Preliminary

GaN Hybrid Amplifier

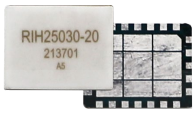
RIH25030-20

Product Features

- Operating Frequency 2400~2500MHz
- Power gain 15.5dB @ Pavg=30W
- Total Efficiency 70% @ Pavg=30W
- Input/Output Impedance 50ohm
- GaN on SiC Technology
- Copper Clad laminates board
- 13x17x2.9mm small size SMD package

Applications

- Industrial Heating and Drying
- Scientific
- Medical
- Plasma Generator
- Anti-Drone System
- Jamming System



Package Type : PP-1S

Description

The RIH25030-20 is a GaN Hybrid power amplifier module designed for Industrial, Scientific, Medical (ISM) and Jamming applications at 2450MHz. RIH Series is an suitable for use in CW, pulse and Linear application and 50ohm input and output impedance matched device can deliver up to 30W of saturation power and operating drain voltage 45V.

Electrical Specifications @ Vds=45V, Ta=25°C, 50Ω System

PARAMETER	UNIT	MIN	TYP	MAX	CONDITION
Frequency Range	MHz	2400		2500	ZS = ZL = 50 ohm
Power Gain	dB	14	15.5	-	Pout=30W
Gain Flatness		-	-	1	
Input Return Loss		-	-10	-	Pin=0dBm
Pout @ Saturation	dBm	40	44.77	45.2	CW
Drain Efficiency	%	65	70	-	Pavg=30W
Supply Voltage	V	-3.2	-3.0*1	-2.7	Vgs
		25	45	50	Vds
Gate Current(Vgs)	mA	-	3.6		Pout=30W
Drain Current(Vds)		-	960	-	

Note

1. Vgs (Pin#1) set: Idq 50mA

Caution

The drain voltage must be supplied to the device after the gate voltage is supplied

Turn on ➔ Turn on the Gate voltage supply and last turn on the Drain voltage supplies

Turn off ➔ Turn off the Drain voltage and last turn off the Gate voltage

KS Q 9100:2018
AS9100 D

Certification

This product is manufactured by a company that is certified for the AS9100D quality management system.

Mechanical Specifications

PARAMETER	UNIT	TYPICAL	RATING
Mass	g	2.0	-
Dimension	㎜	13 x 17 x 2.9	±0.15

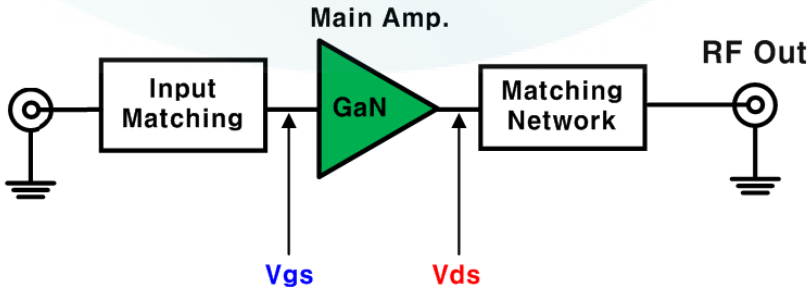
Absolute Maximum Ratings

PARAMETER	UNIT	RATING	SYMBOL	CONDITION
Gate-Source Voltage	V	-10 ~ 0	Vgs	Tc=25°C
Drain-Source Voltage	V	100	Vds2	Tc=25°C
Gate Current	mA	3.6	C_G	Tc=25°C
Power Dissipation	W	30	P_D	Tc=85°C
Operating Junction Temperature	°C	225	T_J	-
Operating Case Temperature	°C	-30 ~ 125	T_C	-
Storage Temperature	°C	-40 ~ 125	T_{STG}	-
Soldering Temperature	°C	245	Ts	30s Max.
RF Input Level	dBm	30	Pin	Tc=25°C

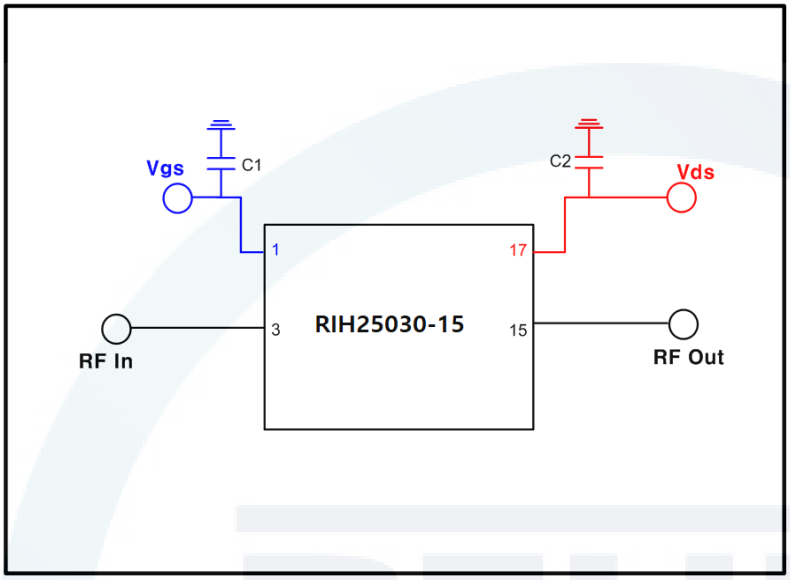
ESD Level

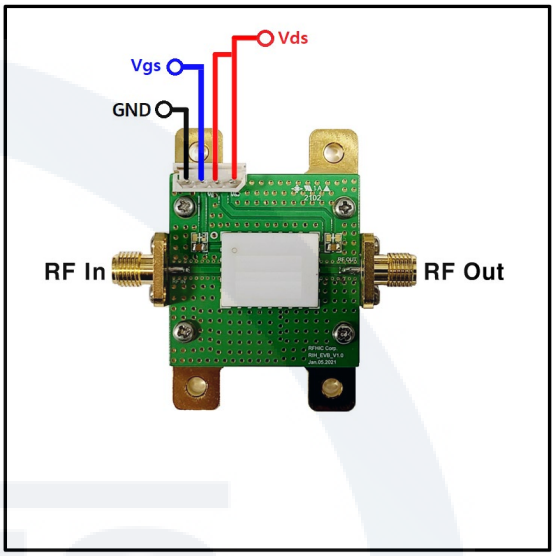
PARAMETER	STANDARD	RESULT
HBM	JESD22-A114E	Class 1C
CDM	JESD22-C101F	Class C2
MSL	JEDEC J-STD-020	MSL3

Block Diagram



Application Circuit

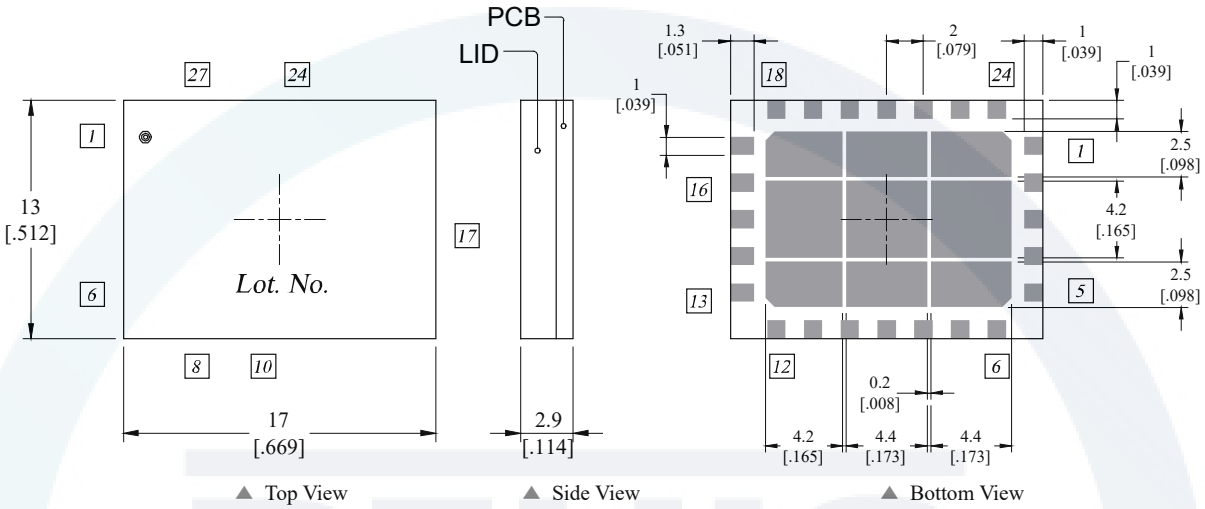




Bill of Material (Evaluation board)

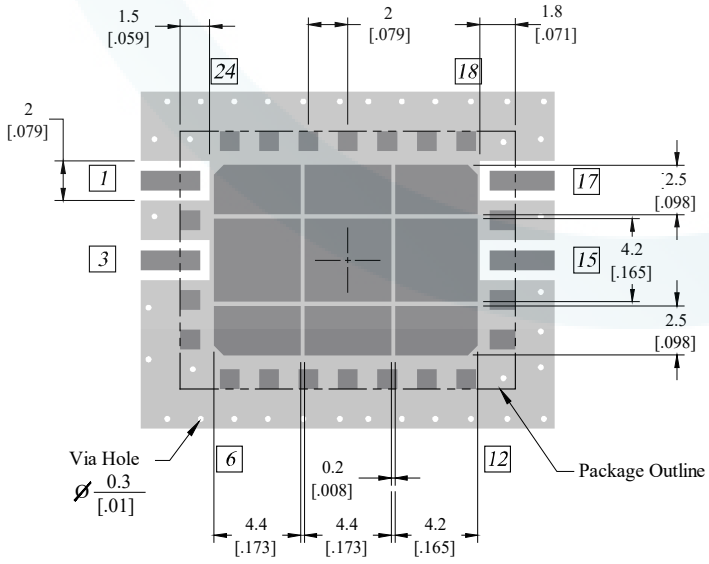
LOCATION	Part Number	Value
C1	GRM21BR71C475KA73L	4.7uF / 16V
C2	GRM21BC72A105KE01L	1.0uF / 100V
PCB	RO4350B	2Layer, 20mil, 1oz

Package Dimensions (Type: PP-1S) * Unit: mm[inch]

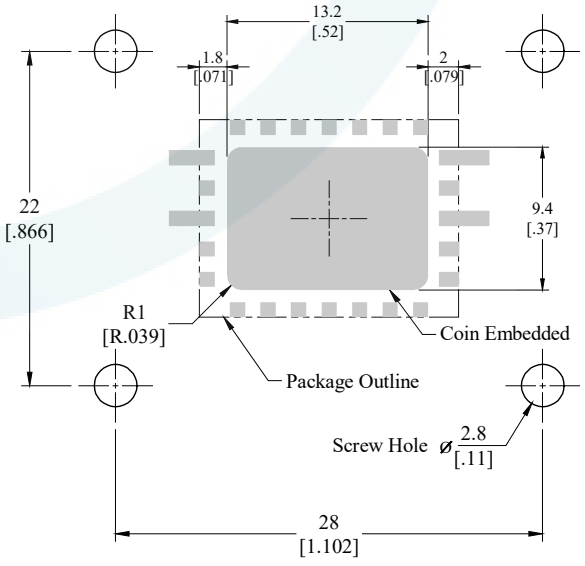


Pin Description			
Pin No	**Function**	**Pin No**	**Function**
1	Vgs	17	Vds2
-	-	-	-
3	RF In	15	RF Out
All other pins Ground			

Recommended Pattern



Mounting Configuration & Coin Embedded



*** Mounting Configuration Notes**

1. For the proper performance of the device, Ground / Thermal via holes must be designed to remove heat.
2. To properly use heatsink, ensure the ground/thermal via hole region to contact the heatsink. We recommend the mounting screws be added near the heatsink to mount the board.
3. In designing the necessary RF trace, width will depend upon the PCB material and construction.
4. Use 2mm Copper Coin embedded PCB minimum thickness for the heatsink.
5. Do not put solder mask on the backside of the PCB in the region where the board contacts the heatsink
6. We recommend adding as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.
7. We recommend that the PCB with the RF device in a hybrid package is not washed to remove the flux.

Ordering Information

Part Number	Package Design
RIH25030-20	-R (Reel)
	-B (Bulk)
	-EVB (Evaluation Board)

Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RIH25030-20	2021.07.12	0.1	-	Preliminary
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