Wideband Power Amplifier RWP15020-G1

Product Features

GaN on SiC Broadband High Power Amplifier

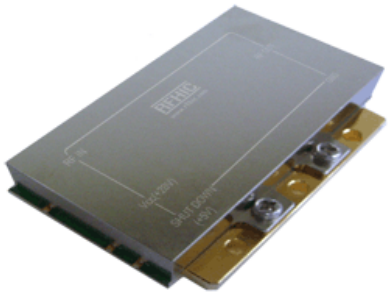
1000 to 2000MHz Operation Bandwidth

Small Signal Gain 27dB min

20W Typical. P3dB

Application

UHF/Military



Package : DP-75

Description

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

Operating frequency range is from 1000MHz to 2000MHz.

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℃; Z_S = Z_L = 50Ω

No	Item	Conditions	Min	Typ	Max	Unit
1	**Bandwidth**		1000		2000	MHz
2	**Small Signal Gain**		27	29	31	dB
3	**Gain Variation vs Temperature**	-20°C to 60°C	-2		+2	dB
4	**Gain Variation vs Frequency**			±1	±2	dBpp
5	**P_3dB**	1000MHz to 1200MHz	41	43		dBm
		1200MHz to 2000MHz	42	44		
6	**OIP3 @ Po = +33dBm (1MHz Tone spacing, CW 2-Tone)**	1000MHz to 1600MHz	48	50		dBm
		1600MHz to 2000MHz	46	48		
7	**Input Return Loss**			-10	-6	dB
8	**Output Return Loss**			-10	-5	dB
9	**2nd Harmonic suppression**	CW 1-tone @Po = +30dBm, Freq 1000MHz		-35	-28	dBc
10	**Supply Voltage**	Vcc(=Vds)	27.5	28	30	V
11	**Quiescent Current consumption**			2.2	2.5	A
12	**Current Consumption @ P_3dB**	CW 1-tone			3.6	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**	+20	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	**RWP15020-G1**	Pallet
2	**RWP15020-GH**	Module assembled with RWP15020-G1

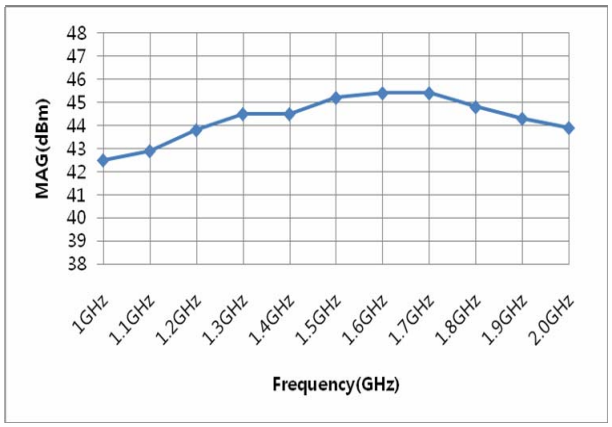
** RWP15020-GH is a SMA connectorized housing version of RWP15020-G1. Electrical parameters are all same as RWP15020-G1.*

For more information, please contact RFHIC.

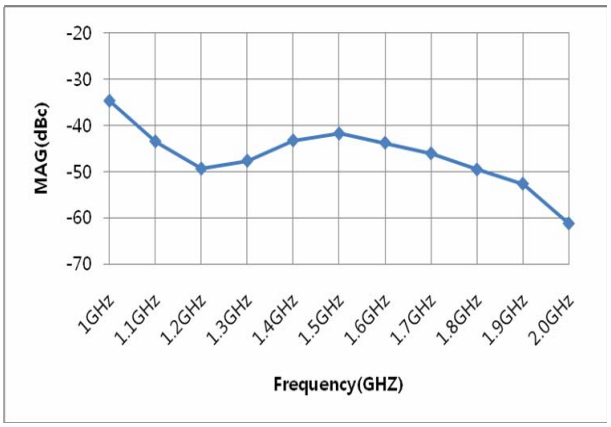
RWP15020-G1 Typical Performance @ 25℃

Frequency	P1dB	P3dB	Current@P1dB	Current@P3dB	2nd Harm	OIP3 (30dBm/Tone)
(MHz)	(dBm)	(dBm)	(A)	(A)	@30dBm(dBc)	(dBm)
1000	39.4	42.5	2.3	2.9	-34.7	49.5
1100	39.8	42.9	2.4	3.1	-43.5	49.8
1200	40.6	43.8	2.1	3.3	-49.4	50.4
1300	41.5	44.5	2.5	3.3	-47.7	50.8
1400	42.1	44.5	2.5	3.3	-43.3	51.0
1500	42.3	45.2	2.5	3.2	-41.8	51.1
1600	43.0	45.4	2.4	3.0	-43.8	51.0
1700	43.2	45.4	2.3	2.7	-46.1	50.3
1800	42.6	44.8	2.1	2.5	-49.6	49.5
1900	42.4	44.3	2.0	2.3	-52.7	48.5
2000	42.0	43.9	2.0	2.3	-61.3	47.6

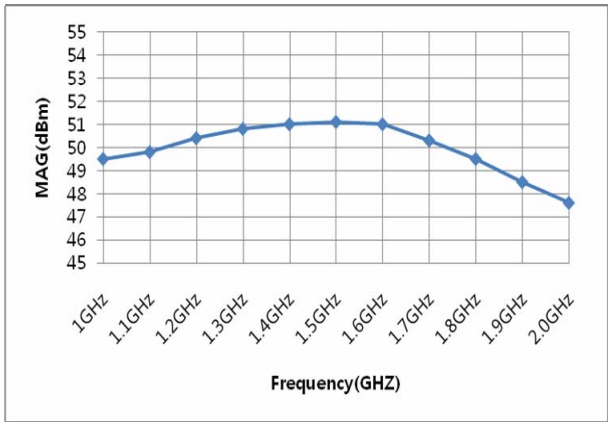
P3dB



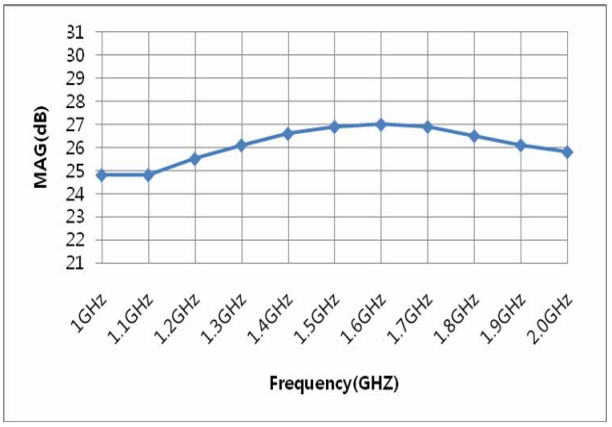
2nd Harmonics



OIP3



Power Gain @ Pin=18dBm



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.

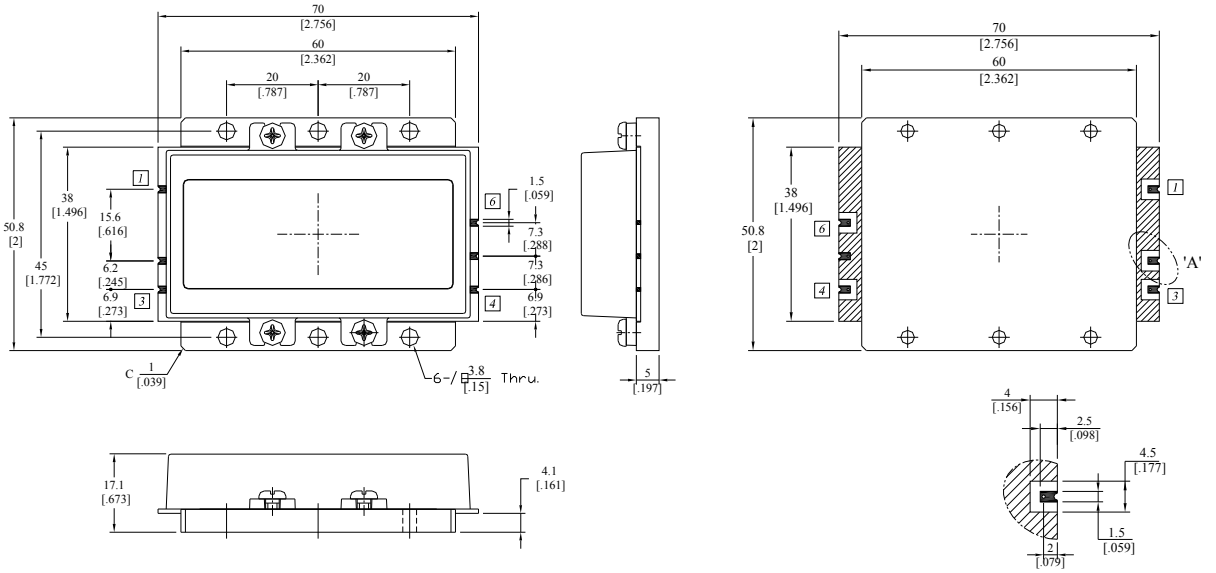
Case temperature must maintain below 85°C.

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.

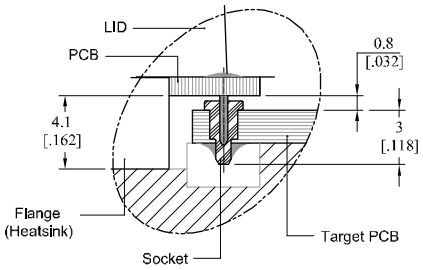
Package Dimensions (Type: DP-75)

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

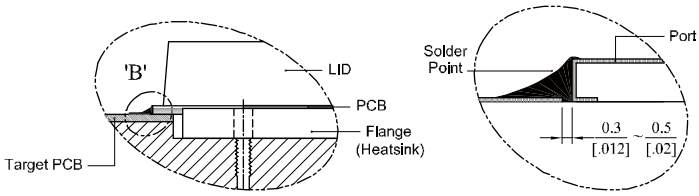


How to connect the amplifier to a target PCB

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	**GND**	Ground
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 :