

# AC1057

## 0.3 TO 1000 MHz TO-8 CASCADABLE AMPLIFIER

### Typical Values

|                            |                          |
|----------------------------|--------------------------|
| Low Frequency .....        | <b>AC1057</b><br>0.3 MHz |
| Medium Output Level .....  | +16.0 dBm                |
| High Performance Thin Film |                          |
| Standard Size TO-8         |                          |

## SPECIFICATIONS\*

| Parameter                          | Typical      | Guaranteed   |               |
|------------------------------------|--------------|--------------|---------------|
|                                    |              | 0 to 50 °C   | -55 to +85 °C |
| Frequency (Min.)                   | 0.3-1200 MHz | 0.3-1000 MHz | 0.3-1000 MHz  |
| Small Signal Gain (Min.)           | 9.8 dB       | 9.0 dB       | 8.5 dB        |
| Gain Flatness (Max.)               | ±0.25 dB     | ±0.5 dB      | ±0.9 dB       |
| Noise Figure (Max.)                | 5.0 dB       | 6.5 dB       | 7.0 dB        |
| SWR (Max.) Input/Output            | 1.5:1        | 1.8:1        | 2.0:1         |
| Power Output (Min.)<br>@ 1dB comp. | +14.0 dBm    | +13.0 dBm    | +13.0 dBm     |
| DC Current (Max.)                  | 44 mA        | 48 mA        | 52 mA         |

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

## INTERMODULATION PERFORMANCE

Typical @ 25 °C; 400 MHz

|                                             |                          |
|---------------------------------------------|--------------------------|
| Second Order Harmonic Intercept Point ..... | <b>AC1057</b><br>+42 dBm |
| Second Order Two Tone Intercept Point ..... | +36 dBm                  |
| Third Order Two Tone Intercept Point .....  | +27.5 dBm                |

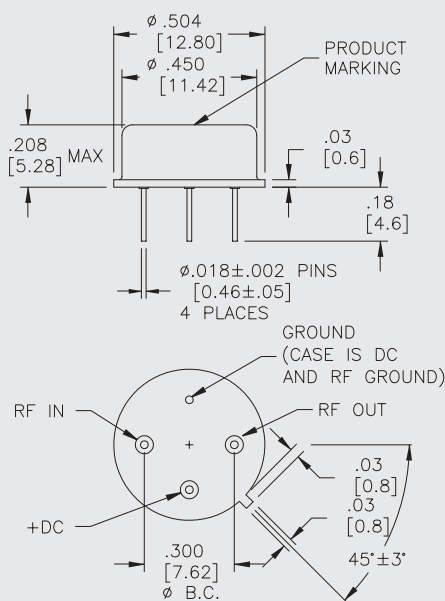
## ABSOLUTE MAXIMUM RATINGS

|                                                      |                |
|------------------------------------------------------|----------------|
| 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.) ..... | 50 Milliwatts  |
| Maximum Peak Power (3 μsec Max.) .....               | 0.5 Watt       |
| Burn-in Temperature .....                            | +105 °C        |
| Thermal Resistance <sup>1</sup> (θjc) .....          | +42 °C/Watt    |
| Junction Temperature Rise Above Case (Tjc) .....     | +29.9 °C       |

<sup>1</sup> Thermal resistance is based on total power dissipation.

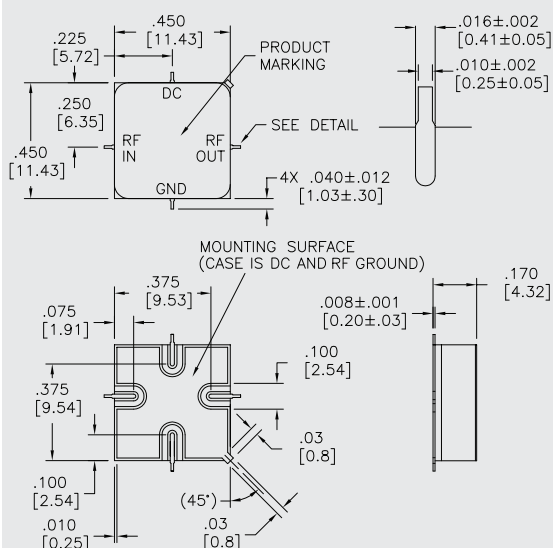
### AC1057

#### TO-8 Package for Amplifiers



### AS1057

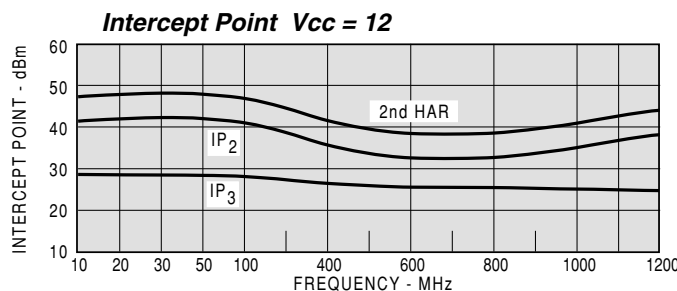
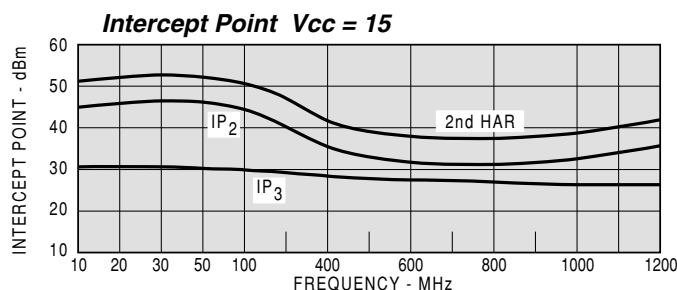
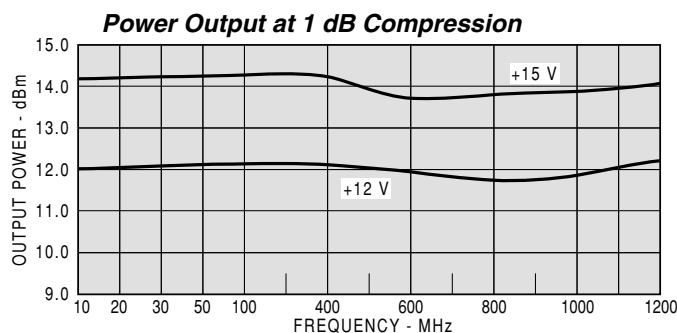
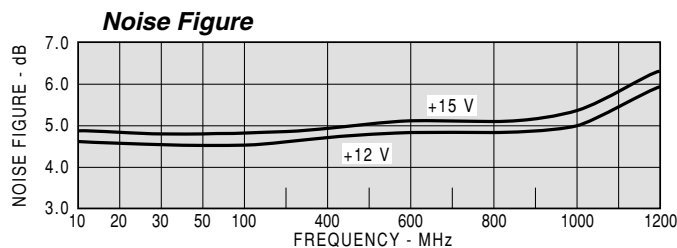
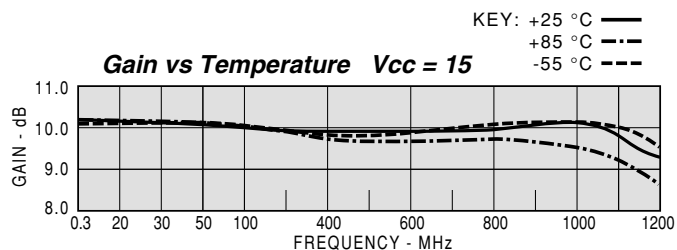
#### SMT0-8 Package for Amplifiers



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: AC1057 |      |      |       | Vcc= +15V |             |       | lcc= 45.09 |
|---------------|------|------|-------|-----------|-------------|-------|------------|
| FREQ          | SWR  | SWR  | GAIN  | PHASE     | GROUP DELAY |       | REV/ISO    |
| MHZ           | IN   | OUT  | DB    | DEG       | NSEC        | DB    |            |
| 0.3           | 1.27 | 1.47 | 10.05 | -168      |             | -16.4 |            |
| 10            | 1.03 | 1.35 | 9.96  | 179       | 0.63        | -16.8 |            |
| 30            | 1.04 | 1.34 | 9.93  | 175       | 0.49        | -16.8 |            |
| 50            | 1.05 | 1.35 | 9.92  | 172       | 0.41        | -16.8 |            |
| 100           | 1.10 | 1.34 | 9.89  | 165       | 0.43        | -16.8 |            |
| 200           | 1.20 | 1.31 | 9.85  | 150       | 0.42        | -16.9 |            |
| 300           | 1.29 | 1.26 | 9.80  | 135       | 0.41        | -16.9 |            |
| 400           | 1.38 | 1.21 | 9.80  | 120       | 0.42        | -17.0 |            |
| 500           | 1.44 | 1.16 | 9.79  | 105       | 0.41        | -17.0 |            |
| 600           | 1.45 | 1.09 | 9.86  | 89        | 0.43        | -16.9 |            |
| 700           | 1.44 | 1.07 | 9.90  | 73        | 0.45        | -16.7 |            |
| 800           | 1.41 | 1.15 | 9.96  | 57        | 0.46        | -16.6 |            |
| 900           | 1.30 | 1.32 | 10.04 | 40        | 0.49        | -16.3 |            |
| 1000          | 1.31 | 1.48 | 9.97  | 21        | 0.51        | -16.0 |            |
| 1100          | 1.55 | 1.61 | 9.81  | 2         | 0.55        | -15.9 |            |
| 1200          | 1.95 | 1.78 | 9.44  | -19       | 0.59        | -15.8 |            |

| Model: AC1057 |      |        |      | Vcc= +15V |       |        | lcc= 45.09 |
|---------------|------|--------|------|-----------|-------|--------|------------|
| S11           |      | S21    |      | S12       |       | S22    |            |
| FREQ          | MAG  | ANG    | MAG  | ANG       | MAG   | ANG    |            |
| 0.3           | 0.12 | -93.1  | 3.18 | -167.6    | 0.152 | -9.40  | 0.19       |
| 10            | 0.02 | -152.8 | 3.15 | 178.7     | 0.145 | -1.10  | 0.15       |
| 30            | 0.02 | -134.7 | 3.14 | 175.2     | 0.144 | -2.90  | 0.15       |
| 50            | 0.03 | -125.3 | 3.13 | 172.3     | 0.144 | -4.00  | 0.15       |
| 100           | 0.05 | -118.6 | 3.12 | 164.6     | 0.145 | -7.20  | 0.15       |
| 200           | 0.09 | -122.9 | 3.11 | 149.6     | 0.143 | -14.2  | 0.14       |
| 300           | 0.13 | -135.1 | 3.09 | 134.7     | 0.143 | -21.1  | 0.11       |
| 400           | 0.16 | -148.1 | 3.09 | 119.7     | 0.142 | -28.0  | 0.10       |
| 500           | 0.18 | -161.5 | 3.09 | 104.7     | 0.142 | -34.2  | 0.08       |
| 600           | 0.18 | -177.1 | 3.11 | 89.2      | 0.142 | -40.7  | 0.04       |
| 700           | 0.18 | 162.2  | 3.12 | 73.5      | 0.146 | -47.7  | 0.04       |
| 800           | 0.17 | 139.5  | 3.15 | 57.2      | 0.149 | -55.2  | 0.07       |
| 900           | 0.13 | 106.4  | 3.18 | 39.9      | 0.153 | -63.7  | 0.14       |
| 1000          | 0.14 | 45.7   | 3.15 | 21.3      | 0.159 | -72.7  | 0.19       |
| 1100          | 0.22 | 1.80   | 3.09 | 1.70      | 0.161 | -83.3  | 0.23       |
| 1200          | 0.32 | -32.8  | 2.96 | -190.0    | 0.162 | -95.6  | 0.28       |
| 1300          | 0.46 | -59.7  | 2.69 | -40.5     | 0.159 | -108.4 | 0.30       |

| Model: AC1057 |      |      |      | Vcc= +12V |             |       | lcc= 36.36 |
|---------------|------|------|------|-----------|-------------|-------|------------|
| FREQ          | SWR  | SWR  | GAIN | PHASE     | GROUP DELAY |       | REV/ISO    |
| MHZ           | IN   | OUT  | DB   | DEG       | NSEC        | DB    |            |
| 0.3           | 1.27 | 1.46 | 9.95 | -168      |             | -16.3 |            |
| 10            | 1.02 | 1.34 | 9.88 | 179       | 0.57        | -16.7 |            |
| 30            | 1.03 | 1.33 | 9.84 | 175       | 0.49        | -16.8 |            |
| 50            | 1.05 | 1.33 | 9.84 | 172       | 0.36        | -16.8 |            |
| 100           | 1.10 | 1.33 | 9.80 | 164       | 0.43        | -16.8 |            |
| 200           | 1.21 | 1.30 | 9.74 | 149       | 0.42        | -16.9 |            |
| 300           | 1.31 | 1.25 | 9.69 | 134       | 0.41        | -16.8 |            |
| 400           | 1.41 | 1.20 | 9.69 | 119       | 0.43        | -16.9 |            |
| 500           | 1.47 | 1.17 | 9.66 | 104       | 0.42        | -16.8 |            |
| 600           | 1.48 | 1.12 | 9.71 | 88        | 0.43        | -16.7 |            |
| 700           | 1.48 | 1.13 | 9.75 | 72        | 0.45        | -16.5 |            |
| 800           | 1.45 | 1.22 | 9.80 | 56        | 0.46        | -16.3 |            |
| 900           | 1.34 | 1.40 | 9.86 | 38        | 0.50        | -16.0 |            |
| 1000          | 1.36 | 1.58 | 9.76 | 20        | 0.52        | -15.7 |            |
| 1100          | 1.60 | 1.72 | 9.58 | 0         | 0.56        | -15.5 |            |
| 1200          | 2.01 | 1.92 | 9.17 | -21       | 0.59        | -15.5 |            |

| Model: AC1057 |      |        |      | Vcc= +12V |       |        | lcc= 36.36 |
|---------------|------|--------|------|-----------|-------|--------|------------|
| S11           |      | S21    |      | S12       |       | S22    |            |
| FREQ          | MAG  | ANG    | MAG  | ANG       | MAG   | ANG    |            |
| 0.3           | 0.12 | -90.4  | 3.15 | -167.6    | 0.153 | -9.6   | 0.19       |
| 10            | 0.01 | -138.2 | 3.12 | 178.7     | 0.146 | -1.1   | 0.14       |
| 30            | 0.02 | -122.4 | 3.11 | 175.1     | 0.145 | -2.7   | 0.14       |
| 50            | 0.03 | -114.8 | 3.10 | 172.2     | 0.145 | -4.1   | 0.14       |
| 100           | 0.05 | -112.8 | 3.09 | 164.5     | 0.144 | -7.0   | 0.14       |
| 200           | 0.10 | -120.5 | 3.07 | 149.2     | 0.144 | -13.8  | 0.13       |
| 300           | 0.13 | -134.0 | 3.05 | 134.1     | 0.144 | -20.9  | 0.11       |
| 400           | 0.17 | -148.2 | 3.05 | 118.9     | 0.143 | -27.0  | 0.09       |
| 500           | 0.19 | -162.3 | 3.04 | 103.7     | 0.144 | -33.3  | 0.08       |
| 600           | 0.20 | -178.2 | 3.06 | 88.2      | 0.146 | -40.1  | 0.06       |
| 700           | 0.19 | 160.8  | 3.07 | 72.4      | 0.149 | -46.6  | 0.06       |
| 800           | 0.18 | 137.4  | 3.09 | 55.8      | 0.153 | -54.1  | 0.10       |
| 900           | 0.15 | 104.3  | 3.11 | 38.2      | 0.159 | -62.7  | 0.17       |
| 1000          | 0.15 | 47.0   | 3.08 | 19.6      | 0.164 | -72.2  | 0.22       |
| 1100          | 0.23 | 3.10   | 3.01 | -0.20     | 0.168 | -83.5  | 0.27       |
| 1200          | 0.34 | -31.5  | 2.87 | -21.0     | 0.169 | -96.1  | 0.31       |
| 1300          | 0.48 | -59.0  | 2.60 | -42.5     | 0.165 | -109.2 | 0.33       |