



COAXIAL

Wideband Amplifier

ZVA-203GX+

50Ω 2 to 20 GHz

FEATURES

- Low noise figure, 2 dB at 8 GHz
- High IP3, 27.5 dBm typ. at 8 GHz
- Excellent gain flatness, ± 1.0 dB typ. from 2 to 20 GHz
- Wide input voltage range +5V to +15V

APPLICATIONS

- Radar
- Very wideband test instrumentation
- Lab use
- Wideband isolation, directivity 50 dB typ.
- EW



Generic photo used for illustration purposes only

| | |
|------------|---------------|
| Model No. | ZVA-203GX+ |
| Case Style | AV2554-1 |
| Connectors | 2.92mm Female |

+RoHS Compliant

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

ELECTRICAL SPECIFICATIONS AT 25°C, V_{DD}=+5.0V TYP.

| Parameter | Condition (GHz) | Min. | Typ. | Max. | Units |
|---|-----------------|------|------|------|-------|
| Frequency Range ¹ | | 2 | | 20 | GHz |
| Noise Figure | 2.0 | | 4.8 | 6.4 | dB |
| | 8.0 | | 2 | 3.7 | |
| | 20.0 | | 4 | 6.4 | |
| Gain | 2.0 | 26 | 29.5 | 32.0 | dB |
| | 8.0 | 26 | 29.5 | 32.0 | |
| | 14.0 | 25 | 28.5 | 31.0 | |
| | 20.0 | 27 | 30 | 33.0 | |
| | 2.0 | | 17 | | |
| Input Return Loss | 4.0 | | 25 | | |
| | 6.0 | | 20 | | |
| | 8.0 | | 25 | | |
| | 10.0 | | 27 | | |
| | 12.0 | | 22 | | |
| | 14.0 | | 15 | | |
| | 16.0 | | 15 | | |
| | 18.0 | | 10 | | |
| | 20.0 | | 15 | | |
| Output Return Loss | 2.0 | | 27 | | dB |
| | 4.0 | | 30 | | |
| | 6.0 | | 22 | | |
| | 8.0 | | 22 | | |
| | 10.0 | | 14 | | |
| | 12.0 | | 10 | | |
| | 14.0 | | 14 | | |
| | 16.0 | | 14 | | |
| | 18.0 | | 14 | | |
| 20.0 | | 10 | | | |
| Output Power @ 1 dB compression | 2.0 | | 16 | | dBm |
| | 8.0 | | 16 | | |
| | 12.0 | | 15 | | |
| | 16.0 | | 15 | | |
| | 18.0 | | 14 | | |
| Output IP3 | 2.0 | | 27.5 | | dBm |
| | 8.0 | | 27.5 | | |
| | 12.0 | | 27 | | |
| | 16.0 | | 26.5 | | |
| | 18.0 | | 26 | | |
| 20.0 | | 25 | | | |
| I _{DD1} Device Operating Current at V _{DD} =5V ² | — | | 400 | 500 | mA |
| Device Operating Voltage | — | +5 | +9 | +15 | V |

1. Usable 1 GHz to 22 GHz.

2. Increasing VDD, reduces IDD.





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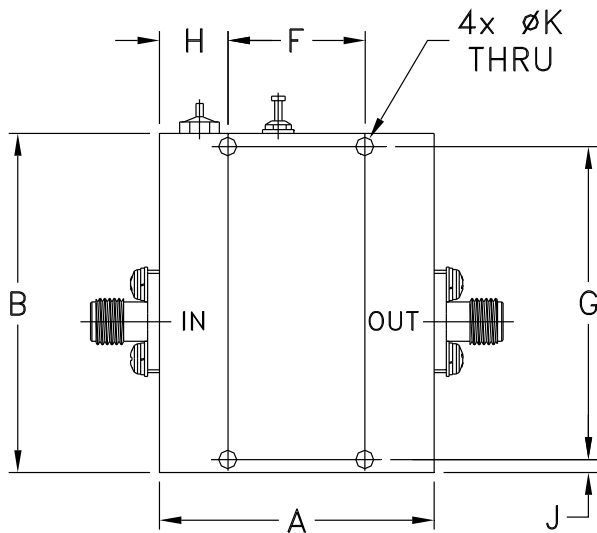
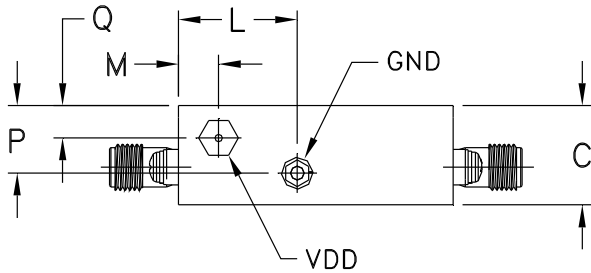
Wideband Amplifier

ZVA-203GX+

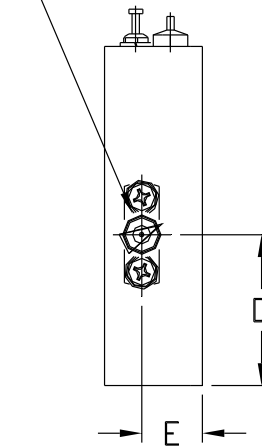
ABSOLUTE MAXIMUM RATINGS²

| Parameter | Ratings |
|-------------------------------------|----------------|
| Operating Temperature (ground lead) | 0°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| Total Power Dissipation | 2W |
| Input Power (CW), Vd=12 | 0 dBm |
| DC Voltage | +15V |

OUTLINE DRAWING



2x 2.92mm FEMALE, CONN



OUTLINE DIMENSIONS (Inches/mm)

| A | B | C | D | E | F | G | H | J | K | L | M | N | P | Q | wt |
|-------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|------|---|------|------|-------|
| 1.5 | 1.82 | 0.53 | 0.81 | 0.33 | 0.75 | 1.680 | 0.380 | 0.070 | 0.098 | 0.65 | 0.22 | - | 0.36 | 0.17 | grams |
| 38.10 | 46.23 | 13.46 | 20.57 | 8.38 | 19.05 | 42.67 | 9.65 | 1.78 | 2.49 | 16.51 | 5.59 | - | 9.14 | 4.32 | 140 |





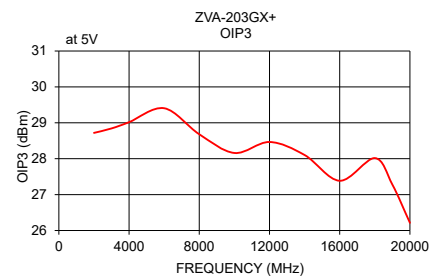
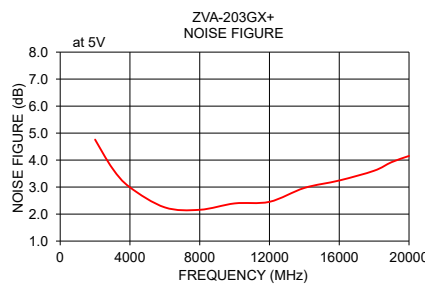
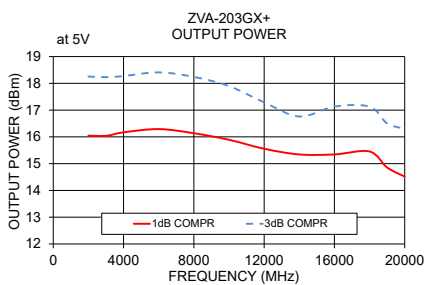
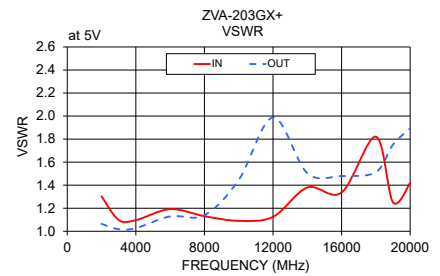
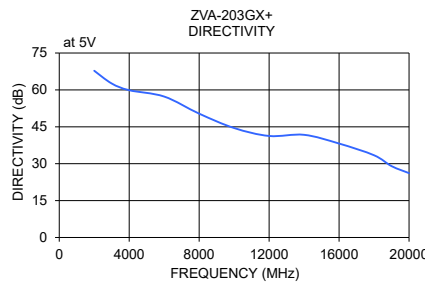
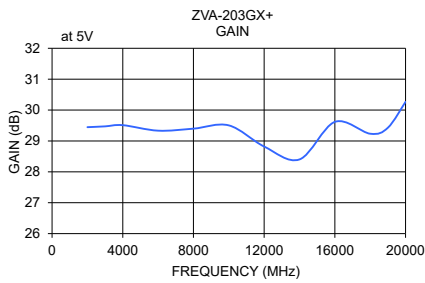
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Wideband Amplifier

ZVA-203GX+

TYPICAL PERFORMANCE DATA/CURVES

| Frequency (MHz) | Gain (dB) | Directivity (dB) | VSWR (:1) | | Noise Figure (dB) | Pout at 1 dB Compr. (dBm) | | OIP3 (dBm) |
|-----------------|-----------|------------------|-----------|------|-------------------|---------------------------|-------|------------|
| | | | IN | OUT | | 1dB | 3dB | |
| 2000 | 29.45 | 67.79 | 1.30 | 1.06 | 4.76 | 16.05 | 18.25 | 28.72 |
| 3000 | 29.47 | 62.60 | 1.10 | 1.02 | 3.69 | 16.04 | 18.23 | 28.84 |
| 4000 | 29.51 | 59.87 | 1.10 | 1.03 | 2.99 | 16.17 | 18.27 | 29.02 |
| 6000 | 29.33 | 57.30 | 1.19 | 1.13 | 2.25 | 16.29 | 18.41 | 29.41 |
| 8000 | 29.40 | 50.34 | 1.13 | 1.14 | 2.16 | 16.14 | 18.24 | 28.68 |
| 10000 | 29.50 | 44.50 | 1.09 | 1.45 | 2.40 | 15.89 | 17.90 | 28.16 |
| 12000 | 28.82 | 41.28 | 1.13 | 1.99 | 2.45 | 15.56 | 17.29 | 28.47 |
| 14000 | 28.40 | 41.74 | 1.38 | 1.50 | 2.97 | 15.34 | 16.76 | 28.10 |
| 16000 | 29.62 | 38.19 | 1.34 | 1.48 | 3.24 | 15.34 | 17.13 | 27.39 |
| 18000 | 29.23 | 33.43 | 1.82 | 1.51 | 3.61 | 15.45 | 17.13 | 28.02 |
| 19000 | 29.43 | 29.01 | 1.25 | 1.75 | 3.92 | 14.86 | 16.50 | 27.28 |
| 20000 | 30.27 | 26.16 | 1.42 | 1.89 | 4.15 | 14.52 | 16.30 | 26.21 |



NOTES

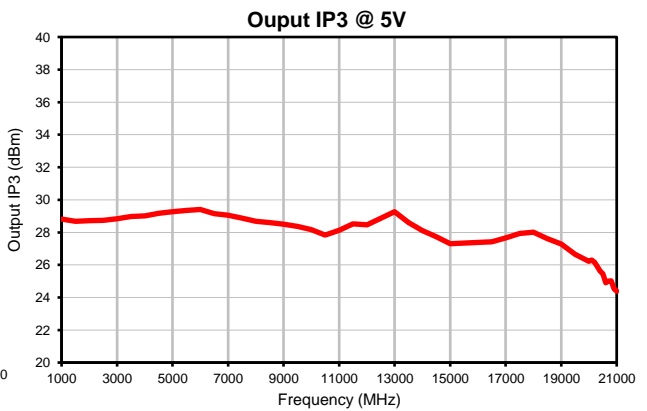
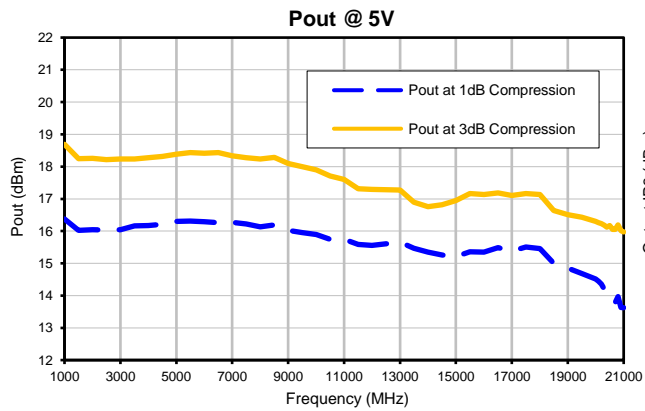
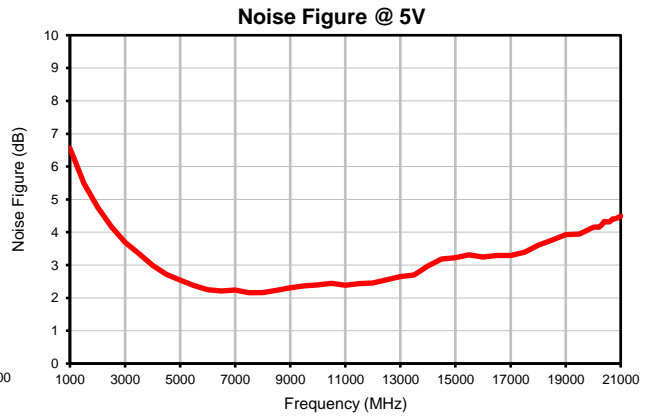
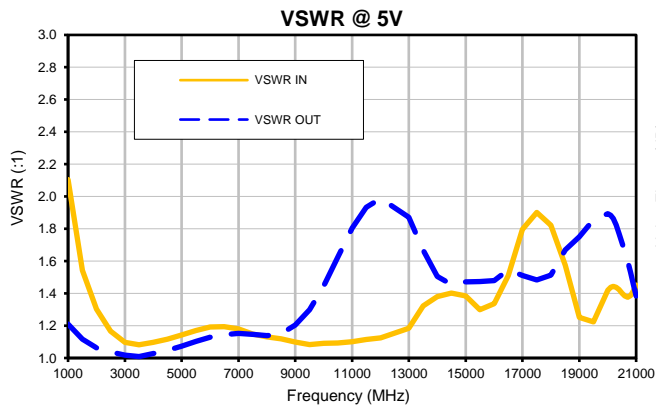
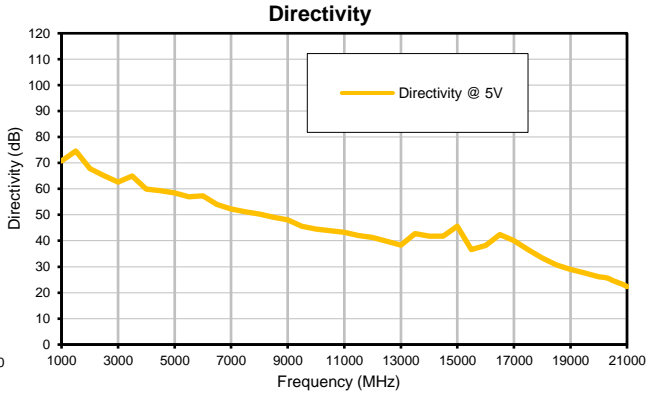
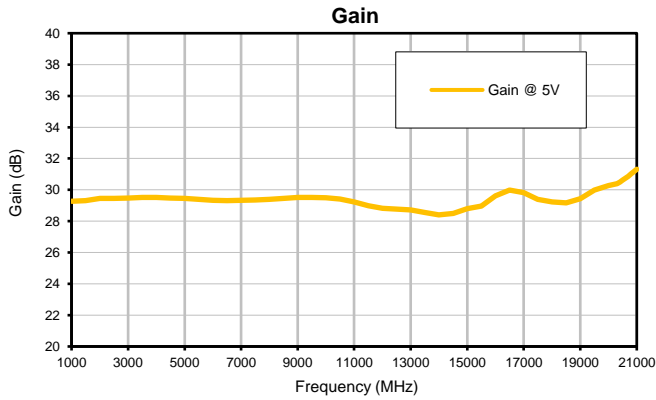
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- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document 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

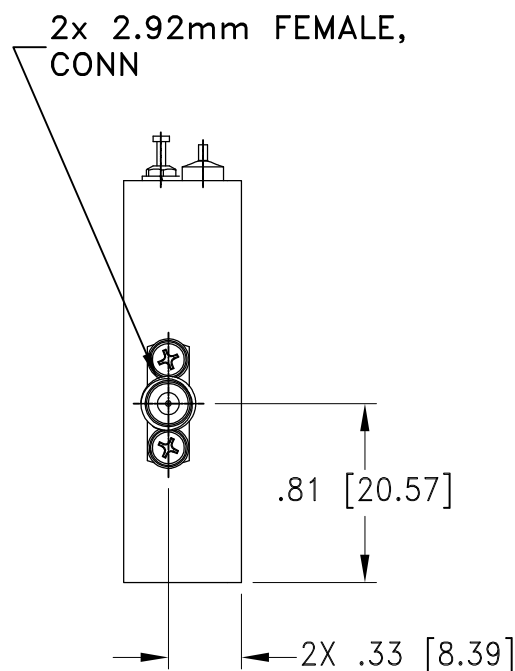
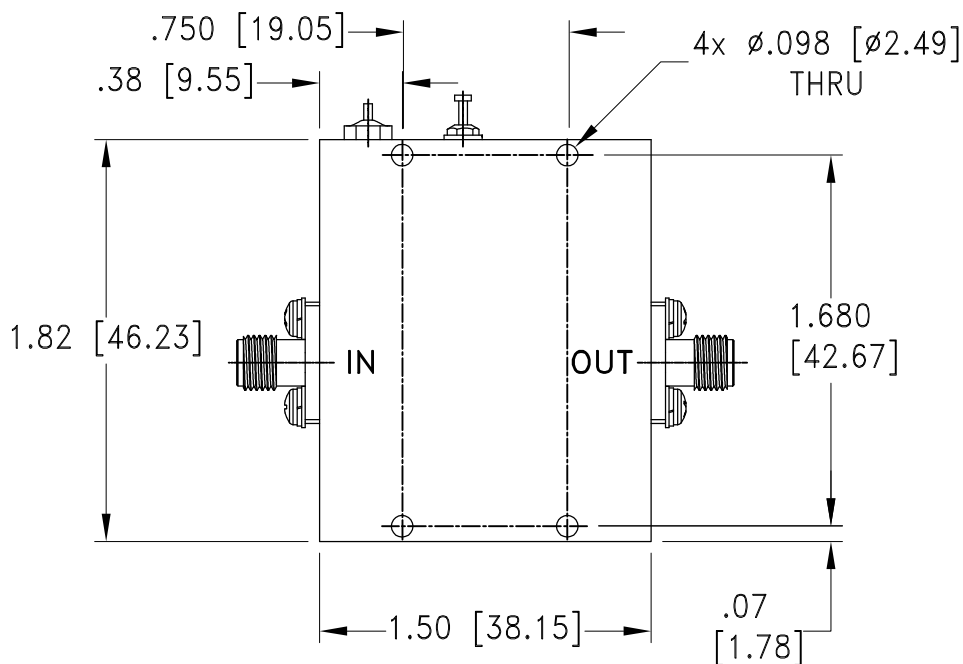
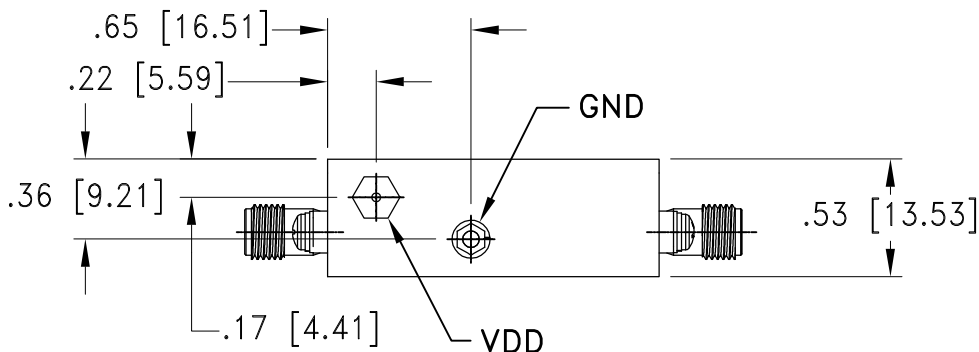
| FREQUENCY (MHz) | GAIN (dB) 5V | DIRECTIVITY (dB) 5V | VSWR (:1) | | NOISE FIGURE (dB) 5V | POUT @ 1 dB COMPRESSION (dBm) 5V | POUT @ 3 dB COMPRESSION (dBm) 5V | OUTPUT IP3 (dBm) 5V |
|--------------------|--------------------|---------------------------|-----------|-----------|----------------------------|---|---|---------------------------|
| | | | IN 5V | OUT 5V | | | | |
| 1000 | 29.28 | 70.83 | 2.10 | 1.21 | 6.56 | 16.38 | 18.69 | 28.82 |
| 1500 | 29.31 | 74.62 | 1.54 | 1.12 | 5.50 | 16.02 | 18.25 | 28.68 |
| 2000 | 29.45 | 67.79 | 1.30 | 1.06 | 4.76 | 16.05 | 18.25 | 28.72 |
| 2500 | 29.45 | 65.09 | 1.17 | 1.04 | 4.17 | 16.03 | 18.21 | 28.74 |
| 3000 | 29.47 | 62.60 | 1.10 | 1.02 | 3.69 | 16.04 | 18.23 | 28.84 |
| 3500 | 29.51 | 65.00 | 1.08 | 1.01 | 3.35 | 16.16 | 18.24 | 28.97 |
| 4000 | 29.51 | 59.87 | 1.10 | 1.03 | 2.99 | 16.17 | 18.27 | 29.02 |
| 4500 | 29.48 | 59.36 | 1.12 | 1.05 | 2.72 | 16.22 | 18.31 | 29.18 |
| 5000 | 29.44 | 58.38 | 1.14 | 1.07 | 2.54 | 16.31 | 18.39 | 29.27 |
| 5500 | 29.39 | 57.01 | 1.17 | 1.10 | 2.37 | 16.31 | 18.43 | 29.34 |
| 6000 | 29.33 | 57.30 | 1.19 | 1.13 | 2.25 | 16.29 | 18.41 | 29.41 |
| 6500 | 29.31 | 54.02 | 1.19 | 1.15 | 2.21 | 16.26 | 18.43 | 29.14 |
| 7000 | 29.33 | 52.31 | 1.18 | 1.15 | 2.24 | 16.27 | 18.34 | 29.05 |
| 7500 | 29.36 | 51.11 | 1.15 | 1.15 | 2.16 | 16.22 | 18.27 | 28.87 |
| 8000 | 29.40 | 50.34 | 1.13 | 1.14 | 2.16 | 16.14 | 18.24 | 28.68 |
| 8500 | 29.45 | 49.05 | 1.12 | 1.15 | 2.23 | 16.20 | 18.29 | 28.60 |
| 9000 | 29.51 | 48.05 | 1.10 | 1.20 | 2.31 | 16.03 | 18.10 | 28.50 |
| 9500 | 29.51 | 45.63 | 1.08 | 1.30 | 2.37 | 15.95 | 18.00 | 28.37 |
| 10000 | 29.50 | 44.50 | 1.09 | 1.45 | 2.40 | 15.89 | 17.90 | 28.16 |
| 10500 | 29.41 | 43.90 | 1.09 | 1.62 | 2.44 | 15.74 | 17.71 | 27.84 |
| 11000 | 29.23 | 43.29 | 1.10 | 1.80 | 2.38 | 15.74 | 17.60 | 28.13 |
| 11500 | 28.99 | 41.97 | 1.12 | 1.93 | 2.43 | 15.58 | 17.31 | 28.53 |
| 12000 | 28.82 | 41.28 | 1.13 | 1.99 | 2.45 | 15.56 | 17.29 | 28.47 |
| 13000 | 28.71 | 38.30 | 1.18 | 1.87 | 2.64 | 15.65 | 17.28 | 29.27 |
| 13500 | 28.56 | 42.79 | 1.32 | 1.67 | 2.70 | 15.46 | 16.90 | 28.60 |
| 14000 | 28.40 | 41.74 | 1.38 | 1.50 | 2.97 | 15.34 | 16.76 | 28.10 |
| 14500 | 28.50 | 41.81 | 1.40 | 1.46 | 3.19 | 15.26 | 16.81 | 27.73 |
| 15000 | 28.79 | 45.55 | 1.38 | 1.47 | 3.23 | 15.21 | 16.94 | 27.31 |
| 15500 | 28.97 | 36.63 | 1.30 | 1.47 | 3.32 | 15.36 | 17.16 | 27.35 |
| 16000 | 29.62 | 38.19 | 1.34 | 1.48 | 3.24 | 15.34 | 17.13 | 27.39 |
| 16500 | 29.98 | 42.46 | 1.51 | 1.55 | 3.29 | 15.48 | 17.18 | 27.42 |
| 17000 | 29.81 | 40.04 | 1.80 | 1.51 | 3.30 | 15.38 | 17.10 | 27.66 |
| 17500 | 29.40 | 36.59 | 1.90 | 1.48 | 3.39 | 15.51 | 17.17 | 27.94 |
| 18000 | 29.23 | 33.43 | 1.82 | 1.51 | 3.61 | 15.45 | 17.13 | 28.02 |
| 18500 | 29.17 | 30.73 | 1.58 | 1.67 | 3.76 | 15.00 | 16.64 | 27.62 |
| 19000 | 29.43 | 29.01 | 1.25 | 1.75 | 3.92 | 14.86 | 16.50 | 27.28 |
| 19500 | 29.99 | 27.64 | 1.22 | 1.86 | 3.94 | 14.69 | 16.43 | 26.66 |
| 20000 | 30.27 | 26.16 | 1.42 | 1.89 | 4.15 | 14.52 | 16.30 | 26.21 |
| 20100 | 30.30 | 26.01 | 1.44 | 1.88 | 4.16 | 14.44 | 16.26 | 26.31 |
| 20200 | 30.35 | 25.89 | 1.44 | 1.86 | 4.15 | 14.35 | 16.23 | 26.17 |
| 20300 | 30.40 | 25.67 | 1.44 | 1.82 | 4.22 | 14.20 | 16.18 | 25.88 |
| 20400 | 30.49 | 25.29 | 1.42 | 1.77 | 4.32 | 14.11 | 16.12 | 25.62 |
| 20500 | 30.61 | 24.67 | 1.40 | 1.71 | 4.32 | 14.05 | 16.18 | 25.46 |
| 20600 | 30.74 | 24.23 | 1.38 | 1.66 | 4.31 | 13.82 | 16.05 | 24.90 |
| 20700 | 30.87 | 23.76 | 1.38 | 1.60 | 4.41 | 13.78 | 16.06 | 25.00 |
| 20800 | 31.03 | 23.43 | 1.39 | 1.53 | 4.42 | 13.97 | 16.19 | 25.02 |
| 20900 | 31.18 | 22.95 | 1.42 | 1.45 | 4.44 | 13.63 | 16.02 | 24.52 |
| 21000 | 31.32 | 22.34 | 1.45 | 1.38 | 4.49 | 13.62 | 15.97 | 24.39 |

Typical Performance Curves



Outline Dimensions

AV2554-1



Weight: 140 grams

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

Notes:

1. Case material: Brass alloy
2. Case finish: Gold plating 20 μ inches, over Nickel plating 100 μ inches.



P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661 For detailed performance specs & shopping online see Mini-Circuits web site



The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: www.minicircuits.com

RF/IF MICROWAVE COMPONENTS



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 85° 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 |