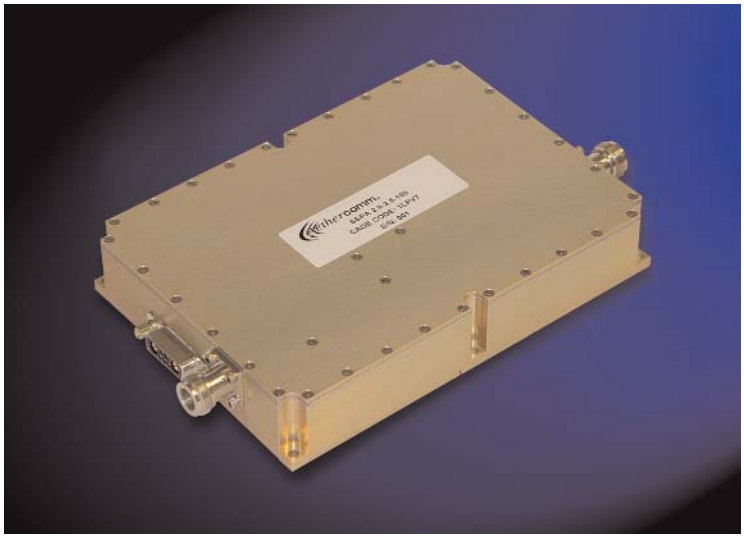
GaN Broadband Power Amplifier

Solid State RF Amplifier

Aethercomm Model Number SSPA 2.9-3.5-100 is a high power, S Band Radar, Solid State Power Amplifier that operates from 2.9 to 3.5 GHz. This unit delivers 100 watts of peak or average power typical to the load at room temperature. It can handle both pulsed and CW input signals. Energy storage is internal to the amplifier for a 100uSec, 10% duty cycle. Longer pulse widths may require external capacitance. Typical saturated gain is 50 dB. Typical power flatness is ± 0.5 dB across the band. Typical small signal gain is 58.0 dB. Noise Figure is 6.5 dB typical at 25°C. Input VSWR is 2.0:1 maximum. Output VSWR is 2.0:1 maximum. This unit is equipped with Aethercomm's proprietary DC switching circuitry that enables and disables the DC-DC circuitry in 1000 nSec maximum. Standard features include reverse polarity protection, output short and open circuit protection, and reverse polarity protection. This power amplifier operates from a +36 Vdc power supply. The current at 100 Watts of average RF output power is 10 Amps typical. This amplifier operates from -40C to +85C base plate temperature. In pulsed mode, the pulse droop is 0.15 dB maximum for a 10 uSec pulse at a 10% duty cycle.

This SSPA is manufactured for S Band Radar systems that employ short pulse, long pulse and CW waveforms. Standard housing size is approximately 5.00(w) by 7.00(l) by 1.25(h) inches. For mounting and heat sink instructions, please contact the factory. A Type N female connector is standard on the RF input port. A type N female connector is standard on the output port. DC and logic connections are accessible via a DSUB connector. A logic high will disable the amplifier. A logic low or open circuit will enable the unit. The Enable On Time is 340 nSec typical. The Off Time for this unit is 800 nSec typical. Over temperature shut down is a standard feature and this unit will shut down when

- **Operation Across 2.90-3.50 GHz min**
- **Pulsed or CW Operation**
- **100 Watts Pulsed Output Power typ.**
- **36 Vdc Operation**
- **Internal Energy Storage**



the temperature reaches 90°C. Typical test data appears on page two of this data sheet.

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 2.9-3.5-100 Typical Performance from 2.9 to 3.5 GHz @ 25°C with a CW Input Signal

Freq (MHz)	Pout @PSat (dBm)	Current @ PSat from a +36 Vdc Supply (Amps)	Gain @ Psat (dB)	2nd Harmonic @ PSat (dBc)	3rd Harmonic @ PSat (dBc)	OIP3 @ Pout SCL = 40 dBm with a 1 MHz Spacing (dBc)
2.90	49.4	10.6	49.9	-37.0	-41.0	53.0
3.00	49.5	10.5	51.0	-40.0	-58.0	54.0
3.10	49.4	9.6	50.9	-39.0	-62.0	54.0
3.20	50.0	9.5	52.5	-49.0	-54.0	54.0
3.30	50.0	9.3	51.5	-63.0	-60.0	53.0
3.40	49.8	9.1	51.3	-53.0	-59.0	54.0
3.50	49.7	8.7	51.2	-46.0	-59.0	54.0

SSPA 2.9-3.5-100 Typical Performance from 2.9 to 3.5 GHz @ 85°C with a CW Input Signal

Freq (MHz)	Pout @PSat (dBm)	Current @ PSat from a +36 Vdc Supply (Amps)	Gain @ Psat (dB)	2nd Harmonic @ PSat (dBc)	3rd Harmonic @ PSat (dBc)	OIP3 @ Pout SCL = 40 dBm with a 1 MHz Spacing (dBc)
2.90	48.1	9.0	48.6	-35.0	-37.0	53.0
3.00	48.6	9.3	50.1	-38.0	-62.0	53.0
3.10	48.7	9.2	49.2	-39.0	-57.0	53.0
3.20	49.2	9.1	49.7	-55.0	-53.0	52.5
3.30	49.3	8.9	49.8	-67.0	-54.0	52.4
3.40	49.2	8.6	46.7	-56.0	-58.0	52.0
3.50	49.1	8.3	47.6	-49.0	-53.0	51.5