High Linearity

Amplifier

ZX60-2411BM-S+

50Ω 800 MHz to 2400 MHz

Features

- High linearity
- High IP3, +40 dBm typ
- Reverse voltage connection protected
- 4.5V - 5.5V operation
- Small size
- Low cost
- Protected by US patent 6,790,049

Applications

- High linearity drivers
- Buffer amplifier
- Transmit side gain stage
- General purpose small signal
- Lab, instrumentation
- Test equipment

Connectors	Model
SMA	ZX60-2411BM-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) f_L - f_H	GAIN (dB) Typ.	GAIN (dB) Min.	GAIN (dB) Flatness Typ.	GAIN (dB) Flatness Max.	MAXIMUM POWER (dBm) Output (1dB Comp.) Typ.	DYNAMIC RANGE NF (dB) Typ.	DYNAMIC RANGE IP3 (dBm) Typ.	VSWR (:1) Typ. In	VSWR (:1) Typ. Out	ACTIVE DIRECTIVITY (dB) Isoltion-Gain Typ.	DC VOLTAGE @PIN V+ (V)	DC OPERATING CURRENT @ PIN V+ (mA) Typ.	DC OPERATING CURRENT @ PIN V+ (mA) Max.
ZX60-2411BM-S+	800-1300	13.50	9.00	±0.7	±1.2	22.00	3.50	42.00	1.40	1.25	7.0	5	280	360
	1300-1900	14.00	10.00	±0.4	±0.7	24.00	2.60	40.00	1.30	1.35	5.0	5	280	360
	1900-2400	13.00	9.00	±0.7	±1.5	23.00	3.00	37.00	1.55	1.70	5.0	5	280	360

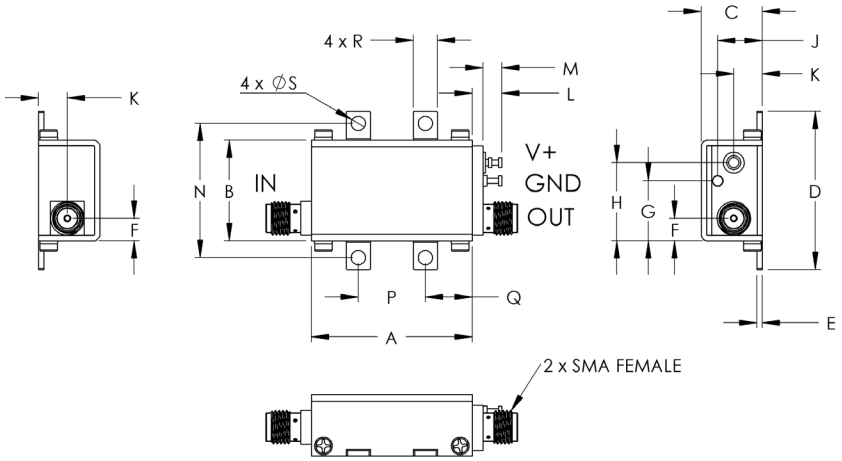
Maximum Ratings

Operating Temperature	-40°C to 80°C case
	-40°C to 50°C ambient at 5V
Storage Temperature	-55°C to 100°C
DC Voltage	6V
Input Power(no Damage)	+14dBm@800-1300MHz
	+15dBm@1300-1900MHz
	+16dBm@1900-2400MHz

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	S	wt.
1.20	.75	.46	1.18	.04	.17	.45	.59	.33	.21	.22	.14	1.00	.50	.35	.18	.106	grams
30.48	19.05	11.68	29.97	1.02	4.32	11.43	14.99	8.38	5.33	5.59	3.56	25.40	12.70	8.89	4.57	2.69	35.0

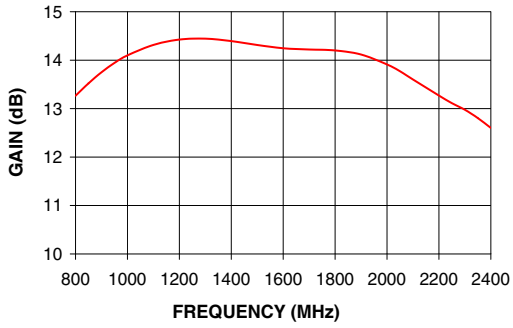
Notes

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

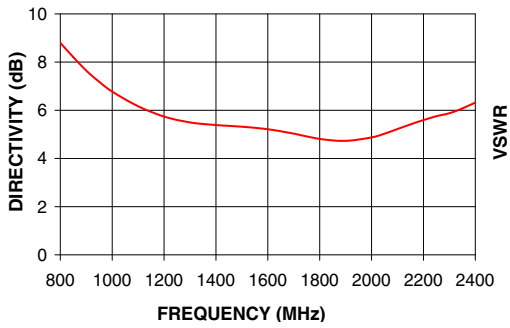
Typical Performance Data & Curves at 25°C ZX60-2411BM-S+

FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR IN (:1)	VSWR OUT (:1)	POWER OUT @ 1dB COMPRESSION (dBm)	IP3 (dBm)	NF (dB)
800	13.27	8.80	1.39	1.30	23.49	41.56	3.73
850	13.52	8.21	1.29	1.29	23.64	42.81	3.45
900	13.75	7.65	1.20	1.29	23.79	43.25	3.19
950	13.94	7.18	1.13	1.27	24.19	43.06	3.05
1000	14.10	6.78	1.08	1.25	24.58	42.14	2.91
1100	14.32	6.17	1.01	1.16	25.05	42.50	2.73
1200	14.43	5.74	1.09	1.04	25.38	42.23	2.57
1300	14.45	5.50	1.19	1.10	25.52	41.47	2.49
1400	14.39	5.39	1.30	1.25	25.46	41.39	2.48
1500	14.31	5.32	1.38	1.37	25.40	40.69	2.45
1600	14.25	5.21	1.39	1.42	25.32	40.49	2.46
1700	14.22	5.03	1.30	1.38	25.20	40.11	2.45
1800	14.20	4.81	1.15	1.30	25.50	40.04	2.54
1900	14.12	4.73	1.05	1.30	25.46	39.62	2.61
2000	13.91	4.88	1.27	1.48	25.23	38.99	2.72
2050	13.77	5.03	1.38	1.61	25.02	38.56	2.77
2100	13.60	5.22	1.49	1.73	24.80	38.30	2.78
2150	13.43	5.41	1.56	1.82	24.42	37.74	3.01
2200	13.27	5.60	1.59	1.88	24.03	37.47	2.88
2250	13.11	5.76	1.56	1.88	23.87	37.10	2.95
2300	12.98	5.88	1.49	1.83	23.71	36.93	3.00
2350	12.80	6.08	1.37	1.74	23.36	36.22	3.07
2400	12.60	6.32	1.23	1.64	23.01	35.66	3.27

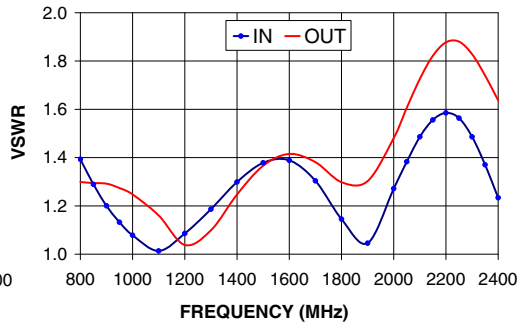
ZX60-2411BM-S+
GAIN



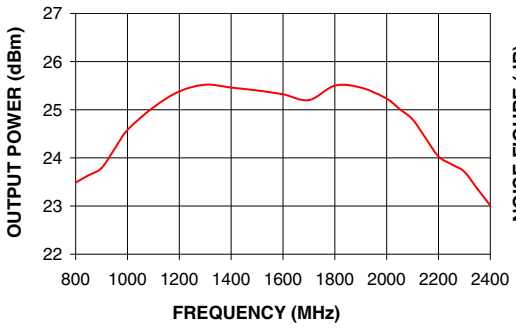
ZX60-2411BM-S+
DIRECTIVITY



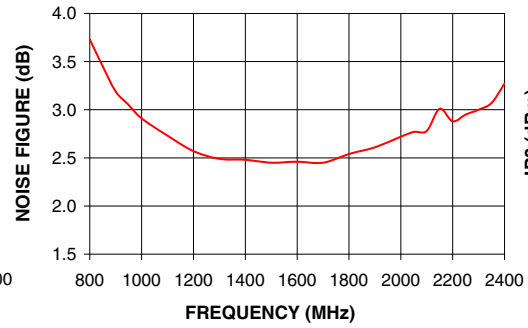
ZX60-2411BM-S+
VSWR



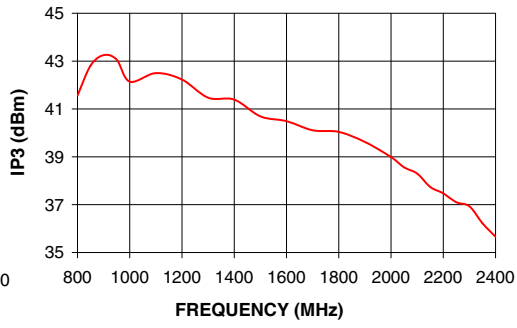
ZX60-2411BM-S+
OUTPUT POWER AT 1dB COMPRESSION



ZX60-2411BM-S+
NOISE FIGURE



ZX60-2411BM-S+
IP3



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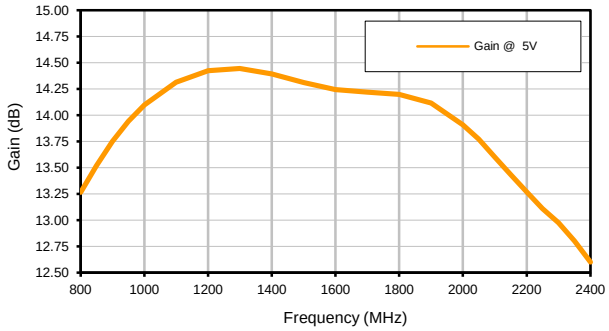
Amplifier ZX60-2411BM-S+

Typical Performance Data

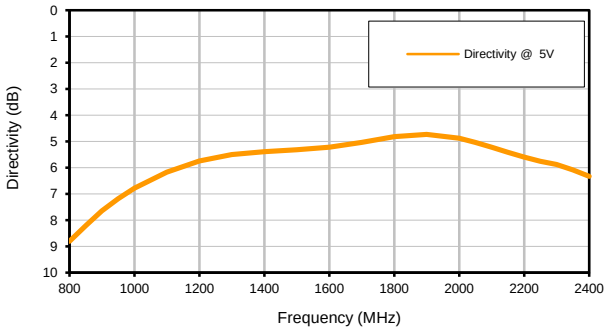
FREQUENCY (MHz)	GAIN (dB) 5V	DIRECTIVITY (dB) 5V	VSWR IN (:1) 5V	VSWR OUT (:1) 5V	Output IP3 (dBm) 5V	NOISE FIGURE (dB) 5V	Pout at 1dB Comp. (dBm) 5V
800	13.27	8.80	1.39	1.30	41.56	3.73	23.49
850	13.52	8.21	1.29	1.29	42.81	3.45	23.64
900	13.75	7.65	1.20	1.29	43.25	3.19	23.79
950	13.94	7.18	1.13	1.27	43.06	3.05	24.19
1000	14.10	6.78	1.08	1.25	42.14	2.91	24.58
1100	14.32	6.17	1.01	1.16	42.50	2.73	25.05
1200	14.43	5.74	1.09	1.04	42.23	2.57	25.38
1300	14.45	5.50	1.19	1.10	41.47	2.49	25.52
1400	14.39	5.39	1.30	1.25	41.39	2.48	25.46
1500	14.31	5.32	1.38	1.37	40.69	2.45	25.40
1600	14.25	5.21	1.39	1.42	40.49	2.46	25.32
1700	14.22	5.03	1.30	1.38	40.11	2.45	25.20
1800	14.20	4.81	1.15	1.30	40.04	2.54	25.50
1900	14.12	4.73	1.05	1.30	39.62	2.61	25.46
2000	13.91	4.88	1.27	1.48	38.99	2.72	25.23
2050	13.77	5.03	1.38	1.61	38.56	2.77	25.02
2100	13.60	5.22	1.49	1.73	38.30	2.78	24.80
2150	13.43	5.41	1.56	1.82	37.74	3.01	24.42
2200	13.27	5.60	1.59	1.88	37.47	2.88	24.03
2250	13.11	5.76	1.56	1.88	37.10	2.95	23.87
2300	12.98	5.88	1.49	1.83	36.93	3.00	23.71
2350	12.80	6.08	1.37	1.74	36.22	3.07	23.36
2400	12.60	6.32	1.23	1.64	35.66	3.27	23.01

Typical Performance Curves

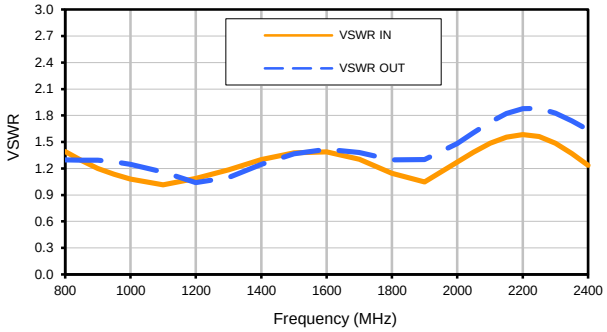
Gain



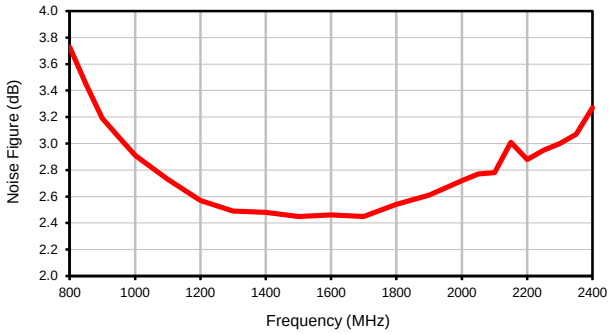
Directivity



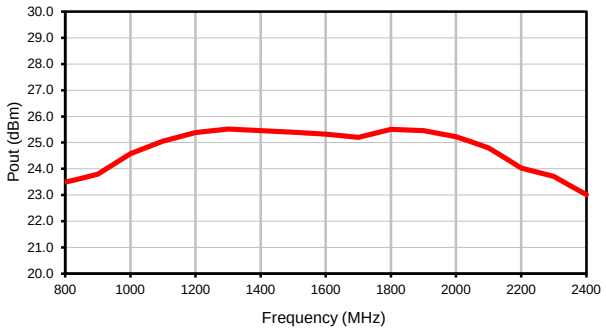
VSWR @ 5V



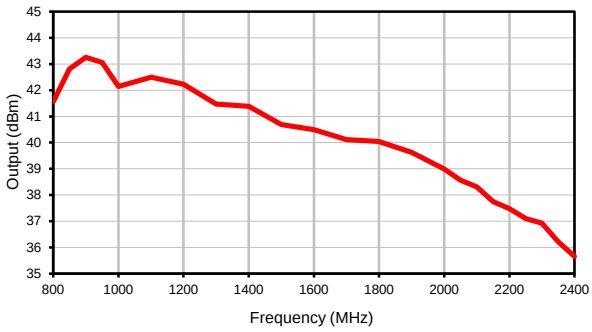
Noise Figure @ 5V



Pout at 1dB Compression @ 5V



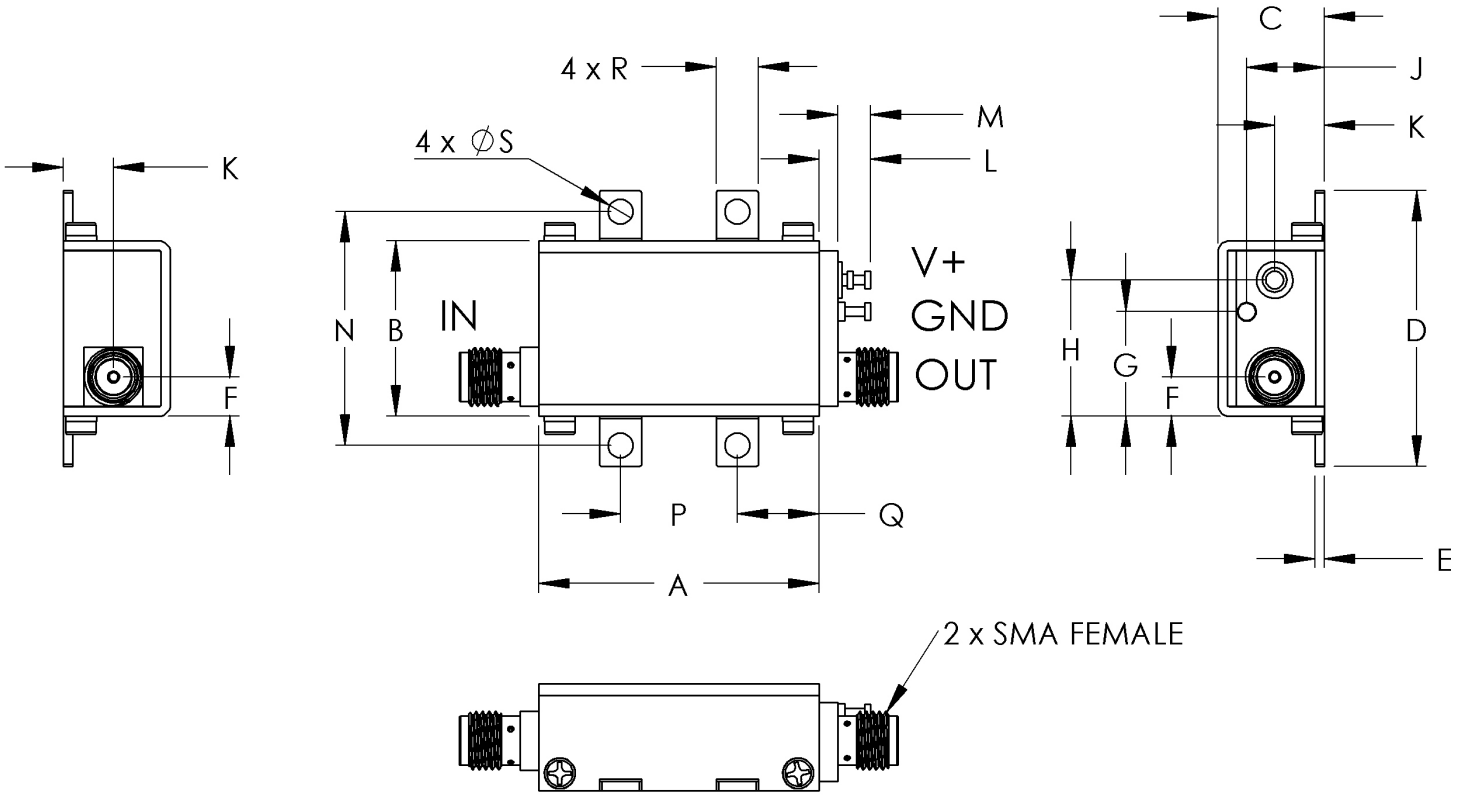
Output IP3 @ 5V



Case Style GA

Outline Dimensions

GA955



CASE #.	A	B	C	D	E	F	G	H	J	K	L	M	N
GA955	1.20 (30.48)	.75 (19.05)	.46 (11.61)	1.18 (29.97)	.04 (1.02)	.17 (4.27)	.45 (11.35)	.58 (14.81)	.33 (8.46)	.21 (5.44)	.22 (5.59)	.14 (3.56)	1.000 (25.4)

CASE #.	P	Q	R	S	WT GRAMS
GA955	.500 (12.70)	.35 (8.89)	.18 (4.57)	.106 (2.69)	35.0

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 **ENV23T12**

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 50° C Ambient Environment	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) 160 hours at 85° C Case	MIL-STD-202, Method 108
Thermal Shock	-55° to 100°C, 5 cycles	MIL-STD-202, Method 107, Condition A, except 100°C