

Product Features

- GaN on SiC Broadband High Power Amplifier
- 20 ~ 500MHz Operation Bandwidth
- Small Signal Gain 41dB min.
- 160W Minimum . @ Psat

Applications

- General Purpose



Package Type : DP-100

Description

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

Operating frequency range is from 20 ~ 500MHz.

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 | - | 500 | - |
| Small Signal Gain | dB | 41 | 43 | 45 | - |
| Gain Variation vs Frequency | dBpp | - | ± 1 | ± 1.5 | - |
| P_3 dB | dBm | 50 | 52 | - | 20 ~ 500MHz |
| OIP3 @ $P_o = +43$ dBm (1MHz Tone spacing, CW 2-Tone) | dBm | 50 | 54 | - | 20 ~ 500 MHz |
| Input Return Loss | dB | - | -11 | -7 | - |
| N^{th} Harmonic suppression | dBc | 15 | 25 | - | CW 1-tone @ $P_o = P_{1dBm}$ |
| Supply Voltage | V | 27.5 | 28 | 30 | $V_{cc}(=V_{ds})$ |
| Quiescent Current consumption | A | - | 7 | 7.5 | - |
| Current Consumption @ P_3 dB | A | - | 11 | 13 | 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 | 15 |
| 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 |
|-------------|---|
| RWP03160-10 | Pallet |
| RWP03160-1R | Pallet with Stainless Steel SMA Connectorized |

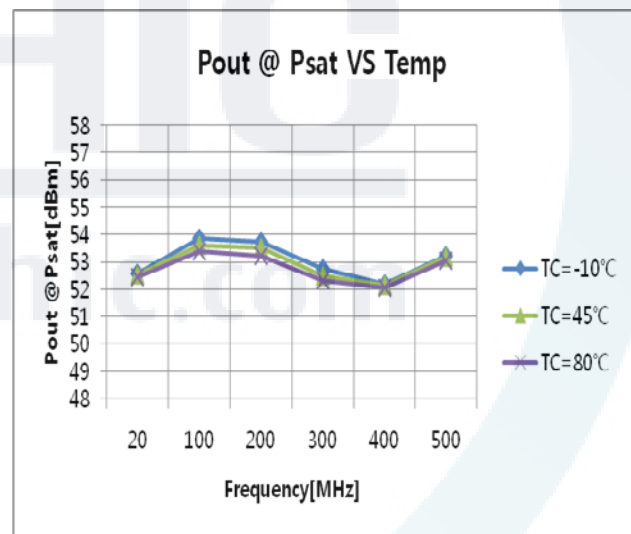
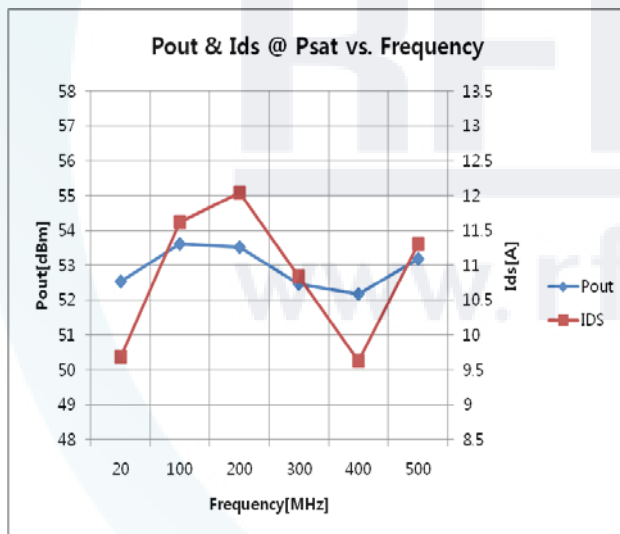
* RWP03160-1R is a SMA connectorized version of RWP03160-10. Electrical parameters are all same as RWP03160-10.
For more information, please contact RFHIC

Mechanical Specifications

| PARAMETER | UNIT | TYP |
|--------------------------|------|--------------------------|
| Dimension | mm | 120(L) x 65(W) x 16.7(H) |
| Weight | g | 240 |
| RWP03160-1R RF Connector | - | SMA Female |
| DC Connector | - | SMW420-06P |
| Cooling | - | External Heat-sink |

Typical Performance @ 25°C

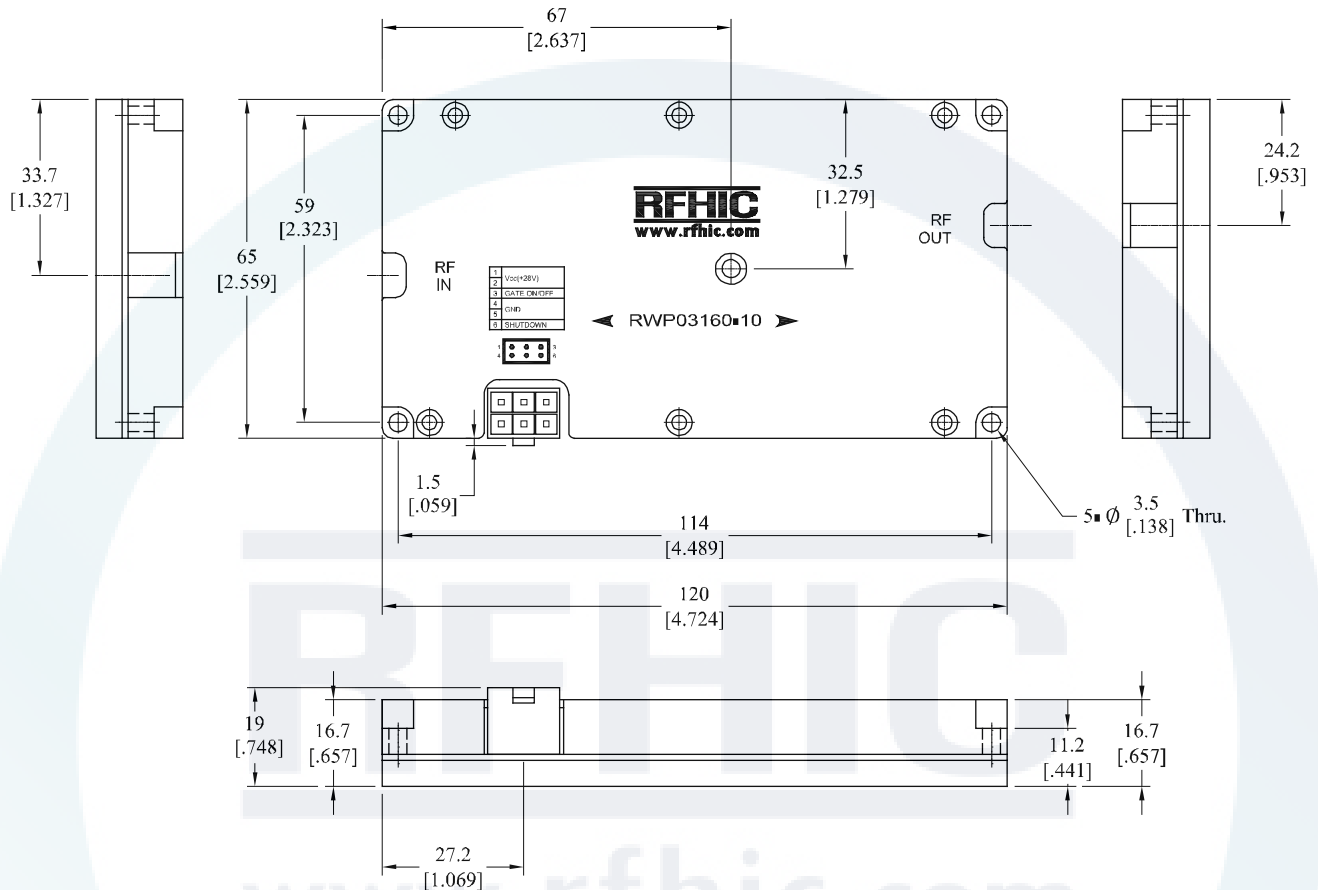
| Frequency | P1dB | P3dB | Psat | Current @P1dB | Current @P3dB | Current @Psat | Gp @ P3dB | PAE @ P3dB | N th Harmonic @ Po = P1dBm | | OIP3 @ 40dBm/Tone |
|-----------|-------|-------|-------|---------------|---------------|---------------|-----------|------------|---------------------------------------|---------------------|-------------------|
| | | | | | | | | | 2 nd Har | 3 rd Har | |
| (MHz) | (dBm) | (dBm) | (dBm) | (A) | (A) | (A) | (dB) | (%) | (dBc) | | (dBm) |
| 20 | 48.1 | 51.0 | 52.3 | 6.60 | 8.30 | 8.9 | 39.50 | 54.17 | -43.2 | -23.1 | 56.6 |
| 100 | 48.1 | 52.1 | 53.0 | 7.08 | 10.18 | 11.1 | 40.10 | 56.90 | -40.0 | -20.6 | 56.5 |
| 200 | 48.2 | 52.3 | 53.0 | 7.30 | 11.04 | 12.0 | 40.70 | 54.94 | -46.1 | -23.1 | 56.2 |
| 300 | 48.0 | 51.1 | 52.1 | 7.01 | 9.73 | 11.1 | 40.90 | 47.29 | -35.2 | -24.9 | 55.4 |
| 400 | 48.0 | 51.2 | 52.0 | 7.13 | 9.07 | 9.9 | 40.90 | 51.91 | -38.9 | -42.9 | 55.3 |
| 500 | 48.0 | 52.0 | 52.4 | 7.57 | 10.98 | 11.0 | 40.20 | 51.55 | -57.9 | -45.9 | 54.4 |



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.
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-100)

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

| Interface Connector | | |
|---------------------|---------------|--|
| Pin No | Port Name | Function |
| 1 | Vcc(28V) | 28VDC |
| 2 | Vcc(28V) | 28VDC |
| 3 | Switch ON/OFF | Switching Time : 5us max |
| | | Enable : TTL "Low" or Open, Disable : TTL "High" |
| | | (Low : 0~0.5V, High : 2.5~5V) |
| | | Disable Status : 20mA Current consumption |
| 4 | GND | DC Ground |
| 5 | GND | DC Ground |
| 6 | Shut Down | Enable : TTL "Low" or Open, Disable : TTL "High" |
| | | (Low : 0~0.5V, High : 2.5~5V) |
| | | Disable Status : 20mA Current consumption |

* Interface connector information : SMW420-06P(YEONHO Electronic, Wafer), SMH420-06(YEONHO Electronic, Housing)

* Recommended Screw Torque : 8.0kgf.cm ± 1 using SEMS M3 15MM Bolt

Revision History

| Part Number | Release Date | Version | Modification | Data Sheet Status |
|-------------|--------------|---------|------------------------------------|-------------------|
| RWP03160-10 | 2015.11.10 | 1.9 | Note | - |
| RWP03160-10 | 2015.1.15 | 1.8 | Notice Change | - |
| RWP03160-10 | 2014.5.23 | 1.7 | Mechanical Specifications addition | - |



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