Wideband Power Amplifier RWP2540200-53

Product Features

- GaN on SiC Broadband High Power Amplifier
- 2500 ~ 4000MHz Operation Bandwidth
- Power Gain Typical 50dB @ Pin +3dBm
- 200W Typical @ Pin +3dBm

Applications

- Aerospace & Defense
- Military
- Electronic Warfare
- Rader
- SATCOM
- Communication
- EMI/RFI
- Jamming

Description

The power amplifier module is designed for broadcasting, telecommunications, and medical purposes.
The operating frequency range is from 2,500 ~ 4,000MHz.
Gallium Nitride on Silicon carbide (GaN-on-SiC) technology is used and attached on an aluminum sub carrier.

Electrical Specifications @ V_{CC} = 48V; Tc = 45°C; Z_S = Z_L = 50Ω

PARAMETER		UNIT	MIN	TYP	MAX	CONDITION
Operating Frequency*		MHz	2500	-	4000	2300-2499MHz*
Small Signal Gain @ Pin -30dBm		dB	-	58.0	-	-
Power Gain Flatness @ Pin +3dBm		dBpp	-	±1.0	±1.5	-
Output Power @ Pin +3dBm		dBm	52.6	53.0	-	-
Input Return Loss		dB	-	-15	-9.5	-
Harmonic Suppression	**2nd**	dBc		35	15	CW 1-Tone @Po = 50dBm
	3rd			45	35	
OIP3 @ PO = 47dBm (100kHz Tone Spacing, CW2-Tone)		dBm	55	58		
Supply Voltage**		V	-	48	-	Vcc(=Vds)
Quiescent Current consumption		A	-	3.1	4.0	-
Current Consumption @ POUT 180Watt		A	-	13	17	CW 1-tone

***Additional Data Available:** Measurement results for 2300–2499 MHz are available upon request.
This frequency range is supported but not included in the guaranteed performance range

** This product can be used with lower voltages, but the listed electrical specifications are only guaranteed at +48V.

Absolute Maximum Ratings

PARAMETER	UNIT	RATING
Input RF Power	dBm	5
Supply Voltage	V	48.5
Load Mismatch Value	-	3 : 1 @all load phase

* Input Signal Condition : CW 1-Tone

Environmental Characteristics

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Flange Temperature	°C	-10	-	60	Tc
Storage Temperature	°C	-30	-	85	Tstg

Mechanical Specifications

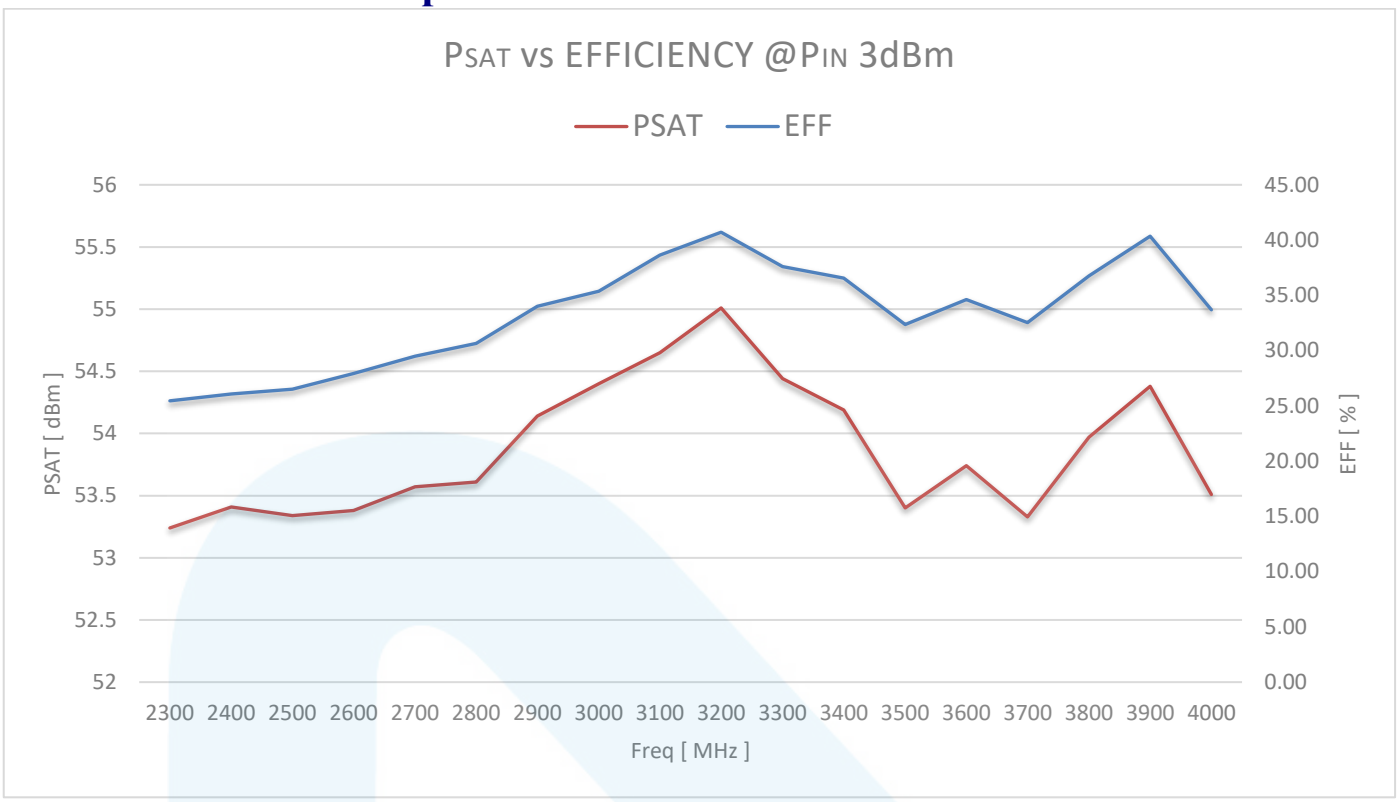
PARAMETER	UNIT	TYP
Dimension	㎜	260(L) x 123.4(W) x 30(H)
Weight	kg	1.46
RF Connector	-	RF Input : SMA Female
		RF Output : N-Type Female
DC Connector	-	3W3 / D-SUB / Female type
Interface Connector	-	*5268-06A Male Type
Cooling	-	External Heat-sink Required

* For Mating Connector : **5264-06A** <-> 5268-06A (Housing)

Typical Performance @ Tc 45°C

Frequency	PIN	PSAT		Power Gain	Current	Voltage	Efficiency
MHz	dBm	dBm	Watt	dB	A	V	%
2300	3	53.24	210.86	50.24	17.26	48	25.45
2400		53.41	219.28	50.41	17.52	48	26.08
2500		53.34	215.77	50.34	16.95	48	26.52
2600		53.38	217.77	50.38	16.24	48	27.94
2700		53.57	227.51	50.57	16.07	48	29.49
2800		53.61	229.61	50.61	15.61	48	30.64
2900		54.14	259.42	51.14	15.89	48	34.01
3000		54.40	275.42	51.40	16.22	48	35.38
3100		54.65	291.74	51.65	15.73	48	38.64
3200		55.01	316.96	52.01	16.22	48	40.71
3300		54.44	277.97	51.44	15.40	48	37.60
3400		54.19	262.42	51.19	14.96	48	36.54
3500		53.40	218.78	50.40	14.08	48	32.37
3600		53.74	236.59	50.74	14.24	48	34.61
3700		53.33	215.28	50.33	13.79	48	32.52
3800		53.97	249.46	50.97	14.14	48	36.75
3900		54.38	274.16	51.38	14.15	48	40.36
4000		53.51	224.39	50.51	13.87	48	33.70

< Table 1. PSAT DATA >



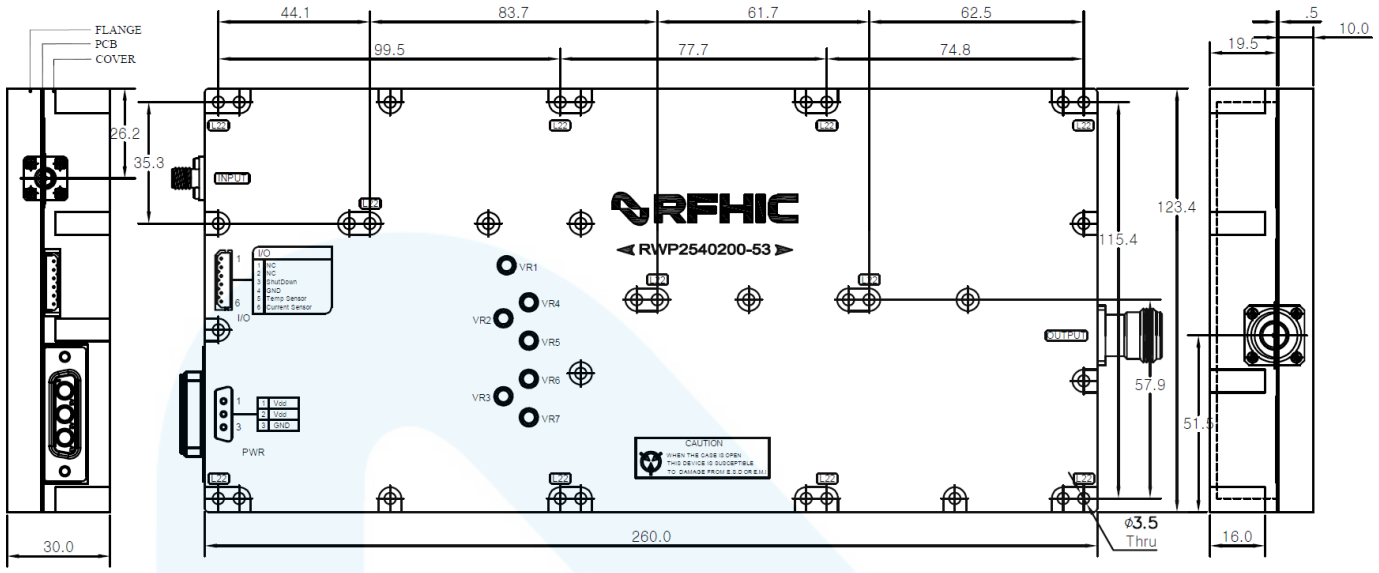
< CHART 1. PSAT vs Efficiency PLOT >

Precautions

1. This product is designed to be used for broadband amplification. Heat generation is higher when there is RF signal in the device. Therefore, the worst case scenario is when there is RF signal.
   The temperature must be calculated properly.
   Case temperature must maintain below 60°C.
2. Thermal Grease or Metal Thermal Interface Materials are recommended for heat dissipation. An example would be spreading thermal grease on the bottom of the device

Package Dimensions

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



DC Connector [3W3 D-SUB-Female]

Pin #	Description	Specifications
1	$+V_{DD}$	+48VDC
2		
3	GND	GROUND

Interface Connector 6Pin-Control [5268-06A]

Pin #	Description	I / O	Specifications
1	NC	-	OPEN
2	NC	-	OPEN
3	Shutdown	I	TTL High : Amp Enable(+5V) TTL Low : Amp Disable(+0V)
4	GND	I	GROUND
5	*Temp Sensor	O	Temp Sense(LM50, Temp=(Vout-500mV) 10mV/°C)
6	**Current Sensor	O	Current=(Vout-500mV), Scale = 200mV/A

* For example, if the output voltage is 1.0 V, the temperature is calculated as: Temperature = (1000 mV - 500 mV) / 10 mV/°C = 50°C
** For example, if the output voltage is 2.5 V, the current is calculated as: Current = (2500 mV - 500 mV) / 200 mV/A = 10 A

Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RWP2540200-53	2025.05.19	0.1	-	Preliminary
RWP2540200-53	2025.06.19	1.0	Specifications added	
RWP2540200-53	2026.05.12	1.1	Interface Connector Type Changed	
RWP2540200-53	2026.06.02	1.2	Storage Temperature specification changed	

Certification

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

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