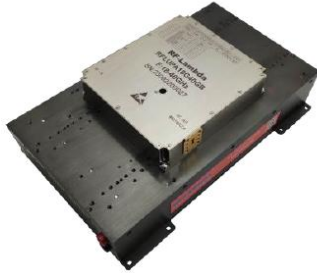


2W Wide Band Power Amplifier 75GHz-110GHz



Note: Photo is for illustration purposes only.
Please refer to outline drawing.

Product Description

RFLUPA75110G02W is a wide band power amplifier with a frequency range of 75 to 110GHz.

The power output of this amplifier is 33dBm typical. The typical small signal gain is 49dB with a gain flatness of ± 5 dB. This power amplifier works with a +28V power supply.

The power amplifier's input connectors is 1.0mm-Female and output connectors is WR-10.

The operating temperature of this product is within -40 to +60°C.

Features

- Wide band Solid State Power Amplifier
- Small Signal Gain 49dB Typical
- Output Saturation Power 33dBm Typical
- Supply Voltage +28VDC
- 50 Ohm Matched Input/Output
- Overvoltage Protection
- Overcurrent Protection

Typical Applications

- Wireless Infrastructure
- Military and Aerospace Applications
- Test Instrumentation
- Radar Systems
- 5G Wireless Communications
- Microwave Radio Systems
- TR Modules
- Research and Development
- Cellular Base Stations

Electrical Specifications ($T_A = +25^\circ\text{C}$)

Parameter	Min	Typ	Max	Min	Typ	Max	Units
Frequency Range	75		98	98		110	GHz
Gain		49			45		dB
Gain Flatness		± 5.0			± 5.0		dB
Gain Variation Over Temperature(-40°C~+60°C)		± 5.0			± 5.0		dB
Input Return Loss		10			10		dB
Output 1dB Compression Point (P1dB)		27			27		dBm
Saturated Output Power (Psat)		33			33		dBm
Isolation S12		-50			-50		dB
Supply Current (Vcc=+28V)		4			4		A
Power-Added Efficiency		2			2		%
Turn On/Off Speed (Switch Disable)	ON		500				ns
	OFF		500				ns
Turn On/Off Speed (Drain Disable)	ON		1000				us
	OFF		200				us
Turn On/Off Speed (Gate Disable)	ON		1000				us
	OFF		200				us
Weight	Net		/				lbs.
	Including Heat sink		/				
Impedance			50				Ohms
Input / Output Connectors			1.0mm-Female(Input) /WR-10(Output)				
Package			Epoxy Sealed (Standard)				
			Hermetically Sealed (Optional)				

Absolute Maximum Ratings

Parameter	Rating
Supply Voltage Range	+30VDC
*RF Input Power (RFIN)	Psat – Large Signal Gain

Bias Up Procedure

1. Connect ground
2. Connect input and output with 50 Ohm source/load.
(In band VSWR < 1.9:1 or >10dB return loss.)
3. Connect positive supply and make sure power supply can handle max current.

Bias Down Procedure

1. Turn off power supply
2. Remove positive supply Connection
3. Remove RF Connection
4. Remove ground

Environmental Specifications and Test Standards

Parameter	Description
Operational Temperature	-40°C to +60°C (Case Temperature)
Storage Temperature	-50°C to +105°C
Thermal Shock	-40°C → +60°C (5 Cycles / 10 hours)
**Random Vibration	MIL-STD-202G Table 214-I, Test Condition Letter C 1.5 Hours Per Axis
High Temperature Burn In	Temperature +60°C for 72 Hours
Shock	1. Weight >20g, 50g half sine wave for 11ms, Speed variation 3.44m/s 2. Weight <=20g, 100g Half sine wave for 6ms, Speed variation 3.75m/s 3. Total 18 times (6 directions, 3 repetitions per direction).
Altitude	Standard: 30,000 Ft (Epoxy Sealed Controlled Environment) Optional: Hermetically Sealed (60,000 ft. 1.0 PSI min)
Hermetically Sealed (Optional)	MIL-STD-883 (For Hermetically Sealed Units)

*Maximum RF input power is set to assure safety of amplifier. Input power may be increased at own risk to achieve full power of amplifier. Please reference gain and power curves.

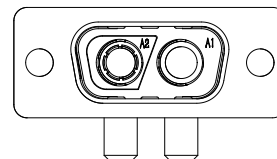
**For vibration testing details please see additional information section.

Equipment Specifications

Name	Description
USB-B	USB-B Port(remote control)
LAN	LAN Port (remote control)

Interface Connector

Female D-Sub is on the housing
The mating Male part number: 09691000022



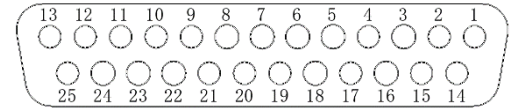
Pin #	Name	Function	Initial State	Description	Applied
A2	+28 VDC	Power Supply	+28 VDC	Power Supply	Yes
A1	GND	Ground	GND	Ground	Yes

Notes:

- HIGH/LOW voltages are standard TTL signals 0V to 0.8V = LOW. 2.8V to 5V = HIGH. Input current is 10uA.
- Matching connector and cable will be shipped with the product.
- Applied=Yes means the feature is included. Applied=No means the feature is not included with this model.

Protection Connector Table

Female D-Sub is on the housing
The mating Male part number: 172-E25-103R001

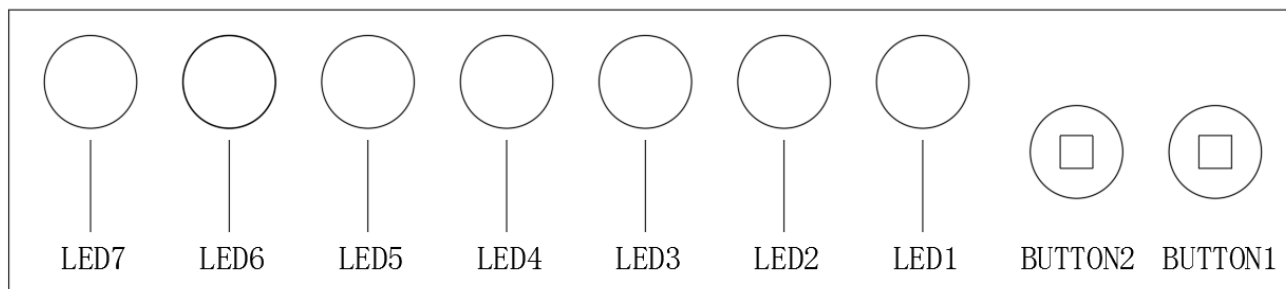


Pin #	Name	Function	Initial State	Description	Applied
1	Reset	Control	HIGH	Resets PA when logic <u>LOW</u> is applied for five more seconds and released	Yes
2	Gate Disable	Control	LOW	Applying logic <u>HIGH</u> disable gates of amplifiers	Yes
3	Drain Disable	Control	LOW	Applying logic <u>HIGH</u> disable drains of amplifiers	Yes
4	RF Input Over Drive	Indicator	LOW	Pin will be latched to logic HIGH when input signal is over limit	No
5	Temperature Over	Indicator	LOW	Pin will be latched to logic HIGH when amplifier is driven over temperature	Yes
6	Current Over	Indicator	LOW	Pin will be latched to logic HIGH when drain current limit is reached	Yes
7	Current Imbalance	Indicator	LOW	Pin will be latched to logic HIGH when an imbalance in the drain current of the combining branches occurs	Yes
8	PA Off Alarm	Indicator	LOW	Pin will be latched to logic HIGH when any of the protection limit is reached	Yes
9	Fan Alarm	Indicator	LOW	Pin will be latched to logic <u>HIGH</u> when Fan limit is reached	No
10	RF Input Switch	Control	LOW	Applying logic HIGH turns OFF RF front-end switch to terminator	Yes
11	VSWR Alarm	Indicator	LOW	Pin will be latched to logic HIGH when output reflection is over limit	No
12	Fixed Attenuation 10dB	Control	LOW	Applying and holding logic HIGH to enable 10dB fixed attenuation	Yes
13	Fixed Attenuation 20dB	Control	LOW	Applying and holding logic HIGH to enable 20dB fixed attenuation	Yes
14	+5V	Power Supply	+5V	+5V DC is supplied for reference (200mA)	Yes
15	GND	Ground	GND	Ground	Yes
16	Calibration	Control	LOW	Applying logic <u>HIGH</u> startup calibration	Yes
17	PA ON/OFF	Control	LOW	Applying logic <u>HIGH</u> opens amplifier RF output	Yes
18	Calibration indicate	Indicator	LOW	Default output low level, output high level during calibration state	Yes
19~25	NC	NC	NC	NC	No

Notes:

- HIGH/LOW voltages are standard TTL signals 0.0V-0.8V = LOW. 2.8V-5V = HIGH.

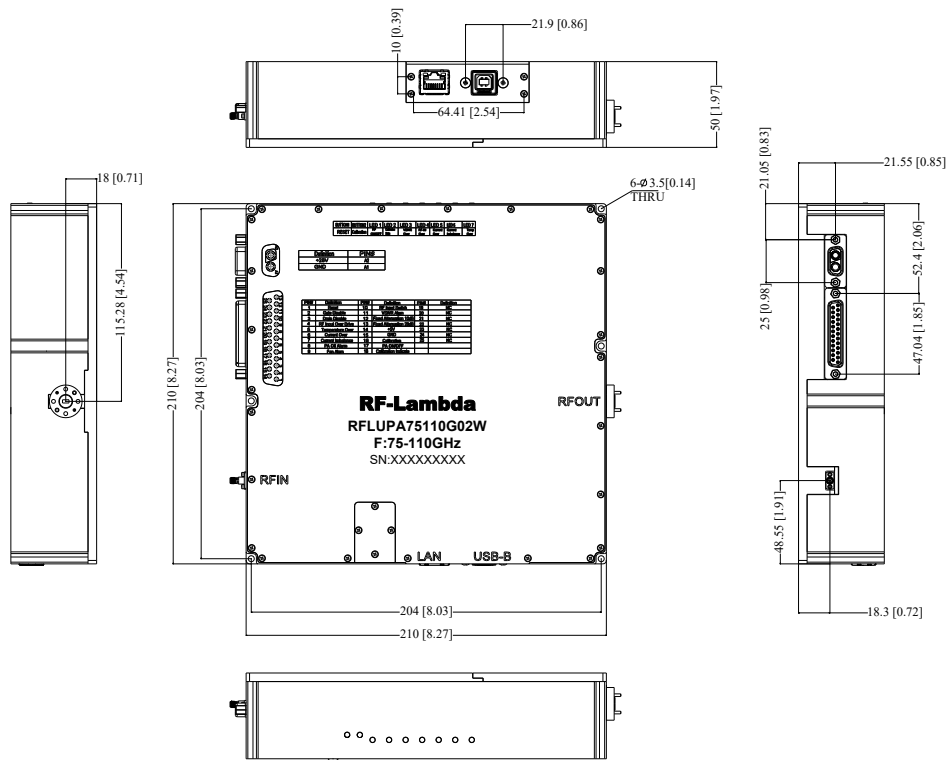
Alarm Status Panel



	Name	Function	Initial State	Description	Applied
	BUTTON1	Reset	Control	Manual reset button to reset PA	Yes
	BUTTON2	Calibration	Control	Manual calibration button to correct PA	Yes
	LED 1	RF ON/OFF	Indicator	RF output status indicator. PA will shut down and latch this LED to a <u>RED</u> color when any protection is triggered *	Yes
	LED 2	Calibration State	Indicator	Calibration status indicator. The red light indicates that calibration is required. The indicator will flash during calibration *	Yes
	LED 3	VSWR Over	Indicator	PA will shut down and latch this LED to a <u>RED</u> color when when output reflection is over limit*	No
	LED 4	RF Input Over Drive	Indicator	PA will shut down and latch this LED to a <u>RED</u> color when input signal is over limit *	No
	LED 5	Current Over	Indicator	PA will shut down and latch this LED to a <u>RED</u> color when current limit is reached *	Yes
	LED 6	Current Imbalance	Indicator	PA will shut down and latch this LED to a <u>RED</u> color when an imbalance in the drain current of the combining branches occurs *	Yes
	LED 7	Temp Over	Indicator	PA will shut down and latch this LED to a <u>RED</u> color when driven over temperature *	Yes

*LED needs to be manually reset to initial state by pressing RESET button.

Outline Drawing



Notes:

1. Package Material: Aluminum
2. Finish: Nickel Plated
3. All dimensions are in millimeters [inches].
4. Tolerances ± 0.1 [0.004] unless otherwise specified (Excl Heat Sink).
5. Heat sink required during operation (sold separately). Matching heatsink is listed on our website. If customer would like to use their own cooling method, please make sure the amplifier will operate under the specs that listed in page 2 of this datasheet.
6. Standard torque wrench must be used to secure RF connectors



Packing List

ID	Description	QTY
1	Fig a. DB25 cable (RFCBLADB25-M)	1
2	Fig b. DB2 cable (RFCBLADB2M)	1
3	Fig c. Waveguide to coaxial adapter (RFWA10V9MM10)(Consult sales)	0



Fig a.



Fig b.



Fig c.

Ordering Information

Part Number	Modification	Description
RFLUPA75110G02W	Input Connector 1.0mm-Female and Output Connector WR-10	75GHz-110GHz Power Amplifier

Amplifier Use

Ensure that the amplifier input and output ports are safely terminated into a proper 50 ohm load before turning on the power. Never operate the amplifier without a load. A proper 50 ohm load is defined as a load with impedance less than 1.9:1 or return loss larger than 10dB relative to 50 Ohm within the specified operating band width.

Power Supply Requirements

Power supply must be able to provide adequate current for the amplifier. Power supply should be able to provide 1.5 times the typical current or 1.2 times the maximum current (whichever is greater).

In most cases, RF - Lambda amplifiers will withstand severe mismatches without damage. However, operation with poor loads is discouraged. If prolonged operation with poor or unknown loads is expected, an external device such as an isolator or circulator should be used to protect the amplifier.

Ensure that the power is off when connecting or disconnecting the input or output of the amp.

Prevent overdriving the amplifier. Do not exceed the recommended input power level.

Adequate heat-sinking required for RF amplifier modules. Please inquire.

Amplifiers do not contain Thermal protection, Reverse DC polarity or Over voltage protection with the exception of a few models. Please inquire.

Proper electrostatic discharge (ESD) precautions are recommended to avoid performance degradation or loss of functionality.

What is not covered with warranty?

Each RF - Lambda amplifier will go through power and temperature stress testing.

Since the die, ICs or MMICs are fragile, these are not covered by warranty. Any damage to these will NOT be free to repair.

Important Notice

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