Wideband Power Amplifier
RWP15020-5H

Product Features

- GaN on SiC Broadband High Power Amplifier
- 1000 ~ 2000MHz Operating 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.
The operating frequency range is from 1000 ~ 2000MHz.
Gallium Nitride on SiC technology is used and attached to an aluminum sub-carrier. Full in/out matching for broadband performance is already applied.
Thermal handling is improved 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	-
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_{3dB}	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 : 500ms 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

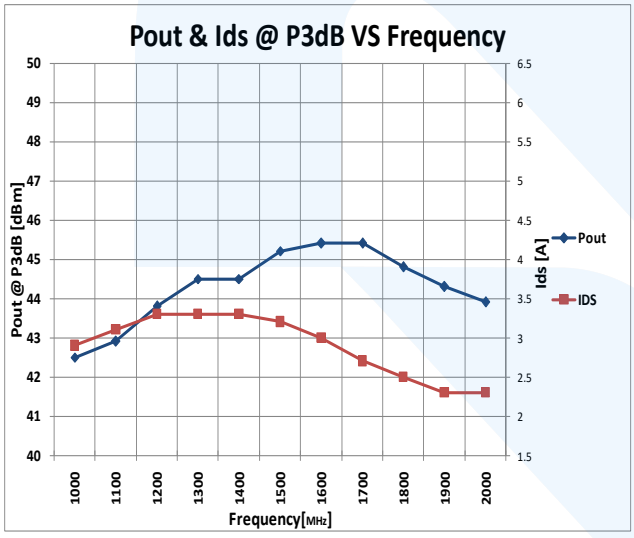
* RWP15020-5H is an SMA connectorized housing version of RWP15020-50. Electrical parameters are all the same as RWP15020-50.
For more information, please contact RFHIC.

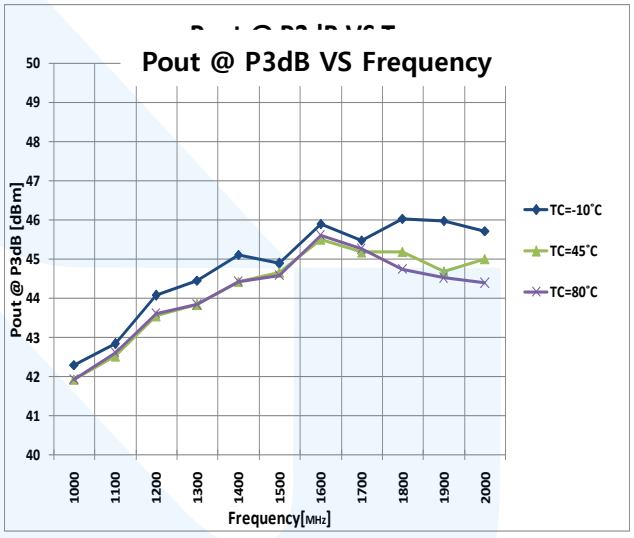
Mechanical Specifications

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

Typical Performance @ 25°C

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

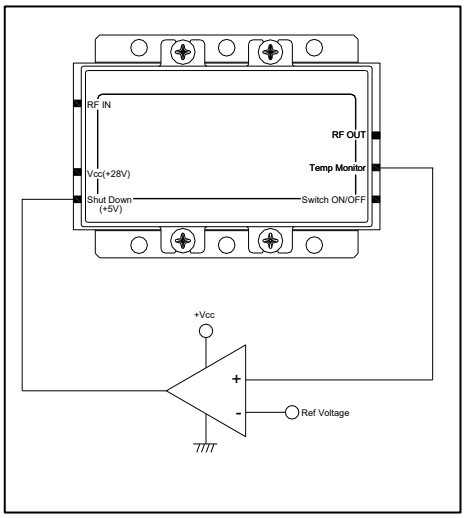




Precautions

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)

Start-up Sequence

1. Ensure that the RF input is disabled.

2. Set the Switch On/Off and Shutdown control pins to 0 V.

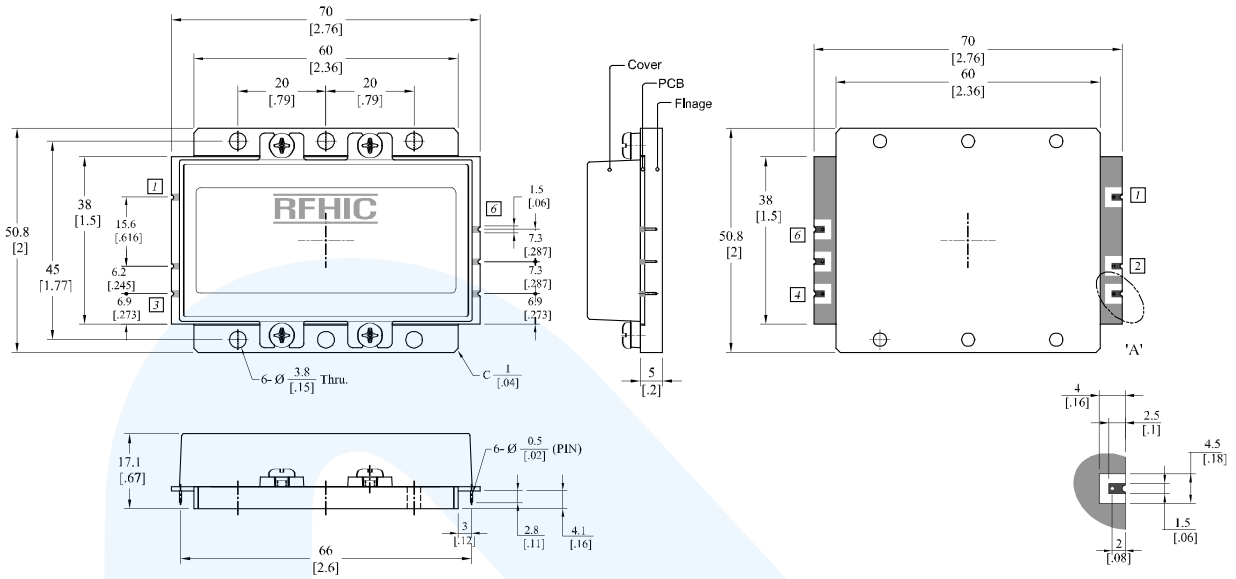
3. Apply the 28 V DC supply and allow the supply voltage to stabilize. Verify that the quiescent current is within the specified limits.

4. Once the amplifier is operating normally, enable the RF input. Gradually increase the RF drive level while monitoring the supply current and case temperature.

Note: For normal operation, connect both the Switch On/Off and Shutdown pins to 0 V (GND). Do not leave either pin floating, as operation is not guaranteed in this condition.

Package Dimensions (Type: DP-75)

* Unit: mm[inch] | Tolerance: ±0.3[.012]

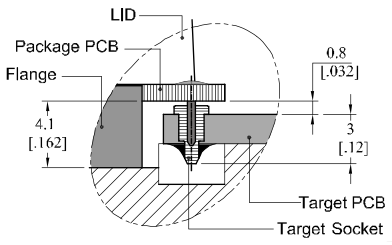


Pin Description			
Pin No	**Function**	**Pin No**	**Function**
1	RF IN	4	Switch ON/OFF
2	Vcc(+28V)	5	Temp Monitor
3	Shut Down(+5V)	6	RF OUT

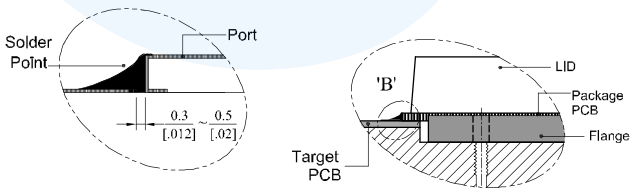
* Terminal Pin Information : ASK206091,AA (Acethink, Pin) , ASK20556,AA-1(Acethink, Pin Socket)
* Recommended Screw Torque : 8.0kgf.cm±1 using SEMS M3 10mm Bolt

How to connect the package to a target PCB

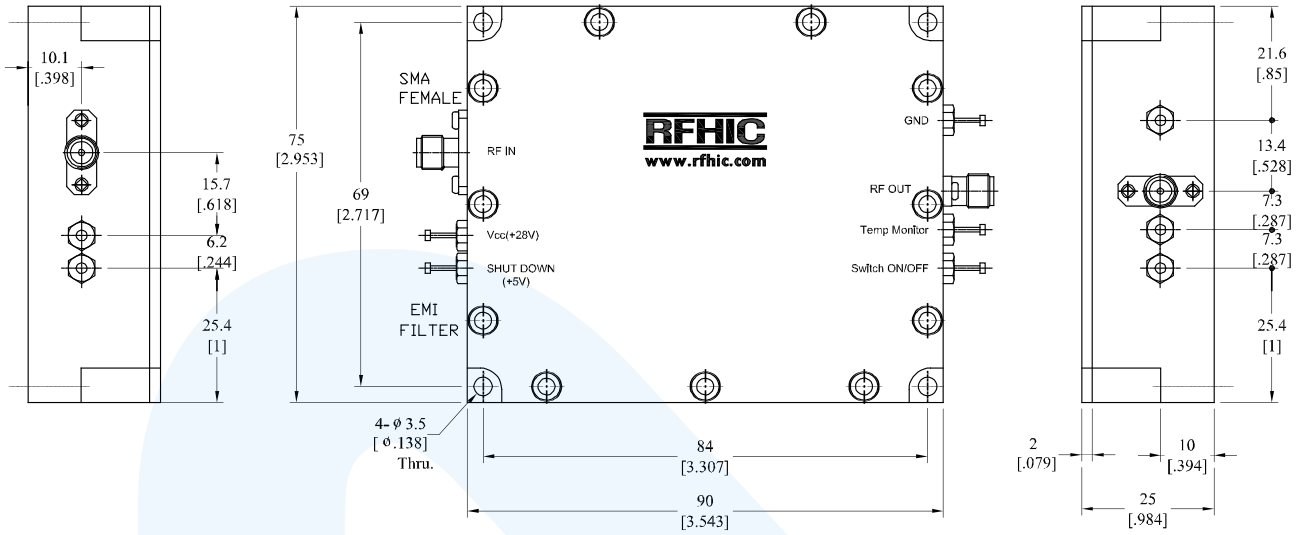
With Pin



Without Pin



SMA Connectorized Housing Dimensions



Revision History

Part Number	Release Date	Version	Modification	Data Sheet Status
RWP15020-5H	2026.11.09	2.2	Start-up Sequence	
RWP15020-5H	2019.07.18	2.1	Package Dimensions	-
RWP15020-5H	2015.11.10	2.0	Note	-
RWP15020-5H	2015.06.30	1.9	Electrical Specifications	-

Certification

This product is manufactured by a company that is certified for the AS9100D quality management system.

RFHIC Corporation reserves the right to make changes to any products herein or to discontinue any product at any time without notice. While product specifications have been thoroughly examined for reliability, RFHIC Corporation strongly recommends buyers to verify that the information they are using is accurate before ordering. RFHIC Corporation does not assume any liability for the suitability of its products for any particular purpose, and disclaims any and all liability, including without limitation consequential or incidental damages. RFHIC products are not intended for use in life support equipment or application where malfunction of the product can be expected to result in personal injury or death. Buyer uses or sells such products for any such unintended or unauthorized application, buyer shall indemnify, protect, and hold RFHIC Corporation and its directors, officers, stockholders, employees, representatives and distributors harmless against any and all claims arising out of such unauthorized use. All sales inquiries and support should be directed to the local authorized geographic distributor for RFHIC Corporation. For customers in the US, please contact the US sales team through our website at https://www.rfhicusa.com/ . For all other inquiries, please contact our international sales team through our website portal at https://rfhic.com/contact/