



1.0-8.0GHz, 10W, 28V GaN Fully matched PA Module

The XMAH1080-10C9 is a 10-watt ,single stage integrated Power Amplifier Module, designed for broad band applications, with frequencies from 1 to 8GHz. The module is 50 Ω input/output matched and requires minimal external components. 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. **It can deliver 10W pulsed CW and 9W CW within typical circuit at 3dB compression**



$V_{ds}=28V, V_{gs}=-2.37V, I_{dq}=25mA$ CW					
Freq(MHz)	P-1(dBm)	P-1Gain(dB)	P-3(dBm)	P-3W)	EFF (%)
1000	39.69	11.4	40.8	12.0	63.7
1200	39.98	11.9	41.19	13.2	60.5
1400	39.82	12.2	41.23	13.3	57.2
1600	39.86	12.3	41.51	14.2	55.0
1800	39.91	12.3	41.64	14.6	55.1
2000	39.94	12.6	41.77	15.0	55.7
2200	40.30	13.4	42.05	16.0	59.2
2400	40.25	13.5	41.93	15.6	59.5
2600	40.06	13.4	41.76	15.0	57.6
2800	39.95	12.8	41.76	15.0	56.0
3000	39.38	11.7	41.3	13.5	48.5
3200	38.53	11.4	40.63	11.6	41.2
3400	38.11	10.7	40.33	10.8	37.1
3600	37.94	10.1	40.11	10.3	35.0
3800	37.56	10.0	39.9	9.8	32.7
4000	37.45	9.8	39.88	9.7	31.8
4200	36.96	9.8	39.55	9.0	28.2
4400	36.78	9.9	39.58	9.1	27.6
4600	36.46	9.6	39.55	9.0	26.7
4800	36.91	10.5	40.15	10.3	30.5
5000	38.34	12.0	41.32	13.5	40.6
5200	39.03	13.1	41.81	15.2	47.1
5400	39.03	12.3	41.6	14.5	45.3
5600	38.73	11.2	41.27	13.4	41.7
5800	38.72	11.1	41	12.6	40.4
6000	39.99	11.7	41.85	15.3	58.3
6200	39.74	11.2	41.75	15.0	61.8
6400	39.10	9.5	41.21	13.2	50.6
6600	38.87	8.7	41.11	12.9	45.1
6800	38.83	9.2	41.21	13.2	44.3
7000	39.03	8.9	41.3	13.5	45.1



7200	38.32	7.8	40.61	11.5	38.4
7400	38.41	8.2	40.35	10.9	36.5
7600	38.33	9.8	40.72	11.8	40.4
7800	38.57	10.0	40.97	12.5	41.8
8000	39.29	8.3	41.53	14.2	48.8

Harmonic at P3dB

Fre(MHz) Harmonic	1000	1500	2000	2500	3000	3500	4000	4500
2nd(dBc)	-21.6	-26.0	-19.5	-24.2	-17.7	-15.2	-17.3	-15.2
3rd(dBc)	-13.8	-15.2	-12.8	-13.8	-12.6	-20.4	-29.1	-26.0

Fre(MHz) Harmonic	5000	5500	6000	6500	7000	7500	8000
2nd(dBc)	-20.9	-33.7	-33.1	-33.1	-34.6	-29.0	-35.6
3rd(dBc)	-22.7	-33.3	-29.6	-24.5	-44.0	-42.0	-43.7

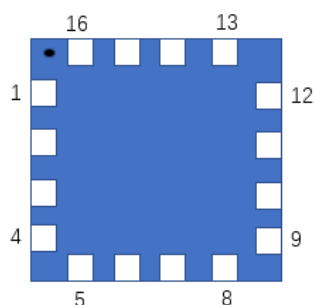
Product Features

- Operating Frequency Range: 1-8GHz
- Operating Drain Voltage: +28 V (Up to 32V)
- 50 Ω Input/Output
- $P_{sat} \geq 40$ dBm
- Power gain: >6dB
- Minimum efficiency: >25%
- 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_{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 $T_c = 85^\circ\text{C}$, DC test	$R_{\theta JC}$	6	°C/W

Table 3. Electrical Characteristics

Parameter	Condition	Min	Typ	Max	Unit
Frequency Range		1000		8000	MHz
Power Gain @ Psat		6			dB
P_{SAT}	Pulse	40			dBm
Drain Efficiency @ P_{SAT}		25			%

Unless otherwise noted: $T_A = 25^\circ\text{C}$, $V_{DD} = 28\text{ V}$, Pulse Width=50 us, Duty cycle=20%

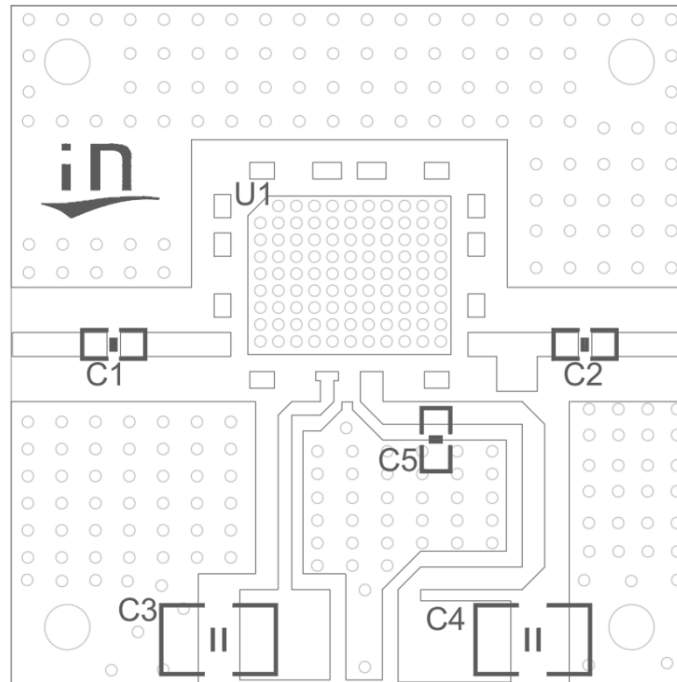
Load Mismatch of per Section (On Test Fixture, 50 ohm system): $V_{DD} = 28\text{ V}$, $I_{DQ} = 25\text{ mA}$, $f = 6\text{ GHz}$

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



Component	Value	Description
U1	XMAH1080-10C9	PA (12.2*10.2mm)
C1、C2	3.9pF	0603
C3、C4	10uF	1206



TYPICAL CHARACTERISTICS

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

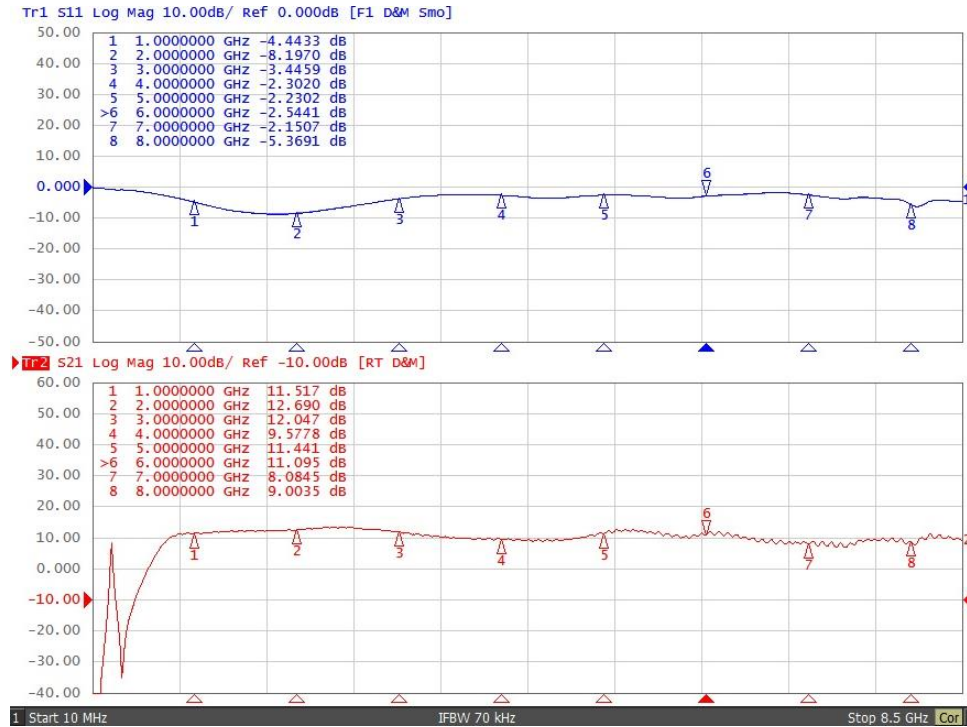
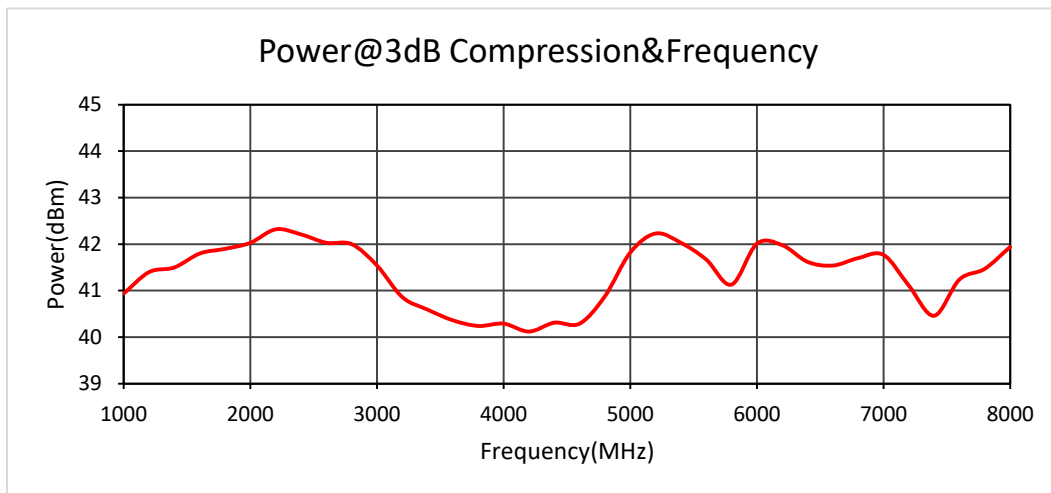
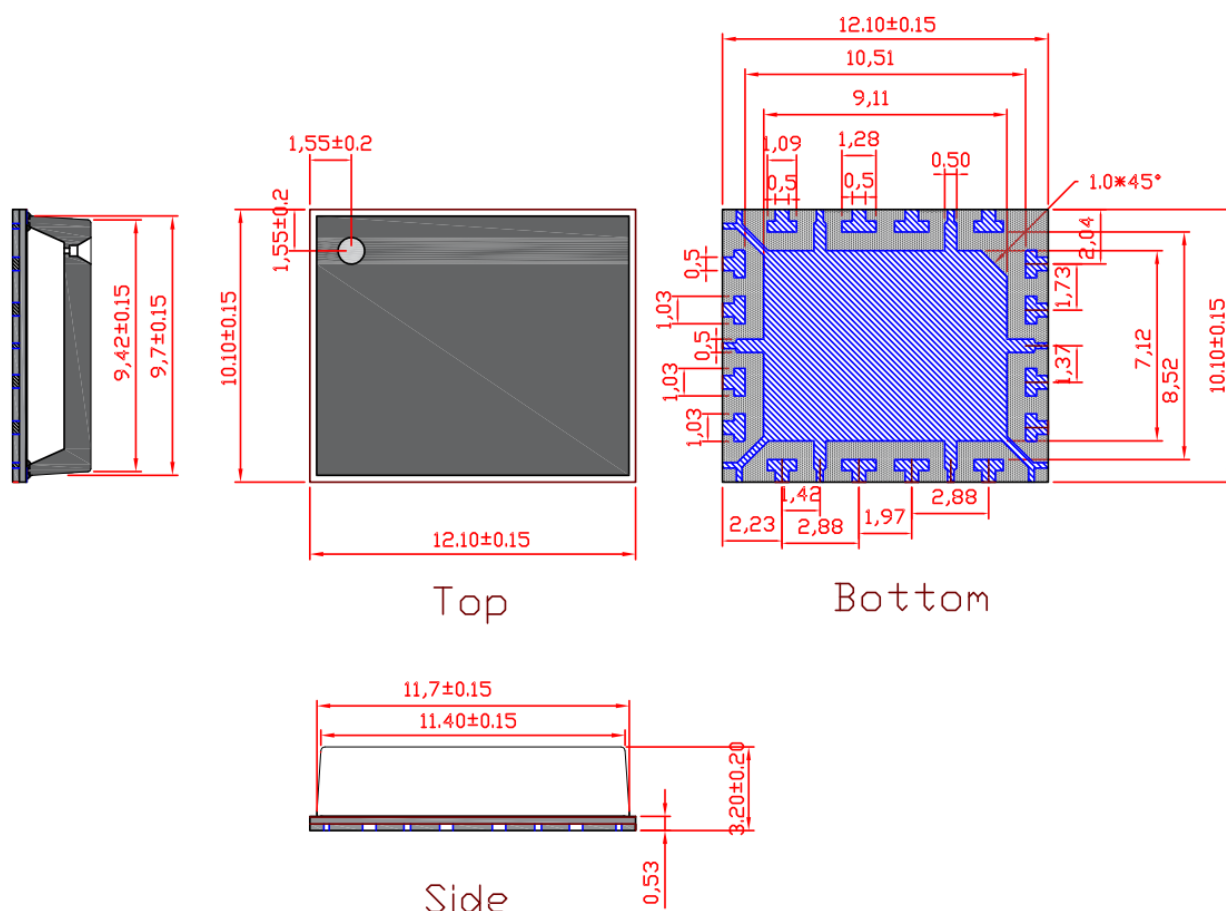


Figure 3. P3dB across the band at 28V





Package Dimensions (Unit:mm)



Revision history

Table 6. Document revision history

Date	Revision	Datasheet Status
2025/12/23	Rev 1.0	Preliminary Datasheet

Application data based on HJ-25-24

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