

Product Features

- GaN on SiC Broadband High Power Amplifier
- 20 ~ 520MHz Operation Bandwidth
- Small Signal Gain 40dB min.
- 40W 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 20 ~ 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.

Electrical Specifications @ $V_{CC} = 28V$; $T_c = 45^\circ C$; $Z_s = Z_L = 50\Omega$

| PARAMETER | UNIT | MIN | TYP | MAX | CONDITION |
|--|------|------|---------|-----------|--|
| Operating Frequency | MHz | 20 | - | 520 | - |
| Small Signal Gain | dB | 40 | 42 | 44 | - |
| Gain Variation vs Frequency | dBpp | - | ± 1 | ± 1.5 | - |
| P ₃ dB | dBm | 45 | 46 | - | 20 ~ 100MHz |
| | | 46 | 47 | - | 100 ~ 520MHz |
| OIP ₃ @ P _o = +33dBm (1MHz Tone spacing, CW 2-Tone) | dBm | 50 | 54 | - | 20 ~ 520 MHz |
| Input Return Loss | dB | - | -11 | -7 | - |
| 2 nd Harmonic suppression | dBc | - | -48 | -40 | CW 1-tone @P _o = +30dBm, Freq 200MHz |
| Supply Voltage | V | 27.5 | 28 | 30 | V _{cc} (=V _{ds}) |
| Quiescent Current consumption | A | 2.8 | 3 | 3.2 | - |
| Current Consumption @ P ₃ dB | A | - | 3.8 | 4.5 | 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 | 13 |
| 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 | °C | -10 | - | 80 | Tc |
| Storage Temperature | °C | -40 | - | 105 | Tstg |
| Vibration | MIL-STD-810G Method 514.6 ANNEX C | | | | VI |

Ordering Information

| Part Number | Package |
|-------------|-----------------------------------|
| RWP03040-10 | Pallet |
| RWP03040-1H | Module assembled with RWP03040-10 |

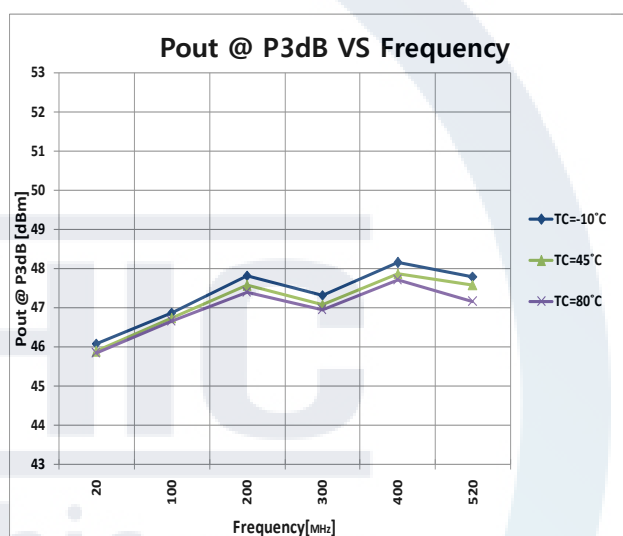
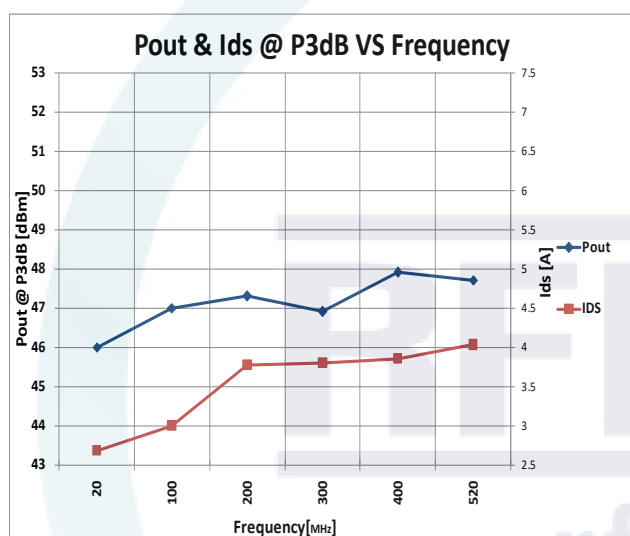
* RWP03040-1H is a SMA connectorized housing version of RWP03040-10. Electrical parameters are all same as RWP03040-10.
For more information, please contact RFHIC

Mechanical Specifications

| PARAMETER | | UNIT | TYP |
|-----------------------------|---------|------|---------------------------|
| Dimension | Package | mm | 70(L) x 50.8(W) x 17.3(H) |
| | Housing | | 90(L) x 75(W) x 25(H) |
| Weight | Package | g | 55 |
| | Housing | | 250 |
| Housing RF IN/OUT Connector | | - | SMA Female |
| Cooling | | - | External Heat-sink |

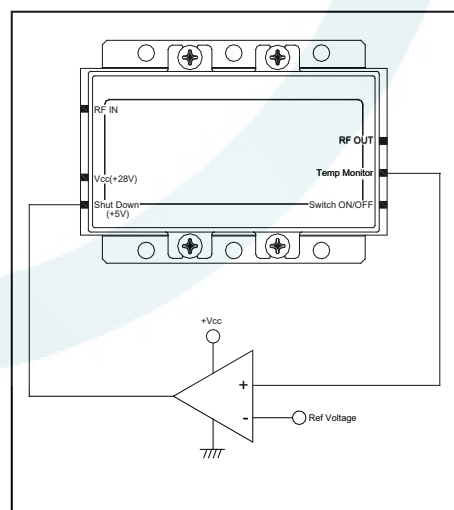
Typical Performance @ 25°C

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



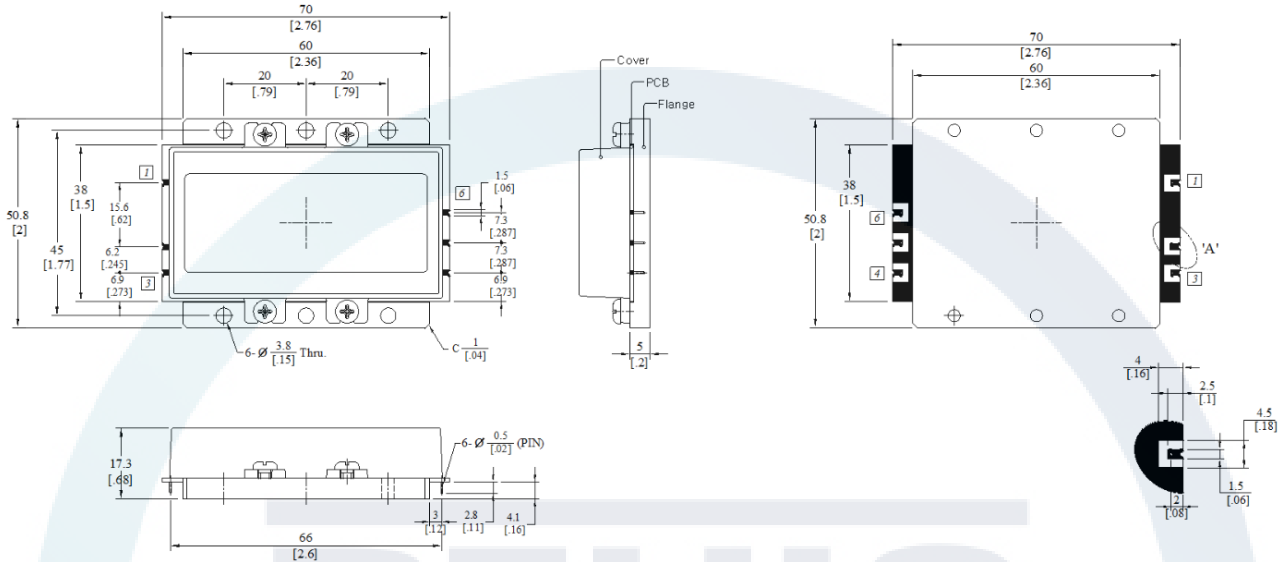
Precaution

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: ± 0.3 [.012]

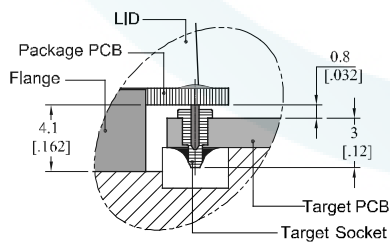
| Pin Description | | | |
|-----------------|----------------|--------|---------------|
| Pin No | Function | Pin No | Function |
| 1 | RF IN | 4 | Switch ON/OFF |
| 2 | Vcc(+28V) | 5 | Temp Monitor |
| 3 | Shut Down(+5V) | 6 | RF OUT |

* Terminal Pin Information : ASK206091,AA (Acethink, Pin) , ASK20556,AA-1(Acethink, Pin Socket)

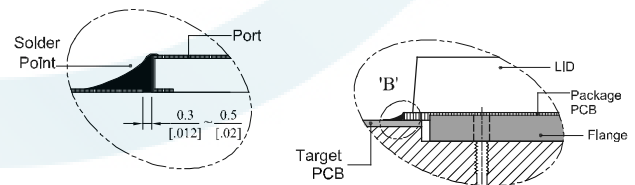
* Recommended Screw Torque : 8.0kgf.cm ± 1 using SEMS M3 10mm Bolt

How to connected the package to a target PCB

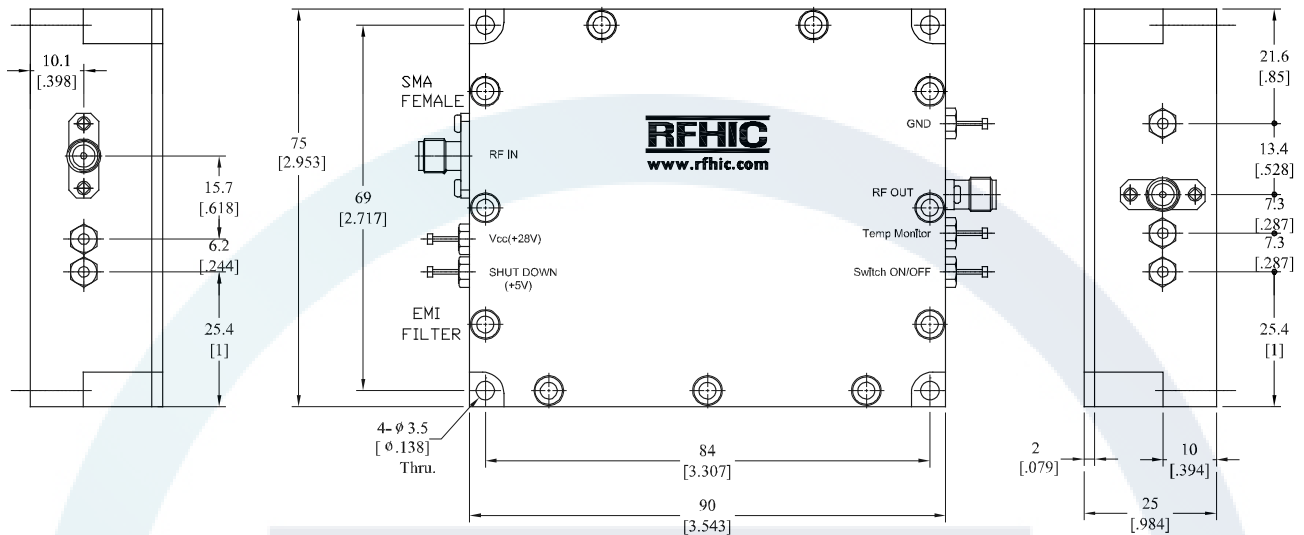
With Pin



Without Pin



SMA Connectorized Housing Dimensions



Revision History

| Part Number | Release Date | Version | Modification | Data Sheet Status |
|-------------|--------------|---------|---------------------------|-------------------|
| RWP03040-10 | 2019.07.18 | 2.2 | Package Dimensions | - |
| RWP03040-10 | 2015.11.10 | 2.1 | Note | - |
| RWP03040-10 | 2015.06.30 | 2.0 | Electrical Specifications | - |



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