# WP288P25015MH

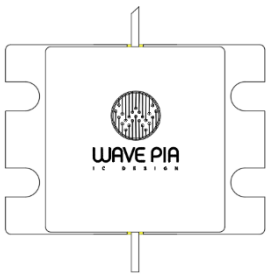
## X-Band Internally Matched GaN HEMT

### Product Features

- 50Ω Matched GaN HEMT for 8.0 to 8.5GHz
- 9.8dB Small Signal Gain
- 15W Minimum $P_{SAT}$
- 40% Drain Efficiency at $P_{SAT}$
- 28V Operation

### Applications

- Broadband Amplifiers
- Cellular Infrastructure
- Test Instrumentation
- Radar Application



Package Type: One-PKG

### Absolute Maximum Rating

| Parameter | Symbol | Rating | Units | Conditions |
|---|---|---|---|---|
| Drain-Source Voltage | $V_{DSS}$ | 160 | Volts | 25˚C |
| Gate-to-Source Voltage[3] | $V_{GS}$ | -10, +2 | Volts | 25˚C |
| Storage Temperature[3] | $T_{STG}$ | -65, +150 | ˚C | |
| Operating Junction Temperature[1,3] | $T_J$ | 225 | ˚C | |
| Maximum Forward Gate Current[3] | $I_{GMAX}$ | 30 | mA | 25˚C |
| Maximum Drain Current[2] | $I_{DMAX}$ | 1 | A | Id @ Vd = 10V, Vg = 1V |
| Soldering Temperature[3] | $T_S$ | 245 | ˚C | |

1. Continuous use at maximum temperature will affect MTTF.
2. Current limit for long term, reliable operation.
3. After additional updates.

### DC Characteristics[1] (Ta=25˚C)

| Parameter | Symbol | MIN | TYP | MAX | Units | Conditions |
|---|---|---|---|---|---|---|
| Gate Threshold Voltage | $V_{GS(th)}$ | | -3.0 | | $V_{DC}$ | VDS = 28V, ID = 1mA |
| Gate Quiescent Voltage | $V_{GS(Q)}$ | | -2.33 | | $V_{DC}$ | VDS = 28V, ID = 200mA |
| Saturated Drain Current[1] | $I_{DS}$ | | 1000 | | mA/mm | VDS = 10V, VGS = 1V |
| Drain-Source Breakdown Voltage | $V_{BR}$ | 160 | | | $V_{DC}$ | ID = 1mA/mm |

1. Scaled from PCM data.

### RF Characteristics (Ta = 25˚C, F0 = 8.25GHz, unless otherwise noted)

| Parameter | Symbol | MIN | TYP | MAX | Units | Conditions |
|---|---|---|---|---|---|---|
| $P_{SAT}$ Gain | $G_{PSAT}$ | | 7.4 | | dB | VDD = 28V, IDQ = 200mA CW |
| Saturated Output Power | $P_{SAT}$ | | 43.2 | | dBm | VDD = 28V, IDQ = 200mA CW |
| Drain Efficiency[1] | n | | 44.0 | | % | VDD = 28V, IDQ = 200mA CW |

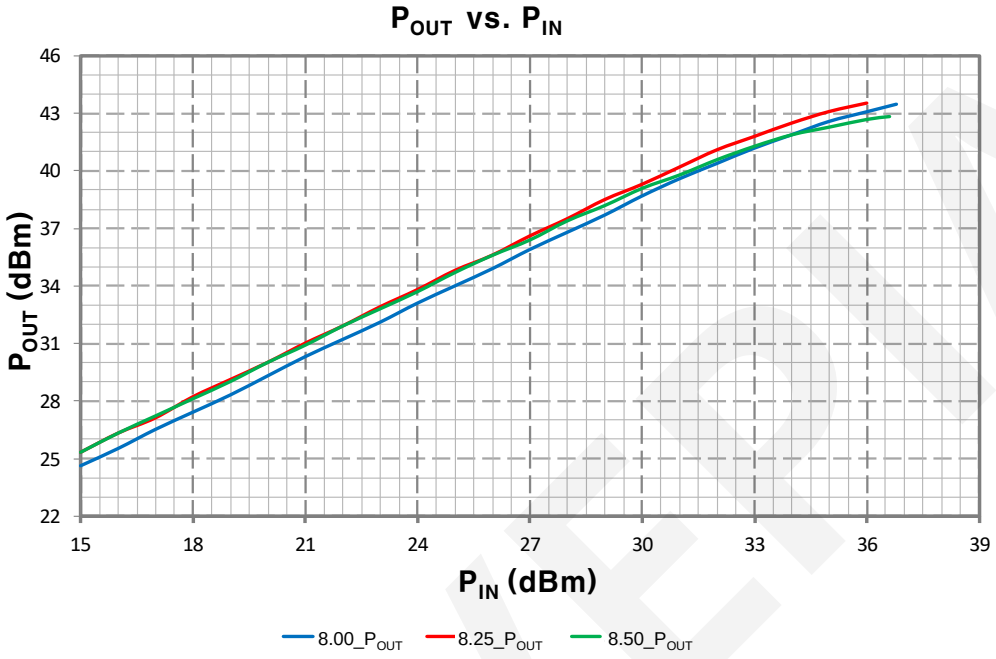
1. Drain Efficiency = $P_{OUT}$ / $P_{DC}$

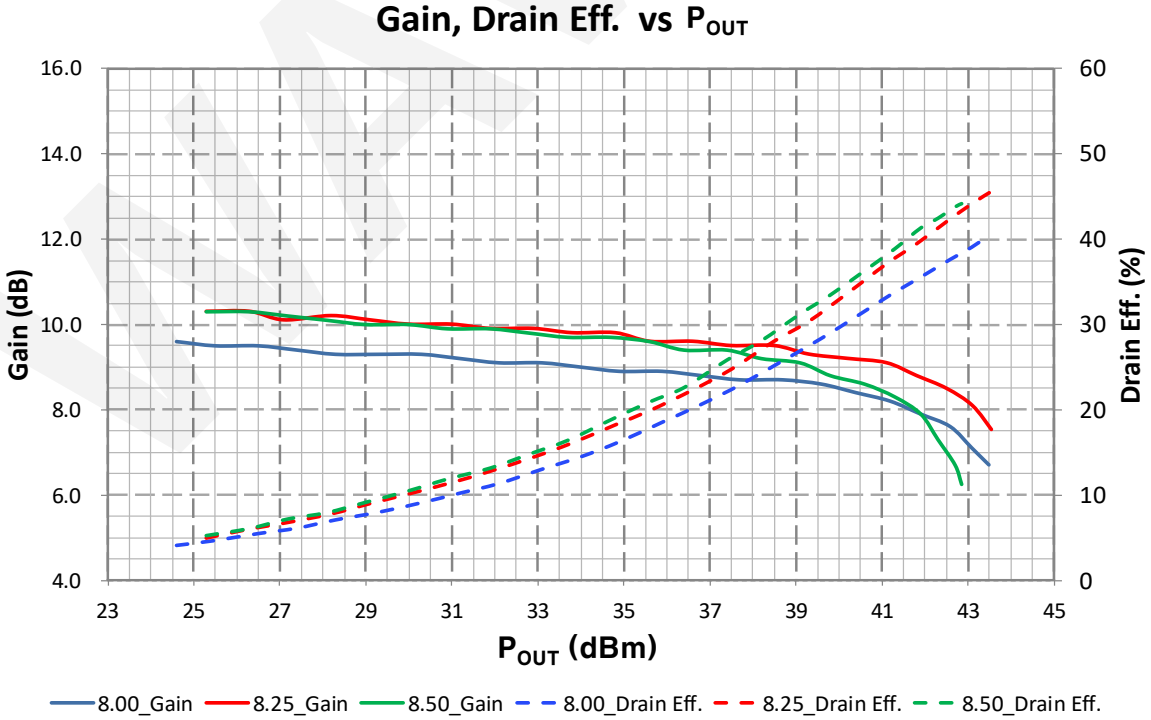




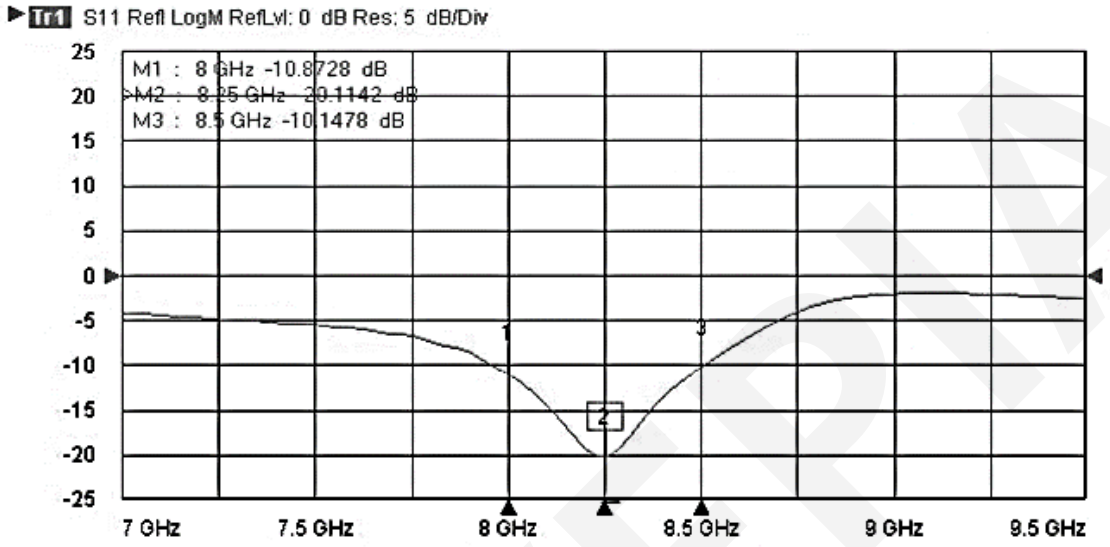
WAVEPIA Co., LTD.
sales@wavepia.com
http://www.wavepia.com

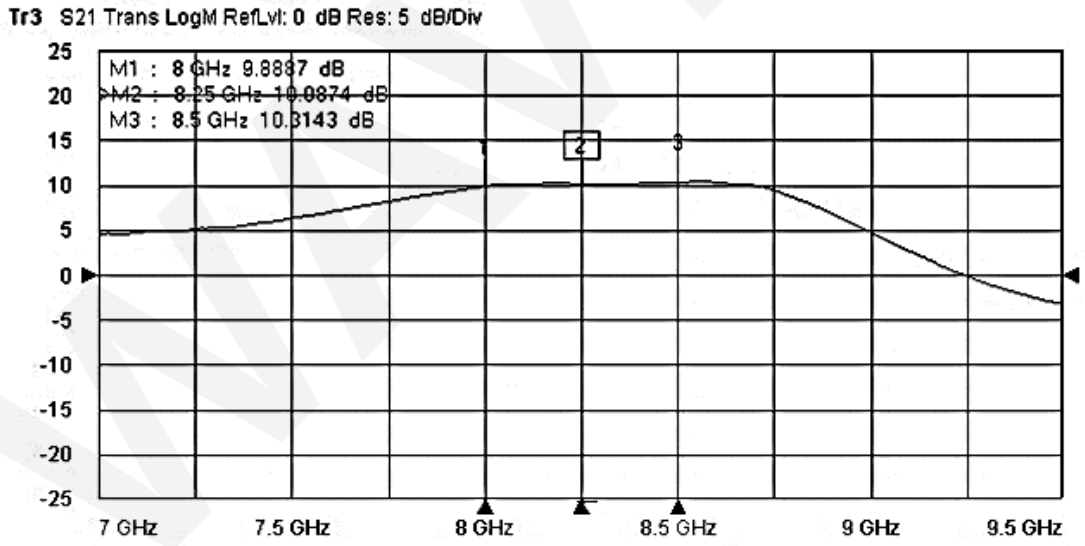
**CW Signal Performance (Ta=25℃, Measured in the test board amplifier circuit)**
VDD = 28V, IDQ = 200mA



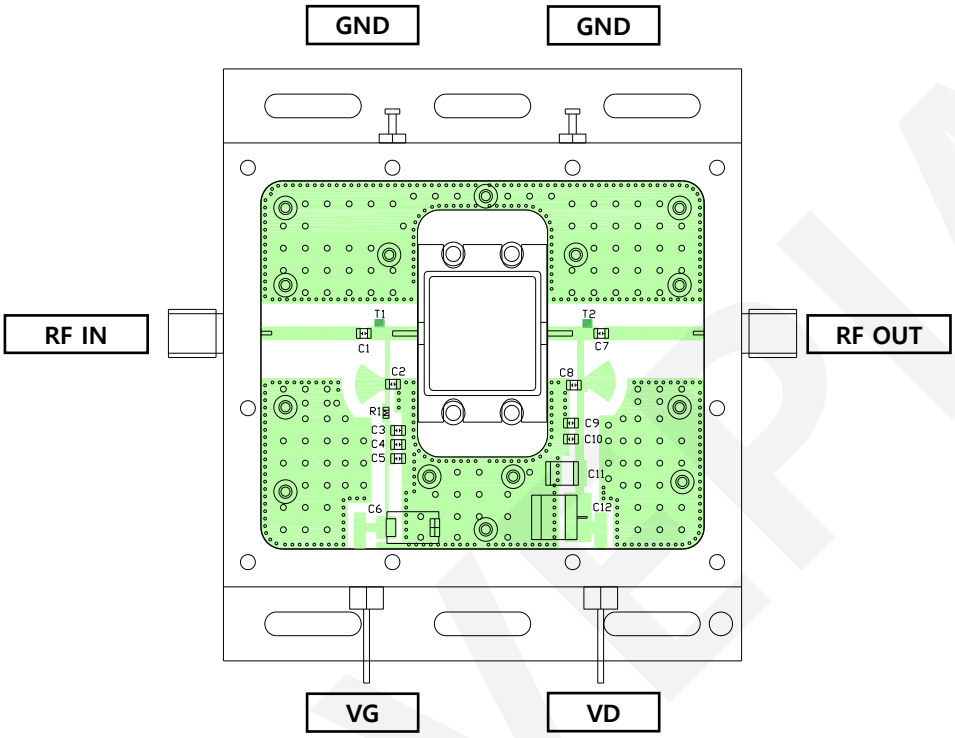
**Small Signal Performance (Ta=25℃, Measured in the test board amplifier circuit)**
VDD = 28V, IDQ = 200mA




| Frequency | S11 | S21 |
|---|---|---|
| 8.0GHz | -10.8 dB | 9.8 dB |
| 8.25GHz | -20.1 dB | 10.0 dB |
| 8.5GHz | -10.1 dB | 10.3 dB |

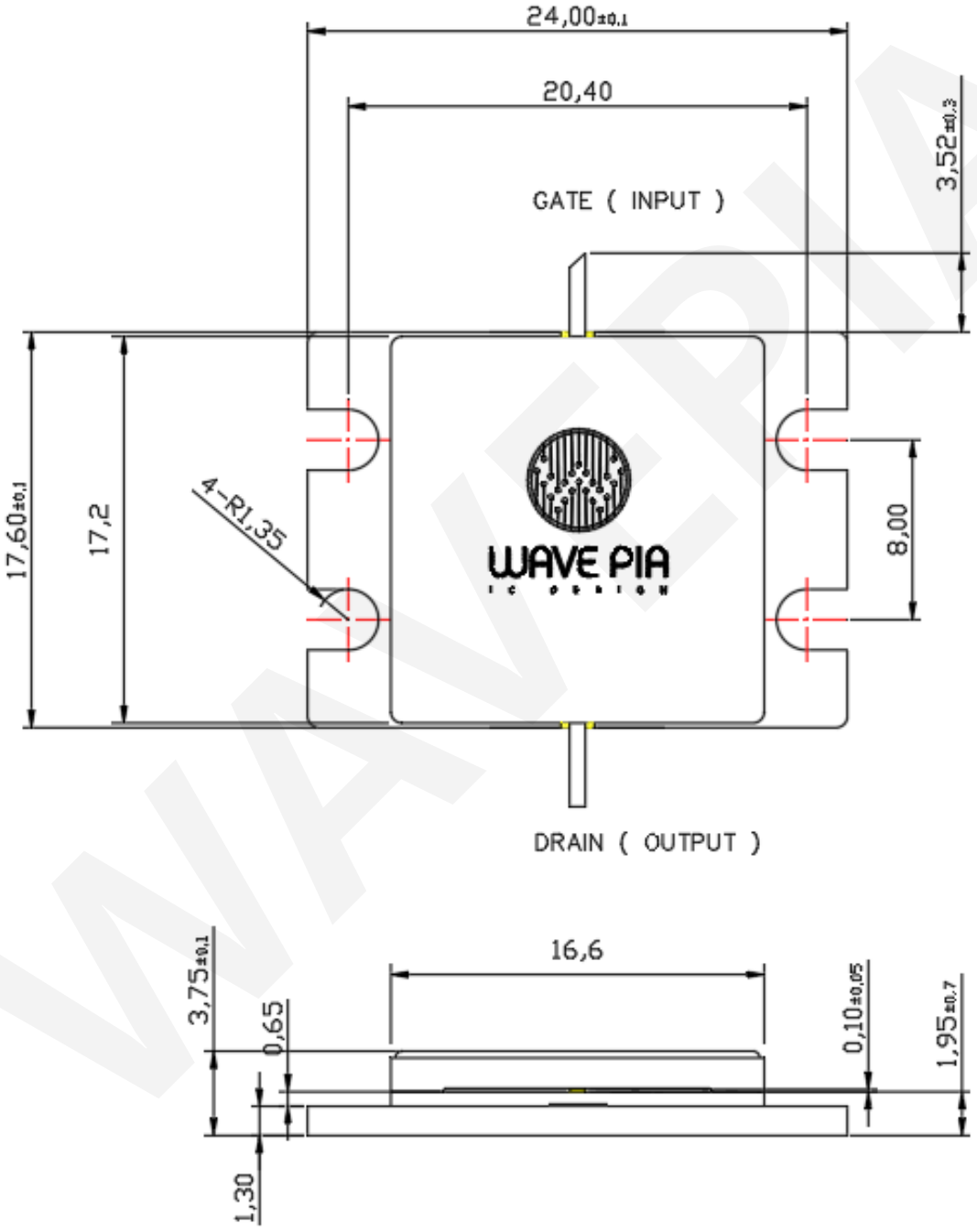
## Evaluation Board



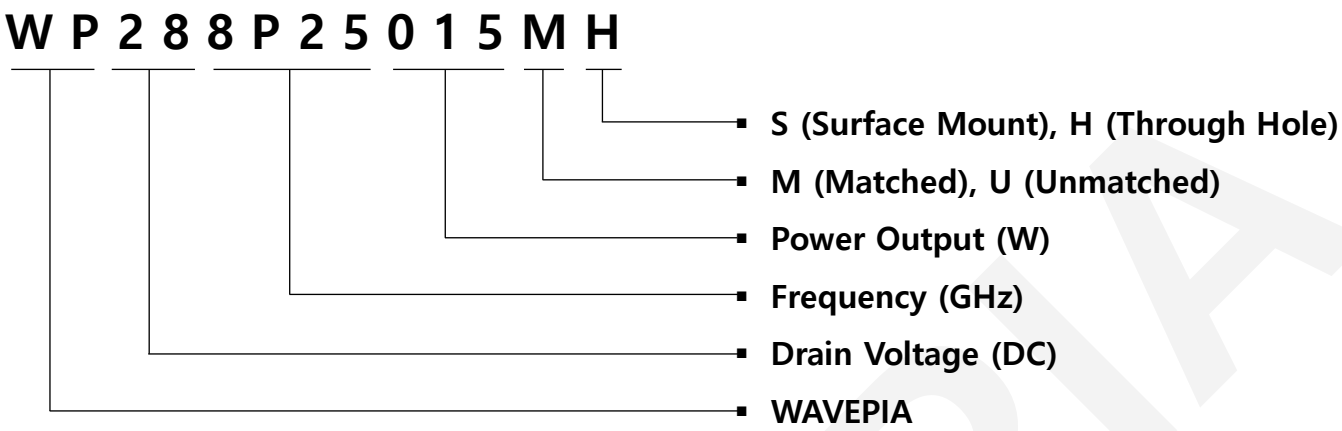

| Reference | Value | Description | Package | Manufacturer |
|---|---|---|---|---|
| C1,C7 | 2.0pF | High Q Capacitor | 2012 | Johanson |
| C2,C8 | 10pF | High Q Capacitor | 2012 | Johanson |
| C3 | 100pF | Ceramic Capacitor | 2012 | SAMSUNG |
| C4 | 10nF | Ceramic Capacitor | 2012 | SAMSUNG |
| C5 | 1uF | Ceramic Capacitor | 2012 | SAMSUNG |
| C6 | 47uF | Tantalium Capacitor | 7343 | Vishay |
| C9 | 100pF | High Q Capacitor | 2012 | Johanson |
| C10 | 220pF | High Q Capacitor | 2012 | Johanson |
| C11 | 470nF | High V Capacitor | 4532 | Johanson |
| C12 | 10uF | Tantalium Capacitor | 7360 | Vishay |
| R1 | 10Ω | Chip Resistor | 2012 | SAMSUNG |
| T1,T2 | | Tuning Point | | |
| Q1 | 15W | WP288P25015MH | One-PKG | WAVEPIA |
| PCB | | RO4350B 30mil 1oz | | Rogers |

**Product Dimension**

- Package Type: One-PKG
- Unit: mm



**Part Number System**




| Parameter | Value | Units |
|---|---|---|
| Drain Voltage | 28 | V |
| Lower Frequency | 8.0 | GHz |
| Upper Frequency | 8.5 | GHz |
| Output Power | 15 | W |
| Transistor Type | Matched | - |
| Package | Through Hole | - |