

## Product Features

- Frequency from 5.4 ~ 5.9GHz
- GaN HEMT
- 50 Ohm Input/Output impedance
- High efficiency

## Applications

- Radar system



## Description

The RRP54592K4-24 is designed for Radar system application frequencies from 5.4 ~ 5.9GHz.

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

## Electrical Specifications @ $V_{DS1}=50V$ , $V_{DS2}=6V$ , $T_c=50^{\circ}C$ , 50 $\Omega$ System

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Frequency	MHz	5400	-	5900	$f_o$
Operating Bandwidth	MHz	-	500	-	BW
Output Pulse Power	W	2100	2400	-	$P_o$
Input Pulse Power	dBm	-	40	-	$P_i$
Power Gain	dB	-	23.8	-	$G_P$
Gain Flatness	dB	-	-	$\pm 0.5$	$\Delta G_P$
Duty Cycle	%	-	-	10	DC
Pulse Width	us	-	-	100	PW
Efficiency	%	25	30	-	$E_{ff}$
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 VSWR	dB	-	-	1.5:1	VSWR
Output VSWR	dB	-	-	1.5:1	VSWR
Switching Time	us	-	0.1	-	$t_{sw}$
Phase Deviation	$^{\circ}$	-20	-	20	$\Delta\phi$

\* Test Pulse conditions = 100us, 10%

\* Custom design available

**Absolute Maximum Ratings**

PARAMETER	UNIT	RATING	SYMBOL
Operating Flange Temperature	°C	-20 ~ 85	T <sub>C</sub>
Storage Temperature	°C	-40 ~ 125	T <sub>STG</sub>

**Operating Voltages**

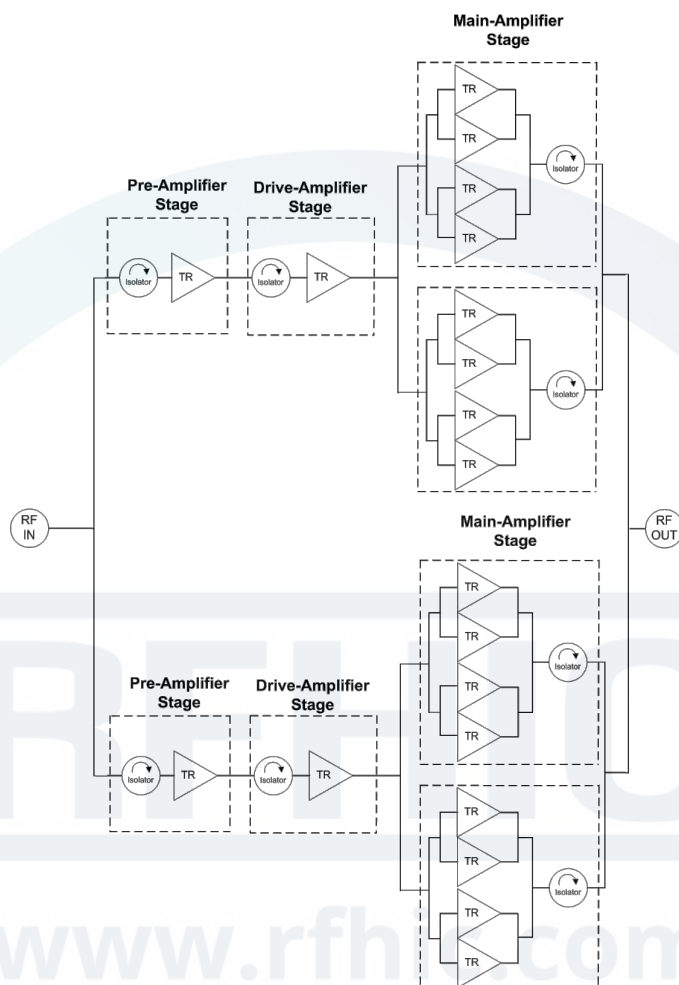
PARAMETER	UNIT	NOMINAL VOLTAGE	VOLTAGE ACCURACY	SYMBOL
Drain-Source Voltage	V	50	± 2%	V <sub>DS1</sub>
Drain-Source Sub Voltage	V	6	± 2%	V <sub>DS2</sub>
On/Off Control Voltage	V	TTL Low(0V) : PA OFF, TTL High(5V) : PA ON		
Peak Monitor Voltage	V	1.3V@5.65GHz, 60dBm (dB/25mV)		
Current Monitor Voltage	V	4V@AVG_16A (A/0.25V)		
Temp Monitor Voltage	V	0.75V@25°C (1°C/0.01V)		

**Power Supply**

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Drain-Source Current(AVG)	A	-	16.5	20	I <sub>DS1</sub>
Drain-Source Sub Current(AVG)	A	-	0.07	0.12	I <sub>DS2</sub>

\* Duty Cycle 10%, Pulse Width 100us

## Block diagram

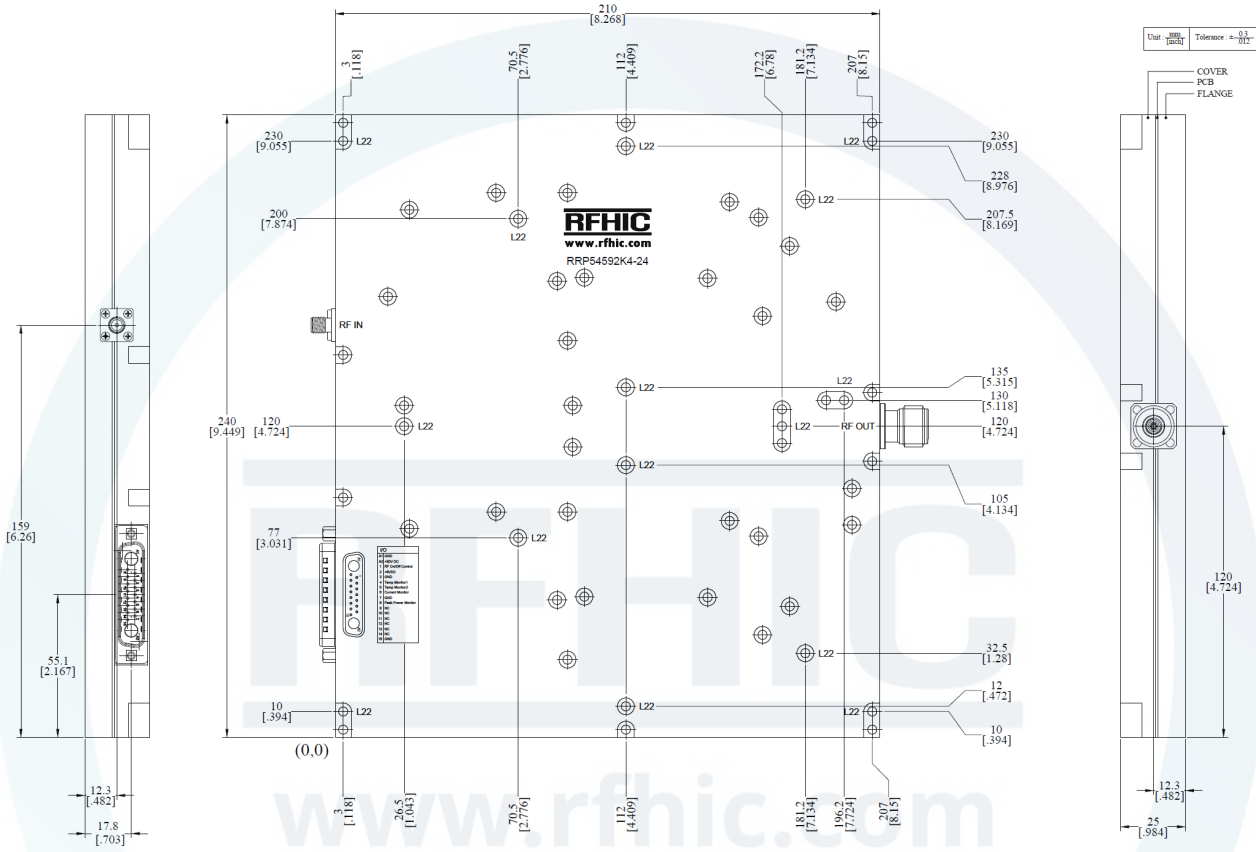


## Mechanical Specifications

PARAMETER	UNIT	TYP
Mass	kg	2.21
Dimension	mm	210 x 240 x 25 (without connectors)
RF Connector	-	SMA Female : RF Input
		N Female : RF Output
DC Connector	-	17W2 Combo Connector (male) : Supply

**Outline Drawing**

\* Unit: mm[inch] | Tolerance  $\pm 0.3$ [.012]



## Pin Description

Supply : 17W2 Combo Connector			
Pin No	Description	Pin No	Description
A1	GND	8	Peak Power Monitor
A2	$V_{DS1}(+50V)$	9	NC
1	RF On/Off control	10	NC
2	$V_{DS2}(+6V)$	11	NC
3	GND	12	NC
4	Temp Monitor1	13	NC
5	Temp Monitor2	14	NC
6	Current Monitor	15	GND
7	GND		

## Bias Sequence

HPA turn-on	HPA turn-off
1. Pin A2 : $V_{DS1}(+50V)$	1. RF Input, Off
2. Pin 2 : $V_{DS2}(+6V)$	2. Pin 1 : Pulse on/off
3. Pin 1 : Pulse on/off	3. Pin 2 : $V_{DS2}(+6V)$
4. RF Input	4. Pin A2 : $V_{DS1}(+50V)$

\* It is recommended to follow the sequence of bias application as in the above table. However, there is an internal protection circuit that prevents the possible damages that may be occurred from a different sequence of bias applications.

**Revision History**

Part Number	Release Date	Version	Modification	Data Sheet Status
RRP54592K4-24	2020.07.14	0.1	-	Preliminary
RRP54592K4-24	2020.08.19	0.2	-	Preliminary
RRP54592K4-24	2021.01.27	0.3	-	Preliminary
RRP54592K4-24	2022.09.26	0.4		Preliminary



RFHIC Corporation reserves the right to make changes to any products herein or to discontinue any product at any time without notice. While product specifications have been thoroughly examined for reliability, RFHIC Corporation strongly recommends buyers to verify that the information they are using is accurate before ordering. RFHIC Corporation does not assume any liability for the suitability of its products for any particular purpose, and disclaims any and all liability, including without limitation consequential or incidental damages. RFHIC products are not intended for use in life support equipment or application where malfunction of the product can be expected to result in personal injury or death. Buyer uses or sells such products for any such unintended or unauthorized application, buyer shall indemnify, protect and hold RFHIC Corporation and its directors, officers, stockholders, employees, representatives and distributors harmless against any and all claims arising out of such unauthorized use.

Sales, inquiries and support should be directed to the local authorized geographic distributor for RFHIC Corporation. For customers in the US, please contact the US Sales Team at 919-677-8780. For all other inquiries, please contact the International Sales Team at 82-31-8069-3044.