

**Product Features**

- Frequency from 16.2 ~ 16.8 GHz
- GaN HEMT
- 50 Ohm Input/Output impedance
- High efficiency

**Applications**

- Radar System



**Description**

The RRP162168020-17A is designed for Radar system application frequencies from 16.2 ~ 16.8 GHz. This module uses GaN HEMT technology which performs high breakdown voltage, wide bandwidth and high efficiency.

**Electrical Specifications @  $V_{DS} = 50V, V_{GS} = -4V, I_{dq} = 150mA, T = 25^{\circ}C, 50\Omega$  System, Input Power +25dBm**

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Frequency	GHz	16.2	-	16.8	$f_O$
Operating Bandwidth	MHz	-	600	-	BW
Output Pulse Power	dBm	42.5	43	-	$P_O$
Power Gain	dB	-	17	-	$G_P$
Gain Flatness	dB	-	$\pm 1.0$	-	$\Delta G_P$
Duty Cycle	%	-	6	-	DC
Pulse Width	us	-	7.5	-	PW
Drain Efficiency	%	20	25	-	$E_{ff}$
Amplitude Pulse Droop	dB	-	0.5	1.0	Droop
Harmonics 1 to N	dBc	-	40	-	$H_N$
Spurious Level	dBc	-	60	-	Spur
Rise Time	ns	-	-	50	$t_r$
Fall Time	ns	-	-	50	$t_f$
Input Return Loss	dB	-	-	-9	RL
Operating Voltage $V_{DS}$	V		50		$V_{DS}$
Operating Voltage $V_{GS}$	V		-4		$V_{GS}$

- \* Test Pulse conditions = 7.5us, 6%
- \* Above electrical specifications is measured by connecting electrolytic condenser 10,000uF 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
Operating Junction Temperature	°C	225	T <sub>J</sub>
Operating Flange Temperature	°C	-30 ~ 65	T <sub>C</sub>
Storage Temperature	°C	-30 ~ 125	T <sub>STG</sub>

**Operating Voltages**

PARAMETER	UNIT	NOMINAL VOLTAGE	VOLTAGE ACCURACY	SYMBOL
Drain-Source Voltage	V	50	± 2%	V <sub>DS</sub>
Gate-Source Voltage	V	-4(ON), -8(OFF)	± 2%	V <sub>GS</sub>

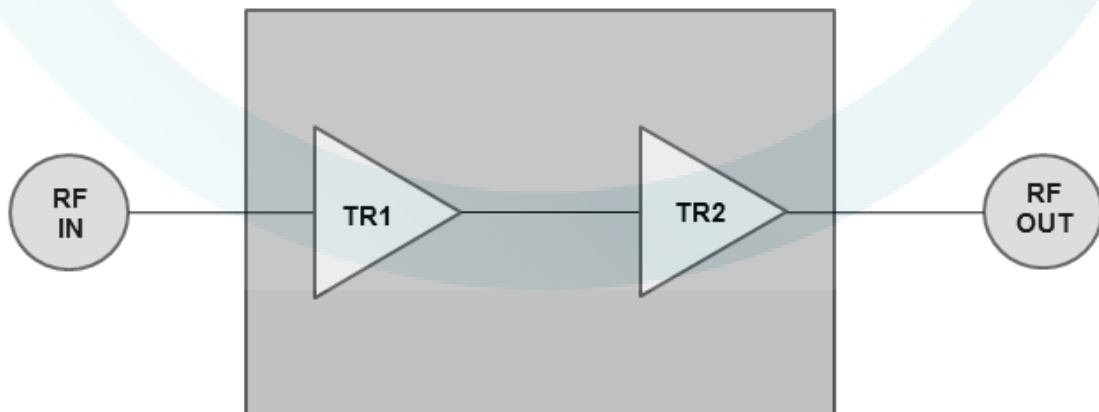
**Power Supply**

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Drain-Source Current(AVG)	A	-	0.5	1	I <sub>DS</sub>

\* Duty Cycle 6%, Pulse Width 7.5us

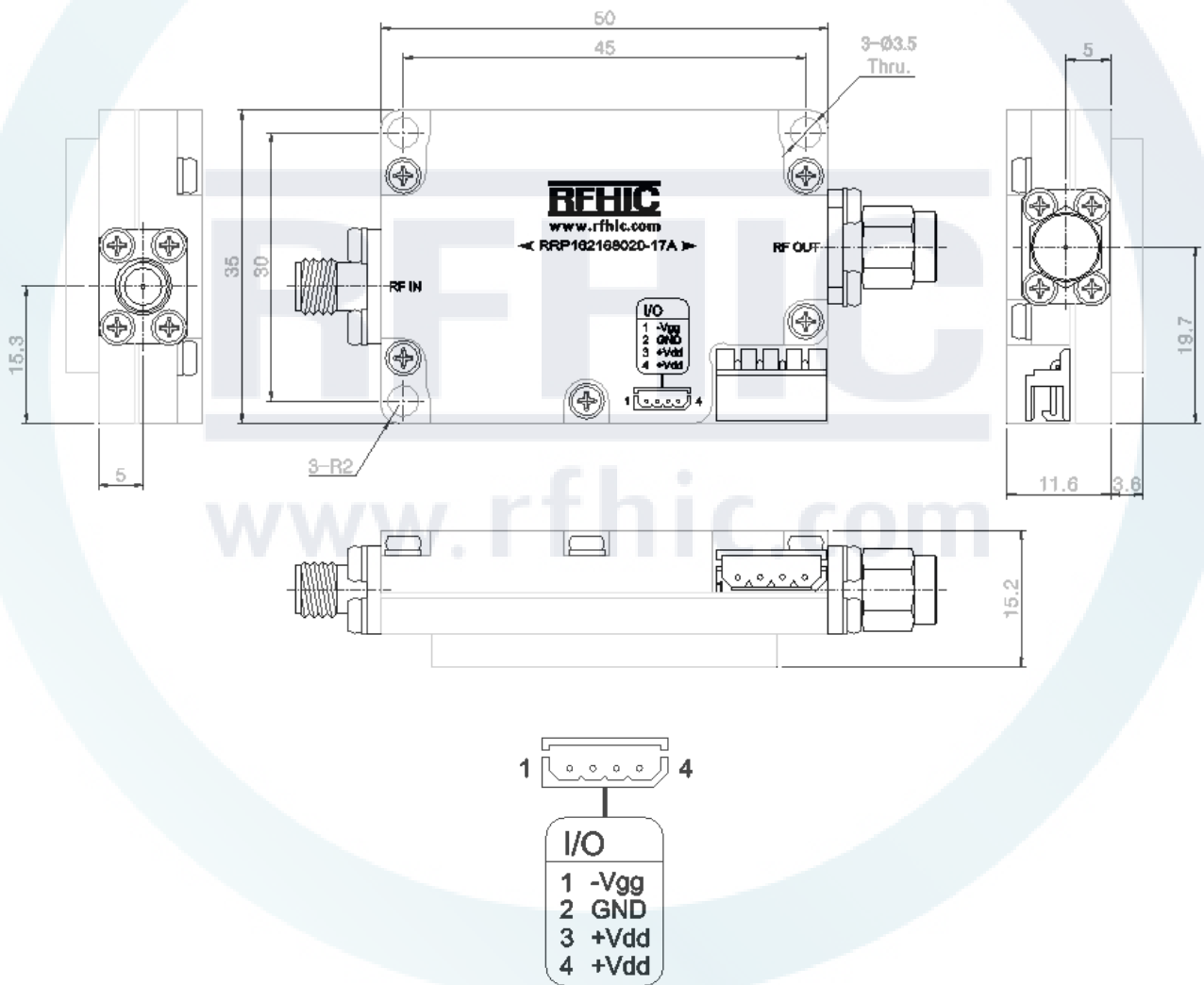
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**Block diagram**



**Mechanical Specifications**

PARAMETER	UNIT	TYP
Dimension	mm	50 x 35 x 11.7 (W x L x H)
RF Connector	-	SMA Fe-Male: RF Input
		SMA Male: RF Output



Pin No	Function	Description
1	-Vgg	ON -4V / OFF: less than -5V
2	GND	Ground
3	+Vdd	+50V
4	+Vdd	

### Precautions

This product is 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.

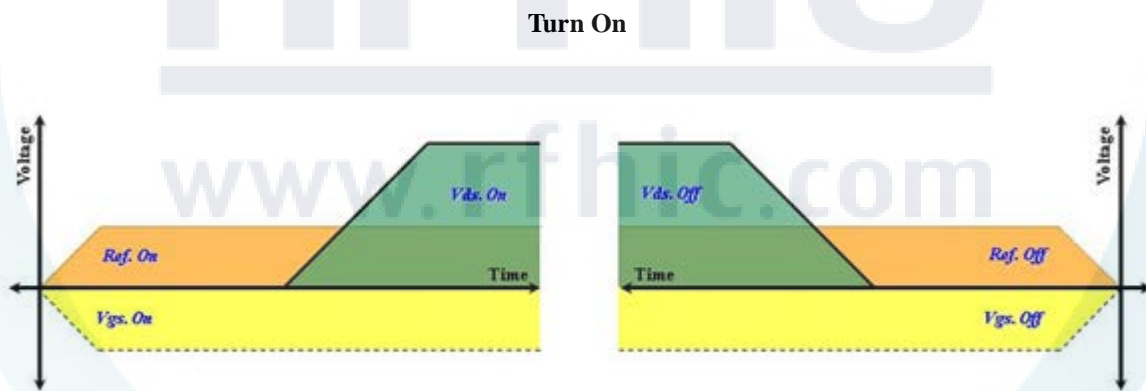
The required sequence for power supply is as follows.

### During Turn-On

1. Connect GND.
2. Apply  $V_{GS}$ .
3. Apply  $V_{DS}$ .
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.



- Sequence Timing Diagram -

**Revision History**

Part Number	Release Date	Version	Modification	Data Sheet Status
RRP162168020-17A	2016.03.23	0.1	-	Preliminary



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