

Product Features

- Frequency from 2.7 ~ 3.5GHz
- High Output Power : 53.5dBm(Typ)
- High Gain : 32dB(Typ)
- High Efficiency
- High thermal stability
- Internally matched for ease of use
- Small Size : 75 x 30 x 10.7
- 20% Duty Cycle, 1ms Pulse Width

Applications

- Radar system



Description

The RRP2735200-30 is designed for Radar system application frequencies from 2.7 ~ 3.5GHz and GaN HEMT technology has been used that performs high breakdown voltage, wide bandwidth and high efficiency. RRP2735200-30 has been designed 3 stages to have higher Gain at the wide frequency range of 2.7 ~ 3.5GHz. GaN HEMT technology has been used to every amplifier in it for better reliability. Since it is high efficiency amplifier, it can perform at max 20% duty cycle and 1ms of pulse width. A droop feature is below 1dB for long pulse usages.

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

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Frequency	MHz	2700	-	3500	f_O
Operating Bandwidth	MHz	-	800	-	BW
Output Pulse Power	W	200	230	-	P_O
Input Pulse Power	dBm	-	22	23	P_I
Power Gain	dB	31	32	-	G_P
Gain Flatness	dB	-	1	2	ΔG_P
Duty Cycle	%	-	10	20	DC
Pulse Width	us	-	500	1000	PW
Efficiency	%	32	35	-	E_{ff}
Amplitude Pulse Droop	dB	-0.5	0.5	1	Droop
Harmonics 1 to N	dBc	20	30	-	H_N
Spurious Level	dBc	60	-	-	Spur
Rise Time	ns	-	-	200	t_r
Fall Time	ns	-	-	200	t_f
Phase Deviation	°	-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	80	I_G
Operating Junction Temperature	°C	225	T_J
Operating Flange Temperature	°C	-30 ~ 100	T_C
Storage Temperature	°C	-55 ~ 150	T_{STG}

Operating Voltages

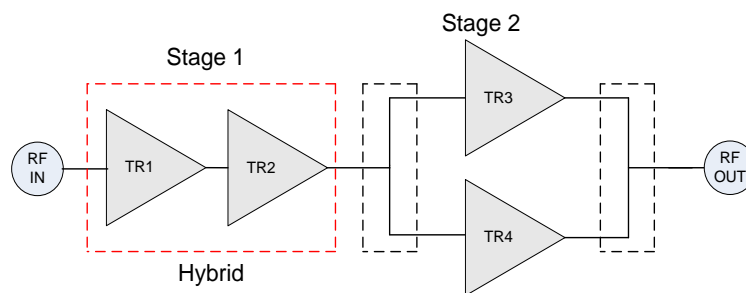
PARAMETER	UNIT	NOMINAL VOLTAGE	VOLTAGE ACCURACY	SYMBOL
Drain-Source Voltage	V	50	± 5%	V_{DS}
Gate-Source Voltage	V	-4(ON) , -8(OFF)	± 5%	V_{GS1}
Gate-Source Voltage	V	-4(ON) , -8(OFF)	± 5%	V_{GS2}

Power Supply

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Drain-Source Current(AVG)	A	-	-	20	I_{DS}
Gate-Source Current(On-Stage)	A	-	-	0.03	I_{GS}
Gate-Source Current(Off-Stage)	mA	-	-	0.05	I_{GS}

* Duty Cycle 10%, Pulse Width 100us

Block diagram



Precautions

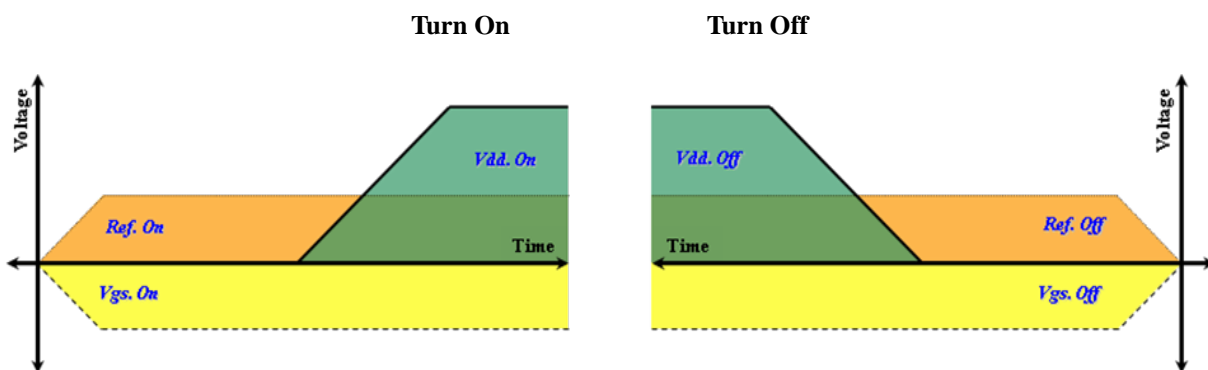
This product is a Pulse Amplifier based on a Gallium Nitride Transistor.
 The Gallium Nitride Transistor requires a Negative Voltage Bias which operates alongside a Positive Voltage Bias. These Biases are applied in accordance to the Sequence during Turn-On and Turn-Off.
 The Pallet Amplifier does not 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_{GS2} .
3. Apply 50V to V_{DS} .
4. Turn on the V_{GS1} and V_{GS2} , 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_{GS2} .
3. Remove all connections.



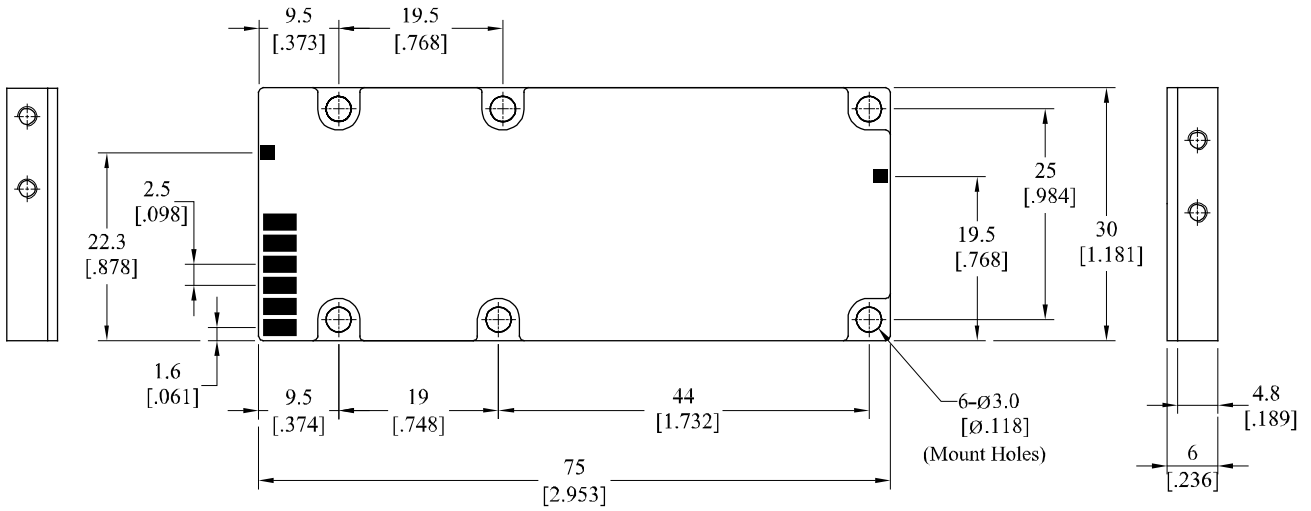
- Sequence Timing Diagram -

Mechanical Specifications

PARAMETER	UNIT	TYP
Mass	kg	0.07
Dimension	mm	75 x 30 x 10.7
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_{GS2}
		DC Pad : GND

Outline Drawing

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



Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RRP2735200-30	2012.9.6	1.0	-	Preliminary

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