Wideband Amplifier

RFC1G21H8-24-S

Product Features

- GaN on SiC MMIC
- Very Low Distortion
- Guaranteed Broadband Power Gain
- Heat Sink 99.9% Copper, Ag or Gold Plate
- Excellent Thermal Conductivity
- Single Supply Voltage @ 24V
- No External Circuit needed

Applications

- Drive Amplifier

Package Type : SOT-115J

Description

The RFC1G21H8- 24-S is specifically designed for up to 1GHz in frequency as amplifiers.
This hybrid dynamic range amplifier module operates with a single voltage supply of 24V(DC).
The RFC1G21H8- 24-S is equipped with over-voltage suppressor.

Electrical Specifications @ V_{CC} = 24V; Tc = 45°C; Z_S = Z_L = 50Ω

PARAMETER	UNIT	MIN	TYP	MAX	CONDITION
Operating Frequency	MHz	20	-	1000	-
Small Signal Gain	dB	20.0	21.0	-	20 ~ 1000MHz
Gain Variation vs Frequency	dBpp	-	1.5	2.0	20 ~ 1000MHz
Input/Output Return Loss	dB	-	-10	-7	20 ~ 1000MHz
P3dB	dBm	35.0	36.0		20 ~ 1000MHz
OIP3 @ Po = +23dBm (1MHz Tone spacing, CW 2-Tone)	dBm	43.0	44.0	-	20 ~ 1000MHz
Supply Voltage	V		+24	+25	Vcc(=Vds)
Quiescent Current consumption	mA	1000	-	1200	-

Absolute Maximum Ratings

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Input RF Power	dBm	-	-	22	-
Supply Voltage	V	-	-	30	-
Load Mismatch Value	3 : 1 @ all load phase				
Operating Case Temperature	℃	-20	-	80	Tc
Storage Temperature	℃	-40	-	105	Tstg

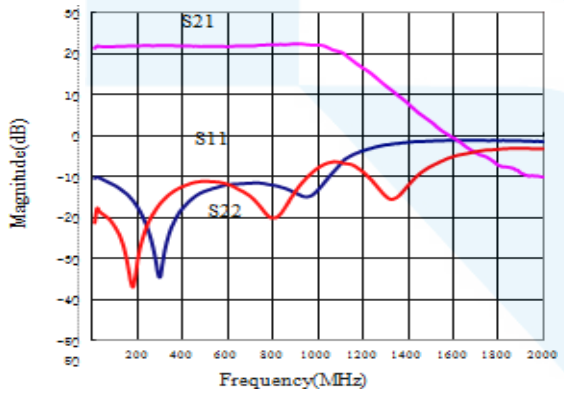
Note

1. To protect the unit, Supply Voltage under 18V, the unit will be switched off.

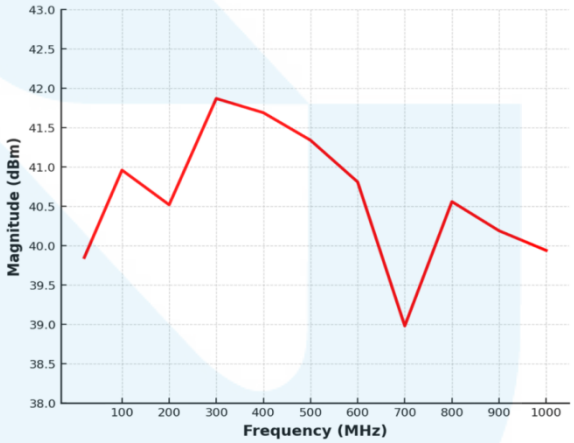
Typical Performance @ 25℃

PARAMETER	UNIT	Typical Performance		
Frequency	MHz	20	500	1000
Small Signal Gain	dB	21	21	22
Input Return Loss	dB	-10	-13	-13
Output Return Loss	dB	-17	-11	-8
P3dB	dBm	36	39	37
OIP3	dBm	45	47	44
Supply Voltage	V	-	24	-
Quiescent Current consumption	mA	1100		

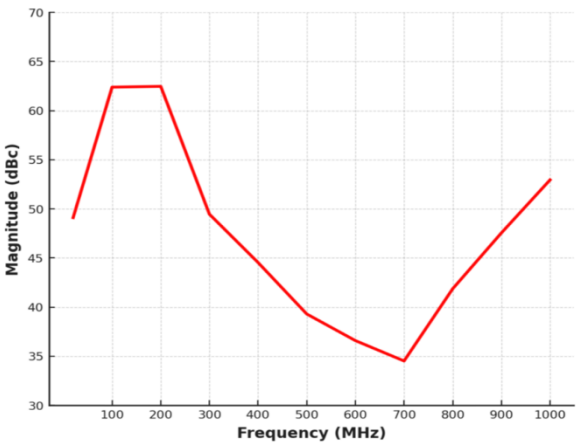
S-Parameters



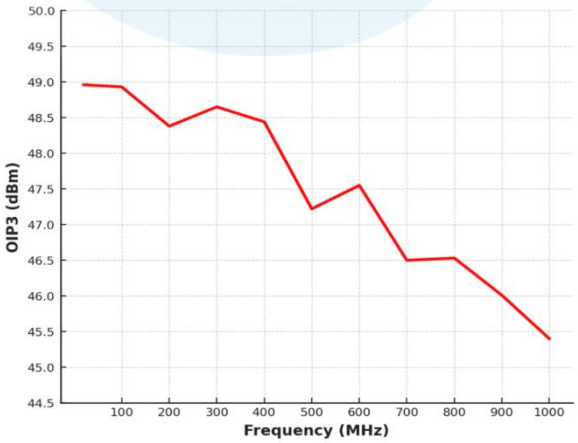
Power Output 3dB Compression



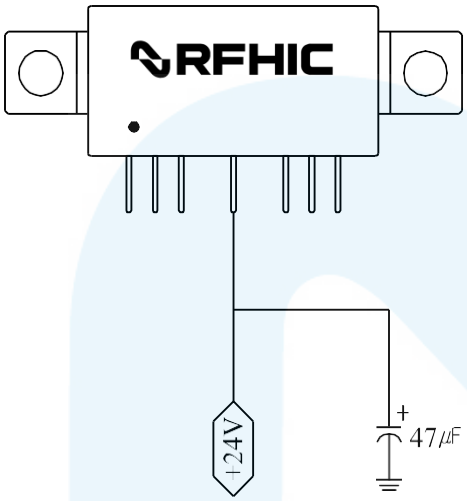
2nd Harmonic @ Po 30dBm



OIP 3 @ Po 23dBm



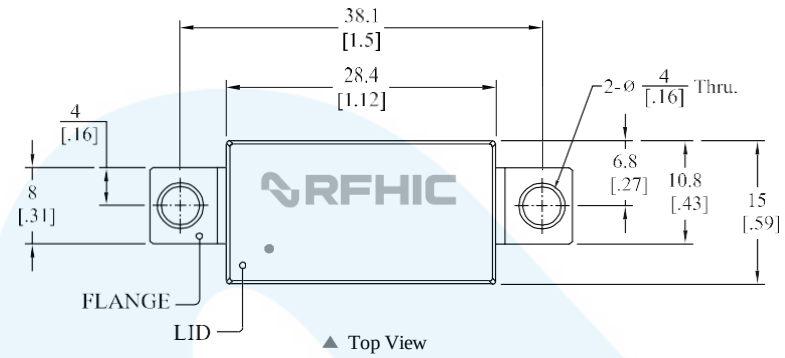
Note for Correct Use



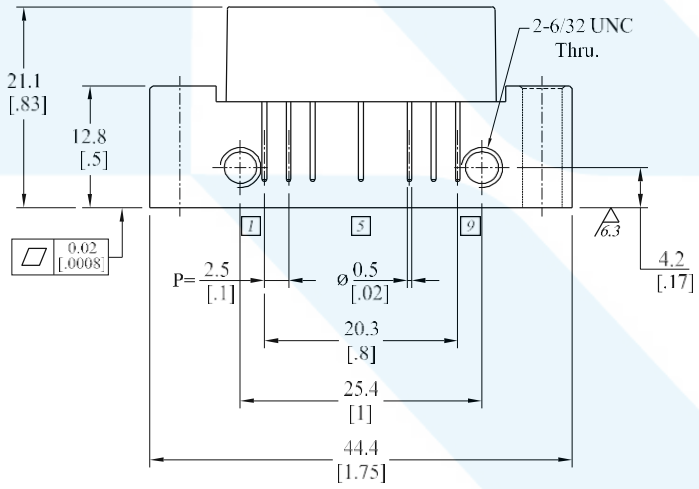
1. On the power input port (Pin#5), 47uF/35V capacitor GND is recommended.
2. Heat sink should be placed as tight as possible to the metal case.
3. Pay attention when handling electrostatic-sensitive devices.
- Person at a workbench should be earthed via a wrist strap and a resistor.
- All mains-powered equipment should be connected to the mains via an earth-leakage switch.
- Equipment cases should be grounded.
- Relative humidity should be maintained between 40% and 50%.
- An ionizer is recommended.
- Keep static materials, such as plastic envelopes and plastic trays etc., away from the workbench.
4. One must put the power off, before adjusting the in/output matching of the system.
5. Pay close attention to the input voltage not to over power the hybrid.
6. Do not open the Plastic cover to change the matching inside the hybrid.

Package Dimensions (Type: SOT-115J)

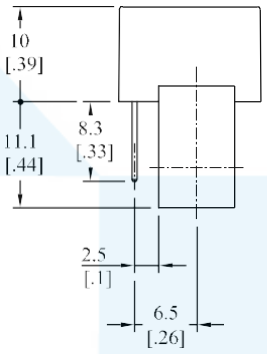
* Unit: mm[inch] | Tolerance: ±0.2[.008]



▲ Top View



▲ Front View



▲ Side View

Pin Description					
Pin No	**Function**	**Pin No**	**Function**	**Pin No**	**Function**
1	RF Input	4	-	7	GND
2	GND	5	Vcc	8	GND
3	GND	6	-	9	RF Output

*** Mounting Configuration Notes**

1. Ground / thermal via holes are critical for the proper performance of this device.
2. Add as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.
3. Mounting screws can be added near the part to fasten the board to a heatsink. Ensure that the ground / thermal via hole region contacts the heatsink.
4. Do not put solder mask on the backside of the PCB in the region where the board contacts the heatsink.
5. RF trace width depends upon the PCB material and construction.
6. Use 1 oz. Copper minimum.

Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RFC1G21H8-24-S	2025.02.17	0.1	Electrical Specifications modification	-

Certification

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

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