Ultra Wide Bandwidth

Amplifier

ZX60-14012L-S+

50Ω 300 KHz to 14 GHz

Features

- Wide bandwidth, 300 kHz to 14 GHz
- Reverse voltage connection protected
- Over-voltage transient protected
- Excellent flatness over frequency range, ±1dB typ.
- +11dBm typ. output power at 1dB compression
- Low cost
- Protected by US patent 6,790,049

Applications

- Broad band
- Buffer or low level driver
- General purpose
- Lab
- Instrumentation
- Test equipment

CASE STYLE: GC957

Connectors	Model
SMA	ZX60-14012L-S+

+RoHS Compliant

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

Electrical Specifications at T_{AMB} = 25°C

MODEL NO.	FREQ. (MHz)	GAIN (dB)				MAXIMUM POWER (dBm)		DYNAMIC RANGE			VSWR (:1) Typ.		ACTIVE DIRECTIVITY (dB) Isolation-Gain	DC VOLTAGE @ Pin V+ (V) (Note 2)	DC OPERATING CURRENT @ Pin V+ (mA)	
				Flatness		Output (1 dB Comp.)		NF (dB) (Note 1)		IP3 (dBm)						
	f_L- f_U	Typ.	Min.	Typ.	Max.	Typ.	Min. (Note 3)	Typ.	Max.	Typ.	In	Out	Typ.		Typ.	Max.
ZX60-14012L-S+	0.3-14000	12	9	±1.0	±2.0	11	9	5.5	7.5	20	1.3	1.7	4.5 - 8.5	12	62	68

1. Noise figure tested and guaranteed over the 10-14000 MHz range.
2. Unit is internally voltage regulated over 10.5 to 20 VDC input range.
3. +4 dBm min. power output @ 10000-14000 MHz

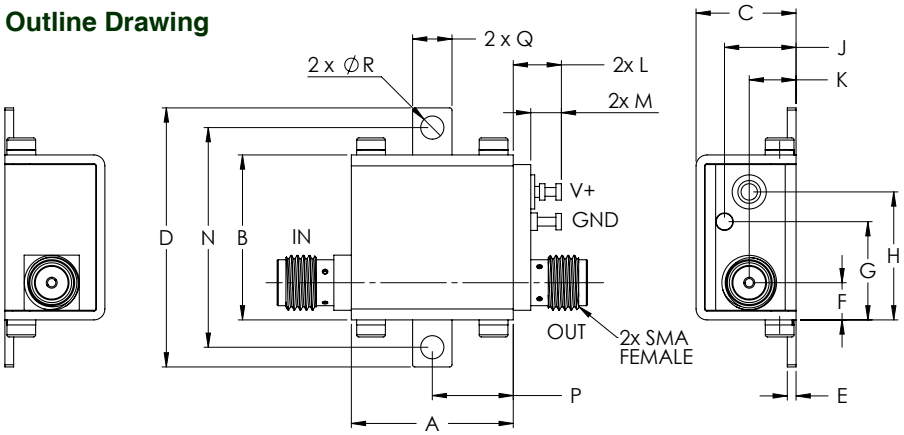
Maximum Ratings

Operating Temperature	-40°C to 80°C case
	-40°C to 55°C ambient at 12V
	-40°C to 50°C ambient at 15V
	-40°C to 40°C ambient at 20V
Storage Temperature	-55°C to 100°C
DC Voltage	20V
Input Power(no Damage)	10dBm

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

NOTE: When soldering the DC connections, caution must be used to avoid overheating the DC terminals. See Application Note AN-40-10 .

Outline Drawing



Outline Dimensions (inch / mm)

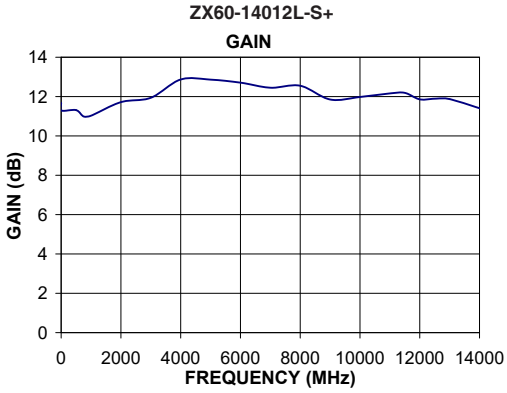
A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	WT.
.74	.75	.46	1.18	.04	.17	.45	.59	.33	.21	.22	.14	1.00	.37	.18	.106	GRAM
18.80	19.05	11.68	29.97	1.02	4.32	11.43	14.99	8.38	5.33	5.59	3.56	25.40	9.40	4.57	2.69	23.0

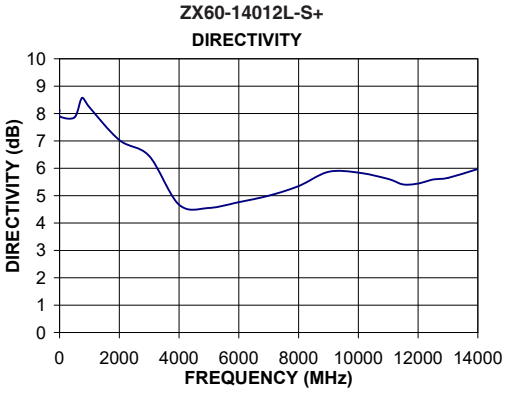
Notes

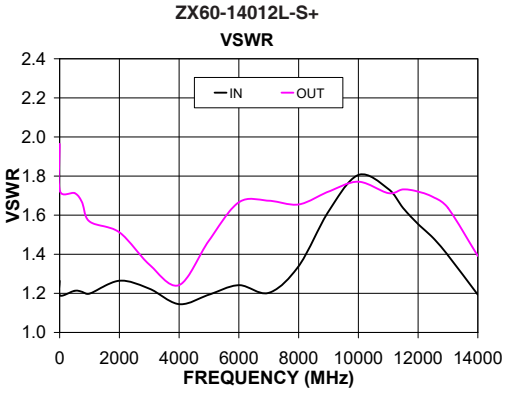
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's 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

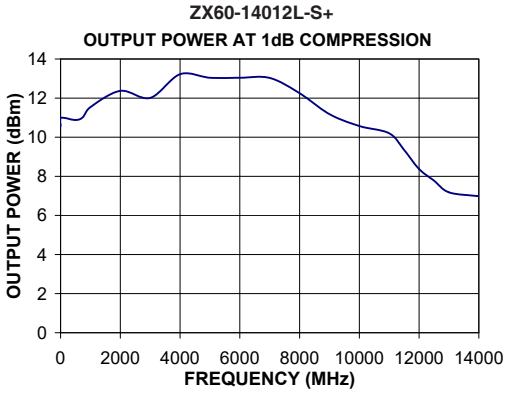
Typical Performance Data & Curves at 25°C ZX60-14012L-S+

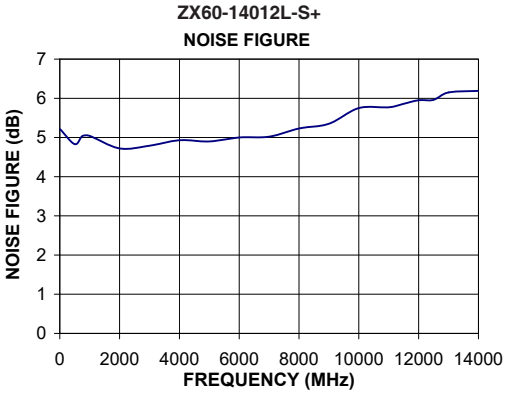
FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR IN (:1)	VSWR OUT (:1)	POWER OUT @1dB COMPRESSION (dBm)	IP3 (dBm)	NF (dB)
0.3	11.68	8.13	1.26	1.96	10.56	24.86	------
10	11.29	7.89	1.19	1.72	10.99	25.44	5.21
500	11.31	7.86	1.21	1.71	10.88	25.08	4.83
750	10.99	8.57	1.21	1.67	11.03	25.55	5.03
1000	11.03	8.23	1.20	1.57	11.54	26.40	5.04
2000	11.72	7.03	1.26	1.51	12.37	28.02	4.72
3000	11.94	6.45	1.22	1.35	12.01	27.22	4.79
4000	12.87	4.67	1.14	1.24	13.22	25.58	4.93
5000	12.86	4.55	1.19	1.47	13.04	22.99	4.90
6000	12.71	4.76	1.24	1.67	13.04	21.14	5.00
7000	12.45	5.00	1.20	1.67	13.03	20.91	5.02
8000	12.55	5.35	1.34	1.65	12.25	17.80	5.23
9000	11.85	5.87	1.62	1.72	11.18	16.77	5.35
10000	11.98	5.84	1.81	1.77	10.57	14.99	5.75
11000	12.16	5.61	1.73	1.71	10.20	14.11	5.77
11500	12.19	5.41	1.64	1.73	9.35	12.73	5.86
12000	11.86	5.44	1.55	1.72	8.37	12.38	5.95
12500	11.89	5.59	1.48	1.69	7.78	12.27	5.96
13000	11.87	5.65	1.39	1.64	7.18	11.60	6.15
14000	11.41	5.97	1.19	1.39	6.98	10.94	6.19

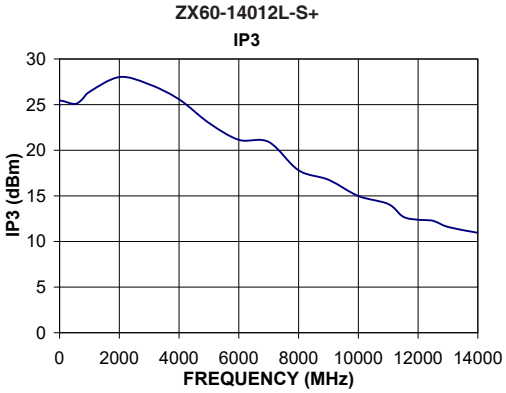












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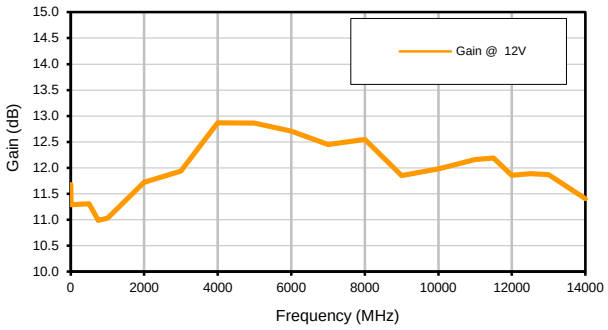
Amplifier ZX60-14012L-S+

Typical Performance Data

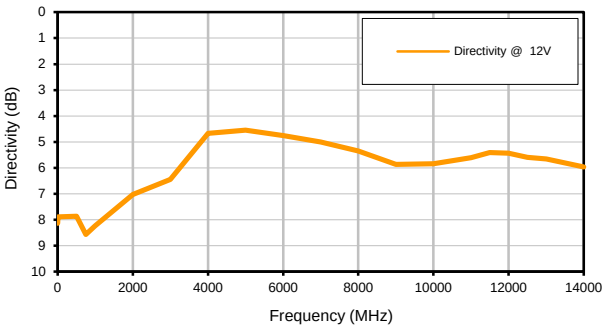
FREQUENCY (MHz)	GAIN (dB) 12V	DIRECTIVITY (dB) 12V	VSWR IN (:1) 12V	VSWR OUT (:1) 12V	Output IP3 (dBm) 12V	NOISE FIGURE (dB) 12V	Pout at 1dB Comp. (dBm) 12V
0.3	11.68	8.13	1.26	1.96	24.86	----	10.56
10	11.29	7.89	1.19	1.72	25.44	5.21	10.99
500	11.31	7.86	1.21	1.71	25.08	4.83	10.88
750	10.99	8.57	1.21	1.67	25.55	5.03	11.03
1000	11.03	8.23	1.20	1.57	26.40	5.04	11.54
2000	11.72	7.03	1.26	1.51	28.02	4.72	12.37
3000	11.94	6.45	1.22	1.35	27.22	4.79	12.01
4000	12.87	4.67	1.14	1.24	25.58	4.93	13.22
5000	12.86	4.55	1.19	1.47	22.99	4.90	13.04
6000	12.71	4.76	1.24	1.67	21.14	5.00	13.04
7000	12.45	5.00	1.20	1.67	20.91	5.02	13.03
8000	12.55	5.35	1.34	1.65	17.80	5.23	12.25
9000	11.85	5.87	1.62	1.72	16.77	5.35	11.18
10000	11.98	5.84	1.81	1.77	14.99	5.75	10.57
11000	12.16	5.61	1.73	1.71	14.11	5.77	10.20
11500	12.19	5.41	1.64	1.73	12.73	5.86	9.35
12000	11.86	5.44	1.55	1.72	12.38	5.95	8.37
12500	11.89	5.59	1.48	1.69	12.27	5.96	7.78
13000	11.87	5.65	1.39	1.64	11.60	6.15	7.18
14000	11.41	5.97	1.19	1.39	10.94	6.19	6.98

Typical Performance Curves

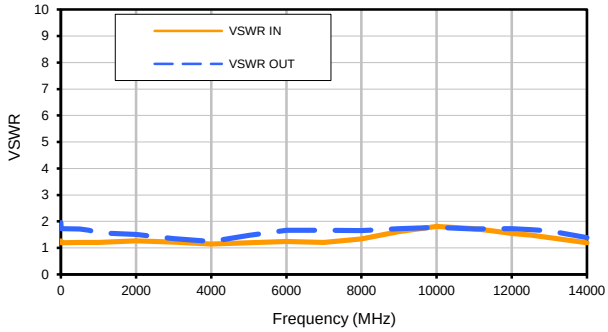
Gain



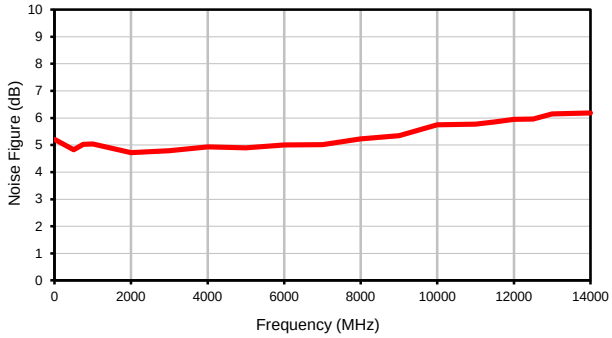
Directivity



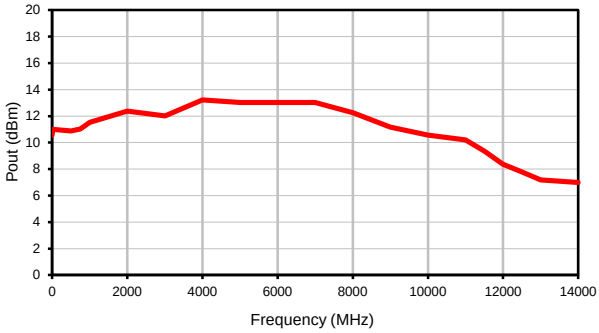
VSWR @ 12V



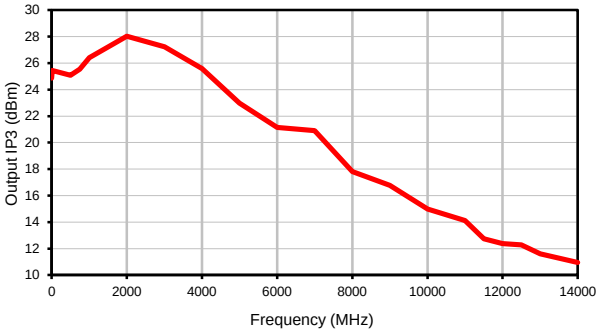
Noise Figure @ 12V



Pout at 1dB Compression @ 12V



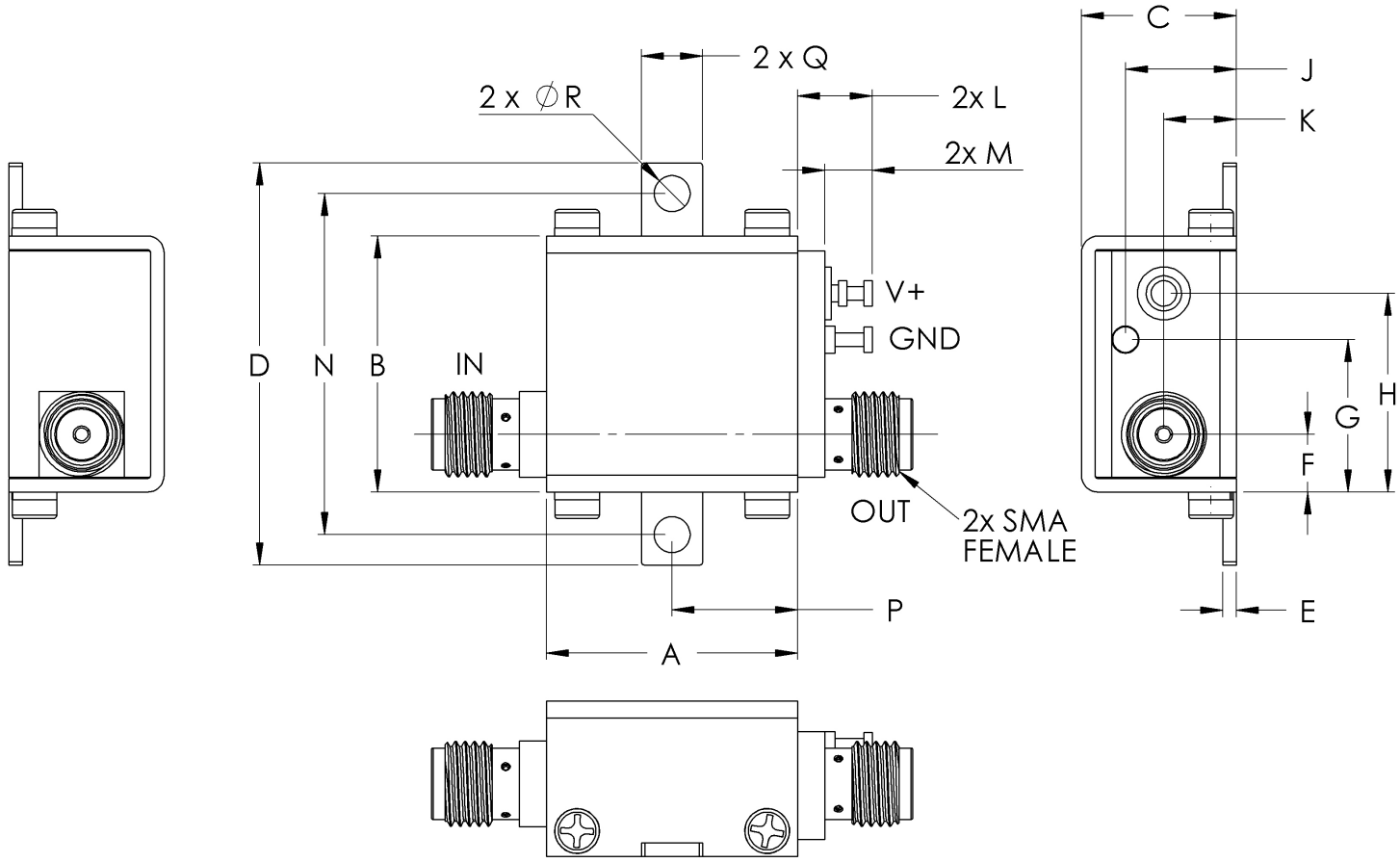
Output IP3 @ 12V



Case Style GC

Outline Dimensions

GC957



CASE #.	A	B	C	D	E	F	G	H	J	K	L	M	N
GC957	.74 (18.80)	.75 (19.15)	.46 (11.61)	1.18 (30.07)	.04 (1.02)	.17 (4.32)	.45 (11.40)	.59 (14.86)	.33 (8.31)	.21 (5.44)	.22 (5.59)	.14 (3.56)	1.00 (25.4)

CASE #.	P	Q	R	WT GRAMS
GC957	.37 (9.40)	.18 (4.57)	.106 (2.69)	23.0

Dimensions are in inches (mm). Tolerances: 2Pl. ± .03; 3Pl. ± .015
Tolerance on hole size and interaxes dimensions to be ± .005.

Note:

1. Case material: Brass
2. Case finish: Nickel plate

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Environmental Specifications ENV23

All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-40° to 55° C Ambient Environment at 12V	Individual Model Data Sheet
Operating Temperature	-40° to 50° C Ambient Environment at 15V	Individual Model Data Sheet
Operating Temperature	-40° to 40° C Ambient Environment at 20V	Individual Model Data Sheet
Operating Temperature	-40° to 80° C Case Temperature	Individual Model Data Sheet
Storage Temperature	-55° to 100° C Ambient Environment	Individual Model Data Sheet
Stabilization Bake	(non-operating) 125°C, 24 hours	- - -
Burn-in at Elevated Temp.	(DC on) (DC on)	MIL-STD-202, Method 108
Thermal Shock	-55° to 100°C, 5 cycles	MIL-STD-202, Method 107, Condition A, except 100°C