



Silicon Carbide *Broadband Power Amplifier*

Aethercomm Model Number SSPA 0.5-2.5-10 is a high power, broadband, silicon carbide (SiC) RF amplifier that operates from 0.5 to 2.5 GHz. This PA is ideal for broadband military platforms as well as commercial applications because it is robust and offers high power over a multi-octave bandwidth. This amplifier operates with a base plate temperature of 85C with no degradation in the MTBF for the SiC devices inside. It is packaged in a modular housing that is approximately 4.0 by 6.0" by 2.0". This amplifier has a typical P1dB of 15 watts at room temperature. Saturated output power across the band is typically 15-20 watts. Noise figure at room temperature is 6.0dB typical. This amplifier offers a minimum gain of 47 dB with a typical gain flatness of ± 2.0 dB. Typical OIP3 is 49dBm. Input and Output VSWR is 2.0:1 maximum. Class A current is ~3.0 amps typical employing a +28Vdc supply. This PA operates from 18Vdc to 36Vdc input voltage. Typical harmonic values are -18 dBc in band at P1dB. This SSPA includes an external DC blanking command that enables and disables the module in 2500nSec typical. Standard features include over/under voltage protection, reverse polarity protection and two regulated DC-DC converters with temperature shut off and power supply fault indication. The output is fully protected from an open or short circuit presented to this port with no damage. Input/output RF connectors are SMA Female. DC and Command voltages are accessible via DSUB connector. This amplifier operates from -40C to +85C base plate. Complete test data is found on sheet two of this data sheet.

- **Silicon Carbide Broadband Power Amplifier**
- **Operation from 500MHz to 2.5GHz min**
- **Small Signal Gain 47 dB typ**
- **47 dBm OIP3 typ**
- **15 Watts P1dB typ**



This is an example of an Aethercomm standard product. Aethercomm designs and manufactures high performance, high power CW or pulsed SSPA's for commercial, military and satellite communications customer.

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SSPA 0.5-2.5-10

SSPA 0.5-2.5-10 Typical Performance @ 25°C

| Freq (GHz) | P1dB (dBm) | PSat (dBm) | Current @ P1dB (mA) | DC Power @ Psat (watts) | 2nd Harm @ P1dB (dBc) | 3rd Harm @ P1dB (dBc) | SS Gain (dB) | OIP3 (dBm) |
|---------------|---------------|---------------|------------------------|----------------------------|--------------------------|--------------------------|-----------------|---------------|
| 0.50 | 43.4 | 43.6 | 3580 | 100.2 | -23.8 | -23.8 | 47.5 | 48.0 |
| 0.76 | 43.0 | 43.2 | 3560 | 99.6 | -22.5 | -24.0 | 49.2 | 48.0 |
| 0.96 | 42.7 | 42.8 | 3690 | 103.3 | -21.2 | -21.3 | 50.3 | 47.5 |
| 1.15 | 41.5 | 41.5 | 3950 | 110.6 | -22.1 | -20.1 | 49.0 | 47.0 |
| 1.34 | 41.5 | 42.0 | 3910 | 109.5 | -28.2 | -21.0 | 50.7 | 47.5 |
| 1.54 | 42.5 | 42.6 | 3920 | 109.7 | -30.8 | -22.0 | 49.3 | 48.0 |
| 1.73 | 41.3 | 41.7 | 3700 | 103.6 | -34.8 | -20.0 | 47.8 | 47.0 |
| 1.92 | 42.8 | 43.0 | 3610 | 101.1 | -34.5 | -29.6 | 47.8 | 50.0 |
| 2.11 | 42.4 | 42.9 | 3540 | 99.1 | -36.3 | -21.5 | 49.0 | 48.0 |
| 2.31 | 42.4 | 42.7 | 3640 | 101.9 | -39.3 | -21.6 | 47.0 | 48.5 |
| 2.50 | 42.1 | 42.6 | 3580 | 100.2 | -50.2 | -20.1 | 47.1 | 47.0 |