Preliminary
Wideband Power Amplifier RWP1113500-57

Product Features

- Frequency from 1160 to 1305 MHz
- Class AB GaN HEMT Design
- Typ 500Watt CW
- 50% Efficiency at CW 450W
- 50 ohm Input/ Output impedance matched
- Pb Free / RoHS Standard

Applications

- Radar-Systems
- Jamming-Systems
- Drones/UAVs Systems
- Satellite Communication

Description

RFHIC's GaN Power Amplifier Pallet is Flanged type product which includes all matching for the convenience of customers. RWP1113500-57 is wide band Amp used for up 1160 to 1305 MHz.

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

PARAMETER	UNIT	MIN	TYP	MAX	CONDITION
Frequency	MHz	1160		1305	-
Small Signal Gain	dB		62		@ P_{IN}=-20dBm
Small Signal Gain Flatness	dB		±0.5	±1	@ P_{IN}=-20dBm
Input Power	dBm		-5	0	@ Pout=450W
Output Power	W	450	500		-
1dB Gain Compression Point Output Power (P1dB)	dBm	54	55		-
Input Return Loss	dB		-15	-10	S11
Ouput Return Loss	dB		-20	-10	S22
Efficiency	%		53		@ Pout=450W
Supply Voltage	V		48		
Quiescent Current (IDQ)	A		1.7	2.2	V_{DD}=48.0V
Current Consumption (IDD)			18	20	@ Pout=450W
Third Order Intercept Point	dBm	58.0	63.0		2-Tone @ 47dBm/Tone, 100kHz Spacing
Harmonics @ Pout=450W	dBc	-40	-50		2nd
		-50	-65		3rd
Spurious Signals	dBc		-70		

NOTE

*Measured for the Pout=450W, T=45°C, Tc (Case Temperature)=50°C(Temp DET, Pin 6=1.0V±0.05), VDD = +48V, 50Ω system

Absolute Maximum Ratings

PARAMETER	UNIT	RATING
Input RF Power	dBm	0
Supply Voltage	V	50
Load Mismatch Value	-	3:1 @all load phase

*Input Signal Condition : CW 1-Tone

Environmental Characteristics

PARAMETER	UNIT	MIN	TYP	MAX	Condition
Operating Flange Temperature	°C	-30	-	+60	
Storage Temperature	°C	-40	-	+85	

Typical Performance Data @ V_{DD} = 48V; T_C = 45°C; Z_S = Z_L = 50Ω

Frequency	PIN	POUT		Power Gain	Current	Efficiency
[MHz]	[dBm]	[dBm]	[W]	[dB]	[A]	[%]
1160	-5.2	56.6	457.1	61.8	17.73	53.71
1164	-5.1	56.6	457.1	61.7	17.85	53.35
1180	-5	56.6	457.1	61.6	17.81	53.47
1200	-4.5	56.6	457.1	61.1	17.90	53.20
1220	-3.8	56.6	457.1	60.4	18.15	52.47
1240	-3.4	56.6	457.1	60.0	18.62	51.14
1260	-4	56.6	457.1	60.6	18.38	51.81
1280	-4.4	56.6	457.1	61.0	17.86	53.32
1300	-3.8	56.6	457.1	60.4	17.56	54.23
1305	-3.6	56.6	457.1	60.2	17.44	54.60

< 1. Frequency Characteristics at **450W**>

Frequency	PIN	POUT		Power Gain	Current	Efficiency
[MHz]	[dBm]	[dBm]	[W]	[dB]	[A]	[%]
1160	-3.4	57.1	512.9	60.4	19.22	55.59
1164	-3.3	57.1	512.9	60.1	19.28	55.42
1180	-3	57.1	512.9	59.2	19.27	55.45
1200	-2.1	57.1	512.9	57.9	19.38	55.13
1220	-0.8	57.1	512.9	58.02	19.54	54.68
1240	-1	57.1	512.9	59.05	19.74	53.14
1260	-2	57.1	512.9	59.6	19.64	53.78
1280	-2.5	57.1	512.9	59.4	19.25	55.50
1300	-2.3	57.1	512.9	59.1	18.82	56.77
1305	-2	57.1	512.9	60.4	18.78	56.89

< 2. Frequency Characteristics at **500W**>

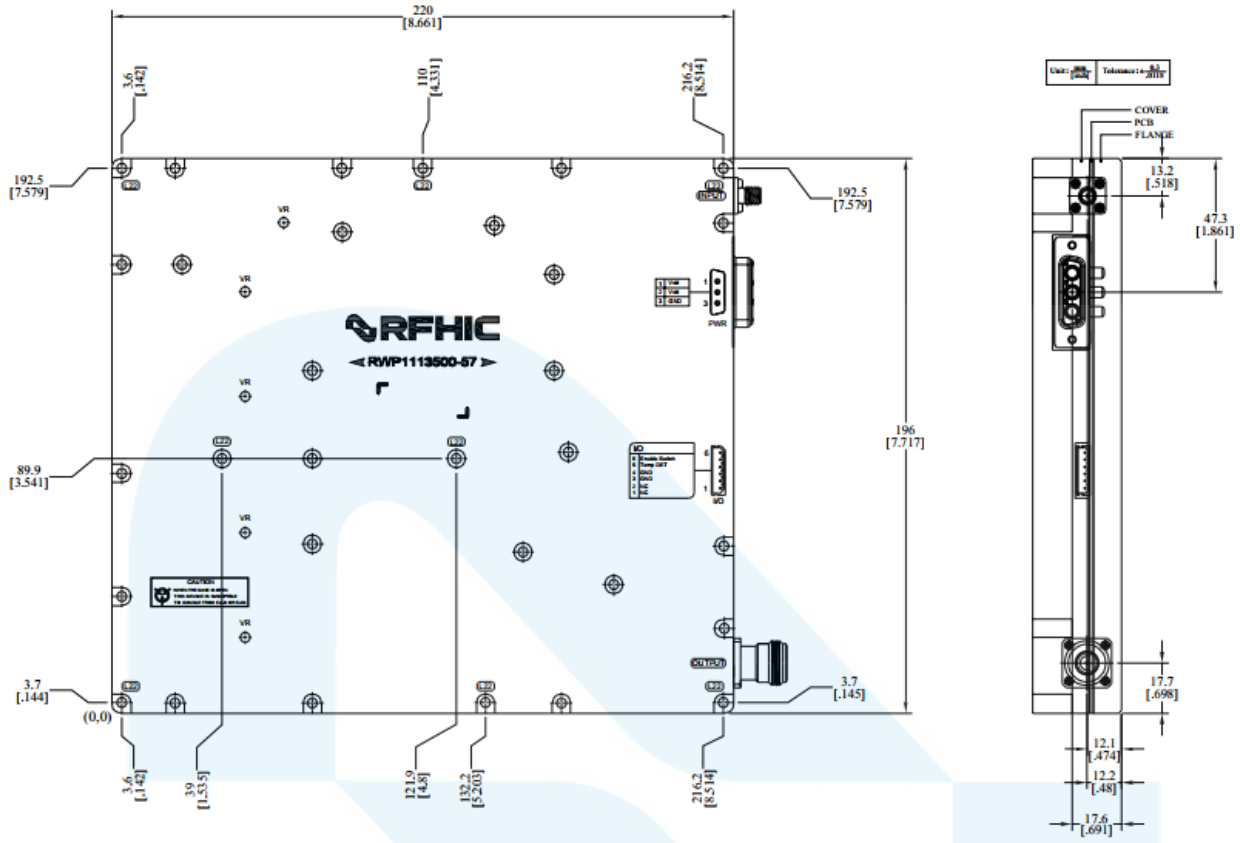
Frequency	Harmonics		@100kHz, Tone/47dBm	
[MHz]	2nd [dBc]	3rd [dBc]	IM3 [dBc]	OIP3 [dBm]
1160	-47	-67	-35	64.5
1164	-45	-70	-35	64.5
1180	-54	-69	-35	64.5
1200	-56	-71	-35	64.5
1220	-62	-72	-35	64.5
1240	-64	-73	-35	64.5
1260	-59	-65	-35	64.5
1280	-54	-68	-35	64.5
1300	-55	-68	-33	63.5
1305	-55	-70	-33	63.5

< 3. **Harmonics and OIP3** Characteristics by Frequency >

Frequency	PIN	POUT		Power Gain	Current	Efficiency
MHz	dBm	dBm	W	Db	A	%
1160	-6.4	55.28	337.3	61.68	15.35	45.78
1180	-7.2	55.29	338.0	62.49	15.40	45.73
1200	-7.9	55.00	316.2	62.90	14.87	44.30
1220	-8	55.16	328.1	63.16	15.00	45.57
1240	-8	55.18	329.6	63.18	15.11	45.45
1260	-8	55.20	331.1	63.20	15.63	44.14
1280	-7.7	55.40	346.7	63.10	15.80	45.72
1305	-6.7	55.83	382.8	62.53	16.35	48.78

< 4. Frequency Characteristics at **P1dB**>

Product Dimensions



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

Mechanical Specification

PARAMETER	Units	Value
Dimensions	mm	220 x 196 x 31.1
RF Input Connector		SMA(Female)
RF Output Connector		N-type(Female)
I/O Connector		SMAW250-06P 6pin(Male)
		3W3/D-SUB(Female)
Cooling		External Heat-Sink Required (Air)

NOTE

1. Connector position and module mount holes may be subjected change.

Interface Connector

3W3 D-SUB

Pin #	Description	Specifications
1	$+V_{DD1}$	+48V
2		
3	GND	GROUND

Terminal Connector 6Pin-Control [SMAW250-06P]

Pin #	Description	Specifications
1	NC	OPEN
2		
3	GND	GROUND
4		
5	Temp DET	Temp Sense(LM50, Temp=(Vout-500mV) °C/10mV)
6	Enable Switch	TTL High : Amp Enable(+5V) TTL Low : Amp Disable(+0V)

* For Mating Connector Use SMH250-06 Series.

Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RWP1113500-57	2024.09.12	0.1	-	Preliminary
	2024.11.14	0.2	-	Preliminary
	2024.12.16	0.3	Added Typical Performance Data Section	Preliminary

Certification

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