COAXIAL

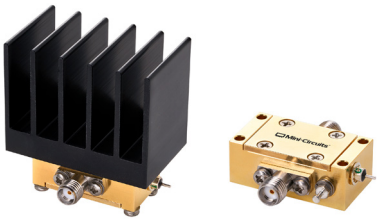
Wideband Amplifier

ZVA-02203LN+
ZVA-02203LNX+

50Ω 2 to 20 GHz Gain 30 dB SMA Female

KEY FEATURES

- Ultra-Wideband Coverage, 2 to 20 GHz
- Excellent Gain Flatness, ±1.5 dB Typ
- Single +12 V Supply
- Reverse Voltage Protected
- Compact Case for Ease of System Integration

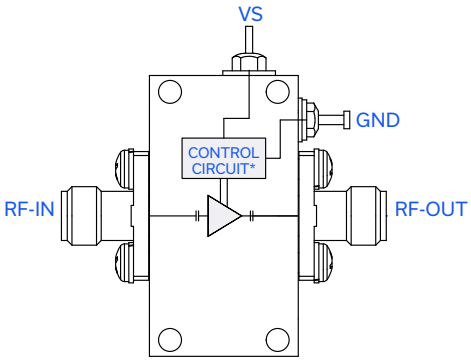


Generic photo used for illustration purposes only

APPLICATIONS

- Fiber Optics
- Wideband Test and Instrumentation
- Military EW and Radar
- Satellite Systems
- 4G LTE & 5G FR1 Infrastructure
- WiFi 6E & WiFi 7
- Aerospace and Defense
- Microwave Point to Point Radio

FUNCTIONAL DIAGRAM



*Voltage Regulation, over-voltage, reverse voltage, and in-rush current protection circuit

PRODUCT OVERVIEW

Mini-Circuits' ZVA-02203LN(X)+ is a coaxial, wideband amplifier offering flat gain across a wide frequency range from 2 to 20 GHz. This model operates on a single +12 V supply with 290 mA typical current consumption and is capable of delivering up to 60 mW output power at 1 dB compression. The amplifier comes in a rugged, compact case (1.2" x 0.64" x 0.45") with SMA (f) RF connectors.

ELECTRICAL SPECIFICATIONS AT +25 °C BASEPLATE AND V_{DD} = +12.0 V

Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range	-	2	-	20	GHz
Gain	2 – 20	27	30	-	dB
Noise Figure	2 – 14 14 – 20	- -	3.5 2.5	- -	dBm
Input Return Loss	2 – 20	11.0	13.0	-	dB
Output Return Loss	2 – 20	11.0	13.0	-	dB
Output Power at 1 dB Compression (P1dB)	2 – 14 14 – 20	+18.5 +17.0	+20.0 +18.0	- -	dBm
Output Third Order Intercept Point (Output Power = +5 dBm/tone)	2-20	-	+28.0	-	dBm
DC Supply Voltage (V_S)	-	+10.0	-	+12.0	V
DC Current	-	-	290	320	mA

REV. C
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ZVA-02203LN+
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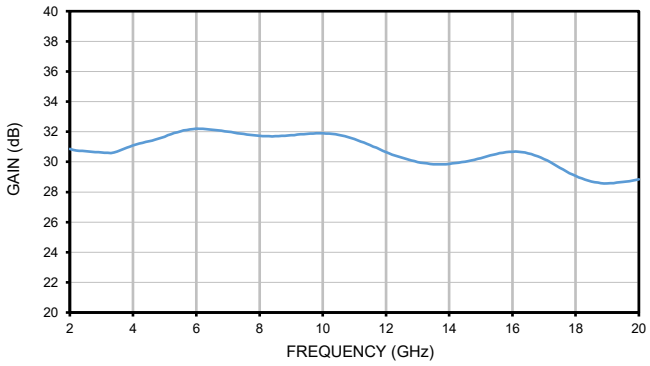
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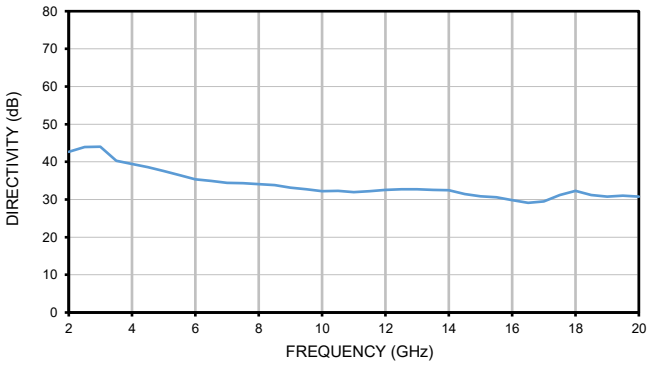
50Ω 2 to 20 GHz Gain 30 dB SMA Female

TYPICAL PERFORMANCE GRAPHS

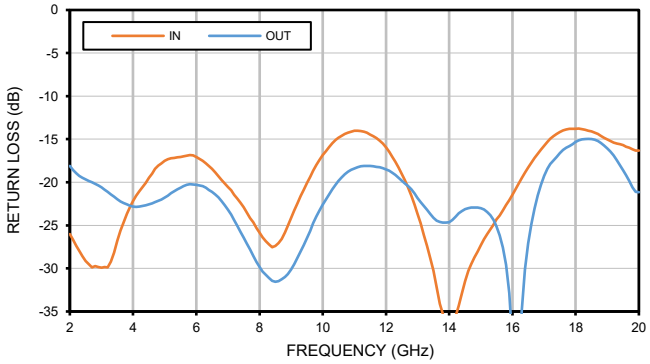
GAIN



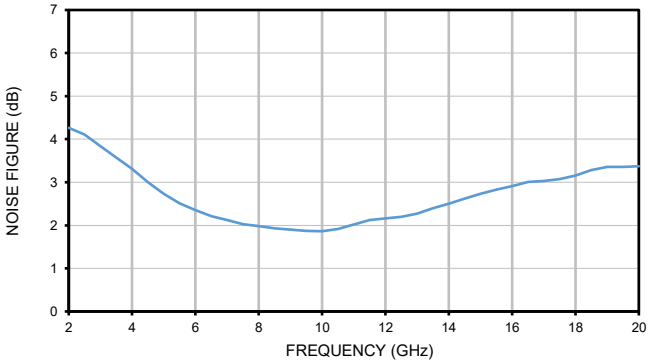
DIRECTIVITY



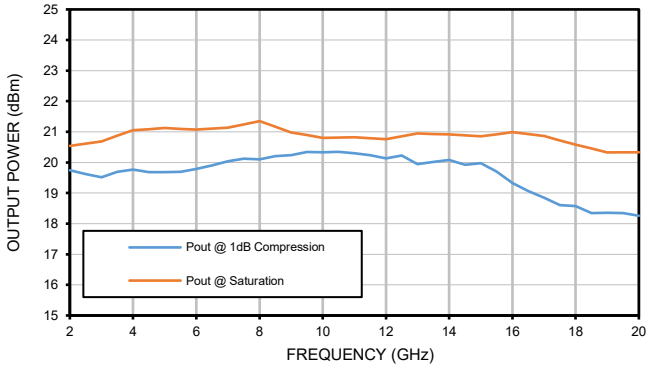
RETURN LOSS



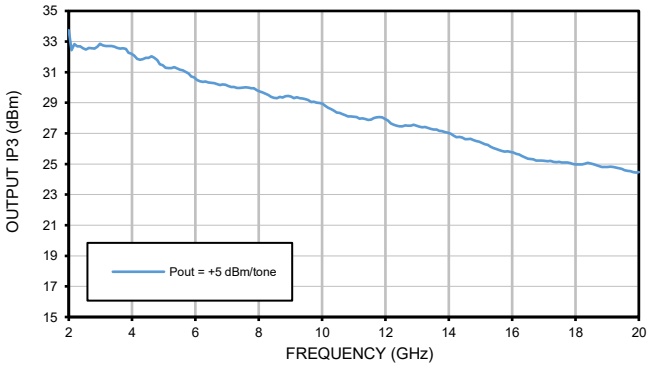
NOISE FIGURE



OUTPUT POWER



OIP3



ABSOLUTE MAXIMUM RATINGS[1]

Parameter	Ratings
Operating Temperature (Baseplate)	-45°C to +85 °C
Storage Temperature	-55 °C to +100 °C
Total Power Dissipation	4.0 W
RF Input Power[2] (CW), Vs = +12.0 V	+5 dBm
DC Operating Voltage (Vs)	+13 V

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

DETERMINING MAXIMUM THERMAL RESISTANCE OF USERS' EXTERNAL HEAT SINK

$$\textit{MAXIMUM THERMAL RESISTANCE} = \frac{\textit{MAXIMUM OPERATING CASE TEMP} - \textit{MAXIMUM USER AMBIENT TEMP}}{\textit{POWER DISSIPATION}}$$

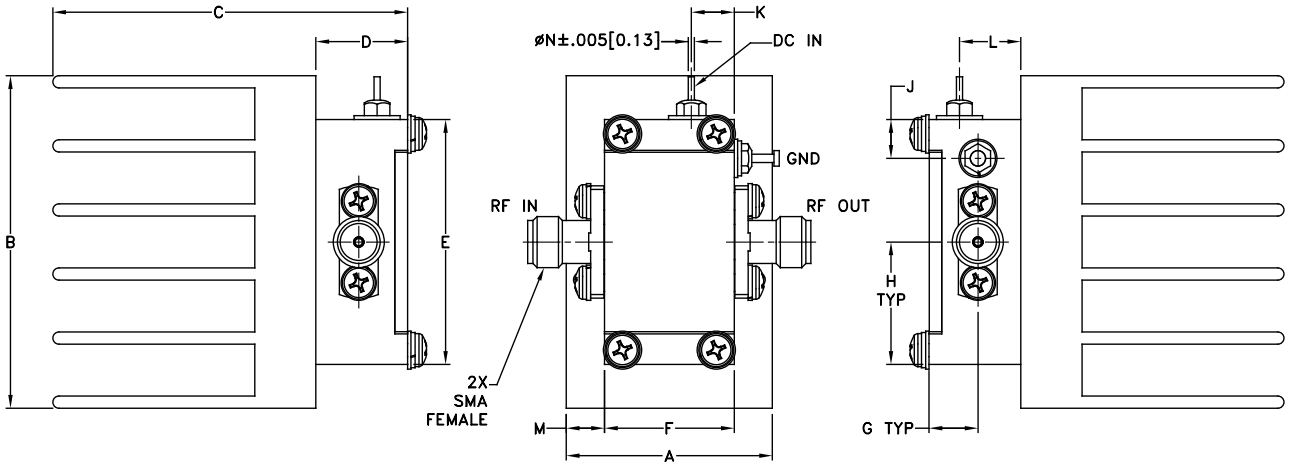
Example:	MAXIMUM OPERATING CASE TEMP = +50 °C (CHECK MAXIMUM RATINGS TABLE FOR THIS VALUE) MAXIMUM USER AMBIENT TEMP = +30 °C (USER DEFINED) POWER DISSIPATION = 10 WATTS (CHECK MAXIMUM RATINGS TABLE FOR THIS VALUE) THEN MAXIMUM ALLOWABLE THERMAL RESISTANCE = 2 °C/W

Wideband Amplifier

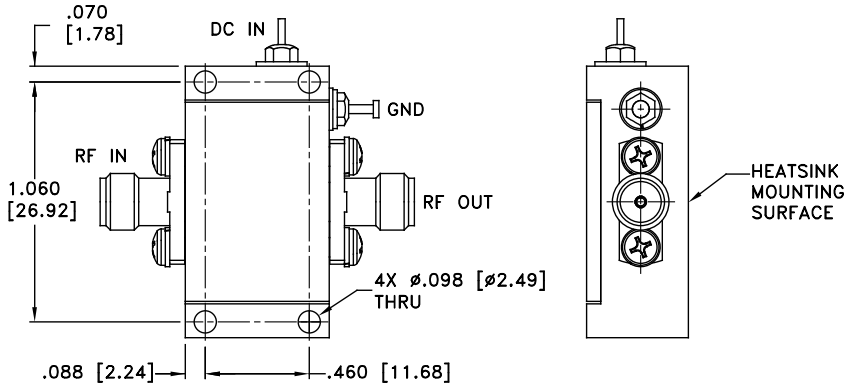
ZVA-02203LN+
ZVA-02203LNX+

50Ω 2 to 20 GHz Gain 30 dB SMA Female

CASE STYLE DRAWING FOR MODELS WITH HEATSINK (ZVA-02203LN+)



CASE STYLE DRAWING FOR MODELS WITHOUT HEATSINK (ZVA-02203LNX+)



CASE#	A	B	C	D	E	F	G	H	J	K	L	M	N
AV3598	1.01 (25.65)	1.63 (41.40)	1.74 (44.20)	0.45 (11.43)	1.20 (30.48)	0.64 (16.26)	0.24 (15.24)	0.06 (15.24)	0.19 (4.83)	0.21 (5.33)	0.30 (7.62)	0.19 (4.75)	0.03 (0.76)

Weight: 58 grams; Without Heatsink 17 grams
Dimensions are in inches [mm]. Tolerances: 2 PL±.03; 3 PL ±.015 Inches

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ADDITIONAL INFORMATION IS AVAILABLE ON OUR DASHBOARD.

Performance Data & Graphs	Data Graphs S-Parameter (S2P Files) Data Set (.zip file)
RoHS Status	Compliant
Environmental Ratings	ENV141
Export Information	ECCN# EAR99

ORDERING INFORMATION

Model No. Links	ZVA-02203LN+	ZVA-02203LNX+
Option	With heatsink	Without heatsink
Product Marking	ZVA-02203LN+	ZVA-02203LNX+
Case Style	AV3598	AV3598
Connector	SMA (Female)	

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