COAXIAL

Ultra-Wideband Amplifier ZVA-5803X+

50Ω 0.5 to 80 GHz Medium Power Amplifier

THE BIG DEAL

- Ultra Wideband Coverage in One Amplifier, 0.5 to 80 GHz
- High Gain, 17 dB typ. Over 0.5 to 80 GHz
- Flat Gain Response, ±3.0 dB typ. Through 80 GHz
- Medium Output Power, +14 dBm typ.
- Operating DC Voltage, +10 to +15 V
- DC Protected Against Over-Voltage & Reverse-Voltage

Generic photo used for illustration purposes only

Model No.	ZVA-5803X+
Case Style	VP3085-2
Connector	1.0mm Female

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

APPLICATIONS

- 4G LTE & 5G FR1, FR2 & FR2+ Infrastructure
- R&D, Production, and OTA Test Systems
- Test & Measurement Equipment
- WiFi 6E, IoT, SATCOM
- Communications, Radar, EW, and ECM Defense

PRODUCT OVERVIEW

Mini-Circuits' ZVA-5803X+ is a coaxial ultra-wideband amplifier, operating from 0.5 to 80 GHz and utilizing 1.0mm female connectors. This model operates over a single positive supply voltage 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 and medium output power make this amplifier an ideal choice for testing and instrumentation applications for communications and radar.

KEY FEATURES

Features	Advantages
Ultra-wideband amplifier, 0.5 to 80 GHz	A single amplifier serves the need for applications including 5G bands, Broadband Telecom, SATCOM, Test & Instrumentation, etc.
High gain, 17 dB typ. Low return loss, 14 dB typ. Medium RF power, +14 dBm typ.	The combination of high gain, low return loss and medium RF power make this amplifier an ideal choice for testing and instrumentation applications.
Wide operating DC supply voltage +10 to +15 V	Offers more flexibility to the user when choosing their power supply, while maintaining 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.

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ELECTRICAL SPECIFICATIONS AT 25 °C BASEPLATE

Parameter	Condition (GHz)	ZVA-5803X+ Min.	ZVA-5803X+ Typ.	ZVA-5803X+ Max.	Units
Frequency Range		0.5		80	GHz
Gain	0.5 - 2	-	14.0	-	dB
	2 – 80	14.0	17.0	-	
Output Power at 1dB compression	0.5 - 55	-	11.5	-	dBm
	55 – 80	-	8.5	-	
Saturated Output Power (Psat)[1]	0.5 - 55	-	15.5	-	dBm
	55 – 80	-	12.0	-	
Output IP3 (Output Power = 0 dBm/tone)	0.5 – 67	-	23.0	-	dBm
Input Return Loss	0.5 – 80	-	14	-	dB
Output Return Loss	0.5 – 80	-	14	-	dB
Noise Figure	0.5 – 54	-	5.0	-	dB
Operating DC Voltage	-	+10	-	+15	V
Device Operating Current at +10 V	-	-	130	170	mA
Total Power Dissipation at +10 V	-	-	1.4[2]	-	W

1. At Psat, Pout changes less than 0.1 dB for a 1 dB change in Pin.
2. Device operating power based on current when amplifier is in saturation.

ABSOLUTE MAXIMUM RATINGS[3]

Parameter	Ratings
Operating Temperature	-40 °C to +50 °C Ambient -40 °C to +60 °C Case
Storage Temperature	-40 °C to +85 °C
RF Input Power[4](CW)	+5 dBm
DC Operating Voltage	+16 V

3. Continuous operation is not recommended at these extremes. Permanent damage may occur if any of these limits are exceeded.
4. Specified under 50 ohms, Input and output load and source impedance.

⚠ HANDLING PRECAUTIONS[6]

Baseplate Temperature	Do not operate above +60 °C
Open Load Impedance	Open and short-circuit loads are not recommended at the amplifier output. Ensure proper 50 Ohm load before turning the amplifier "on".

6. Damage to the device may occur when operating improperly.

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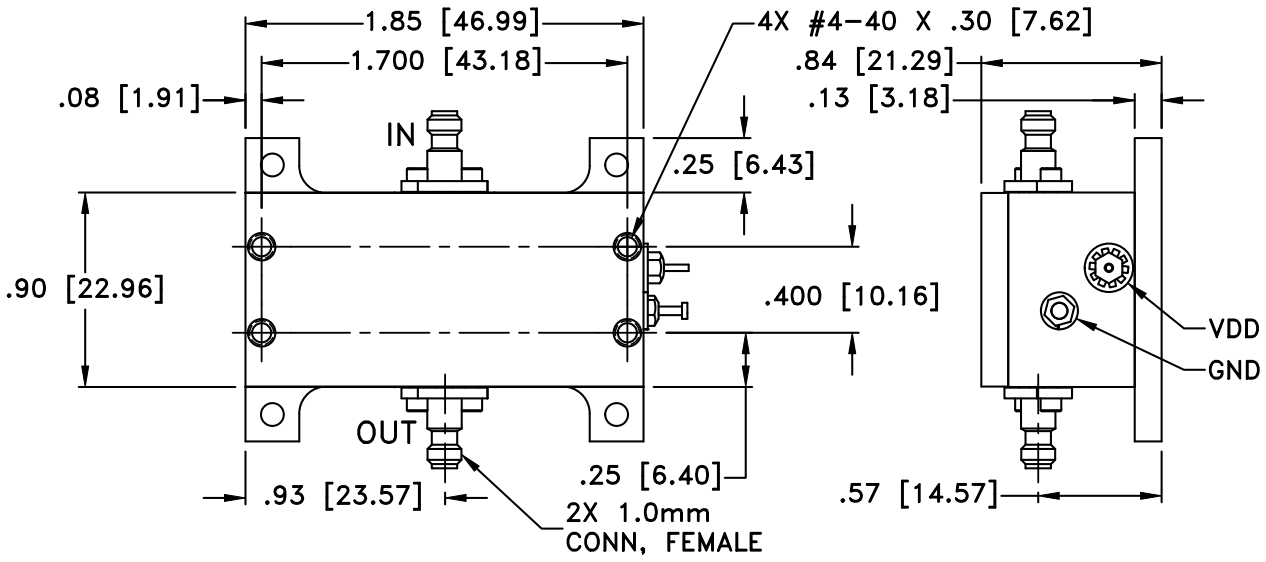
OUTLINE DRAWING



Weight 47.0 grams
Dimensions are in inches [mm]. Tolerances: 2 Pl.±.03; 3 Pl.±.015

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TYPICAL PERFORMANCE DATA

Frequency (GHz)	Gain (dB) 10V	Active Directivity (dB) 10V	Return Loss (dB) 10V		Pout @ 1 dB Compression (dBm) 10V	Pout @ Saturation (dBm) 10V	OIP3 (dBm) 10V	Noise Figure (dB) 10V
			IN	OUT				
0.5	11.1	72.9	5.7	11.2	10.8	13.7	20.9	8.6
5.0	17.8	58.4	15.1	25.0	12.0	15.8	24.3	5.6
10.0	16.1	53.9	14.7	19.8	11.6	15.2	24.3	5.8
15.0	15.9	50.9	14.5	15.2	11.8	15.5	24.2	5.2
20.0	16.6	45.5	16.9	16.9	12.4	15.8	24.7	4.9
25.0	17.2	35.8	16.8	18.8	12.8	15.8	24.7	4.6
30.0	17.8	37.0	18.5	14.0	12.5	15.9	24.7	4.3
35.0	18.5	36.8	18.0	19.2	12.0	15.2	24.4	4.3
40.0	17.7	34.3	21.1	10.9	11.4	14.6	24.1	4.5
45.0	18.1	40.0	16.3	14.3	12.0	14.9	25.8	5.0
50.0	18.4	43.3	14.9	16.2	12.0	14.9	24.2	4.5
55.0	19.1	36.6	12.1	17.4	11.2	14.2	23.7	—
60.0	18.9	36.0	11.6	12.0	10.0	13.3	22.1	—
65.0	20.1	28.9	23.6	16.3	10.1	13.7	21.3	—
70.0	18.3	27.6	16.8	20.3	9.1	12.4	—	—
75.0	18.0	31.1	18.9	9.4	8.6	11.8	—	—
80.0	19.7	35.9	10.5	11.1	6.5	10.1	—	—

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

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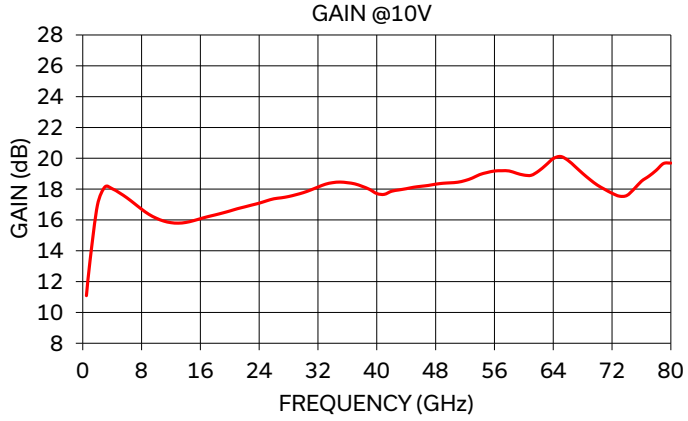
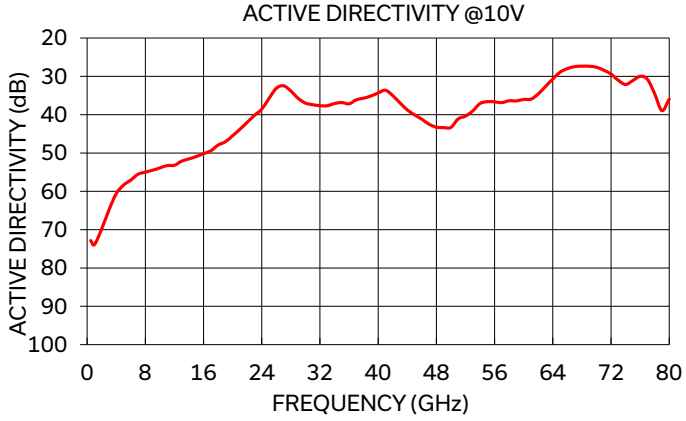
TYPICAL PERFORMANCE GRAPHS

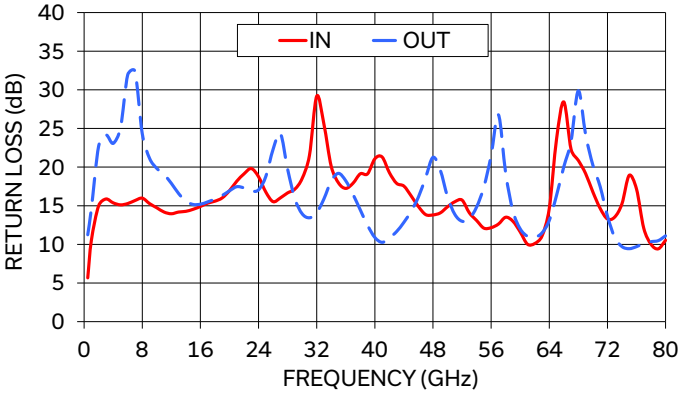
ZVA-5803X+
GAIN @10V



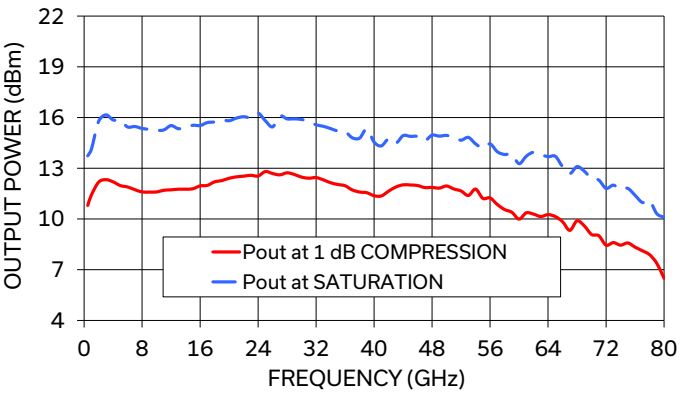
ZVA-5803X+
ACTIVE DIRECTIVITY @10V



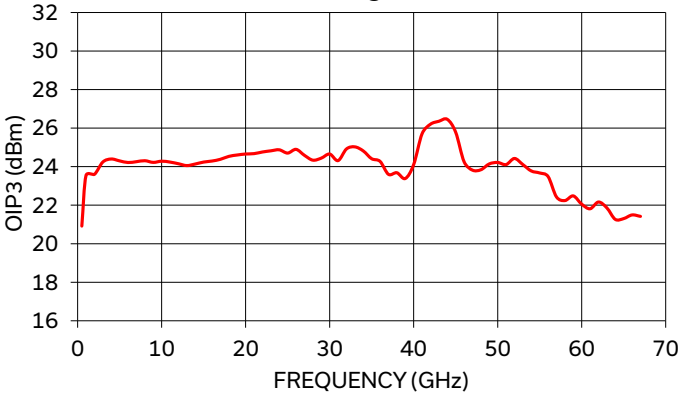
ZVA-5803X+
RETURN LOSS @10V



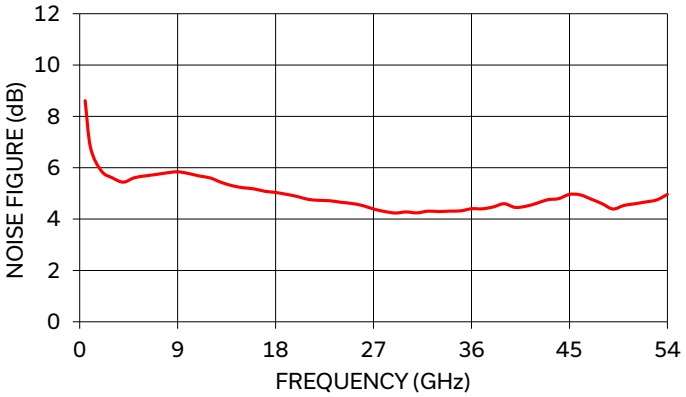
ZVA-5803X+
OUTPUT POWER @10V



ZVA-5803X+
OIP3 @10V



ZVA-5803X+
NOISE FIGURE @10V



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