Preliminary

Pulse Amp Pallet RRP1214500-14

Product Features

- High Output Power : Pout =560W(Typ.)
- High Gain : GP =14dB(Typ.)
- High Efficiency : 65%(Typ.)
- High thermal stability
- Internally matched for ease of use
- 20% Duty Cycle, 200us Pulse Width

Applications

- Radar system

Description

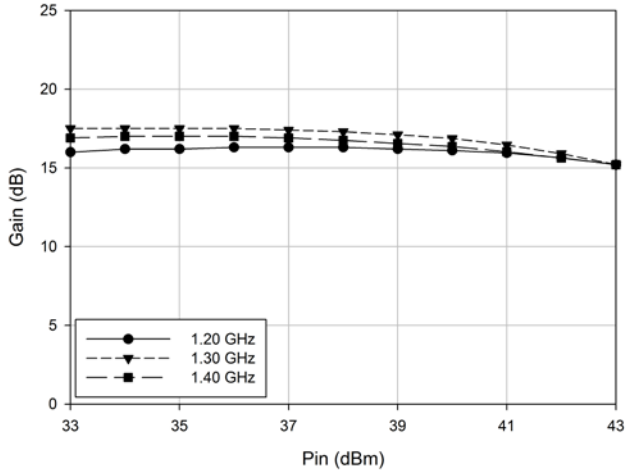
The RRP1214500-14 is designed for Radar system application frequencies from 1.2GHz to 1.4GHz and GaN HEMT technology has been used that performs high breakdown voltage, wide bandwidth and high efficiency. Since it is high efficiency amplifier, it can perform at max. 20% duty cycle and 200us of pulse width.

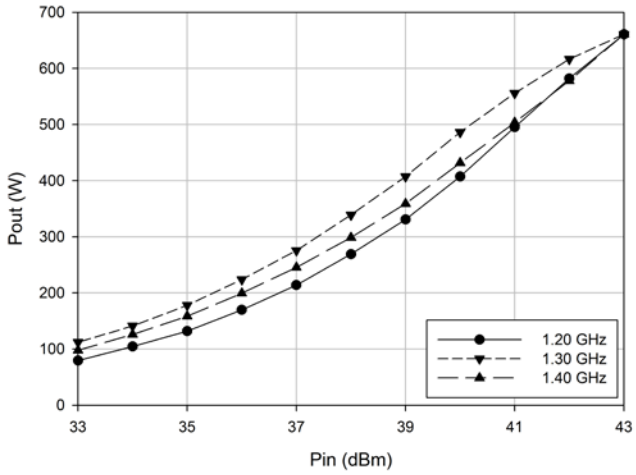
Electrical Specifications @ V_{DS} =50V, T=25°C, 50Ω System

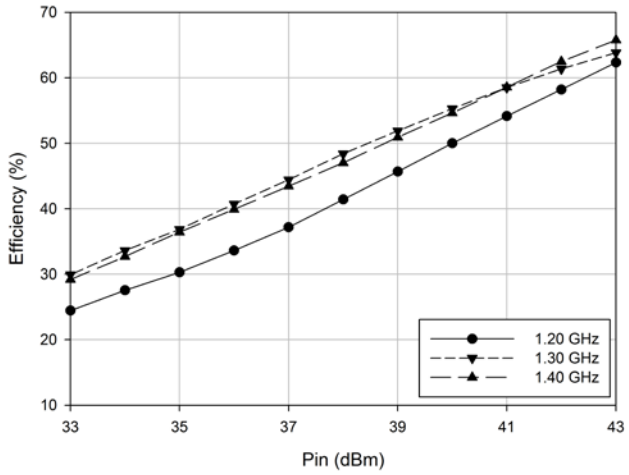
PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Frequency	MHz	1200	-	1400	f_O
Operating Bandwidth	MHz	-	200	-	BW
Output Pulse Power	W	500	560	-	P_O
Input Pulse Power	dBm	-	43.5	-	P_I
Power Gain	dB	13.5	14	-	G_P
Gain Flatness	dB	-	0.5	1.0	ΔG_P
Duty Cycle	%	-	10	20	DC
Pulse Width	us	-	100	200	PW
Efficiency	%	55	65	-	E_{ff}
Amplitude Pulse Droop	dB	-	0.5	1.0	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	°	-15	-	15	Δφ

* Above electrical specifications is measured by connecting electrolytic condenser 1,500uF to DC. Please make sure that electrolytic condenser is connected properly while testing the module.
* Custom design available

Typical Performance @ 25°C







Absolute Maximum Ratings

PARAMETER	UNIT	RATING	SYMBOL
Gate-Source Voltage	V	-10 ~ 0	V_{GS}
Drain- Source Voltage	V	110	V_{DS}
Gate Current	mA	70	I_G
Operating Junction Temperature	°C	225	T_J
Operating Flange Temperature	°C	-20 ~ 100	T_C
Storage Temperature	°C	-50 ~ 150	T_{STG}

Operating Voltages

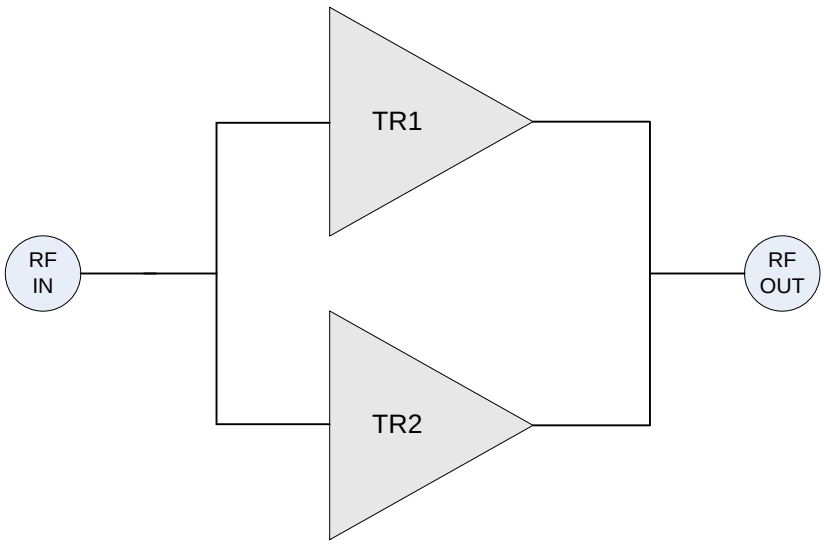
PARAMETER	UNIT	NOMINAL VOLTAGE	VOLTAGE ACCURACY	SYMBOL
Drain-Source Voltage	V	50	± 2%	V_{DS}
Gate-Source Voltage	V	-4(ON) , -8(OFF)	± 2%	V_{GS}

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.

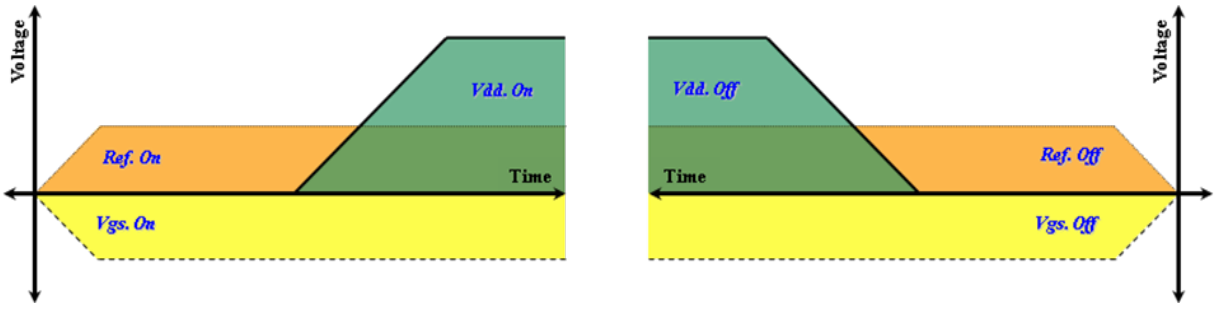
During Turn-On

1. Connect GND.
2. Apply -4V to V_{GS}.
3. Apply 50V to V_{DS}.
4. Turn on the V_{GS}, 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_{GS}.
3. Remove all connections.

Turn On **Turn Off**



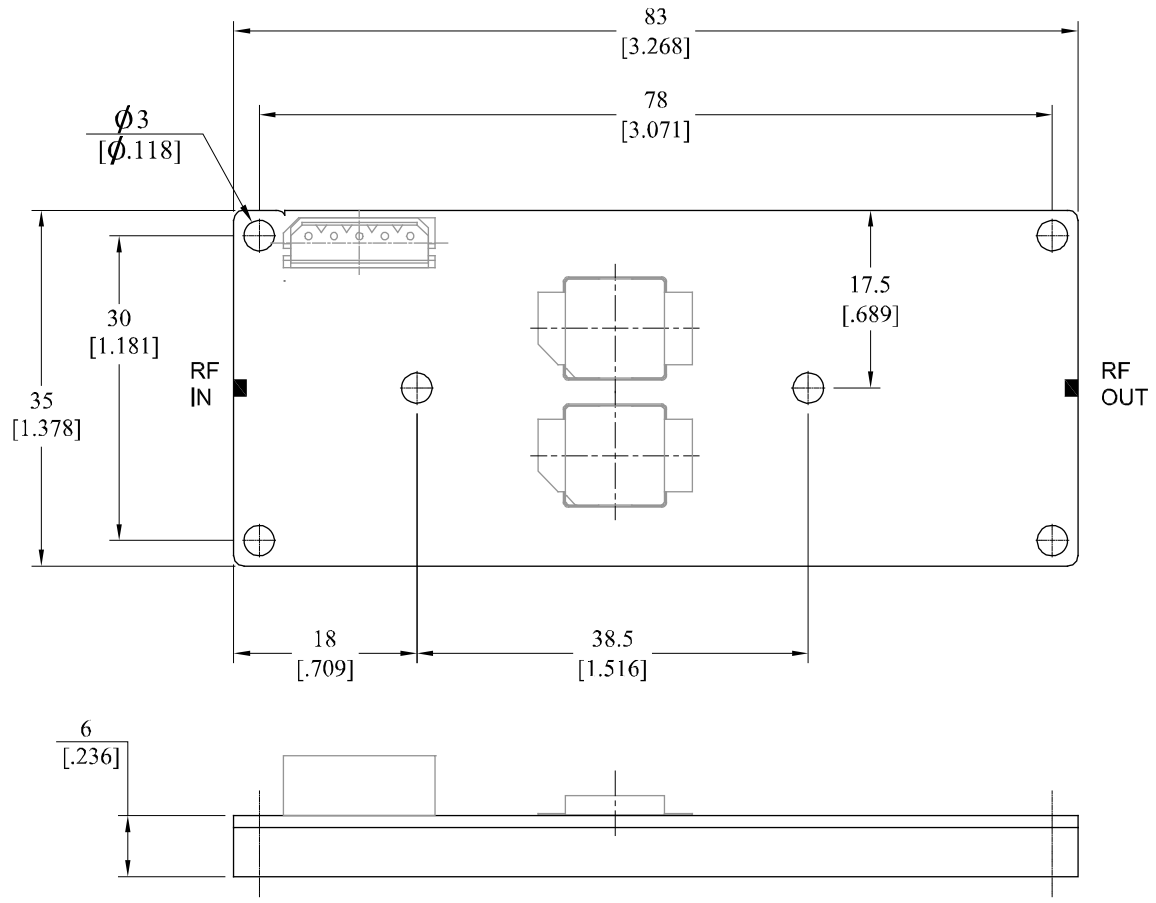
- Sequence Timing Diagram -

Mechanical Specifications

PARAMETER	UNIT	TYP
Mass	kg	0.06
Dimension	㎜	83 x 35 x 12
RF Connector	-	50 ohm Pad : RF Input
		50 ohm Pad : RF Output
DC Connector	-	5pin Molex Connector (Male) : Supply

Outline Drawing

* Unit: mm[inch] | Tolerance ±0.2[.008]



Pin Description

Pin No	Description	Pin No	Description
1	V_{DS} (+50V)	4	GND
2	V_{DS} (+50V)	5	V_{GS} (-4V)
3	GND	-	-

Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RRP1214500-14	2014.02.14	0.3	Modified Spec. & Format	Preliminary
RRP1214500-14	2013.10.01	0.2	Modified Spec. (Min DE : 55% → 60%)	Preliminary
RRP1214500-14	2013.02.21	0.1	-	Preliminary