



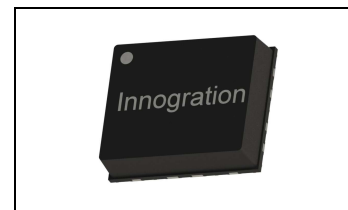
## 2.0-6.0GHz, 10W, 28V GaN Fully matched PA Module

### Description

The GMAH2060-10C9 is a 10-watt ,single stage integrated Power Amplifier Module, designed for broad band applications, with frequencies from 2 to 6GHz. The module is 50  $\Omega$  input/output matched and requires minimal external components. It can work at higher voltage like 32V with increased power capability

The module implements wideband power amplifier in form of multi chips, housed in cost effective plastic open cavity package, offers a much lower cost than traditional MMIC solutions.

V<sub>ds</sub>=28V, I<sub>dq</sub>=25mA,



Pulse Power (50us, 20%)					
Freq(MHz)	P-1(dBm)	P-1Gain(dB)	P-3(dBm)	P-3(W)	EFF (%)
2000	40.10	12.6	41.04	12.7	55.5
3000	40.89	14.5	41.76	15.0	57.7
4000	40.27	14.8	42.06	16.1	52.7
5000	40.45	12.8	41.63	14.5	63.5
6000	38.64	12.2	40.00	10.0	60.6

CW Power					
Freq(MHz)	P-1(dBm)	P-1Gain(dB)	P-3(dBm)	P-3(W)	EFF (%)
2000	39.49	12.5	40.63	11.6	53.0
3000	40.18	14.1	41.15	13.0	53.3
4000	39.67	14.3	41.63	14.5	50.4
5000	39.35	12.5	40.92	12.3	57.3
6000	37.80	12.1	39.66	9.2	56.0

### Product Features

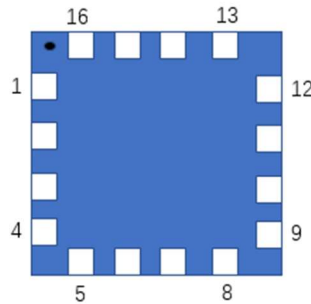
- Operating Frequency Range: 2-6GHz
- Operating Drain Voltage: +28 V
- 50  $\Omega$  Input/Output
- Psat $\geq$ 40 dBm
- Small signal gain:>12dB, Power gain:>9dB
- Minimum efficiency:>45%
- 12x10 mm Surface Mount Package
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

### Applications

- Ultra Broadband Amplifiers
- Fiber Drivers
- Test Instrumentation
- EMC Amplifier Drivers
- 2-way Radios



## Pin Configuration and Description (Top view)



Pin No.	Symbol	Description
4	RF IN	RF Input
9	RF OUT	RF Output
6	V <sub>gs</sub>	Gate bias
7	V <sub>dd</sub>	Drain bias
Others	NC	No connection
Package Base	GND	DC/RF Ground. Proposed to be soldered to heatsink plane directly for the best CW thermal and RF performance. Soldered through high density vias or copper coin also allowed ,but will result in excessive junction temperatures and different RF performance

**Table 1. Maximum Ratings**

Rating	Symbol	Value	Unit
Drain--Source Voltage	V <sub>DSS</sub>	150	Vdc
Gate--Source Voltage	V <sub>GS</sub>	-10 to +2	Vdc
Operating Voltage	V <sub>DD</sub>	+36	Vdc
Storage Temperature Range	T <sub>stg</sub>	-65 to +150	°C
Case Operating Temperature	T <sub>c</sub>	+150	°C
Operating Junction Temperature	T <sub>j</sub>	+225	°C

**Table 2. Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case T <sub>c</sub> = 87°C, T <sub>j</sub> =175°C, DC test	R <sub>θJC</sub>	6	°C/W

**Table 3. Electrical Characteristics**

Parameter	Condition	Min	Typ	Max	Unit
Frequency Range		2000		6000	MHz
Power Gain @ P <sub>sat</sub>		9			dB
P <sub>SAT</sub>	Pulse	39	40		dBm
Drain Efficiency @ P <sub>SAT</sub>		45			%

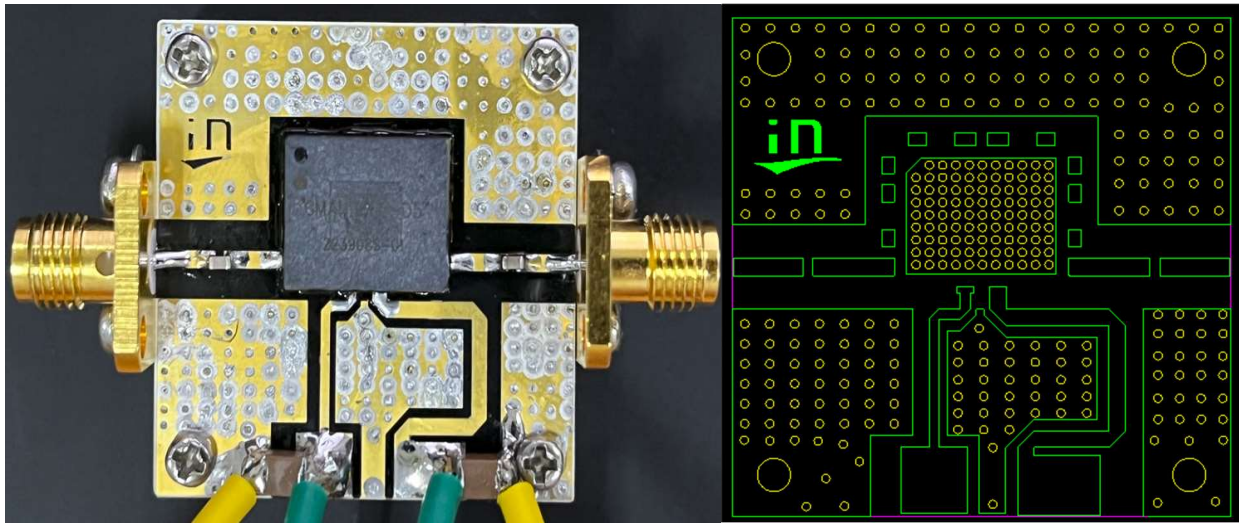
Unless otherwise noted: T<sub>A</sub> = 25°C, V<sub>DD</sub> =28 V, Pulse Width=50 us, Duty cycle=20%

**Load Mismatch of per Section (On Test Fixture, 50 ohm system):** V<sub>DD</sub> =28 V, I<sub>DQ</sub> =25 mA, f = 3.5 GHz

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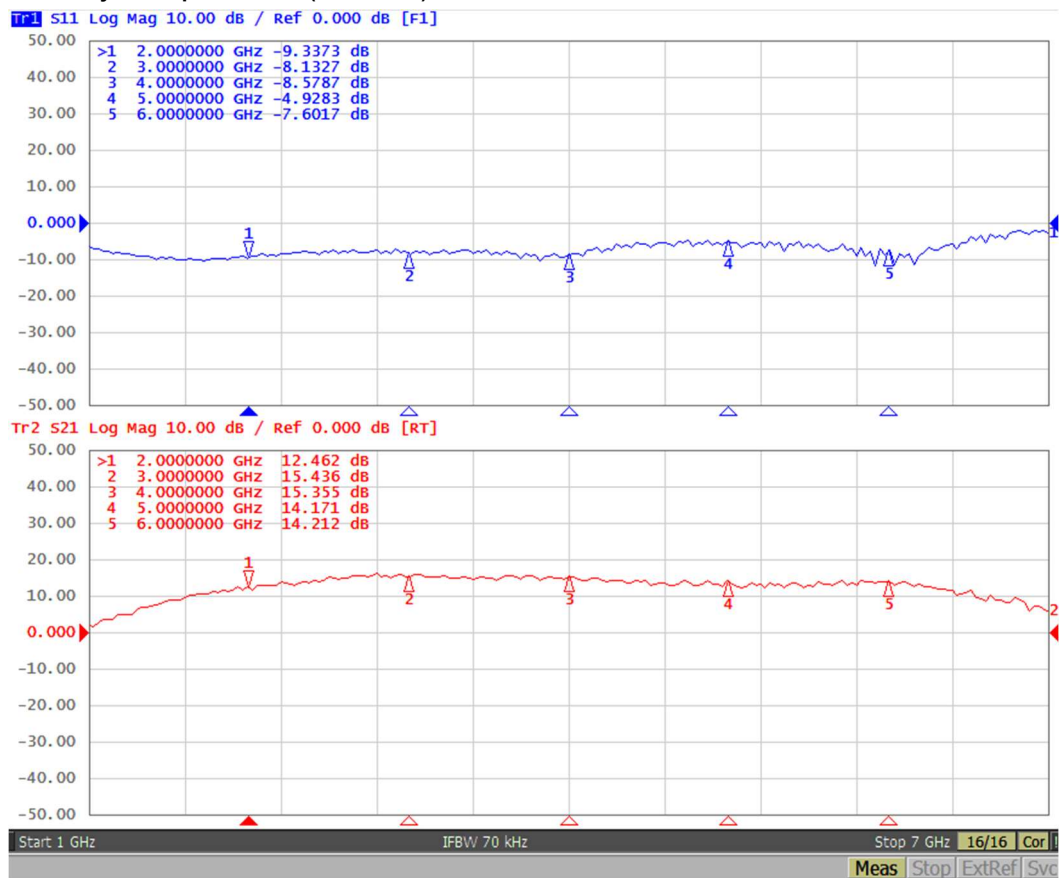
## Reference Circuit of Test Fixture Assembly Diagram

Figure 1. Test Circuit Component Layout

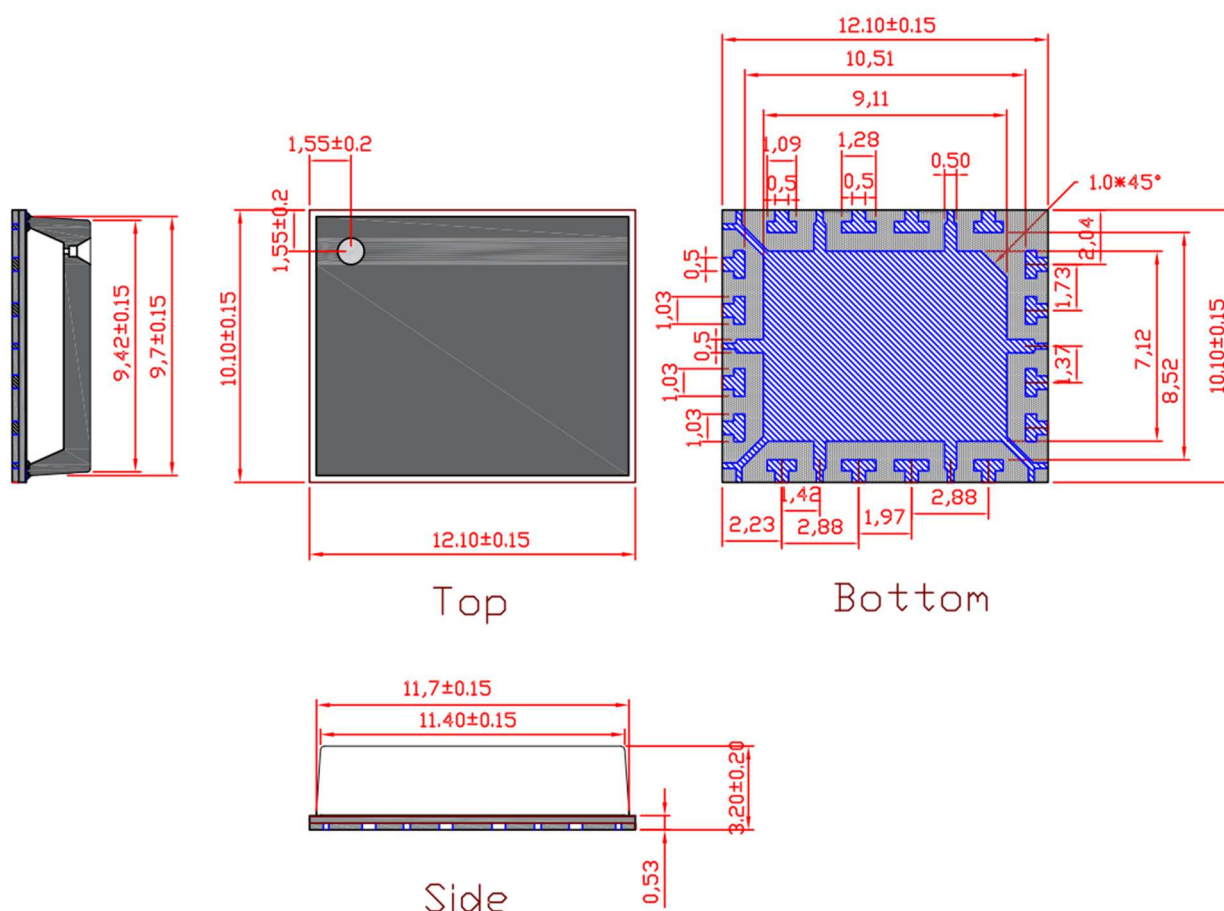


## TYPICAL CHARACTERISTICS

Figure 2. Network analyzer output S11/S21 (Pin=0dBm)



### Package Dimensions (Unit:mm)



## Revision history

Table 6. Document revision history

Date	Revision	Datasheet Status
2022/9/22	Rev 1.0	Preliminary Datasheet
2022/10/26	Rev 2.0	Update based on new die B10
2023/1/31	Rev 2.1	Update the package drawing to be more understandable for soldering

**Application data based on HJ-22-06**

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