizes two integrated fans, keeping the amplifier cool to the touch during normal operation at room temperature
High gain Low VSWR Medium RF power	The amplifier provides 33 dB (typ.) of gain over the entire operating band, and is capable of delivering over ¾ Watt of RF power
Adjustable DC Supply Voltage	The device is capable of operating from +10 to +15 V with consistent DC power consumption
DC Protection – Over-voltage Reverse voltage In-rush Current	The internal DC circuitry allows the amplifier to be protected from external mishandling, that could lead to catastrophic failures in the field

REV. A
ECO-012828
ZVE-453+
MCLNY
220414

ELECTRICAL SPECIFICATIONS AT 25 °C BASEPLATE

Parameter	Condition (MHz)	ZVE-453+[3] ZVE-453X+[4] Min.	Typ.	Max.	Units
Frequency Range		18000		45000	MHz
Gain	18000–30000	28.0	32		dB
	30000–45000	30.0	34		
Output Power at 1dB compression	18000 – 20000	25.0	27.5		dBm
	20000 – 37000	27.0	29.0		
	37000 – 45000	24.5	27.0		
Saturated Output Power	18000 – 20000	27.0	28.5		dBm
	20000 – 37000	28.0	30.0		
	37000 – 45000	25.5	28.0		
Output IP3	18000 – 45000		37		dBm
Input VSWR	18000 – 45000		1.5	2.0	:1
Output VSWR[1]	18000 – 45000		1.5	2.0	:1
Operating DC Voltage		+10	—	+15	V
Device Operating Current at +15 V (ZVE-453+ / ZVE-453X+)			550[4] / 750[3]	1000[4] / 1200[3]	mA
Device Operating Power at +15 V			13[2]		W

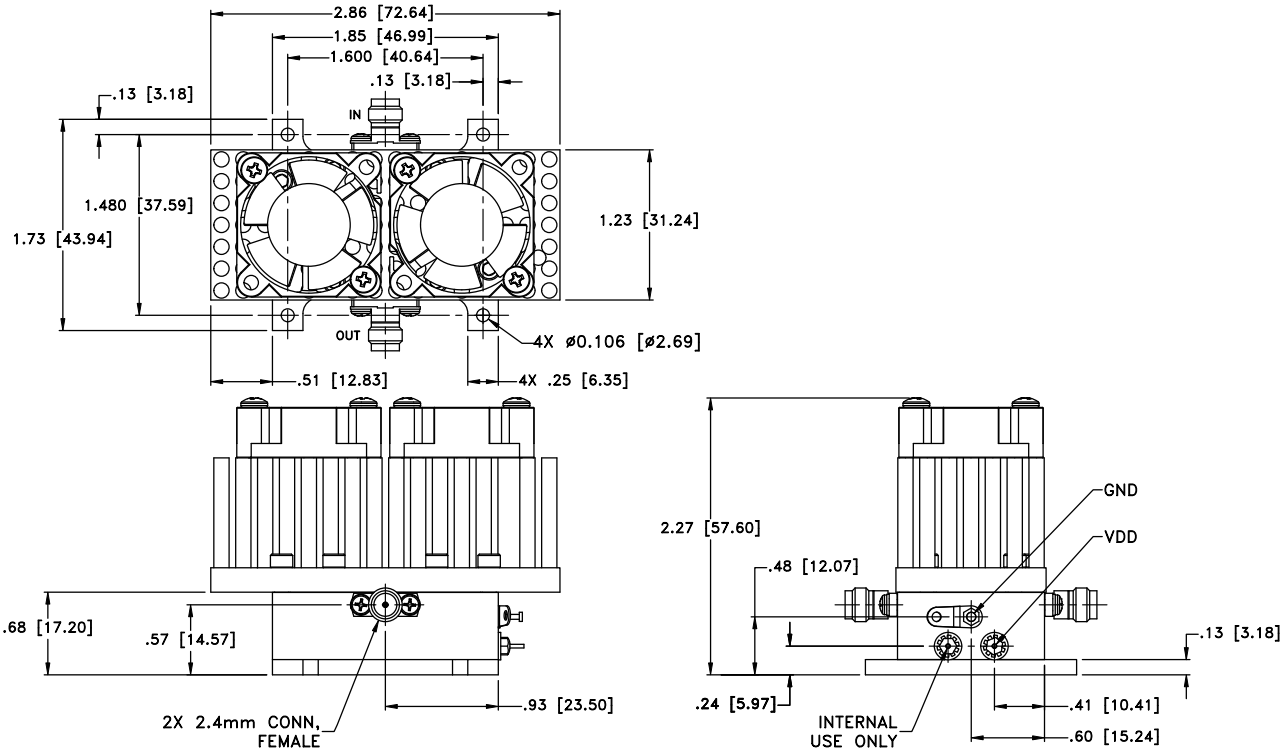
1. Open and short-circuit loads are not recommended at the amplifier output. Ensure proper 50 Ohm load before turning the amplifier "ON".
2. Device operating power is based on current when amplifier is in saturation.
3. For units with heatsink, limit ambient temperature to 50 °C.
4. For units without heatsink, limit the maximum baseplate temperature to 60 °C.

MAXIMUM RATINGS[6]

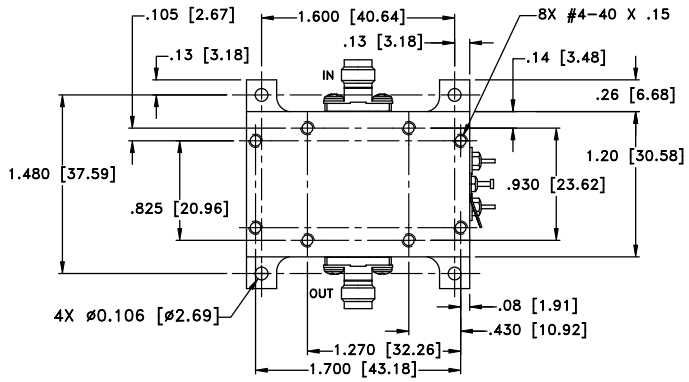
Parameter	Ratings
Operating Temperature	ZVE-453+ -40 °C to +50 °C Ambient ZVE-453X+ -40 °C to +60 °C Baseplate
Storage Temperature	-40 °C to +85 °C
Total Power Dissipation	14.5 W
RF Input Power[5] (CW)	+7 dBm
DC Operating Voltage	+16 V

5. Specified under matched load to 50 ohms.
6. Continuous operation is not recommended at these extremes. Permanent damage may occur if any of these limits are exceeded.

OUTLINE DRAWING FOR MODELS WITH HEATSINK & FAN (ZVE-453+)



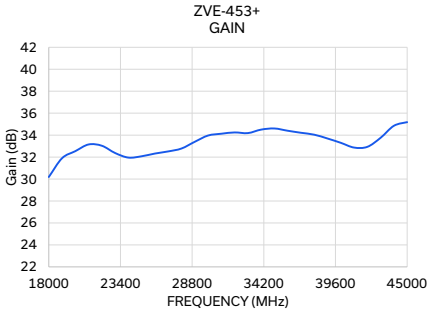
MOUNTING INFORMATION FOR MODELS WITHOUT HEATSINK & FAN (ZVE-453X+)

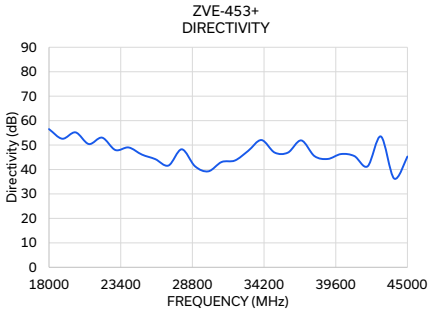


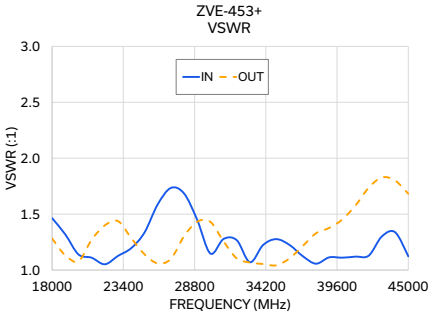
WT. GRAMS 160 grams; WITHOUT HEATSINK GRAMS 60 grams
Dimensions are in inches [mm]. Tolerances: 2 Pl.±.03; 3 Pl. ±.015

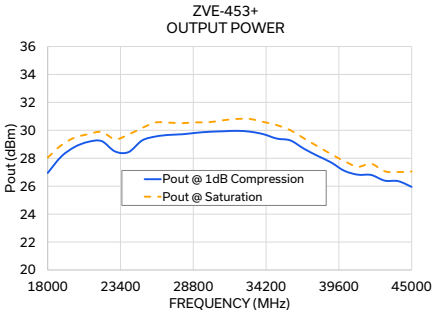
TYPICAL PERFORMANCE DATA/CURVES

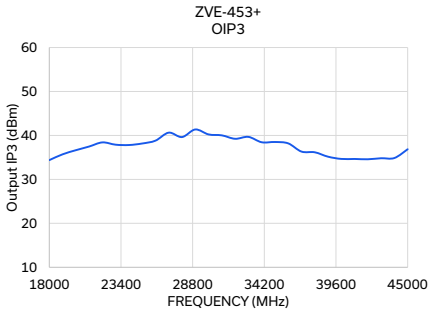
Frequency (MHz)	Gain (dB)	Directivity (dB)	VSWR (:1) IN	VSWR (:1) OUT	Pout @ 1 dB Compression (dBm)	Pout @ Saturation (dBm)	Output IP3 (dBm)
18000	30.18	56.51	1.46	1.28	26.95	28.05	34.38
21000	33.15	50.41	1.11	1.27	29.17	29.72	37.47
24000	31.95	49.01	1.20	1.29	28.44	29.70	37.82
27000	32.52	41.62	1.73	1.10	29.67	30.55	40.63
30000	33.96	39.25	1.15	1.43	29.89	30.58	40.23
33000	34.19	47.60	1.07	1.07	29.90	30.81	39.67
36000	34.40	46.92	1.22	1.10	29.28	30.01	38.19
39000	33.69	44.31	1.11	1.38	27.72	28.31	35.16
42000	32.93	41.31	1.13	1.74	26.80	27.60	34.58
45000	35.18	45.32	1.12	1.68	25.95	27.05	36.86











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