

GaN Solid State Power Amplifier

RCM251K6-20



Product Features

- 2400 ~ 2500MHz
- Output power: 1.6kW(CW) Peak Power @ 50V
- Built with GaN on SiC HEMT
- 55% Efficiency
- High Reliability
- Power & Frequency Monitoring Available

Applications

- Building Block for High-Power Systems
- Plasma Generation
- Industrial Heating and Drying
- Microwave CVD
- Microwave Sintering
- Microwave Chemistry
- Materials Processing
- Study of Biological Phenomena
- Semiconductor Equipment



Description

The RCM251K6-20 is a 1.6 kW, GaN solid-state power amplifier designed for high power industrial, scientific, and medical (ISM) applications. The solid-state power amplifier is operable from 2400 to 2500 MHz and is built using RFHIC's cutting edge gallium-nitride (GaN) on SiC HEMT providing excellent efficiency and breakdown voltage.

The GaN Solid state Power Amplifier (SSPA) is suitable for use in CW, pulse, and linear applications. This high efficiency rugged device is targeted to replace industrial magnetrons and other vacuum tubes currently powering industrial heating, drying, microwave CVD, semiconductor equipment and sintering.

Electrical Specifications @ $V_{DS}=50V$, $T=25^{\circ}C$, 50 Ω System

PARAMETER		UNIT	MIN	TYP	MAX
Operating Frequency		MHz	2400	-	2500
Operating Bandwidth		MHz	-	100	-
CW Variable Output Power		W	100	-	1600
Power Gain @ Peak Power		dB	-	62	-
Max RF Input power		dBm	-	0	2
Operating Voltage		VDC	50	-	52
Efficiency (DC to RF)		%	-	-	57
FWD & RVS Port Sampling		dB	-	43	-
GUI Control	Power Amplifier On / Off	Enable / Disable Using GUI			
Monitoring (GUI)	FWD & RVS Power	Forward and Reverse Power from 100~1600W *For accurate monitoring, the correct frequency must be set in the RF input section. *Unless FWD & RVS Sampling ports are 50 Ohm matched, a margin of error up to 5% may occur			
	Temperature	Internal Temperature Sensor [$^{\circ}C$]			
Max. Mismatch @ Max Output Power*		6: 1 VSWR			
Control Interface		RS-232			

* Amplifier can withstand a maximum load mismatch up to 6:1 at max. output power.
In case a higher reflected power is measured, the system will automatically shut down to prevent system failure.

GaN Solid State Power Amplifier

RCM251K6-20



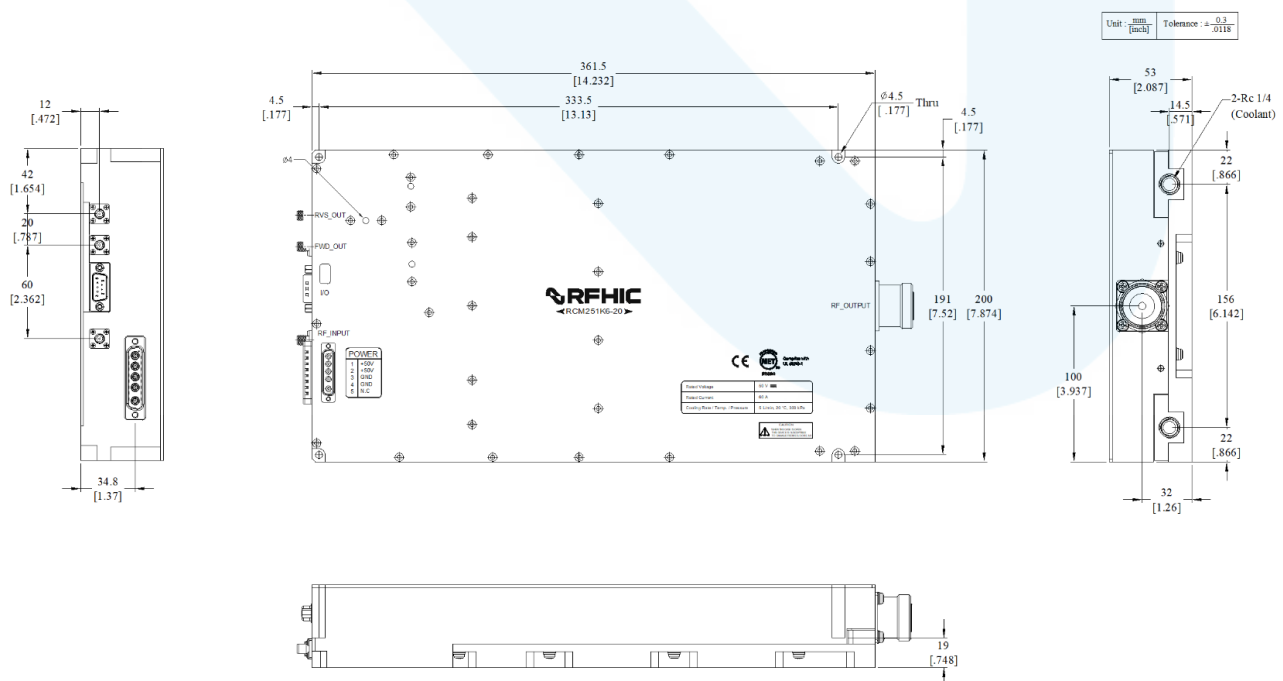
Mechanical Specifications

PARAMETER	UNIT	VALUE
Dimensions (W x D x H)	mm	200 x 361.5 x 53
Weight	kg	7.6
RF Input/FWD/RVS Sampling Connector	-	SMA Female
RF Output Connector	-	7/16 DIN Female
DC & GND: DB-5W5 4-Pin Female	-	
I/O Connector	-	D sub 9pin
Cooling Requirements	Water Cooling Rate	5L/Min, 3Bar
	Cooling Water Inlet Temperature	20°C~25°C (typ.)
	Relative humidity below dew point (non-condensing)	
Fluid Inlet/Outlet Size	Inch	1/4 Tapered Pipe Thread

Note

Dimension and weight may be subject to change.

Mechanical drawing



GaN Solid State Power Amplifier

RCM251K6-20



Revision History

Part Number	Release Date	Version	Description	Data Sheet Status
RCM251K6-20	Sep, 2025	1.0	Initial release of datasheet	Production



Certification

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

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. All 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 through our website at <https://www.rfhicusa.com/>. For all other inquiries, please contact our international sales team through our website portal at <https://rfhic.com/contact/>