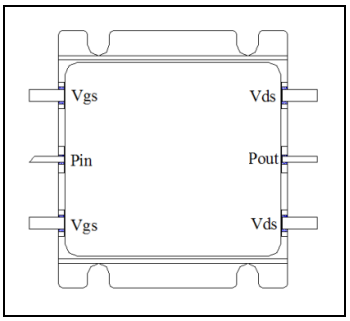
0.8-2.5GHz, 80W, GaN Fully matched PA Module



Description

The GMAH0825-80H3 is a 80-watt,single stage integrated Power Amplifier Module, designed for broad band applications, with frequencies from 0.8 to 2.5GHz. The module is 50 Ω input/output matched and requires minimal external components. It can work at higher voltage up to 36V 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=32V, Idq=250mA， CW

Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	IDS(A)	Gain(dB)	Eff(%)	2nd Harmonic	3rd Harmonic
800	36.10	49.41	87.3	3.83	13.31	71.2	-20.4	-14.2
900	36.80	49.94	98.6	4.37	13.14	70.5	-17.8	-12.2
1000	37.40	50.40	109.6	5.31	13.00	64.5	-26.1	-16.0
1100	38.20	50.92	123.6	6.24	12.72	61.9	-33.4	-17.0
1200	39.00	51.44	139.3	7.07	12.44	61.6	-23.3	-14.5
1300	39.05	51.08	128.2	6.68	12.03	60.0	-23.7	-20.7
1400	38.90	51.08	128.2	6.45	12.18	62.1	-22.2	-23.8
1500	38.70	51.06	127.6	6.19	12.36	64.4	-22.3	-30.6
1600	39.45	50.81	120.5	5.93	11.36	63.5	-21.8	-30.0
1700	38.70	50.43	110.4	5.92	11.73	58.3	-18.2	-27.4
1800	38.75	50.55	113.5	6.44	11.80	55.1	-16.7	-28.8
1900	37.75	50.55	113.5	7.07	12.80	50.2	-16.8	-22.0
2000	36.65	50.00	100.0	7.11	13.35	44.0	-25.6	-19.3
2100	37.40	50.42	110.2	7.98	13.02	43.1	-29.9	-29.0
2200	37.80	50.37	108.9	7.90	12.57	43.1	-29.9	-29.2
2300	38.45	50.35	108.4	7.44	11.90	45.5	-27.1	-29.4
2400	39.30	51.28	134.3	7.93	11.98	52.9	-28.7	-42.0
2500	40.40	51.27	134.0	7.17	10.87	58.4	-31.9	-47.0

Product Features

- Operating Frequency Range: 0.8-2.5GHz
- Operating Drain Voltage(Recommended): +32 V (up to 36V with power increased >100W)
- 50 Ω Input/Output (External DC block capacitor needed)
- Psat≥49 dBm (CW)
- Small signal gain:>13dB, Power gain:>11dB
- 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

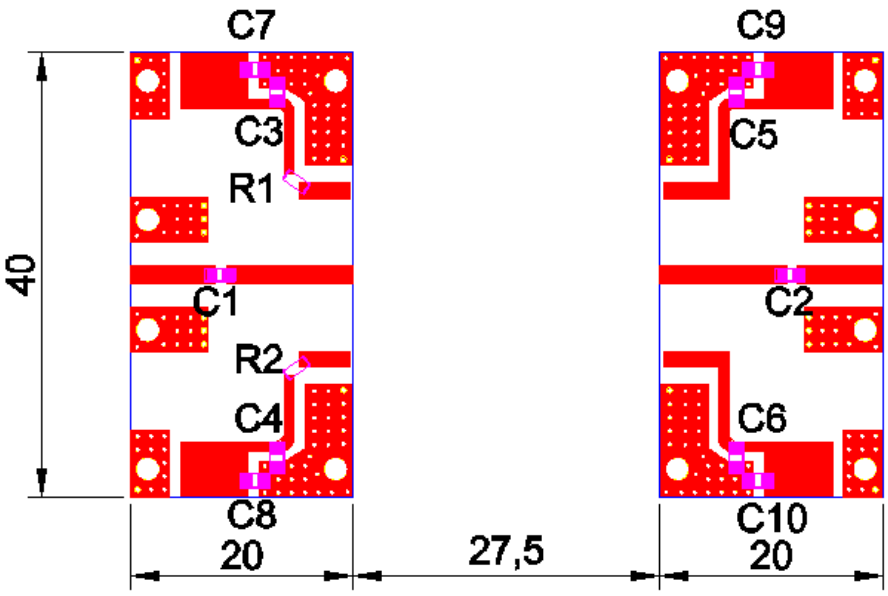
Table 1. Maximum Ratings

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=90W, FEA	RθJC	1.3	°C/W

Typical application circuit



Component	Description	Suggested Manufacturer / Series Number
C7,C8,C9,C10	10 uF	TDK
C1	10pF	MQ200805_Series (BEIJING YUANLIU HONGYUAN ELECTRONIC TECHNOLOGY CO.,LTD)

C3,C4,C5,C6	10pF	MQ201111_Series (BEIJING YUANLIU HONGYUAN ELECTRONIC TECHNOLOGY CO.,LTD)
C2	12pF	MQ201111_Series (BEIJING YUANLIU HONGYUAN ELECTRONIC TECHNOLOGY CO.,LTD)
R1 R2	10Ω	Open suppliers. 1206 SMD Resistor
PCB	30Mil Rogers 4350B	Rogers

TYPICAL CHARACTERISTICS

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

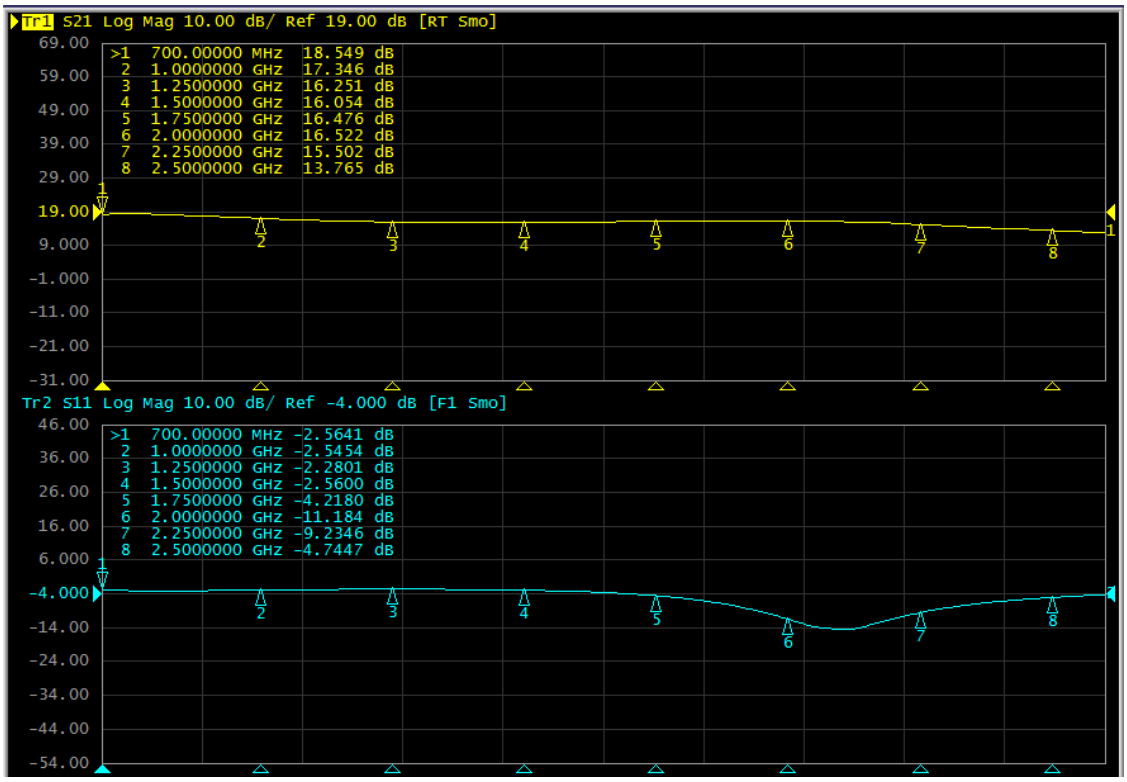
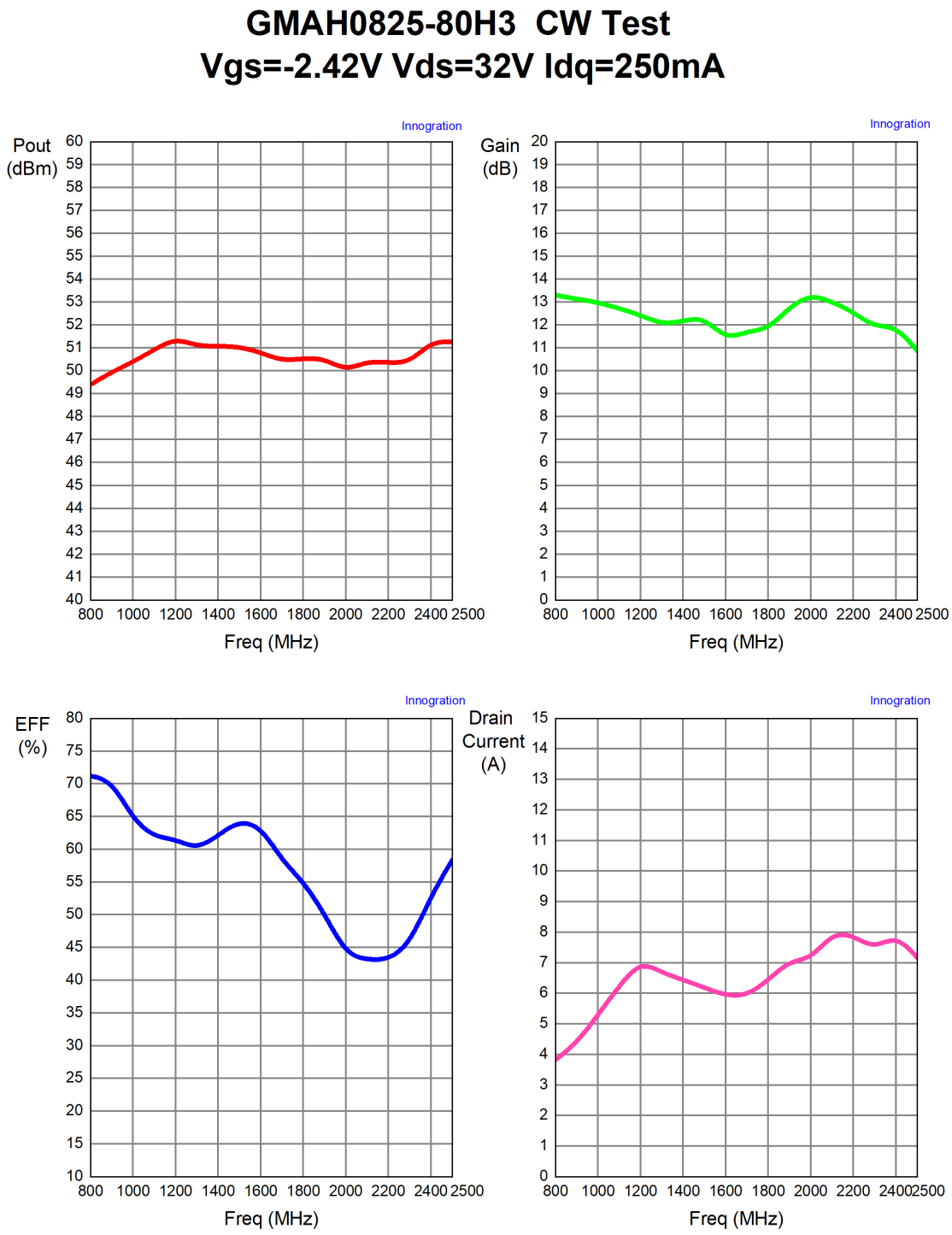
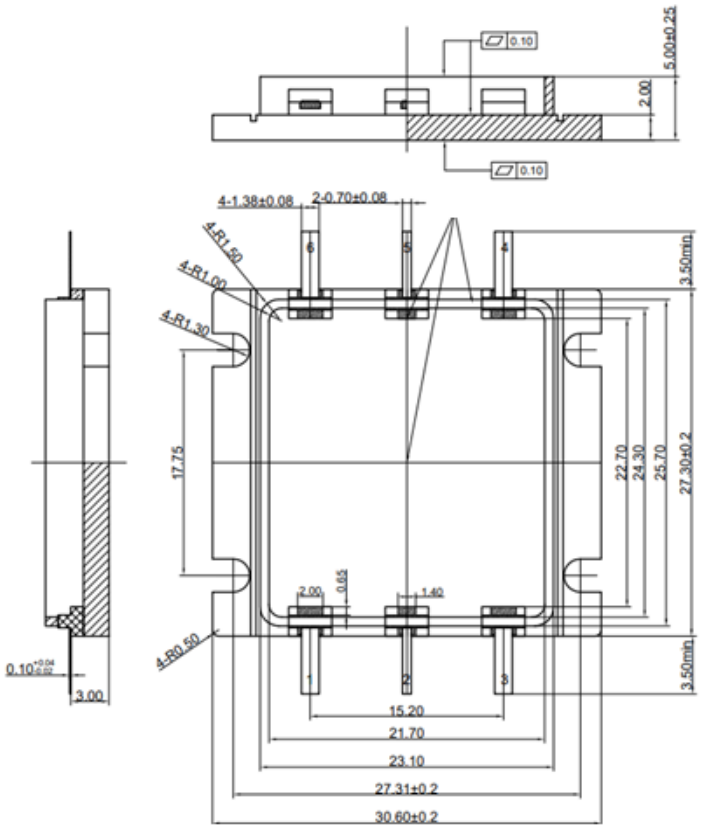


Figure 3. Psat, Eff and Power Gain Vs Frequency across the band



Package Dimensions （Unit:mm）



Revision history

Table 6. Document revision history

Date	Revision	Datasheet Status
2023/3/29	Rev 1.0	Preliminary Datasheet
2025/8/26	Rev 1.0	Production datasheet finalization

Application data based on SYX-23-10/JF-25-20

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