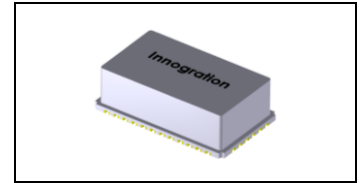




200-2500MHz, 15W, 28V GaN PA Module

Description

The GMAH0225-15T6 is a 15-watt peak power, integrated Power Amplifier Module, designed for broad band applications, with frequencies from 200 to 2500 MHz. The module is 50 Ω 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 36V)
- 50 Ω Input
- Gain at 10 W avg.: ≥ 22 dB
- Saturated Power: ≥ 15 W
- 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

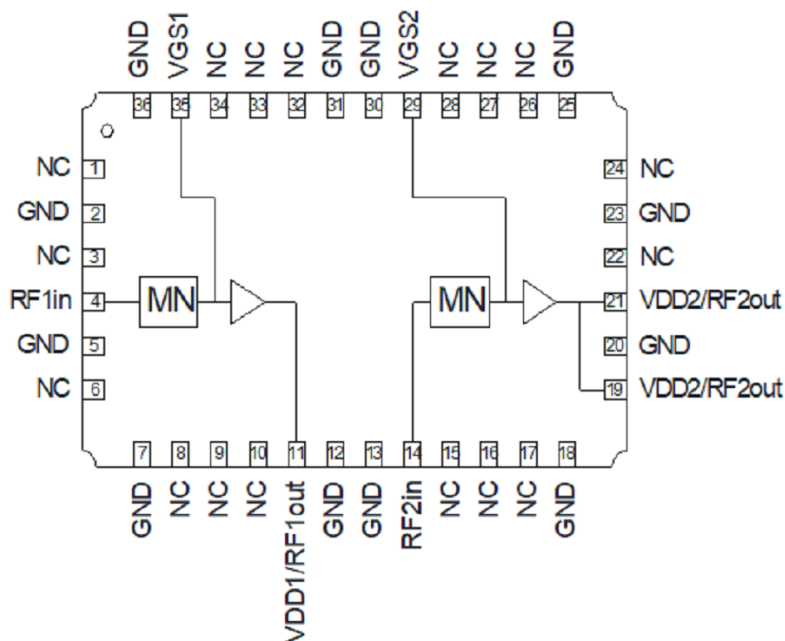




Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DS}	150	Vdc
Gate--Source Voltage	V_{GS}	-10 to +2	Vdc
Operating Voltage	V_{DD}	+36	Vdc
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 $T_c=87^\circ\text{C}$, $T_j=175^\circ\text{C}$, 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		100		2600	MHz
Power Gain @ $P_{out}=10\text{W Avg.}$	Driver + Final Stage		22		dB
P_{SAT}		15		20	W
Drain Efficiency @ P_{SAT}		35	55		%

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): $V_{DD}=30\text{ V}$, $f = 2.6\text{ GHz}$

VSWR 10:1 at P3dB pulse CW Output Power	No Device Degradation
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Reference Circuit of Test Fixture Assembly Diagram

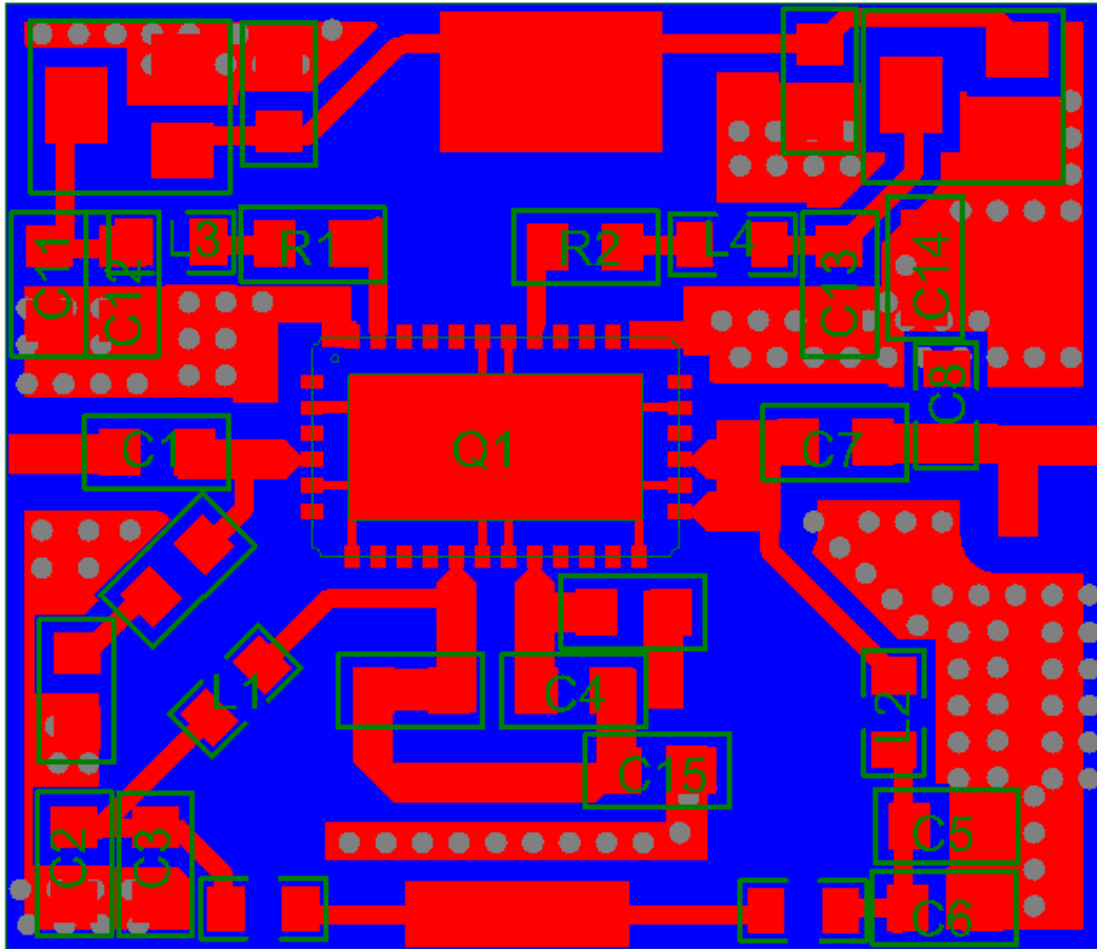


Figure 1. Test Circuit Component Layout

Table 5. Test Circuit Component Designations and Values

Component	Description	Suggested Manufacturer
C1	30pF	DLC75D
C2,C5,C12,C13	100pF	DLC75D
C3,C6,C11,C14	10uF	
C4,C7	100pF	ATC600S
C8,C15	1.5pF	DLC75D
R1,R2	Chip Resistor,20ohm	0603
L1	330nH	0603
L2	100nH	
PCB	RO4350B 20mils	Rogers



TYPICAL CHARACTERISTICS

Figure 2. Psat and Efficiency vs. Frequency

Test Condition: Pulse CW, Pulse width=100us, Duty Cycle=10%

Driver: VDS=30V ,Vgs=-2.65V Idq=40mA Final: VDS=30V Vgs=-2.75V Idq=100mA

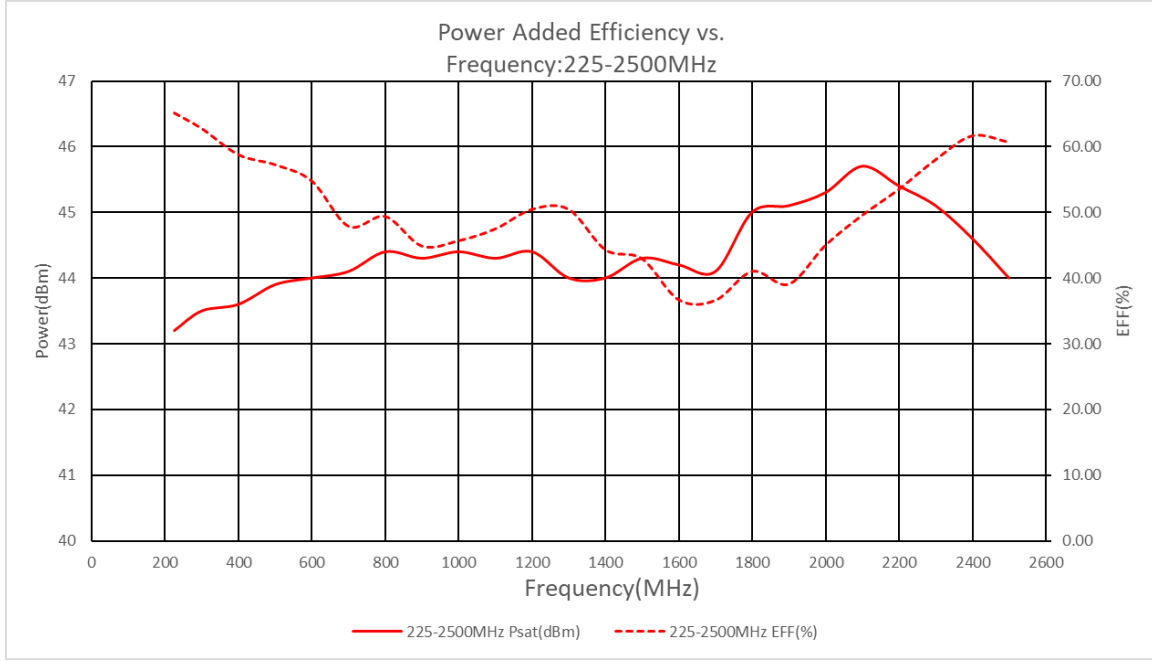
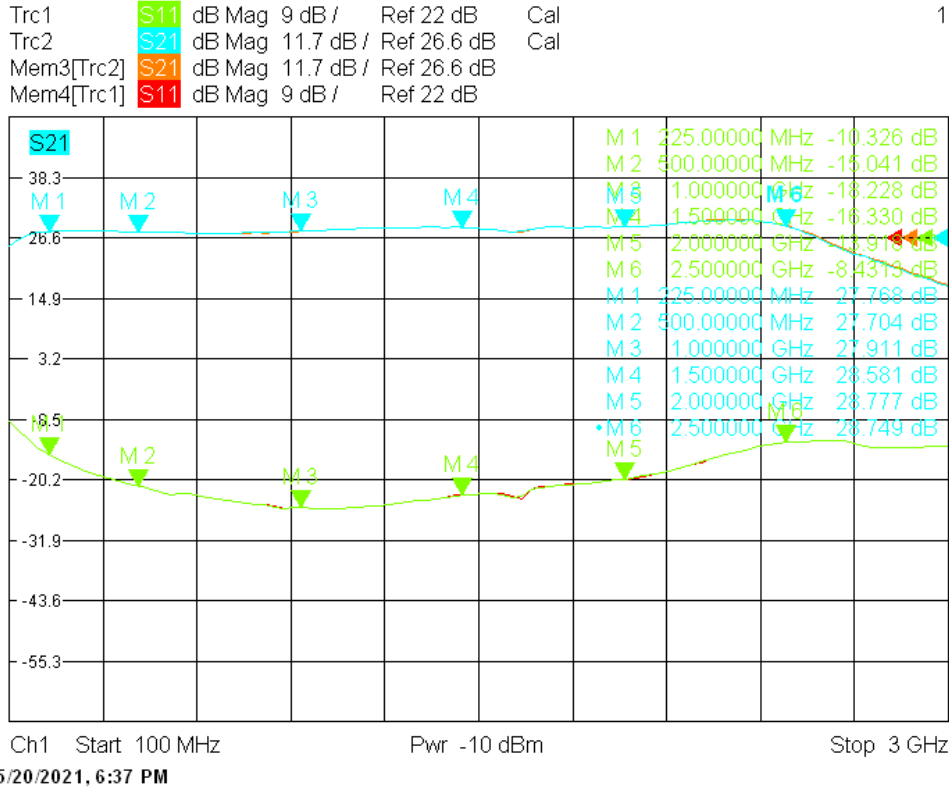


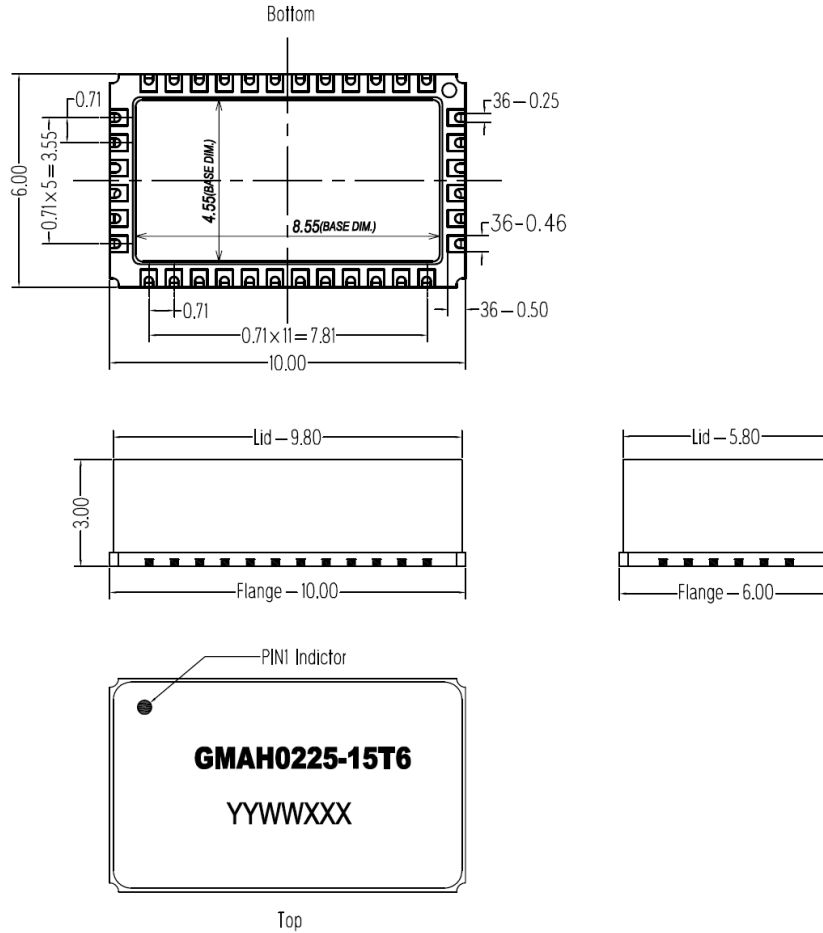
Figure 3. Network Analyzer output S11/S21 Driver: VDS=30V ,Vgs=-2.65V Idq=40mA/Final: VDS=30V Vgs=-2.75V Idq=100mA





Package Dimensions

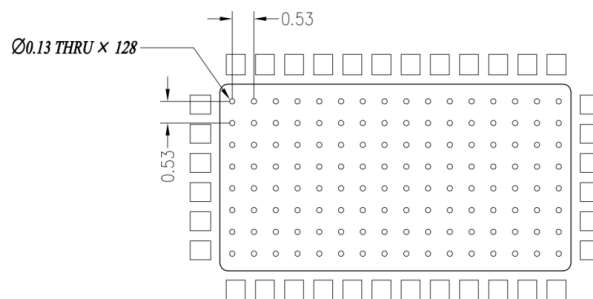
10*6 Ceramic QFN Package



Notes:

- 1. All dimensions are in mm;
- 2. The tolerances unless specified are ±0.2mm.

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
2021/2/20	Rev 1.0	Preliminary Datasheet
2021/5/20	Rev 1.1	PCB info simplified according to ZL-21-11
2022/3/15	Rev 1.2	Package outline update

Application data based on ZL-21-11

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