

Preliminary

Wideband Power Amplifier

RWP20050-10



Product Features

- GaN on SiC Wideband Power Amplifier
- 1000 ~ 3000MHz Operation Bandwidth
- Power Gain 37dB @ Pin 10dBm
- 50W Typical @ Pin 10dBm

Applications

- Communication System
- General Purpose



Description

RWP20050-10 is a unique GaN-SiC wideband power amplifier that powers 47dBm over a bandwidth of 1000-3000MHz. This GaN wideband power amplifier has been specifically developed for Communication System and other applications in general. This amplifier offers a typical Power Gain of 37dB, and typically draws 1.2A at +32Vcc.

Electrical Specifications @ $V_{CC} = 32V$; $T_c = 45^\circ C$; $Z_s = Z_L = 50\Omega$

PARAMETER	UNIT	MIN	TYP	MAX	CONDITION
Operating Frequency	MHz	1000	-	3000	-
Power Gain @ Pin 10dBm	dB	35	37	-	1000 ~ 3000MHz
Power Gain Flatness @ Pin 10dBm	dBpp	-	± 1.0	± 2.0	1000 ~ 3000MHz
Output Power @ Pin 10dBm	dBm	45	47	-	1000 ~ 3000MHz
Input Return Loss	dB	-	-10	-7	-
Supply Voltage	V	31.5	32	-	$V_{cc}(=V_{ds})$
Quiescent Current consumption	A	-	1.2	1.7	-
Current Consumption @ Pin 10dBm	A	-	5.0	6.5	CW 1-tone
On/Off Switching Time*	uS	-	2	5	On : TTL "Low"
					Off : TTL "High"(30mA@Disable)
Shut Down or Switch On/Off TTL Voltage**	V	0	-	0.5	On : TTL "Low"(Enable)
		2.5	5	5.5	Off : TTL "High"

Note.

*, Gate On/Off: High speed switching

**, Drain On/Off: 500ms delay

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Absolute Maximum Ratings

PARAMETER	UNIT	RATING
Input RF Power	dBm	13
Supply Voltage	V	35
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	-20	-	80	Tc
Storage Temperature	°C	-40	-	105	Tstg
Vibration	MIL-STD-810G Method 514.6 ANNEX C				VI

Mechanical Specifications

PARAMETER		UNIT	TYP
Dimension	Package	mm	72 x 50.8 x 16.8
	Housing		98.8 x 75 x 25
Weight	Package	g	105
	Housing		355
Housing RF IN/OUT Connector		-	SMA Female
Cooling		-	External Heat-sink

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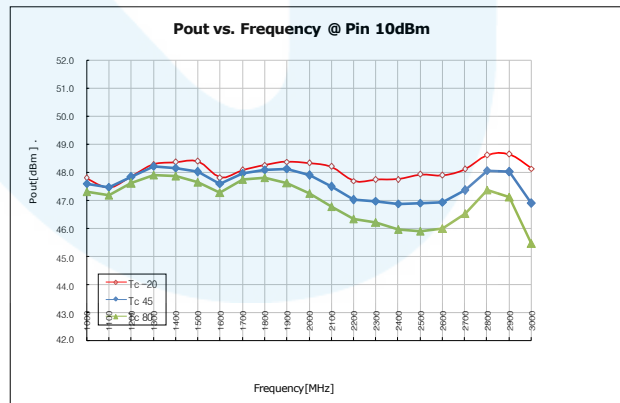
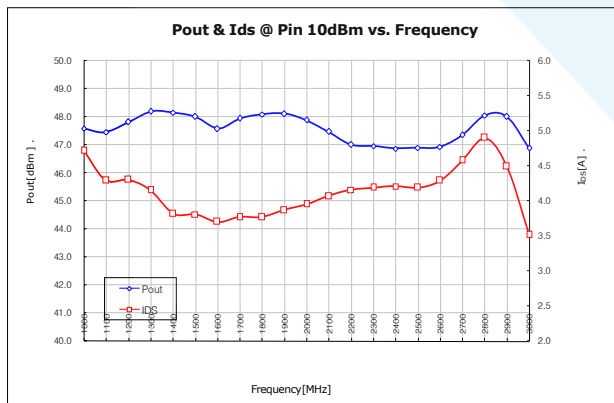
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Typical Performance @ 25°C

Frequency (MHz)	Pout @ Pin 10dBm (dBm)	Gp @ Pin 10dBm (dB)	Current @ Pin 10dBm (A)	PAE @ Pin 10dBm (%)	Harmonic	
					2 nd Harm (dBc)	3 rd Harm (dBm)
1000	47.59	37.59	4.72	38.01	-11.33	-13.36
1100	47.46	37.46	4.29	40.59	-12.07	-13.57
1200	47.82	37.82	4.30	43.99	-15.9	-17.99
1300	48.2	38.20	4.15	49.75	-19.19	-21.97
1400	48.15	38.15	3.82	53.43	-18.87	-33.69
1500	48.01	38.01	3.81	51.87	-27.52	-19.42
1600	47.58	37.58	3.70	48.38	-20.68	-22.04
1700	47.95	37.95	3.77	51.70	-20.03	-26.52
1800	48.09	38.09	3.77	53.40	-23.72	-30.81
1900	48.11	38.11	3.87	52.26	-26.57	-31.44
2000	47.88	37.88	3.95	48.56	-33.05	-33.79
2100	47.47	37.47	4.07	42.88	-45.92	-29.53
2200	47.01	37.01	4.16	37.74	-32.92	-26.76
2300	46.96	36.96	4.19	37.04	-27.53	-29.7
2400	46.87	36.87	4.21	36.11	-27.23	-29.31
2500	46.9	36.90	4.19	36.53	-32.14	-23.5
2600	46.93	36.93	4.29	35.92	-34.17	-27.19
2700	47.35	37.35	4.58	37.07	-33.31	-25.91
2800	48.06	38.06	4.90	40.80	-33.62	-35.78
2900	48.01	38.01	4.49	44.02	-38.39	-60.3
3000	46.88	36.88	3.52	43.28	-40.64	-42.78



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 80°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

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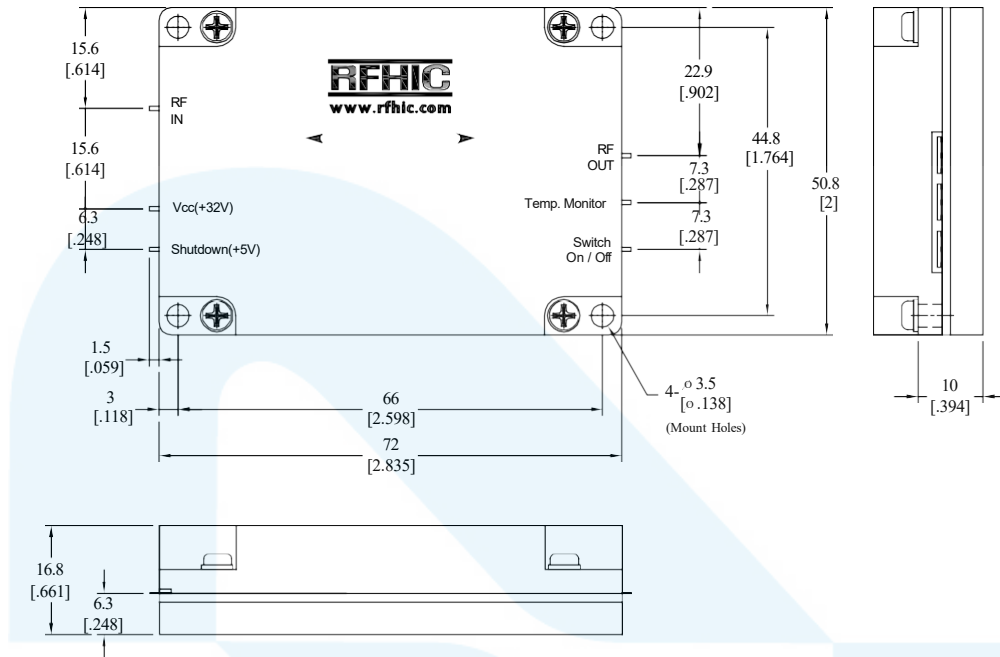
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Package Dimensions

* Unit: mm[inch] | Tolerance: ± 0.3 [.012]

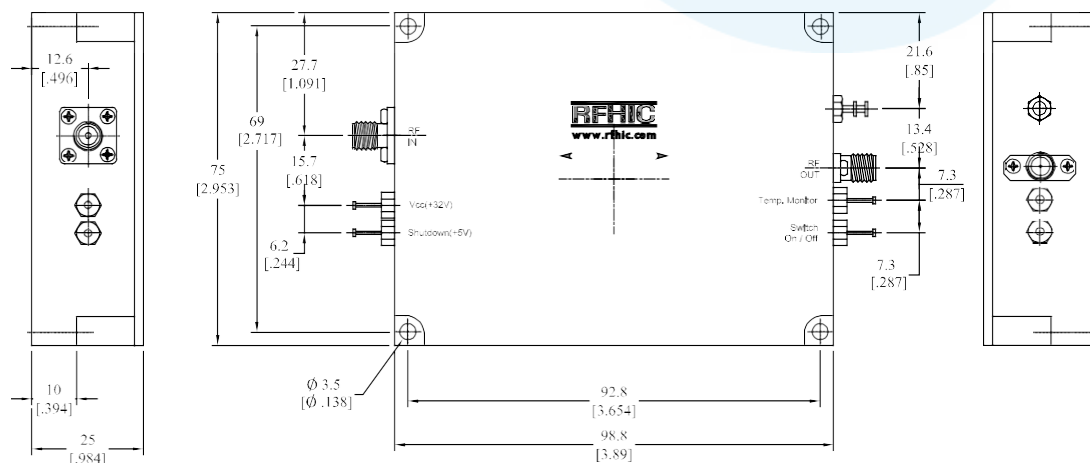


Pin Description			
Pin No	Function	Pin No	Function
1	RF IN	4	Switch ON/OFF
2	Vcc(+32V)	5	Temp Monitor
3	Shut Down(+5V)	6	RF OUT

* Recommended Screw Torque : 8.0kgf.cm ± 1 using SEMS M3 14mm Bolt

SMA Connectorized Housing Dimension

* Unit: mm[inch] | Tolerance: ± 0.3 [.012]



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Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RWP20050-10	2023.04.13	1.3	Image Change	-
RWP20050-10	2019.07.18	1.2	Package Dimensions	-
RWP20050-10	2015.11.10	1.1	Electrical Specifications & Dimensions	-
RWP20050-10	2014.05.08	1.0	-	



Certification

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

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