

AC847

10 TO 800 MHz TO-8 CASCADABLE AMPLIFIER

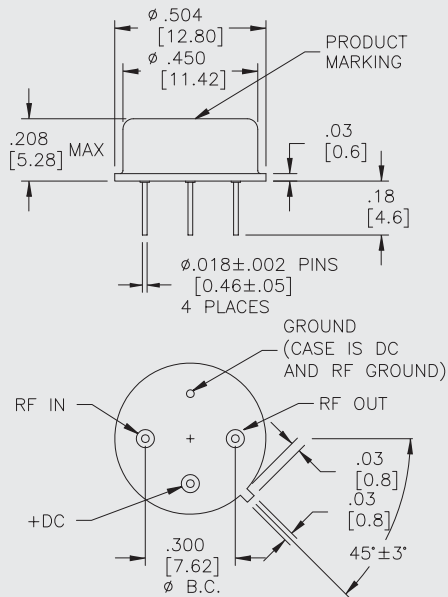
Typical Values

| | |
|-----------------------------------|-------------------|
| Medium Gain | 13.3 dB |
| Low Noise Figure | <3.0 dB |
| Medium Output Level | +17.0 dBm |
| High Performance Thin Film | |
| Standard Size TO-8 | |

AC847

AC847

TO-8 Package for Amplifiers



SPECIFICATIONS*

| Parameter | Typical | Guaranteed | |
|---------------------------------|-----------|---------------------|---------------------|
| | | 0 to 50 °C | -55 to +85 °C |
| Frequency (Min.) | 5-900 MHz | 10-800 MHz | 10-800 MHz |
| Small Signal Gain (Min.) | 13.3 dB | 12.5 dB | 12.0 dB |
| Gain Flatness (Max.) | ±0.4 dB | ±0.5 dB | ±0.7 dB |
| Noise Figure (Max.) | <3.0 dB | 3.5 [^] dB | 4.0 [^] dB |
| SWR (Max.) Input/Output | <1.5:1 | 1.7:1 | 1.9:1 |
| Power Output (Min.) @ 1dB comp. | +17.0 dBm | +16.0 dBm | +15.5 dBm |
| DC Current (Max.) | 44.0 mA | 48.0 mA | 52.0 mA |

* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.
[^] 0.5 dB higher above 600 MHz.

INTERMODULATION PERFORMANCE

| Typical @ 25 °C | +12 volts | +15 volts |
|---|-----------|-----------|
| Second Order Harmonic Intercept Point | +51 dBm | +53 dBm |
| Second Order Two Tone Intercept Point | +45 dBm | +47 dBm |
| Third Order Two Tone Intercept Point | +31 dBm | +32 dBm |

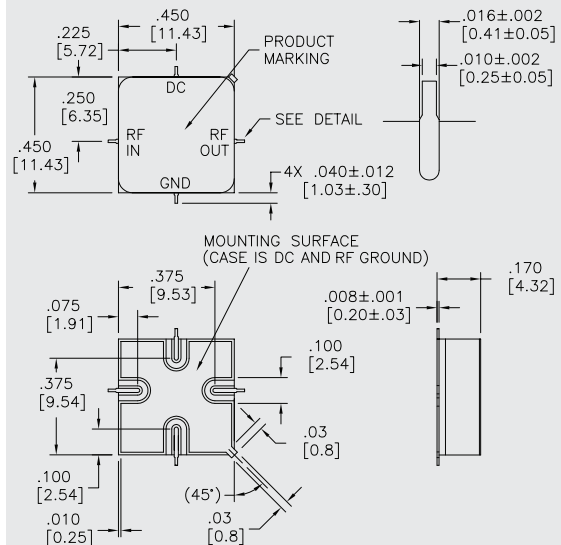
ABSOLUTE MAXIMUM RATINGS

| | |
|---|----------------|
| 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.) | 125 Milliwatts |
| Maximum Peak Power (3 μ sec Max.) | 0.5 Watt |
| Burn-in Temperature | +105 °C |
| Thermal Resistance ¹ (θ_{jc} ; Vcc = 15) | +56 °C/Watt |
| Junction Temperature Rise Above Case (T _{jc} ; Vcc = 15) ... | +39.1 °C |

¹ Thermal resistance is based on total power dissipation.

AS847

SMT0-8 Package for Amplifiers

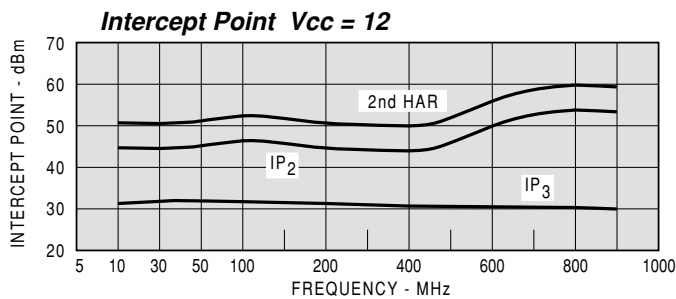
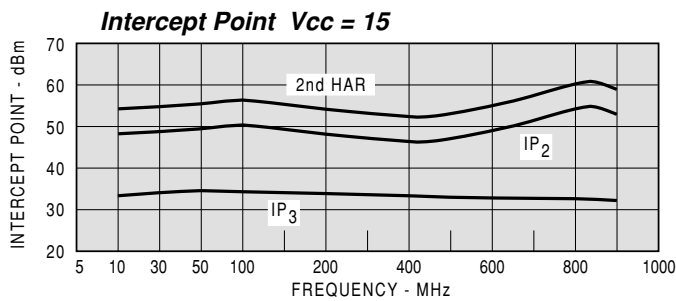
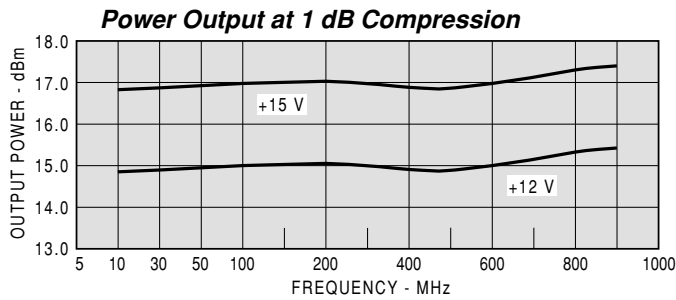
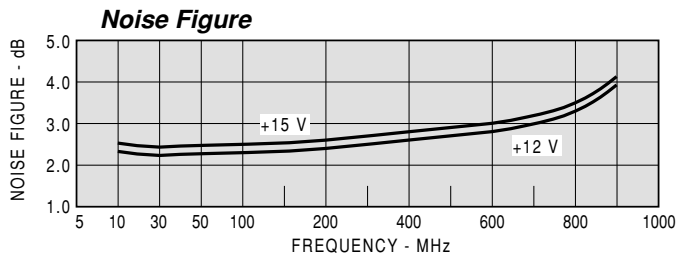
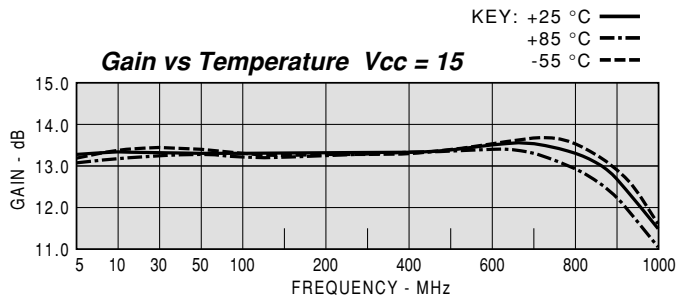


If DC is present on RF input/output, this model requires additional external blocking capacitors.

DIMENSIONS ARE IN INCHES [MILLIMETERS]

TYPICAL PERFORMANCE

TYPICAL AUTOMATIC TEST DATA



| Model: AC847 | | Vcc=+15V | | | | Icc=44.30 | |
|--------------|------|----------|-------|-------|-------|-----------|--|
| FREQ | SWR | SWR | GAIN | PHASE | DELAY | REV/ISO | |
| MHZ | IN | OUT | DB | DEG | NSEC | DB | |
| 5 | 1.47 | 1.35 | 13.32 | -167 | | -17.9 | |
| 10 | 1.28 | 1.18 | 13.35 | -175 | | -17.5 | |
| 30 | 1.20 | 1.08 | 13.33 | 176 | 0.77 | -17.4 | |
| 50 | 1.20 | 1.07 | 13.29 | 171 | 0.62 | -17.3 | |
| 100 | 1.22 | 1.08 | 13.26 | 161 | 0.57 | -17.4 | |
| 200 | 1.29 | 1.11 | 13.27 | 141 | 0.54 | -17.4 | |
| 300 | 1.39 | 1.16 | 13.32 | 122 | 0.54 | -17.6 | |
| 400 | 1.48 | 1.23 | 13.40 | 102 | 0.56 | -17.7 | |
| 500 | 1.52 | 1.33 | 13.53 | 81 | 0.58 | -17.8 | |
| 600 | 1.48 | 1.41 | 13.60 | 59 | 0.62 | -17.8 | |
| 700 | 1.32 | 1.47 | 13.63 | 35 | 0.67 | -17.9 | |
| 800 | 1.17 | 1.45 | 13.41 | 9 | 0.73 | -18.1 | |
| 900 | 1.40 | 1.33 | 12.83 | -17 | 0.75 | -18.7 | |
| 1000 | 2.02 | 1.15 | 11.73 | -45 | 0.75 | -19.8 | |
| 1100 | 3.01 | 1.15 | 10.14 | -71 | 0.70 | -21.4 | |

| Model: AC847 | | Vcc=+15V | | | | | | Icc=44.30 | |
|--------------|------|----------|------|--------|-------|--------|------|-----------|--|
| FREQ. | S11 | | S21 | | S12 | | S22 | | |
| MHz | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG | |
| 5 | 0.19 | -98 | 4.63 | -166.6 | 0.127 | -171.3 | 0.15 | -75.4 | |
| 10 | 0.12 | -124.6 | 4.65 | -175.1 | 0.134 | -176.7 | 0.08 | -103.4 | |
| 30 | 0.09 | -152.8 | 4.64 | 176.3 | 0.136 | 176.4 | 0.04 | -150.9 | |
| 50 | 0.09 | -156.0 | 4.62 | 171.4 | 0.136 | 172.2 | 0.04 | -172.6 | |
| 100 | 0.10 | -153.5 | 4.60 | 161.1 | 0.135 | 163.2 | 0.04 | 156.8 | |
| 200 | 0.13 | -146.8 | 4.61 | 141.4 | 0.134 | 146.2 | 0.05 | 120.1 | |
| 300 | 0.16 | -147.9 | 4.63 | 121.9 | 0.132 | 129.1 | 0.07 | 98.2 | |
| 400 | 0.19 | -155.3 | 4.68 | 101.8 | 0.130 | 112.4 | 0.10 | 74.5 | |
| 500 | 0.21 | -168.4 | 4.75 | 80.9 | 0.129 | 96.1 | 0.14 | 52.0 | |
| 600 | 0.19 | 174.3 | 4.79 | 58.6 | 0.129 | 78.3 | 0.17 | 27.5 | |
| 700 | 0.14 | 148.1 | 4.80 | 35.0 | 0.127 | 59.9 | 0.19 | 0.2 | |
| 800 | 0.08 | 77.1 | 4.68 | 9.2 | 0.124 | 39.6 | 0.18 | -30.4 | |
| 900 | 0.17 | -11.7 | 4.38 | -17.5 | 0.115 | 17.6 | 0.14 | -66.9 | |
| 1000 | 0.34 | -46.6 | 3.86 | -44.8 | 0.102 | -4.9 | 0.07 | -115.9 | |
| 1100 | 0.50 | -69.6 | 3.21 | -70.7 | 0.085 | -25.6 | 0.07 | 108.3 | |
| 1200 | 0.63 | -88.0 | 2.58 | -94.5 | 0.069 | -44.8 | 0.18 | 62.3 | |

| Model: AC847 | | Vcc=+12V | | | | Icc=35.03 | |
|--------------|------|----------|-------|-------|-------|-----------|--|
| FREQ | SWR | SWR | GAIN | PHASE | DELAY | REV/ISO | |
| MHZ | IN | OUT | DB | DEG | NSEC | DB | |
| 5 | 1.46 | 1.35 | 13.24 | -167 | | -18.0 | |
| 10 | 1.27 | 1.17 | 13.26 | -175 | | -17.5 | |
| 30 | 1.19 | 1.07 | 13.23 | 176 | 0.80 | -17.4 | |
| 50 | 1.19 | 1.06 | 13.22 | 171 | 0.69 | -17.4 | |
| 100 | 1.21 | 1.06 | 13.18 | 161 | 0.57 | -17.5 | |
| 200 | 1.30 | 1.09 | 13.18 | 141 | 0.55 | -17.6 | |
| 300 | 1.41 | 1.13 | 13.24 | 121 | 0.55 | -17.7 | |
| 400 | 1.51 | 1.19 | 13.30 | 101 | 0.56 | -17.8 | |
| 500 | 1.56 | 1.28 | 13.43 | 80 | 0.59 | -17.9 | |
| 600 | 1.51 | 1.35 | 13.51 | 58 | 0.62 | -18.0 | |
| 700 | 1.36 | 1.39 | 13.53 | 34 | 0.67 | -18.0 | |
| 800 | 1.20 | 1.36 | 13.30 | 8 | 0.73 | -18.3 | |
| 900 | 1.42 | 1.24 | 12.70 | -19 | 0.75 | -19.0 | |
| 1000 | 2.04 | 1.08 | 11.58 | -46 | 0.75 | -20.1 | |
| 1100 | 3.06 | 1.23 | 9.95 | -72 | 0.71 | -21.7 | |

| Model: AC847 | | Vcc=+12V | | | | | | Icc=35.03 | |
|--------------|------|----------|------|--------|-------|--------|------|-----------|--|
| FREQ. | S11 | | S21 | | S12 | | S22 | | |
| MHz | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG | |
| 5 | 0.19 | -95.9 | 4.59 | -166.7 | 0.126 | -171.5 | 0.15 | -72.8 | |
| 10 | 0.12 | -121.6 | 4.60 | -175.1 | 0.133 | -176.8 | 0.08 | -98.7 | |
| 30 | 0.09 | -149.8 | 4.59 | 176.2 | 0.135 | 176.1 | 0.03 | -141.9 | |
| 50 | 0.09 | -153.3 | 4.58 | 171.3 | 0.134 | 172.1 | 0.03 | -165.5 | |
| 100 | 0.10 | -149.6 | 4.56 | 161.0 | 0.134 | 163.0 | 0.03 | 161.6 | |
| 200 | 0.13 | -143.6 | 4.56 | 141.2 | 0.132 | 145.7 | 0.04 | 124.2 | |
| 300 | 0.17 | -146.0 | 4.59 | 121.5 | 0.131 | 128.5 | 0.06 | 101.2 | |
| 400 | 0.20 | -154.9 | 4.62 | 101.4 | 0.129 | 111.8 | 0.09 | 76.8 | |
| 500 | 0.22 | -169.0 | 4.69 | 80.2 | 0.127 | 95.0 | 0.12 | 54.0 | |
| 600 | 0.20 | 173.2 | 4.74 | 58.0 | 0.127 | 77.3 | 0.15 | 28.7 | |
| 700 | 0.15 | 145.6 | 4.75 | 34.2 | 0.125 | 58.5 | 0.16 | 0.5 | |
| 800 | 0.09 | 78.1 | 4.62 | 8.3 | 0.121 | 37.9 | 0.15 | -30.9 | |
| 900 | 0.17 | -7.8 | 4.32 | -18.7 | 0.113 | 15.6 | 0.11 | -69.6 | |
| 1000 | 0.34 | -44.7 | 3.79 | -46.1 | 0.098 | -7.3 | 0.04 | -141.2 | |
| 1100 | 0.51 | -68.5 | 3.15 | -72.1 | 0.082 | -28.5 | 0.10 | 92.3 | |
| 1200 | 0.64 | -87.6 | 2.52 | -95.9 | 0.065 | -48 | 0.21 | 57.6 | |