

## Product Features

GaN on SiC Broadband High Power Amplifier  
 20 to 520MHz Operation Bandwidth  
 Small Signal Gain 39dB min.  
 40W Typical. P3dB

## Application

HF/VHF



Package : DP-75

## Description

The power amplifier module is designed for Broadcasting, Telecommunication, Medical and Other markets.

Operating frequency range is from 20MHz to 520MHz.

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.

## Typical Specifications

$V_{CC} = +28V$ ;  $T = 25^{\circ}C$ ;  $Z_S = Z_L = 50\Omega$

No	Item	Conditions	Min	Typ	Max	Unit
1	Bandwidth		20		520	MHz
2	Small Signal Gain		40	42	44	dB
3	Gain Variation vs Temperature	-20°C to 60°C	-2		+2	dB
4	Gain Variation vs Frequency			±1	±1.5	dBpp
5	P <sub>3dB</sub>	20MHz to 100MHz	45	46		dBm
		100MHz to 520MHz	46	47		
6	OIP3 @ P <sub>o</sub> = +30dBm (1MHz Tone spacing, CW 2-Tone)	20MHz to 520 MHz	50	54		dBm
7	Input Return Loss			-11	-7	dB
8	Output Return Loss			-7	-4	dB
9	2 <sup>nd</sup> Harmonic suppression	CW 1-tone @P <sub>o</sub> = +30dBm, Freq 200MHz		-48	-40	dBc
10	Supply Voltage	V <sub>cc</sub> (=V <sub>ds</sub> )	27.5	28	30	V
11	Quiescent Current consumption		2.8	3	3.2	A
12	Current Consumption @ P <sub>3dB</sub>	CW 1-tone		3.8	4.5	A
13	On/Off Switching Time	On : TTL "Low"		3	5	uS
		Off : TTL "High"(100mA@Disable)				
14	Shut Down or Switch On/Off TTL Voltage	On : TTL "Low"(Enable)	0		0.5	V
		Off : TTL "High"	2.5	5	5.5	

## Environmental Characteristics

No	Item	Min	Typ	Max	Unit
1	Operating Temperature	-20		+60	°C
2	Storage Temperature	-40		+105	°C
3	Vibration	MIL-STD-810G Method 514.6 ANNEX C			

## Absolute Maximum Ratings

No	Item	Rating	Unit
1	Operating Flange Temperature	+85	°C
2	Input RF Power	+13	dBm
3	Supply Voltage	+30	V
4	Load Mismatch Value	3 : 1 @all load phase	

\* Input Signal Condition : CW 1-Tone

## Ordering Information

No	Part Number	Package
1	RWP03040-10	Pallet
2	RWP03040-1H	Module assembled with RWP03040-10

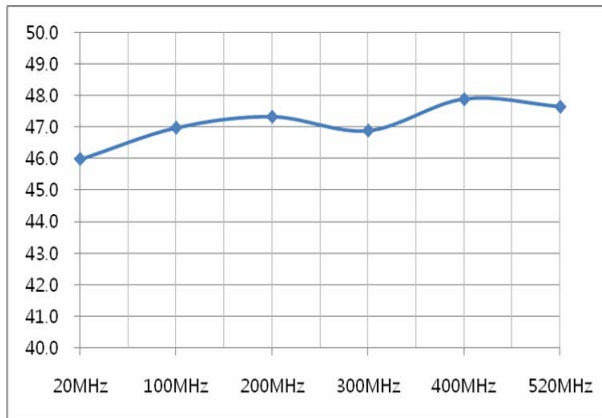
\* RWP03040-1H is a SMA connectorized housing version of RWP03040-10. Electrical parameters are all same as RWP03040-10.

For more information, please contact RFHIC

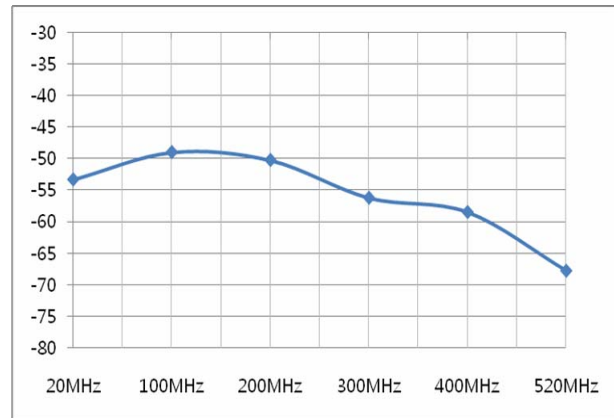
## RWP03040-10 Typical Performance @ 25°C

Frequency (MHz)	P1dB (dBm)	P3dB (dBm)	Current@P1dB (A)	Current@P3dB (A)	2nd Harm @30dBm(dBc)	OIP3@1GHz(dBm) (30dBm/Tone)
20	45.5	46.0	2.7	2.68	-57.51	55.7
100	46.2	47.0	2.9	3.00	-49.11	56.9
200	46.6	47.3	3.5	3.77	-48.43	56.3
300	45.8	46.9	3.4	3.80	-52.39	54.8
400	46.8	47.9	3.5	3.85	-71.33	54.8
520	46.1	47.7	3.5	4.03	-57.16	55.0

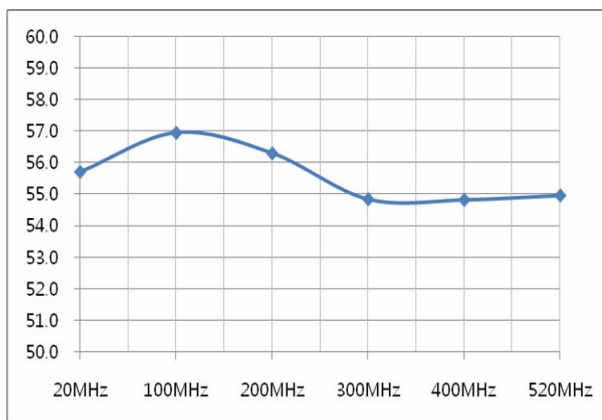
**P3dB**



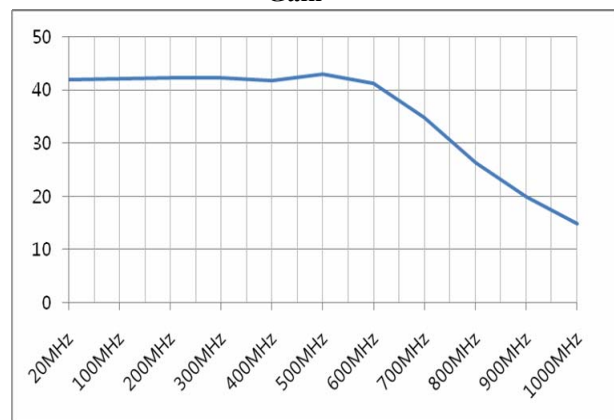
**2<sup>nd</sup> Harmonics**



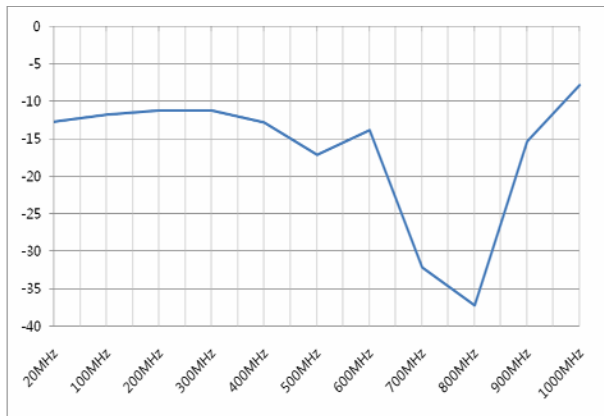
**OIP3**



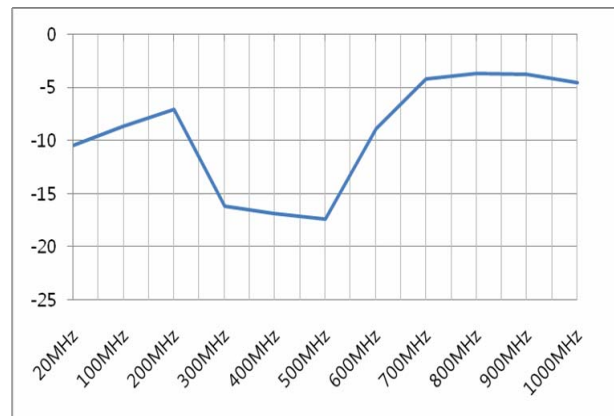
**Gain**



**Input Return Loss**



**Output Return Loss**



## Precautions

1. This product is designed to be used for broadband amplification.

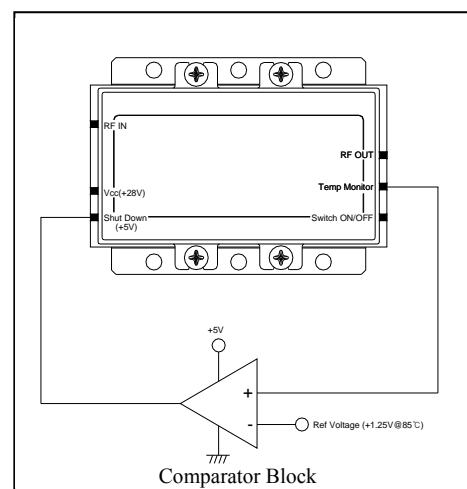
Heat generation is higher when there is no RF signal in the device. Therefore, the worst case scenario is when there is no RF signal, and the amplifier is “on” with current draw.

The temperature must be calculated properly.

Case temperature must maintain below 85°C.

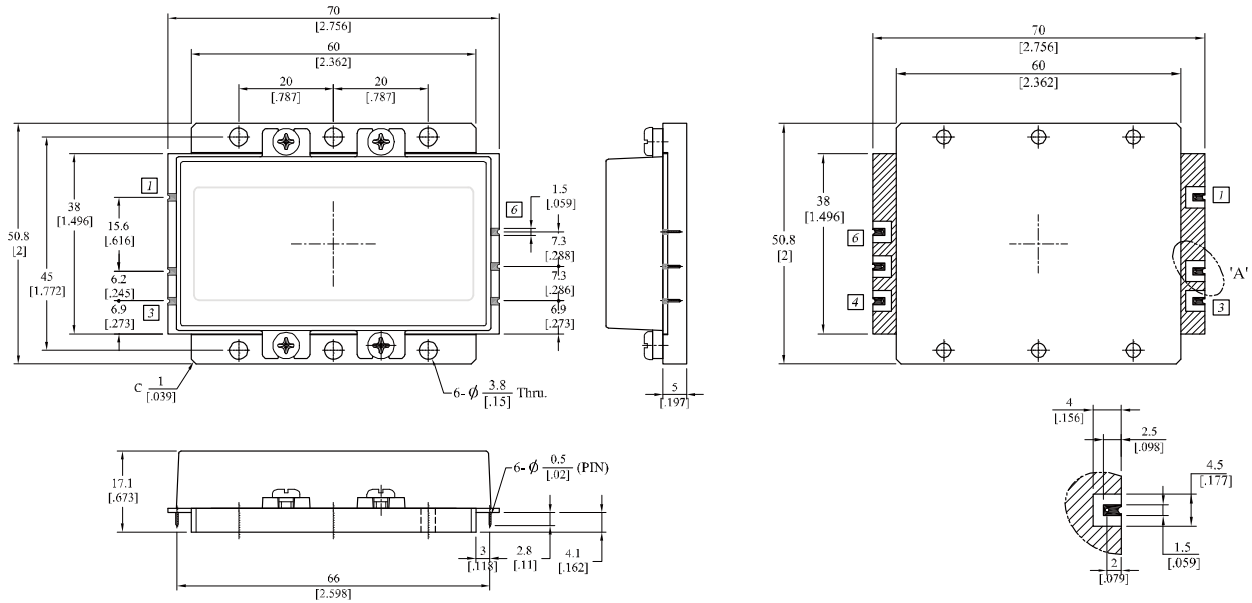
Right side drawing notes how to use a temperature monitoring function to protect against overheating.

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.



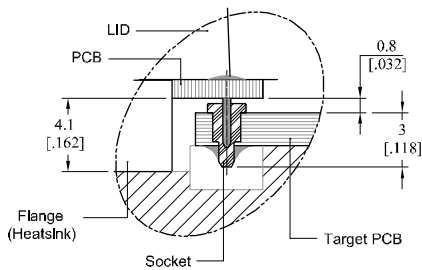
## Package Dimensions (Type: DP-75)

(Unit : mm/[inch], Tolerance : ±0.2/[.008])

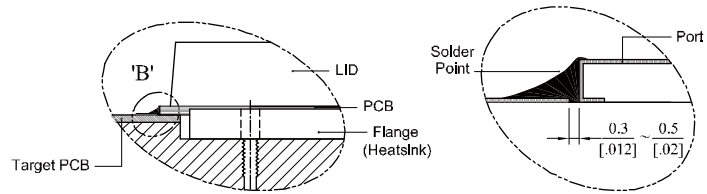


## How to connect the amplifier to a target PCB

### Method-I (with Pin)



### Method-II (without Pin) - If you cut out the pin



## Pin Description

Pin No	Port Name	Function
1	RF IN	RF Input
2	Vcc(+28V)	DC Supply
3	Shut Down(+5V)	Shut Down @ TTL High, Enable @ TTL Low
4	Switch ON/OFF	Disable @ TTL High (Switch Status : Off)
5	Temp Monitor	0.65V @ 25°C, Scale : 10mV/°C (Accuracy : ±3°C)
6	RF OUT	RF Output

\* 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

**Note :**

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