

Product Features

GaN on SiC Broadband High Power Amplifier
 20 to 1000MHz Operation Bandwidth
 Small Signal Gain 36dB min
 40W Typical. P3dB

Application

HF/VHF/UHF
 Broadband PA
 Broadcasting PA



Package : DP-75

Description

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

Operating frequency range is from 20MHz to 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.

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		1000	MHz
2	Small Signal Gain		36	38	40	dB
3	Gain Variation vs Temperature	-20°C to 60°C	-2.0		+2.0	dB
4	Gain Variation vs Frequency			±1	±2	dBpp
5	P _{3dB}	20MHz to 300 MHz	44	46		dBm
		300 MHz to 600 MHz	42	45		
		600 MHz to 1000 MHz	41	43		
6	OIP ₃ @ P _o = +33dBm (1MHz Tone spacing, CW 2-Tone)	20MHz to 300 MHz	51	53		dBm
		300 MHz to 600 MHz	46	48		
		600 MHz to 1000 MHz	43	45		
7	Input Return Loss			-12	-7	dB
8	Output Return Loss			-8	-5	dB
9	2 nd Harmonic suppression	CW 1-tone @P _o = +30dBm, Freq 400MHz		-34	-31	dBc
10	Supply Voltage	V _{cc} (=V _{ds})	27.5	28	30	V
11	Quiescent Current Consumption		1.9	2.1	2.3	A
12	Current Consumption @ P _{3dB}	CW 1-tone		2.5	3.2	A
13	On/Off Switching Time	On : TTL "Low"		3	5	uS
		Off : TTL "High"(300mA@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	+15	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	RWP05040-10	Pallet
2	RWP05040-1H	Module assembled with RWP05040-10

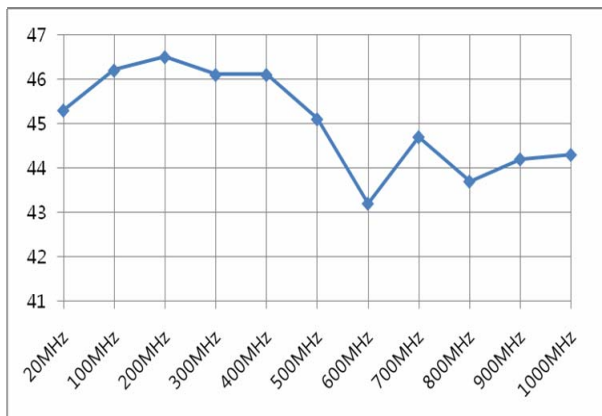
* RWP05040-1H is a SMA connectorized housing version of RWP05040-10. Electrical parameters are all same as RWP05040-10.

For more information, please contact RFHIC.

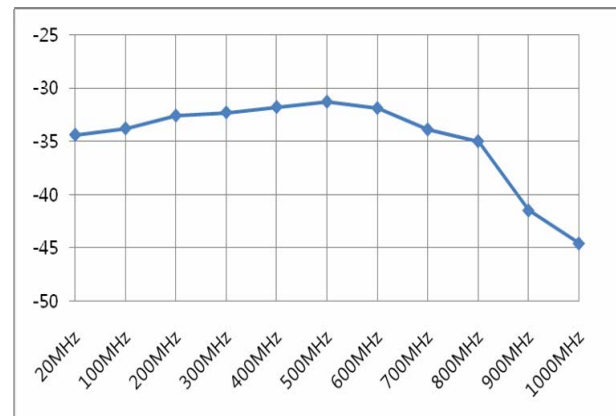
RWP05040-10 Typical Performance @ 25°C

Frequency (MHz)	P1dB (dBm)	P3dB (dBm)	Current@P1dB (A)	Current@P3dB (A)	2nd Harm @30dBm(dBc)	OIP3 (30dBm/Tone) (dBm)
20	44.0	45.3	2.04	2.23	-34.4	53.2
100	44.2	46.2	2.07	2.44	-33.8	53.1
200	44.7	46.5	2.20	2.67	-32.6	53.1
300	44.5	46.1	2.21	2.56	-32.3	52.8
400	44.0	46.1	2.10	2.66	-31.8	52.4
500	43.1	45.1	1.90	2.25	-31.3	50.4
600	40.7	43.2	1.89	2.49	-31.9	49.2
700	40.8	44.7	1.92	2.60	-33.9	46.3
800	40.8	43.7	1.85	2.45	-35.0	45.2
900	41.5	44.2	1.95	2.54	-41.5	45.6
1000	43.2	44.3	2.63	2.53	-44.6	45.3

P3dB



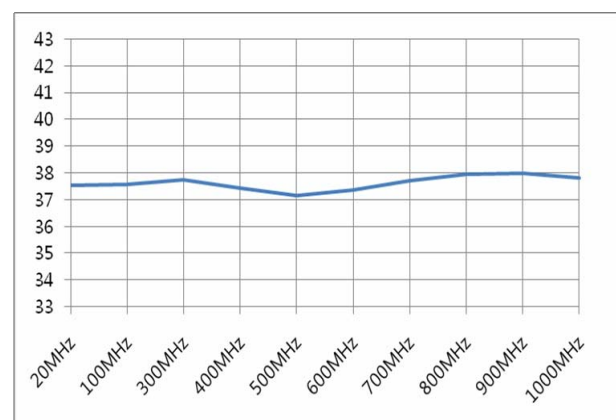
2nd Harmonics



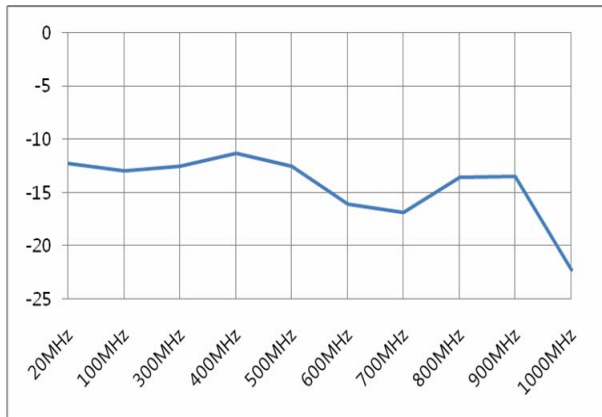
OIP3



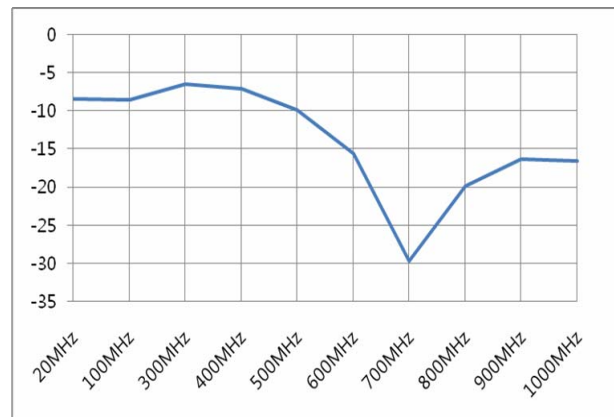
Gain



Input Return Loss



Output Return Loss



Precautions

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

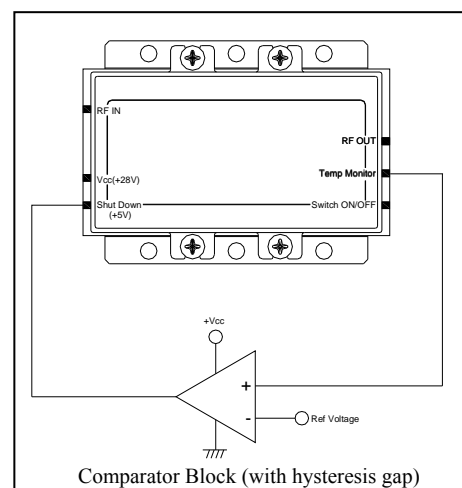
Heat generation is higher when there is no RF signal in the device. Therefore, the worst case scenario is when there is no RF signal, and the amplifier is “on” with current draw.

The temperature must be calculated properly.

Case temperature must maintain below 85°C.

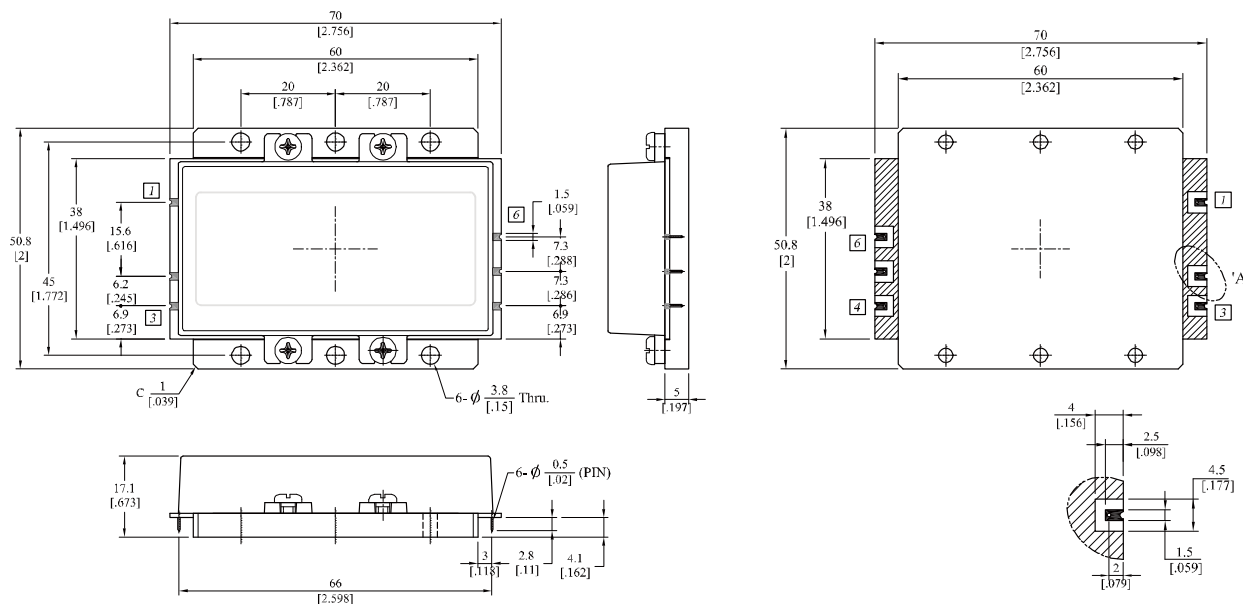
Right side drawing notes how to use a temperature monitoring function to protect against overheating.

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.



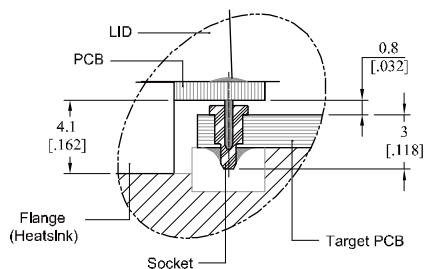
Package Dimensions (Type: DP-75)

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

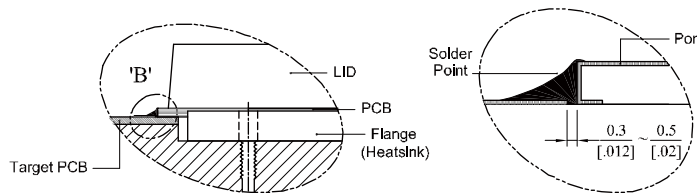


How to connect the amplifier to a target PCB

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	0.85V @ 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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