



LOW NOISE, HIGH GAIN

# Wideband Amplifier **ZVA-18403G+** **ZVA-18403GX+**

50Ω 18 to 40 GHz

## THE BIG DEAL

- Extremely Low Noise Figure of 3.8 dB typ. through Ka-Band
- High Gain of 43 dB typ.
- Output Power, +23 dBm (200 mW)
- Available with and without heatsink
- Operates with a single DC supply of +9 to +15 V
- Over-Voltage and Reverse Voltage protected



Generic photo used for illustration purposes only

## APPLICATIONS

- 5G (24-39 GHz)
- Test and Instrumentation
- Ka band

<b>Model No.</b>	ZVA-18403G+	ZVA-18403GX+ <sup>3</sup>
<b>Case Style</b>	T2704	
<b>Connectors</b>	2.92mm Female	

### +RoHS Compliant

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

## PRODUCT OVERVIEW

Mini-Circuits' ZVA-18403G+ is a coaxial, low noise, wideband and high gain amplifier operating from 18 to 40 GHz. The model operates over a single positive supply range of +9 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 against over-voltage, reverse voltage and in-rush current that protects it from damage if mishandled during operation. This amplifier has an excellent Noise Figure performance of 3.8 dB (typ.) over the entire band, and is capable of delivering about 200 mW (+23 dBm) of RF Power. This amplifier is an ideal choice for applications with extremely demanding dynamic range requirements.

## KEY FEATURES

Feature	Advantages
Wide-band Amplifier, 18 to 40 GHz	A single amplifier serves the need for applications including 5G bands (24 to 39 GHz), SATCOM, Test & Instrumentation etc.
<ul style="list-style-type: none"> <li>• High Gain</li> <li>• Low Noise</li> <li>• Medium RF power</li> </ul>	The Amplifier is capable of providing high gain of over 43 dB (typ.) in the entire operating band with extremely Low noise of 3.8 dB (typ.) and good RF power of about +23 dBm.
Adjustable DC Supply Voltage	The device is capable of operating from +9 to +15 V with consistent DC power consumption
DC Protection – <ul style="list-style-type: none"> <li>• Over-voltage</li> <li>• Reverse voltage</li> <li>• In-rush current</li> </ul>	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-008345  
 ZVA-18403G+  
 DF/CP/PS  
 210618





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# Wideband Amplifier

## ZVA-18403G+ ZVA-18403GX+

Mini-Circuits

### ELECTRICAL SPECIFICATIONS AT 25°C

Parameter	Condition (MHz)	ZVA-18403G+ ZVA-18403GX+ <sup>3</sup>			Units
		Min.	Typ.	Max.	
Frequency Range		18000		40000	MHz
Gain	18000-40000	38	43		dB
Noise Figure	18000-40000	—	3.8	4.8	dB
Output Power at 1 dB compression	18000-24000		21		dBm
	24000-40000		23		
Output third order intercept point <sup>4</sup>	18000-40000		28		dBm
Input VSWR	18000-18500		1.8		:1
	18500-23000		1.25		
	23000-40000		1.6		
Output VSWR <sup>2</sup>	18000-20000		1.5		:1
	20000-32000		2.6		
	30000-40000		2.4		
Operating DC Voltage		+9	—	+15	V
Device Operating Current <sup>1</sup> (at 9 V DC)		—	—	375	mA
Device Operating Power at Operating DC Voltage		—	3	—	W

- DC Supply must be able to source at least 400 mA DC at startup.
- Open and short-circuit loads are not recommended at the amplifier output. Ensure proper 50 Ohm load before turning the amplifier "ON".
- For units without heat-sink, limit the maximum baseplate temperature to 85 °C.
- Output IP3 is measured with two tones separated by 1 MHz, with output power at 14 dBm/tone.

### MAXIMUM RATINGS<sup>5</sup>

Parameter	Ratings
Operating Temperature	ZVA-18403G+ -40 °C to 70 °C Ambient ZVA-18403GX+ -40 °C to 85 °C Baseplate
Storage Temperature	-55 °C to 100 °C
Total Power dissipation	3.8 W
Input Power (CW)	+5 dBm
DC Operating Voltage	+16 V

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



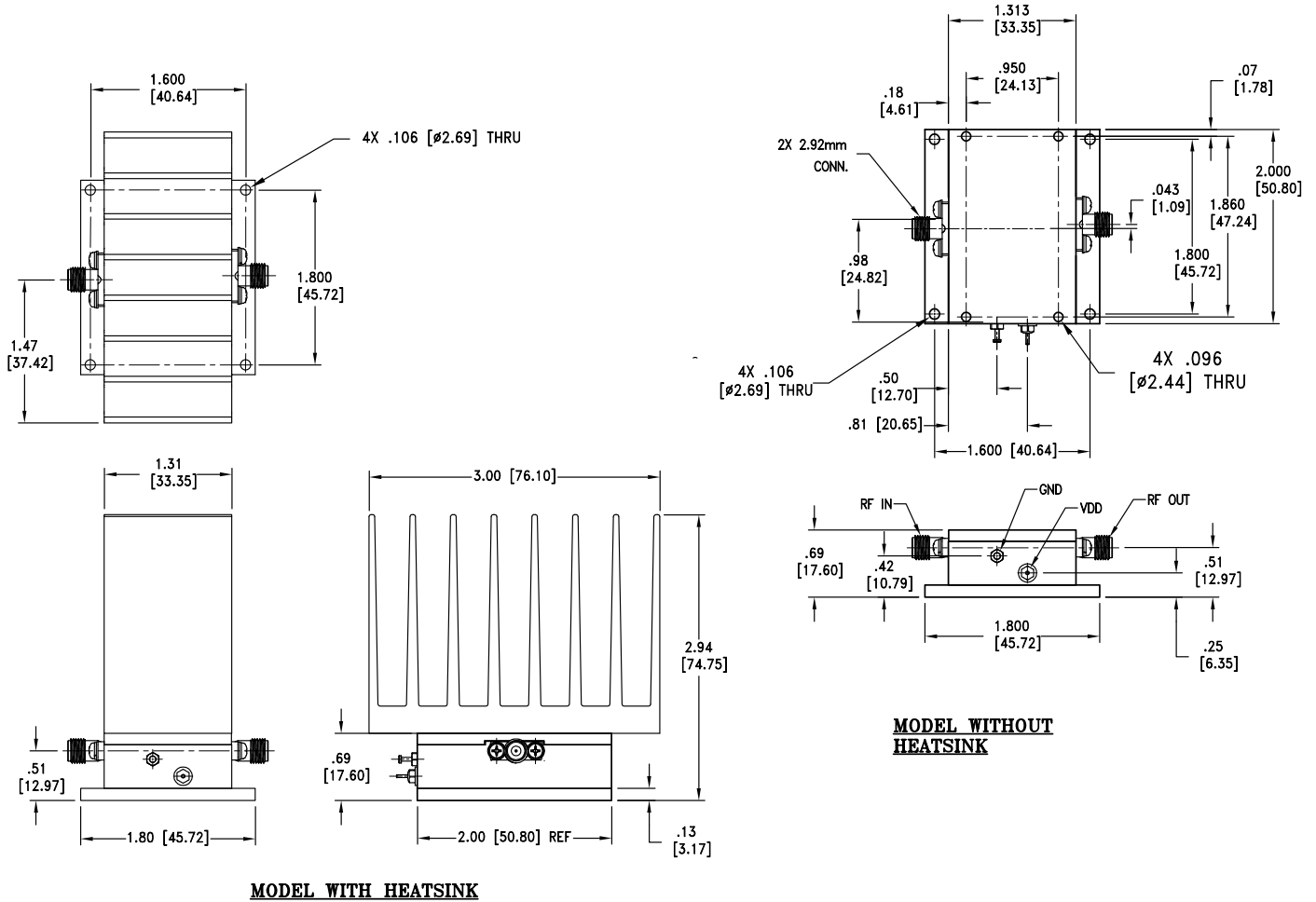


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# ZVA-18403G+ ZVA-18403GX+

## OUTLINE DRAWING



Weight: 350 grams; Weight without heatsink: 220 grams

Dimensions are in inches [mm]. Tolerances: 2 Pl. ±.03; 3 Pl. ± .015

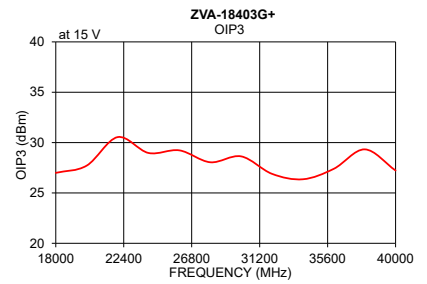
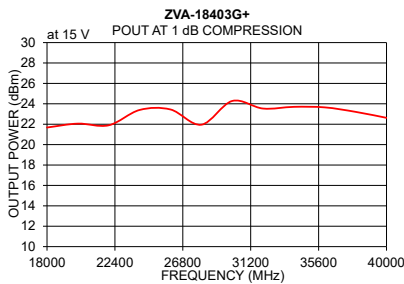
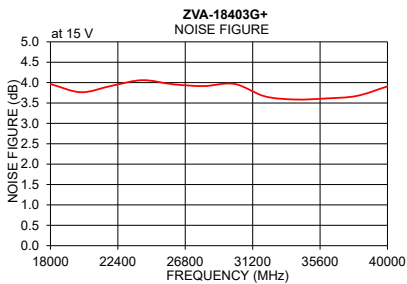
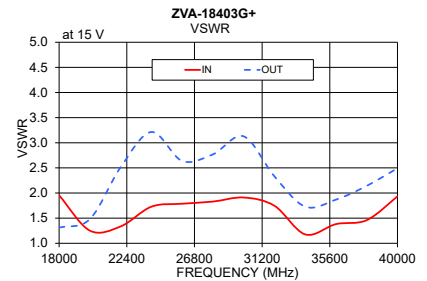
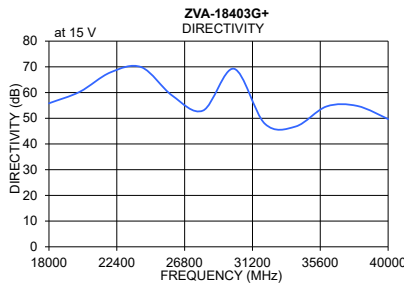
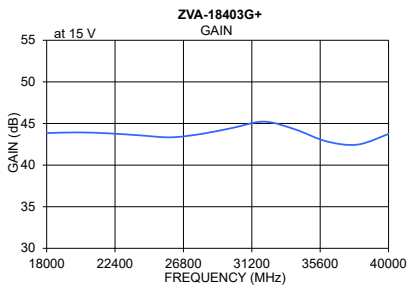


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## TYPICAL PERFORMANCE DATA/CURVES

Frequency (MHz)	Gain (dB)	Directivity (dB)	VSWR (:1)		Noise Figure (dB)	Pout at 1 dB Compr. (dBm)	OIP3 (dBm)
	15 V	15 V	IN	OUT	15 V	15 V	15 V
18000	43.84	55.82	1.95	1.31	3.97	21.68	26.99
20000	43.93	60.30	1.25	1.48	3.76	22.06	27.71
22000	43.81	67.88	1.34	2.51	3.92	21.89	30.54
24000	43.57	69.86	1.73	3.21	4.06	23.40	28.97
26000	43.34	58.80	1.79	2.64	3.96	23.44	29.23
28000	43.76	53.01	1.83	2.77	3.92	21.95	28.05
30000	44.49	69.26	1.91	3.13	3.97	24.28	28.63
32000	45.22	47.89	1.75	2.33	3.66	23.54	26.90
34000	44.28	46.79	1.18	1.73	3.59	23.70	26.36
36000	42.86	54.59	1.38	1.87	3.61	23.65	27.40
38000	42.46	54.79	1.46	2.14	3.67	23.21	29.33
40000	43.75	49.69	1.93	2.49	3.91	22.62	27.23



### 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-Circuits' applicable established test performance criteria and measurement instructions.
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