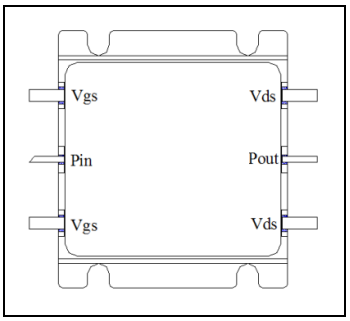
0.6-2.2GHz, 120W, GaN Fully matched PA Module



Description

The XMAH0620-120H3 is a 120-watt,single stage integrated Power Amplifier Module, designed for broad band applications, with frequencies from 0.6 to 2.2GHz. **Especially within 0.6-1.0GHz, it has >150W CW capability and within 1.4-2.2G, it has >140W 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=500mA， CW

Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	IDS(A)	Gain(dB)	Eff(%)	2nd Harmonic	3rd Harmonic
500	39.20	50.09	102.1	6.77	10.89	53.9	-16.3	-12.0
600	39.60	52.66	184.5	12.30	13.06	53.6	-12.3	-13.2
700	39.40	53.10	204.2	14.30	13.70	51.0	-12.7	-13.0
800	40.30	52.75	188.4	12.84	12.45	52.4	-10.6	-13.2
900	39.80	52.22	166.7	11.30	12.42	52.7	-8.8	-11.9
1000	39.40	52.52	178.6	11.10	13.12	57.5	-11.6	-12.2
1100	39.10	52.10	162.2	9.96	13.00	58.2	-11.1	-14.0
1200	38.70	51.32	135.5	9.09	12.62	53.2	-11.5	-14.5
1300	39.30	51.06	127.6	8.62	11.76	52.9	-11.0	-14.4
1400	39.30	51.50	141.3	9.49	12.20	53.2	-12.0	-25.3
1500	42.11	52.72	187.1	12.31	10.61	54.3	-12.8	-30.3
1600	42.10	52.61	182.4	11.55	10.51	56.4	-12.3	-30.0
1700	41.80	52.32	170.6	10.23	10.52	59.6	-15.2	-26.7
1800	40.40	52.30	169.8	10.74	11.90	56.5	-15.0	-28.2
1900	39.85	52.23	167.1	11.04	12.38	54.1	-14.6	-32.1
2000	40.55	52.48	177.0	11.46	11.93	55.2	-18.1	-37.9
2100	40.90	52.33	171.0	11.30	11.43	54.0	-25.0	-40.0
2200	40.40	52.06	160.7	10.90	11.66	52.7	-29.4	-34.6
2300	40.60	51.56	143.2	9.80	10.96	52.2	-28.7	-30.8
2400	40.65	50.47	111.4	7.87	9.82	50.6	-24.4	-31.8

Product Features

- Operating Frequency Range: 0.5-2.2GHz
- Operating Drain Voltage(Recommended): +28 V (up to 32V with power increased)
- 50 Ω Input/Output (External DC block capacitor needed)
- Psat≥51 dBm (CW)
- Small signal gain:>14dB, Power gain:>10dB
- Minimum efficiency:>50%
- 30.8*27.4 mm metal RF package

Applications

- Ultra Broadband Amplifiers, typically 1-2GHz,0.8-2.2GHz
- L band power amplifier, typically 600-960MHz,960-1215MHz, 1200-1400MHz.1800-2200MHz
- Test Instrumentation
- EMC Amplifier Drivers
- 2-way Radios

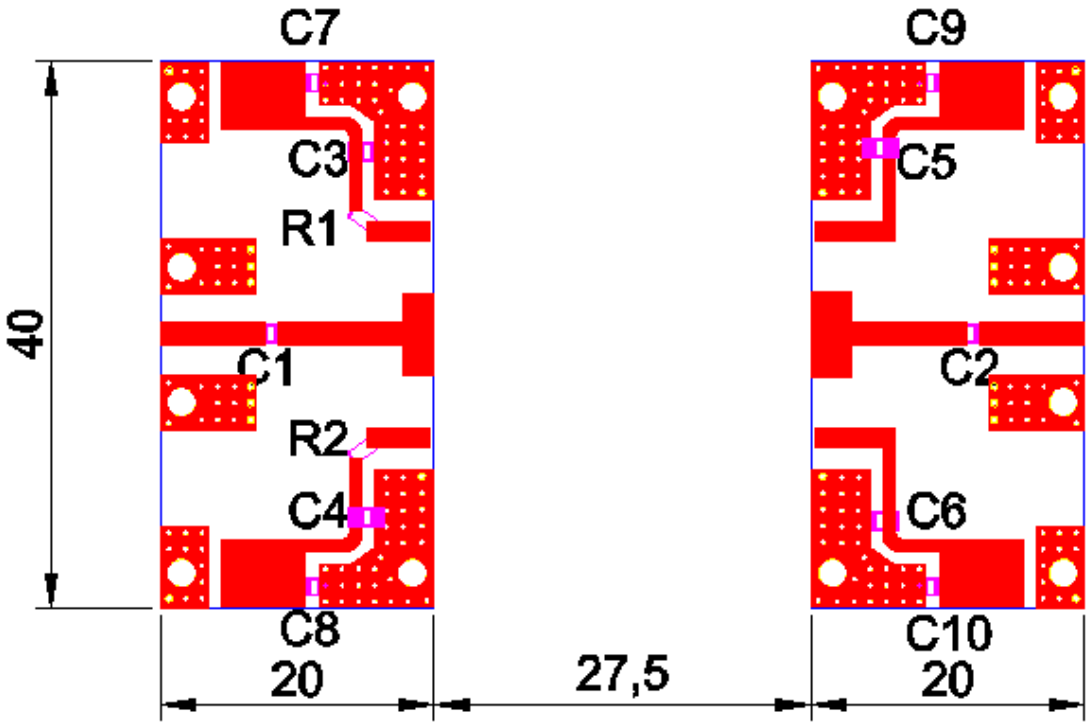
Table 1. Maximum Ratings

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=120W, FEA	$R_{\theta JC}$	0.8	°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	MQ200805
C3 C4 C5 C6	6.8 pF	MQ401111
C7 C8 C9 C10	10 uF	TDK
R1	10 Ohm	Open suppliers. 1206 SMD Resistor
PCB	30Mil Rogers 4350	Rogers

TYPICAL CHARACTERISTICS

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

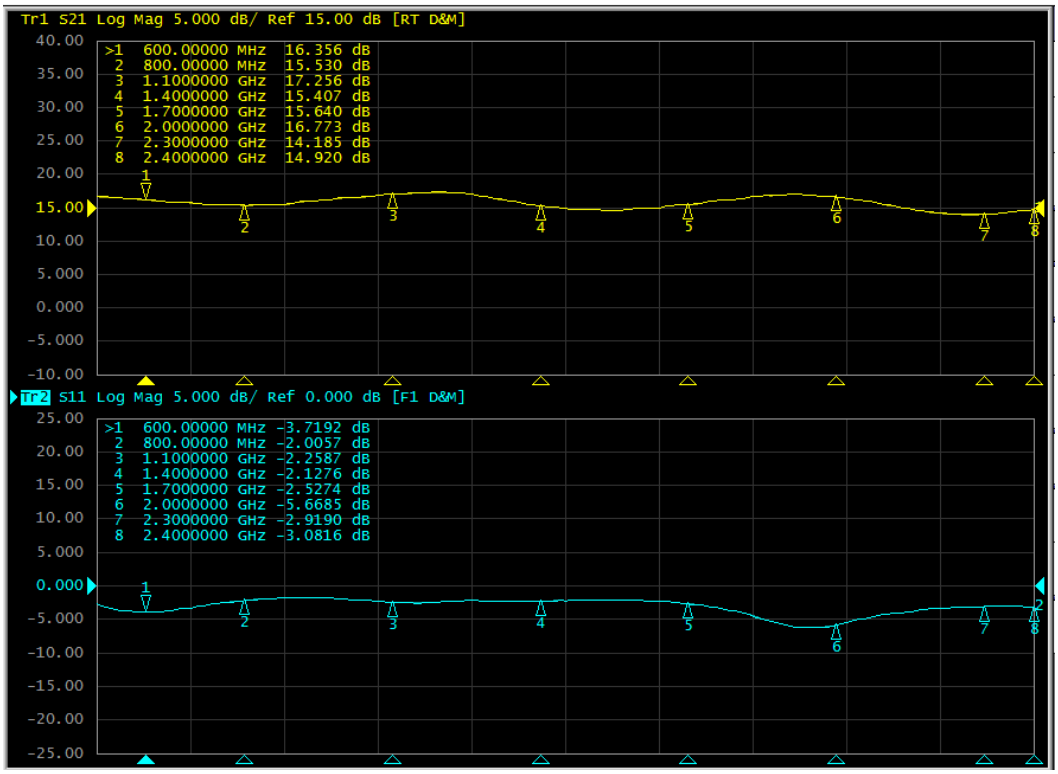
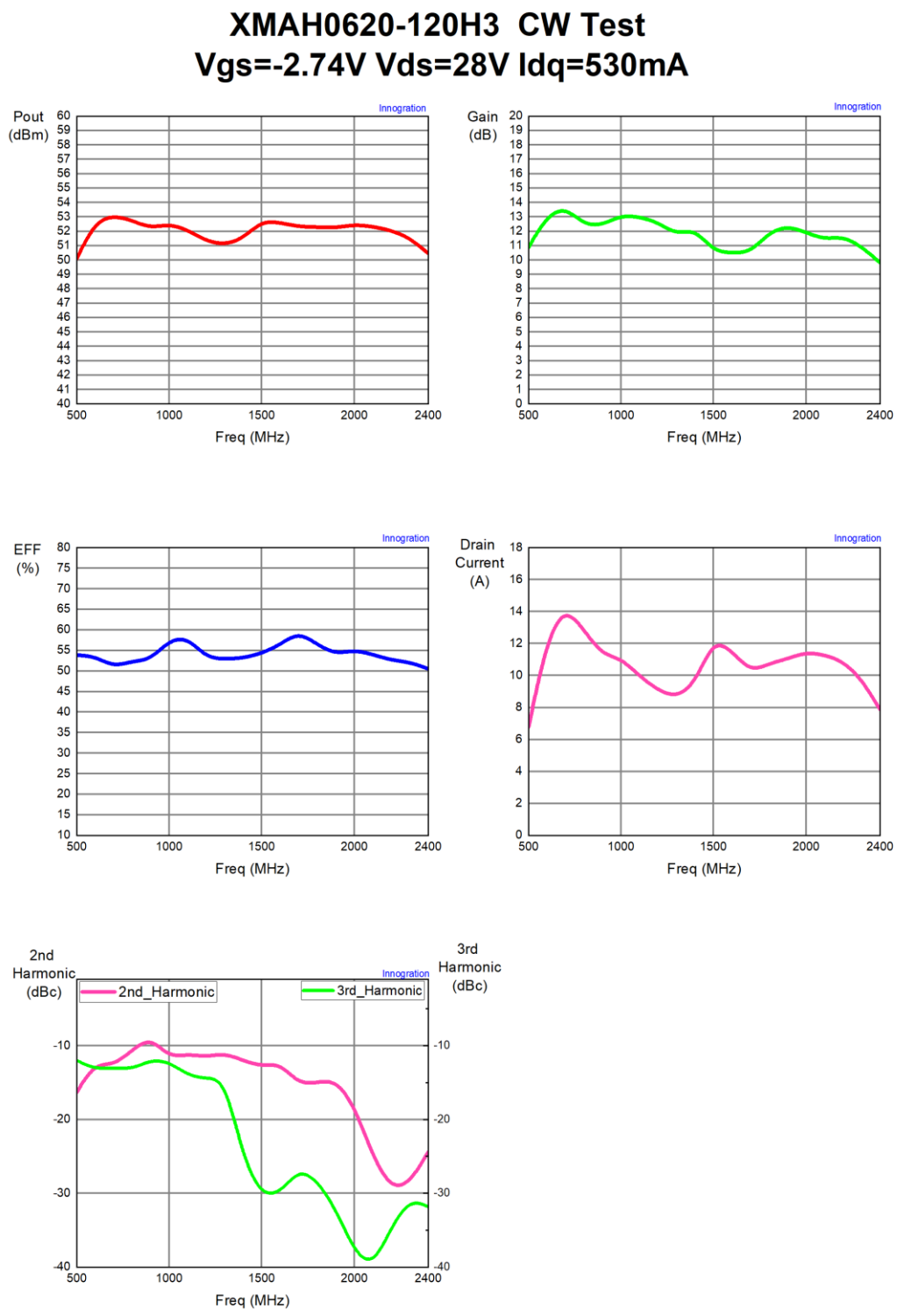
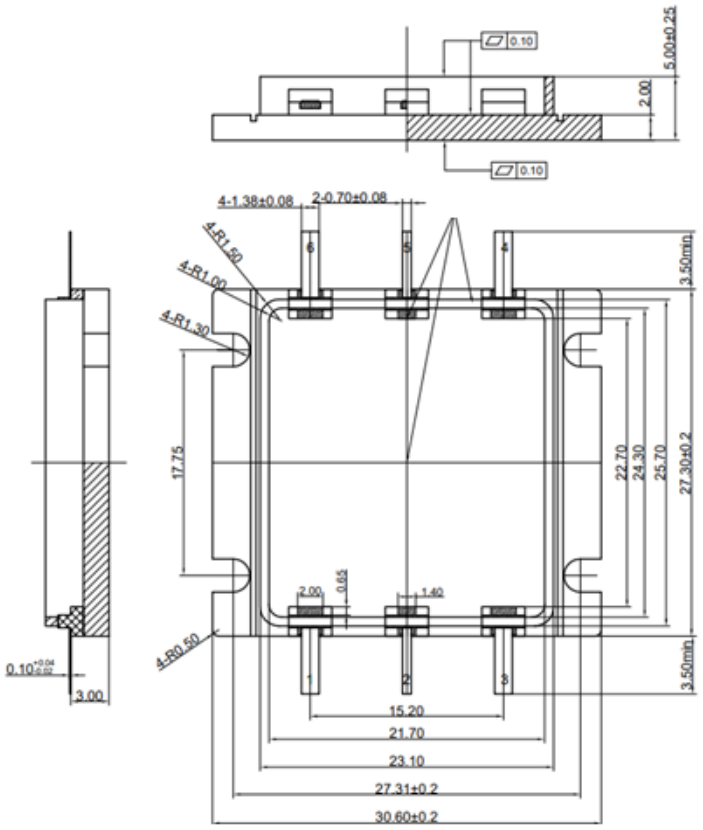


Figure 3. Psat, Eff and Power Gain Vs Frequency across the band



Package Dimensions （Unit:mm）



Revision history

Table 6. Document revision history

Date	Revision	Datasheet Status
2025/11/16	Rev 1.0	Preliminary datasheet

Application data based on JF-25-36

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