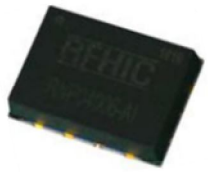
## Product Features

- Surface Mount Hybrid Type
- No matching circuit needed
- High Efficiency
- High Linearity
- Psat 4W Power
- Alumina Substrate
- GaN on SiC Chip on board

## Applications

- RF Sub-Systems
- Base Station



Package Type : HY-6

## Description

GaN on SiC is used and attached on a board. It is connected by using bias and in/out matching circuit method with gold wire bonding.

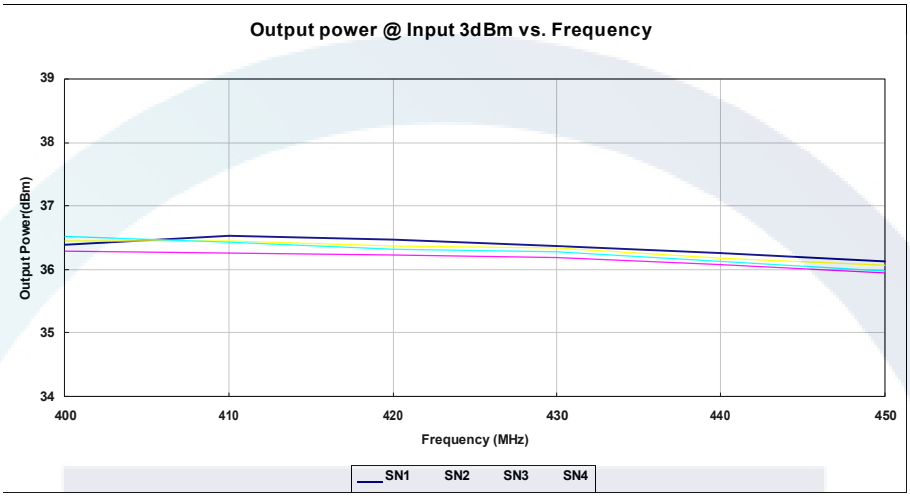
## Electrical Specifications @ Ta=25℃

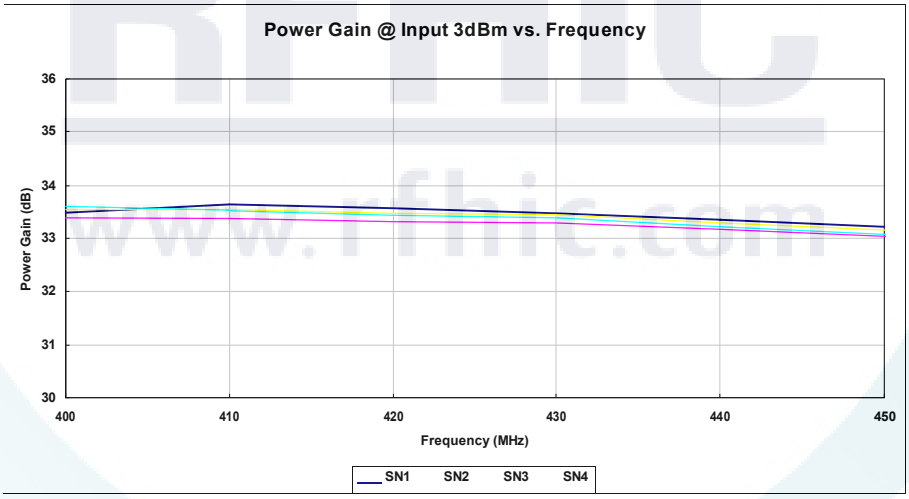
| PARAMETER | | UNIT | MIN | TYP | MAX | CONDITION |
|---|---|---|---|---|---|---|
| Frequency Range | | MHz | 400 | - | 450 | $Z_S = Z_L = 50$ ohm |
| Power Gain | | dB | 32 | 33 | - | @ Input 3 dBm |
| Input Return Loss | | dB | - | -10 | -6 | - |
| Output Power | | dBm | 35.5 | 36 | - | @ Input 3 dBm |
| Efficiency | | % | 65 | 70 | - | |
| $N^{TH}$ Harmonic suppression | | dBc | 10 | 15 | - | |
| Total Current consumption | Drive | mA | - | 90 | - | - |
| | Main | | - | 230 | - | |
| Weight | | g | - | - | 2 | - |
| Supply Voltage | | V | - | 4 | - | Drive Amp |
| | | | - | -3.2 | - | Gate Bias |
| | | | - | 24 | - | Main Bias |
| Dimensions (W×L×H) | | mm | 20 × 14.5 × 4.8 | | | |

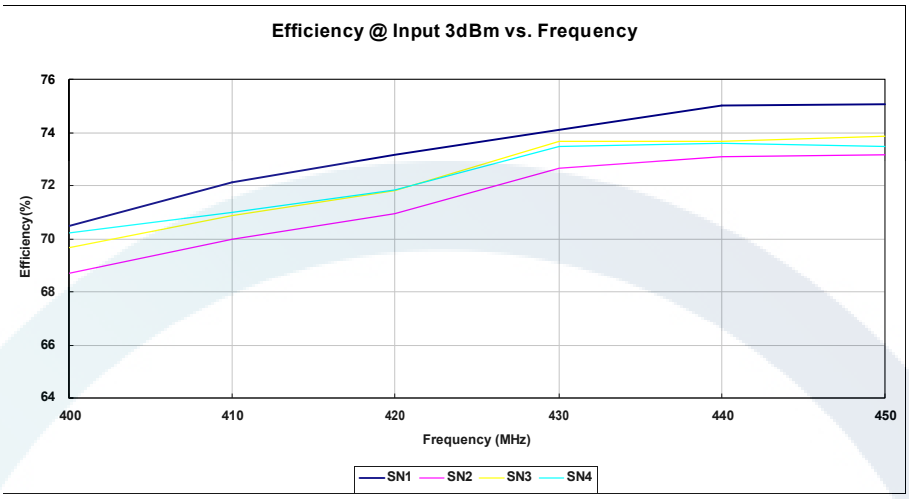
*** Caution** : The drain voltage must be supplied to the device after the gate voltage is supplied.

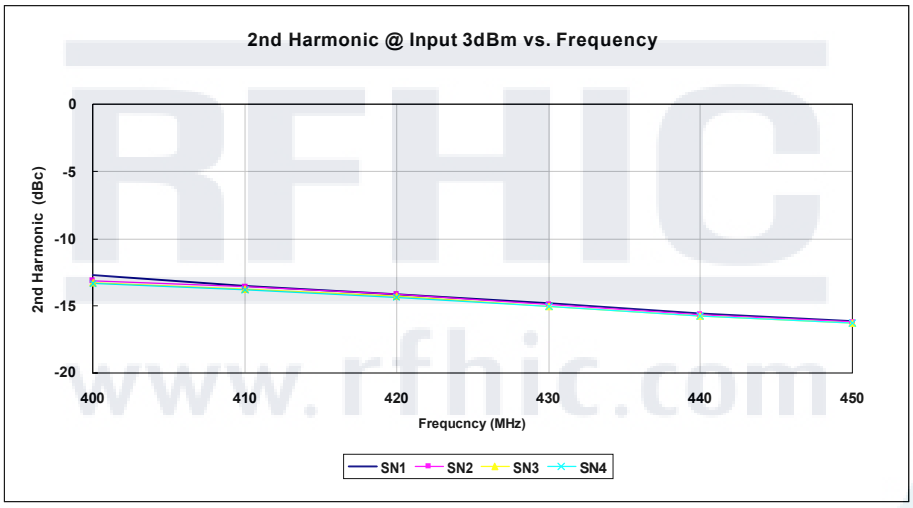
## Performance Charts

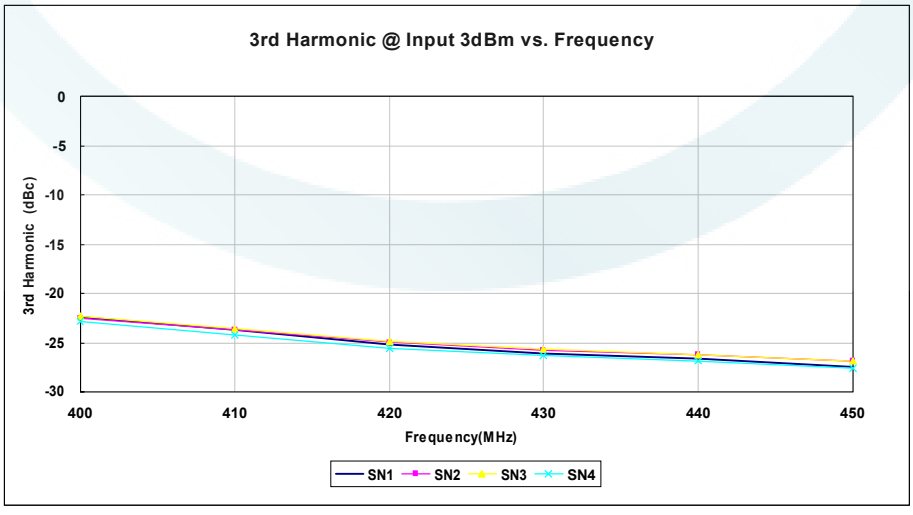
* Bias Voltage Condition : Pin4. Drive Amp(+4V) , Pin5. Gate Bias(-3.2V), Pin7.Main Bias(24V), Ta=25℃




Efficiency @ Input 3dBm vs. Frequency
Efficiency(%)
76
74
72
70
68
66
64
400
410
420
430
440
450
Frequency (MHz)
SN1
SN2
SN3
SN4


2nd Harmonic @ Input 3dBm vs. Frequency
2nd Harmonic (dBc)
0
-5
-10
-15
-20
400
410
420
430
440
450
Frequcncy (MHz)
SN1
SN2
SN3
SN4


3rd Harmonic @ Input 3dBm vs. Frequency
3rd Harmonic (dBc)
0
-5
-10
-15
-20
-25
-30
400
410
420
430
440
450
Frequency(MHz)
SN1
SN2
SN3
SN4

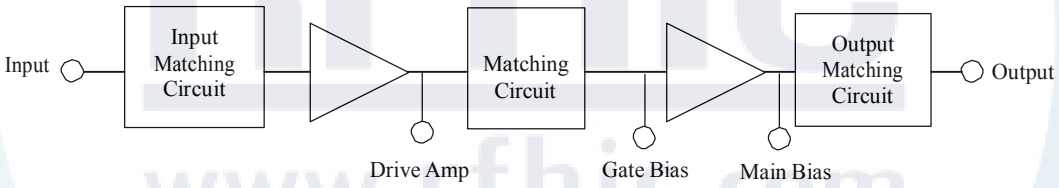
## Absolute Maximum Ratings

| PARAMETER | UNIT | RATING |
|---|---|---|
| Operating Case Temperature | °C | 80 |
| Input RF Power | dBm | 5 |
| Supply Voltage ( Main Bias ) | V | 24.5 |
| Load Mismatch Value | - | 3 : 1 @ all load phase |

## Environmental Characteristics

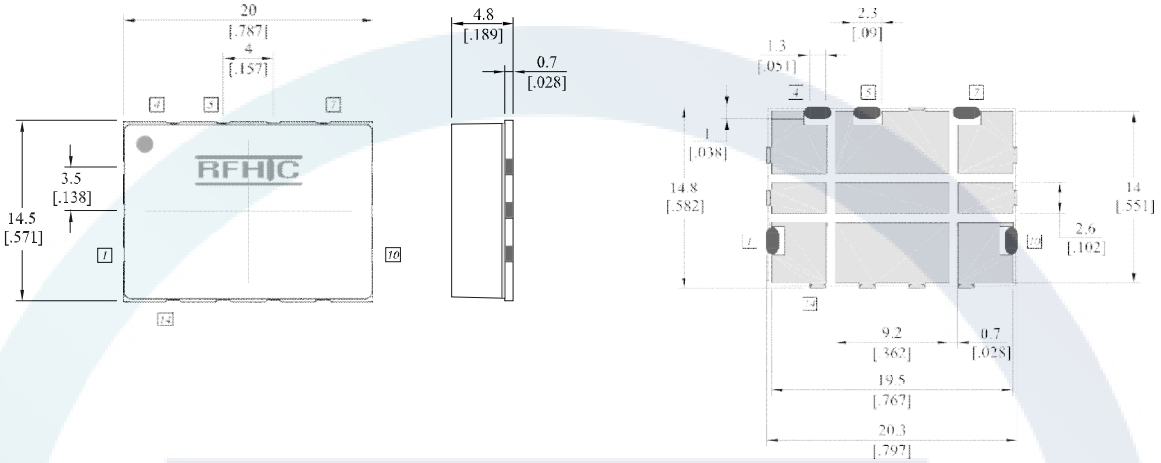
| PARAMETER | UNIT | MIN | TYP | MAX |
|---|---|---|---|---|
| Operating Temperature | °C | -40 | - | 80 |
| Storage Temperature | °C | -40 | - | 105 |
| Vibration | MIL-STD-810G Method 514.6 ANNEX C | | | |

## Block Diagram



## Package Dimensions (Type: HY-6)

* Unit: mm[inch] | Tolerance ±0.15[.006]




▲ Top View ▲ Side View ▲ Bottom View

| Pin Description | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Pin No** | **Function** | **Pin No** | **Function** | **Pin No** | **Function** | **Pin No** | **Function** |
| 1 | RF Input | 4 | Drive AMP(+4V) | 8 | GND | 11 | GND |
| 2 | GND | 5 | Gate Bias(-3.2V) | 9 | GND | 12 | GND |
| 3 | GND | 6 | GND | 10 | RF Output | 13 | GND |
| - | - | 7 | Drain Bias(+24V) | - | - | 14 | GND |

*** Mounting Configuration Notes**

1. Ground / thermal via holes are critical for the proper performance of this device.
2. Add as much copper as possible to inner and outer layers near the part to ensure optimal thermal performance.
3. Mounting screws can be added near the part to fasten the board to a heatsink. Ensure that the ground / thermal via hole region contacts the heatsink.
4. Do not put solder mask on the backside of the PCB in the region where the board contacts the heatsink.
5. RF trace width depends upon the PCB material and construction.
6. Use 1 oz. Copper minimum.

## Revision History

| Part Number | Release Date | Version | Modification | Data Sheet Status |
|---|---|---|---|---|
| RNP04006-A1 | 2012.9.28 | 1.0 | - | - |
| | | | | |
| | | | | |