

Solid State 3 -6GHz Bi-Directional Amplifier 5W

LW10-797596

TYPICAL APPLICATIONS

The SSBDA is ideal for :

- Airborne, Aircraft and UAV Equipment
- Power Amplifier Stage for Wireless Infrastructure
- RF Telemetry
- Software Defined Radios

PRODUCT FEATURES

- Small Form Factor (82.6 x 50.8 x 22.4 mm)
- Exceptional Bandwidth, Output Power and Efficiency
- Fast auto Rx – Tx switching
- Comprehensive Built-In Protection with auto shutdown
- High Reliability and Ruggedness
- Simple 2 pin DC interface

GENERAL DESCRIPTION

This SSBDA is a solid-state, Class AB broadband power amplifier module based on advanced GaN technology. The SSBDA is ideal for pulsed or CW applications, offering exceptional performance and functionality in a small and lightweight form factor. The design employs proprietary matching networks and combining techniques that ensure optimum performance at low cost.



ELECTRICAL CHARACTERISTICS - Operational $T_A = 25\text{ }^\circ\text{C}$, 28 V_{DC}, 50Ω System (unless otherwise noted)

PARAMETER	MIN	TYP	MAX	UNITS
Operating Frequency Range	3.0		6.0	GHz
Tx / Rx Switching Characteristics: T_{RX}, T_{TX} (50% CTRL to 10/90% RF)		100	125	μs
Tx / Rx Switching Threshold (factory set via SW)		-15		dBm
DC Supply Voltage		28		V
Current Consumption - Transmit			2	A
Current Consumption – Receive			1	A
Efficiency	30	37		%

Linwave reserves the right to make changes, without notice, in the products, including circuits, standard cells, and/or software, described or contained herein in order to improve design and/or performance.

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ELECTRICAL CHARACTERISTICS - Transmit $T_A = 25\text{ }^\circ\text{C}$, 28 V_{DC}, 50Ω System (unless otherwise noted)

PARAMETER	MIN	TYP	MAX	UNITS
Operating Frequency Range	3		6	GHz
Saturated Output Power (P _{SAT})	+35	+37		dBm
Large Signal Gain	18	20		dB
Gain Flatness		+/-1	-/+2	dB
Input Return Loss	10			dB
Current Consumption – No RF signal applied			1.5	A
Current Consumption – Input Power Level = 0dBm			2	A
Efficiency	30	37		%
Output Third-Order Intercept Point (OIP ₃) ^[1]				dBm
Second Harmonic Emissions		-10		dBc
Third Harmonic Emissions		-20		dBc
Higher Harmonic Emissions		-35		dBc
Non-Harmonic Spurious Emissions			-65	dBc

[1] Measured at +20 dBm/tone, 1 MHz tone spacing.

ELECTRICAL CHARACTERISTICS - Receive $T_A = 25\text{ }^\circ\text{C}$, 28 V_{DC}, 50Ω System (unless otherwise noted)

PARAMETER	MIN	TYP	MAX	UNITS
Saturated Output Power (P _{SAT})	+5			dBm
Gain	18	20		dB
Gain Flatness		+/-2	-/+3	dB
Noise Figure			3	dB
Input Return Loss	10			dB
Current Consumption			1	A
Rx Protection	+37			dBm
Rx Leakage	+5			dBm

CONTROL CHARACTERISTICS AND ADVANCED FEATURES ^[4]

PARAMETER	VALUE
Built-In Test Functions	Temperature and Voltage
Temperature BIT	Range: -40 °C to +125 °C Accuracy: ±3 °C
Voltage BIT	All critical voltage rails monitored Accuracy: ±5 %
Thermal Overload Protection	Threshold: +85 °C Hysteresis (T _{RX} - T _{ENABLE}): 8 °C typ.

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MECHANICAL CHARACTERISTICS

PARAMETER	VALUE	UNITS
Dimensions ^[3]	82.6 x 50.8 x 22.4 mm	mm
Mass	240	g
RF In / Out Connectors	SMA Female	-
DC In	Filtered Feed through and separate ground turret	-
Cooling Method	External Heatsink to Baseplate (Not Supplied)	-

[3] Also see Outline Drawing.

ENVIRONMENTAL CHARACTERISTICS

PARAMETER	MIN	TYP	MAX	UNITS
Case or Baseplate Temperature	-40		+65	°C
Humidity (MIL-STD-810F, Method 507.4, para. 4.5.2)			95	%
Altitude (MIL-STD-810F, Method 500.4, para. 4.5.2, 4.5.3)			30,000	ft
Vibration Def Stan 08-123, (Data Sheet 25)				
Shock Def Stan 08-123, (Data Sheet 28)				
Ingress Protection		IP66		-

ABSOLUTE MAXIMUM RATINGS (Not simultaneous)

TRx Input Power	+30 dBm
RF Output Mismatch	VSWR ∞:1 at all phase angles
Case or Baseplate Temperature (Operating)	-40 °C to +65 °C
Case or Baseplate Temperature (Non-Operating)	-40 °C to +85 °C
DC Supply Voltage (DC IN+ to GND)	29.5 V
Tx / Rx Mode Switching Frequency	10 kHz (currently SW limited to 1kHz)

Maximum Ratings.

Exceeding maximum ratings may cause permanent damage. Operation between operating range maximum and absolute maximum for extended periods may reduce device reliability. Absolute maximum ratings are stress figures only and functional operation under these conditions is not implied.

ESD Precautions.

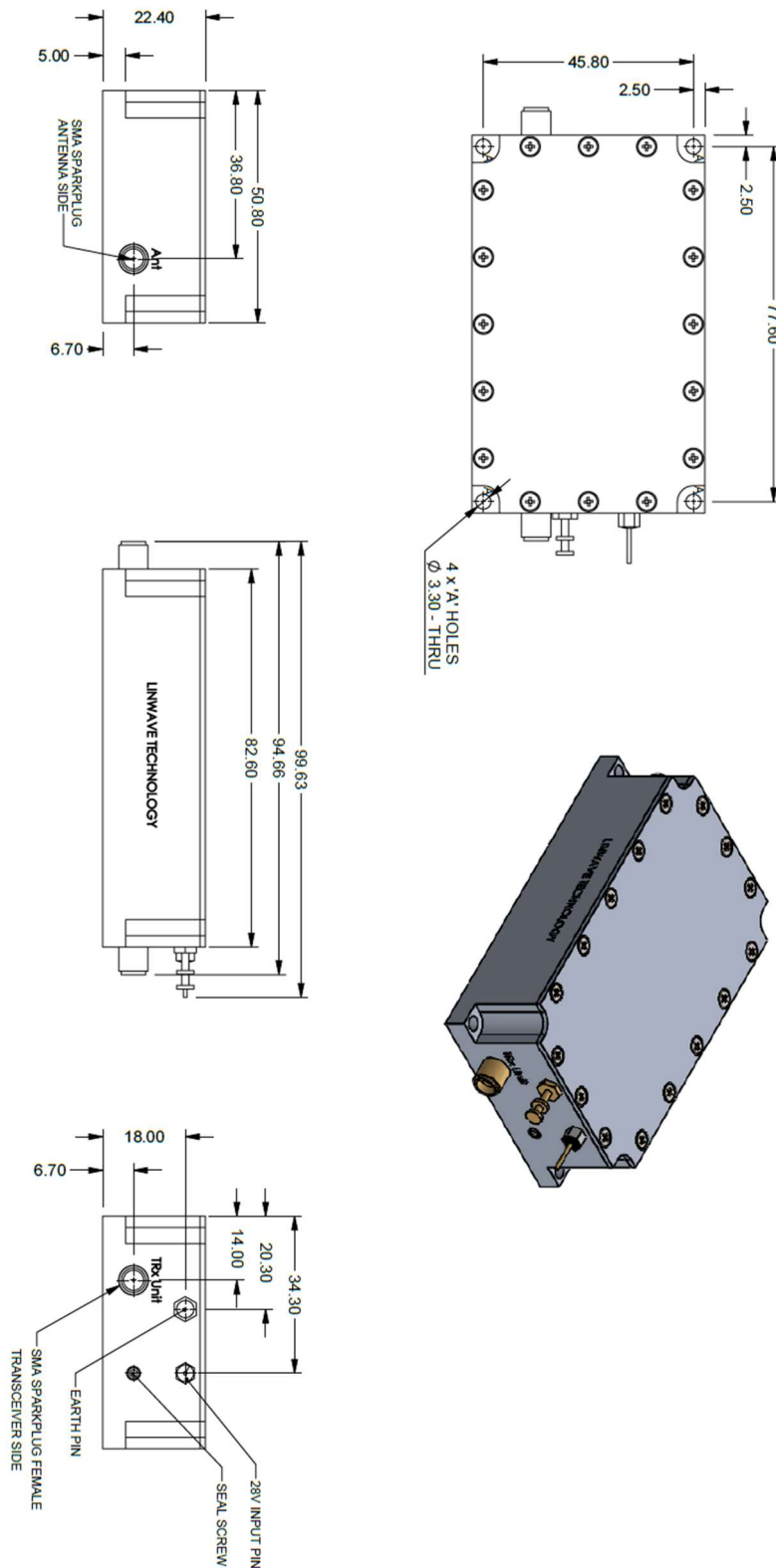
Observe standard precautions when handling ESD-sensitive devices.

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OUTLINE DRAWING



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