

### Product Description:

The Nxbeam NPM1000-KW is a Ku-band high power GaN module that is ideally suited for satellite communications, point-to-point radios, and radar applications. The module operates from 12.5 to 15 GHz and can provide 70 W of saturated output power and 40 W of linear power.



### Key Features:

- Frequency: 12.5 – 15.0 GHz
- Linear Gain: > 40 dB
- Psat (at 28V): 70 W
- Psat (at 24V): 55 W
- Linear Power (at 28V): 40 W at -25 dBc
- Linear Power (at 24V): 35 W at -25 dBc
- RF Input: SMA, RF Output: WR75 (Bottom Side)

- Module Dimensions (mm):  
76 x 46 x 19 (L x W x H)  
(not including SMA connector or bias pins)

### Electrical Specifications (Peak Power Operation)

Test Condition: Vd = 24 V, Idq = 5 A, Temp. = 25 °C

| Parameter              | Min  | Typical | Max  | Unit |
|------------------------|------|---------|------|------|
| Frequency              | 12.5 |         | 15.0 | GHz  |
| Output Power (at Psat) |      | 55      |      | W    |
| Gain (small signal)    |      | 41      |      | dB   |
| Power Gain (at Psat)   |      | 34      |      | dB   |
| Efficiency (at Psat)   |      | 18      |      | %    |
| Input Return Loss      |      | 8       |      | dB   |
| Output Return Loss     |      | 8       |      | dB   |

### Electrical Specifications (Linear Power Operation)

Test Condition: Vd = 24V, Idq = 3.2 A, Temp. = 25 °C

Measured at -25 dBc, 2-tone, Signal Spacing = 1 MHz

| Parameter           | Min  | Typical | Max  | Unit |
|---------------------|------|---------|------|------|
| Frequency           | 12.5 |         | 15.0 | GHz  |
| Small Signal Gain   |      | 40      |      | dB   |
| Linear Output Power |      | 35      |      | W    |
| Power Gain          |      | 38      |      | dB   |
| Efficiency          |      | 19      |      | %    |

### Absolute Maximum Ratings (Temp. = 25°C)

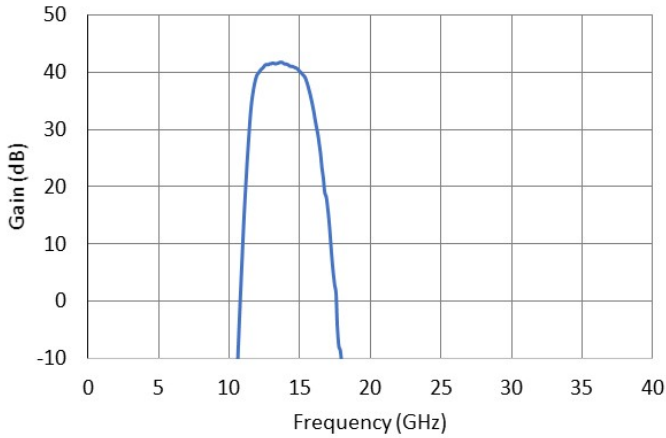
| Parameter                         | Min | Max | Unit |
|-----------------------------------|-----|-----|------|
| Drain Voltage (Vd1, Vd2)          |     | 28  | V    |
| Drain Current (Id1)               |     | 4   | A    |
| Drain Current (Id2)               |     | 1.2 | A    |
| Drain Current (Id3)               |     | 4   | A    |
| Drain Current (Id4)               |     | 10  | A    |
| Gate Voltage (Vg1, Vg2, Vg3, Vg4) | -8  | 0   | V    |
| Input Power (Pin)                 |     | TBD | dBm  |

### Recommended Operating Condition

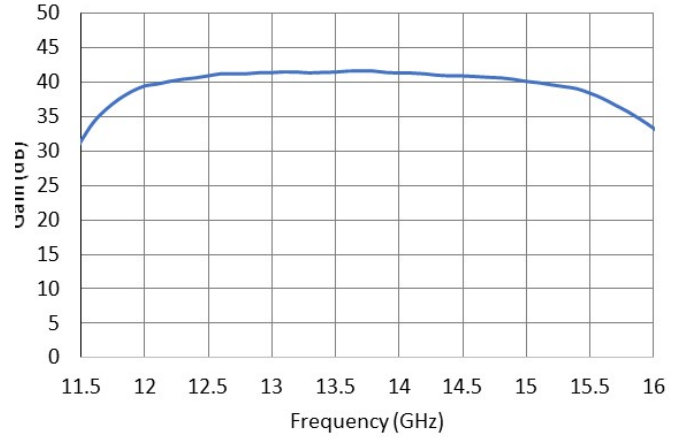
| Parameter                   | Value    | Unit |
|-----------------------------|----------|------|
| Drain Voltage (Vd)          | 20 - 28  | V    |
| Drain Current (Idq)         | up to 10 | A    |
| Gate Voltage (Vg) (Typical) | -4.0     | V    |

Test Condition:  $V_d = 24\text{ V}$ ,  $I_{dQ} = 6\text{ A}$ , Base Plate Temp. =  $85\text{ }^\circ\text{C}$

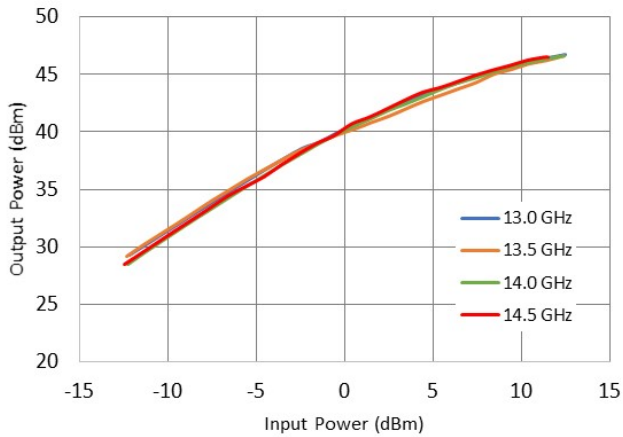
Gain (wideband) vs. Frequency



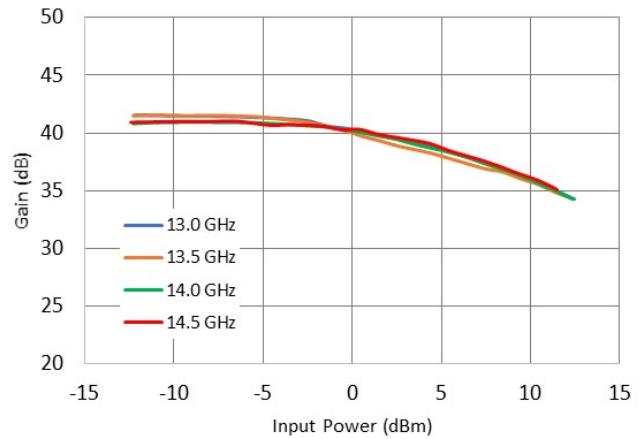
Gain (narrowband) vs. Frequency



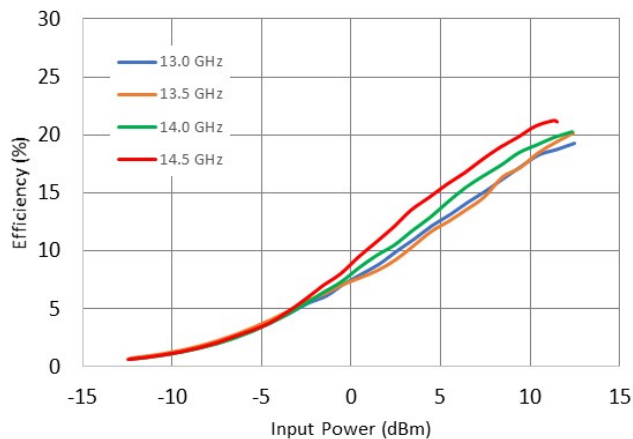
Output Power vs. Input Power vs. Frequency



Gain vs. Input Power vs. Frequency

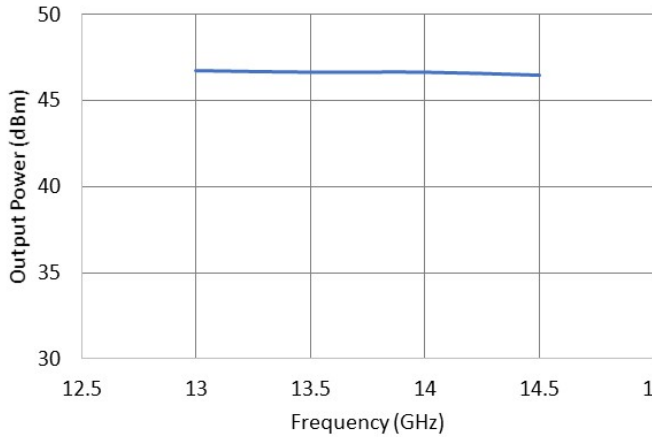


Efficiency vs. Input Power vs. Frequency

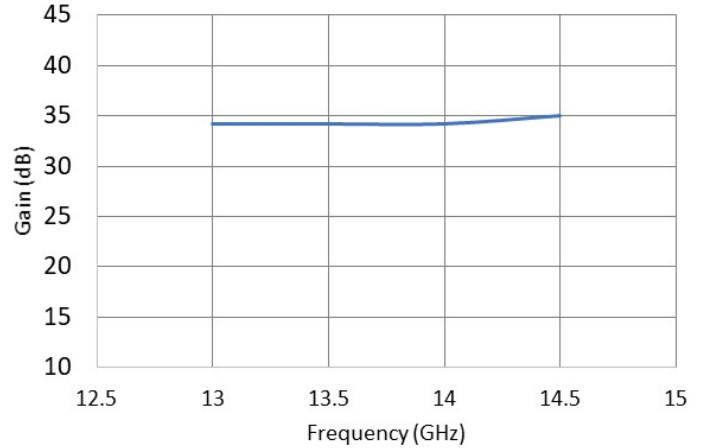


Test Condition:  $V_d = 24\text{ V}$ ,  $I_{dq} = 6\text{ A}$ , Base Plate Temp. =  $85\text{ }^\circ\text{C}$

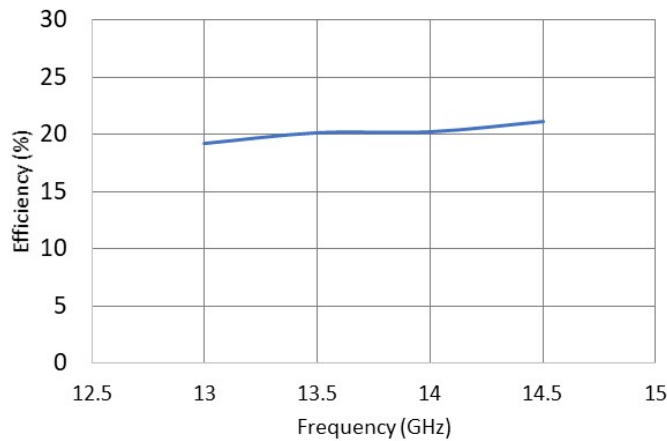
Output Power (at Psat) vs. Frequency



Gain (at Psat) vs. Frequency

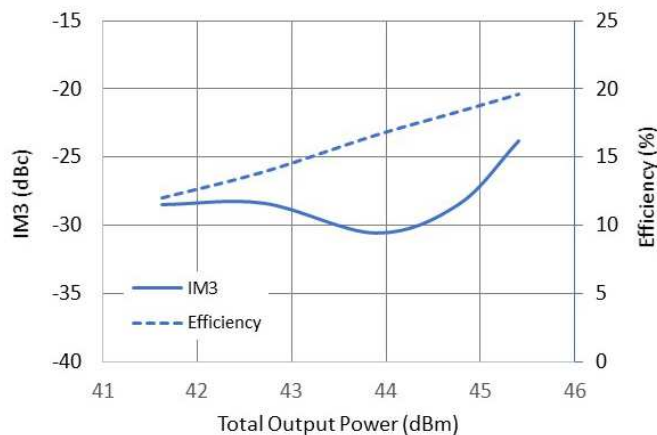


Efficiency (at Psat) vs. Frequency

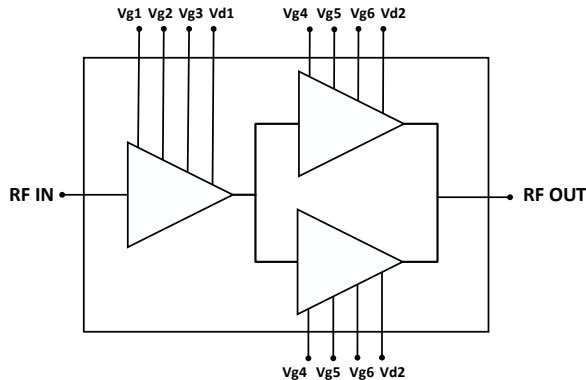


Test Condition:  $V_d = 24\text{ V}$ ,  $I_{dq} = 3.2\text{ A}$ , Base Plate Temp. =  $70\text{ }^\circ\text{C}$ , 2-Tone with 1 MHz Signal Spacing

IM3 and Efficiency vs. Output Power

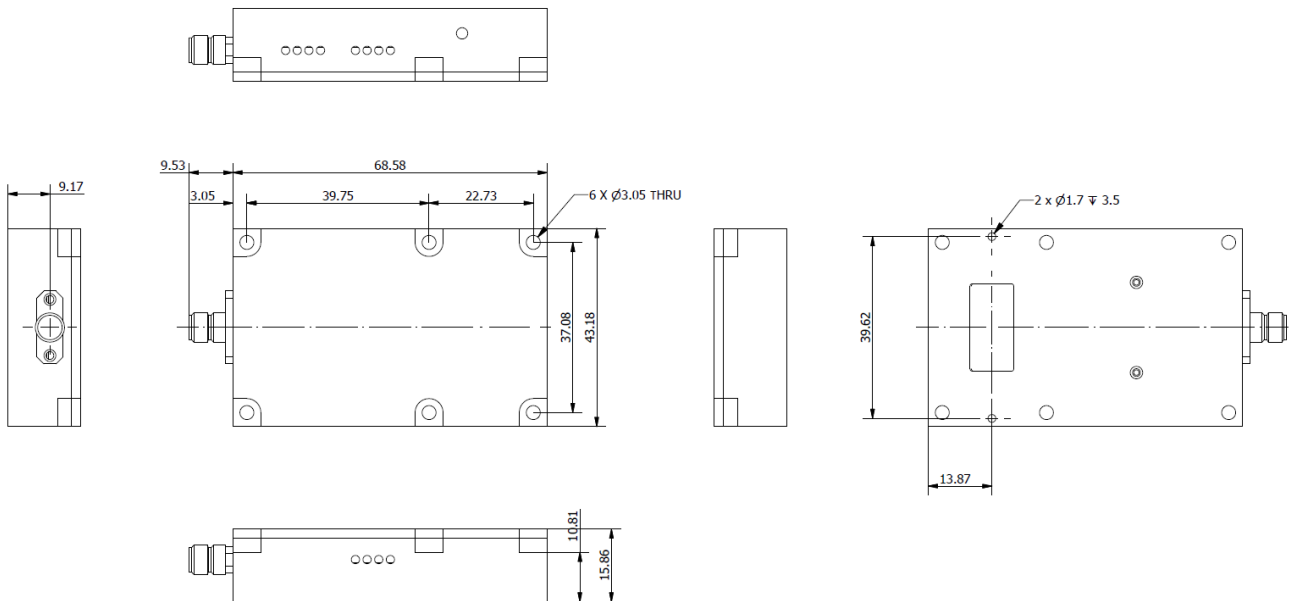


### Module Block Diagram



Bias arraignment shown is for maximum performance optimization. Module can be delivered with additional internal connections to simplify external connection.

### Dimensional Drawing (all dimensions in mm)



### Important Information

Nxbeam Inc. reserves the right to update and change without notice the characteristic data and other specifications as they apply to this document. Customers should obtain and verify the most recent product information before placing orders. Nxbeam Inc. assumes no responsibility or liability whatsoever for the use of the information contained herein.

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**ESD Sensitive Product**