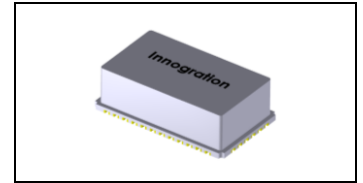




## 200-2500MHz, 15W, 28V GaN PA Module

### Description

The GMAH0225-16T6 is a 15-watt 2 stages, integrated Power Amplifier Module, designed for broad band applications, with frequencies from 200 to 2500 MHz. The module is 50  $\Omega$  input and requires minimal external components. The module offers a much smaller footprint than traditional discrete component solutions.



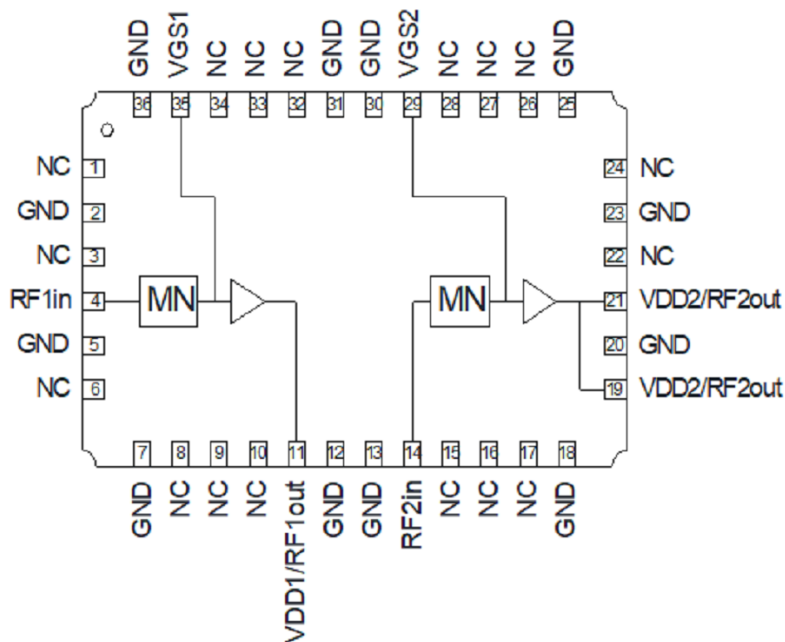
### Product Features

- Operating Frequency Range: 200 - 2500 MHz
- Operating Drain Voltage: 28V (up to 32V)
- 50  $\Omega$  Input
- Saturated Power:  $\geq 15W$
- Small signal gain.:  $\geq 21dB$
- ACPR at 4W:  $< -35dBc$
- Single Ended Device
- 6x10 mm surface mount air cavity package
- Support CW/pulsed or any other modulation signals
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

### Applications

- Tactical communication
- Wideband spectrum management
- LMR
- Benchtop Amplifier
- EMC test

### Pin Configuration and Description





**Table 1. Maximum Ratings**

| Rating                         | Symbol    | Value       | Unit |
|--------------------------------|-----------|-------------|------|
| Drain--Source Voltage          | $V_{DS}$  | 150         | Vdc  |
| Gate--Source Voltage           | $V_{GS}$  | -10 to +2   | Vdc  |
| Operating Voltage              | $V_{DD}$  | +32         | Vdc  |
| Input power                    | $P_{in}$  | 27.5        | dBm  |
| Storage Temperature Range      | $T_{stg}$ | -65 to +150 | °C   |
| Case Operating Temperature     | $T_c$     | +150        | °C   |
| Operating Junction Temperature | $T_j$     | +225        | °C   |

**Table 2. Thermal Characteristics**

| Characteristic   | Symbol          | Value | Unit |
|--|-----------------|-------|------|
| Thermal Resistance, Junction to Case<br>$T_c=87^\circ\text{C}$ , $T_j=175^\circ\text{C}$ , DC test | $R_{\theta JC}$ | 3.5   | °C/W |

**Table 3. ESD Protection Characteristics**

| Test Methodology   | Class |
|--|-------|
| Human Body Model(HBM) (JEDEC Standard JS-001-2012)       | TBD   |
| Charged Device Model (CDM) (JEDEC Standard JESD22-C101F) | TBD   |

**Table 4. Electrical Characteristics**

| Parameter                             | Condition            | Min | Typ | Max  | Unit |
|---------------------------------------|----------------------|-----|-----|------|------|
| Frequency Range                       |                      | 200 |     | 2500 | MHz  |
| Power Gain @ $P_{out}=4\text{W Avg.}$ | Driver + Final Stage | 18  |     |      | dB   |
| $P_{SAT}$                             |                      | 15  |     | 20   | W    |
| Drain Efficiency @ $P_{SAT}$          |                      | 30  | 40  |      | %    |

Unless otherwise noted:  $T_A = 25^\circ\text{C}$ ,  $V_{DD} = 28\text{ V}$ , Pulse Width=100 us, Duty cycle=10%

**Load Mismatch of per Section (On Test Fixture, 50 ohm system):**  $V_{DD} = 28\text{V}$ ,  $f = 2.5\text{ GHz}$

|  |                       |
|--|-----------------------|
| VSWR 10:1 at 15W pulse CW Output Power | No Device Degradation |
|--|-----------------------|

Reference Circuit of Test Fixture Assembly Diagram

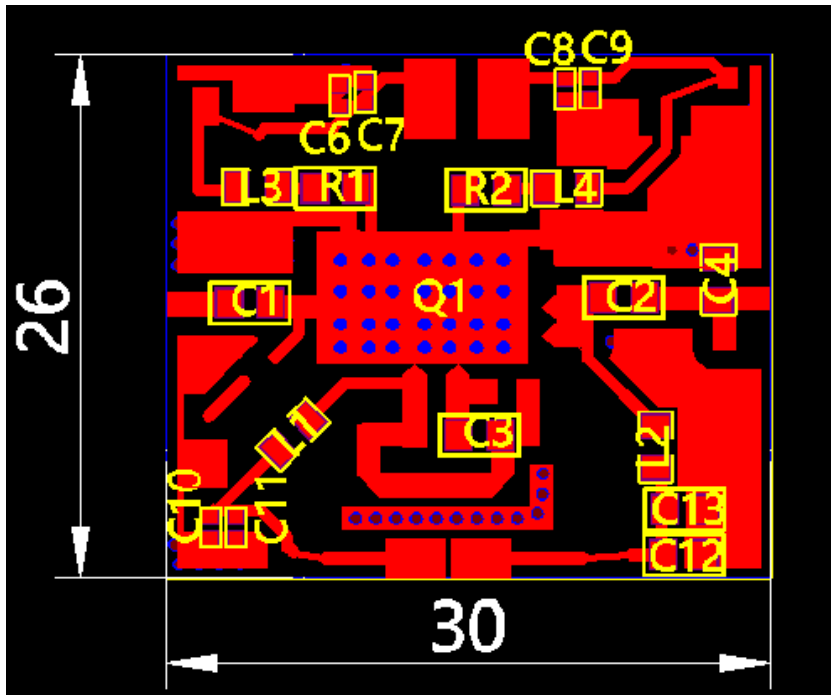


Figure 1. Test Circuit Component Layout

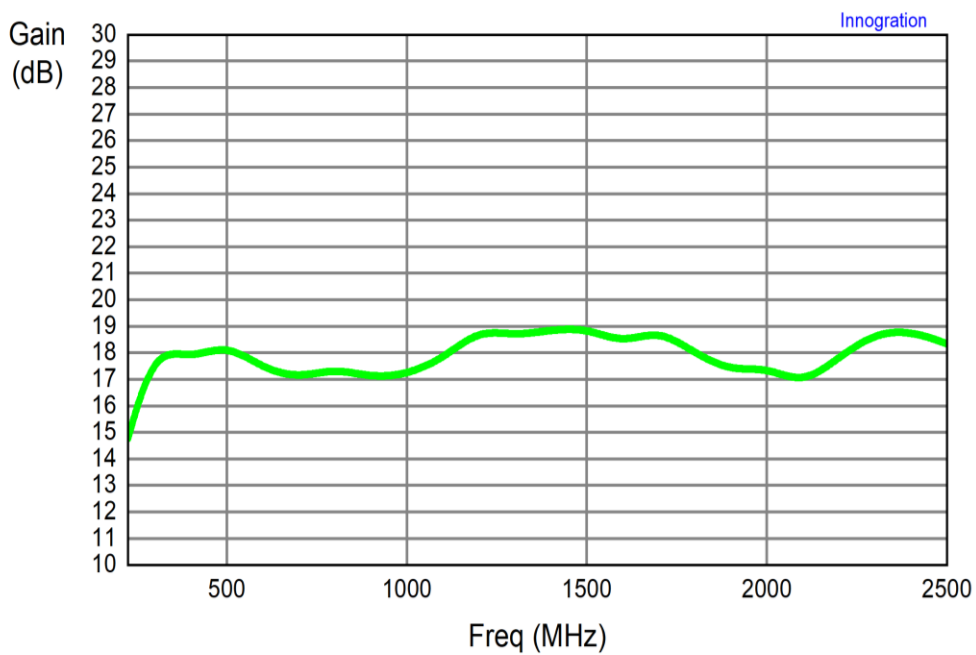
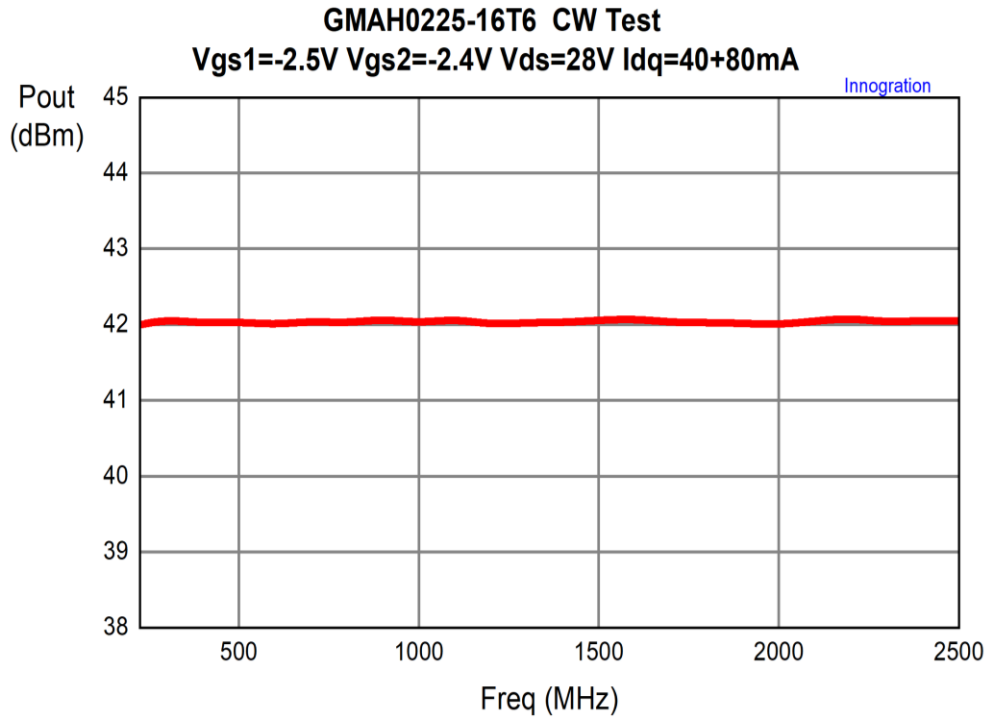
Table 5. Test Circuit Component Designations and Values

| Component     | Description        | Suggested Manufacturer                       |
|---------------|--------------------|--|
| C1            | 30 pF              |  |
| C2            | 56 pF              |  |
| C3            | 100 pF             |  |
| C4            | 1.0 pF             |  |
| C6 C9 C10 C13 | 68 pF              |  |
| C7 C8 C11 C12 | 1 uF               | 0805   |
| L1            | 470 nH             | 0805 Open high frequency inductance supplier |
| L2            | 422 nH             | 5910 Open high frequency inductance supplier |
| L3 L4         | 4.7 nH             | LQW18AN4N7D00D                               |
| R1 R2         | 22 Ohm             | Chip Resistor 0603                           |
| PCB           | 20Mil Rogers 4350B |  |



## TYPICAL CHARACTERISTICS

Figure 2. Psat and Efficiency, Power gain vs. Frequency



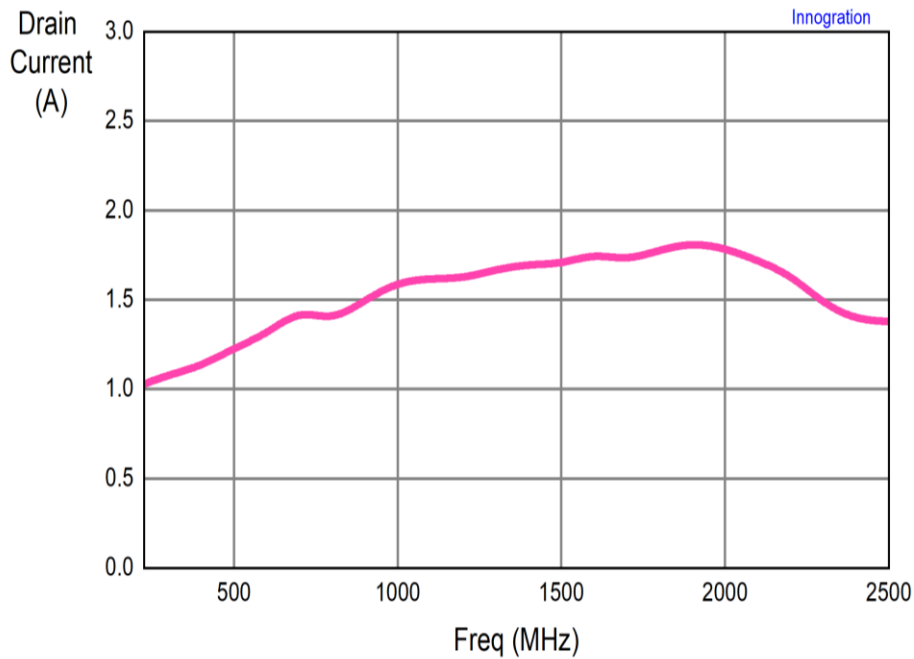
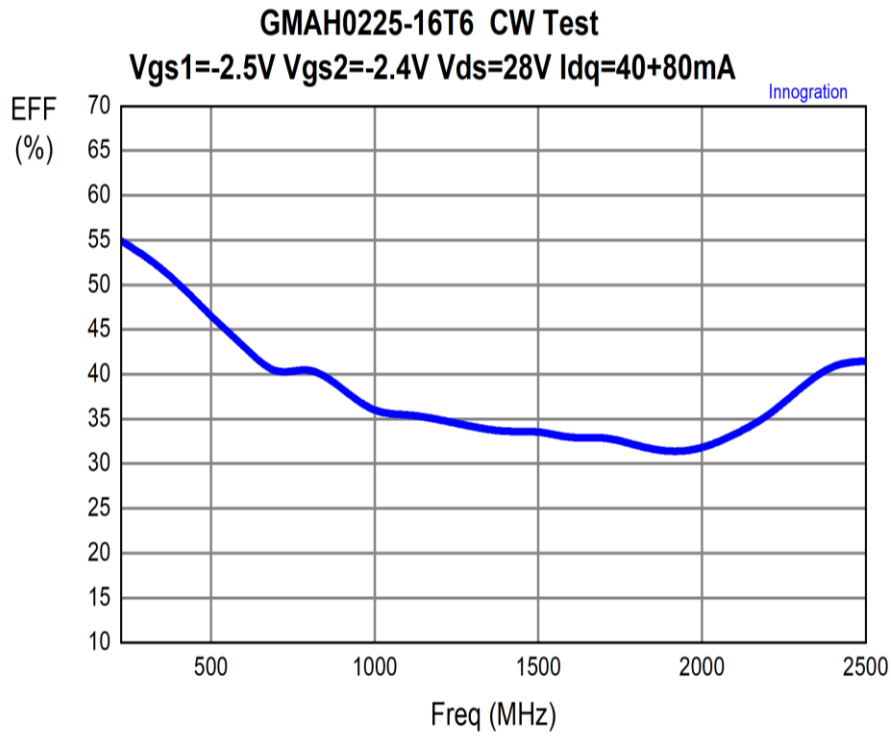
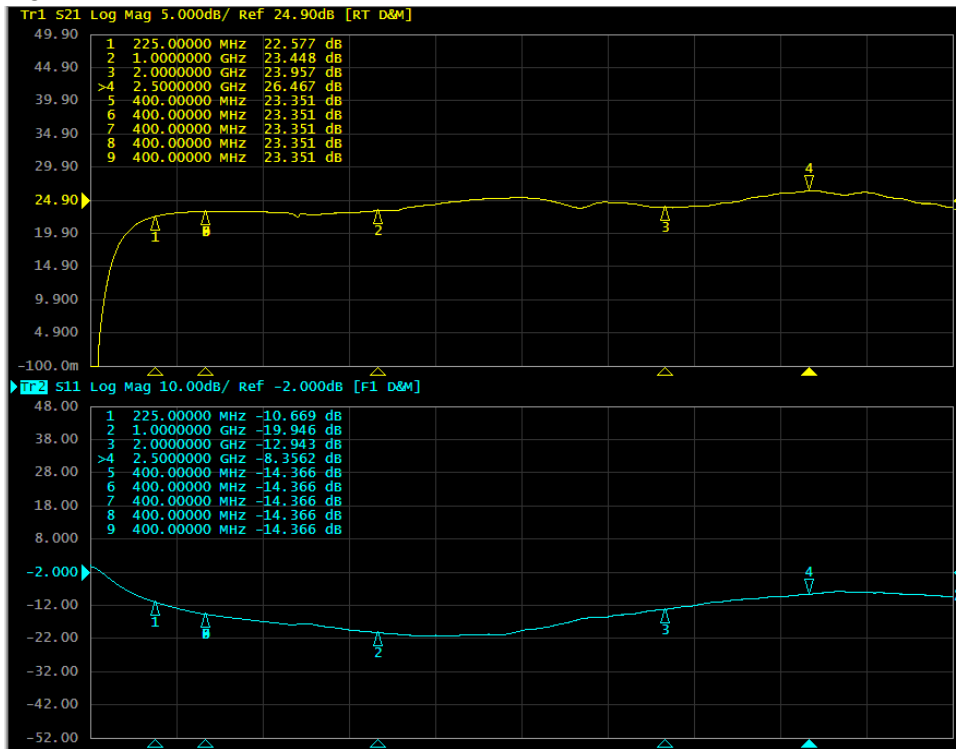




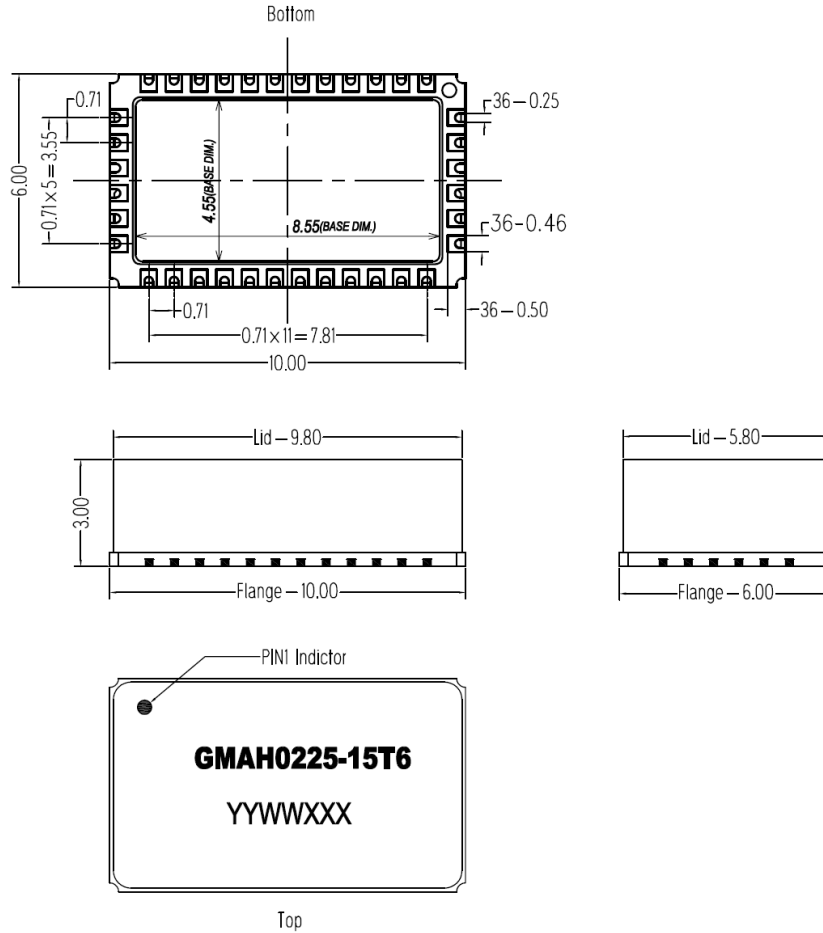
Figure 3. Network Analyzer output S11/S21

Vgs1=-2.5 V; Vgs2=-2.4 V Vds=28V; Idq =40mA+80mA input power= 0 dBm



## Package Dimensions

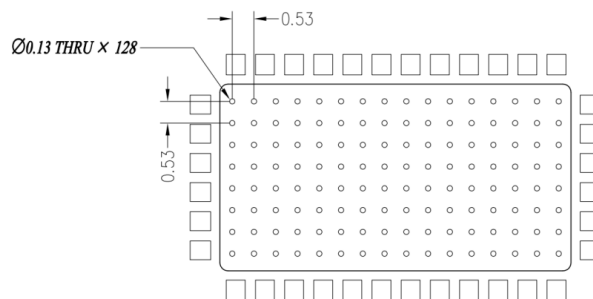
### 10\*6 Ceramic QFN Package



#### Notes:

1. All dimensions are in mm;
2. The tolerances unless specified are  $\pm 0.2$  mm.

## Mounting Footprint Pattern



#### Notes:

1. All dimensions are in mm;
2. Vias are required under the backside paddle of this device for proper RF/DC grounding and thermal dissipation. ALL vias are PTH to ground.



## Revision history

Table 6. Document revision history

| Date      | Revision | Datasheet Status   |
|-----------|----------|--|
| 2026/4/27 | Rev 1.0  | <b>Preliminary Datasheet ,modified from GMAH0225—15T6</b><br>-Specify the maximum input power<br>-Lower Vds upper limits to 32V for CW operation |
|           |          |  |
|           |          |  |

Application data based on JF-26-13

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