TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

Rev. 5/10

# AP2079

## 10 TO 2000 MHz
## TO-8 CASCADABLE AMPLIFIER

| Typical Values | AP2079 |
|---|---|
| High Third Order I.P. | 38 dBm |
| High Power Output | +24.5 dBm |
| Low Noise Figure | 3.1 dB |
| High Performance Thin Film | |
| Standard Size TO-8 Package | |

## SPECIFICATIONS*

| Parameter | Typical | Guaranteed 0 to 50 °C | Guaranteed -55 to +85 °C |
|---|---|---|---|
| Frequency (Min.) | 10-2100 MHz | 10-2000 MHz | 10-2000 MHz |
| Small Signal Gain (Min.) | 10.3 dB | 9.7 dB | 9.0 dB |
| Gain Flatness (Max.) | ±0.4 dB | ±0.6 dB | ±0.7 dB |
| Noise Figure (Max.) 250-2000 MHz | 3.1 dB | 3.6 dB | 4.3 dB |
| SWR (Max.) Input/Output | 1.6:1 | 1.8:1 | 2.0:1 |
| Power Output (Min.) @ 1dB comp. | +24.5 dBm | +23.5 dBm | +23.0 dBm |
| Reverse Isolation | 17.0 dB | — | — |
| DC Current (Max.) | 125 mA | 128 mA | 132 mA |

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

## INTERMODULATION PERFORMANCE

| Typical @ 25 °C | AP2079 |
|---|---|
| Second Order Harmonic Intercept Point | +60 dBm |
| Second Order Two Tone Intercept Point | +54 dBm |
| Third Order Two Tone Intercept Point | +38 dBm |

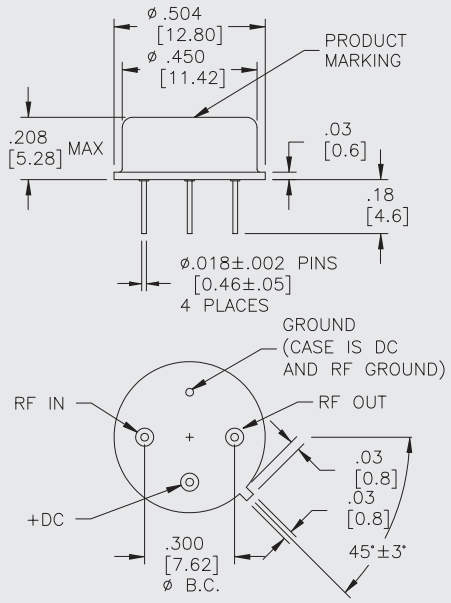
## ABSOLUTE MAXIMUM RATINGS

| | |
|---|---|
| Storage Temperature | -65 to +150 °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.) | 200 Milliwatts |
| Maximum Peak Power (3 µsec Max.) | 0.5 Watt |
| Burn-in Temperature | +105 °C |
| Thermal Resistance[1] (θjc) | +21 °C/Watt |
| Junction Temperature Rise Above Case (Tjc) | +39.5 °C |

[1] Thermal resistance is based on total power dissipation.

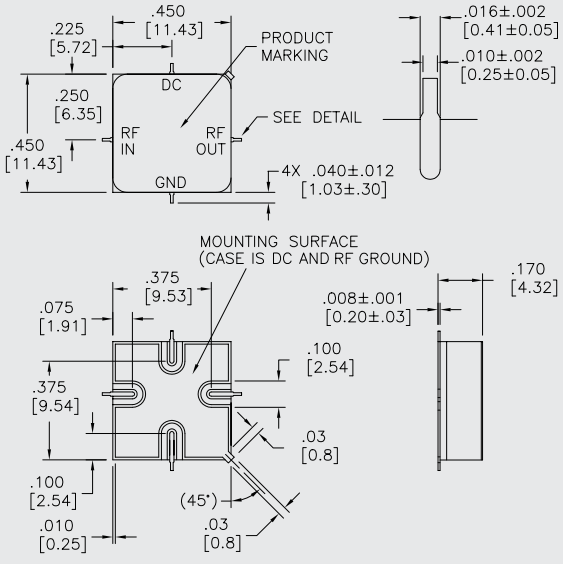
## AP2079

### TO-8 Package for Amplifiers




## APS2079

### SMTO-8 Package for Amplifiers




DIMENSIONS ARE IN INCHES [MILLIMETERS]

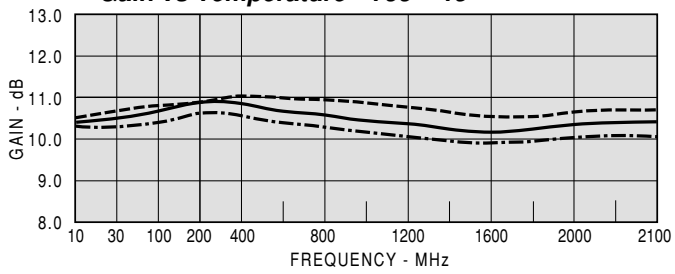
TELEDYNE
MICROWAVE SOLUTIONS
Everywhereyoulook™

# AP2079

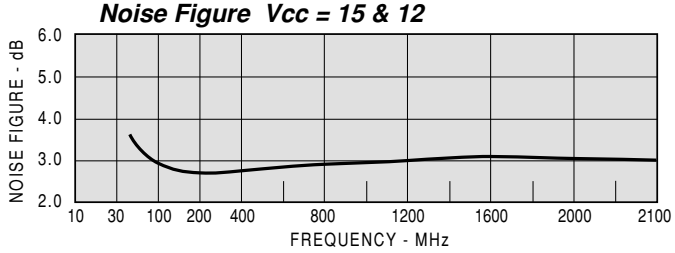
## TYPICAL PERFORMANCE

KEY: +25 °C ——
+85 °C -·-·-
-55 °C - - -

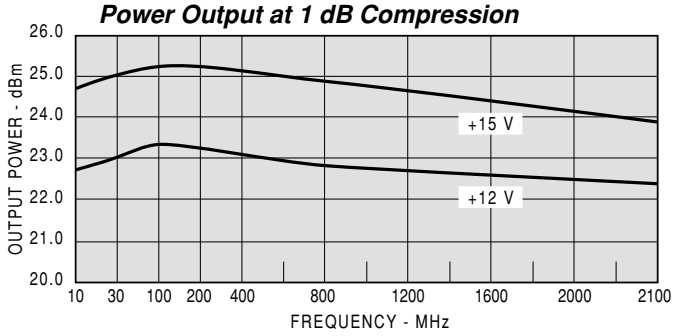
### Gain vs Temperature Vcc = 15



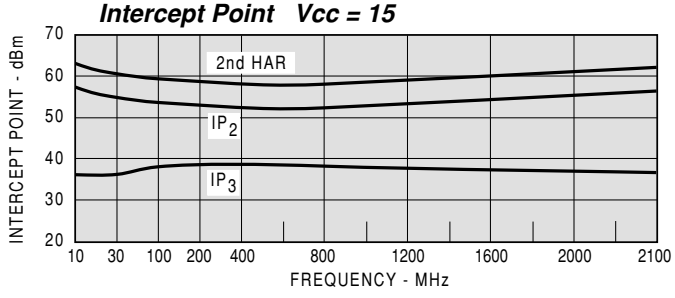

### Noise Figure Vcc = 15 & 12



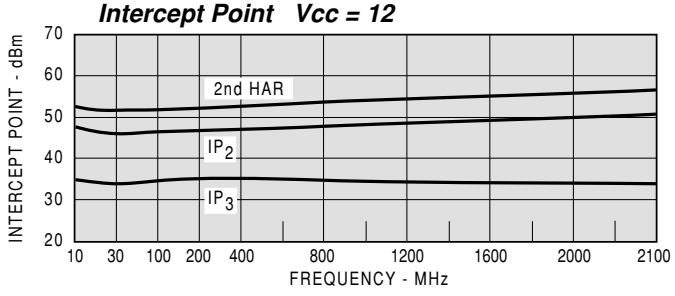

### Power Output at 1 dB Compression




### Intercept Point Vcc = 15




### Intercept Point Vcc = 12




## TYPICAL AUTOMATIC TEST DATA

Model: AP2079 Vcc=+15V Icc=123.16

| FREQ MHZ | SWR IN | SWR OUT | GAIN DB | PHASE DEG | GROUP DELAY NSEC | REV/ISO DB |
|---|---|---|---|---|---|---|
| 10 | 1.52 | 1.44 | 10.21 | -157 | | -16.9 |
| 15 | 1.32 | 1.41 | 10.28 | -166 | | -16.9 |
| 20 | 1.23 | 1.41 | 10.31 | -170 | | -16.9 |
| 50 | 1.10 | 1.46 | 10.32 | -179 | 0.79 | -17.1 |
| 100 | 1.06 | 1.51 | 10.51 | 175 | 0.34 | -17.4 |
| 200 | 1.04 | 1.58 | 10.71 | 165 | 0.30 | -17.6 |
| 400 | 1.11 | 1.58 | 10.67 | 145 | 0.27 | -17.7 |
| 600 | 1.18 | 1.57 | 10.52 | 127 | 0.25 | -17.7 |
| 800 | 1.23 | 1.55 | 10.43 | 110 | 0.24 | -17.6 |
| 1000 | 1.28 | 1.52 | 10.32 | 93 | 0.24 | -17.7 |
| 1200 | 1.32 | 1.50 | 10.25 | 76 | 0.24 | -17.6 |
| 1400 | 1.36 | 1.50 | 10.13 | 58 | 0.24 | -17.6 |
| 1600 | 1.39 | 1.53 | 10.08 | 42 | 0.23 | -17.5 |
| 1800 | 1.37 | 1.58 | 10.16 | 24 | 0.24 | -17.5 |
| 2000 | 1.33 | 1.66 | 10.28 | 7 | 0.24 | -17.4 |
| 2200 | 1.24 | 1.80 | 10.43 | -11 | 0.25 | -17.3 |

LINEAR S-PARAMETERS

Model: AP2079 Vcc=+15V Icc=123.16

| FREQ. | S11 | | S21 | | S12 | | S22 | |
|---|---|---|---|---|---|---|---|---|
| MHz | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 10 | 0.21 | -78.8 | 3.24 | -157.2 | 0.143 | 16.3 | 0.18 | -176.3 |
| 15 | 0.14 | -80.6 | 3.27 | -165.5 | 0.143 | 9.6 | 0.17 | -174.7 |
| 20 | 0.10 | -80.7 | 3.28 | -170.0 | 0.142 | 6.0 | 0.17 | -174.2 |
| 50 | 0.05 | -78.1 | 3.28 | -178.5 | 0.139 | -1.2 | 0.19 | -175.7 |
| 100 | 0.03 | -97.9 | 3.35 | 175.4 | 0.136 | -6.1 | 0.20 | 179.6 |
| 200 | 0.02 | 165.6 | 3.43 | 164.7 | 0.132 | -11.0 | 0.22 | 166.5 |
| 400 | 0.05 | 93.0 | 3.41 | 145.3 | 0.130 | -19.9 | 0.23 | 143.1 |
| 600 | 0.08 | 71.8 | 3.36 | 127.4 | 0.131 | -30.0 | 0.22 | 124.2 |
| 800 | 0.10 | 56.2 | 3.32 | 110.2 | 0.131 | -39.4 | 0.21 | 105.2 |
| 1000 | 0.12 | 42.2 | 3.28 | 93.1 | 0.131 | -50.6 | 0.21 | 85.9 |
| 1200 | 0.14 | 28.9 | 3.25 | 75.7 | 0.132 | -61.2 | 0.20 | 65.3 |
| 1400 | 0.15 | 16.8 | 3.21 | 58.4 | 0.132 | -73.5 | 0.20 | 43.3 |
| 1600 | 0.16 | 4.0 | 3.19 | 41.8 | 0.133 | -85.8 | 0.21 | 21.0 |
| 1800 | 0.16 | -9.1 | 3.22 | 24.3 | 0.134 | -98.6 | 0.22 | -0.1 |
| 2000 | 0.14 | -20.6 | 3.27 | 6.8 | 0.135 | -112.5 | 0.25 | -20.2 |
| 2200 | 0.11 | -29.8 | 3.32 | -11.3 | 0.136 | -128.7 | 0.28 | -40.5 |

Model: AP2079 Vcc=+12V Icc=105.92

| FREQ MHZ | SWR IN | SWR OUT | GAIN DB | PHASE DEG | GROUP DELAY NSEC | REV/ISO DB |
|---|---|---|---|---|---|---|
| 10 | 1.52 | 1.51 | 10.14 | -157 | | -17.2 |
| 15 | 1.32 | 1.49 | 10.23 | -166 | | -17.2 |
| 20 | 1.23 | 1.49 | 10.25 | -170 | | -17.2 |
| 50 | 1.10 | 1.54 | 10.28 | -179 | 0.80 | -17.4 |
| 100 | 1.06 | 1.60 | 10.47 | 175 | 0.33 | -17.7 |
| 200 | 1.03 | 1.67 | 10.68 | 165 | 0.30 | -17.9 |
| 400 | 1.11 | 1.68 | 10.64 | 145 | 0.27 | -18.0 |
| 600 | 1.18 | 1.66 | 10.50 | 128 | 0.25 | -17.9 |
| 800 | 1.23 | 1.63 | 10.39 | 110 | 0.24 | -17.8 |
| 1000 | 1.28 | 1.59 | 10.31 | 93 | 0.24 | -17.8 |
| 1200 | 1.33 | 1.56 | 10.23 | 76 | 0.24 | -17.6 |
| 1400 | 1.36 | 1.54 | 10.15 | 59 | 0.24 | -17.5 |
| 1600 | 1.39 | 1.55 | 10.11 | 42 | 0.23 | -17.4 |
| 1800 | 1.37 | 1.57 | 10.22 | 25 | 0.24 | -17.2 |
| 2000 | 1.31 | 1.64 | 10.35 | 7 | 0.25 | -17.0 |
| 2200 | 1.21 | 1.75 | 10.53 | -12 | 0.26 | -16.8 |

LINEAR S-PARAMETERS

Model: AP2079 Vcc=+12V Icc=105.92

| FREQ. | S11 | | S21 | | S12 | | S22 | |
|---|---|---|---|---|---|---|---|---|
| MHz | MAG | ANG | MAG | ANG | MAG | ANG | MAG | ANG |
| 10 | 0.20 | -77.5 | 3.21 | -157.4 | 0.138 | 15.7 | 0.20 | -171.6 |
| 15 | 0.14 | -78.7 | 3.25 | -165.6 | 0.138 | 9.1 | 0.20 | -171.9 |
| 20 | 0.10 | -77.8 | 3.25 | -170.0 | 0.138 | 5.8 | 0.20 | -172.3 |
| 50 | 0.05 | -73.8 | 3.27 | -178.6 | 0.136 | -1.0 | 0.21 | -175.2 |
| 100 | 0.03 | -92.1 | 3.34 | 175.4 | 0.131 | -6.0 | 0.23 | -179.7 |
| 200 | 0.02 | 162.5 | 3.42 | 164.7 | 0.127 | -10.5 | 0.25 | 167.9 |
| 400 | 0.05 | 88.7 | 3.40 | 145.5 | 0.126 | -18.2 | 0.25 | 146.5 |
| 600 | 0.08 | 69.3 | 3.35 | 127.6 | 0.127 | -27.4 | 0.25 | 129.6 |
| 800 | 0.11 | 53.9 | 3.31 | 110.3 | 0.129 | -36.8 | 0.24 | 112.5 |
| 1000 | 0.12 | 39.7 | 3.28 | 93.4 | 0.129 | -46.8 | 0.23 | 95.8 |
| 1200 | 0.14 | 26.3 | 3.25 | 76.0 | 0.133 | -57.3 | 0.22 | 77.6 |
| 1400 | 0.15 | 14.2 | 3.22 | 58.7 | 0.133 | -68.9 | 0.21 | 57.9 |
| 1600 | 0.16 | 1.2 | 3.20 | 42.1 | 0.135 | -80.5 | 0.22 | 37.3 |
| 1800 | 0.16 | -13.1 | 3.24 | 24.6 | 0.139 | -92.9 | 0.22 | 17.6 |
| 2000 | 0.14 | -25.6 | 3.29 | 6.9 | 0.142 | -106.4 | 0.24 | -2.1 |
| 2200 | 0.10 | -37.5 | 3.36 | -11.5 | 0.145 | -122.0 | 0.27 | -23.3 |