

## Solid State 20MHz -1GHz Bi-Directional Amplifier 20W

LW10-797595

### TYPICAL APPLICATIONS

The SSBDA is ideal for :

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

### GENERAL DESCRIPTION

This SSBDA is a solid-state, Class AB broadband power amplifier module based on advanced GaN HEMT 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.

### PRODUCT FEATURES

- Small Form Factor (86 x 82.6 x 21.1 mm)
- Exceptional Bandwidth, Output Power and Efficiency
- Fast auto Rx – Tx switching (manual option available)
- Comprehensive Built-In Protection with auto shutdown
- High Reliability and Ruggedness
- Simple 2 pin DC interface



### ELECTRICAL CHARACTERISTICS - Operational $T_A = 25\text{ }^\circ\text{C}$ , 28 V<sub>DC</sub>, 50Ω System (unless otherwise noted)

PARAMETER	MIN	TYP	MAX	UNITS
Operating Frequency Range	0.02		1.0	GHz
Tx / Rx Switching Characteristics: T <sub>RX</sub> , T <sub>TX</sub> (50% CTRL to 10/90% RF)		100	125	μs
Tx / Rx Switching Threshold <sup>[1]</sup> (factory set via SW)		-15		dBm
DC Supply Voltage	26.5	28	29.5	V
Current Consumption - Transmit			3	A
Current Consumption – Receive			1	A
Efficiency	40	50		%

**[1] Option for external threshold level setting or external switching control available.**

**Quote requirements under LW10-797692 when ordering.**

*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<sub>DC</sub>, 50Ω System (unless otherwise noted)

PARAMETER	MIN	TYP	MAX	UNITS
Operating Frequency Range	0.02		1.0	GHz
Saturated Output Power (P <sub>SAT</sub> ) 20MHz to 50MHz	+40.5			dBm
Saturated Output Power (P <sub>SAT</sub> ) 50MHz to 1GHz	+43			dBm
Large Signal Gain	18	20		dB
Gain Flatness 20MHz to 50MHz			-/+3	dB
Gain Flatness 50MHz to 1GHz			-/+2.5	dB
Input Return Loss	10			dB
Current Consumption – No RF signal applied			1.8	A
Current Consumption – Input Power Level = 0dBm			3	A
Efficiency	40	50		%
Second Harmonic Emissions		-10		dBc
Third Harmonic Emissions		-20		dBc
Higher Harmonic Emissions		-35		dBc
Non-Harmonic Spurious Emissions			-65	dBc

**ELECTRICAL CHARACTERISTICS - Receive**  $T_A = 25\text{ }^\circ\text{C}$ , 28 V<sub>DC</sub>, 50Ω System (unless otherwise noted)

PARAMETER	MIN	TYP	MAX	UNITS
Saturated Output Power (P <sub>SAT</sub> )	+5			dBm
Gain	18	20		dB
Gain Flatness	+/-2		-/+3	dB
Noise Figure			4	dB
Input Return Loss	9.5			dB
Current Consumption			1	A
Rx Protection	+37			dBm
Rx Leakage	+5			dBm

**CONTROL CHARACTERISTICS AND ADVANCED FEATURES**

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 <sub>RX</sub> - T <sub>ENABLE</sub> ): 8 °C typ.

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## MECHANICAL CHARACTERISTICS

PARAMETER	VALUE	UNITS
Dimensions <sup>[2]</sup>	86 x 82.6 x 21.1	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)	-

[2] Also see Outline Drawing. Outline drawing subject to customer changes under LW10-797692 option.

## 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.

### Customer Options.

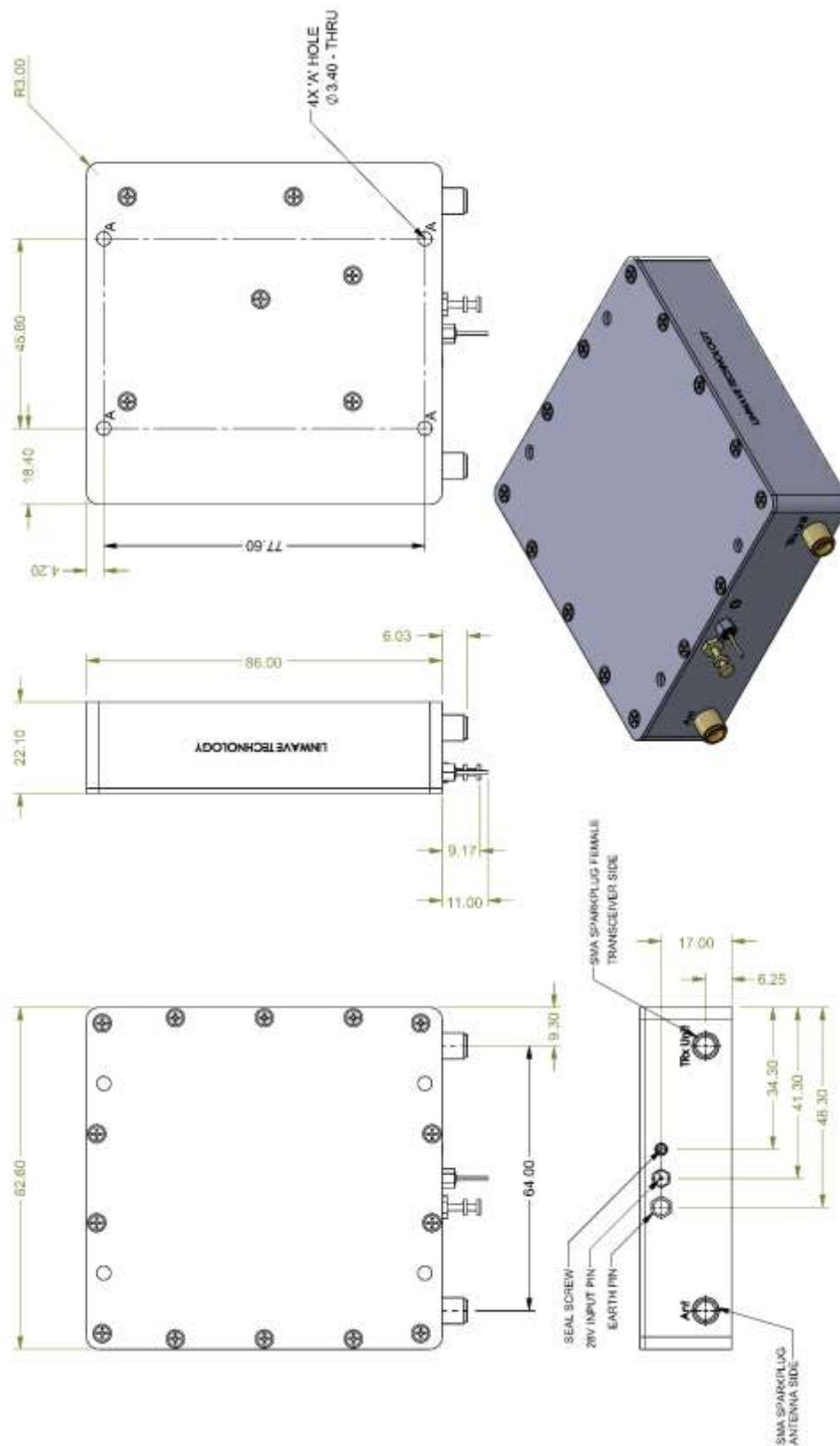
The customer may elect to have externally programmable RF threshold levels and / or externally controlled RF switching. Please quote LW10-797692 along with your requirements, when ordering.

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## OUTLINE DRAWING



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