

# A2CP16212 6.0-16.0 GHz COUGARPAK® AMPLIFIER

| Typical Values                              | A2CP16212    |
|---|--------------|
| Ultra Broad Bandwidth .....                 | 6.0-16.0 GHz |
| High Gain .....                             | 19.0 dB      |
| Low Noise Figure .....                      | 3.2 dB       |
| High Reverse Isolation .....                | 45 dB        |
| High Performance Thin Film                  |              |
| High Frequency Two-stage CougarPak® Package |              |

## SPECIFICATIONS\*

| Parameter                          | Typical      | Guaranteed   |               |
|------------------------------------|--------------|--------------|---------------|
|                                    |              | 0 to 50 °C   | -55 to +85 °C |
| Frequency (Min.)                   | 6.0-16.0 GHz | 6.0-16.0 GHz | 6.0-16.0 GHz  |
| Small Signal Gain (Min.)           | 19.0 dB      | 18.4 dB      | 17.0 dB       |
| Gain Flatness (Max.)               | ±0.7 dB      | ±1.5 dB      | ±1.5 dB       |
| Noise Figure (Max.)                | 6-8 GHz      | 4.0 dB       | 4.5 dB        |
|                                    | 8-16 GHz     | 3.2 dB       | 3.7 dB        |
| SWR (Max.)                         | Input/Output | 2.0:1        | 2.1:1         |
| Power Output (Min.)<br>@ 1dB comp. | +15.0 dBm    | +13.5 dBm    | +13.0 dBm     |
| Reverse Isolation                  | 45.0 dB      | —            | —             |
| DC Current (Max.)                  | 90 mA        | 93 mA        | 95 mA         |

\* Measured in a 50-ohm system at +5 Vdc unless otherwise specified.

## INTERMODULATION PERFORMANCE

| Typical @ 25 °C                             | A2CP16212 |
|---|-----------|
| Second Order Harmonic Intercept Point ..... | +45 dBm   |
| Second Order Two Tone Intercept Point ..... | +39 dBm   |
| Third Order Two Tone Intercept Point .....  | +28 dBm   |

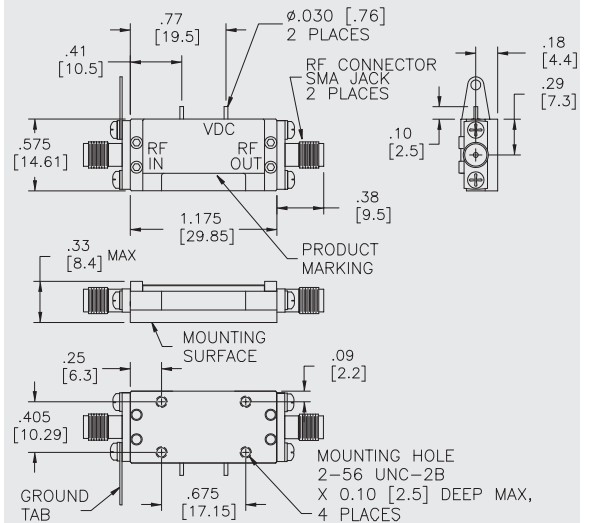
## ABSOLUTE MAXIMUM RATINGS

|  |                |
|--|----------------|
| Storage Temperature .....                            | -65 to +150 °C |
| Maximum Case Temperature .....                       | +125 °C        |
| Maximum DC Voltage .....                             | +8 Volts       |
| Maximum Continuous RF Input Power .....              | +14 dBm        |
| Maximum Short Term Input Power (1 Minute Max.) ..... | +17 dBm        |
| Maximum Peak Power (3 μsec Max.) .....               | +20 dBm        |
| Burn-in Temperature .....                            | +125 °C        |
| Thermal Resistance <sup>1</sup> (θjc) .....          | +89 °C/Watt    |
| Junction Temperature Rise Above Case (Tjc) .....     | +40 °C         |

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

## A2CP16212

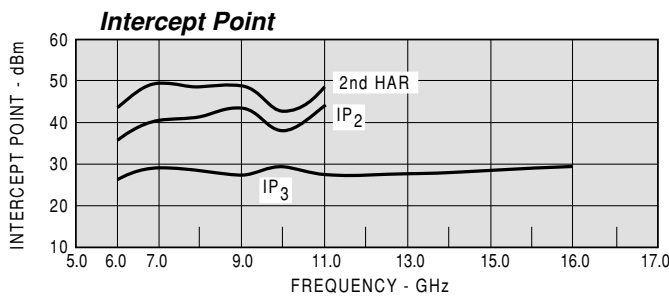
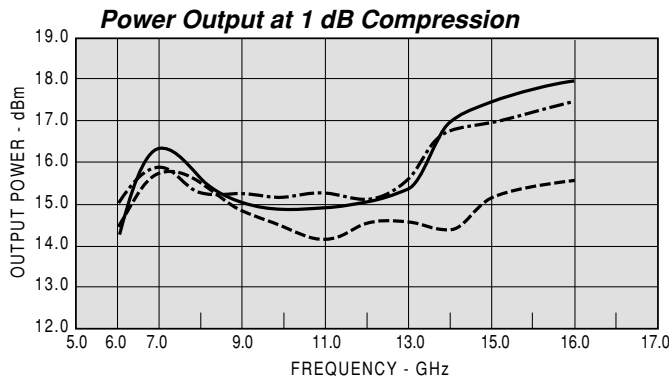
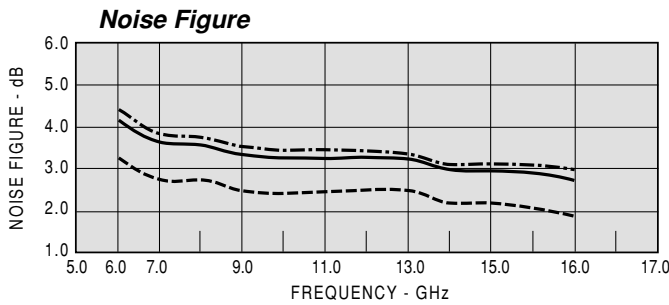
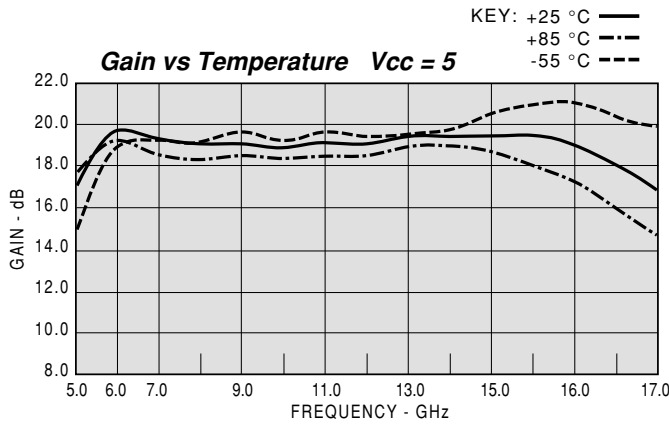
### High Frequency CougarPak® SMA Package (two-stage)



DIMENSIONS ARE IN INCHES [MILLIMETERS]

**TYPICAL PERFORMANCE**

**TYPICAL AUTOMATIC TEST DATA**



| Model: A2CP16212 |      | Vcc=+5V |       |         |       | Icc=86.46 |  |
|------------------|------|---------|-------|---------|-------|-----------|--|
| FREQ             | SWR  | SWR     | GAIN  | PHASE   | DELAY | REV/ISO   |  |
| GHZ              | IN   | OUT     | DB    | DEG     | NSEC  | DB        |  |
| 5.0              | 2.12 | 1.64    | 17.44 | 6.66    | 0.57  | -57.01    |  |
| 5.5              | 1.47 | 1.42    | 19.13 | -91.10  | 0.53  | -52.91    |  |
| 6.0              | 1.53 | 1.40    | 19.89 | 174.36  | 0.52  | -52.50    |  |
| 6.5              | 1.51 | 1.40    | 19.80 | 86.13   | 0.47  | -51.92    |  |
| 7.0              | 1.31 | 1.25    | 19.32 | 4.08    | 0.44  | -51.95    |  |
| 7.5              | 1.21 | 1.13    | 19.03 | -72.04  | 0.41  | -50.54    |  |
| 8.0              | 1.13 | 1.23    | 19.21 | -146.87 | 0.42  | -50.84    |  |
| 8.5              | 1.08 | 1.36    | 19.37 | 137.36  | 0.42  | -49.30    |  |
| 9.0              | 1.22 | 1.41    | 19.25 | 62.39   | 0.41  | -47.96    |  |
| 9.5              | 1.64 | 1.31    | 18.89 | -9.83   | 0.39  | -49.27    |  |
| 10.0             | 1.62 | 1.20    | 18.84 | -79.94  | 0.38  | -48.43    |  |
| 10.5             | 1.47 | 1.21    | 19.17 | -151.31 | 0.40  | -45.97    |  |
| 11.5             | 1.25 | 1.12    | 19.09 | 65.07   | 0.39  | -45.22    |  |
| 12.0             | 1.38 | 1.14    | 19.15 | -5.44   | 0.39  | -44.34    |  |
| 12.5             | 1.25 | 1.18    | 19.22 | -76.23  | 0.39  | -42.61    |  |
| 13.0             | 1.07 | 1.13    | 19.54 | -147.48 | 0.40  | -41.21    |  |
| 13.5             | 1.16 | 1.20    | 19.79 | 139.21  | 0.40  | -40.26    |  |
| 14.0             | 1.62 | 1.33    | 19.70 | 66.07   | 0.40  | -39.64    |  |
| 14.5             | 1.87 | 1.25    | 19.93 | -7.57   | 0.41  | -38.32    |  |
| 15.0             | 1.75 | 1.10    | 19.88 | -84.73  | 0.43  | -36.89    |  |
| 15.5             | 1.53 | 1.09    | 19.55 | -161.04 | 0.43  | -36.93    |  |
| 16.0             | 1.18 | 1.31    | 19.05 | 121.82  | 0.43  | -38.34    |  |
| 16.5             | 1.18 | 1.51    | 18.21 | 43.88   | 0.44  | -41.41    |  |
| 17.0             | 1.47 | 1.74    | 17.04 | -32.19  | 0.43  | -52.57    |  |

| Model: A2CP16212 |      | LINEAR S-PARAMETERS |      |         |      |         |      | Icc=86.46 |  |
|------------------|------|---------------------|------|---------|------|---------|------|-----------|--|
| FREQ.            |      | S11                 |      | S21     |      | S12     |      | S22       |  |
| GHZ              | MAG  | ANG                 | MAG  | ANG     | MAG  | ANG     | MAG  | ANG       |  |
| 5.0              | 0.35 | 149.89              | 7.23 | 6.08    | 0.00 | -157.92 | 0.25 | -44.51    |  |
| 5.5              | 0.20 | 127.37              | 8.91 | -91.57  | 0.00 | 104.88  | 0.16 | -98.96    |  |
| 6.0              | 0.21 | 106.87              | 9.81 | 173.73  | 0.00 | 30.81   | 0.15 | -143.12   |  |
| 6.5              | 0.21 | 56.00               | 9.73 | 84.99   | 0.00 | -50.68  | 0.15 | 159.27    |  |
| 7.0              | 0.15 | -8.32               | 9.21 | 2.80    | 0.00 | -121.79 | 0.11 | 88.07     |  |
| 7.5              | 0.10 | -83.62              | 8.90 | -73.42  | 0.00 | 157.56  | 0.08 | -15.45    |  |
| 8.0              | 0.06 | -175.10             | 9.12 | -148.28 | 0.00 | 95.19   | 0.10 | -114.10   |  |
| 8.5              | 0.02 | 67.13               | 9.33 | 135.56  | 0.00 | 8.70    | 0.13 | -179.04   |  |
| 9.0              | 0.11 | -109.61             | 9.22 | 60.18   | 0.00 | -58.37  | 0.13 | 141.52    |  |
| 9.5              | 0.21 | -178.39             | 8.81 | -12.40  | 0.00 | -127.82 | 0.09 | 122.84    |  |
| 10.0             | 0.22 | 123.76              | 8.72 | -82.52  | 0.00 | 171.38  | 0.07 | 108.34    |  |
| 10.5             | 0.17 | 54.43               | 9.04 | -153.87 | 0.00 | 101.37  | 0.07 | 75.38     |  |
| 11.0             | 0.12 | -48.04              | 9.12 | 133.27  | 0.00 | 41.28   | 0.07 | 21.77     |  |
| 11.5             | 0.14 | -143.88             | 9.00 | 62.17   | 0.01 | -27.81  | 0.07 | -61.28    |  |
| 12.0             | 0.14 | 152.65              | 9.04 | -8.85   | 0.01 | -89.71  | 0.08 | -143.40   |  |
| 12.5             | 0.08 | 102.67              | 9.08 | -79.48  | 0.01 | -154.20 | 0.08 | 171.09    |  |
| 13.0             | 0.01 | -73.45              | 9.40 | -150.69 | 0.01 | 137.59  | 0.05 | 177.94    |  |
| 13.5             | 0.11 | -124.97             | 9.68 | 135.90  | 0.01 | 67.67   | 0.10 | -161.73   |  |
| 14.0             | 0.22 | -163.85             | 9.66 | 62.51   | 0.01 | -2.38   | 0.13 | 166.75    |  |
| 14.5             | 0.31 | 145.10              | 9.85 | -11.43  | 0.01 | -64.54  | 0.10 | 129.25    |  |
| 15.0             | 0.30 | 93.27               | 9.88 | -87.74  | 0.01 | -135.09 | 0.06 | 125.22    |  |
| 15.5             | 0.18 | 46.75               | 9.59 | -163.99 | 0.01 | 155.42  | 0.11 | 140.69    |  |
| 16.0             | 0.02 | 15.36               | 9.13 | 118.28  | 0.01 | 87.78   | 0.17 | 120.77    |  |
| 16.5             | 0.12 | 141.37              | 8.38 | 39.59   | 0.01 | 26.13   | 0.21 | 87.12     |  |
| 17.0             | 0.16 | 78.11               | 7.37 | -37.16  | 0.00 | 8.83    | 0.21 | 36.40     |  |