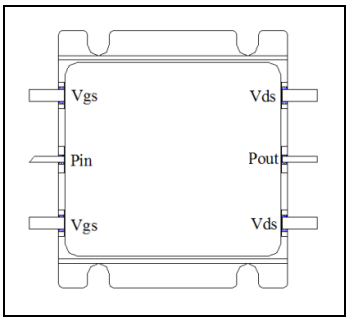
0.5-2.5GHz, 100W, GaN Fully matched PA Module



Description

The XMAH0525-100H3 is a 100-watt,single stage integrated Power Amplifier Module, designed for broad band applications, with frequencies from 0.5 to 2.5GHz. **Especially within 0.6-2.4GHz, it has >120W CW capability.**

The module is 50 Ω input/output matched and requires minimal external components. It can work at higher voltage up to 32V with increased power capability

The module implements multiple GaN active dice and its matching network within highly compact 30.8*27.4mm metal RF package with excellent capability for heat dissipation.

Vds=28V, Idq=220mA， CW

Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	IDS(A)	Gain(dB)	Eff(%)	2nd Harmonic	3rd Harmonic
500	39.53	50.12	102.8	6.59	10.59	55.7	-16.0	-12.0
600	38.50	52.60	182.0	11.56	14.10	56.2	-12.2	-13.5
700	38.10	52.63	183.2	12.72	14.53	51.4	-11.0	-14.6
800	38.03	52.40	173.8	11.79	14.37	52.6	-10.0	-14.6
900	38.20	52.47	176.6	10.80	14.27	58.4	-8.6	-11.7
1000	38.05	52.58	181.1	11.33	14.53	57.1	-12.2	-11.5
1100	37.75	52.45	175.8	10.49	14.70	59.9	-12.7	-12.4
1200	38.42	51.85	153.1	9.58	13.43	57.1	-11.5	-13.1
1300	39.40	51.75	149.6	9.60	12.35	55.7	-11.9	-12.2
1400	39.35	51.20	131.8	8.71	11.85	54.1	-9.6	-21.8
1500	39.75	51.63	145.5	9.86	11.88	52.7	-11.6	-27.8
1600	40.50	51.62	145.2	9.54	11.12	54.4	-12.0	-26.2
1700	39.10	51.40	138.0	8.57	12.30	57.5	-14.7	-22.8
1800	38.60	51.68	147.2	9.07	13.08	58.0	-19.8	-18.4
1900	37.80	51.28	134.3	8.48	13.48	56.6	-17.7	-21.1
2000	39.50	51.39	137.7	9.20	11.89	53.5	-18.3	-27.3
2100	40.70	51.85	153.1	10.40	11.15	52.6	-24.0	-36.3
2200	41.95	52.11	162.6	11.20	10.16	51.8	-26.9	-34.1
2300	42.30	52.15	164.1	10.65	9.85	55.0	-27.1	-29.7
2400	42.00	51.41	138.4	9.02	9.41	54.8	-23.8	-30.8
2500	41.50	50.35	108.4	7.30	8.85	53.0	-19.8	-39.2

Product Features

- Operating Frequency Range: 0.5-2.5GHz
- Operating Drain Voltage(Recommended): +28 V (up to 32V with power increased)
- 50 Ω Input/Output (External DC block capacitor needed)
- Psat≥50 dBm (CW)
- Small signal gain:>12dB, Power gain:>9dB
- Minimum efficiency:>50%

- 30.8*27.4 mm metal RF package
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

Applications

- Ultra Broadband Amplifiers, typically 0.8-2.5GHz, 1-2GHz,0.8-2.2GHz
- L band power amplifier, typically 960-1215MHz, 1200-1400MHz.1400-1600MHz
- Test Instrumentation
- EMC Amplifier Drivers
- 2-way Radios

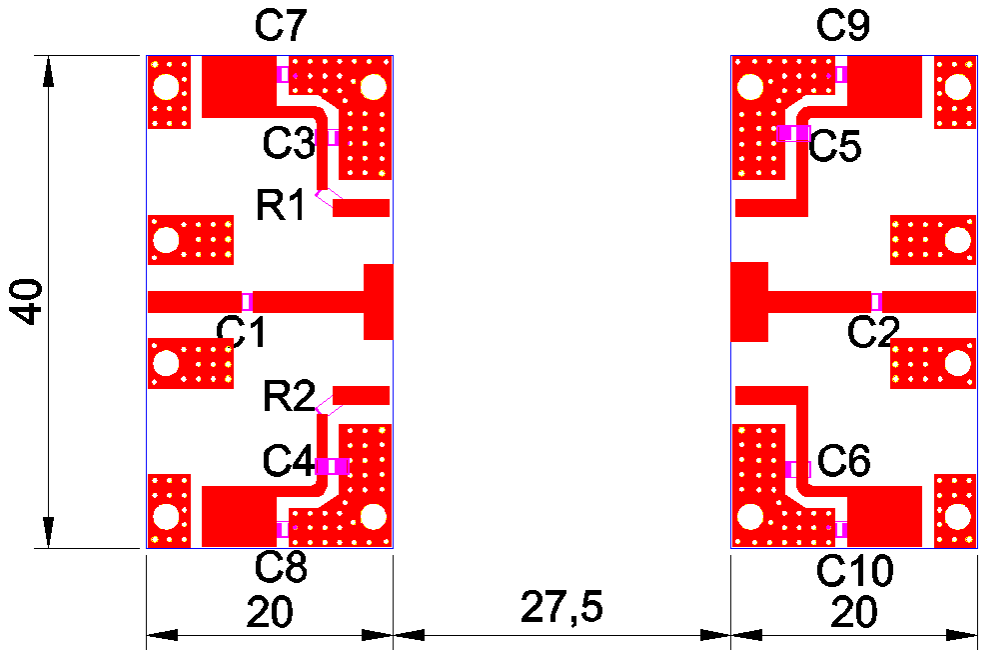
Table 1. Maximum Ratings

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= 25°C, Pout=100W, FEA	RθJC	1.0	°C/W

Typical application circuit



Component	Description	Suggested Manufacturer / Series Number
C1 C3 C4 C5 C6	6.8 pF	MQ200805
C2	6.8 pF x 2	MQ301111
C7 C8 C9 C10	10 uF	TDK
R1	10 Ohm	1206 SMD Resistor
PCB	30Mil Rogers 4350	Rogers

TYPICAL CHARACTERISTICS

Figure 1. Network analyzer output S11/S21 (Pin=0dBm)

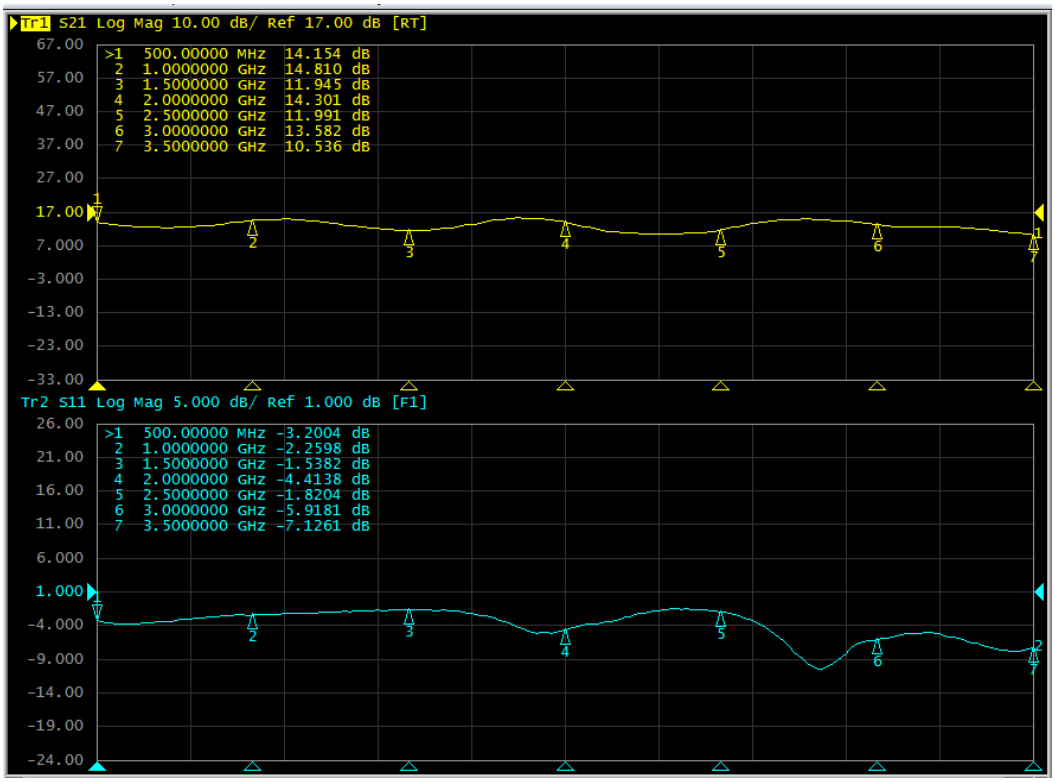
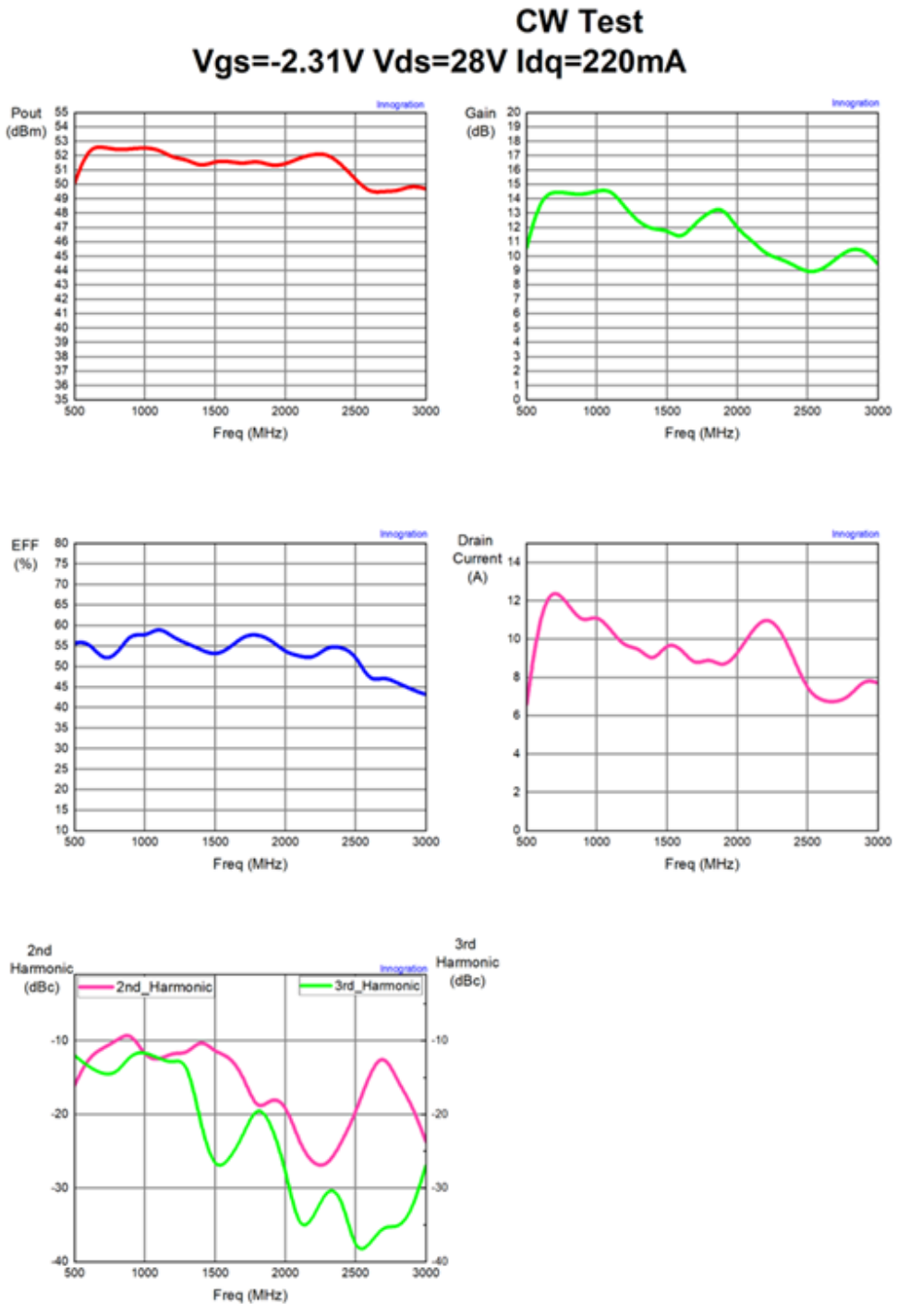
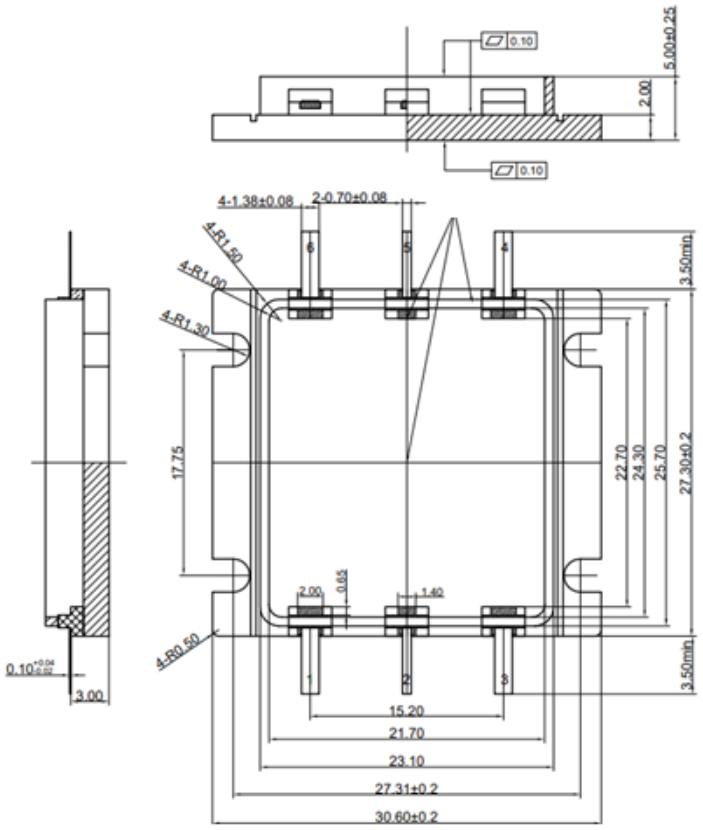


Figure 3. Psat, Eff and Power Gain Vs Frequency across the band



Package Dimensions （Unit:mm）



Revision history

Table 6. Document revision history

Date	Revision	Datasheet Status
2025/10/24	Rev 1.0	Preliminary datasheet

Application data based on JF-25-32

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