



# AC1508 10 TO 1500 MHz TO-8 CASCADABLE AMPLIFIER

**Typical Values**

|                               | <b>AC1508</b> |
|-------------------------------|---------------|
| Medium Gain . . . . .         | 12.5 dB       |
| Medium Output Level . . . . . | +16.5 dBm     |
| High Performance Thin Film    |               |
| Standard Size TO-8            |               |

**SPECIFICATIONS\***

| Parameter                | Typical      | Guaranteed  |               |
|--------------------------|--------------|-------------|---------------|
|                          |              | 0 to 50° C  | -55 to +85° C |
| Frequency (Min.)         | 5-1700 MHz   | 10-1500 MHz | 10-1500 MHz   |
| Small Signal Gain (Min.) | 12.5 dB      | 11.5 dB     | 11.0 dB       |
| Gain Flatness (Max.)     | ±0.2 dB      | ±0.4 dB     | ±0.6 dB       |
| Noise Figure (Max.)      |              |             |               |
| 10-1000 MHz              | 4.0 dB       | 4.5 dB      | 5.0 dB        |
| 1000-1500 MHz            | 4.5 dB       | 5.0 dB      | 5.5 dB        |
| SWR (Max.)               | Input/Output | 1.8:1       | 2.0:1         |
| Power Output (Min.)      |              |             |               |
| @ 1dB comp.              | +16.5 dBm    | +15.5 dBm   | +15.0 dBm     |
| DC Current (Max.)        | 50 mA        | 55 mA       | 60 mA         |

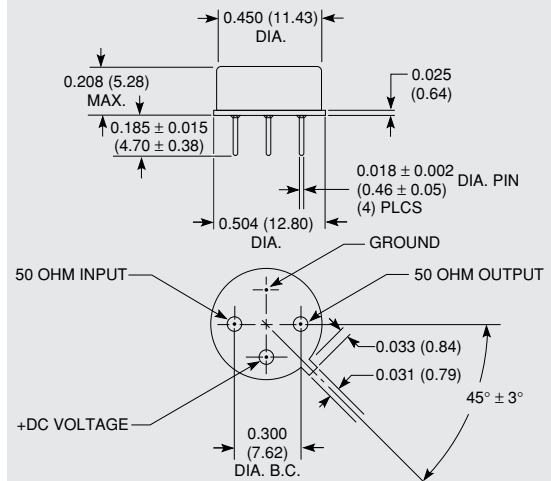
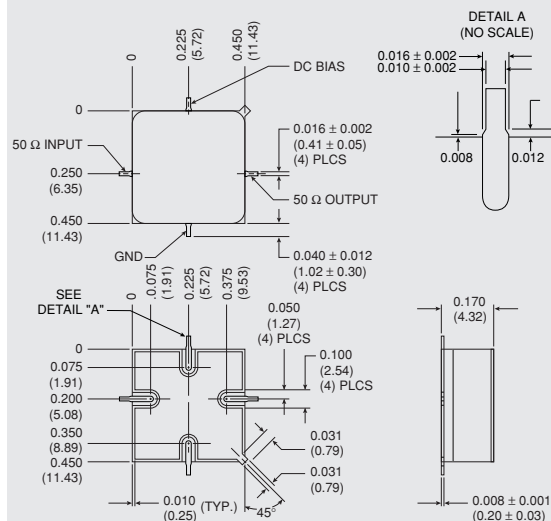
\* Measured in a 50-ohm system at +15 Vdc unless otherwise specified.

**INTERMODULATION PERFORMANCE****Typical @ 25° C; 600 MHz**

|                                                 | <b>AC1508</b> |
|-------------------------------------------------|---------------|
| Second Order Harmonic Intercept Point . . . . . | +51 dBm       |
| Second Order Two Tone Intercept Point . . . . . | +45 dBm       |
| Third Order Two Tone Intercept Point . . . . .  | +30 dBm       |

**ABSOLUTE MAXIMUM RATINGS**

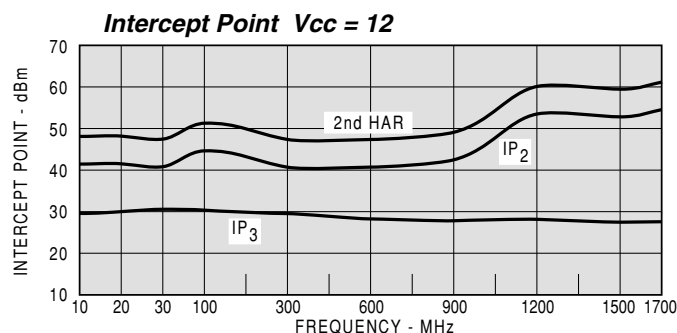
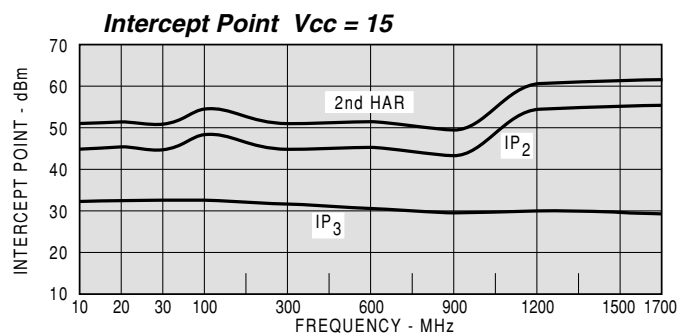
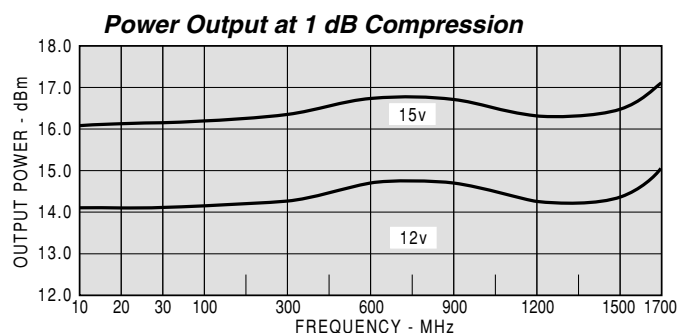
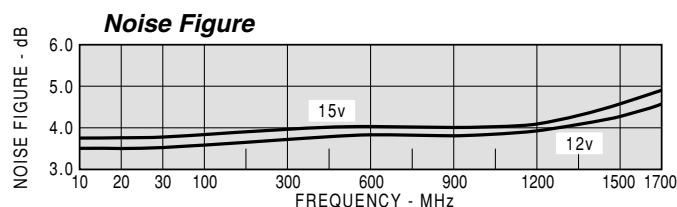
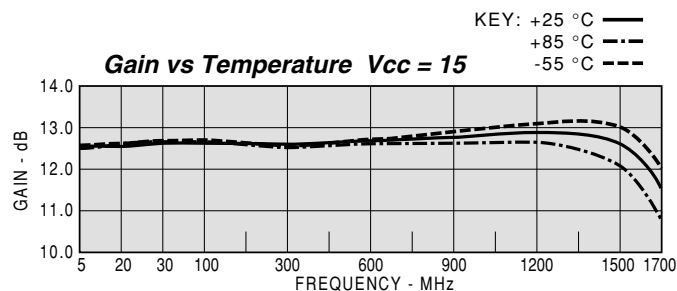
|                                                          |               |
|----------------------------------------------------------|---------------|
| Storage Temperature . . . . .                            | -62 to 125° C |
| Maximum Case Temperature . . . . .                       | +125° C       |
| Maximum DC Voltage . . . . .                             | +17 Volts     |
| Maximum Continuous RF Input Power . . . . .              | +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) . . . . .          | +41.5° C/Watt |
| Junction Temperature Rise Above Case (Tjc) . . . . .     | +39.2° C      |

<sup>1</sup> Thermal resistance is based on total power dissipation.**AC1508****TO-8 Package for Amplifiers****AS1508****SMT0-8 Package for Amplifiers**

DIMENSIONS ARE IN INCHES (MILLIMETERS)



## TYPICAL PERFORMANCE



## TYPICAL AUTOMATIC TEST DATA

| Model: AC1508 |      |      | Vcc= +15V |       | Icc= 48.18  |         |
|---------------|------|------|-----------|-------|-------------|---------|
| FREQ          | SWR  | SWR  | GAIN      | PHASE | GROUP DELAY | REV/ISO |
| MHZ           | IN   | OUT  | DB        | DEG   | NSEC        | DB      |
| 5             | 1.37 | 1.43 | 12.39     | -172  |             | -17.5   |
| 10            | 1.34 | 1.39 | 12.41     | -177  |             | -17.5   |
| 20            | 1.34 | 1.37 | 12.45     | 179   | 0.91        | -17.4   |
| 50            | 1.35 | 1.35 | 12.50     | 174   | 0.47        | -17.4   |
| 100           | 1.35 | 1.34 | 12.51     | 165   | 0.45        | -17.4   |
| 200           | 1.33 | 1.34 | 12.42     | 151   | 0.41        | -17.4   |
| 300           | 1.33 | 1.34 | 12.38     | 136   | 0.40        | -17.5   |
| 400           | 1.36 | 1.36 | 12.41     | 122   | 0.40        | -17.5   |
| 500           | 1.37 | 1.36 | 12.48     | 107   | 0.41        | -17.5   |
| 600           | 1.37 | 1.34 | 12.53     | 92    | 0.42        | -17.4   |
| 700           | 1.39 | 1.35 | 12.59     | 77    | 0.43        | -17.4   |
| 800           | 1.44 | 1.30 | 12.66     | 61    | 0.43        | -17.4   |
| 900           | 1.49 | 1.25 | 12.72     | 46    | 0.43        | -17.3   |
| 1000          | 1.52 | 1.29 | 12.76     | 29    | 0.46        | -17.3   |
| 1100          | 1.54 | 1.29 | 12.80     | 13    | 0.46        | -17.2   |
| 1200          | 1.59 | 1.32 | 12.80     | -4    | 0.48        | -17.3   |
| 1300          | 1.56 | 1.35 | 12.80     | -22   | 0.51        | -17.3   |
| 1400          | 1.47 | 1.34 | 12.73     | -41   | 0.53        | -17.1   |
| 1500          | 1.42 | 1.41 | 12.55     | -61   | 0.56        | -17.0   |
| 1600          | 1.44 | 1.43 | 12.15     | -82   | 0.59        | -16.9   |
| 1700          | 1.72 | 1.40 | 11.42     | -104  | 0.62        | -16.9   |

| Model: AC1508 |      | LINEAR S-PARAMETERS |      |        |       |        |      |        |  | Icc= 48.18 |  |
|---------------|------|---------------------|------|--------|-------|--------|------|--------|--|------------|--|
| FREQ          |      | S11                 |      | S21    |       | S12    |      | S22    |  |            |  |
| MHz           | MAG  | ANG                 | MAG  | ANG    | MAG   | ANG    | MAG  | ANG    |  |            |  |
| 5             | 0.16 | -145.8              | 4.16 | -171.9 | 0.133 | 9.3    | 0.18 | 166.2  |  |            |  |
| 10            | 0.14 | -160.0              | 4.17 | -176.7 | 0.134 | 4.4    | 0.16 | 168.7  |  |            |  |
| 20            | 0.14 | -168.6              | 4.19 | 179.5  | 0.135 | 1.3    | 0.16 | 167.8  |  |            |  |
| 50            | 0.15 | -174.1              | 4.22 | 173.6  | 0.135 | -3.2   | 0.15 | 163.9  |  |            |  |
| 100           | 0.15 | -176.7              | 4.22 | 165.4  | 0.135 | -7.7   | 0.14 | 155.0  |  |            |  |
| 200           | 0.14 | -175.7              | 4.18 | 150.5  | 0.134 | -16.0  | 0.15 | 135.3  |  |            |  |
| 300           | 0.14 | -174.7              | 4.16 | 136.0  | 0.133 | -23.5  | 0.15 | 113.1  |  |            |  |
| 400           | 0.15 | -172.1              | 4.17 | 121.6  | 0.134 | -31.5  | 0.15 | 90.8   |  |            |  |
| 500           | 0.16 | -170.1              | 4.21 | 107.0  | 0.134 | -39.1  | 0.15 | 71.4   |  |            |  |
| 600           | 0.15 | -167.5              | 4.23 | 91.9   | 0.135 | -47.3  | 0.14 | 47.0   |  |            |  |
| 700           | 0.16 | -168.2              | 4.26 | 76.8   | 0.136 | -55.7  | 0.15 | 25.7   |  |            |  |
| 800           | 0.18 | -167.5              | 4.30 | 61.4   | 0.135 | -64.3  | 0.13 | 6.80   |  |            |  |
| 900           | 0.20 | -165.0              | 4.33 | 45.6   | 0.136 | -73.0  | 0.11 | -30.9  |  |            |  |
| 1000          | 0.21 | -166.9              | 4.35 | 29.3   | 0.136 | -82.5  | 0.13 | -62.4  |  |            |  |
| 1100          | 0.21 | -175.7              | 4.36 | 12.7   | 0.138 | -90.9  | 0.13 | -88.4  |  |            |  |
| 1200          | 0.23 | 174.4               | 4.36 | -4.30  | 0.137 | -100.8 | 0.14 | -120.4 |  |            |  |
| 1300          | 0.22 | 163.3               | 4.37 | -22.2  | 0.137 | -109.8 | 0.15 | -145.2 |  |            |  |
| 1400          | 0.19 | 141.0               | 4.33 | -41.0  | 0.139 | -119.8 | 0.15 | -175.4 |  |            |  |
| 1500          | 0.17 | 105.7               | 4.24 | -60.8  | 0.140 | -130.0 | 0.17 | 157.3  |  |            |  |
| 1600          | 0.18 | 57.3                | 4.05 | -82.0  | 0.142 | -140.6 | 0.18 | 138.6  |  |            |  |
| 1700          | 0.26 | 7.80                | 3.72 | -103.9 | 0.143 | -152.6 | 0.17 | 121.6  |  |            |  |
| 1800          | 0.40 | -24.8               | 3.27 | -126.0 | 0.138 | -166.3 | 0.16 | 116.0  |  |            |  |

| Model: AC1508 |      |      | Vcc= +12V |       | Icc= 38.16  |         |
|---------------|------|------|-----------|-------|-------------|---------|
| FREQ          | SWR  | SWR  | GAIN      | PHASE | GROUP DELAY | REV/ISO |
| MHZ           | IN   | OUT  | DB        | DEG   | NSEC        | DB      |
| 5             | 1.36 | 1.41 | 12.28     | -172  |             | -17.5   |
| 10            | 1.32 | 1.37 | 12.32     | -177  |             | -17.4   |
| 20            | 1.32 | 1.34 | 12.36     | 180   | 0.86        | -17.3   |
| 50            | 1.33 | 1.32 | 12.41     | 173   | 0.48        | -17.3   |
| 100           | 1.34 | 1.31 | 12.40     | 165   | 0.45        | -17.3   |
| 200           | 1.32 | 1.32 | 12.32     | 150   | 0.41        | -17.4   |
| 300           | 1.33 | 1.31 | 12.27     | 136   | 0.40        | -17.4   |
| 400           | 1.36 | 1.32 | 12.30     | 121   | 0.41        | -17.4   |
| 500           | 1.38 | 1.31 | 12.36     | 107   | 0.41        | -17.4   |
| 600           | 1.39 | 1.28 | 12.43     | 91    | 0.43        | -17.2   |
| 700           | 1.42 | 1.29 | 12.47     | 76    | 0.43        | -17.3   |
| 800           | 1.48 | 1.23 | 12.54     | 61    | 0.44        | -17.2   |
| 900           | 1.53 | 1.18 | 12.60     | 45    | 0.44        | -17.2   |
| 1000          | 1.55 | 1.22 | 12.62     | 28    | 0.46        | -17.2   |
| 1100          | 1.57 | 1.22 | 12.67     | 12    | 0.47        | -17.0   |
| 1200          | 1.62 | 1.26 | 12.68     | -5    | 0.48        | -17.0   |
| 1300          | 1.57 | 1.30 | 12.66     | -24   | 0.52        | -16.9   |
| 1400          | 1.48 | 1.31 | 12.57     | -42   | 0.54        | -16.7   |
| 1500          | 1.44 | 1.39 | 12.37     | -62   | 0.57        | -16.5   |
| 1600          | 1.49 | 1.40 | 11.90     | -84   | 0.60        | -16.4   |
| 1700          | 1.81 | 1.37 | 11.13     | -106  | 0.61        | -16.3   |