

GaN Solid State Power Amplifier

RCM052K5-20



Product Features

- 500 MHz ($\geq \pm 1$ MHz)
- Output power: 2.5kW (CW) Peak 50V
- Built with GaN on SiC HEMT
- 60% System 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 RCM502K5-20 is a 2.5kW, GaN solid-state power amplifier designed for high power industrial, scientific, and medical (ISM) applications. The solid-state power amplifier is operable at 500MHz with ± 1 MHz bandwidth. The amplifier is equipped with 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 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 linear accelerator applications.

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

PARAMETER	UNIT	MIN	TYP	MAX
Operating Frequency	MHz		500	
Operating Bandwidth	MHz	499		501
CW Variable Output Power	W	25	-	2500
Power Gain @Peak Power	dB	69		72
RF Input Power	dBm	-8		-5
Efficiency (AC to RF)	%	-	-	60
Operating Voltage	VDC	42		55
Max. Mismatch @ Max Output Power*	6: 1 VSWR			

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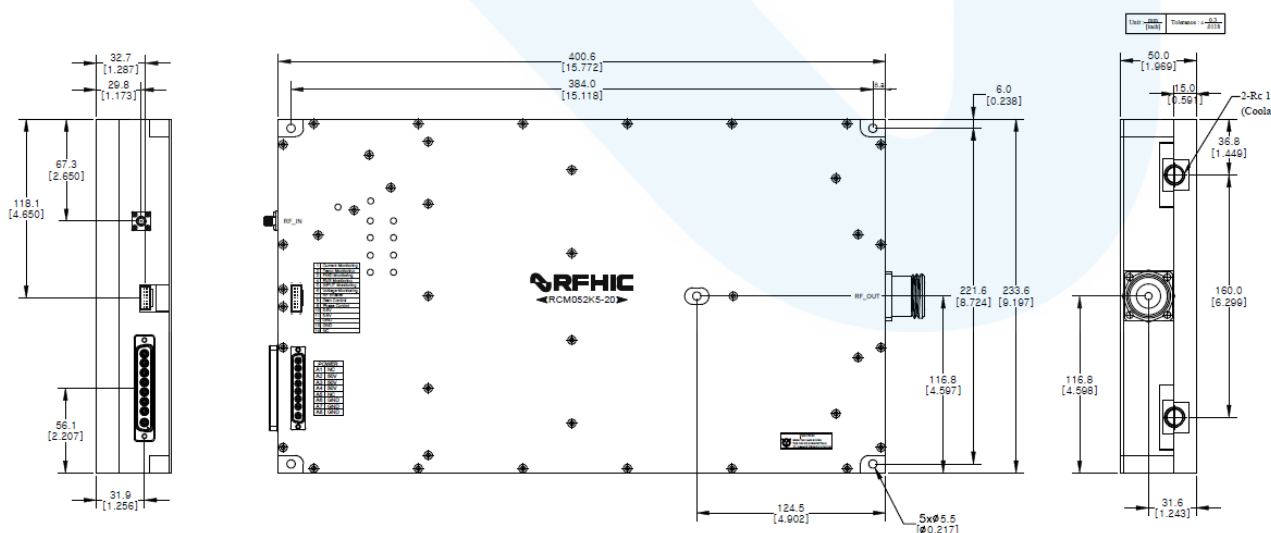
Mechanical Specifications

PARAMETER	UNIT	VALUE	
Dimensions (L x W x H)	mm	400.6 x 233.6 x 50	
Weight	kg	10	
RF Input Connector	-	SMA, Female	
RF Output Connector		7/16DIN, Female	
DC & GND: DB-8W8 8-Pin Female	-	D-Sub 8W8	
I/O Connector	-	SMAW200-14C	
Cooling Type	-	Water Cooling Rate	6L/Min, 5Bar
		Cooling Water Inlet Temperature	20°C~25°C (typ.)
		Relative humidity below dew point (non-condensing)	
		* De-ionized water shall be used to prevent system damage	
Fluid Inlet/Outlet Size	Inch	1/4 Tapered Pipe Thread	

Note

Dimension and weight may be subject to change.

Mechanical drawing



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Interface Connector

14 Pin-Control (SMAW200-14C)

Pin No	Description	Pin No	Description
1	Current Monitoring	2	Temperature Monitoring
3	Forward power Monitoring	4	Reverse power Monitoring
5	Input Monitoring	6	Voltage Monitoring(Drain)
7	RF Enable (Low Enable)	8	Gain Control (0~5V)
9	Phase Control (0~5V)	10	+5.6V
11	+5.6V	12	GND
13	GND	14	Voltage Monitoring(Input)

8 Pin-Power (3008W8SXX99A10X)

Pin No	Description	Pin No	Description
A1(132A10049X)	50V	A2(132A10049X)	50V
A3(132A10049X)	50V	A4(132A10049X)	50V
A5(132A10049X)	GND	A6(132A10049X)	GND
A7(132A10049X)	GND	A8(132A10049X)	GND

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Revision History

Part Number	Release Date	Version	Description	Data Sheet Status
RCM052K5-20	April, 2025	0.1	Initial release of datasheet	Preliminary
RCM052K5-20	May, 2025	0.2	Change interface connector(power) male to female	Preliminary



Certification

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

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