

Coaxial Broadband Amplifier

ZFL-1200GH+

50Ω Variable Gain 10 to 1200 MHz

Features

- wideband, 10 to 1200 MHz
- rugged, shielded case
- gain control range: 60 dB typ.
- gain control voltage: 0 to +5V
- variable gain: +34 to -26 dB

Applications

- cellular
- VHF/UHF
- AGC applications



Generic photo used for illustration purposes only

CASE STYLE: Y39

| Connectors | Model |
|----------------------|-------------|
| SMA | ZFL-1200GH+ |
| BRACKET (OPTION "B") | |

+RoHS Compliant

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

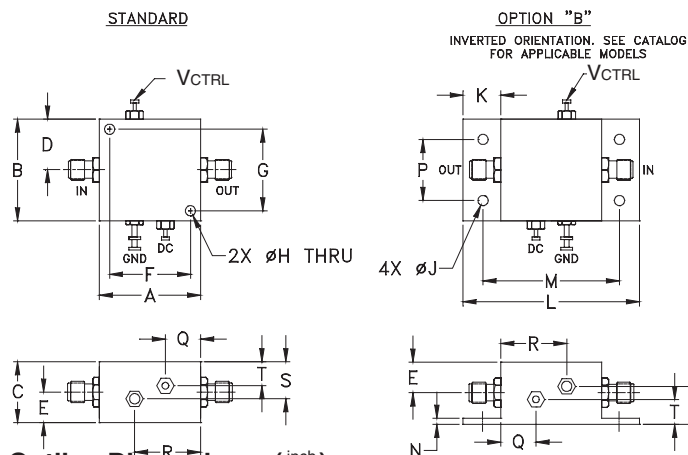
Electrical Specifications at 25°C, $V_{CTRL}=0V$ (or open)

| Parameter | Condition (MHz) | Min. | Typ. | Max. | Units |
|-------------------------------------|-----------------|------|------|------|-------|
| Frequency Range | | 10 | — | 1200 | MHz |
| Gain | 10-1200 | 29 | 32 | — | dB |
| Gain Flatness | 10-1200 | — | ±1.3 | — | dB |
| Output Power at 1dB compression | 10-1200 | — | +13 | — | dBm |
| Output Power at 3dB compression | 10-1200 | — | +15 | — | dBm |
| Noise Figure | 10-1200 | — | 5.5 | — | dB |
| Output third order intercept point | 10-1200 | — | +28 | — | dBm |
| Output second order intercept point | 10-1200 | — | +50 | — | dBm |
| Input VSWR | 10-1200 | — | 1.25 | — | :1 |
| Output VSWR | 10-1200 | — | 1.5 | — | :1 |
| DC Supply Voltage | | — | 15 | — | V |
| Supply Current | | — | — | 230 | mA |

Open load is not recommended, potentially can cause damage.
With no load derate max input power by 20 dB

V_{CTRL} : Gain Control Voltage.

Outline Drawing



Outline Dimensions (inch/mm)

| A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | R | S | T | wt. |
|-------|-------|-------|-------|------|-------|-------|------|------|-------|-------|-------|------|-------|-------|-------|-------|------|-------|
| 1.25 | 1.25 | .75 | .63 | .36 | 1.000 | 1.000 | .125 | .125 | .46 | 2.18 | 1.688 | .06 | .750 | .50 | .80 | .45 | .29 | grams |
| 31.75 | 31.75 | 19.05 | 16.00 | 9.14 | 25.40 | 25.40 | 3.18 | 3.18 | 11.68 | 55.37 | 42.88 | 1.52 | 19.05 | 12.70 | 20.32 | 11.43 | 7.37 | 38 |

Gain Flatness, $V_{CC}=15V$, 10-1200 MHz

| V_{CTRL} (V) | Gain Flatness (dB) Typ. |
|----------------|-------------------------|
| 0 or open | ±1.3 |
| 1 | ±1.5 |
| 2 | ±2.2 |
| 3 | ±3.3 |
| 4 | ±1.0 |
| 5 | ±1.0 |

Maximum Ratings

| Parameter | Ratings |
|----------------------------|----------------|
| Operating Temperature | -20°C to 71°C |
| Storage Temperature | -55°C to 100°C |
| DC Voltage | +17V |
| V_{CTRL} | 0 to +5.5V |
| Input RF Power (no damage) | +10 dBm |

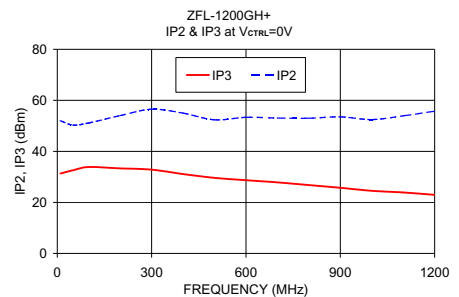
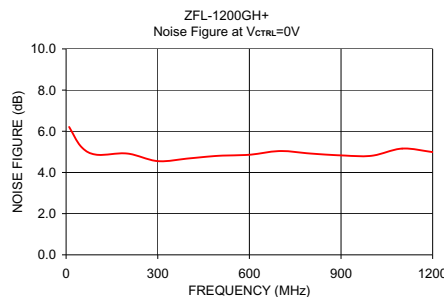
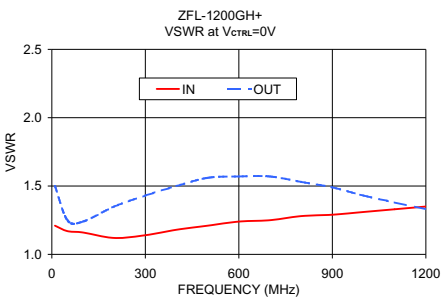
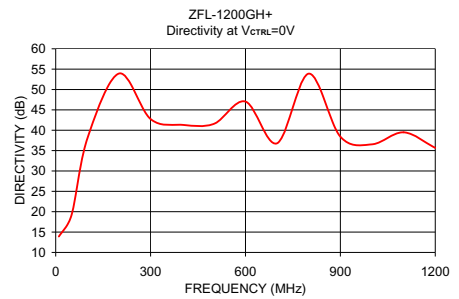
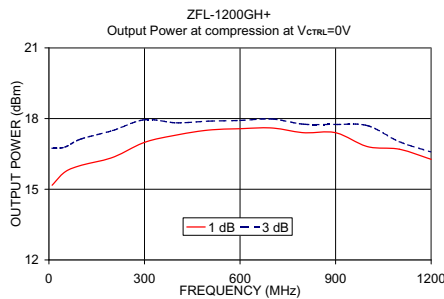
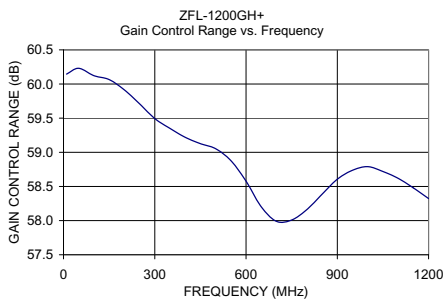
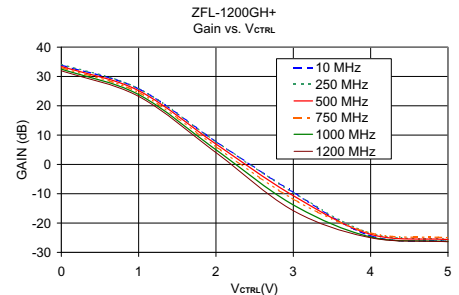
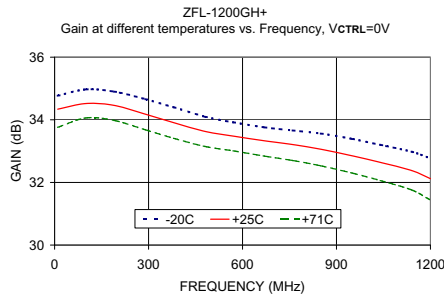
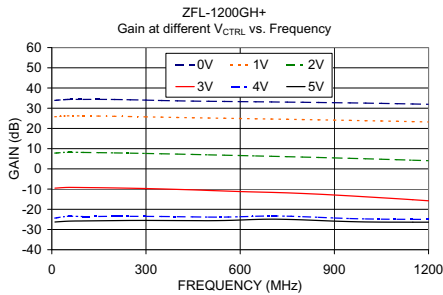
Permanent damage may occur if any of these limits are exceeded.

Notes

- 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.
- 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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| FREQUENCY (MHz) | GAIN (dB) | DIRECTIVITY (dB) | VSWR (:1) | | POUT at 1 dB COMPR. (dBm) | POUT at 3 dB COMPR. (dBm) | NOISE FIGURE (dB) | IP3 (dBm) | IP2 (dBm) |
|-----------------|-----------|------------------|-----------|------|---------------------------|---------------------------|-------------------|-----------|-----------|
| | | | IN | OUT | | | | | |
| 10.00 | 34.34 | 13.91 | 1.21 | 1.50 | 15.17 | 16.74 | 6.21 | 31.32 | 51.99 |
| 50.00 | 34.52 | 19.18 | 1.17 | 1.25 | 15.73 | 16.79 | 5.24 | 32.59 | 50.30 |
| 100.00 | 34.46 | 37.95 | 1.16 | 1.24 | 16.01 | 17.13 | 4.86 | 33.86 | 51.13 |
| 200.00 | 34.18 | 53.92 | 1.12 | 1.35 | 16.35 | 17.49 | 4.92 | 33.33 | 54.02 |
| 300.00 | 33.91 | 42.75 | 1.14 | 1.43 | 16.99 | 17.95 | 4.55 | 32.84 | 56.51 |
| 500.00 | 33.48 | 41.56 | 1.21 | 1.56 | 17.51 | 17.89 | 4.81 | 29.62 | 52.37 |
| 600.00 | 33.33 | 47.04 | 1.24 | 1.57 | 17.57 | 17.92 | 4.86 | 28.70 | 53.34 |
| 800.00 | 33.06 | 53.89 | 1.28 | 1.53 | 17.40 | 17.76 | 4.92 | 26.78 | 52.99 |
| 1000.00 | 32.64 | 36.54 | 1.31 | 1.43 | 16.81 | 17.70 | 4.81 | 24.53 | 52.46 |
| 1100.00 | 32.38 | 39.49 | 1.33 | 1.38 | 16.70 | 17.02 | 5.16 | 23.89 | 53.92 |
| 1200.00 | 32.12 | 35.67 | 1.35 | 1.33 | 16.27 | 16.58 | 4.99 | 22.97 | 55.74 |



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Broadband Amplifier

ZFL-1200GH+

Typical Performance Data

| Vctrl=0V @ 25°C | | | | | | | | | |
|--------------------|---------------------|----------------------------|------------------------|-------------------------|-----------------------------|-----------------------------------|-----------------------------------|----------------------------|----------------------------|
| FREQUENCY (MHz) | GAIN (dB) 15V | DIRECTIVITY (dB) 15V | VSWR IN (:1) 15V | VSWR OUT (:1) 15V | NOISE FIGURE (dB) 15V | Pout at 1dB Comp. (dBm) 15V | Pout at 3dB Comp. (dBm) 15V | Output IP2 (dBm) 15V | Output IP3 (dBm) 15V |
| 10.0 | 33.86 | 13.91 | 1.21 | 1.50 | 6.21 | 15.17 | 16.74 | 51.99 | 31.32 |
| 50.0 | 34.34 | 19.18 | 1.17 | 1.25 | 5.24 | 15.73 | 16.79 | 50.30 | 32.59 |
| 100.0 | 34.36 | 37.95 | 1.16 | 1.24 | 4.86 | 16.01 | 17.13 | 51.13 | 33.86 |
| 200.0 | 34.31 | 53.92 | 1.12 | 1.35 | 4.92 | 16.35 | 17.49 | 54.02 | 33.33 |
| 300.0 | 34.00 | 42.75 | 1.14 | 1.43 | 4.55 | 16.99 | 17.95 | 56.51 | 32.84 |
| 500.0 | 33.42 | 41.56 | 1.21 | 1.56 | 4.81 | 17.51 | 17.89 | 52.37 | 29.62 |
| 600.0 | 33.27 | 47.04 | 1.24 | 1.57 | 4.86 | 17.57 | 17.92 | 53.34 | 28.70 |
| 800.0 | 32.93 | 53.89 | 1.28 | 1.53 | 4.92 | 17.40 | 17.76 | 52.99 | 26.78 |
| 1000.0 | 32.52 | 36.54 | 1.31 | 1.43 | 4.81 | 16.81 | 17.70 | 52.46 | 24.53 |
| 1100.0 | 32.25 | 39.49 | 1.33 | 1.38 | 5.16 | 16.70 | 17.02 | 53.92 | 23.89 |
| 1200.0 | 31.95 | 35.67 | 1.35 | 1.33 | 4.99 | 16.27 | 16.58 | 55.74 | 22.97 |



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IF/RF MICROWAVE COMPONENTS

Broadband Amplifier

ZFL-1200GH+

Typical Performance Data

| FREQUENCY (MHz) | GAIN @ Vdc=15V & 25°C | | | | | | FREQUENCY (MHz) | GAIN CONTROL RANGE @ Vdc=15V & 25°C (dB) | FREQUENCY (MHz) | GAIN @ Vdc=15V & Vctrl=0V | | |
|--------------------|-----------------------|------------------|------------------|------------------|------------------|------------------|--------------------|--|--------------------|---------------------------|-------|-------|
| | Vctrl (V) = 0 | Vctrl (V) = 1 | Vctrl (V) = 2 | Vctrl (V) = 3 | Vctrl (V) = 4 | Vctrl (V) = 5 | | | | -20°C | +25°C | +71°C |
| 10.0 | 33.86 | 25.79 | 7.79 | -9.53 | -24.37 | -26.29 | 10.0 | 60.15 | 10.0 | 34.77 | 34.34 | 33.76 |
| 50.0 | 34.34 | 26.21 | 8.21 | -9.19 | -23.46 | -25.89 | 50.0 | 60.23 | 100.0 | 34.97 | 34.52 | 34.06 |
| 100.0 | 34.36 | 26.17 | 8.12 | -9.24 | -23.59 | -25.77 | 100.0 | 60.12 | 190.0 | 34.90 | 34.46 | 33.98 |
| 150.0 | 34.38 | 26.11 | 8.02 | -9.32 | -23.54 | -25.69 | 150.0 | 60.07 | 290.0 | 34.66 | 34.18 | 33.68 |
| 200.0 | 34.31 | 26.01 | 7.90 | -9.44 | -23.49 | -25.60 | 200.0 | 59.91 | 380.0 | 34.40 | 33.91 | 33.41 |
| 250.0 | 34.18 | 25.88 | 7.77 | -9.57 | -23.48 | -25.53 | 250.0 | 59.71 | 480.0 | 34.10 | 33.63 | 33.15 |
| 300.0 | 34.00 | 25.73 | 7.63 | -9.73 | -23.50 | -25.50 | 300.0 | 59.49 | 570.0 | 33.92 | 33.48 | 33.01 |
| 350.0 | 33.81 | 25.57 | 7.47 | -9.93 | -23.55 | -25.54 | 350.0 | 59.35 | 670.0 | 33.76 | 33.33 | 32.84 |
| 400.0 | 33.65 | 25.41 | 7.30 | -10.15 | -23.67 | -25.58 | 400.0 | 59.22 | 760.0 | 33.66 | 33.21 | 32.70 |
| 450.0 | 33.52 | 25.27 | 7.13 | -10.40 | -23.76 | -25.61 | 450.0 | 59.13 | 850.0 | 33.56 | 33.06 | 32.53 |
| 500.0 | 33.42 | 25.15 | 6.95 | -10.67 | -23.85 | -25.63 | 500.0 | 59.05 | 950.0 | 33.39 | 32.85 | 32.30 |
| 550.0 | 33.34 | 25.03 | 6.77 | -10.96 | -23.85 | -25.54 | 550.0 | 58.88 | 1040.0 | 33.20 | 32.64 | 32.06 |
| 600.0 | 33.27 | 24.91 | 6.59 | -11.22 | -23.68 | -25.31 | 600.0 | 58.58 | 1140.0 | 32.98 | 32.38 | 31.76 |
| 650.0 | 33.18 | 24.78 | 6.40 | -11.44 | -23.44 | -25.02 | 650.0 | 58.20 | 1200.0 | 32.77 | 32.12 | 31.44 |
| 700.0 | 33.10 | 24.64 | 6.22 | -11.63 | -23.31 | -24.89 | 700.0 | 57.99 | | | | |
| 750.0 | 33.02 | 24.51 | 6.03 | -11.87 | -23.41 | -24.99 | 750.0 | 58.01 | | | | |
| 800.0 | 32.93 | 24.38 | 5.83 | -12.17 | -23.66 | -25.23 | 800.0 | 58.16 | | | | |
| 850.0 | 32.84 | 24.25 | 5.63 | -12.53 | -23.98 | -25.55 | 850.0 | 58.39 | | | | |
| 900.0 | 32.74 | 24.11 | 5.42 | -12.94 | -24.30 | -25.87 | 900.0 | 58.61 | | | | |
| 950.0 | 32.64 | 23.98 | 5.21 | -13.37 | -24.57 | -26.10 | 950.0 | 58.74 | | | | |
| 1000.0 | 32.52 | 23.83 | 4.99 | -13.82 | -24.76 | -26.27 | 1000.0 | 58.79 | | | | |
| 1050.0 | 32.38 | 23.68 | 4.76 | -14.29 | -24.89 | -26.34 | 1050.0 | 58.72 | | | | |
| 1100.0 | 32.25 | 23.53 | 4.53 | -14.77 | -24.95 | -26.37 | 1100.0 | 58.62 | | | | |
| 1150.0 | 32.10 | 23.37 | 4.29 | -15.27 | -24.99 | -26.38 | 1150.0 | 58.48 | | | | |
| 1200.0 | 31.95 | 23.20 | 4.04 | -15.78 | -25.01 | -26.38 | 1200.0 | 58.32 | | | | |



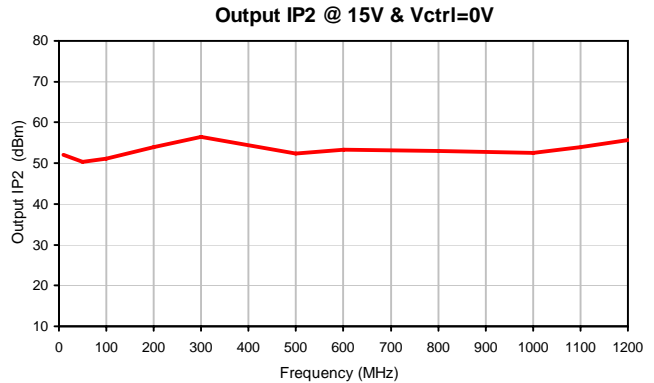
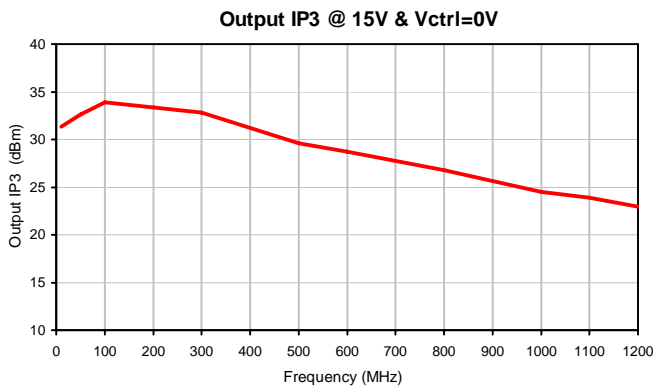
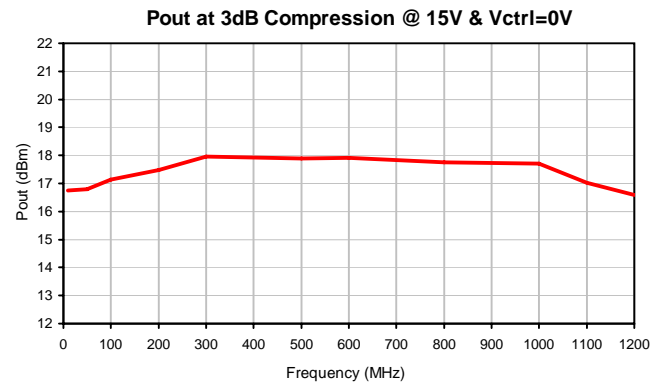
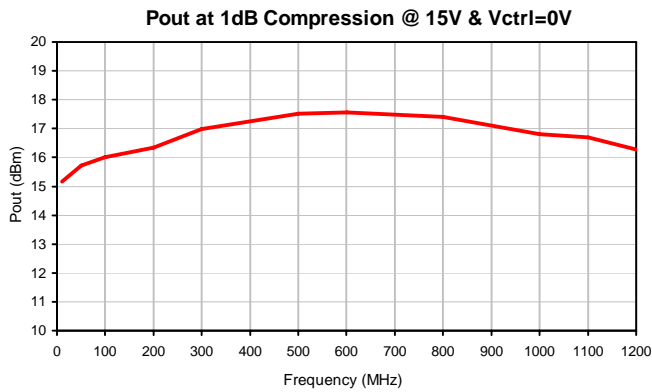
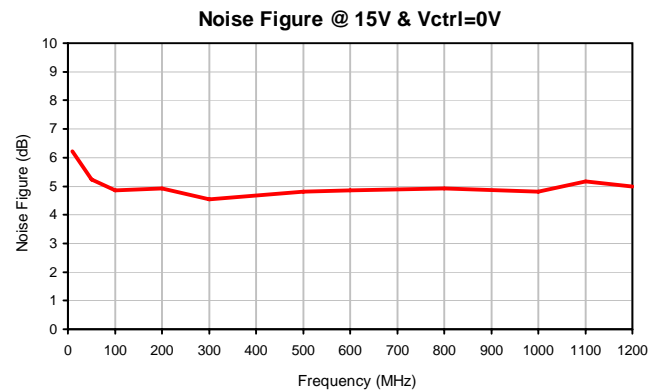
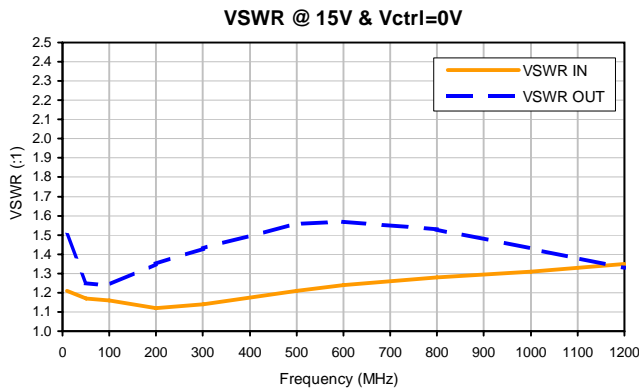
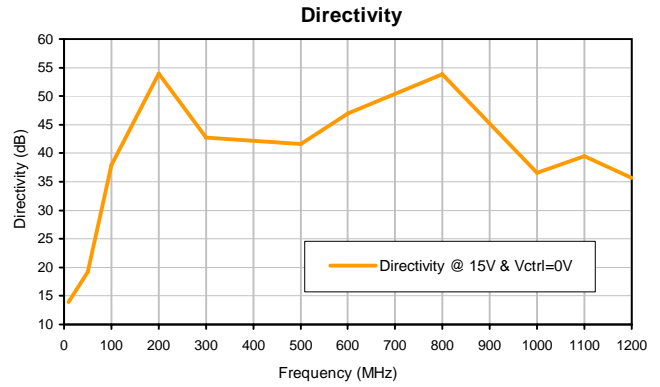
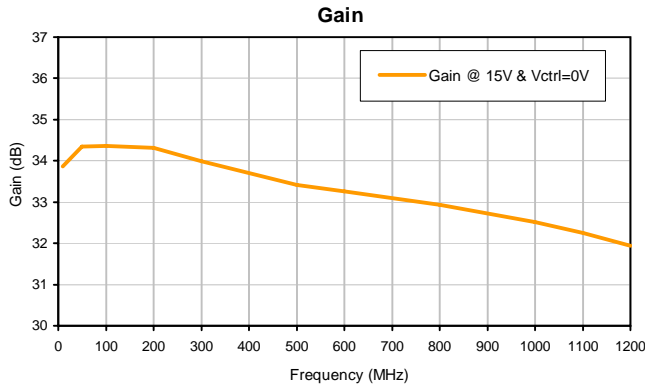
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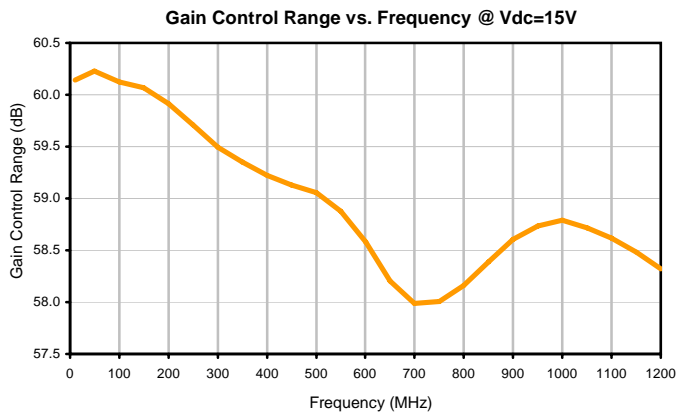
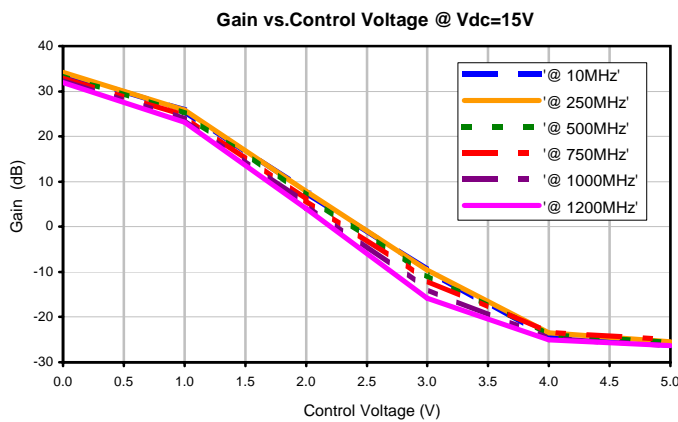
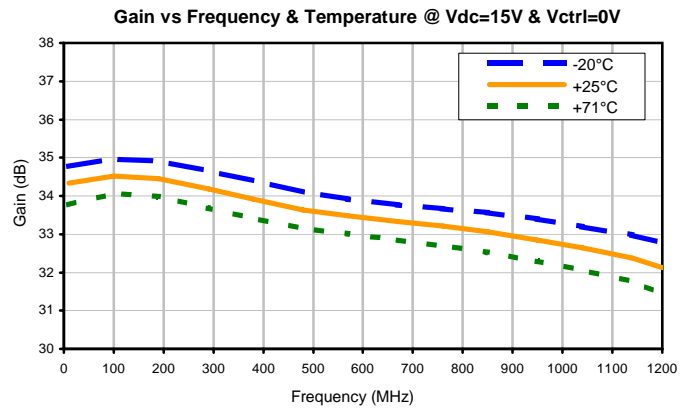
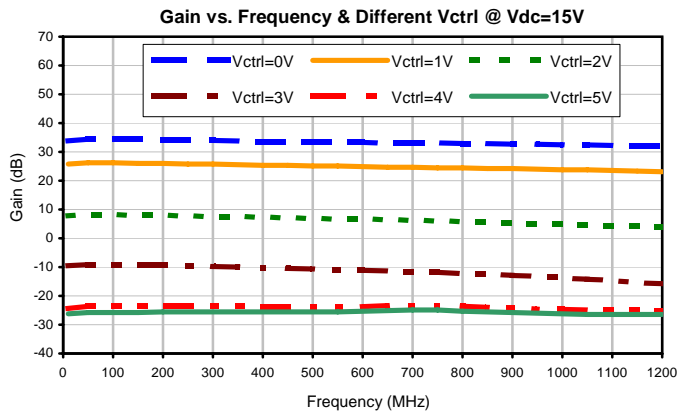
IF/RF MICROWAVE COMPONENTS

REV. OR
 ZFL-1200GH+
 5/17/2012
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Typical Performance Curves



Typical Performance Curves

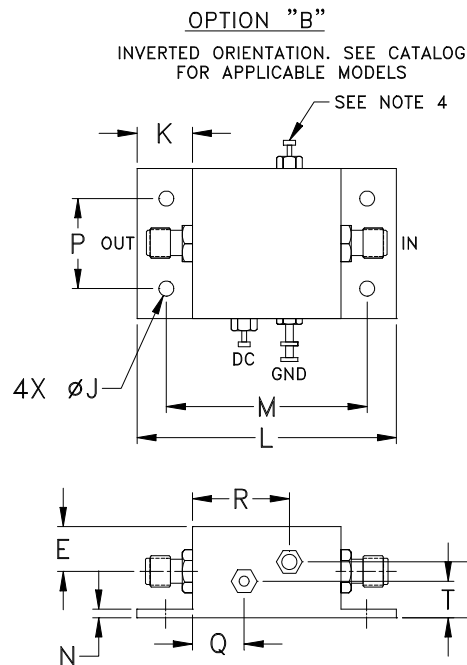
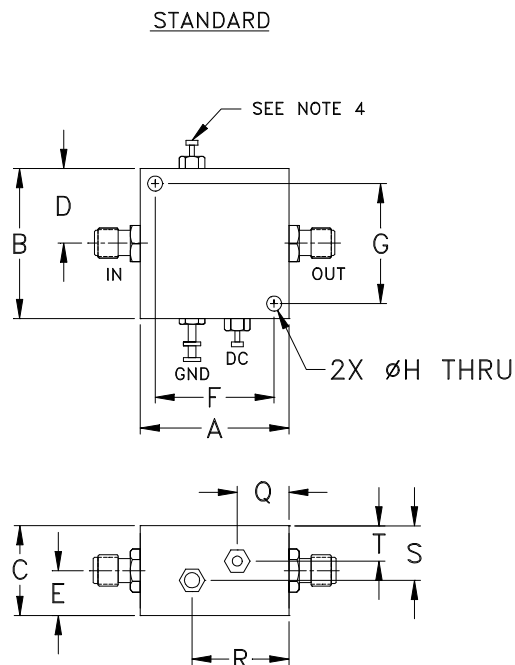


Case Style

Y

Y39

Outline Dimensions



| CASE# | A | B | C | D | E | F | G | H | J | K | L | M | N |
|-------|-----------------|-----------------|----------------|---------------|---------------|-----------------|-----------------|---------------|---------------|---------------|----------------|-----------------|--------------|
| Y39 | 1.25 (31.75) | 1.25 (31.75) | .75 (19.05) | .63 (16.0) | .36 (9.15) | 1.000 (25.4) | 1.000 (25.4) | .125 (3.2) | .125 (3.2) | .46 (11.7) | 2.18 (55.4) | 1.688 (42.9) | .06 (1.5) |

| CASE# | P | Q | R | S | T | WT. GRAMS |
|-------|----------------|---------------|---------------|---------------|--------------|-----------|
| Y39 | .750 (19.0) | .50 (12.7) | .80 (20.3) | .45 (11.4) | .29 (7.4) | 38 |

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

Notes:

1. Case material: Aluminum alloy.
2. Case finish:
For RoHS Case Styles: Clear chemical conversion coating, non-chrome or trivalent chrome based.
3. Mounting bracket available on request. Add suffix B to part number
4. Gain terminal may exist on some models, refer catalog data sheet for details..

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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 Ambient Environment | 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 |