

AC1082

10 TO 1000 MHz TO-8 CASCADABLE AMPLIFIERS

Typical Values

| | |
|-----------------------------------|-------------------------|
| Low Noise | AC1082 3.5 dB |
| Wide Voltage Range | +5 to +8 Volts |
| High Performance Thin Film | |
| Standard Size TO-8 Package | |

SPECIFICATIONS*

| Parameter | Typical | Guaranteed | |
|------------------------------------|------------|-------------|---------------|
| | | 0 to 50 °C | -55 to +85 °C |
| Frequency (Min.) | 5-1100 MHz | 10-1000 MHz | 10-1000 MHz |
| Small Signal Gain (Min.) | 14.8 dB | 14.0 dB | 13.5 dB |
| Gain Flatness (Max.) | ±0.3 dB | ±0.5 dB | ±0.7 dB |
| Noise Figure (Max.) | 3.5 dB | 4.5 dB | 5.0 dB |
| SWR (Max.) Input/Output | < 1.6:1 | 1.8:1 | 1.8:1 |
| Power Output (Min.) @ 1dB comp. | +12.8 dBm | +12.0 dBm | +11.5 dBm |
| Reverse Isolation | 18.0 dB | — | — |
| DC Current (Max.) | 30.0 mA | 32.0 mA | 34.0 mA |

* Measured in a 50-ohm system at +5 Vdc unless otherwise specified.

INTERMODULATION PERFORMANCE

Typical @ 25 °C

| | |
|--|-----------|
| AC1082 | |
| Second Order Harmonic Intercept Point | +43 dBm |
| Second Order Two Tone Intercept Point | +37 dBm |
| Third Order Two Tone Intercept Point | +26.5 dBm |

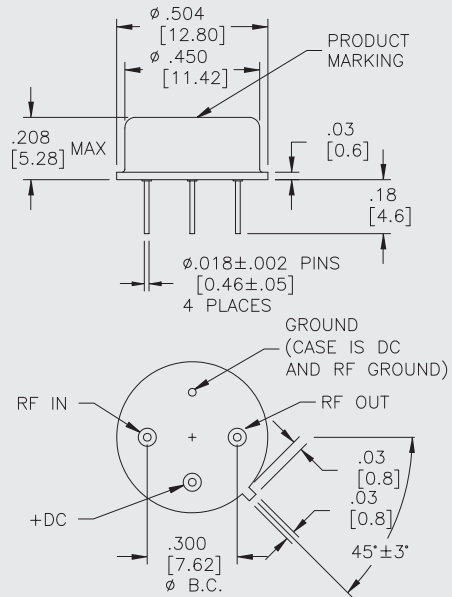
ABSOLUTE MAXIMUM RATINGS

| | |
|---|----------------|
| Storage Temperature | -62 to +125 °C |
| Maximum Case Temperature | +125 °C |
| Maximum DC Voltage | +10 Volts |
| Maximum Continuous RF Input Power | +10 dBm |
| Maximum Short Term Input Power (1 Minute Max.) | 50 Milliwatts |
| Maximum Peak Power (3 μsec Max.) | 0.5 Watt |
| Burn-in Temperature | +125 °C |
| Thermal Resistance¹ (θjc) | +78 °C/Watt |
| Junction Temperature Rise Above Case (Tjc) | +12.1 °C |

¹Thermal resistance is based on total power dissipation.

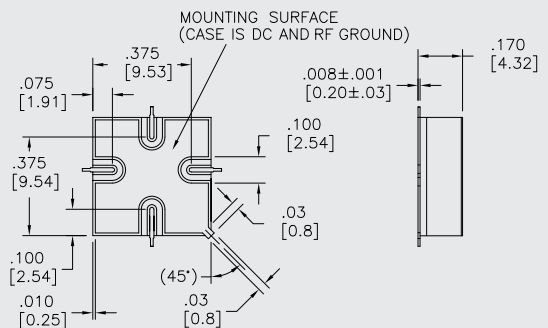
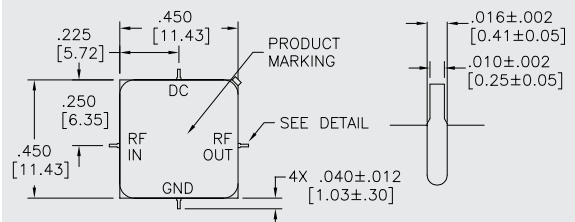
AC1082

TO-8 Package for Amplifiers



AS1082

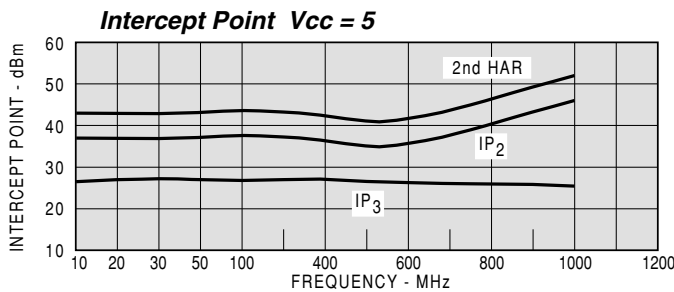
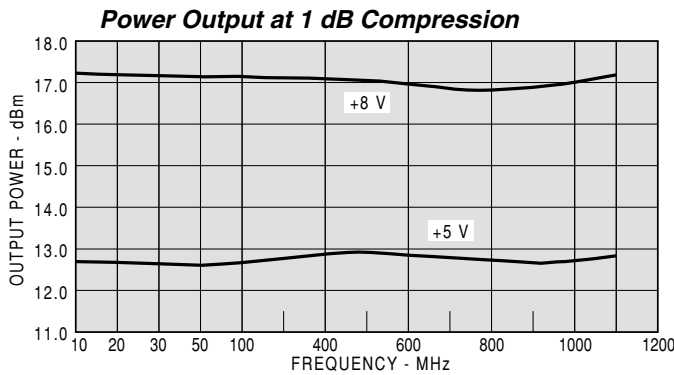
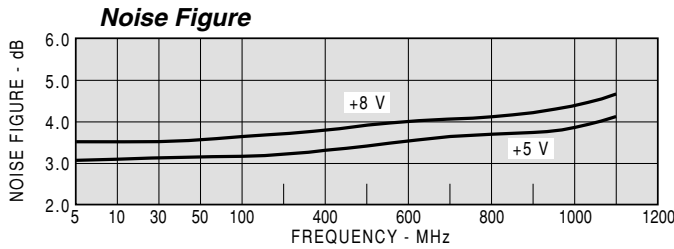
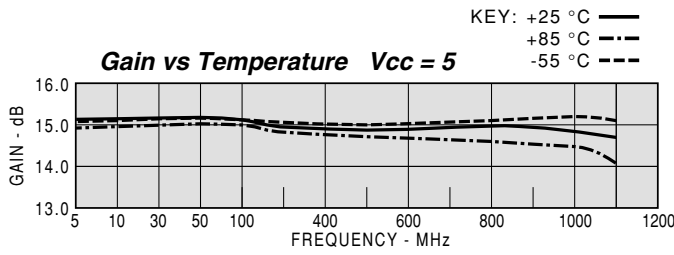
SMT0-8 Package for Amplifiers



DIMENSIONS ARE IN INCHES [MILLIMETERS]

TYPICAL PERFORMANCE

TYPICAL AUTOMATIC TEST DATA



| Model: AC1082 | | | Vcc=+5V | | | Icc=29.52 | |
|---------------|------|------|---------|-------|---------|-----------|-------|
| FREQ | SWR | SWR | GAIN | DELAY | REV/ISO | DB | DB |
| MHZ | IN | OUT | DB | NSEC | | | |
| 5 | 1.28 | 1.29 | 15.0 | | | | -19.4 |
| 10 | 1.19 | 1.15 | 15.0 | | | | -19.4 |
| 20 | 1.14 | 1.10 | 15.1 | | | | -19.3 |
| 50 | 1.14 | 1.08 | 15.1 | 0.713 | | | -19.3 |
| 100 | 1.14 | 1.07 | 15.0 | 0.489 | | | -19.3 |
| 200 | 1.20 | 1.08 | 14.9 | 0.500 | | | -19.3 |
| 300 | 1.25 | 1.10 | 14.9 | 0.489 | | | -19.1 |
| 400 | 1.30 | 1.13 | 14.9 | 0.489 | | | -18.9 |
| 500 | 1.33 | 1.16 | 14.9 | 0.497 | | | -18.5 |
| 600 | 1.37 | 1.20 | 14.8 | 0.510 | | | -18.2 |
| 700 | 1.40 | 1.26 | 14.9 | 0.516 | | | -17.7 |
| 800 | 1.44 | 1.33 | 14.9 | 0.550 | | | -17.3 |
| 900 | 1.48 | 1.42 | 15.0 | 0.579 | | | -16.7 |
| 1000 | 1.59 | 1.56 | 15.0 | 0.645 | | | -16.3 |
| 1100 | 1.90 | 1.78 | 14.8 | 0.697 | | | -15.9 |

| Model: AC1082 | | | LINEAR S-PARAMETERS | | | | | | Icc=29.52 | |
|---------------|------|--------|---------------------|--------|-------|--------|------|------|-----------|-----|
| | | | Vcc=+5V | | | | S22 | | | |
| FREQ. | S11 | | S21 | | S12 | | S22 | | MAG | ANG |
| MHZ | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG | | |
| 5 | 0.12 | -53.1 | 5.62 | -169.7 | 0.107 | 12.0 | 0.13 | 0.13 | 92.4 | |
| 10 | 0.09 | 37.7 | 5.65 | -176.0 | 0.107 | 6.0 | 0.07 | 0.07 | 72.7 | |
| 20 | 0.07 | -30.7 | 5.66 | 179.1 | 0.108 | 2.0 | 0.05 | 0.05 | 45.4 | |
| 50 | 0.07 | -26.0 | 5.70 | 171.5 | 0.109 | -3.0 | 0.04 | 0.04 | 3.9 | |
| 100 | 0.07 | -41.8 | 5.63 | 162.6 | 0.108 | -7.0 | 0.03 | 0.03 | -27.4 | |
| 200 | 0.09 | -74.9 | 5.56 | 144.8 | 0.108 | -14.0 | 0.04 | 0.04 | -63.3 | |
| 300 | 0.11 | -97.1 | 5.55 | 127.1 | 0.111 | -22.0 | 0.05 | 0.05 | -84.4 | |
| 400 | 0.13 | -112.1 | 5.55 | 109.7 | 0.114 | -29.0 | 0.06 | 0.06 | -105.5 | |
| 500 | 0.14 | -130.2 | 5.56 | 91.5 | 0.118 | -38.0 | 0.07 | 0.07 | -128.8 | |
| 600 | 0.16 | -151.8 | 5.50 | 73.1 | 0.123 | -47.0 | 0.09 | 0.09 | -156.0 | |
| 700 | 0.17 | -171.1 | 5.57 | 54.6 | 0.130 | -57.0 | 0.11 | 0.11 | 179.3 | |
| 800 | 0.18 | 166.3 | 5.57 | 34.7 | 0.137 | -68.0 | 0.14 | 0.14 | 153.5 | |
| 900 | 0.19 | 135.0 | 5.64 | 13.9 | 0.146 | -81.0 | 0.17 | 0.17 | 124.1 | |
| 1000 | 0.23 | 94.0 | 5.59 | -9.3 | 0.154 | -96.0 | 0.22 | 0.22 | 90.5 | |
| 1100 | 0.31 | 48.6 | 5.51 | -34.2 | 0.161 | -113.0 | 0.28 | 0.28 | 53.3 | |
| 1200 | 0.45 | 8.9 | 5.07 | -62.6 | 0.160 | -133.0 | 0.35 | 0.35 | 13.0 | |

| Model: AC1082 | | | Vcc=+8V | | | Icc=48.59 | |
|---------------|------|------|---------|-------|---------|-----------|-------|
| FREQ | SWR | SWR | GAIN | DELAY | REV/ISO | DB | DB |
| MHZ | IN | OUT | DB | NSEC | | | |
| 5 | 1.27 | 1.31 | 15.3 | | | | -19.6 |
| 10 | 1.18 | 1.15 | 15.3 | | | | -19.5 |
| 20 | 1.11 | 1.08 | 15.3 | | | | -19.5 |
| 50 | 1.11 | 1.04 | 15.4 | 0.694 | | | -19.4 |
| 100 | 1.12 | 1.03 | 15.2 | 0.485 | | | -19.5 |
| 200 | 1.14 | 1.03 | 15.2 | 0.486 | | | -19.5 |
| 300 | 1.20 | 1.04 | 15.2 | 0.477 | | | -19.4 |
| 400 | 1.24 | 1.07 | 15.1 | 0.478 | | | -19.2 |
| 500 | 1.25 | 1.08 | 15.2 | 0.488 | | | -18.9 |
| 600 | 1.28 | 1.10 | 15.2 | 0.493 | | | -18.6 |
| 700 | 1.33 | 1.14 | 15.2 | 0.505 | | | -18.3 |
| 800 | 1.35 | 1.19 | 15.3 | 0.521 | | | -17.9 |
| 900 | 1.37 | 1.25 | 15.4 | 0.562 | | | -17.5 |
| 1000 | 1.39 | 1.35 | 15.5 | 0.616 | | | -17.0 |
| 1100 | 1.57 | 1.53 | 15.5 | 0.662 | | | -16.6 |

| Model: AC1082 | | | LINEAR S-PARAMETERS | | | | | | Icc=48.59 | |
|---------------|------|--------|---------------------|--------|-------|--------|------|------|-----------|-----|
| | | | Vcc=+8V | | | | S22 | | | |
| FREQ. | S11 | | S21 | | S12 | | S22 | | MAG | ANG |
| MHZ | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG | | |
| 5 | 0.12 | -50.0 | 5.80 | -169.0 | 0.105 | 12.0 | 0.13 | 0.13 | 101.5 | |
| 10 | 0.08 | -47.9 | 5.82 | -175.6 | 0.106 | 6.0 | 0.07 | 0.07 | 88.9 | |
| 20 | 0.05 | -38.5 | 5.82 | 179.4 | 0.106 | 2.0 | 0.04 | 0.04 | 69.7 | |
| 50 | 0.05 | -30.0 | 5.88 | 171.8 | 0.107 | -3.0 | 0.02 | 0.02 | 28.1 | |
| 100 | 0.05 | -42.5 | 5.79 | 163.0 | 0.106 | -7.0 | 0.01 | 0.01 | -11.6 | |
| 200 | 0.07 | -72.1 | 5.73 | 145.6 | 0.106 | -15.0 | 0.01 | 0.01 | -46.4 | |
| 300 | 0.09 | -92.0 | 5.72 | 128.4 | 0.108 | -23.0 | 0.02 | 0.02 | -59.3 | |
| 400 | 0.11 | -102.6 | 5.71 | 111.5 | 0.110 | -31.0 | 0.03 | 0.03 | -79.9 | |
| 500 | 0.11 | -118.9 | 5.73 | 93.9 | 0.113 | -40.0 | 0.04 | 0.04 | -103.2 | |
| 600 | 0.12 | -137.2 | 5.72 | 75.9 | 0.117 | -49.0 | 0.05 | 0.05 | -135.1 | |
| 700 | 0.14 | -153.3 | 5.77 | 57.9 | 0.122 | -59.0 | 0.06 | 0.06 | -164.8 | |
| 800 | 0.15 | -173.3 | 5.81 | 38.9 | 0.127 | -70.0 | 0.09 | 0.09 | 165.7 | |
| 900 | 0.16 | 156.5 | 5.90 | 19.0 | 0.134 | -82.0 | 0.11 | 0.11 | 131.9 | |
| 1000 | 0.16 | 115.6 | 5.97 | -3.3 | 0.141 | -95.0 | 0.15 | 0.15 | 93.6 | |
| 1100 | 0.22 | 64.1 | 5.93 | -27.2 | 0.148 | -112.0 | 0.21 | 0.21 | 54.2 | |
| 1200 | 0.36 | 20.1 | 5.69 | -55.2 | 0.150 | -131.0 | 0.30 | 0.30 | 12.9 | |