*Coaxial*

# Amplifier

# ZX60-3018G-S+

50Ω 20 MHz to 3 GHz

CASE STYLE: GC957

| Connectors | Model |
|---|---|
| **SMA** | ZX60-3018G-S+ |

***+RoHS Compliant***

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

## Features

- Wide bandwidth, 20 MHz to 3 GHz
- Low noise figure, 2.7 dB typ.
- Output power up to 12.8 dBm typ.
- Protected by US patent 6,790,049

## Applications

- Buffer amplifier
- Cellular
- PCS
- Lab
- Instrumentation
- Test equipment

## Electrical Specifications at $T_{AMB}$ = 25°C

| MODEL NO. | FREQ. (GHz) $f_L$ - $f_U$ | DC VOLTAGE @ Pin V+ (V) | GAIN over frequency in GHz Typ (dB) 0.1 | 1.0 | 2.0 | 3.0 | Min.at 2 GHz | MAXIMUM POWER (dBm) Output (1 dB Comp.) Typ. $f_L$ | $f_U$ | DYNAMIC RANGE NF (dB) Typ. | IP3 (dBm) Typ. | VSWR (:1) Typ. In | Out | ACTIVE DIRECTIVITY (dB) Isolation-Gain Typ. | DC OPERATING CURRENT @ Pin V+ (mA) Typ. | Max. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ZX60-3018G-S+ | 0.02 - 3 | 12.0 | 22.8 | 21.9 | 20.3 | 18.8 | 18.0 | 12.8 | 10.2 | 2.7 | 25.0 | 1.3 | 1.4 | 2-6 | 34 | 45 |

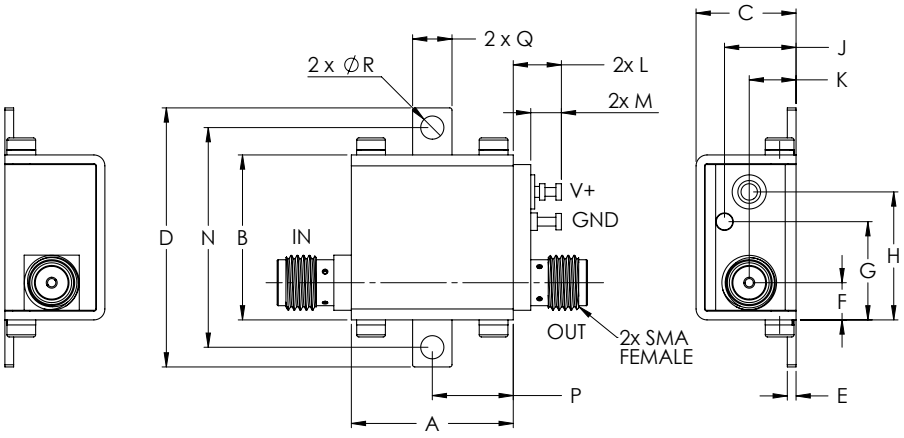
## Maximum Ratings

| | |
|---|---|
| Operating Temperature | -45°C to 85°C case |
| Storage Temperature | -55°C to 100°C |
| DC Voltage | 12.5V |
| Input Power(no Damage) | 13dBm |
| Power | 0.7W |

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.
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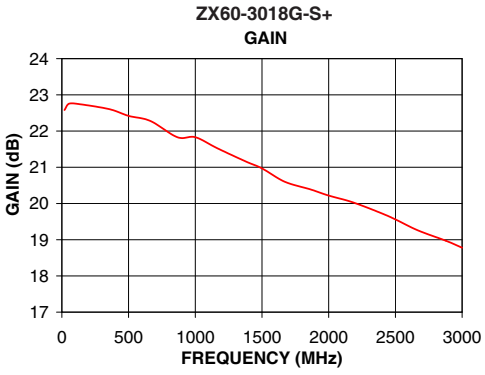
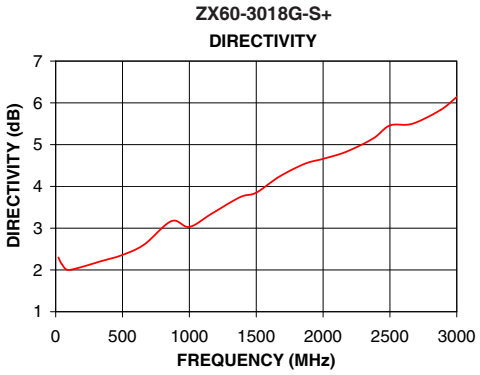
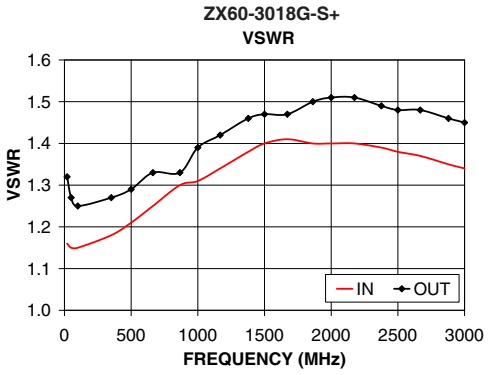
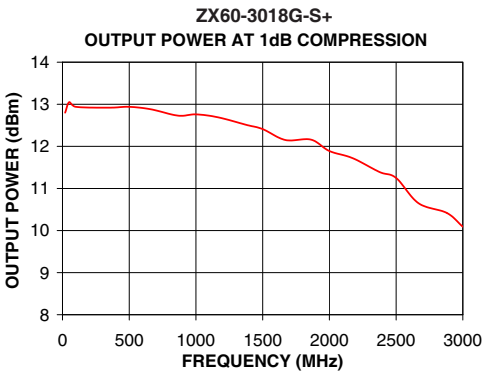
# Typical Performance Data & Curves at 25°C ZX60-3018G-S+

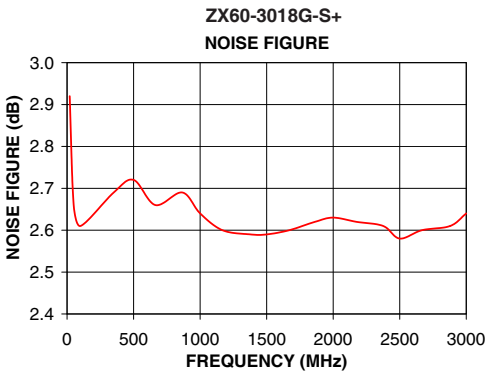
| FREQUENCY (MHz) | GAIN (dB) | DIRECTIVITY (dB) | VSWR IN (:1) | VSWR OUT (:1) | POWER OUT @1dB COMPRESSION (dBm) | IP3 (dBm) | NF (dB) |
|---|---|---|---|---|---|---|---|
| 20 | 22.58 | 2.30 | 1.16 | 1.32 | 12.80 | 25.61 | 2.92 |
| 50 | 22.75 | 2.12 | 1.15 | 1.27 | 13.05 | 25.87 | 2.66 |
| 100 | 22.76 | 2.00 | 1.15 | 1.25 | 12.94 | 25.89 | 2.61 |
| 351 | 22.61 | 2.22 | 1.18 | 1.27 | 12.92 | 25.39 | 2.69 |
| 500 | 22.42 | 2.36 | 1.21 | 1.29 | 12.94 | 25.26 | 2.72 |
| 663 | 22.28 | 2.61 | 1.25 | 1.33 | 12.88 | 25.39 | 2.66 |
| 866 | 21.83 | 3.17 | 1.30 | 1.33 | 12.73 | 25.67 | 2.69 |
| 1000 | 21.83 | 3.03 | 1.31 | 1.39 | 12.76 | 25.66 | 2.64 |
| 1168 | 21.52 | 3.35 | 1.34 | 1.42 | 12.69 | 25.66 | 2.60 |
| 1378 | 21.16 | 3.74 | 1.38 | 1.46 | 12.51 | 25.64 | 2.59 |
| 1500 | 20.97 | 3.85 | 1.40 | 1.47 | 12.41 | 25.45 | 2.59 |
| 1671 | 20.60 | 4.23 | 1.41 | 1.47 | 12.15 | 25.80 | 2.60 |
| 1863 | 20.39 | 4.54 | 1.40 | 1.50 | 12.16 | 25.64 | 2.62 |
| 2000 | 20.22 | 4.66 | 1.40 | 1.51 | 11.89 | 25.08 | 2.63 |
| 2174 | 20.04 | 4.83 | 1.40 | 1.51 | 11.72 | 24.67 | 2.62 |
| 2376 | 19.76 | 5.15 | 1.39 | 1.49 | 11.39 | 23.90 | 2.61 |
| 2500 | 19.56 | 5.46 | 1.38 | 1.48 | 11.25 | 23.54 | 2.58 |
| 2668 | 19.26 | 5.50 | 1.37 | 1.48 | 10.65 | 22.94 | 2.60 |
| 2879 | 18.97 | 5.83 | 1.35 | 1.46 | 10.42 | 22.62 | 2.61 |
| 3000 | 18.78 | 6.14 | 1.34 | 1.45 | 10.09 | 22.36 | 2.64 |

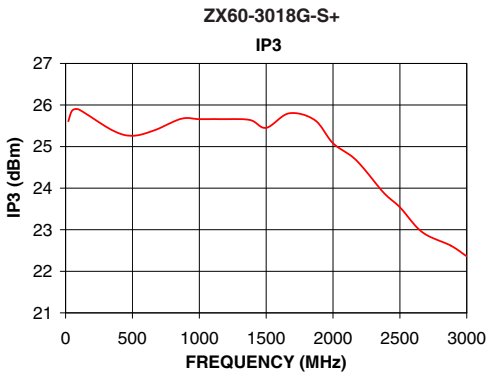
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# Amplifier ZX60-3018G-S+

## *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 | 22.58 | 2.30 | 1.16 | 1.32 | 25.61 | 2.92 | 12.80 |
| 50 | 22.75 | 2.12 | 1.15 | 1.27 | 25.87 | 2.66 | 13.05 |
| 100 | 22.76 | 2.00 | 1.15 | 1.25 | 25.89 | 2.61 | 12.94 |
| 351 | 22.61 | 2.22 | 1.18 | 1.27 | 25.39 | 2.69 | 12.92 |
| 500 | 22.42 | 2.36 | 1.21 | 1.29 | 25.26 | 2.72 | 12.94 |
| 663 | 22.28 | 2.61 | 1.25 | 1.33 | 25.39 | 2.66 | 12.88 |
| 866 | 21.83 | 3.17 | 1.30 | 1.33 | 25.67 | 2.69 | 12.73 |
| 1000 | 21.83 | 3.03 | 1.31 | 1.39 | 25.66 | 2.64 | 12.76 |
| 1168 | 21.52 | 3.35 | 1.34 | 1.42 | 25.66 | 2.60 | 12.69 |
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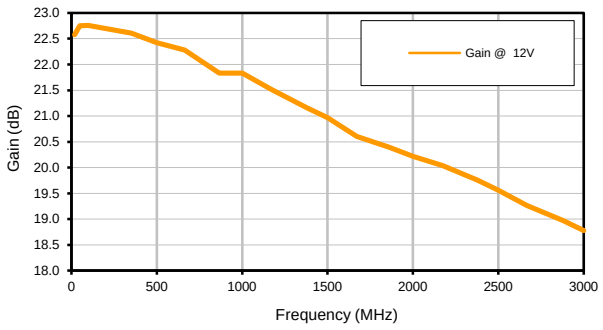
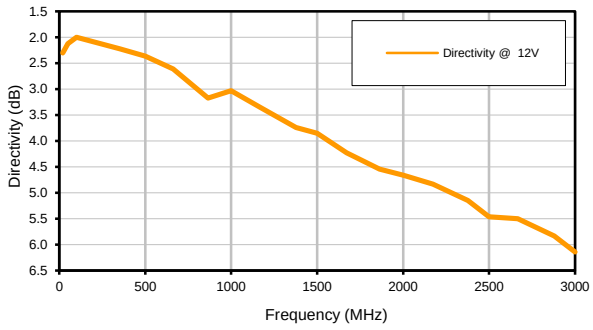
| 2174 | 20.04 | 4.83 | 1.40 | 1.51 | 24.67 | 2.62 | 11.72 |
| 2376 | 19.76 | 5.15 | 1.39 | 1.49 | 23.90 | 2.61 | 11.39 |
| 2500 | 19.56 | 5.46 | 1.38 | 1.48 | 23.54 | 2.58 | 11.25 |
| 2668 | 19.26 | 5.50 | 1.37 | 1.48 | 22.94 | 2.60 | 10.65 |
| 2879 | 18.97 | 5.83 | 1.35 | 1.46 | 22.62 | 2.61 | 10.42 |
| 3000 | 18.78 | 6.14 | 1.34 | 1.45 | 22.36 | 2.64 | 10.09 |

## *Typical Performance Curves*

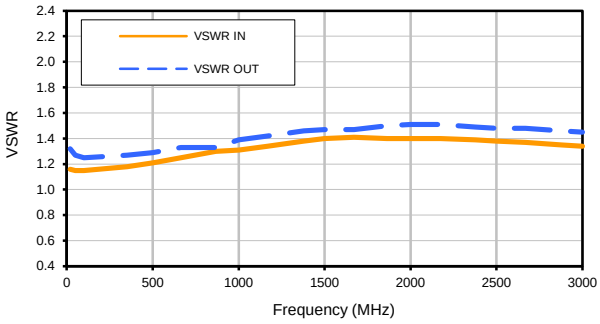
### Gain



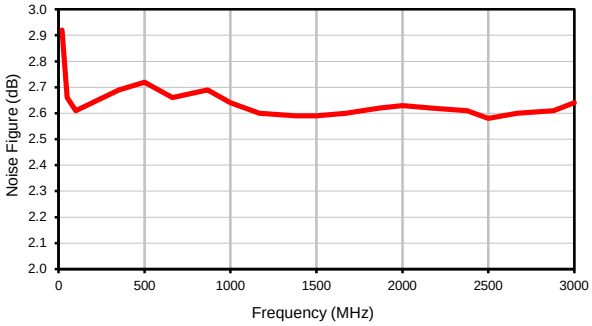

### Directivity



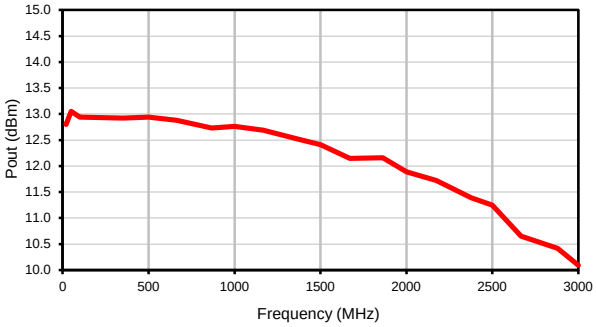

### VSWR @ 12V



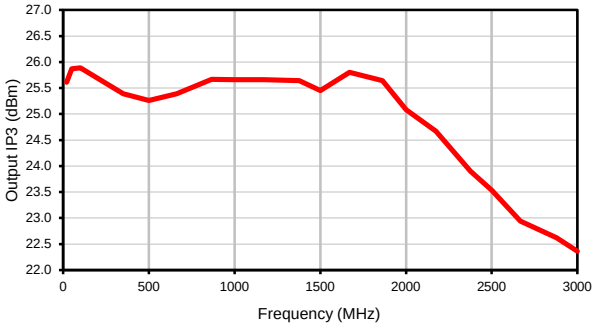

### Noise Figure @ 12V




### Pout at 1dB Compression @ 12V



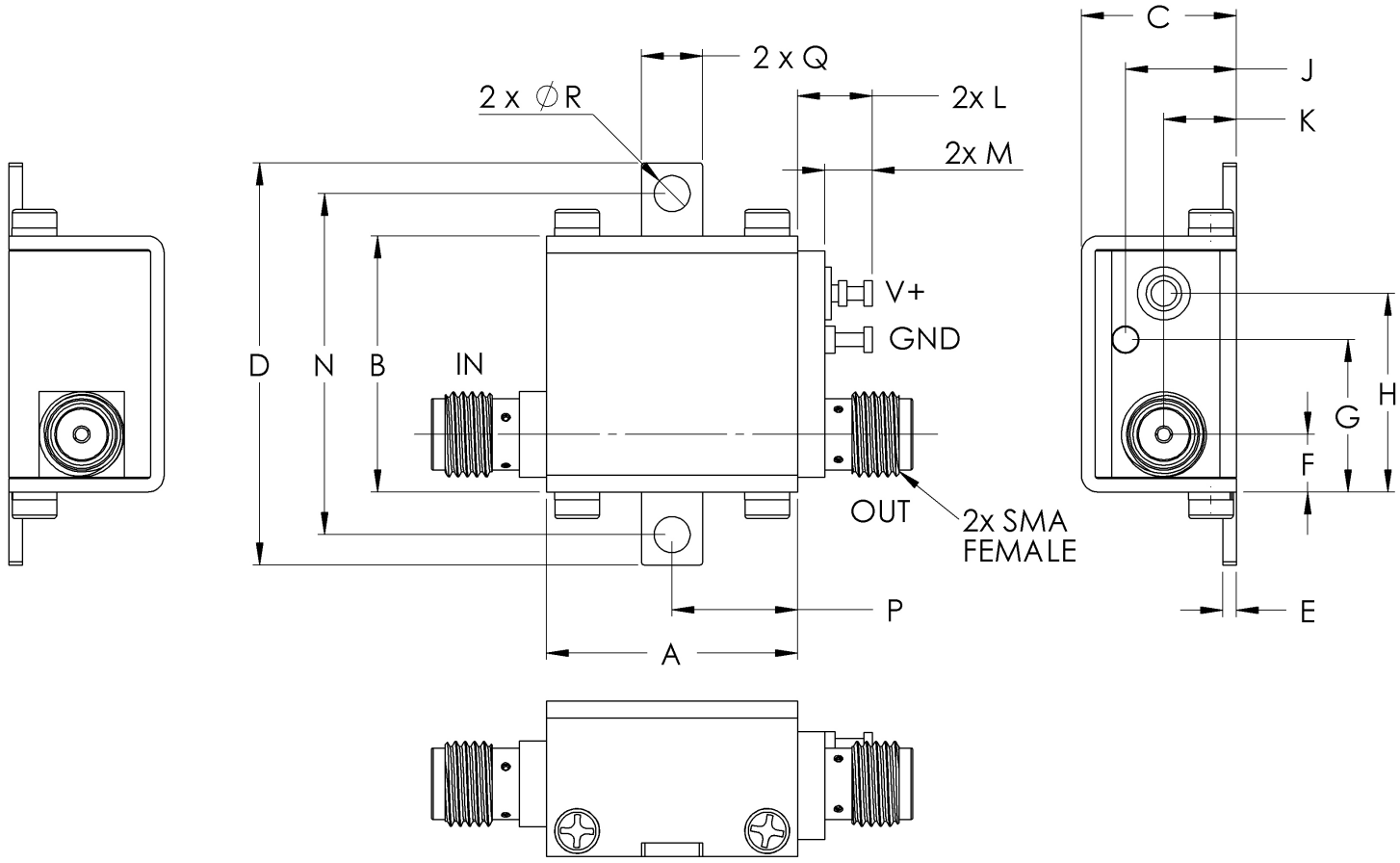

### Output IP3 @ 12V



# 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 ENV23T11

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 | -45° to 85° C<br>Case Temperature | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C<br>Ambient Environment | Individual Model Data Sheet |
| Stabilization Bake | (non-operating)<br>125°C, 24 hours | - - - |
| Burn-in at Elevated Temp. | (DC on)<br>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 |