Coaxial

Amplifier

ZX60-2514MA+

50Ω High Isolation 0.5 to 2.5 GHz

CASE STYLE: GC957

Connectors	Model
SMA	ZX60-2514M-S+

+RoHS Compliant

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

Features

- from 2.8V to 5V operation
- wide bandwidth, 0.5 to 2.5 GHz
- high active directivity
- output power, up to19 dBm typ.
- protected by US patent 6,790,049

Applications

- buffer amplifier
- LO amplifiers for mixers
- cellular
- PCN

Electrical Specifications T_{AMB}=25°C

MODEL NO.	FREQ. (GHz)		DC VOLTS (V)	GAIN, dB Typical over frequency, GHz						MAXIMUM POWER (dBm) Output (1 dB Comp.) Typ.		DYNAMIC RANGE NF (dB) Typ.	DYNAMIC RANGE IP3 (dBm) Typ.		VSWR* (:1) Typ.		ACTIVE DIRECTIVITY (dB) (Isolation-Gain) Typ.		DC OPERATING CURRENT @ Pin V+ (mA)	
	f_L	f_U		0.5	1.0	1.5	2.0	2.5	Min. at 2 GHz	f_L	f_U	at 1 GHz	at 1 GHz	at 2 GHz	In	Out	f_L	f_U	Typ	Max.
ZX60-2514MA+	0.5	2.5	5.0	16.2	17.9	18.1	17.8	16.8	15.0	19.0	17.0	4.3	31.0	29.0	1.4	1.4	32	19	75	94
			2.8	14.6	15.7	15.6	15.0	14.1	—	11.0	12.0	4.5	23.5	23.5	1.4	1.5	35	20	71	—

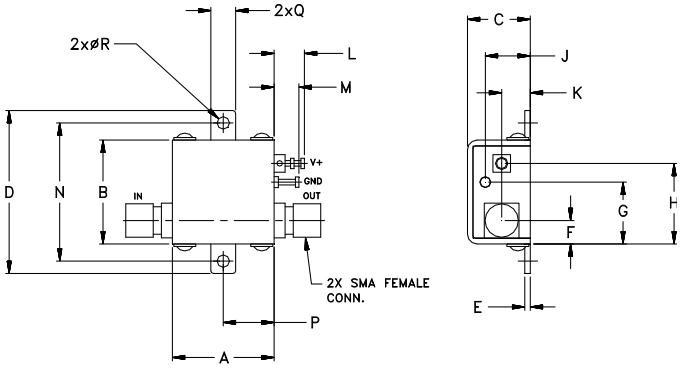
* at 1100-2500 MHz

Maximum Ratings

Operating Temperature	-40°C to 85°C case
Storage Temperature	-55°C to 100°C
DC Voltage	7V
Input Power (No damage)	13 dBm (continuous operation)
	24 dBm (5 minutes max.)
Power Dissipation	500mW

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

Outline Drawing



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

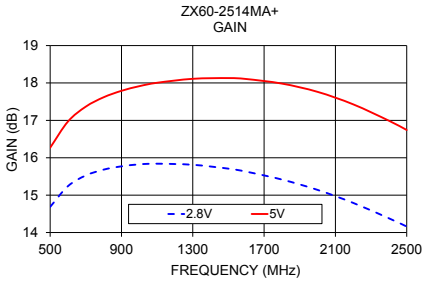
Outline Dimensions (inch / mm)

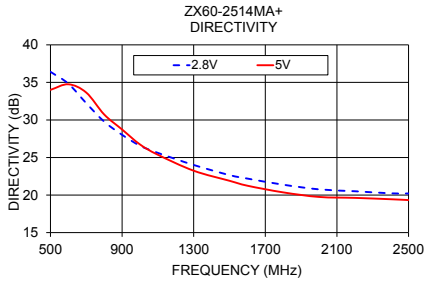
A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	wt
.74	.75	.46	1.18	.04	.17	.45	.59	.33	.21	.22	.18	1.00	.37	.18	.106	grams
18.80	19.05	11.68	29.97	1.02	4.32	11.43	14.99	8.38	5.33	5.59	4.57	25.40	9.40	4.57	2.69	23.0

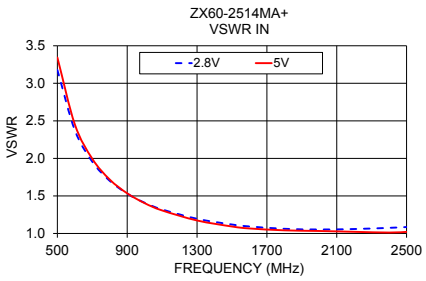
Notes

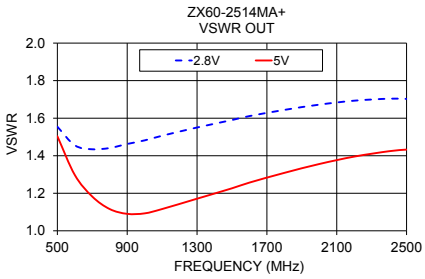
A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's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

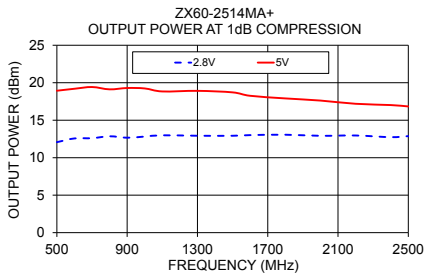
FREQUENCY (MHz)	GAIN (dB)		DIRECTIVITY (dB)		VSWR IN (:1)		VSWR OUT (:1)		POUT at 1 dB COMPR. (dBm)		NOISE FIGURE (dB)	
	2.8V	5V	2.8V	5V	2.8V	5V	2.8V	5V	2.8V	5V	2.8V	5V
500	14.69	16.27	36.41	34.01	3.18	3.34	1.55	1.50	12.07	18.93	4.95	4.87
600	15.24	16.97	34.83	34.75	2.38	2.45	1.46	1.30	12.57	19.20	4.74	4.60
700	15.53	17.37	32.23	33.64	1.96	1.99	1.43	1.18	12.60	19.43	4.62	4.53
800	15.68	17.62	29.78	30.73	1.70	1.72	1.44	1.12	12.86	19.12	4.52	4.42
900	15.77	17.79	28.02	28.73	1.53	1.53	1.46	1.09	12.66	19.29	4.48	4.39
1000	15.82	17.91	26.58	26.74	1.41	1.40	1.48	1.09	12.82	19.24	4.56	4.42
1100	15.84	18.01	25.61	25.37	1.32	1.31	1.51	1.12	12.99	18.84	4.44	4.34
1300	15.81	18.11	24.00	23.24	1.20	1.17	1.55	1.17	12.93	18.92	4.50	4.38
1500	15.71	18.13	22.66	21.90	1.12	1.09	1.59	1.23	12.93	18.71	4.46	4.37
1600	15.63	18.11	22.19	21.24	1.09	1.07	1.61	1.26	13.01	18.26	4.45	4.34
1800	15.42	17.98	21.38	20.35	1.06	1.04	1.64	1.31	13.06	17.91	4.47	4.38
2000	15.14	17.76	20.76	19.75	1.05	1.03	1.67	1.36	12.92	17.62	4.45	4.30
2200	14.79	17.43	20.51	19.62	1.06	1.02	1.69	1.40	12.96	17.19	4.44	4.27
2400	14.38	16.99	20.23	19.44	1.07	1.01	1.70	1.42	12.74	17.02	4.49	4.35
2500	14.16	16.74	20.21	19.33	1.09	1.02	1.70	1.43	12.87	16.84	4.53	4.38

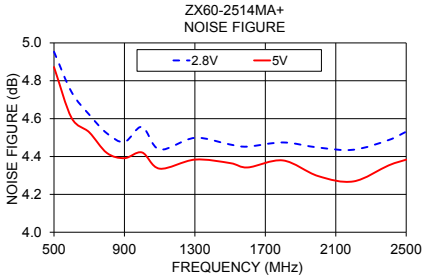












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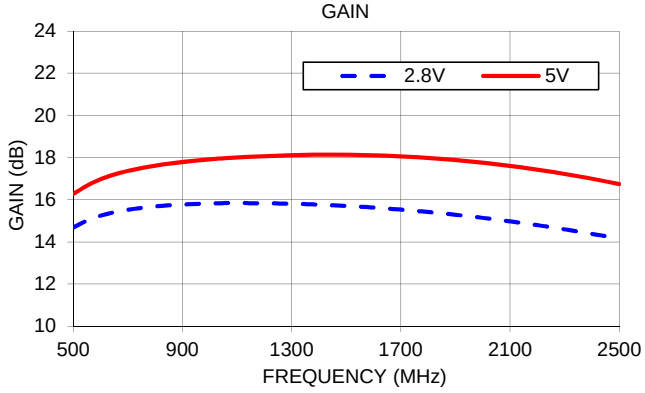
Typical Performance Data

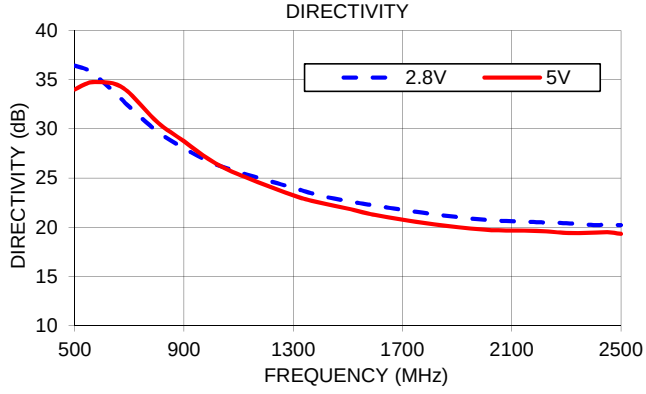
FREQ. (MHz)	GAIN (dB)		DIRECTIVITY (dB)		VSWR IN (:1)		VSWR OUT (:1)		POWER OUT @ 1dB COMPRESSION (dBm)		IP3 (dBm)		NF (dB)	
	2.8V	5V	2.8V	5V	2.8V	5V	2.8V	5V	2.8V	5V	2.8V	5V	2.8V	5V
500	14.69	16.27	36.41	34.01	3.18	3.34	1.55	1.50	12.07	18.93	23.85	31.12	4.95	4.87
550	15.01	16.67	35.94	34.67	2.71	2.81	1.49	1.39	12.26	19.37	23.77	31.27	4.85	4.76
600	15.24	16.97	34.83	34.75	2.38	2.45	1.46	1.30	12.57	19.20	24.04	31.29	4.74	4.60
650	15.41	17.19	33.59	34.53	2.14	2.19	1.44	1.23	12.67	19.22	24.12	31.27	4.70	4.61
700	15.53	17.37	32.23	33.64	1.96	1.99	1.43	1.18	12.60	19.43	23.90	31.48	4.62	4.53
800	15.68	17.62	29.78	30.73	1.70	1.72	1.44	1.12	12.86	19.12	24.29	31.21	4.52	4.42
900	15.77	17.79	28.02	28.73	1.53	1.53	1.46	1.09	12.66	19.29	23.80	31.00	4.48	4.39
1000	15.82	17.91	26.58	26.74	1.41	1.40	1.48	1.09	12.82	19.24	24.03	30.91	4.56	4.42
1100	15.84	18.01	25.61	25.37	1.32	1.31	1.51	1.12	12.99	18.84	24.29	30.57	4.44	4.34
1300	15.81	18.11	24.00	23.24	1.20	1.17	1.55	1.17	12.93	18.92	24.00	30.30	4.50	4.38
1400	15.77	18.13	23.21	22.48	1.15	1.13	1.57	1.20	12.98	18.63	23.99	29.98	4.50	4.38
1500	15.71	18.13	22.66	21.90	1.12	1.09	1.59	1.23	12.93	18.71	23.68	29.79	4.46	4.37
1600	15.63	18.11	22.19	21.24	1.09	1.07	1.61	1.26	13.01	18.26	24.04	29.60	4.45	4.34
1800	15.42	17.98	21.38	20.35	1.06	1.04	1.64	1.31	13.06	17.91	23.95	29.09	4.47	4.38
2000	15.14	17.76	20.76	19.75	1.05	1.03	1.67	1.36	12.92	17.62	23.78	28.74	4.45	4.30
2200	14.79	17.43	20.51	19.62	1.06	1.02	1.69	1.40	12.96	17.19	23.53	28.02	4.44	4.27
2300	14.59	17.22	20.41	19.43	1.07	1.01	1.70	1.41	12.98	17.03	23.60	27.95	4.50	4.38
2400	14.38	16.99	20.23	19.44	1.07	1.01	1.70	1.42	12.74	17.02	23.32	27.82	4.49	4.35
2450	14.27	16.87	20.26	19.50	1.08	1.02	1.71	1.43	12.95	16.85	23.46	27.69	4.46	4.33
2500	14.16	16.74	20.21	19.33	1.09	1.02	1.70	1.43	12.87	16.84	23.56	27.86	4.53	4.38

Typical Performance Curves

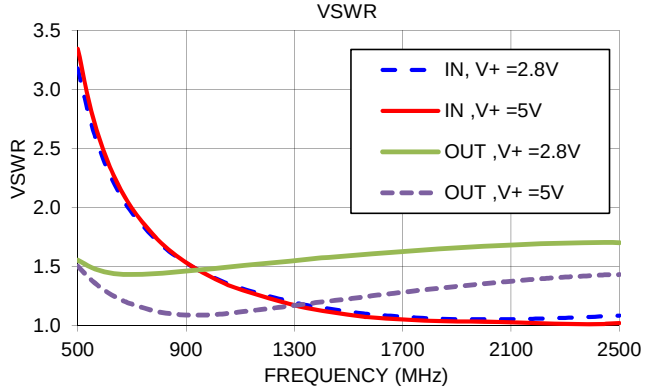
ZX60-2514MA+
GAIN



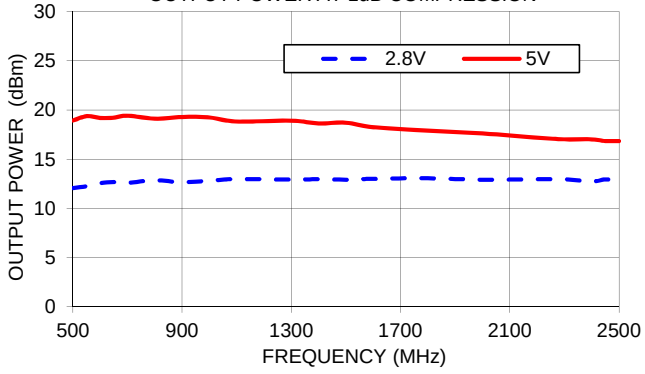
ZX60-2514MA+
DIRECTIVITY



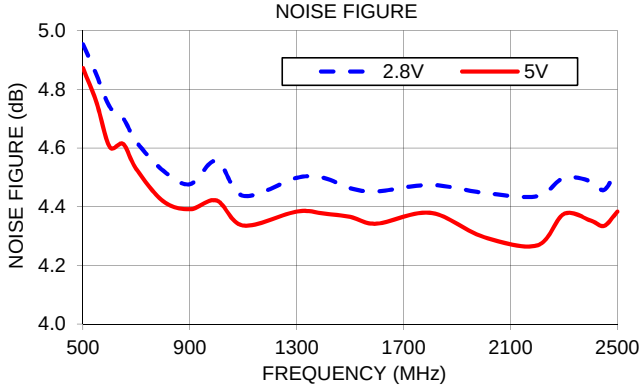
ZX60-2514MA+
VSWR



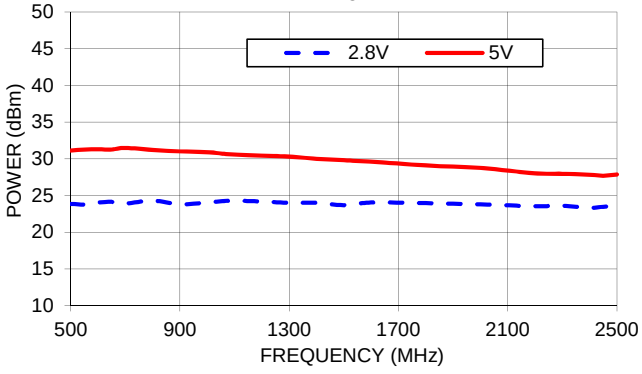
ZX60-2514MA+
OUTPUT POWER AT 1dB COMPRESSION



ZX60-2514MA+
NOISE FIGURE



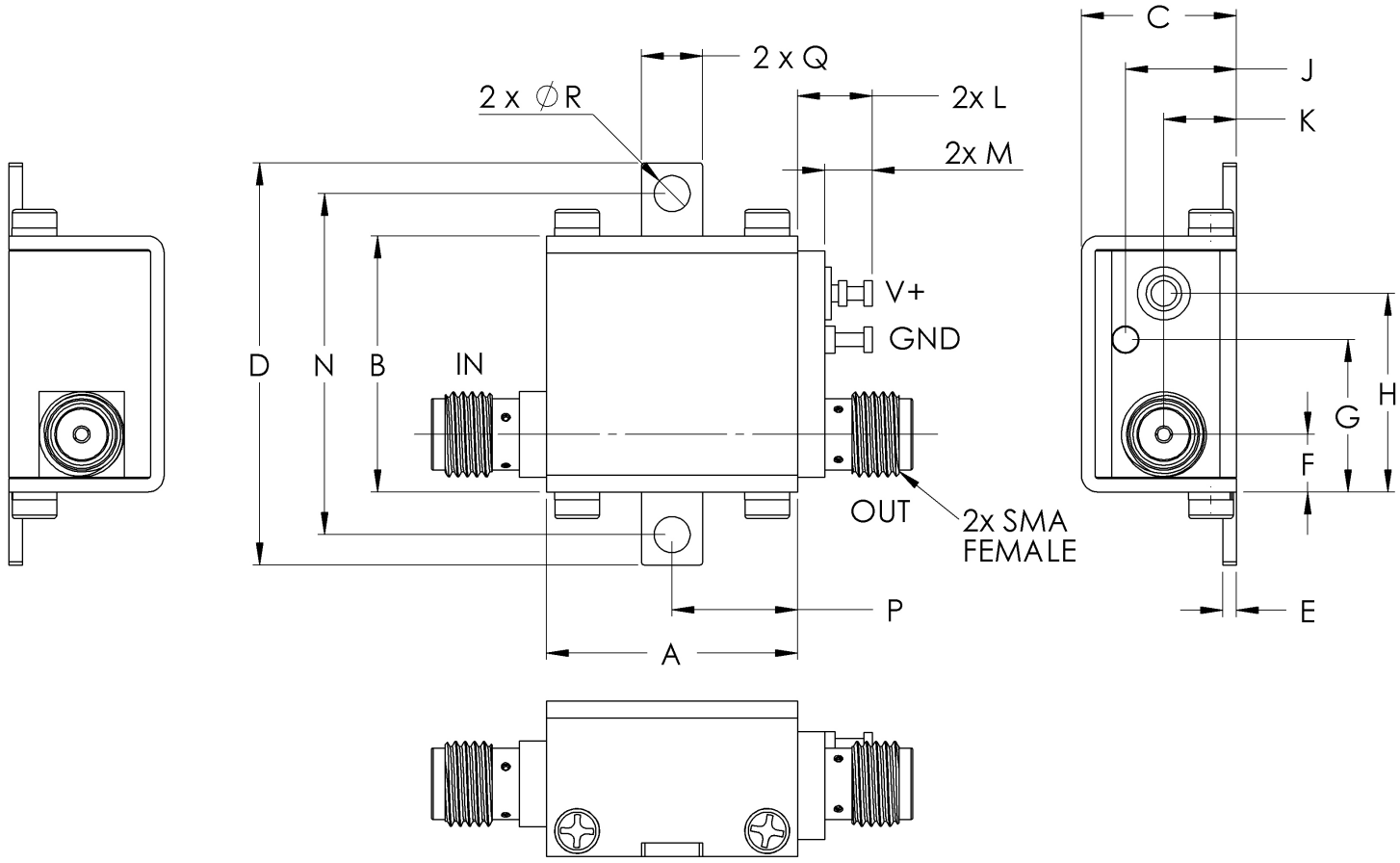
ZX60-2514MA+
IP3



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 ENV23T10

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 85° 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	MIL-STD-202, Method 108
Thermal Shock	-55° to 100°C, 5 cycles	MIL-STD-202, Method 107, Condition A, except 100°C