

# Coaxial Amplifier

## ZFL-1000H+

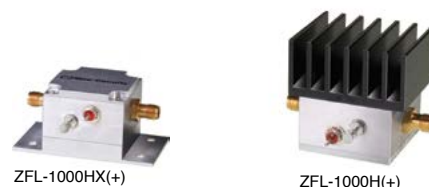
50Ω Medium Power 10 to 1000 MHz

### Features

- wideband, 10 to 1000 MHz
- low noise, 4 dB typ.
- high IP3, +33 dBm typ.
- protected by US Patent, 6,943,629

### Applications

- cellular
- VHF/UHF
- test equipment



CASE STYLE: SS98

Connectors Model

SMA ZFL-1000H+

SMA ZFF-1000HX+

BRACKET (OPTION "B")

### +RoHS Compliant

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

### Amplifier Electrical Specifications

| MODEL NO.   | FREQUENCY (MHz) |       | GAIN (dB) |               | MAXIMUM POWER (dBm)  |                   | DYNAMIC RANGE |                | VSWR (:1) Typ. |     | DC POWER      |                   |
|-------------|-----------------|-------|-----------|---------------|----------------------|-------------------|---------------|----------------|----------------|-----|---------------|-------------------|
|             | $f_L$           | $f_U$ | Min.      | Flatness Max. | Output (1 dB Compr.) | Input (no damage) | NF (dB) Typ.  | IP3 (dBm) Typ. | In             | Out | Volt (V) Nom. | Current (mA) Max. |
| ZFL-1000H+  | 10              | 1000  | 28        | ±1.0          | +20                  | +5                | 4.0           | +33            | 1.4            | 1.4 | 15            | 160               |
| ZFL-1000HX+ | 10              | 1000  | 28        | ±1.0          | +20                  | +5                | 4.0           | +33            | 1.4            | 1.4 | 15            | 160               |

\* Heat sink not included

Open load is not recommended, potentially can cause damage.

With no load derate max input power by 20 dB

To order without heat sink, add suffix X to model number. Alternative heat sinking and heat removal must be provided by the user to limit maximum temperature to 71°C, in order to ensure proper performance. For reference, this requires thermal resistance of user's external heat sink to be 15°C/W Max.

### Maximum Ratings

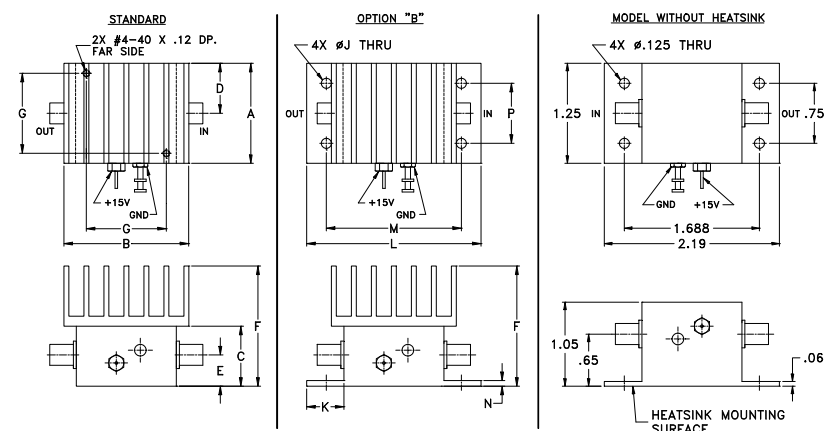
Operating Temperature -20°C to 71°C

Storage Temperature -55°C to 100°C

DC Voltage +17V Max.

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

### Outline Drawing



### Outline Dimensions (inch/mm)

| A     | B     | C     | D     | E    | F     | G     | H  | J    | K     | L     | M     | N    | P     | wt*   |
|-------|-------|-------|-------|------|-------|-------|----|------|-------|-------|-------|------|-------|-------|
| 1.25  | 1.56  | .75   | .63   | .39  | 1.50  | 1.000 | -- | .125 | .46   | 2.19  | 1.688 | .06  | .750  | grams |
| 31.75 | 39.62 | 19.05 | 16.00 | 9.91 | 38.10 | 25.40 | -- | 3.18 | 11.68 | 55.63 | 42.88 | 1.52 | 19.05 |       |

\*70 grams without heat sink

#### 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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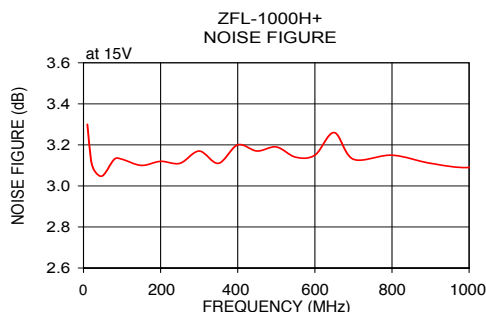
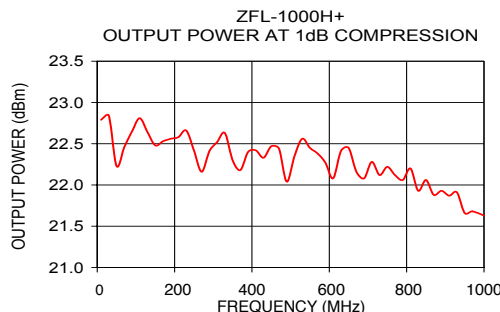
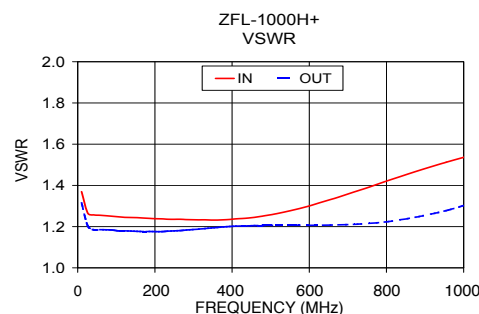
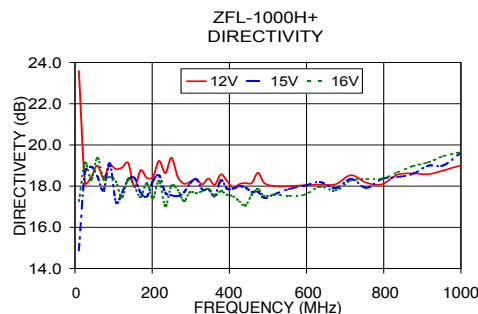
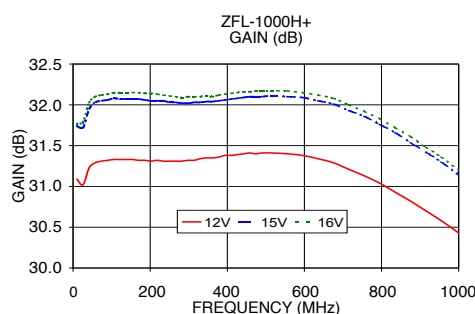


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# Typical Performance Data/Curves

## ZFL-1000H+

| FREQUENCY<br>(MHz) | GAIN<br>(dB) |       |       | DIRECTIVITY<br>(dB) |       |       | VSWR<br>(:1) |      | NOISE<br>FIGURE<br>(dB) | P. OUT<br>at 1dB<br>COMPR.<br>(dBm) |
|--------------------|--------------|-------|-------|---------------------|-------|-------|--------------|------|-------------------------|-------------------------------------|
|                    | 12V          | 15V   | 16V   | 12V                 | 15V   | 16V   | IN           | OUT  |                         |                                     |
| 10.00              | 31.09        | 31.74 | 31.77 | 23.59               | 14.88 | 17.27 | 1.27         | 1.24 | 3.30                    | 22.79                               |
| 30.00              | 30.90        | 31.61 | 31.68 | 18.51               | 17.44 | 18.56 | 1.23         | 1.11 | 3.07                    | 22.84                               |
| 50.00              | 31.28        | 32.00 | 32.07 | 16.61               | 16.37 | 18.07 | 1.23         | 1.15 | 3.05                    | 22.23                               |
| 100.00             | 31.33        | 32.08 | 32.15 | 18.72               | 17.70 | 19.24 | 1.23         | 1.15 | 3.13                    | 22.71                               |
| 150.00             | 31.32        | 32.07 | 32.15 | 18.44               | 18.46 | 17.74 | 1.23         | 1.15 | 3.10                    | 22.48                               |
| 200.00             | 31.31        | 32.05 | 32.14 | 18.23               | 18.78 | 18.41 | 1.24         | 1.16 | 3.12                    | 22.66                               |
| 250.00             | 31.31        | 32.03 | 32.11 | 19.38               | 17.56 | 18.01 | 1.24         | 1.17 | 3.11                    | 22.42                               |
| 300.00             | 31.32        | 32.03 | 32.10 | 18.61               | 18.14 | 18.21 | 1.23         | 1.19 | 3.17                    | 22.48                               |
| 400.00             | 31.38        | 32.06 | 32.13 | 18.43               | 17.88 | 17.36 | 1.23         | 1.21 | 3.20                    | 22.38                               |
| 500.00             | 31.41        | 32.11 | 32.17 | 18.08               | 17.91 | 17.26 | 1.25         | 1.22 | 3.19                    | 22.17                               |
| 600.00             | 31.37        | 32.08 | 32.15 | 18.43               | 17.47 | 17.84 | 1.30         | 1.22 | 3.15                    | 22.17                               |
| 700.00             | 31.24        | 31.96 | 32.02 | 18.14               | 18.28 | 18.33 | 1.36         | 1.24 | 3.13                    | 22.18                               |
| 800.00             | 31.02        | 31.75 | 31.82 | 18.29               | 18.38 | 18.56 | 1.42         | 1.26 | 3.15                    | 22.17                               |
| 900.00             | 30.74        | 31.47 | 31.53 | 18.63               | 18.87 | 18.96 | 1.49         | 1.31 | 3.11                    | 21.97                               |
| 1000.00            | 30.43        | 31.14 | 31.20 | 19.00               | 19.62 | 19.66 | 1.54         | 1.36 | 3.09                    | 21.63                               |



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# Amplifier

# ZFL-1000H+

## Typical Performance Data

| FREQUENCY<br>(MHz) | GAIN<br>(dB) |       |       | DIRECTIVITY<br>(dB) |       |       | VSWR<br>IN<br>(:1)<br>15V | VSWR OUT<br>(:1)<br>15V | NOISE<br>FIGURE<br>(dB)<br>15V | Pout at<br>1dB Comp.<br>(dBm)<br>15V |
|--------------------|--------------|-------|-------|---------------------|-------|-------|---------------------------|-------------------------|--------------------------------|--------------------------------------|
|                    | 12V          | 15V   | 16V   | 12V                 | 15V   | 16V   |                           |                         |                                |                                      |
| 10.0               | 32.70        | 34.40 | 34.71 | 16.10               | 15.30 | 15.40 | 1.21                      | 1.69                    | 4.82                           | 21.35                                |
| 17.2               | 32.46        | 34.18 | 34.49 | 16.40               | 15.40 | 15.60 | 1.22                      | 1.54                    | 4.77                           | 21.44                                |
| 38.8               | 32.18        | 33.91 | 34.21 | 16.30               | 16.60 | 15.50 | 1.22                      | 1.51                    | 4.63                           | 21.13                                |
| 87.6               | 32.17        | 33.88 | 34.20 | 16.80               | 15.80 | 16.30 | 1.21                      | 1.46                    | 4.63                           | 21.14                                |
| 197.6              | 32.28        | 33.94 | 34.24 | 16.40               | 14.90 | 14.80 | 1.18                      | 1.45                    | 4.58                           | 21.07                                |
| 365.4              | 32.49        | 34.04 | 34.32 | 15.40               | 14.80 | 15.60 | 1.08                      | 1.37                    | 4.67                           | 20.84                                |
| 441.5              | 32.61        | 34.13 | 34.40 | 15.50               | 14.10 | 15.30 | 1.07                      | 1.33                    | 4.72                           | 20.57                                |
| 517.7              | 32.69        | 34.21 | 34.46 | 14.40               | 14.80 | 13.90 | 1.08                      | 1.32                    | 4.74                           | 20.37                                |
| 568.5              | 32.68        | 34.20 | 34.45 | 14.10               | 13.70 | 14.30 | 1.09                      | 1.29                    | 4.75                           | 20.24                                |
| 619.2              | 32.75        | 34.24 | 34.50 | 14.20               | 13.30 | 13.50 | 1.11                      | 1.28                    | 4.74                           | 20.38                                |
| 695.4              | 32.79        | 34.27 | 34.52 | 13.90               | 14.20 | 13.00 | 1.12                      | 1.28                    | 4.75                           | 20.63                                |
| 771.5              | 32.88        | 34.30 | 34.50 | 13.30               | 11.90 | 12.70 | 1.11                      | 1.34                    | 4.79                           | 20.95                                |
| 847.7              | 33.02        | 34.35 | 34.58 | 12.50               | 11.90 | 12.90 | 1.10                      | 1.41                    | 4.81                           | 21.49                                |
| 923.8              | 33.21        | 34.43 | 34.63 | 11.50               | 11.50 | 11.70 | 1.15                      | 1.47                    | 4.85                           | 21.95                                |
| 1000.0             | 33.21        | 34.36 | 34.52 | 11.10               | 11.70 | 11.30 | 1.34                      | 1.65                    | 4.90                           | 22.42                                |

REV. X1  
ZFL-1000H+  
060913  
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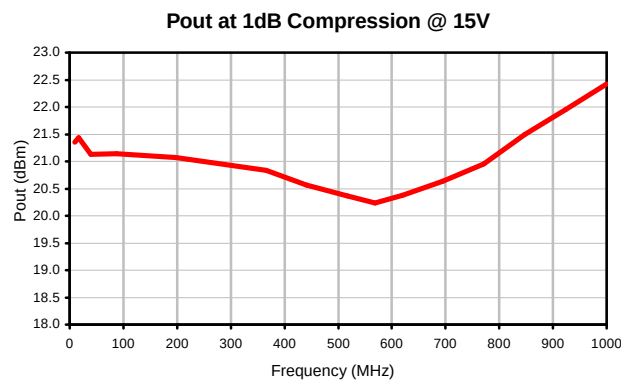
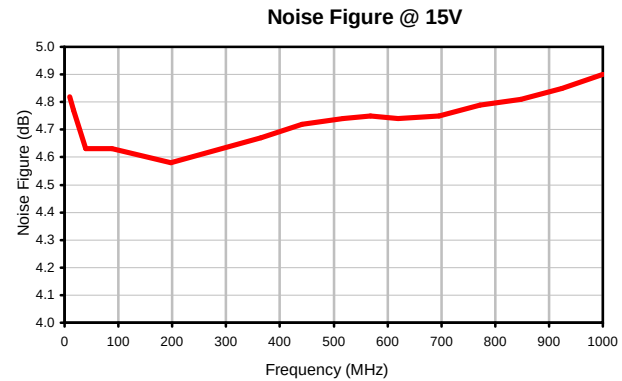
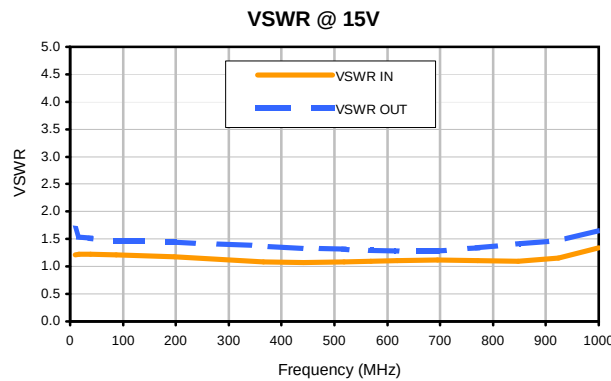
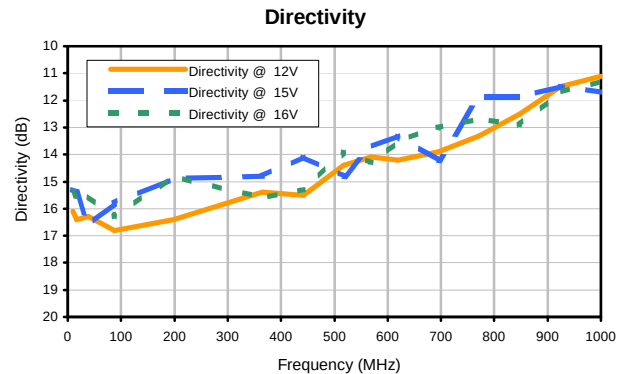
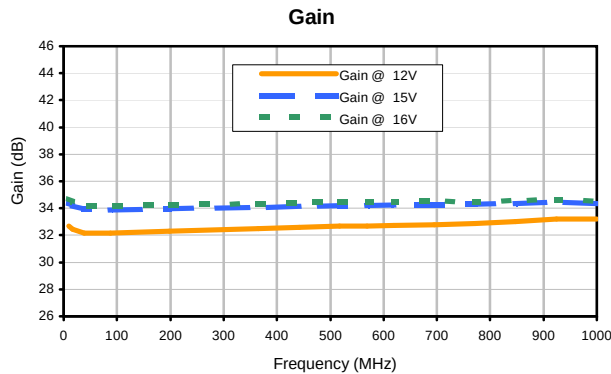
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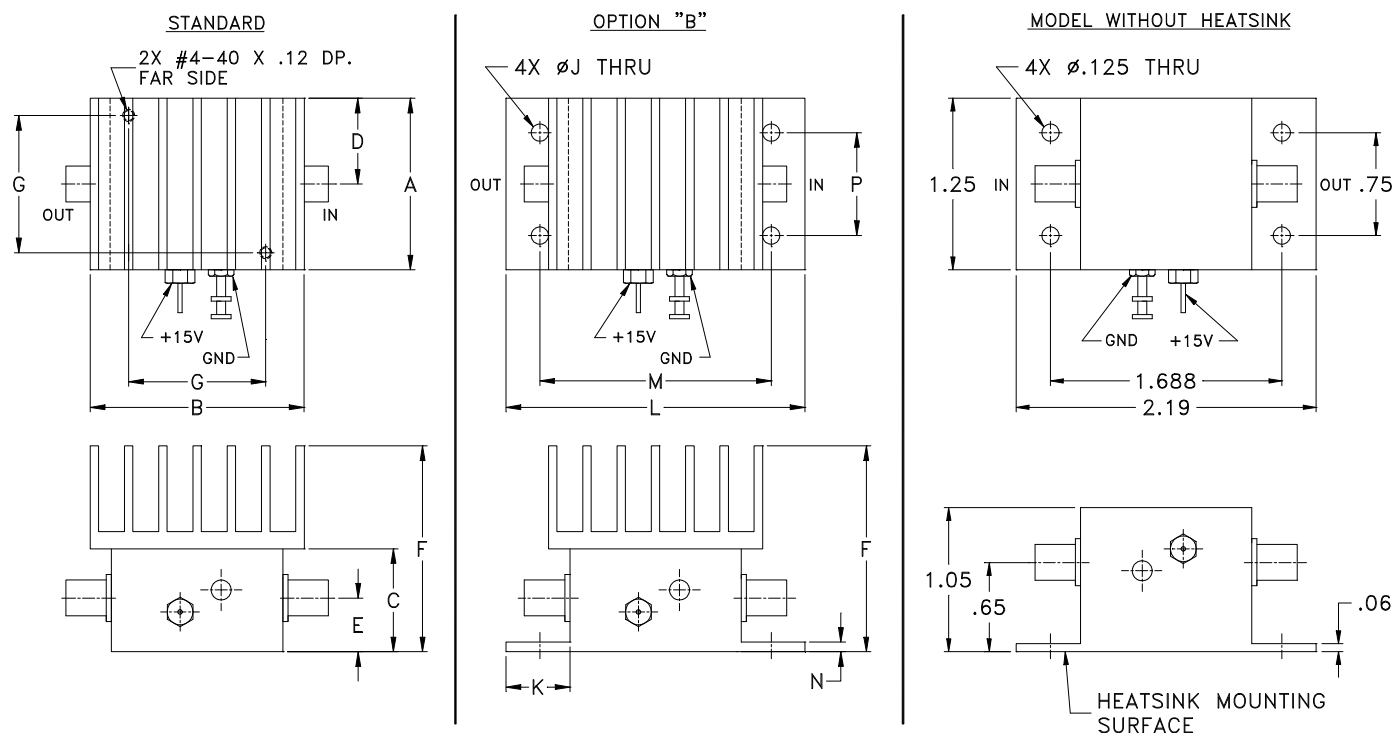
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## Typical Performance Curves



### Outline Dimensions



| CASE# | A               | B               | C              | D              | E             | F               | G                | H  | J              | K              | L               | M                | N             |
|-------|-----------------|-----------------|----------------|----------------|---------------|-----------------|------------------|----|----------------|----------------|-----------------|------------------|---------------|
| SS98  | 1.25<br>(31.75) | 1.56<br>(39.62) | .75<br>(19.05) | .63<br>(16.00) | .39<br>(9.91) | 1.50<br>(38.10) | 1.000<br>(25.40) | -- | .125<br>(3.18) | .46<br>(11.68) | 2.19<br>(55.63) | 1.688<br>(42.88) | .06<br>(1.52) |

| CASE# | P               | WT. GRAMS | WT. WITHOUT HEATSINK GRAMS |
|-------|-----------------|-----------|----------------------------|
| SS98  | .750<br>(19.05) | 85.0      | 70.0                       |

Dimensions are in inches (mm). Tolerances: 2 Pl.  $\pm .03$ ; 3 Pl.  $\pm .015$

#### Notes:

- Case material: Aluminum alloy.
- Case finish:  
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
- Heat sink finish: Black anodize.
- Refer to the individual model data sheet for the type of connector available.



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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     | -20° to 71° C<br>Ambient Environment  | 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 |