

50Ω

0.1 to 20 GHz

## The Big Deal

- Flat Gain, 14.75 ±1.25 dB across entire bandwidth
- Low noise figure, 2 dB, typ
- High IP3, +30 dBm



Case Style: RN2486-1

## Product Overview

Mini-Circuits' ZVA-213UWX+ is a coaxial, ultra-wideband amplifier offering very flat gain and high dynamic range from 0.1 to 20 GHz. This model is capable of delivering up to +16 dBm output power at 1 dB compression with 2 dB noise and +30 dBm IP3 supporting a wide range of sensitive, high-dynamic range receiver applications and many systems where high performance over a wide frequency range is needed. It operates on a +12/-5V supply and features built-in safety features including protection against reverse bias and immunity to accidental open or short loads. The amplifier comes in a rugged, compact case (1.3 x 0.98 x 0.56") with 2.92mm connectors.

## Key Features

Feature	Advantages
Ultra-wideband, 0.1 to 20 GHz	Enables a single amplifier to be used in a wide range of applications.
Excellent gain flatness, ±1.25 dB across full frequency range	Provides consistent performance across its operating frequency, minimizing the need for external equalizing networks in wideband applications.
Low noise and high IP3: <ul style="list-style-type: none"> <li>• NF, 2 dB typ.</li> <li>• IP3, +30 dBm typ.</li> </ul>	The combination of low noise and high IP3 makes the ZVA-213UWX+ 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.

# Coaxial Wideband Amplifier

## ZVA-213UWX+

50Ω 0.1 to 20 GHz

### Features

- Low noise figure, 1.9 dB at 8 GHz
- High IP3, 30 dBm typ. at 8 GHz
- Excellent gain flatness, ± 1.0 from 0.1 GHz to 20 GHz
- Fully compatible with SMA, Super SMA, and 3.5mm connectors

### Applications

- WiFi
- WLAN
- UMTS
- LTE
- WiMAX
- S-band Radar
- C-band Satcom



Case Style: RN2486-1  
Connectors Model  
2.92mm ZVA-213UWX+

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

### Electrical Specifications at 25°C

Parameter	Condition (GHz)	Min.	Typ.	Max.	Units
Frequency Range		0.1		20	GHz
Noise Figure	0.1-6	—	3.5	—	dB
	6-12	—	2.5	—	
	12-18	—	2.7	—	
	18-20	—	3.4	—	
Gain	0.1-6	11.0	14	—	dB
	6-12	11.0	14	—	
	12-18	11.0	14	—	
	18-20	10.0	13	—	
Input VSWR	0.1-6	—	1.4	—	:1
	6-12	—	1.25	—	
	12-18	—	1.3	—	
	18-20	—	1.6	—	
Output VSWR	0.1-6	—	1.4	—	:1
	6-12	—	1.3	—	
	12-18	—	1.4	—	
	18-20	—	1.6	—	
Output Power @ 1 dB compression <sup>1</sup>	6-12	—	16	—	dBm
	12-18	—	15	—	
	12-18	—	14	—	
	18-20	—	13	—	
Output IP3	0.1-6	—	29.5	—	dBm
	6-12	—	29	—	
	12-18	—	28.5	—	
	18-20	—	26	—	
Device Operating Voltage (V <sub>DD</sub> )			12		V
Device Operating Voltage (V <sub>GG</sub> )			-5		V
Device Operating Current (I <sub>DD</sub> )		—	80	94	mA

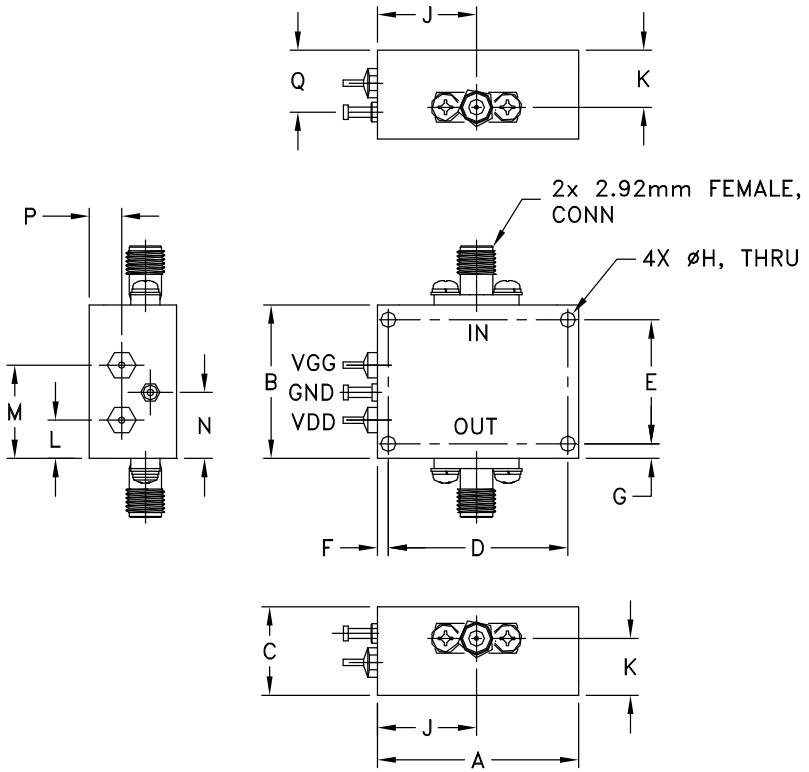
1. Current increases at P1dB.

### Absolute Maximum Ratings<sup>2</sup>

Parameter	Ratings
Operating Temperature (ground lead)	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Total Power Dissipation	1.5W
Input Power (CW), Vd=12	+12 dBm
DC Voltage	13V

2. Permanent damage may occur if any of these limits are exceeded.  
Electrical maximum ratings are not intended for continuous normal operation.

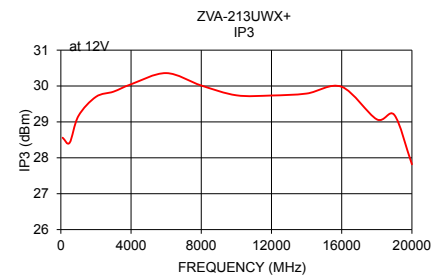
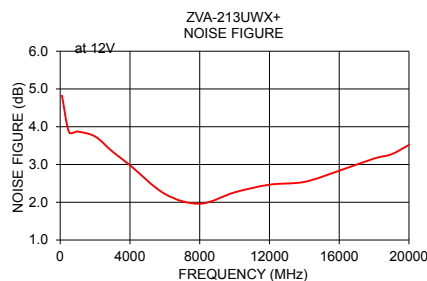
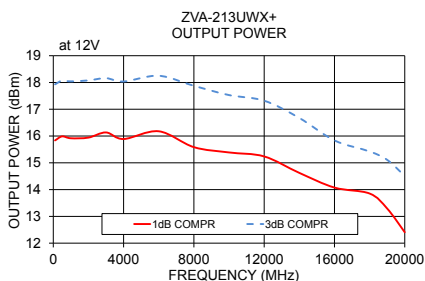
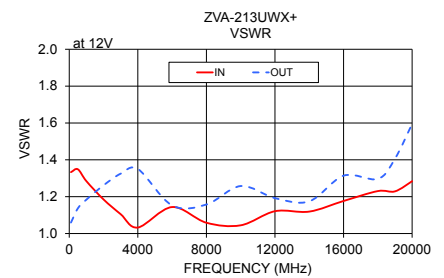
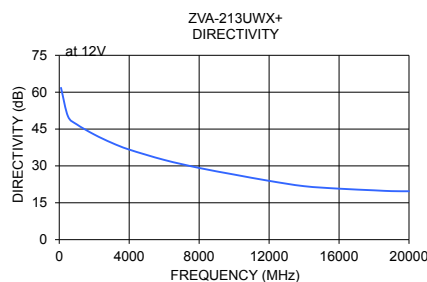
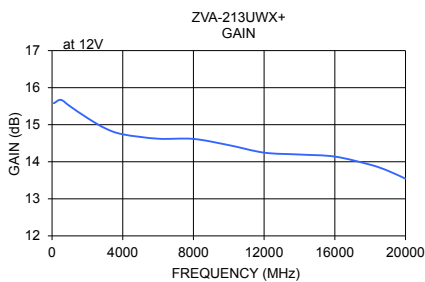
Outline Drawing



Outline Dimensions (inch/mm)

A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	wt
1.3	0.98	0.56	1.16	0.79	0.07	.09	0.098	0.64	0.36	0.24	0.59	0.42	0.21	0.39	grams
33.02	24.89	14.22	29.46	20.07	1.78	2.29	2.49	16.26	9.14	6.10	14.99	10.67	5.33	9.91	74

FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR (:1)		NOISE FIGURE (dB)	POUT COMPR. (dBm)		OUTPUT IP3 (dBm)
			IN	OUT		1dB	3dB	
100	15.58	61.77	1.33	1.06	4.83	15.84	17.93	28.56
500	15.67	50.16	1.35	1.14	3.87	15.99	18.07	28.42
1000	15.50	46.91	1.28	1.18	3.87	15.92	18.04	29.16
2000	15.18	42.78	1.19	1.26	3.74	15.94	18.08	29.70
3000	14.90	39.40	1.10	1.32	3.34	16.13	18.16	29.84
4000	14.74	36.64	1.03	1.35	2.98	15.89	18.04	30.05
6000	14.62	32.44	1.14	1.15	2.22	16.18	18.25	30.36
8000	14.62	29.17	1.06	1.16	1.96	15.58	17.88	30.01
10000	14.45	26.48	1.04	1.26	2.26	15.39	17.53	29.74
12000	14.25	23.92	1.12	1.19	2.47	15.24	17.32	29.74
14000	14.20	21.76	1.12	1.17	2.54	14.62	16.67	29.79
16000	14.14	20.74	1.18	1.31	2.84	14.07	15.84	29.98
18000	13.92	20.07	1.23	1.30	3.16	13.85	15.42	29.07
19000	13.76	19.74	1.23	1.41	3.27	13.29	15.11	29.19
20000	13.54	19.69	1.28	1.60	3.52	12.41	14.51	27.82



### Additional 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](http://www.minicircuits.com/MCLStore/terms.jsp)

