

# Amplifier

## ZX60-4016E-S+

50Ω 20 MHz to 4 GHz

### Features

- Wide bandwidth, 20 MHz to 4 GHz
- Low noise figure, 3.9 dB typ.
- Output power up to 17.4 dBm typ.
- Protected by US patent 6,790,049

### Applications

- Cellular
- PCS
- Communication receivers & transmitters
- Lab
- Instrumentation
- Test equipment



CASE STYLE: GC957

Connectors	Model
SMA	ZX60-4016E-S+

### +RoHS Compliant

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

### Electrical Specifications at T<sub>AMB</sub> = 25°C

MODEL NO.	FREQ. (GHz) f <sub>L</sub> - f <sub>U</sub>	DC VOLTAGE @ Pin V+ (V)	GAIN over frequency in GHz Typ (dB)					MAXIMUM POWER (dBm) Output (1 dB Comp.) Typ. f <sub>L</sub> f <sub>U</sub>		DYNAMIC RANGE NF (dB) IP3 (dBm) Typ. Typ.		VSWR (:1) Typ.				ACTIVE DIRECTIVITY (dB) Isolation-Gain Typ.	DC OPERATING CURRENT @ Pin V+ (mA) Typ. Max.		
			0.1	1.0	2.0	3.0	4.0	Min.at 2 GHz	f <sub>L</sub> -3 GHz	3-f <sub>U</sub> GHz	f <sub>L</sub> -3 GHz	3-f <sub>U</sub> GHz	In	Out	f <sub>L</sub> -3 GHz		3-f <sub>U</sub> GHz		
ZX60-4016E-S+	0.02 - 4	12.0	20.1	19.5	18.2	16.5	14.9	15.7	17.4	14.5	3.9	30.0	1.25	1.3	1.3	1.2	3-6	64	75

### Maximum Ratings

Operating Temperature -45°C to 80°C case

Storage Temperature -55°C to 100°C

DC Voltage 12.5 V

Input Power(no Damage) 13 dBm

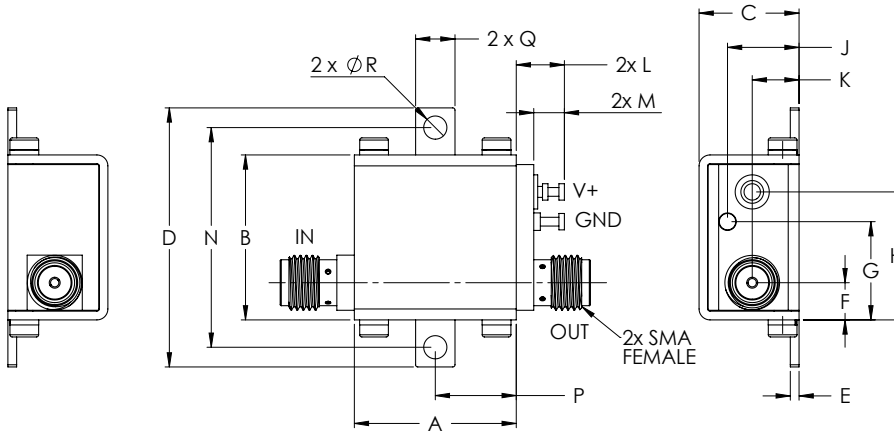
Power 950 mW

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

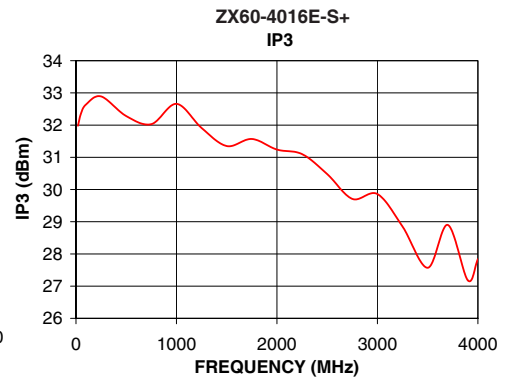
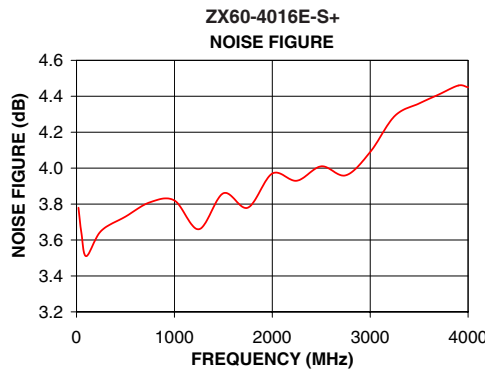
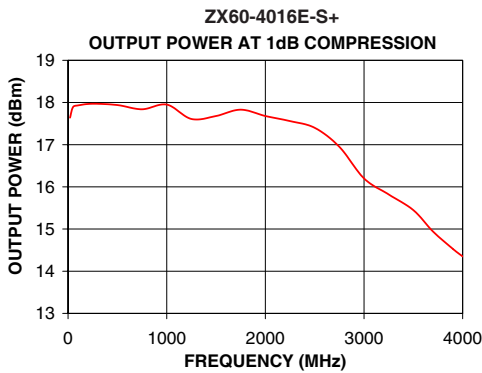
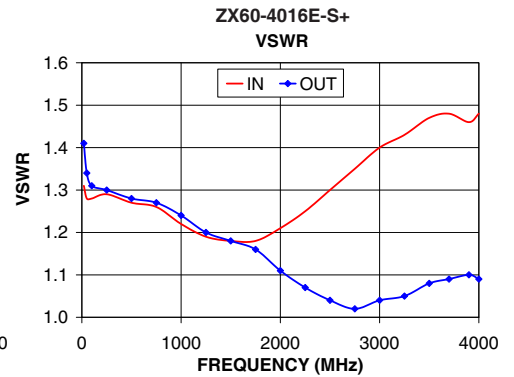
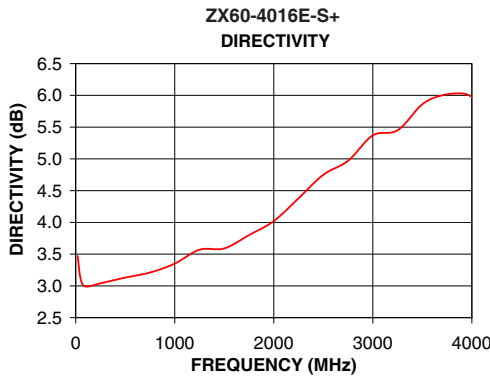
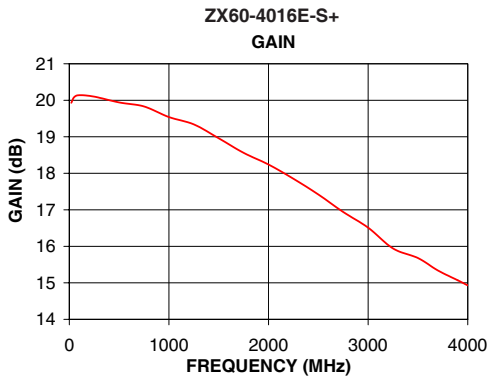
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# Typical Performance Data & Curves at 25°C

# ZX60-4016E-S+

FREQUENCY (MHz)	GAIN (dB)	DIRECTIVITY (dB)	VSWR IN (:1)	VSWR OUT (:1)	POWER OUT @1dB COMPRESSION (dBm)	IP3 (dBm)	NF (dB)
20	19.93	3.47	1.31	1.41	17.64	31.98	3.78
50	20.09	3.11	1.28	1.34	17.89	32.36	3.64
100	20.14	2.99	1.28	1.31	17.93	32.64	3.51
250	20.10	3.04	1.29	1.30	17.97	32.89	3.65
500	19.94	3.13	1.27	1.28	17.94	32.28	3.73
750	19.83	3.21	1.26	1.27	17.84	32.03	3.81
1000	19.54	3.35	1.22	1.24	17.95	32.66	3.82
1250	19.34	3.57	1.19	1.20	17.61	31.91	3.66
1500	18.96	3.59	1.18	1.18	17.68	31.35	3.86
1750	18.56	3.80	1.18	1.16	17.83	31.57	3.78
2000	18.24	4.02	1.21	1.11	17.68	31.24	3.97
2250	17.85	4.38	1.25	1.07	17.56	31.10	3.93
2500	17.42	4.75	1.30	1.04	17.40	30.48	4.01
2750	16.94	4.97	1.35	1.02	16.95	29.71	3.96
3000	16.51	5.37	1.40	1.04	16.20	29.86	4.09
3250	15.94	5.45	1.43	1.05	15.82	28.85	4.29
3500	15.68	5.86	1.47	1.08	15.45	27.57	4.36
3700	15.34	6.00	1.48	1.09	14.94	28.90	4.41
3900	15.07	6.03	1.46	1.10	14.53	27.18	4.46
4000	14.93	5.98	1.48	1.09	14.35	27.84	4.45



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# Amplifier

# ZX60-4016E-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
20	19.93	3.47	1.31	1.41	31.98	3.78	17.64
50	20.09	3.11	1.28	1.34	32.36	3.64	17.89
100	20.14	2.99	1.28	1.31	32.64	3.51	17.93
250	20.10	3.04	1.29	1.30	32.89	3.65	17.97
500	19.94	3.13	1.27	1.28	32.28	3.73	17.94
750	19.83	3.21	1.26	1.27	32.03	3.81	17.84
1000	19.54	3.35	1.22	1.24	32.66	3.82	17.95
1250	19.34	3.57	1.19	1.20	31.91	3.66	17.61
1500	18.96	3.59	1.18	1.18	31.35	3.86	17.68
1750	18.56	3.80	1.18	1.16	31.57	3.78	17.83
2000	18.24	4.02	1.21	1.11	31.24	3.97	17.68
2250	17.85	4.38	1.25	1.07	31.10	3.93	17.56
2500	17.42	4.75	1.30	1.04	30.48	4.01	17.40
2750	16.94	4.97	1.35	1.02	29.71	3.96	16.95
3000	16.51	5.37	1.40	1.04	29.86	4.09	16.20
3250	15.94	5.45	1.43	1.05	28.85	4.29	15.82
3500	15.68	5.86	1.47	1.08	27.57	4.36	15.45
3700	15.34	6.00	1.48	1.09	28.90	4.41	14.94
3900	15.07	6.03	1.46	1.10	27.18	4.46	14.53
4000	14.93	5.98	1.48	1.09	27.84	4.45	14.35



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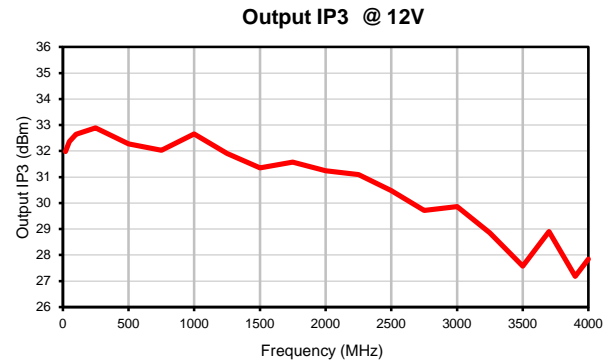
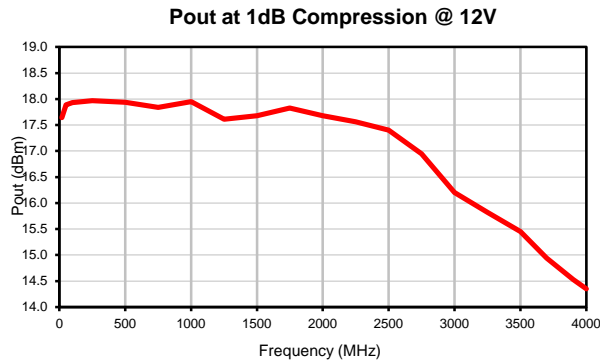
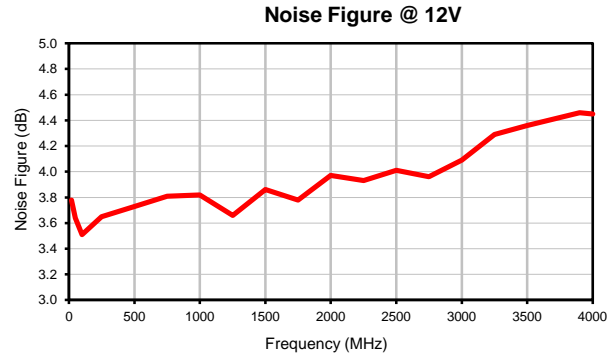
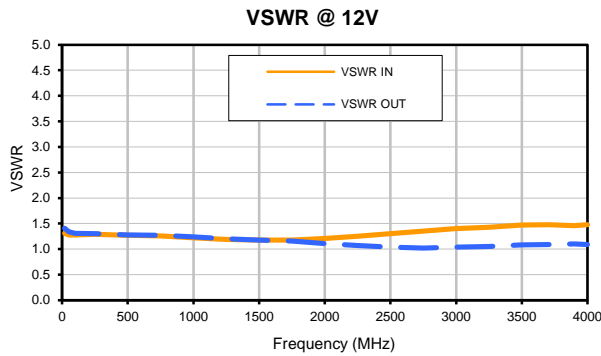
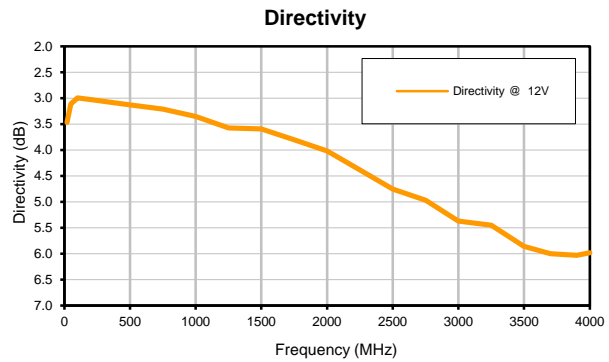
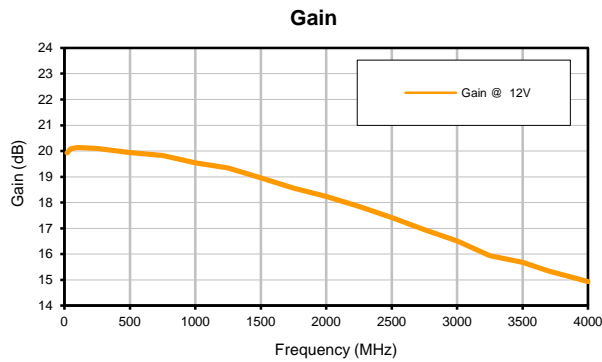
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## Typical Performance Curves



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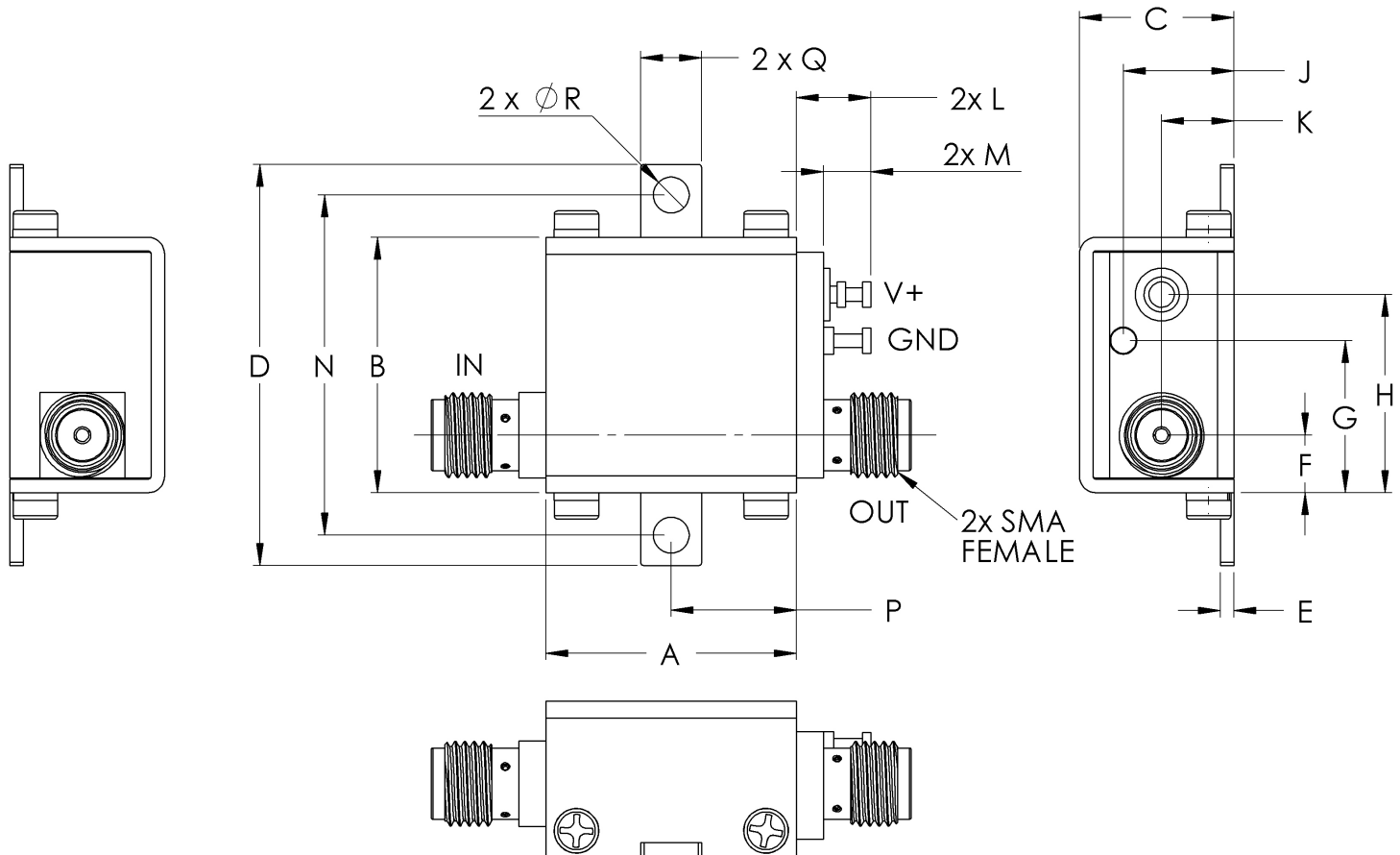
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# Case Style

# 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.  $\pm .03$ ; 3Pl.  $\pm .015$   
Tolerance on hole size and interaxes dimensions to be  $\pm .005$ .

### Note:

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

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Specification	Test/Inspection Condition	Reference/Spec
Operating Temperature	-45° 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	MIL-STD-202, Method 108
Thermal Shock	-55° to 100°C, 5 cycles	MIL-STD-202, Method 107, Condition A, except 100°C