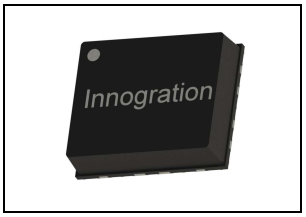
3.0-8.0GHz, 10W, 28V GaN Fully matched PA Module



Description

The GMAH3080-10C9 is a 10-watt ,single stage integrated Power Amplifier Module, designed for broad band applications, with frequencies from 3 to 8GHz. The module is 50 Ω input/output matched and requires minimal external components. It can work at higher voltage like 32V with increased power capability. This module can support CW and pulsed CW, and any other format modulation signal.

Within extended band from 2 to 8GHz, it can still deliver more than 6W.

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.

Vds= 28V, Vgs=-2.37V,Idq=25mA					
Pulse CW, 50us, 20%					
Freq(MHz)	P-1(dBm)	P-1Gain(dB)	P-3(dBm)	P-3(W)	Eff (%)
3000	39.41	12.1	40.56	11.4	50.4
3200	39.63	12.4	40.79	12.0	55.6
3400	40.14	12.1	41.00	12.6	58.2
3600	40.30	12.5	41.00	12.6	56.0
3800	40.09	12.1	40.96	12.5	48.1
4000	39.59	11.7	40.72	11.8	39.7
4200	38.80	11.8	40.25	10.6	39.4
4400	38.68	12.2	40.36	10.9	36.0
4600	38.71	12.1	40.67	11.7	36.2
4800	38.46	12.5	40.57	11.4	37.4
5000	38.72	13.6	41.03	12.7	41.7
5200	39.35	13.8	41.28	13.4	45.4
5400	39.71	13.4	41.54	14.3	50.7
5600	39.94	13.6	41.54	14.3	54.1
5800	40.05	11.9	41.45	14.0	56.2
6000	40.23	11.3	41.36	13.7	55.4
6200	40.06	11.4	41.51	14.2	56.6
6400	40.27	10.5	41.43	13.9	53.6
6600	39.88	9.5	41.09	12.9	48.3
6800	39.78	9.4	40.89	12.3	44.4
7000	39.42	9.5	40.60	11.5	38.5
7200	39.51	9.7	40.80	12.0	39.0
7400	39.61	10.8	40.86	12.2	39.3
7600	39.56	11.3	40.78	12.0	38.1
7800	39.58	10.9	40.93	12.4	43.7
8000	39.09	9.6	40.37	10.8	41.2

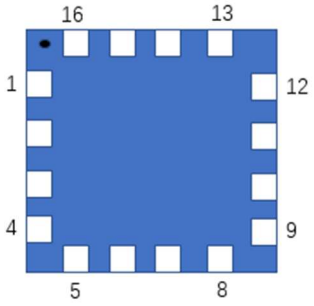
Product Features

- Operating Frequency Range: 3-8GHz
- Operating Drain Voltage: +28 V (Up to 32V)
- 50 Ω Input/Output
- Psat≥40 dBm
- Power gain:>9dB
- Minimum efficiency:>35%
- 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	Vgs	Gate bias
7	Vdd	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_{DSS}	150	Vdc
Gate--Source Voltage	V_{GS}	-10 to +2	Vdc
Operating Voltage	V_{DD}	+36	Vdc
Storage Temperature Range	Tstg	-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= 85°C, DC test	$R_{\theta JC}$	6	°C/W

Table 3. Electrical Characteristics

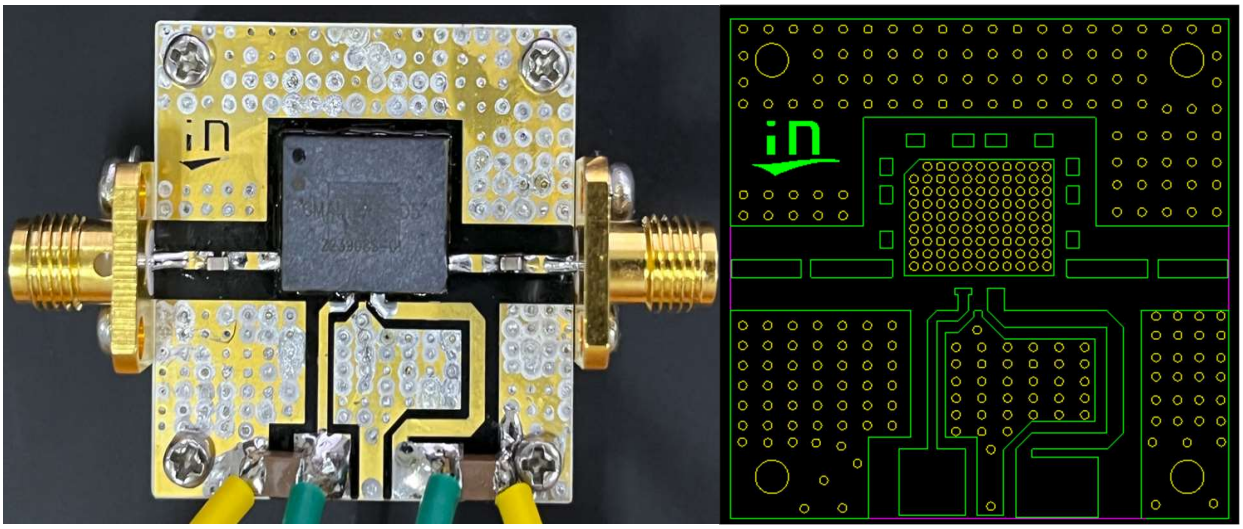
Parameter	Condition	Min	Typ	Max	Unit
Frequency Range		3000		8000	MHz
Power Gain @ Psat		9			dB
P_{SAT}	Pulse	39	40		dBm
Drain Efficiency @ P_{SAT}		35			%
Unless otherwise noted: TA = 25°C, V_{DD} =28 V, Pulse Width=50 us, Duty cycle=20%					

Load Mismatch of per Section (On Test Fixture, 50 ohm system): V_{DD} =28 V, I_{DQ} =25 mA, f = 6 GHz

VSWR 10:1 at Psat pulse CW Output Power	No Device Degradation

Reference Circuit of Test Fixture Assembly Diagram

Figure 1. Test Circuit Component Layout



TYPICAL CHARACTERISTICS

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

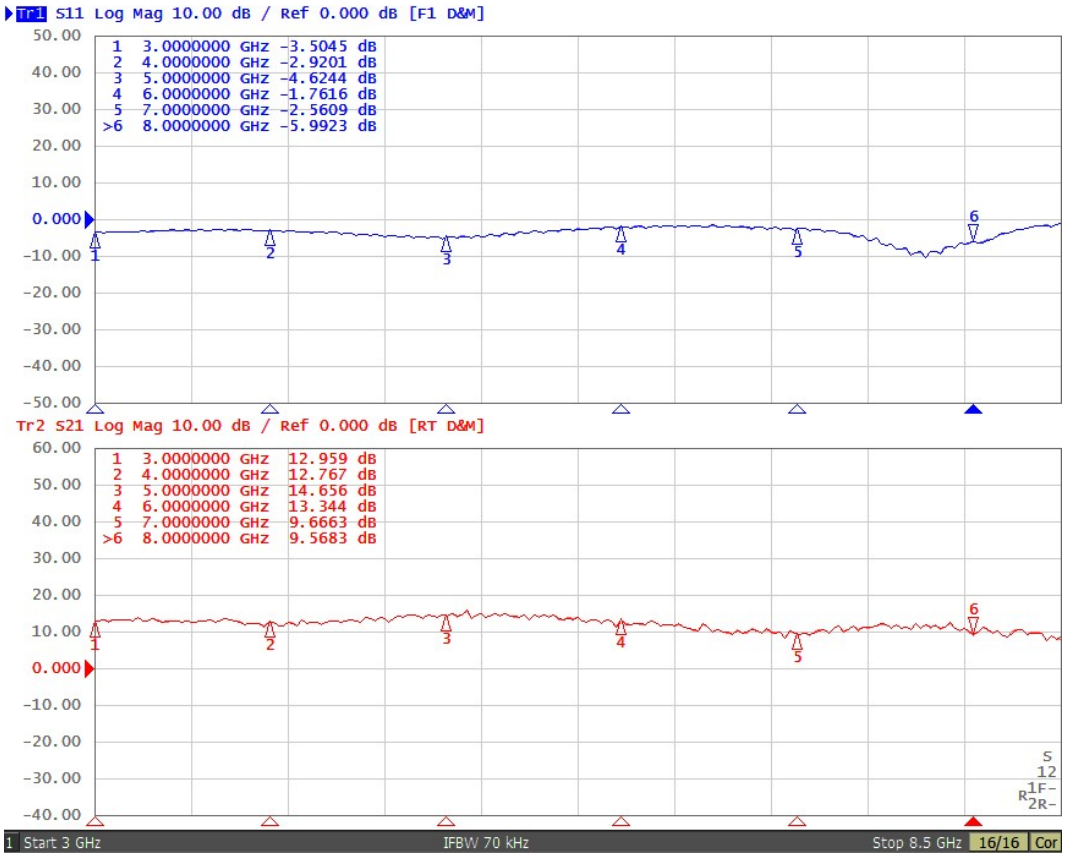
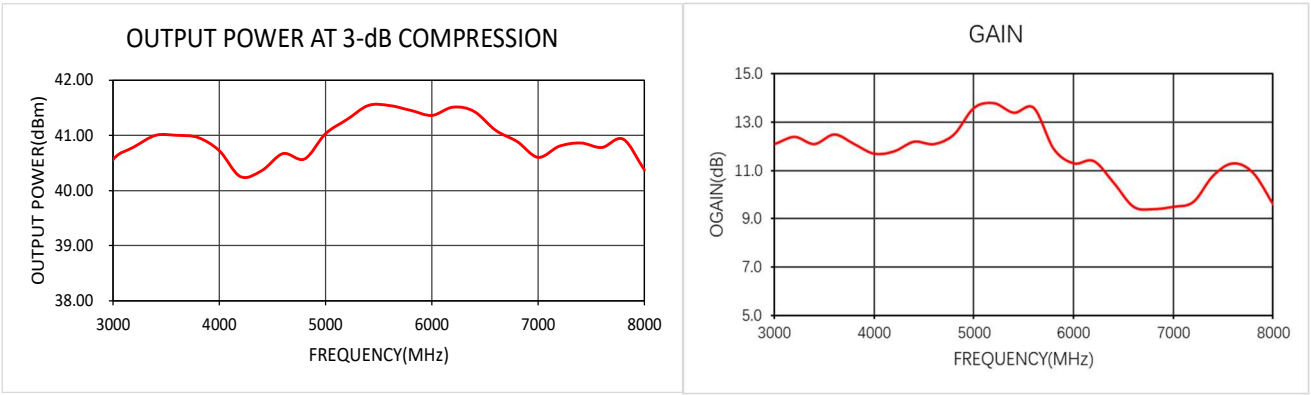
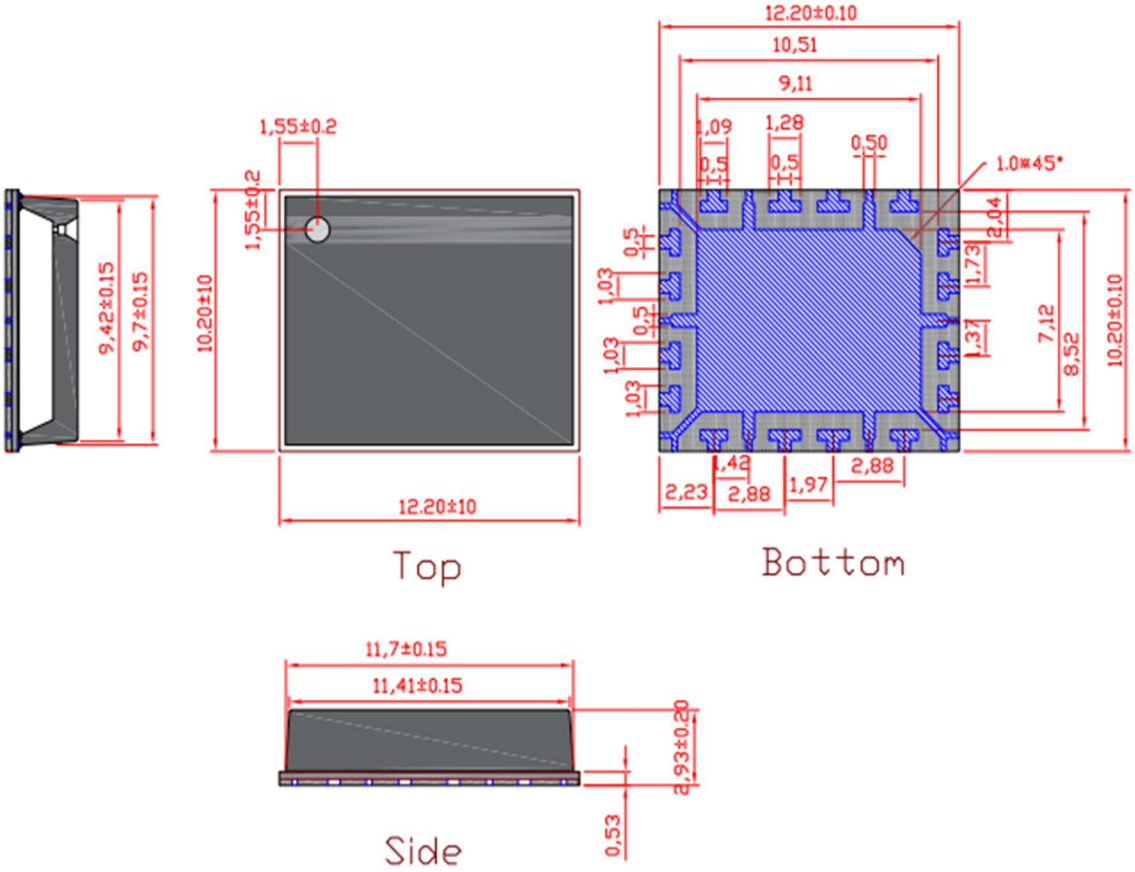


Figure 3. P3dB and Power Gain across the band at 28V



Package Dimensions （Unit:mm）



Revision history

Table 6. Document revision history

Date	Revision	Datasheet Status
2024/1/19	Rev 1.0	Preliminary Datasheet

Application data based on HJ-24-01

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