

Product Features

- GaN on SiC High Power Amplifier
- Class AB GaN design
- 20~1000MHz Wide bandwidth
- 50 Ohm Input/Output impedance
- Small size and Light weight
- High reliability



Description

The RWP05120-51 is designed for Broadcasting, Telecommunication, Medical and Other markets.

Operating frequency range is from 20~1000MHz.

Gallium Nitride on SiC Technology is used and attached on a aluminum sub carrier. Full in/out matching for broadband performance is already applied.

Improved thermal handling by patented technology.

Electrical Specifications @ V_{DC}=28V, T_C=40°C, 50Ω System

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Frequency	MHz	20	-	1000	F _O
Operating Bandwidth	MHz		980		BW
Output Power @ Input Power 0dBm, CW Signal	W	100	120		P _{SAT}
Output Power @ 3dB Gain Compression	dBm		49		P _{3dB}
Power Gain Flatness @ Input Power 0dBm	dB			2.0	ΔG _P
Small Signal Gain @ Input Power -20dBm	dB	56	59	62	G _{SS}
Small Signal Gain Flatness @ Input Power -20dBm	dB			±2.5	ΔG
OIP3 @ 40dBm/Tone, 1MHz Tone Spacing	dBm	50	53		OIP3
Harmonics[2 nd /3 rd] @ Output Power 100W	dBc			-18	2 ND
				-10	3 RD
Spurious Level @ Input Power 0dBm	dBc			-60	Spur
Input Return Loss	dB			-10	IRL
Switch On/Off Time	us		2	5	T _{SW}
Supply Voltage	V	27.5	28	30	V _{DC}
Quiescent Current	A		6.0	7.0	I _{DQ}
Current Consumption @ Pin 0dBm, CW Signal	A		10	13	I _{DD}

* Custom design available

Environmental Specifications

PARAMETER	UNIT	RATING	SYMBOL
Operating Case Temperature	°C	-40 ~ 80	T _C
Storage Temperature	°C	-40 ~ 105	T _{STG}
Relative Humidity(Non-condensing)	RH	95	%

Absolute Maximum Ratings

PARAMETER	UNIT	RATING	SYMBOL
RF Input Power	dBm	+20	P _{IN}
Supply Voltage	V	32	V _{DC}
Load Mismatch Value	-	3:1 @ any angel & continuous amplitude	-

Operating Voltages

PARAMETER	UNIT	NOMINAL VOLTAGE	SYMBOL
Operating Voltage	V	28	V _{DC}
HPA Enable Voltage*	V	TTL Low(0~0.5V) or Open : HPA OFF TTL High(3.5~5V) : HPA ON	-
Switch On/Off Voltage**	V	TTL Low(0~0.5V) or Open : HPA OFF TTL High(3.5~5V) : HPA ON	-
Current Monitor Voltage	V	Output Voltage 2V@10A(0.2V/1A)	-
Temp Monitor Voltage	V	Output Voltage 0.75V@25°C (1°C/0.01V)	-

* HPA Enable : 500ms Delay

** Gate On/Off : High Speed Switching

HPA Operating Sequence

HPA Turn On	HPA Turn Off
1. Pin A2 : +28V On	1. RF Off
2. Pin 4 : HPA Enable On	2. Pin 3 : Switch Off
3. Pin 3 : Switch On	3. Pin 4 : HPA Enable Off
4. RF On	4. Pin A2 : +28V Off

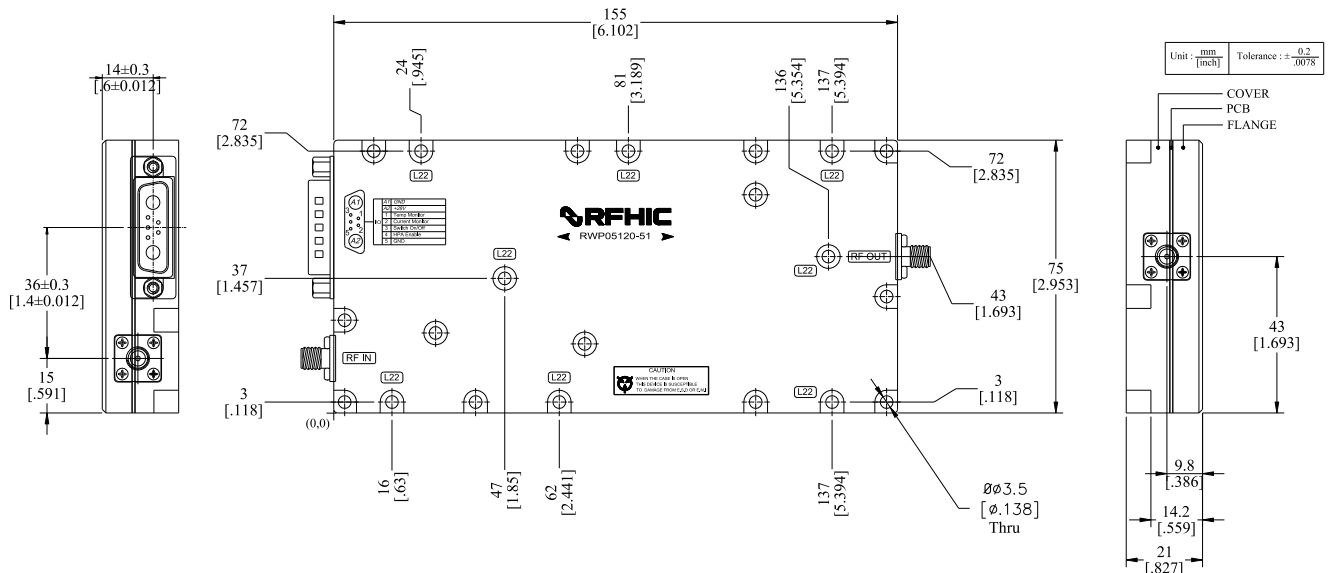
* It is recommended to follow the sequence of bias application as in the above table. However, there is an internal protection circuit that prevents the possible damages that may be occurred from a different sequence of bias applications.

Mechanical Specifications

PARAMETER	UNIT	TYP
Mass	kg	0.46
Dimension	mm	155 x 75 x 21 (Without Connectors)
RF Connector	-	SMA Female : RF Input
		SMA Female : RF Output
DC Connector	-	D-Sub 7-Pin(7W2), Male : Supply
Cooling		External Heat-sink Required

Outline Drawing

* Unit: mm[inch] | Tolerance ±0.2[.0078]



Pin Description

Pin No	Description	Pin No	Description
A1	GND	1	Temp Monitor
A2	V _{DS} (+28V)	2	Current Monitor
		3	Switch On/Off
		4	HPA Enable
		5	GND

Typical Performance @ $V_{DC}=28V, T_C=50^{\circ}C$

Frequency	Gain @ Pin -20dBm	P3dB	Psat @ Pin 0dBm	Current @ Pin 0dBm	PAE @ Pin 0dBm	OIP3 @ 40dBm/Tone	Harmonics @ Pout 100W	
							2 nd	3 rd
[MHz]	[dB]	[dBm]	[dBm]	[A]	[%]	[dBm]	[dBc]	
20	59.0	49.5	51.4	9.2	53.6	54	35	13
50	60.5	50.0	52.2	9.7	61.1	55	33	14
100	60.5	50.5	52.2	9.2	64.4	56	44	14
150	60.3	51.5	52.6	9.5	68.4	56	30	14
200	59.7	51.5	52.5	9.5	66.9	56	32	15
250	58.6	51.5	52.2	9.1	65.1	56	35	16
300	58.4	51.0	52.2	9.8	60.5	55	25	17
350	58.3	51.0	51.9	9.8	56.4	53	23	18
400	58.8	50.5	51.6	9.4	54.9	53	20	20
450	59.9	50.0	51.7	10.2	51.8	53	27	20
500	60.6	50.0	52.1	11.4	50.8	53	35	21
550	60.7	50.0	51.8	10.8	50.1	53	32	23
600	60.4	50.5	51.6	10.3	50.1	53	35	27
650	59.9	50.5	51.5	10.2	49.5	53	31	33
700	59.4	50.0	51.3	10.4	46.3	53	34	37
750	59.3	50.0	51.4	10.4	47.4	54	37	41
800	59.5	50.0	51.7	9.9	53.4	54	28	40
850	59.6	50.0	51.4	9.4	52.4	53	28	38
900	59.9	50.0	51.3	9.5	50.7	53	27	40
950	59.9	50.0	51.4	10.0	49.3	53	27	42
1000	58.7	50.0	51.4	10.2	48.3	53	33	44

Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RWP05120-51	2023.12.01	0.1	-	Preliminary
RWP05120-51	2024.04.29	0.2	Modifications of Specifications	Preliminary



Certification

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

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