

AC4045

800 TO 4000 MHz TO-8 CASCADABLE AMPLIFIER

| Typical Values | AC4045 |
|--|-----------------|
| Ultra Broad Bandwidth | 800 to 4000 MHz |
| High Gain | 18.5 dB |
| High Reverse Isolation | 40.0 dB |
| High Output Power | +20.0 dBm |
| Low Noise Figure | < 3.5 dB |
| High Performance Thin Film Standard Size TO-8 | |

SPECIFICATIONS*

| Parameter | Typical | Guaranteed | |
|------------------------------------|-------------|-------------|---------------|
| | | 0 to 50 °C | -55 to +85 °C |
| Frequency (Min.) | 0.8-4.2 GHz | 0.8-4.0 GHz | 0.8-4.0 GHz |
| Small Signal Gain (Min.) | 18.5 dB | 17.0 dB | 16.0 dB |
| Gain Flatness (Max.) | ±0.5 dB | ±0.8 dB | ±1.0 dB |
| Noise Figure (Max.) | < 3.5 dB | 4.5 dB | 5.0 dB |
| SWR (Max.) Input/Output | 1.6:1 | 1.8:1 | 1.9:1 |
| Power Output (Min.) @ 1dB comp. | +20.0 dBm | +19.0 dBm | +18.5 dBm |
| DC Current (Max.) | 120 mA | 125 mA | 130 mA |

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

INTERMODULATION PERFORMANCE

| Typical @ 25 °C; 2000 MHz | AC4045 |
|---|---------|
| Second Order Harmonic Intercept Point | +49 dBm |
| Second Order Two Tone Intercept Point | +43 dBm |
| Third Order Two Tone Intercept Point | +30 dBm |

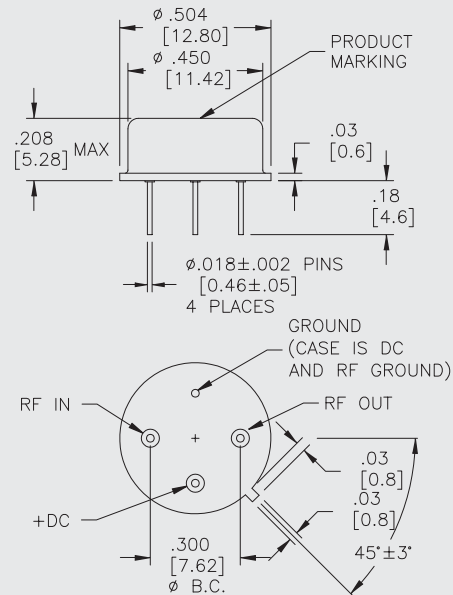
ABSOLUTE MAXIMUM RATINGS

| | |
|---|----------------|
| Storage Temperature | -62 to +125 °C |
| Maximum Case Temperature | +125 °C |
| Maximum DC Voltage | +17 Volts |
| Maximum Continuous RF Input Power | +20 dBm |
| Maximum Short Term Input Power (1 Minute Max.) | 125 Milliwatts |
| Maximum Peak Power (3 µsec Max.) | 0.5 Watt |
| Burn-in Temperature | +105 °C |
| Thermal Resistance ¹ (θ _{jc}) | +19 °C/Watt |
| Junction Temperature Rise Above Case (T _{jc}) | +35.6 °C |

¹ Thermal resistance is based on total power dissipation.

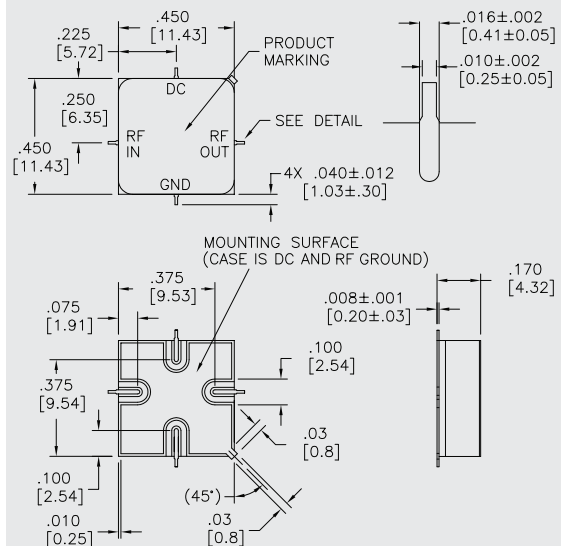
AC4045

TO-8 Package for Amplifiers



AS4045

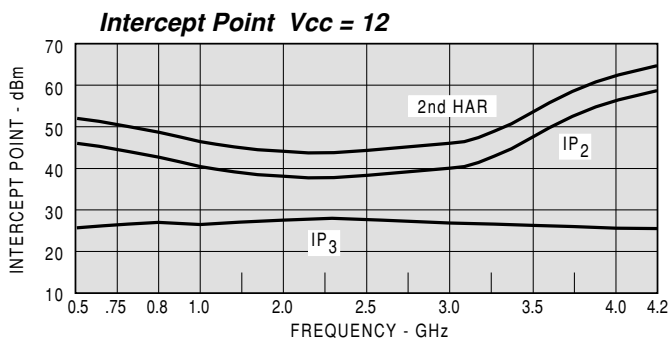
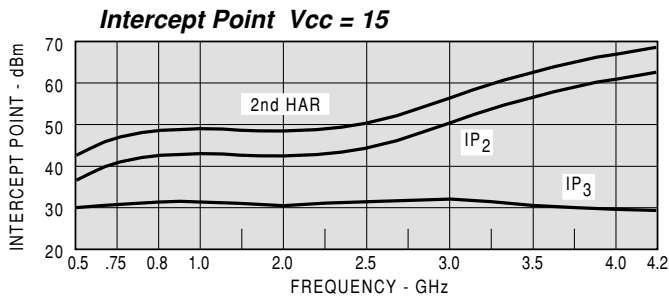
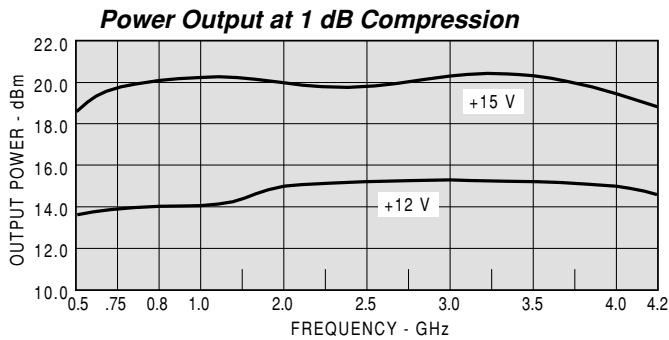
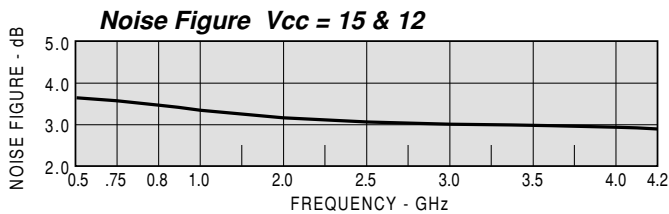
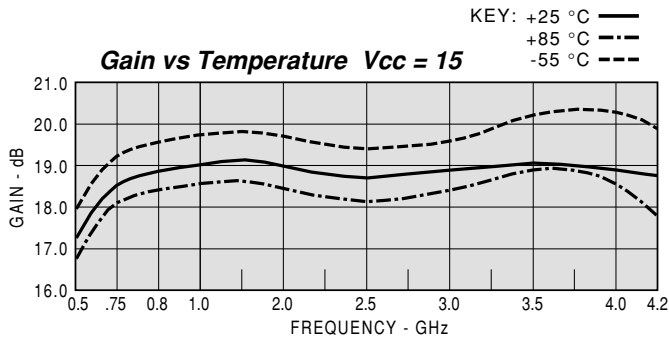
SMT0-8 Package for Amplifiers



DIMENSIONS ARE IN INCHES [MILLIMETERS]

TYPICAL PERFORMANCE

TYPICAL AUTOMATIC TEST DATA



MODEL: AC4045 Vcc = +15V Icc = 120.76 mA

| FREQ. MHZ | VSWR IN | VSWR OUT | GAIN DB | GROUP DELAY NSEC | REV/ISO DB |
|-----------|---------|----------|---------|------------------|------------|
| 750 | 1.51 | 1.43 | 18.5 | 0.497 | -39.2 |
| 800 | 1.45 | 1.37 | 18.6 | 0.497 | -39.2 |
| 1000 | 1.32 | 1.24 | 18.9 | 0.445 | -39.4 |
| 1250 | 1.26 | 1.19 | 19.1 | 0.396 | -40.3 |
| 1500 | 1.27 | 1.20 | 19.2 | 0.369 | -41.9 |
| 1750 | 1.32 | 1.23 | 19.1 | 0.356 | -43.0 |
| 2000 | 1.34 | 1.23 | 18.9 | 0.333 | -44.8 |
| 2250 | 1.39 | 1.18 | 18.7 | 0.321 | -44.4 |
| 2500 | 1.41 | 1.12 | 18.6 | 0.312 | -42.8 |
| 2750 | 1.40 | 1.05 | 18.6 | 0.309 | -41.3 |
| 3000 | 1.37 | 1.02 | 18.7 | 0.312 | -39.8 |
| 3250 | 1.32 | 1.07 | 18.9 | 0.327 | -38.7 |
| 3500 | 1.30 | 1.11 | 18.8 | 0.338 | -37.9 |
| 3750 | 1.32 | 1.12 | 18.9 | 0.322 | -37.4 |
| 4000 | 1.32 | 1.15 | 19.2 | 0.364 | -37.5 |
| 4250 | 1.37 | 1.27 | 19.2 | 0.408 | -38.0 |

MODEL: AC4045 Vcc = +15V Icc = 120.76 mA

LINEAR S-PARAMETERS

| FREQ. MHZ | S11 | | S21 | | S12 | | S22 | |
|-----------|------|--------|------|--------|-------|------|------|--------|
| | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 750 | 0.20 | -107.0 | 8.38 | -12.3 | 0.011 | 18 | 0.18 | 87.4 |
| 800 | 0.18 | -108.6 | 8.53 | -20.6 | 0.011 | 13 | 0.15 | 87.7 |
| 1000 | 0.14 | -111.4 | 8.80 | -49.7 | 0.011 | -2 | 0.11 | 93.4 |
| 1250 | 0.12 | -111.9 | 9.05 | -81.7 | 0.010 | -20 | 0.09 | 111.6 |
| 1500 | 0.12 | -115.4 | 9.12 | -111.4 | 0.008 | -39 | 0.09 | 121.1 |
| 1750 | 0.14 | -126.2 | 9.06 | -139.8 | 0.007 | -66 | 0.10 | 121.1 |
| 2000 | 0.15 | -137.1 | 8.77 | -166.2 | 0.006 | -99 | 0.10 | 110.8 |
| 2250 | 0.16 | -145.8 | 8.58 | -165.5 | 0.006 | -128 | 0.08 | 105.8 |
| 2500 | 0.17 | -156.3 | 8.53 | -144.0 | 0.007 | -152 | 0.06 | 101.6 |
| 2750 | 0.17 | -167.2 | 8.52 | -119.8 | 0.009 | -168 | 0.02 | 96.5 |
| 3000 | 0.15 | -179.0 | 8.62 | -95.3 | 0.010 | -179 | 0.01 | -170.0 |
| 3250 | 0.14 | -169.2 | 8.79 | -69.5 | 0.012 | -174 | 0.03 | -150.5 |
| 3500 | 0.13 | -155.2 | 8.73 | -42.6 | 0.013 | -168 | 0.05 | -174.4 |
| 3750 | 0.14 | -132.9 | 8.79 | -17.2 | 0.013 | -162 | 0.06 | -155.7 |
| 4000 | 0.14 | -109.1 | 9.17 | -12.0 | 0.013 | -159 | 0.07 | -116.7 |
| 4250 | 0.16 | -88.6 | 9.08 | -45.0 | 0.013 | -155 | 0.12 | -75.6 |

MODEL: AC4045 Vcc = +12V Icc = 113.84 mA

| FREQ. MHZ | VSWR IN | VSWR OUT | GAIN DB | GROUP DELAY NSEC | REV/ISO DB |
|-----------|---------|----------|---------|------------------|------------|
| 750 | 1.51 | 1.45 | 18.4 | 0.481 | -40.7 |
| 800 | 1.45 | 1.42 | 18.6 | 0.481 | -40.7 |
| 1000 | 1.31 | 1.36 | 18.9 | 0.430 | -40.7 |
| 1250 | 1.25 | 1.39 | 19.1 | 0.388 | -41.5 |
| 1500 | 1.24 | 1.46 | 19.2 | 0.365 | -42.8 |
| 1750 | 1.29 | 1.53 | 19.2 | 0.353 | -44.3 |
| 2000 | 1.31 | 1.54 | 18.9 | 0.332 | -47.2 |
| 2250 | 1.36 | 1.51 | 18.7 | 0.318 | -48.3 |
| 2500 | 1.38 | 1.44 | 18.7 | 0.316 | -46.9 |
| 2750 | 1.37 | 1.36 | 18.8 | 0.315 | -44.6 |
| 3000 | 1.34 | 1.30 | 18.7 | 0.310 | -42.3 |
| 3250 | 1.31 | 1.27 | 18.7 | 0.321 | -40.2 |
| 3500 | 1.30 | 1.26 | 18.6 | 0.316 | -38.7 |
| 3750 | 1.29 | 1.30 | 18.8 | 0.323 | -37.8 |
| 4000 | 1.26 | 1.34 | 19.0 | 0.375 | -37.3 |
| 4250 | 1.27 | 1.40 | 18.7 | 0.392 | -37.2 |

