Wideband Power Amplifier RWP05020-10

Product Features

- GaN on SiC Broadband High Power Amplifier
- 20 ~ 1000MHz Operation Bandwidth
- Small Signal Gain 38dB min.
- 20W Typical. @ P3dB

Applications

- General Purpose

Package Type : DP-75

Description

The power amplifier module 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 an aluminum sub carrier. Full in/out matching for broadband performance is already applied.
Improved thermal handling by patented technology.

Electrical Specifications @ V_{CC} = 28V; Tc = 45°C; Z_S = Z_L = 50Ω

PARAMETER	UNIT	MIN	TYP	MAX	CONDITION
Operating Frequency	MHz	20	-	1000	-
Small Signal Gain	dB	38	40	42	-
Gain Variation vs Frequency	dBpp	-	±1	±1.5	-
P_3dB	dBm	42	44	-	20 ~ 400MHz
		41	43	-	400 ~ 1000MHz
OIP3 @ Po = +33dBm (1MHz Tone spacing, CW 2-Tone)	dBm	50	53	-	20 ~ 400 MHz
		47	50	-	400 ~ 700 MHz
		45	47	-	700 ~ 1000 MHz
Input Return Loss	dB	-	-15	-10	-
2nd Harmonic suppression	dBc	-	-35	-30	CW 1-tone @Po = +30dBm, Freq 500MHz
Supply Voltage	V	27.5	28	30	Vcc(=Vds)
Quiescent Current consumption	A	1.7	1.9	2.1	-
Current Consumption @ P_3 dB	A	-	2.3	3	CW 1-tone
On/Off Switching Time*	uS	-	3	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

Absolute Maximum Ratings

PARAMETER	UNIT	RATING
Input RF Power	dBm	10
Supply Voltage	V	30
Load Mismatch Value	-	3 : 1 @all load phase

* Input Signal Condition : CW 1-Tone

Environmental Characteristics

PARAMETER	UNIT	MIN	TYP	MAX	SYMBOL
Operating Case Temperature	℃	-10	-	80	Tc
Storage Temperature	℃	-40	-	105	Tstg
Vibration	MIL-STD-810G Method 514.6 ANNEX C				VI

Ordering Information

Part Number	Package
RWP05020-10	Pallet
RWP05020-1H	Module assembled with RWP05020-10

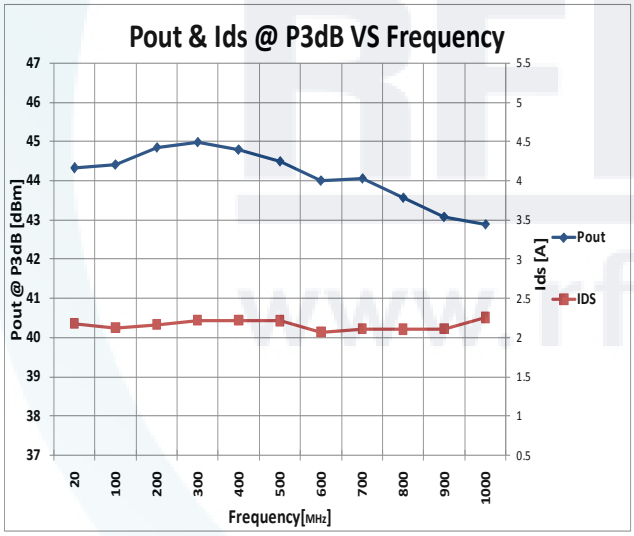
* RWP05020-1H is a SMA connectorized housing version of RWP05020-10. Electrical parameters are all same as RWP05020-10.
For more information, please contact RFHIC

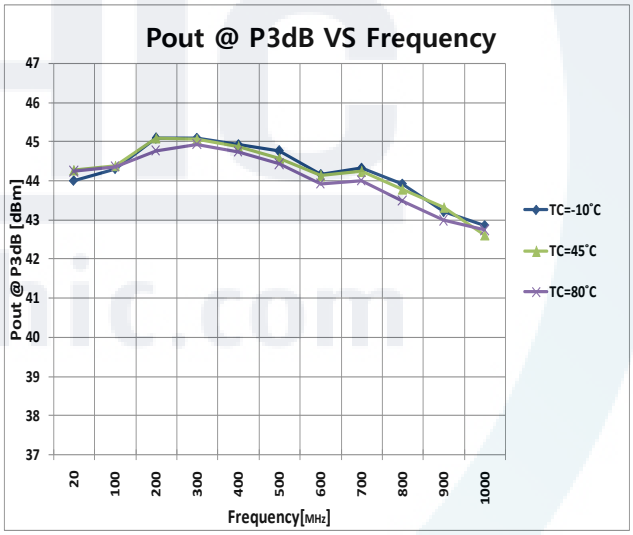
Mechanical Specifications

PARAMETER		UNIT	TYP
Dimension	**Package**	㎜	70(L) x 50.8(W) x 17.1(H)
	Housing		90(L) x 75(W) x 25(H)
Weight	**Package**	g	55
	Housing		250
Housing RF IN/OUT Connector		-	SMA Female
Cooling		-	External Heat-sink

Typical Performance @ 25°C

Frequency (MHz)	P1dB (dBm)	P3dB (dBm)	Current @P1dB (A)	Current @P3dB (A)	2nd Harm @30dBm (dBc)	OIP3 (30dBm/Tone) (dBm)
20	42.4	44.3	1.9	2.2	-43.4	54.4
100	42.5	44.5	2.0	2.2	-42.5	54.9
200	43.3	44.8	2.1	2.3	-39.9	55.1
300	44.2	45.4	2.1	2.3	-35.8	54.6
400	44.6	45.6	2.1	2.3	-33.4	53.6
500	43.7	45.3	2.0	2.3	-34.9	52.2
600	43.9	44.9	2.0	2.2	-47.1	51.4
700	43.4	44.5	1.9	2.1	-42.5	49.4
800	42.8	44.2	1.8	1.9	-47.3	48.3
900	42.0	43.7	1.8	2.0	-55.1	47.5
1000	41.7	44.1	2.0	2.3	-54.1	47.1

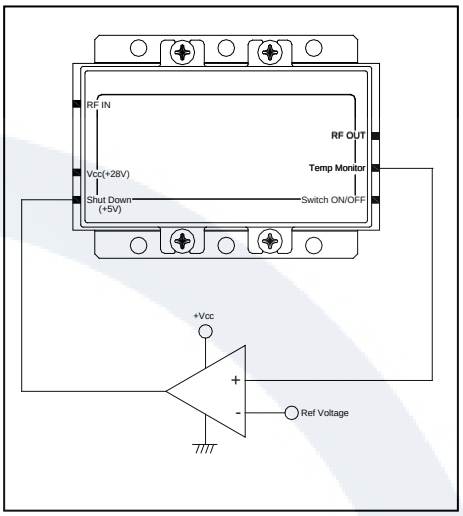




Precautions

1. This product is designed to be used for broadband amplification. Heat generation is higher when there is no RF signal in the device.
   Therefore, the worst case scenario is when there is no RF signal, and the amplifier is “on” with current draw.
   The temperature must be calculated properly.
   Case temperature must maintain below 80°C.
   Right side drawing notes how to use a temperature monitoring function to protect against overheating.

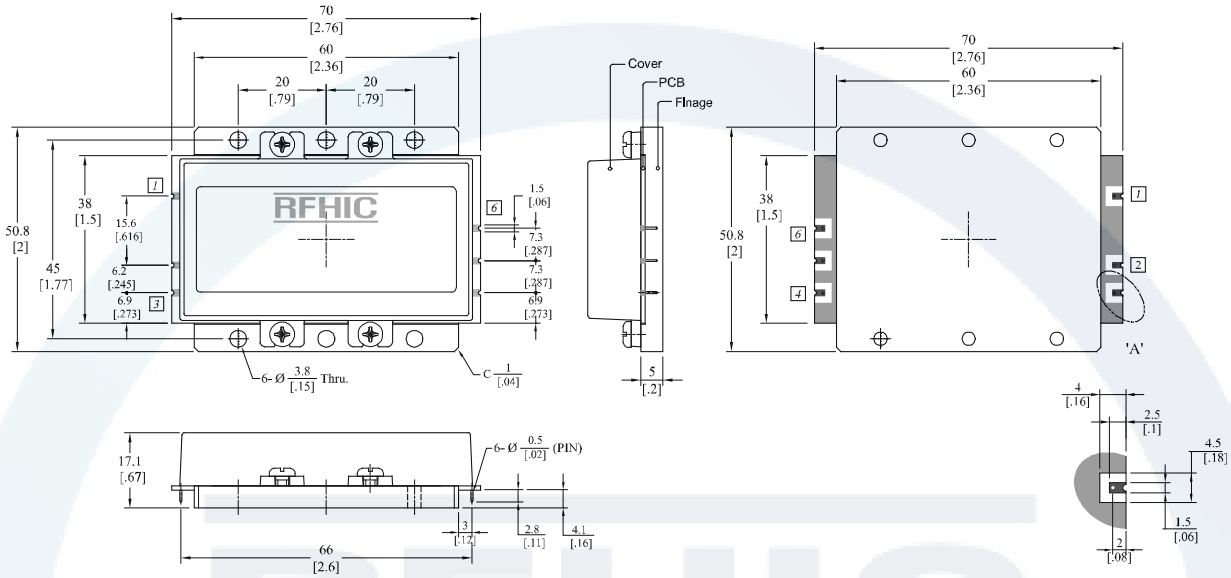
2. Thermal Grease or Metal Thermal Interface Materials are recommended for heat dissipation. An example would be spreading thermal grease on the bottom of the device



Comparator Block (with hysteresis gap)

Package Dimensions (Type: DP-75)

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



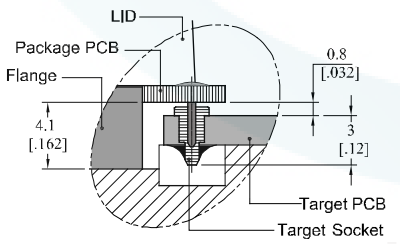
Pin Description			
Pin No	**Function**	**Pin No**	**Function**
1	RF IN	4	Switch ON/OFF
2	Vcc(+28V)	5	Temp Monitor
3	Shut Down(+5V)	6	RF OUT

* Terminal Pin Information : ASK206091,AA (Acethink, Pin) , ASK20556,AA-1(Acethink, Pin Socket)
* Recommended Screw Torque : 8.0kgf.cm±1 using SEMS M3 10mm Bolt

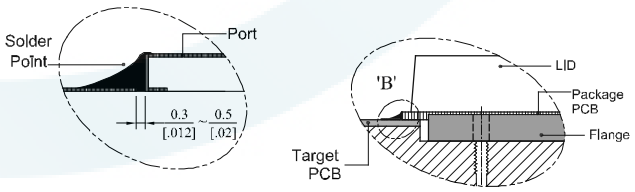
How to connected the package to a target

PCB

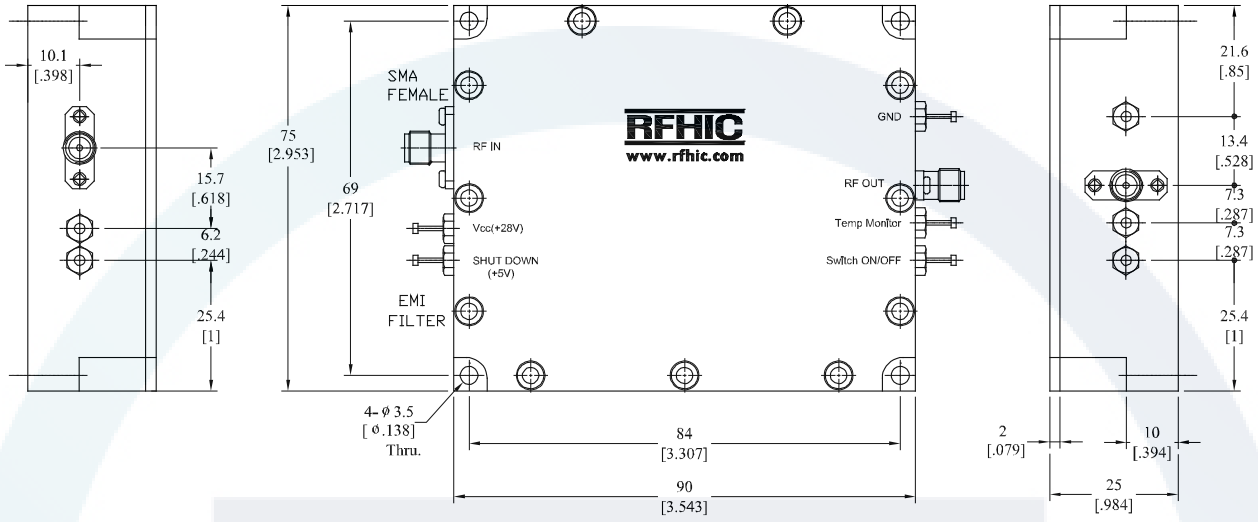
With Pin



Without Pin



SMA Connectorized Housing Dimensions



Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RWP05020-10	2015.11.10	3.1	Note	-
RWP05020-10	2015.6.30	3.0	Electrical Specifications	-
RWP05020-10	2015.1.15	2.9	Notice Change	-