

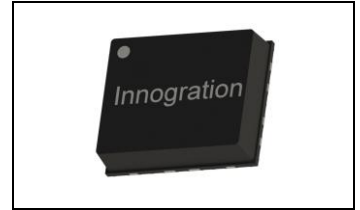


3.0-5.0GHz, 10W, 28V High Gain GaN Fully matched PA Module

Description

The G2MAH3050-10C9 is a 10-watt ,2 stage/high gain integrated Power Amplifier Module, designed for broad band applications, with frequencies from 3 to 5GHz. 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

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;Vgs1=-2.35V,Idq1=4mA; Vgs2=-2.42V,Idq2=25mA					
CW					
Freq(MHz)	P-1(dBm)	P-1Gain(dB)	P-4(dBm)	P-4(W)	EFF(%)
3000	39.10	25.6	40.95	12.5	53.4
3200	37.79	24.3	40.71	11.8	45.1
3400	37.79	24.3	40.75	11.9	41.1
3600	37.76	24.9	40.85	12.2	40.2
3800	37.99	26.4	41.03	12.7	41.1
4000	38.84	27.1	41.37	13.7	44.8
4200	38.28	27.0	41.07	12.8	44.9
4400	37.96	25.6	40.8	12.0	43.7
4600	37.64	24.4	40.61	11.5	44.4
4800	37.18	24.5	40.23	10.6	44.4
5000	37.01	25.7	40.0	10.0	47.6

Product Features

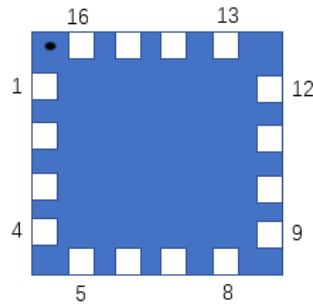
- Operating Frequency Range: 3-5GHz
- Operating Drain Voltage: +28 V
- 50 Ω Input/Output
- Psat \geq 40 dBm
- Small signal gain:>24dB, Power gain:>21dB
- Minimum efficiency:>40%
- 12x10 mm Surface Mount Package
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

Applications

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



Pin Configuration and Description (Top view)



Pin No.	Symbol	Description
1	RF IN	RF Input
9	RF OUT	RF Output
16	Vgs1	Gate bias for 1 st stage
15	Vdd1	Drain bias for 1 st stage
6	Vgs2	Gate bias for 2nd stage
7	Vdd2	Drain bias for 2nd stage
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	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 = 85°C, T _j =175°C, DC test	R _{θJC}	6	°C/W

Table 3. Electrical Characteristics

Parameter	Condition	Min	Typ	Max	Unit
Frequency Range		3000		5000	MHz
Power Gain @ Psat		23			dB
P _{SAT}	Pulse		40		dBm
Drain Efficiency @ P _{SAT}		40			%

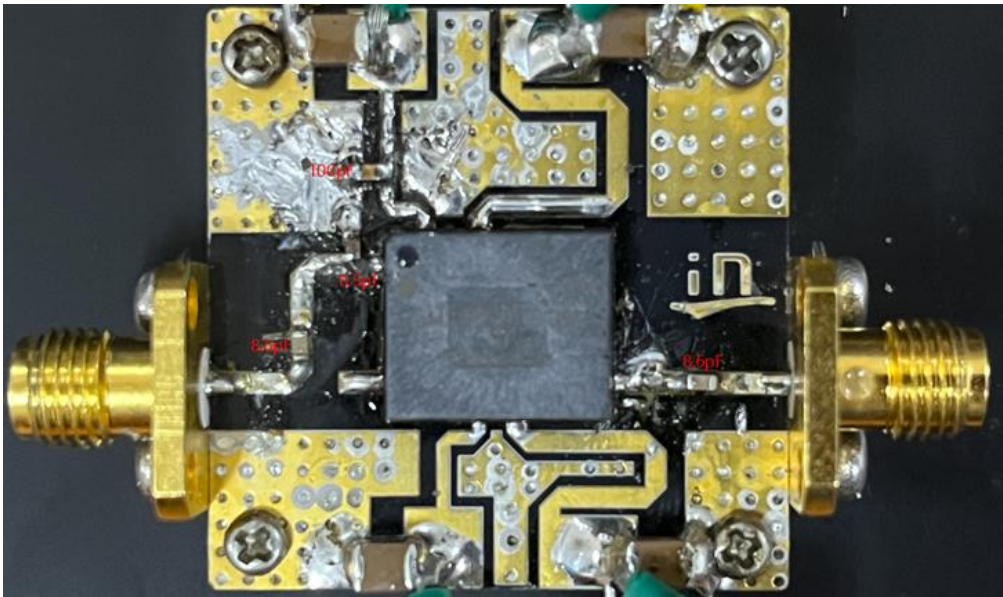
Unless otherwise noted: TA = 25°C, V_{DD} =28 V, Pulse Width=50 us, Duty cycle=20%

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

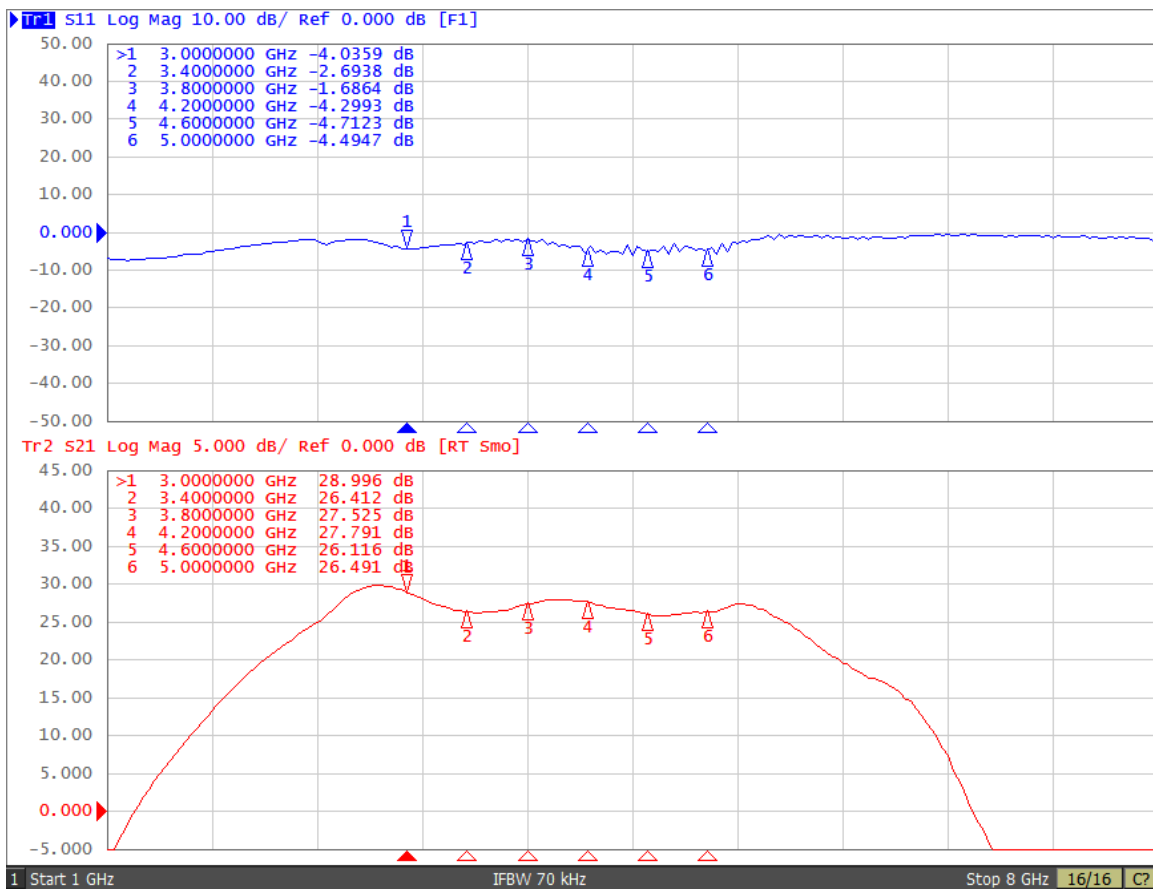
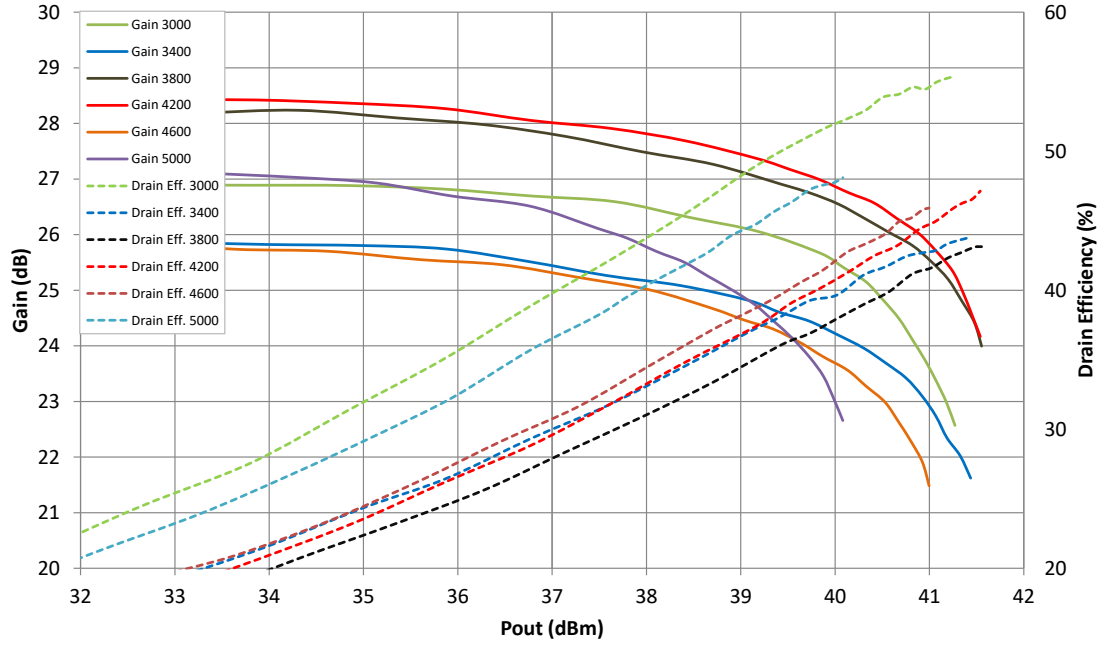


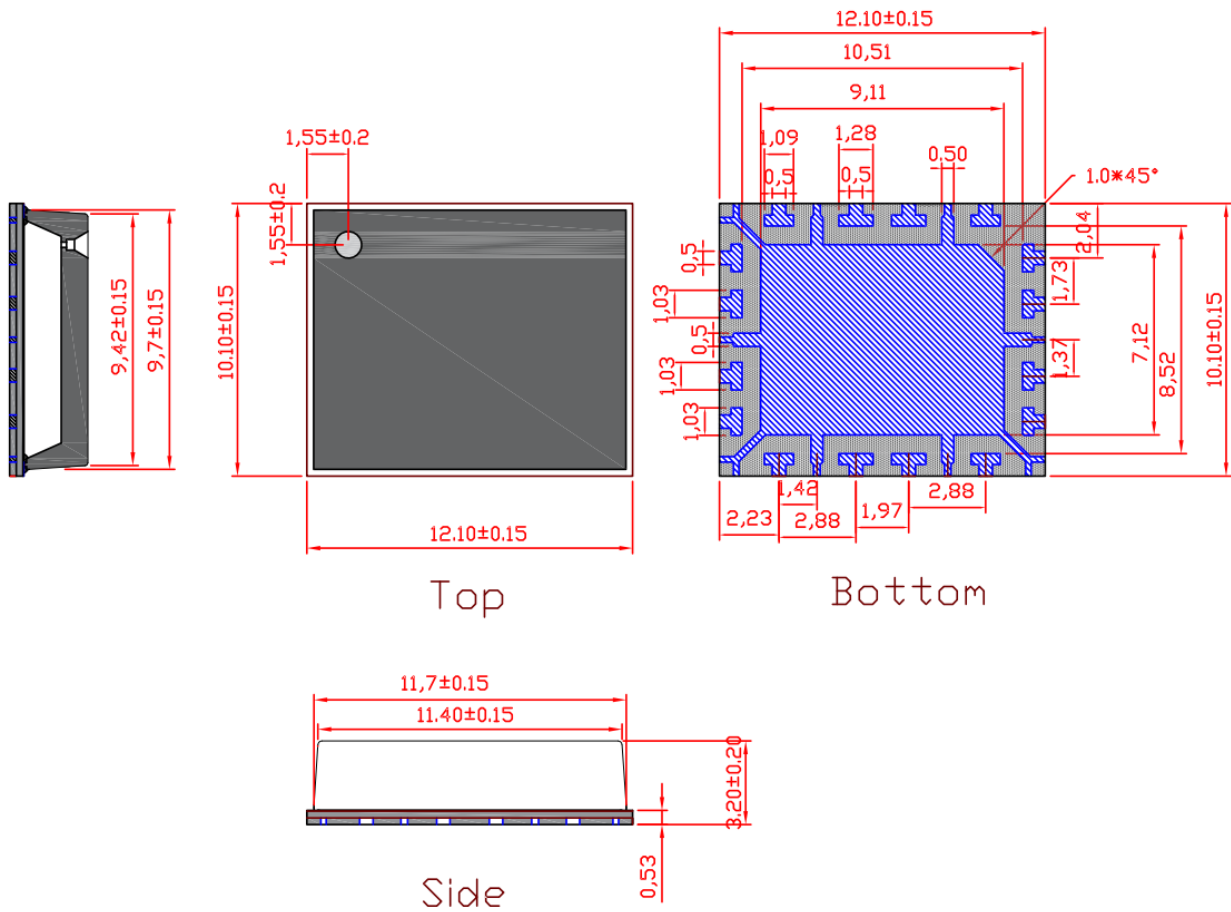


Figure 3. Pout gain, eff as function of Pout at 28V under pulsed CW





Package Dimensions (Unit:mm)



Revision history

Table 6. Document revision history

Date	Revision	Datasheet Status
2023/2/14	Rev 1.0	Preliminary Datasheet
2023/7/2	Rev 1.1	Modify the gain flatness
2025/11/10	Rev 2.0	Update according to IPD and bonding diagram

Application data based on HJ-23-02

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