

AC1008

5 TO 1000 MHz TO-8 CASCADABLE AMPLIFIER

Typical Values

| | |
|--------------------------------------------------|-----------------------------------|
| Medium Output Power | AC1008 +18.5 dBm |
| Medium Gain | +16.2 dB |
| High Third Order I.P. | +33.0 dBm |
| High Performance Thin Film Standard Size TO-8 | |

SPECIFICATIONS*

| Parameter | Typical | Guaranteed | |
|------------------------------------|-----------------------------------------|----------------|----------------|
| | | 0 to 50 °C | -55 to +85 °C |
| Frequency (Min.) | 5-1000 MHz | 5-1000 MHz | 5-1000 MHz |
| Small Signal Gain (Min.) | 15.5 dB | 14.8 dB | 14.3 dB |
| Gain Flatness (Max.) | ±0.2 dB | ±0.4 dB | ±0.5 dB |
| Noise Figure (Max.) | 4.5 dB | 5.5 dB | 6.0 dB |
| SWR (Max.) | Input/Output 5-10 MHz 10-1000 MHz | 1.8:1 1.7:1 | 1.9:1 1.8:1 |
| Power Output (Min.) @ 1dB comp. | +18.5 dBm | +18.0 dBm | +17.5 dBm |
| DC Current (Max.) | 85 mA | 88.0 mA | 93.0 mA |

* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.

INTERMODULATION PERFORMANCE

| Typical @ 25 °C | +12 Volts | +15 Volts |
|---------------------------------------------|-----------|-----------|
| Second Order Harmonic Intercept Point | +44 dBm | +50 dBm |
| Second Order Two Tone Intercept Point | +38 dBm | +44 dBm |
| Third Order Two Tone Intercept Point | +26 dBm | +33 dBm |

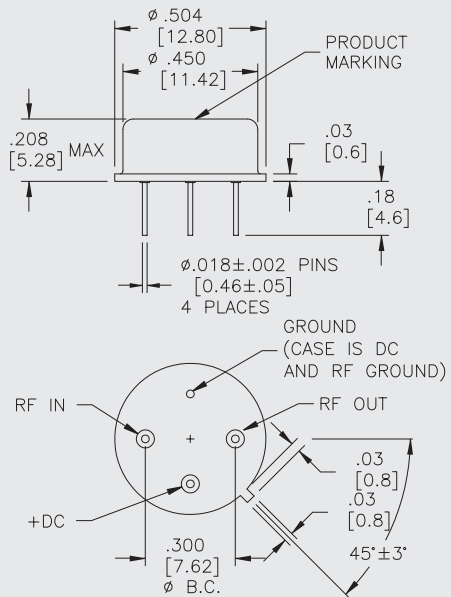
ABSOLUTE MAXIMUM RATINGS

| | |
|------------------------------------------------------|----------------|
| Storage Temperature | -62 to +125 °C |
| Maximum Case Temperature | +125 °C |
| Maximum DC Voltage | +17 Volts |
| Maximum Continuous RF Input Power | +13 dBm |
| Maximum Short Term Input Power (1 Minute Max.) | 100 Milliwatts |
| Maximum Peak Power (3 µsec Max.) | 0.5 Watt |
| Burn-in Temperature | +105 °C |
| Thermal Resistance ¹ (θjc) | +32 °C/Watt |
| Junction Temperature Rise Above Case (Tjc) | +44.2 °C |

¹ Thermal resistance is based on total power dissipation.

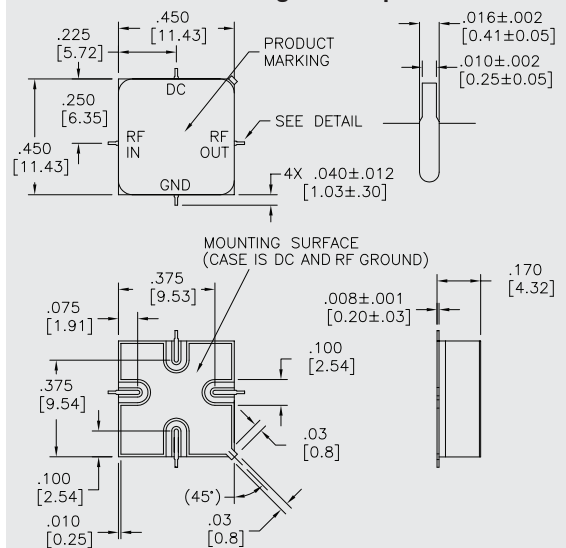
AC1008

TO-8 Package for Amplifiers



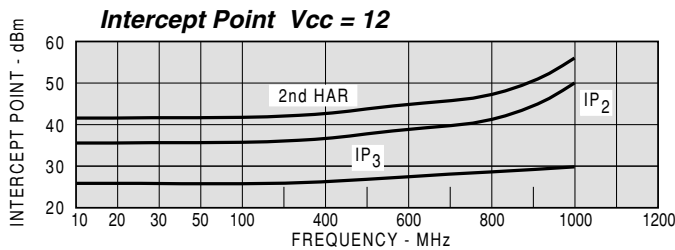
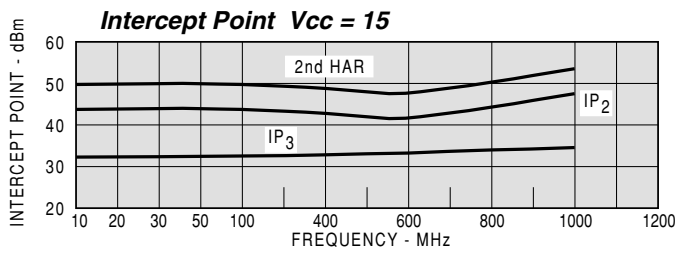
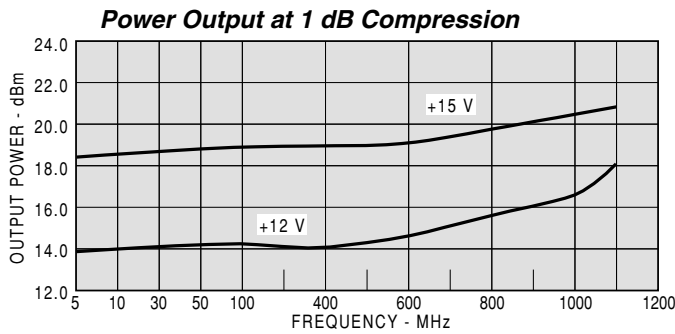
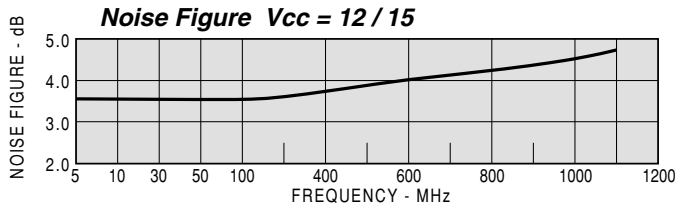
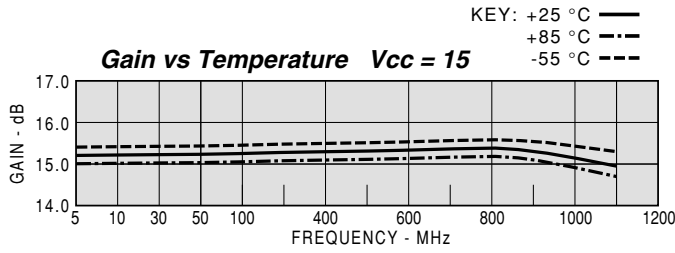
AS1008

SMT0-8 Package for Amplifiers



DIMENSIONS ARE IN INCHES [MILLIMETERS]

TYPICAL PERFORMANCE



TYPICAL AUTOMATIC TEST DATA

| Model: AC1008 | | Vcc=+15V | | | | Icc=83.96 | |
|---------------|------|----------|-------|-------|-------|-----------|--|
| FREQ | SWR | SWR | GAIN | PHASE | DELAY | REV/ISO | |
| MHZ | IN | OUT | DB | DEG | NSEC | DB | |
| 5 | 1.53 | 1.52 | 15.09 | -154 | | -20.2 | |
| 10 | 1.26 | 1.36 | 15.30 | -168 | | -19.9 | |
| 30 | 1.15 | 1.29 | 15.46 | -180 | 1.60 | -19.8 | |
| 50 | 1.14 | 1.27 | 15.49 | 176 | 0.69 | -19.7 | |
| 100 | 1.13 | 1.26 | 15.48 | 167 | 0.50 | -19.6 | |
| 200 | 1.14 | 1.27 | 15.42 | 151 | 0.43 | -19.7 | |
| 300 | 1.17 | 1.28 | 15.37 | 136 | 0.41 | -19.7 | |
| 400 | 1.20 | 1.28 | 15.36 | 122 | 0.40 | -19.6 | |
| 500 | 1.23 | 1.27 | 15.38 | 107 | 0.41 | -19.5 | |
| 600 | 1.26 | 1.25 | 15.37 | 92 | 0.42 | -19.4 | |
| 700 | 1.29 | 1.23 | 15.38 | 77 | 0.43 | -19.3 | |
| 800 | 1.30 | 1.21 | 15.35 | 61 | 0.43 | -19.2 | |
| 900 | 1.31 | 1.22 | 15.26 | 45 | 0.45 | -19.0 | |
| 1000 | 1.32 | 1.26 | 15.10 | 29 | 0.45 | -18.9 | |
| 1100 | 1.33 | 1.35 | 14.89 | 12 | 0.46 | -18.8 | |

LINEAR S-PARAMETERS

| Model: AC1008 | | Vcc=+15V | | | | Icc=83.96 | | |
|---------------|------|----------|------|--------|-------|-----------|------|--------|
| FREQ. | S11 | | S21 | | S12 | | S22 | |
| MHZ | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 5 | 0.21 | -97.5 | 5.68 | -154.4 | 0.098 | 28.9 | 0.21 | -166.6 |
| 10 | 0.11 | -110.4 | 5.82 | -168.0 | 0.101 | 14.4 | 0.15 | -179.2 |
| 30 | 0.07 | -140.0 | 5.93 | -179.5 | 0.103 | 3.5 | 0.13 | 171.1 |
| 50 | 0.06 | -152.5 | 5.95 | 175.5 | 0.104 | 0.2 | 0.12 | 168.2 |
| 100 | 0.06 | -163.6 | 5.94 | 166.5 | 0.104 | -4.7 | 0.11 | 161.8 |
| 200 | 0.07 | -167.3 | 5.90 | 151.2 | 0.103 | -11.8 | 0.12 | 148.2 |
| 300 | 0.08 | -171.0 | 5.87 | 136.4 | 0.104 | -17.7 | 0.12 | 133.0 |
| 400 | 0.09 | 179.7 | 5.86 | 121.9 | 0.104 | -24.1 | 0.12 | 118.7 |
| 500 | 0.10 | 168.1 | 5.87 | 107.2 | 0.106 | -30.1 | 0.12 | 108.0 |
| 600 | 0.12 | 155.0 | 5.87 | 92.10 | 0.107 | -36.6 | 0.11 | 100.5 |
| 700 | 0.13 | 140.9 | 5.87 | 76.80 | 0.109 | -43.3 | 0.10 | 98.2 |
| 800 | 0.13 | 125.6 | 5.85 | 61.10 | 0.110 | -50.5 | 0.10 | 102.4 |
| 900 | 0.14 | 107.7 | 5.79 | 45.00 | 0.112 | -58.2 | 0.10 | 111.1 |
| 1000 | 0.14 | 88.70 | 5.69 | 28.70 | 0.113 | -65.2 | 0.12 | 119.5 |
| 1100 | 0.14 | 69.90 | 5.56 | 12.30 | 0.114 | -73.1 | 0.15 | 122.8 |
| 1200 | 0.15 | 53.60 | 5.36 | -4.40 | 0.116 | -80.5 | 0.19 | 122.1 |

| Model: AC1008 | | Vcc=+12V | | | | Icc=66.48 | |
|---------------|------|----------|-------|-------|-------|-----------|--|
| FREQ | SWR | SWR | GAIN | PHASE | DELAY | REV/ISO | |
| MHZ | IN | OUT | DB | DEG | NSEC | DB | |
| 5 | 1.50 | 1.44 | 14.86 | -155 | | -19.9 | |
| 10 | 1.23 | 1.30 | 15.03 | -168 | | -19.7 | |
| 30 | 1.12 | 1.23 | 15.19 | -180 | 1.60 | -19.5 | |
| 50 | 1.10 | 1.21 | 15.22 | 175 | 0.69 | -19.4 | |
| 100 | 1.10 | 1.20 | 15.21 | 166 | 0.50 | -19.4 | |
| 200 | 1.13 | 1.21 | 15.14 | 151 | 0.43 | -19.5 | |
| 300 | 1.17 | 1.21 | 15.09 | 136 | 0.41 | -19.5 | |
| 400 | 1.21 | 1.22 | 15.07 | 121 | 0.41 | -19.4 | |
| 500 | 1.25 | 1.21 | 15.07 | 106 | 0.42 | -19.3 | |
| 600 | 1.29 | 1.21 | 15.06 | 91 | 0.42 | -19.1 | |
| 700 | 1.32 | 1.21 | 15.02 | 76 | 0.43 | -19.0 | |
| 800 | 1.35 | 1.24 | 14.97 | 60 | 0.44 | -18.9 | |
| 900 | 1.36 | 1.29 | 14.84 | 44 | 0.45 | -18.7 | |
| 1000 | 1.37 | 1.37 | 14.64 | 28 | 0.45 | -18.6 | |
| 1100 | 1.38 | 1.48 | 14.41 | 11 | 0.45 | -18.5 | |

LINEAR S-PARAMETERS

| Model: AC1008 | | Vcc=+12V | | | | Icc=66.48 | | |
|---------------|------|----------|------|--------|-------|-----------|------|--------|
| FREQ. | S11 | | S21 | | S12 | | S22 | |
| MHZ | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 5 | 0.20 | -93.0 | 5.53 | -154.7 | 0.101 | 28.6 | 0.18 | -168.0 |
| 10 | 0.10 | -101.2 | 5.64 | -168.1 | 0.103 | 14.3 | 0.13 | 179.3 |
| 30 | 0.05 | -125.8 | 5.75 | -179.6 | 0.106 | 3.5 | 0.10 | 169.6 |
| 50 | 0.05 | -138.2 | 5.77 | 175.4 | 0.107 | 0.1 | 0.09 | 167.7 |
| 100 | 0.05 | -148.8 | 5.76 | 166.4 | 0.107 | -4.6 | 0.09 | 163.0 |
| 200 | 0.06 | -149.0 | 5.72 | 150.8 | 0.106 | -11.6 | 0.09 | 152.0 |
| 300 | 0.08 | -155.3 | 5.68 | 135.9 | 0.106 | -17.5 | 0.10 | 138.5 |
| 400 | 0.10 | -167.0 | 5.67 | 121.3 | 0.108 | -23.8 | 0.10 | 126.4 |
| 500 | 0.11 | 179.5 | 5.67 | 106.3 | 0.109 | -30.0 | 0.10 | 119.2 |
| 600 | 0.13 | 164.7 | 5.66 | 91.1 | 0.110 | -36.4 | 0.09 | 116.7 |
| 700 | 0.14 | 149.4 | 5.64 | 75.6 | 0.112 | -43.1 | 0.10 | 119.0 |
| 800 | 0.15 | 133.2 | 5.60 | 59.9 | 0.113 | -50.4 | 0.11 | 124.2 |
| 900 | 0.15 | 115.2 | 5.52 | 43.7 | 0.116 | -57.8 | 0.12 | 128.1 |
| 1000 | 0.16 | 95.9 | 5.39 | 27.5 | 0.117 | -65.2 | 0.16 | 128.1 |
| 1100 | 0.16 | 76.7 | 5.25 | 11.2 | 0.119 | -72.9 | 0.19 | 124.7 |
| 1200 | 0.17 | 59.6 | 5.05 | -5.4 | 0.121 | -80.5 | 0.24 | 120.2 |