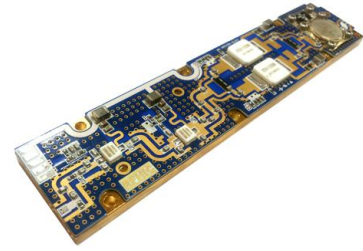


Product Features

- Frequency from 2.9 ~ 3.3GHz
- GaN HEMT
- 50 Ohm Input/Output impedance
- High efficiency

Applications

- Radar system

**Description**

The RRP31250-10 is designed for Radar system application frequencies from 2.9 ~ 3.3GHz.

This module uses GaN HEMT technology which performs high breakdown voltage, wide bandwidth and high efficiency.

Electrical Specifications @ $V_{DS}=50V$, $T=25^{\circ}C$, 50 Ω System

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Frequency	MHz	2900	-	3300	f_O
Operating Bandwidth	MHz	-	400	-	BW
Output Pulse Power	W	230	250	-	P_O
Input Pulse Power	dBm	23	-	-	P_I
Power Gain	dB	-	32	-	G_P
Gain Flatness	dB	-	-	1.0	ΔG_P
Duty Cycle	%	-	-	20	DC
Pulse Width	us	-	-	500	PW
Efficiency	%	-	38	-	E_{ff}
Amplitude Pulse Droop	dB	-	0.5	1.0	Droop
Harmonics 1 to N	dBc	30	-	-	H_N
Spurious Level	dBc	60	-	-	Spur
Rise Time	ns	-	-	200	t_r
Fall Time	ns	-	-	200	t_f
Phase Deviation	$^{\circ}$	-20	-	20	$\Delta\phi$

* Test Pulse conditions = 100us, 10%

* Above electrical specifications is measured by connecting electrolytic condenser 1,000uF to DC. Please make sure that electrolytic condenser is connected properly while testing the module.

* Custom design available

Absolute Maximum Ratings

PARAMETER	UNIT	RATING	SYMBOL
Gate-Source Voltage	V	-10 ~ 0	$V_{GS1, 2}$
Drain- Source Voltage	V	110	V_{DS}
Gate Current	mA	70	I_G
Thermal Resistance	°C/W	0.36	$R_{TH(JC)}$
Operating Junction Temperature	°C	225	T_J
Operating Flange Temperature	°C	-20 ~ 100	T_C
Storage Temperature	°C	-50 ~ 150	T_{STG}

Operating Voltages

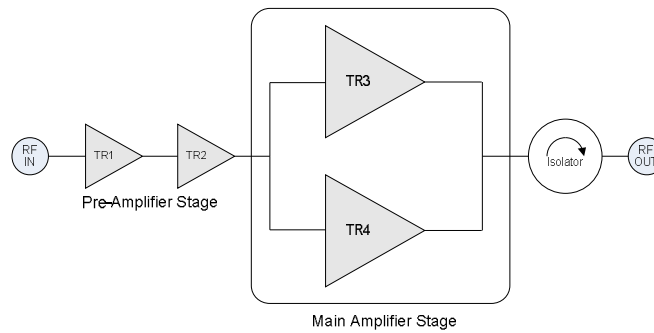
PARAMETER	UNIT	NOMINAL VOLTAGE	VOLTAGE ACCURACY	SYMBOL
Drain-Source Voltage	V	50	± 5%	V_{DS}
Gate-Source Voltage	V	-4(ON) , -8(OFF)	± 5%	V_{GS1}
Gate-Source Voltage	V	-4(ON) , -8(OFF)	± 5%	V_{GS2}

Power Supply

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Drain-Source Current(AVG)	A	-	-	-	I_{DS}

* Duty Cycle 10%, Pulse Width 100us

Block diagram



Precautions

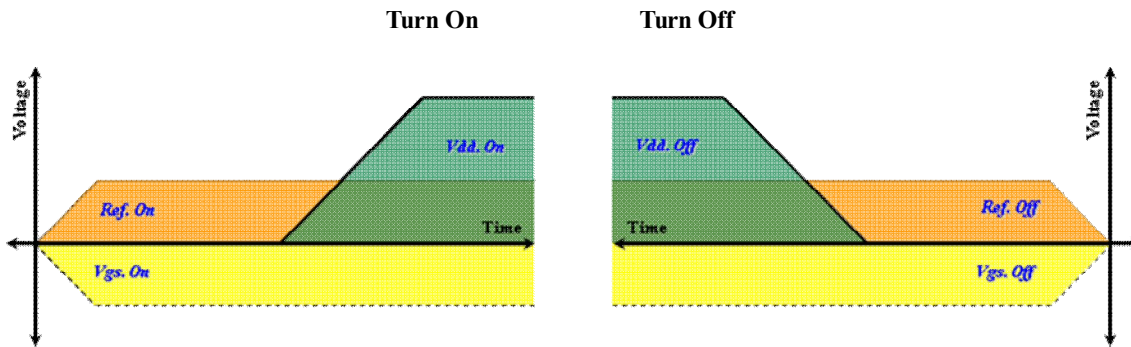
This product is a Pulse Amplifier based on a Gallium Nitride Transistor. The Gallium Nitride Transistor requires a Negative Voltage Bias which operates alongside a Positive Voltage Bias. These Biases are applied in accordance to the Sequence during Turn-On and Turn-Off. The Pallet Amplifier does not have a built-in Bias Sequence Circuit. Therefore, users need to either apply positive voltages and negative voltages in the required sequence, or add an external Bias Circuit to this Amplifier. The required sequence for power supply is as follows.

During Turn-On

1. Connect GND.
2. Apply -4V to V_{GS1} and $V_{GS 2}$.
3. Apply 50V to V_{DS} .
4. Turn on the V_{GS1} and $V_{GS 2}$, and then, turn on the V_{DS} .
5. Apply the RF Power.

During Turn-Off

1. Turn off RF power.
2. Turn off V_{DS} , and then, turn off the V_{GS1} and $V_{GS 2}$.
3. Remove all connections.



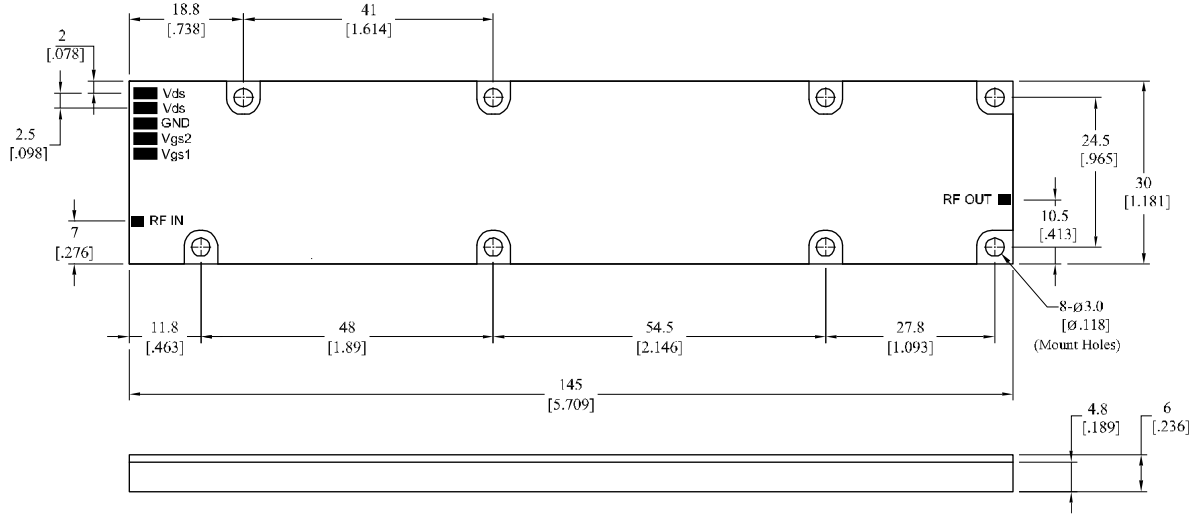
- Sequence Timing Diagram -

Mechanical Specifications

PARAMETER	UNIT	TYP
Mass	kg	0.09
Dimension	mm	145 x 30 x 10
RF Connector	-	50 ohm Pad(SMA Connector available) : RF Input
		50 ohm Pad(SMA Connector available): RF Output
DC Connector	-	DC Pad : V_{DS}
		DC Pad : V_{GS1} and $V_{GS 2}$
		DC Pad : GND

Outline Drawing

* Unit: mm[inch] | Tolerance ± 0.15 [.006]



Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RRP31250-10	2012.9.6	1.0	-	-

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