COAXIAL WIDEBAND MICROWAVE

Amplifier

ZX60-02203+

50Ω 2 to 20 GHz SMA Female

THE BIG DEAL

- Ultra Wideband performance
- Medium power, 15dBm P1dB typ.
- High gain broadband performance
- Voltage regulated internally and reverse voltage protected
- Excellent directivity, 20 dB typ.
- Protected by US patent 6,790,049

Generic photo used for illustration purposes only

Model No.	ZX60-02203+
Case Style	GC957
Connectors	SMA

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

APPLICATIONS

- Microwave point-to-point radios
- Military EW and radar
- Satellite Systems

PRODUCT OVERVIEW

Mini-Circuits' ZX60-02203+ is a wideband connectorized amplifier providing a combination of medium to high gain, medium power, and high IP3 over a very wide frequency range, supporting a diverse range of applications and many systems where high performance over wideband is needed. This design operates on a single 5 V supply and comes in a rugged, compact unibody case (0.74 x 0.75 x 0.46") with SMA connectors, making it an excellent candidate for tough operating conditions and crowded system layouts.

KEY FEATURES

Feature	Advantages
Ultra-wideband 2-20 GHz	Enables a single amplifier to be used in a wide range of applications including EW and communication systems instrumentation and more.
High gain, 20 dB typ.	Reduces the number of gain stages, lowering component count and overall system cost.
Low operating voltage, +5V	The amplifier features low operating voltage
Rugged, unibody construction	Mini-Circuits unibody construction integrates the RF connector into the case body, providing high reliability and excellent survivability in critical applications.

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ZX60-02203+
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ELECTRICAL SPECIFICATIONS AT 25°C AND +5V, UNLESS NOTED

Parameter	Condition GHz)	V_{DD}=5.0 Min.	Typ.	Max.	Units
Frequency Range		2.0		20	GHz
Noise Figure	2.0-6.0	—	8.3	—	dB
	6.0-12.0	—	7.0	—	
	12.0-18.0	—	6.0	—	
	18.0-20.0	—	6.0	—	
Gain	2.0-6.0	20	22	—	dB
	6.0-12.0	17	20	—	
	12.0-18.0	17	19	—	
	18.0-20.0	15.5	18	—	
Input Return Loss	2.0-6.0	—	13.5	—	dB
	6.0-12.0	—	13.0	—	
	12.0-18.0	—	10.0	—	
	18.0-20.0	—	8.0	—	
Output Return Loss	2.0-6.0	—	18.5	—	dB
	6.0-12.0	—	14.0	—	
	12.0-18.0	—	12.0	—	
	18.0-20.0	—	8.5	—	
Output Power at 1dB Compression[1]	2.0-6.0	—	15.2	—	dBm
	6.0-12.0	—	14.7	—	
	12.0-18.0	—	14.5	—	
	18.0-20.0	—	15.0	—	
Output IP3[2]	2.0-6.0	—	28	—	dBm
	6.0-12.0	—	28	—	
	12.0-18.0	—	28	—	
	18.0-20.0	—	26	—	
Device Operating Voltage (V_{DD})	—	4.9	5.0	6.0	V
Device Operating Current (I_{DD})	—	—	154	210	mA

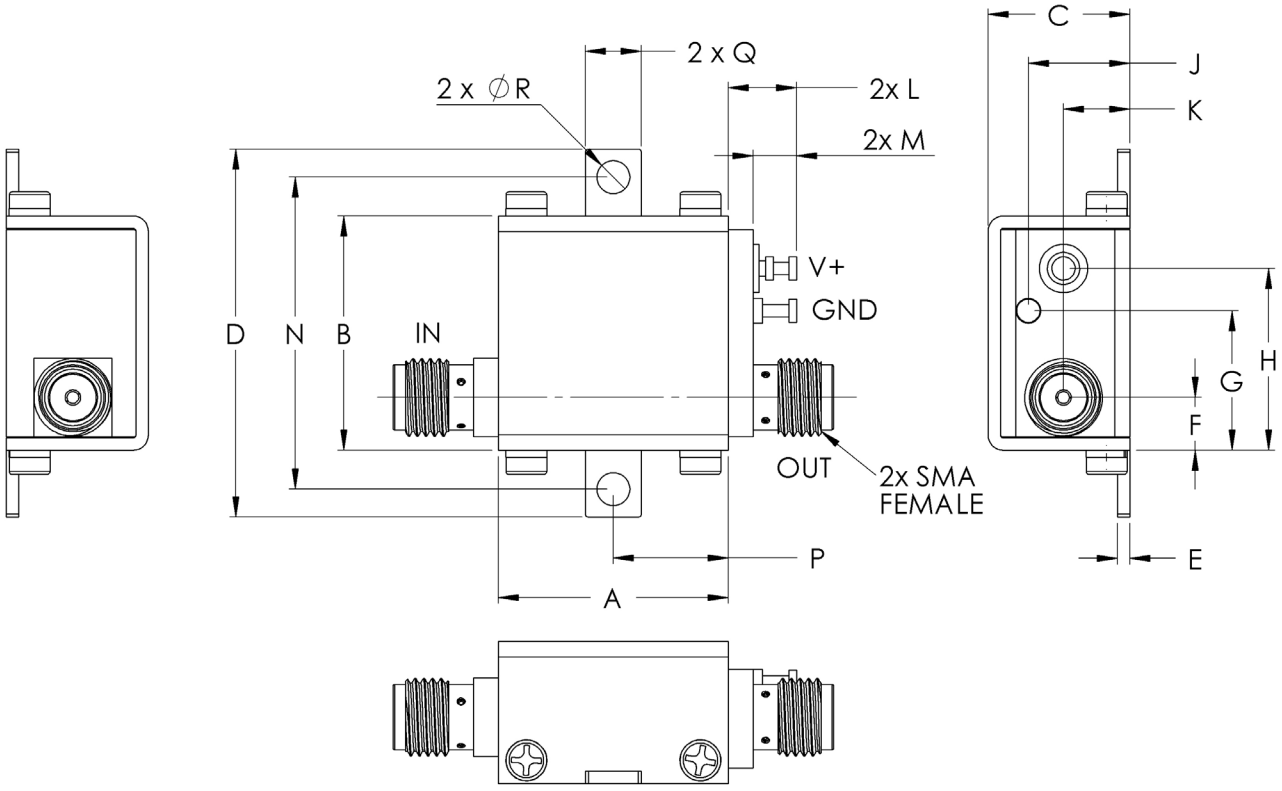
1. Current increases at P1dB
2. OIP3 measured with 0 dBm tones and 1 MHz spacing.

ABSOLUTE MAXIMUM RATINGS[3]

Parameter	Ratings
Operating Temperature (ground lead)	-40°C to 85°C
Storage Temperature	-55°C to 100°C
Total Power Dissipation	1.2 W
Input Power (CW), Vd=5V	17 dBm
DC Voltage	6V

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

OUTLINE DRAWING



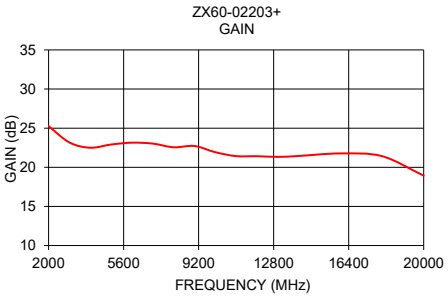
⚠ NOTE: When soldering the DC connections, caution must be used to avoid overheating the DC terminal. See Application Note. AN-40-010.

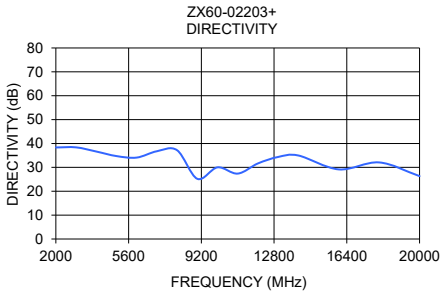
OUTLINE DIMENSIONS (Inches / mm)

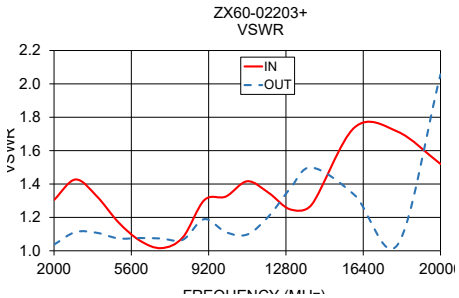
A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	wt
.74	.75	.46	1.18	.04	.17	.45	.59	.33	.21	.22	.14	1.00	.37	.18	.106	grams
18.80	19.1	11.68	30.0	1.02	4.32	11.4	14.99	8.38	5.33	5.59	3.56	25.40	9.40	4.57	2.69	23.0

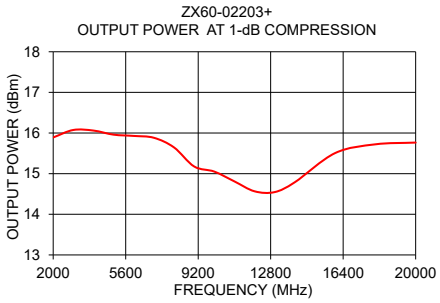
TYPICAL PERFORMANCE DATA/CURVES

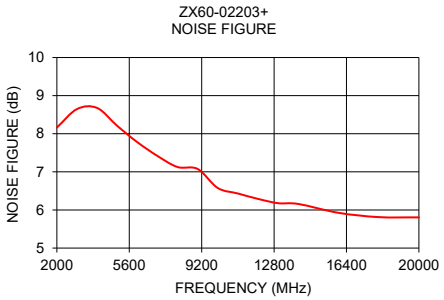
Frequency (MHz)	Gain (dB)	Directivity (dB)	VSVR (:1) 5V		Power Out @1 dB COMPR. (dBm)	Noise Figure (dB)	IP3 (dBm)
	5V	5V	IN	OUT	5V	5V	5V
2000	24.82	38.77	1.30	1.04	15.89	8.16	27.63
3000	22.48	39.07	1.43	1.11	16.08	8.65	27.83
4000	21.77	37.36	1.33	1.11	16.06	8.68	28.29
5000	22.91	34.72	1.17	1.07	15.96	8.21	28.48
6000	23.15	34.09	1.06	1.08	15.93	7.78	29.01
7000	21.50	38.28	1.02	1.07	15.88	7.42	28.41
8000	20.93	38.80	1.08	1.07	15.65	7.13	28.77
9000	20.44	27.48	1.30	1.19	15.18	7.08	29.26
10000	20.00	31.94	1.32	1.11	15.05	6.58	29.21
11000	19.42	29.40	1.42	1.10	14.81	6.43	30.07
12000	19.41	33.65	1.35	1.21	14.57	6.29	28.63
13000	19.36	36.32	1.25	1.37	14.55	6.18	27.75
14000	19.54	36.88	1.28	1.50	14.79	6.16	27.66
16000	19.63	31.29	1.74	1.33	15.51	5.93	27.22
18000	19.04	34.45	1.71	1.04	15.72	5.81	26.66
20000	16.07	29.20	1.52	2.06	15.76	5.81	25.92

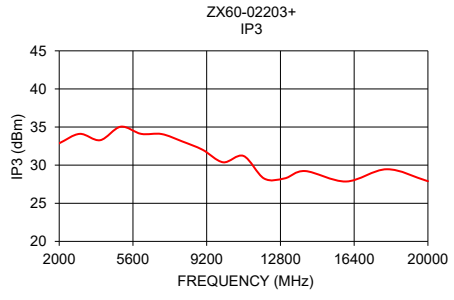












NOTES

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