Wideband Power Amplifier RWP15020-50

Product Features

- GaN on SiC Broadband High Power Amplifier
- 1000 ~ 2000MHz Operation Bandwidth
- Small Signal Gain 27dB 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 1000 ~ 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.

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

PARAMETER	UNIT	MIN	TYP	MAX	CONDITION
Operating Frequency	MHz	1000	-	2000	-
Small Signal Gain	dB	27	29	31	-
Gain Variation vs Frequency	dBpp	-	±1	±2	-
P_3dB	dBm	41	43	-	1000 ~ 1200MHz
		42	44	-	1200 ~ 2000MHz
OIP3 @ Po = +33dBm (1MHz Tone spacing, CW 2-Tone)	dBm	48	50	-	1000 ~ 1600 MHz
		46	48	-	1600 ~ 2000 MHz
Input Return Loss	dB	-	-10	-6	-
Output Return Loss	dB	-	-10	-5	-
2nd Harmonic suppression	dBc	-	-35	-28	CW 1-tone @Po = +30dBm, Freq 1000MHz
Supply Voltage	V	27.5	28	30	Vcc(=Vds)
Quiescent Current consumption	A	-	2.2	2.5	-
Current Consumption @ P_3 dB	A	-	-	3.6	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 : 300ms delay

Absolute Maximum Ratings

PARAMETER	UNIT	RATING
Input RF Power	dBm	20
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
RWP15020-50	Pallet
RWP15020-5H*	Module assembled with RWP15020-50

* RWP15020-5H is a SMA connectorized housing version of RWP15020-50. Electrical parameters are all same as RWP15020-50.
For more information, please contact RFHIC

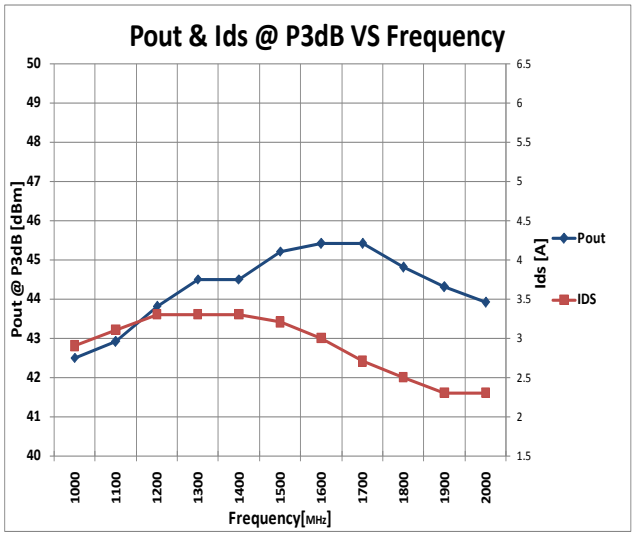
Mechanical Specifications

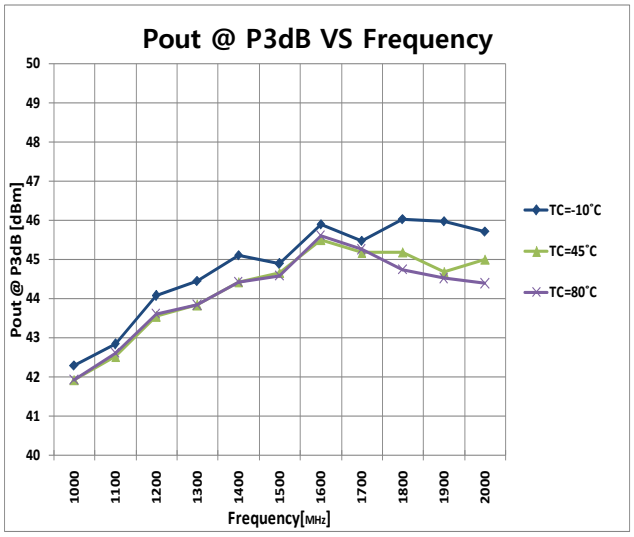
PARAMETER		UNIT	TYP
Dimension	**Package**	㎜	70(L) x 50.8(W) x 17.1(H)
	Housing		90(L) x 75(W) x 25(H)
Weight	**Package**	g	75
	Housing		270
Housing RF IN/OUT Connector		-	SMA Female
Cooling		-	External Heat-sink

*Dimension and weight may change without notice.

Typical Performance @ 25°C

Frequency (MHz)	P1dB (dBm)	P3dB (dBm)	Current@P1dB (A)	Current@P3dB (A)	2nd Harm@30dBm (dBc)	OIP3 (30dBm/Tone) (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

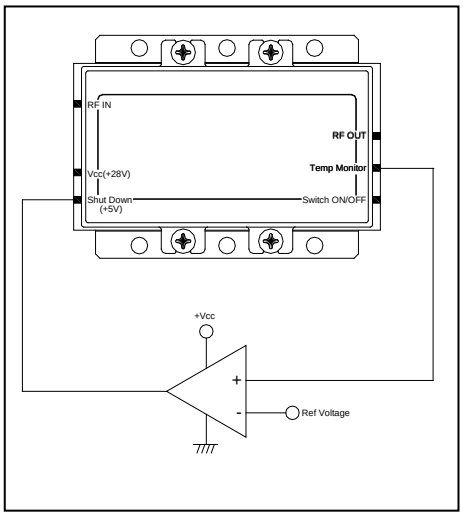




Precautions

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.

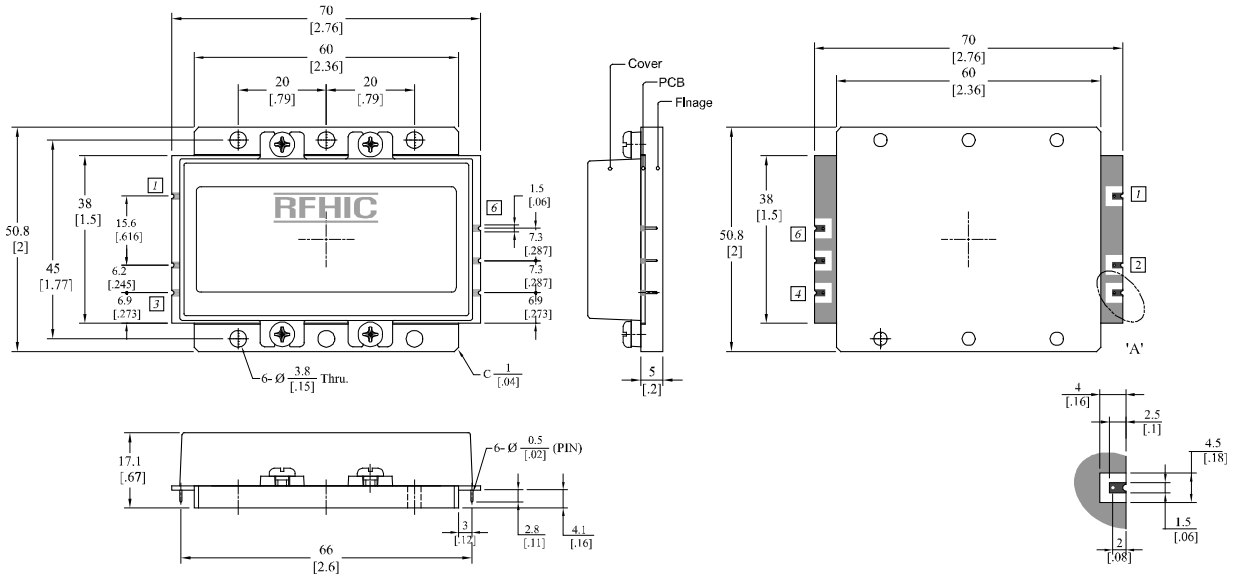
2. Thermal Grease or Metal Thermal Interface Materials are recommended for heat dissipation. An example would be spreading thermal grease on the bottom of the device



Comparator Block (with hysteresis gap)

Package Dimensions (Type: DP-75)

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

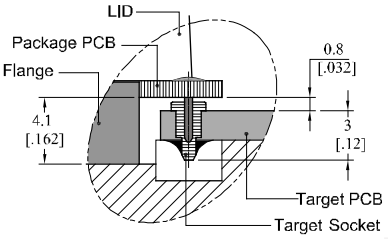


Pin Description			
Pin No	**Function**	**Pin No**	**Function**
1	RF IN	4	Switch ON/OFF
2	Vcc(+28V)	5	Temp Monitor
3	Shut Down(+5V)	6	RF OUT

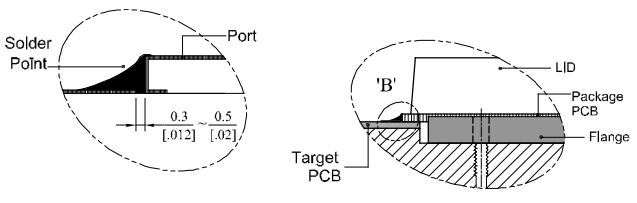
* Terminal Pin Information : ASK206091,AA (Acethink, Pin) , ASK20556,AA-1(Acethink, Pin Socket)
* Recommended Screw Torque : 8.0kgf.cm±1 using SEMS M3 10mm Bolt

How to connected the package to a target PCB

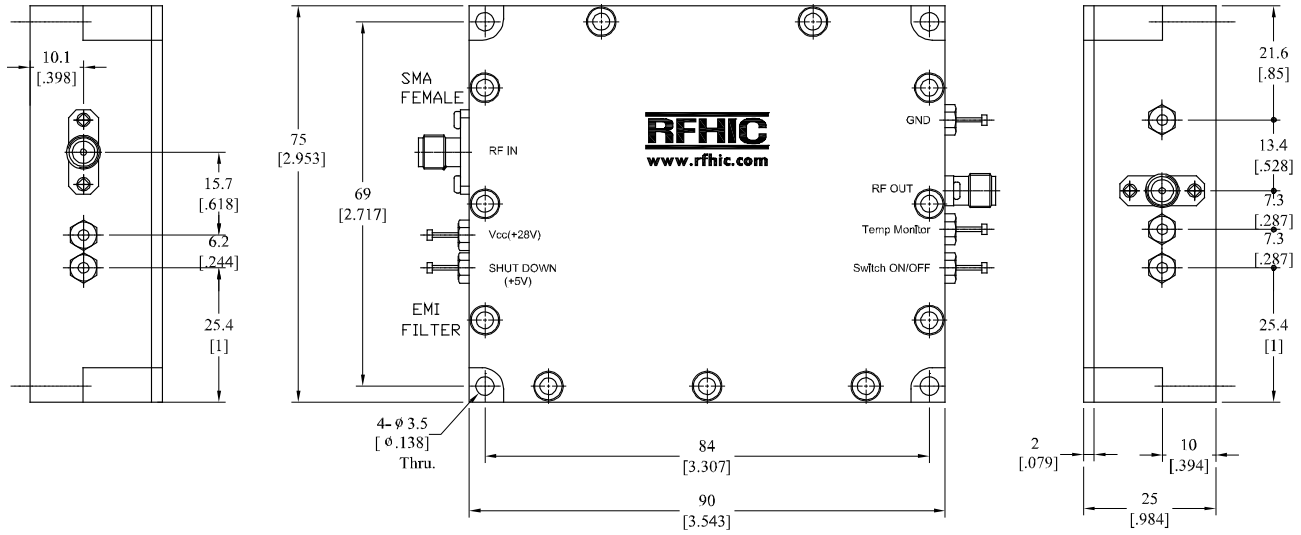
With Pin



Without Pin



SMA Connectorized Housing Dimensions



Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RWP15020-50	2014.5.23	1.7	Condition & Graph modification □	-
RWP15020-50	2014.4.2	1.6	Mechanical Specifications	-
RWP15020-50	2013.10.18	1.5	Parameter & Graph modification □	-