

Coaxial Wideband Amplifier

ZJL-153+

50Ω 5000 to 15000 MHz

The Big Deal

- Wide bandwidth, 5000 to 15000 MHz
- Medium output power, +18 dBm typ
- Single +5V supply voltage



CASE STYLE: BW459

Product Overview

The ZJL-153+ is a Class A, wide frequency range, ideal for a variety of lab applications as well as applications including communications, radar and more. The ruggedly-designed amplifier provides unconditional stability. Housed in a rugged aluminum alloy case measuring 1.0 x 1.07 x 0.61", the unit features SMA connectors and filtered DC pin for the single +5V supply voltage.

Key Features

| Feature | Advantages |
|-----------------------------|--|
| Wideband, 5000 to 15000 MHz | Suitable for a broad range of wideband applications, including test setups, communications and defense applications. |
| Medium P1dB, +18 dBm typ. | Usable for medium power applications, good as buffer amplifier. |
| Single +5V supply voltage | Simplifier the power supply configuration |
| Unconditional stability | Provides reliable performance independent of input and load conditions. |

Coaxial Wideband Amplifier

ZJL-153+

50Ω

5000 to 15000 MHz

Features

- ultra wideband, 5000 to 15000 MHz
- compact rugged case, 1.0"x1.07"x0.61" (including mounting bracket)

Applications

- communications systems
- radar
- instrumentation
- laboratory use



Generic photo used for illustration purposes only

CASE STYLE: BW459
Connectors Model
SMA ZJL-153+

+RoHS Compliant

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

Electrical Specifications at 25°C

| Parameter | ZJL-153+ | | | Units |
|------------------------------------|----------|------|-------|-------|
| | Min. | Typ. | Max. | |
| Frequency Range | 5000 | — | 15000 | MHz |
| Gain | 10 | 13 | — | dB |
| Gain Flatness | — | ±1.5 | — | dB |
| Output Power at 1dB compression | +16 | +18 | — | dBm |
| Noise Figure | — | 6.0 | — | dB |
| Output third order intercept point | — | +23 | — | dBm |
| Input VSWR | — | 1.7 | — | :1 |
| Output VSWR | — | 1.7 | — | :1 |
| DC Supply Voltage | — | 5 | — | V |
| Supply Current | — | — | 180 | mA |

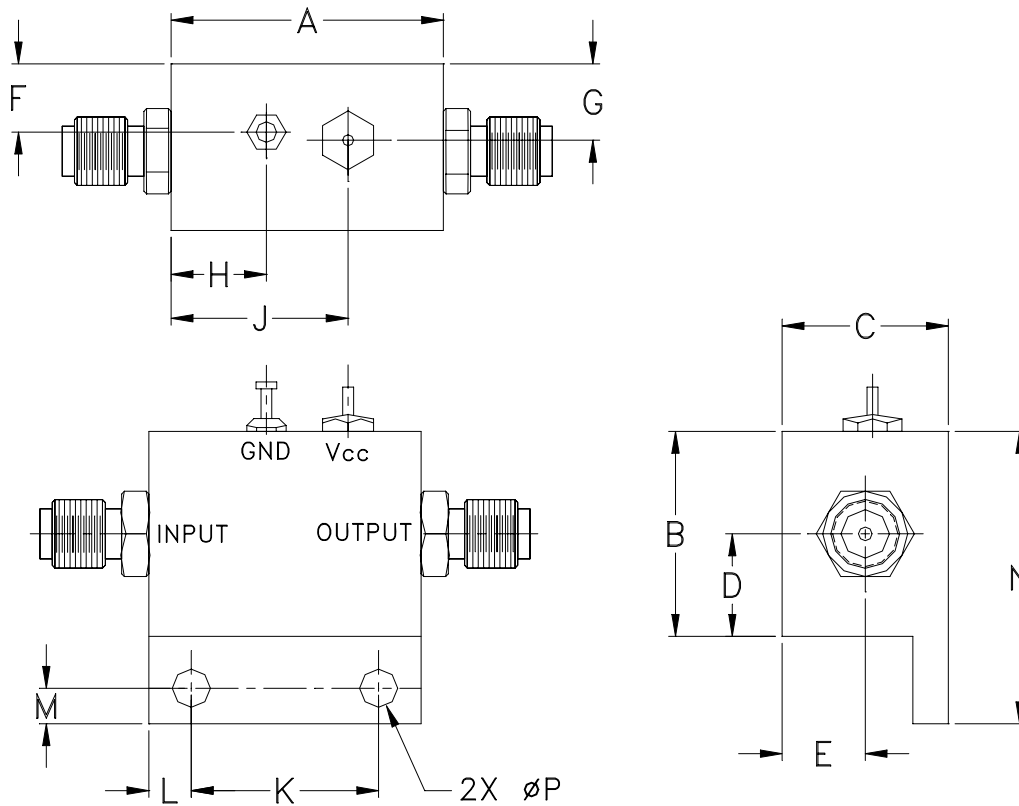
Open/Short load is not recommended, potentially can cause damage.
With no load derate max input power by 20 dB.

Maximum Ratings

| Parameter | Ratings |
|----------------------------|----------------|
| Operating Temperature | -40°C to 50°C |
| Storage Temperature | -55°C to 100°C |
| DC Voltage | +5.5V max. |
| Input RF Power (no damage) | +13 dBm |

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

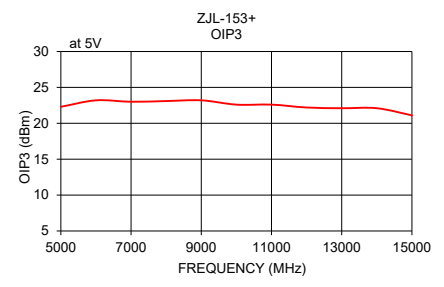
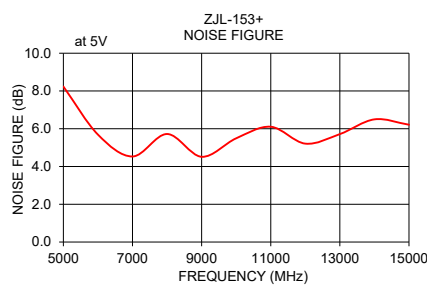
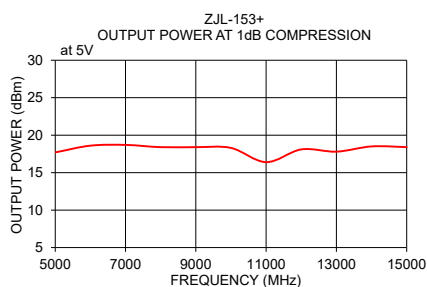
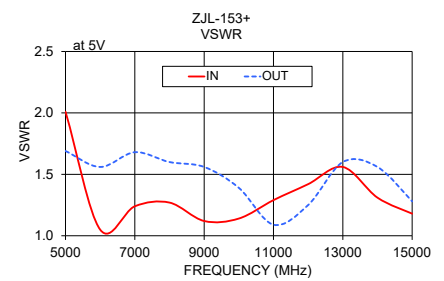
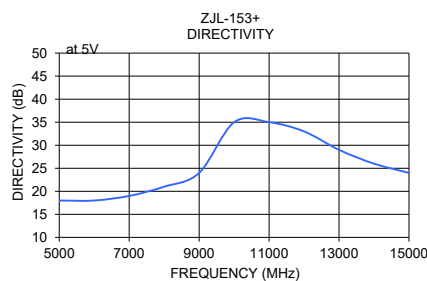
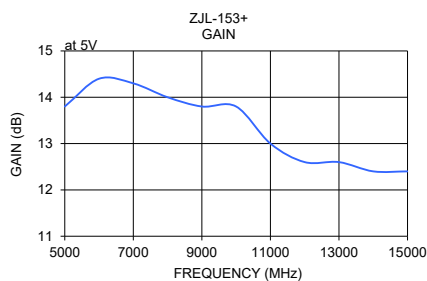
Outline Drawing



Outline Dimensions (inch)

| A | B | C | D | E | F | G | H | J | K | L | M | N | P | wt |
|-------|-------|-------|------|------|------|------|------|-------|-------|------|------|-------|------|-------|
| 1.00 | .75 | .61 | .38 | .29 | .25 | .26 | .35 | .65 | .688 | .156 | .13 | 1.07 | .140 | grams |
| 25.40 | 19.05 | 15.49 | 9.65 | 7.37 | 6.35 | 6.60 | 8.89 | 16.51 | 17.48 | 3.96 | 3.30 | 27.18 | 3.56 | 25 |

| FREQUENCY (MHz) | GAIN (dB) | DIRECTIVITY (dB) | VSWR (:1) | | POUT at 1 dB COMPR. (dBm) | NOISE FIGURE (dB) | OIP3 (dBm) |
|-----------------|-----------|------------------|-----------|------|---------------------------|-------------------|------------|
| | 5V | 5V | IN | OUT | | | |
| 5000 | 13.80 | 18.00 | 2.01 | 1.69 | 17.70 | 8.24 | 22.30 |
| 6000 | 14.40 | 18.00 | 1.05 | 1.56 | 18.60 | 5.69 | 23.20 |
| 7000 | 14.30 | 19.00 | 1.24 | 1.68 | 18.70 | 4.53 | 23.00 |
| 8000 | 14.00 | 21.00 | 1.27 | 1.60 | 18.40 | 5.72 | 23.10 |
| 9000 | 13.80 | 24.00 | 1.12 | 1.56 | 18.40 | 4.51 | 23.20 |
| 10000 | 13.80 | 35.00 | 1.14 | 1.39 | 18.30 | 5.49 | 22.60 |
| 11000 | 13.00 | 35.00 | 1.29 | 1.09 | 16.40 | 6.11 | 22.60 |
| 12000 | 12.60 | 33.00 | 1.42 | 1.25 | 18.10 | 5.21 | 22.20 |
| 13000 | 12.60 | 29.00 | 1.56 | 1.60 | 17.80 | 5.72 | 22.10 |
| 14000 | 12.40 | 26.00 | 1.31 | 1.56 | 18.50 | 6.50 | 22.10 |
| 15000 | 12.40 | 24.00 | 1.18 | 1.28 | 18.40 | 6.21 | 21.10 |



Additional Notes

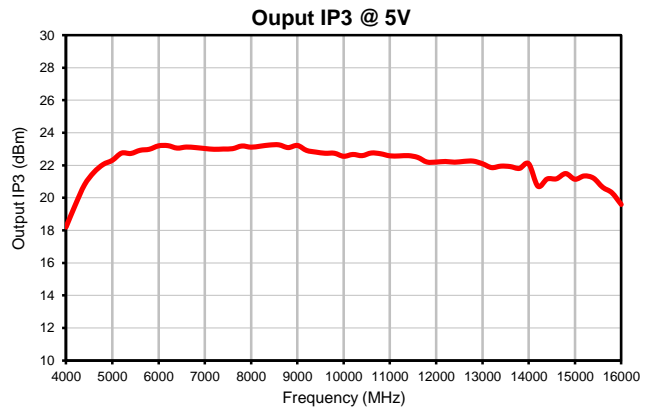
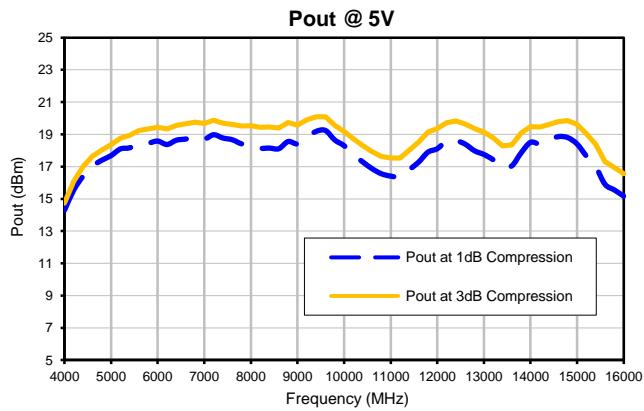
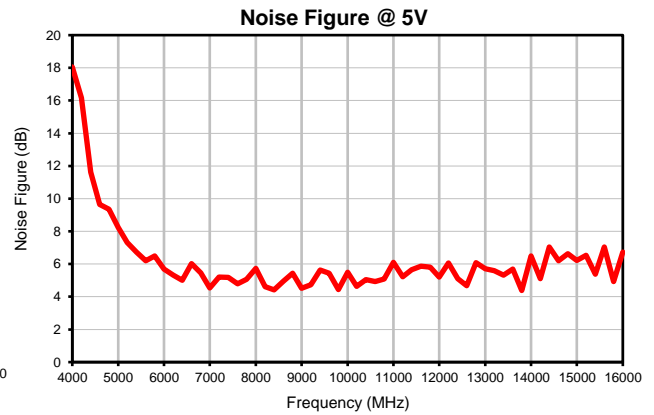
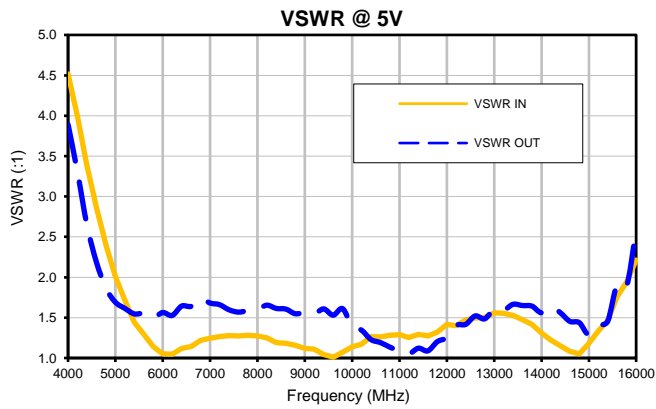
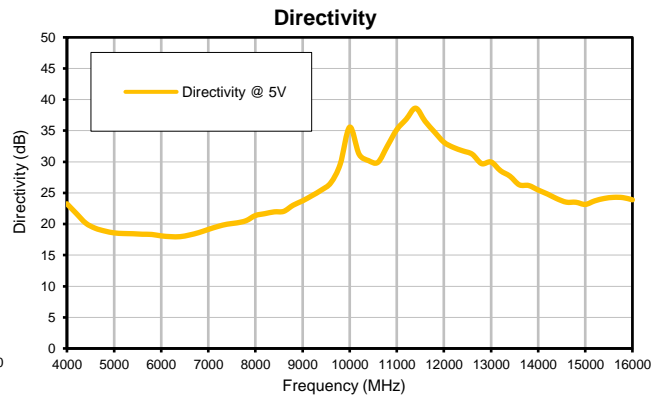
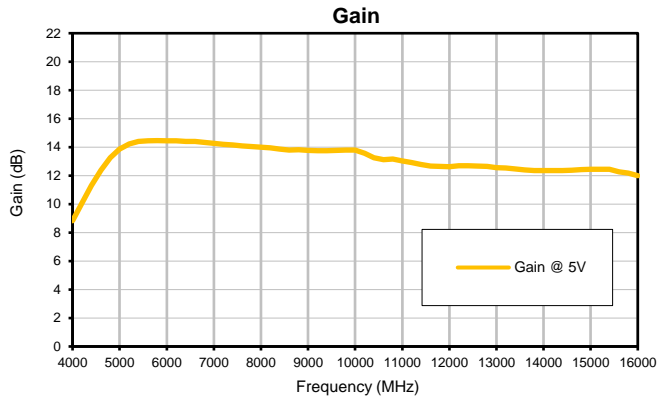
- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's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

Typical Performance Data

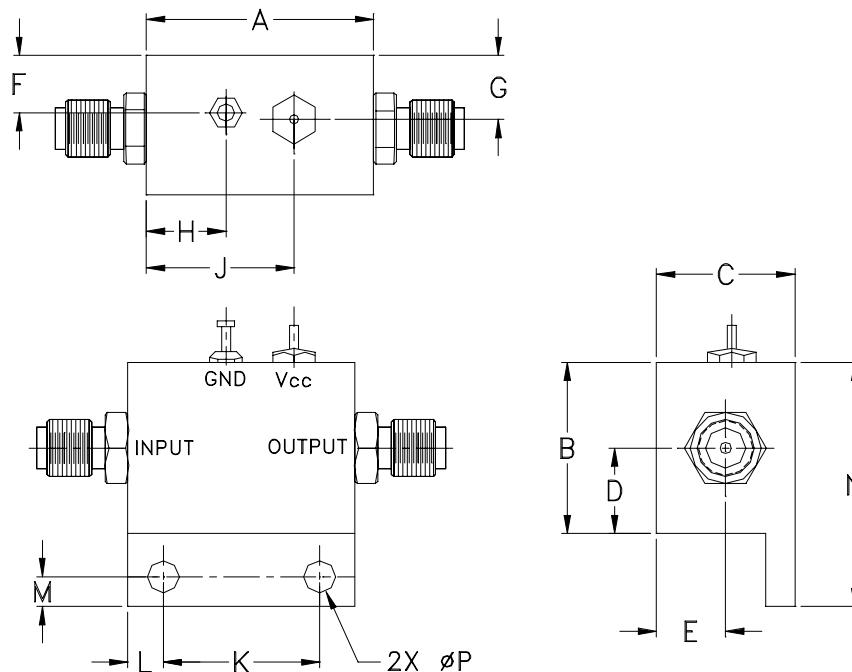
| FREQUENCY (MHz) | GAIN (dB) 5V | DIRECTIVITY (dB) 5V | VSWR (:1) | | NOISE FIGURE (dB) 5V | POUT @ 1 dB COMPRESSION (dBm) 5V | POUT @ 3 dB COMPRESSION (dBm) 5V | OUTPUT IP3 (dBm) 5V |
|--------------------|--------------------|---------------------------|-----------|-----------|----------------------------|---|---|---------------------------|
| | | | IN 5V | OUT 5V | | | | |
| 4000 | 8.83 | 23.25 | 4.52 | 3.89 | 18.05 | 14.29 | 14.74 | 18.20 |
| 4200 | 10.08 | 21.69 | 3.98 | 3.30 | 16.15 | 15.55 | 16.09 | 19.56 |
| 4400 | 11.30 | 20.14 | 3.38 | 2.64 | 11.61 | 16.41 | 17.00 | 20.80 |
| 4600 | 12.39 | 19.33 | 2.86 | 2.19 | 9.64 | 17.03 | 17.64 | 21.56 |
| 4800 | 13.25 | 18.88 | 2.39 | 1.87 | 9.36 | 17.39 | 18.04 | 22.05 |
| 5000 | 13.85 | 18.58 | 2.01 | 1.69 | 8.24 | 17.68 | 18.36 | 22.31 |
| 5200 | 14.21 | 18.47 | 1.71 | 1.61 | 7.32 | 18.09 | 18.75 | 22.75 |
| 5400 | 14.40 | 18.44 | 1.45 | 1.55 | 6.72 | 18.17 | 18.93 | 22.73 |
| 5600 | 14.45 | 18.36 | 1.29 | 1.55 | 6.20 | 18.43 | 19.24 | 22.92 |
| 5800 | 14.46 | 18.33 | 1.14 | 1.50 | 6.50 | 18.46 | 19.35 | 22.99 |
| 6000 | 14.44 | 18.09 | 1.05 | 1.56 | 5.69 | 18.58 | 19.43 | 23.19 |
| 6200 | 14.44 | 17.97 | 1.05 | 1.53 | 5.31 | 18.37 | 19.34 | 23.21 |
| 6400 | 14.41 | 17.97 | 1.12 | 1.64 | 5.01 | 18.63 | 19.55 | 23.06 |
| 6600 | 14.39 | 18.24 | 1.14 | 1.64 | 6.02 | 18.71 | 19.65 | 23.12 |
| 6800 | 14.34 | 18.62 | 1.22 | 1.74 | 5.46 | 18.82 | 19.75 | 23.09 |
| 7000 | 14.27 | 19.13 | 1.24 | 1.68 | 4.53 | 18.70 | 19.67 | 23.03 |
| 7200 | 14.21 | 19.60 | 1.26 | 1.66 | 5.20 | 18.97 | 19.87 | 22.98 |
| 7400 | 14.15 | 19.98 | 1.28 | 1.60 | 5.18 | 18.77 | 19.70 | 23.00 |
| 7600 | 14.09 | 20.18 | 1.27 | 1.57 | 4.80 | 18.66 | 19.61 | 23.02 |
| 7800 | 14.05 | 20.53 | 1.28 | 1.59 | 5.07 | 18.41 | 19.52 | 23.19 |
| 8000 | 13.99 | 21.37 | 1.27 | 1.60 | 5.72 | 18.35 | 19.53 | 23.11 |
| 8200 | 13.95 | 21.67 | 1.25 | 1.65 | 4.62 | 18.14 | 19.43 | 23.18 |
| 8400 | 13.85 | 21.95 | 1.19 | 1.61 | 4.42 | 18.15 | 19.46 | 23.24 |
| 8600 | 13.79 | 22.04 | 1.18 | 1.61 | 4.94 | 18.11 | 19.39 | 23.26 |
| 8800 | 13.81 | 23.02 | 1.16 | 1.55 | 5.43 | 18.56 | 19.73 | 23.09 |
| 9000 | 13.78 | 23.73 | 1.12 | 1.56 | 4.51 | 18.41 | 19.58 | 23.22 |
| 9200 | 13.76 | 24.56 | 1.11 | 1.55 | 4.74 | 18.80 | 19.89 | 22.91 |
| 9400 | 13.75 | 25.46 | 1.04 | 1.61 | 5.64 | 19.18 | 20.10 | 22.81 |
| 9600 | 13.77 | 26.64 | 1.01 | 1.53 | 5.43 | 19.24 | 20.09 | 22.74 |
| 9800 | 13.80 | 29.64 | 1.07 | 1.61 | 4.43 | 18.65 | 19.55 | 22.74 |
| 10000 | 13.78 | 35.58 | 1.14 | 1.39 | 5.49 | 18.29 | 19.19 | 22.55 |
| 10200 | 13.57 | 31.22 | 1.17 | 1.34 | 4.64 | 17.74 | 18.71 | 22.66 |
| 10400 | 13.25 | 30.19 | 1.27 | 1.23 | 5.05 | 17.29 | 18.31 | 22.59 |
| 10600 | 13.13 | 29.93 | 1.26 | 1.19 | 4.92 | 16.87 | 17.92 | 22.76 |
| 10800 | 13.16 | 32.54 | 1.28 | 1.13 | 5.08 | 16.56 | 17.63 | 22.71 |
| 11000 | 13.03 | 35.18 | 1.29 | 1.09 | 6.11 | 16.41 | 17.52 | 22.58 |
| 11200 | 12.93 | 36.85 | 1.25 | 1.05 | 5.22 | 16.37 | 17.52 | 22.57 |
| 11400 | 12.77 | 38.62 | 1.29 | 1.12 | 5.65 | 16.82 | 18.02 | 22.59 |
| 11600 | 12.68 | 36.53 | 1.27 | 1.09 | 5.88 | 17.28 | 18.52 | 22.49 |
| 11800 | 12.65 | 34.80 | 1.32 | 1.20 | 5.81 | 17.90 | 19.14 | 22.20 |
| 12000 | 12.62 | 33.15 | 1.42 | 1.25 | 5.21 | 18.11 | 19.36 | 22.20 |
| 12200 | 12.70 | 32.32 | 1.40 | 1.40 | 6.07 | 18.60 | 19.71 | 22.23 |
| 12400 | 12.69 | 31.76 | 1.47 | 1.42 | 5.11 | 18.61 | 19.84 | 22.19 |
| 12600 | 12.68 | 31.22 | 1.50 | 1.52 | 4.68 | 18.39 | 19.64 | 22.24 |
| 12800 | 12.65 | 29.71 | 1.50 | 1.49 | 6.08 | 17.98 | 19.35 | 22.26 |
| 13000 | 12.56 | 29.98 | 1.56 | 1.60 | 5.72 | 17.75 | 19.13 | 22.10 |
| 13200 | 12.53 | 28.57 | 1.56 | 1.59 | 5.60 | 17.42 | 18.79 | 21.86 |
| 13400 | 12.46 | 27.69 | 1.53 | 1.66 | 5.33 | 16.97 | 18.28 | 21.95 |
| 13600 | 12.41 | 26.30 | 1.47 | 1.65 | 5.68 | 17.04 | 18.34 | 21.92 |
| 13800 | 12.36 | 26.19 | 1.41 | 1.64 | 4.38 | 17.86 | 19.07 | 21.81 |
| 14000 | 12.36 | 25.46 | 1.31 | 1.56 | 6.50 | 18.50 | 19.47 | 22.09 |
| 14200 | 12.35 | 24.81 | 1.22 | 1.63 | 5.10 | 18.40 | 19.45 | 20.71 |
| 14400 | 12.36 | 24.06 | 1.15 | 1.56 | 7.04 | 18.63 | 19.62 | 21.16 |
| 14600 | 12.38 | 23.51 | 1.08 | 1.45 | 6.19 | 18.86 | 19.79 | 21.17 |
| 14800 | 12.41 | 23.50 | 1.05 | 1.44 | 6.64 | 18.79 | 19.85 | 21.49 |
| 15000 | 12.45 | 23.16 | 1.18 | 1.28 | 6.21 | 18.40 | 19.61 | 21.14 |
| 15200 | 12.45 | 23.72 | 1.33 | 1.40 | 6.53 | 17.65 | 19.03 | 21.34 |
| 15400 | 12.43 | 24.11 | 1.47 | 1.46 | 5.37 | 16.98 | 18.38 | 21.21 |
| 15600 | 12.27 | 24.29 | 1.76 | 1.91 | 7.05 | 15.90 | 17.30 | 20.65 |
| 15800 | 12.17 | 24.24 | 1.94 | 1.89 | 4.93 | 15.55 | 16.94 | 20.31 |
| 16000 | 11.99 | 23.89 | 2.21 | 2.58 | 6.73 | 15.17 | 16.55 | 19.59 |



Typical Performance Curves



Outline Dimensions



| CASE# | A | B | C | D | E | F | G | H | J | K | L | M | N |
|-------|-----------------|----------------|----------------|---------------|---------------|---------------|---------------|---------------|----------------|-----------------|----------------|---------------|-----------------|
| BW459 | 1.00 (25.40) | .75 (19.05) | .61 (15.49) | .38 (9.65) | .29 (7.37) | .25 (6.35) | .26 (6.60) | .35 (8.89) | .65 (16.51) | .688 (17.48) | .156 (3.96) | .13 (3.30) | 1.07 (27.18) |

| CASE# | P | WT. GRAMS |
|-------|----------------|-----------|
| BW459 | .140 (3.56) | 25 |

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.



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 75°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 |