



## 2.0-6.0GHz, 100W, GaN Fully matched PA iModule

### Description

The GMAH2060-100F is a 100-watt, single stage integrated Power Amplifier iModule, designed for broad band applications, with frequencies from 2.0 to 6.0GHz. The module is 50  $\Omega$  input/output matched and requires minimal external components.

This iModule implements multiple GaN active dice and its matching network and DC block function etc, within highly compact 20\*23\*2mm flange, with excellent capability for heat dissipation.

It is recommended to solder this iModule onto the heatsink and do additional wire-bonding for power supply and RF input and output with external circuit

- Typical CW performance within 2-6GHz with device solderd:  $V_{ds}=28V$ ,  $I_{dq}=200mA$

No Photo

Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	Ids(A)	Gain(dB)	Eff(%)
2000	43.8	50.1	102.1	6.03	6.3	60.5
2100	44.5	50.6	115.3	6.50	6.2	63.4
2200	41.5	50.6	113.8	6.52	9.0	62.3
2300	39.0	50.8	119.4	6.76	11.8	63.1
2400	39.2	50.8	119.9	7.05	11.6	60.8
2500	40.1	50.6	114.3	6.80	10.5	60.0
2600	41.9	50.9	123.3	8.14	9.0	54.1
2700	39.7	50.7	116.7	7.30	11.0	57.1
2800	37.2	50.5	111.7	6.91	13.3	57.7
2900	36.8	50.5	111.4	7.22	13.6	55.1
3000	39.7	50.3	106.4	6.87	10.6	55.3
3100	42.2	50.4	110.7	8.74	8.2	45.2
3200	43.4	51.5	142.6	10.89	8.2	46.8
3300	41.6	51.7	146.9	11.29	10.1	46.5
3400	39.6	51.4	136.5	10.82	11.8	45.0
3500	40.1	51.4	139.0	10.70	11.4	46.4
3600	43.9	51.8	149.6	11.31	7.8	47.2
3700	45.0	51.3	134.9	10.81	6.3	44.6
3800	45.7	51.5	139.6	10.95	5.7	45.5
3900	43.8	51.6	143.5	10.95	7.8	46.8
4000	41.8	51.7	147.6	11.11	9.9	47.4
4100	41.0	51.5	141.9	10.73	10.5	47.2
4200	42.8	51.2	130.6	10.00	8.4	46.6
4300	43.5	50.7	116.1	8.86	7.1	46.8



4400	42.5	50.5	112.7	8.16	8.0	49.3
4500	41.6	50.9	123.3	8.93	9.3	49.3
4600	38.0	50.6	115.3	9.00	12.6	45.8
4700	39.2	50.7	118.0	9.55	11.5	44.1
4800	42.3	50.6	114.0	9.43	8.3	43.2
4900	43.5	50.5	112.2	9.28	7.0	43.2
5000	42.0	50.6	115.6	9.20	8.6	44.9
5100	39.4	50.8	119.7	9.03	11.4	47.3
5200	38.8	50.5	111.9	8.63	11.7	46.3
5300	40.9	50.4	109.4	8.87	9.5	44.0
5400	43.5	50.4	108.6	9.04	6.9	42.9
5500	44.0	50.5	112.7	9.18	6.6	43.9
5600	41.4	50.4	108.4	8.68	8.9	44.6
5700	39.0	50.2	105.4	8.42	11.3	44.7
5800	38.3	50.2	104.7	8.47	11.9	44.2
5900	39.7	50.4	110.2	8.82	10.7	44.6
6000	40.2	50.6	115.1	8.80	10.4	46.7
6100	40.5	50.3	108.1	8.25	9.9	46.8
6200	41.3	49.5	88.7	6.93	8.2	45.7

## Product Features

- Operating Frequency Range: 2.0-6.0GHz
- Operating Drain Voltage(Recommended): +32V
- 50  $\Omega$  Input/Output (External DC block capacitor needed)
- $P_{sat} \geq 50$  dBm (CW)
- Small signal gain:>10dB, Power gain:>7dB @ $P_{out}=100W$
- Minimum  $P_{sat}$  efficiency:>40%
- 20\*23 mm metal flange with 2mm thickness
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

## Applications

- Ultra Broadband Amplifiers within S/C band
- Test Instrumentation
- EMC Amplifier Drivers
- 2-way Radios



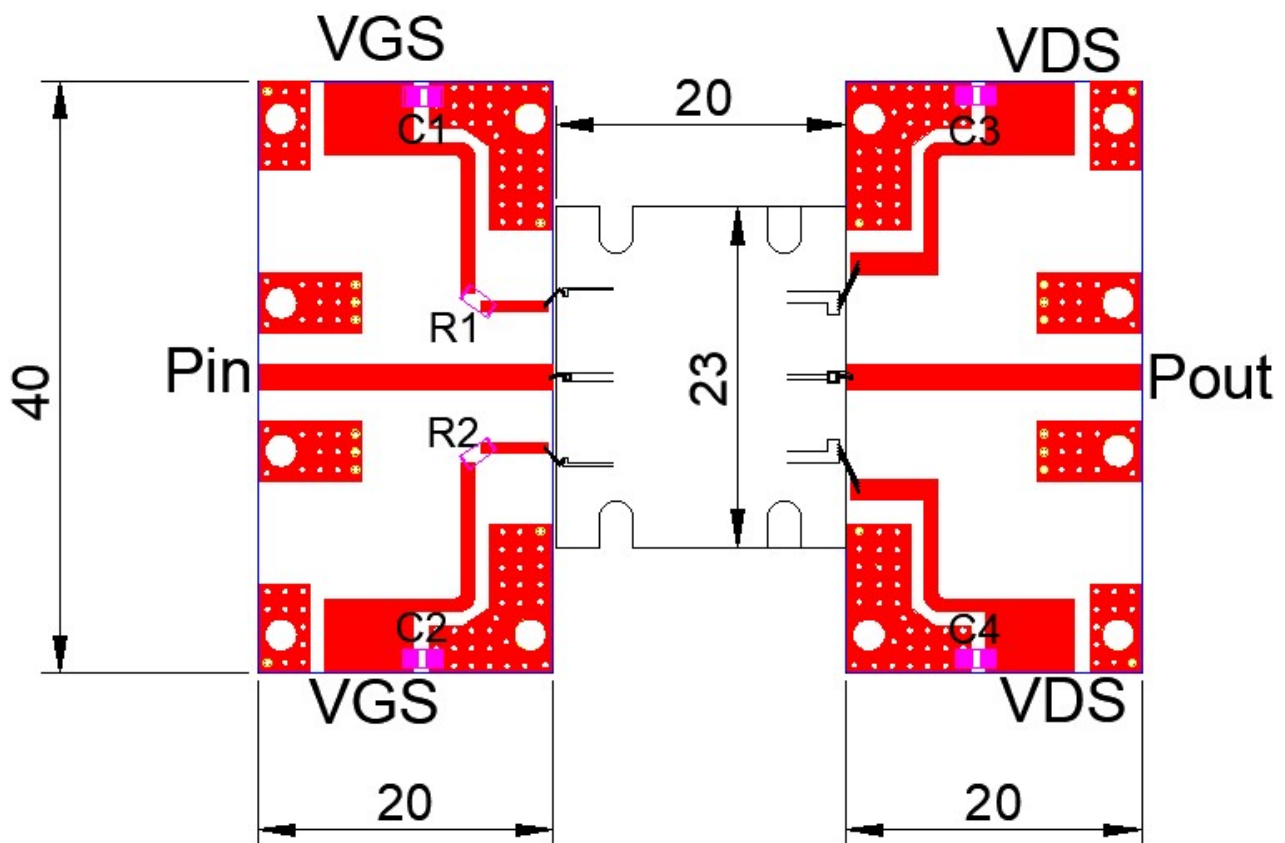
Table 1. Maximum Ratings

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 $T_c = 25^\circ\text{C}$ , $P_{out} = 100\text{W}$ , FEA	$R_{\theta JC}$	1.2	°C/W

Typical application circuit



Component	Description	Suggestion
C1, C2, C3, C4	10uF	1210
R1, R2	Chip Resistor, 10Ω	0805
PCB	Rogers4350b, 30mil	



## TYPICAL CHARACTERISTICS

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

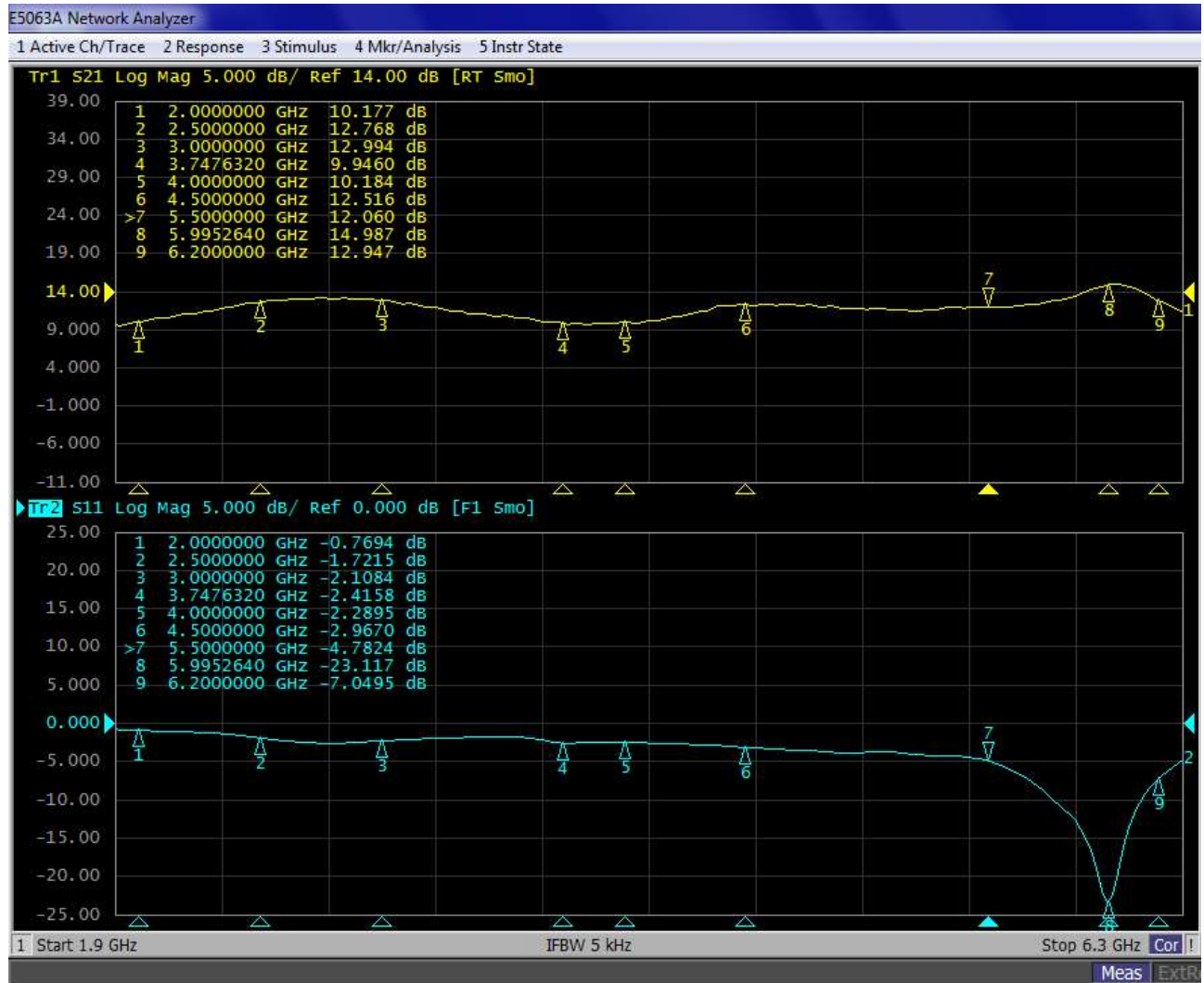
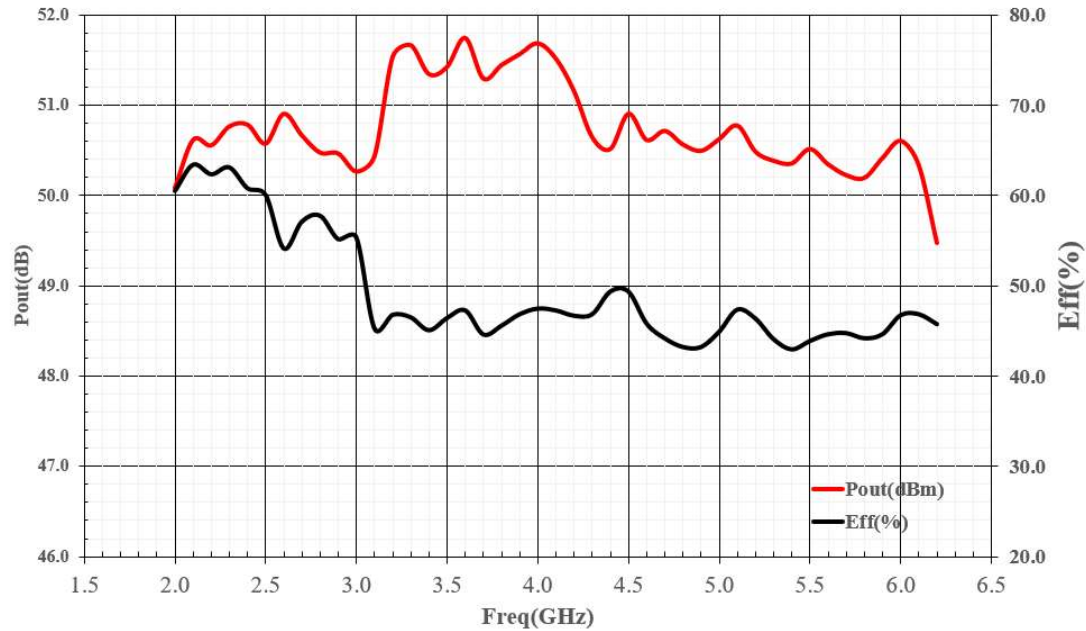


Figure 3. Psat, Eff@Psat, Gain@Psat Vs Frequency across the band

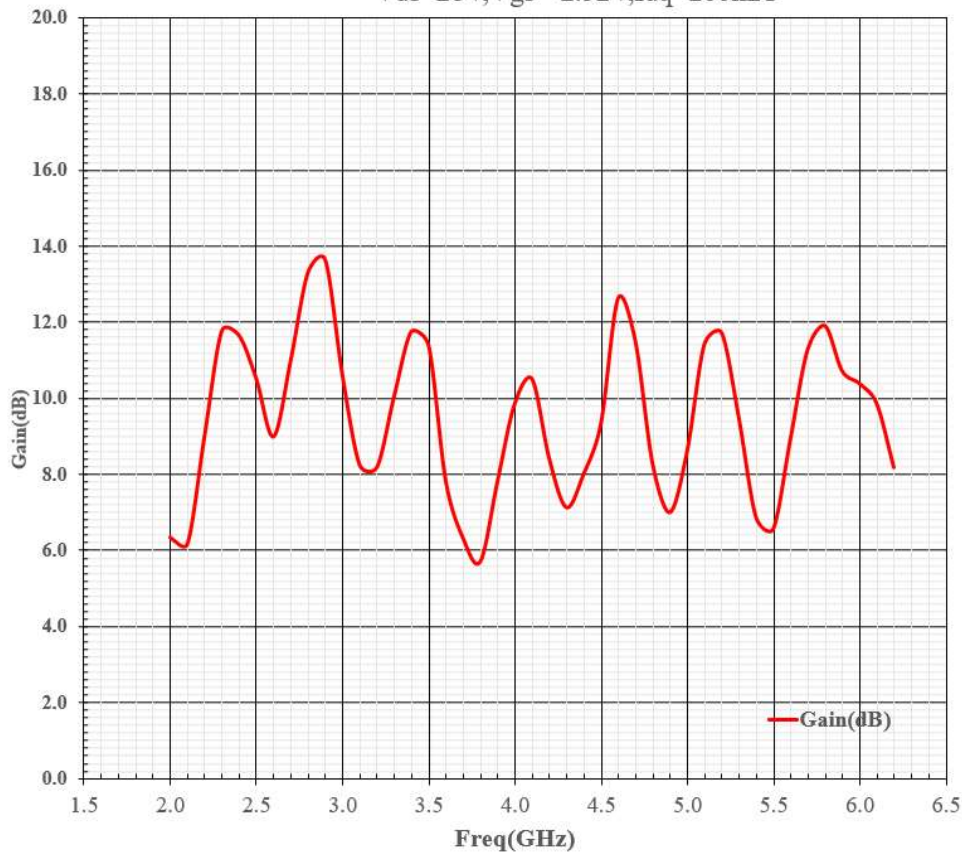
## GMAH2060-100F

$V_{ds}=28V, V_{gs}=-2.52V, I_{dq}=200mA$



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## Revision history

Table 6. Document revision history

Date	Revision	Datasheet Status
2024/3/7	Rev 1.0	Advanced Datasheet

Application data based on RXT-24-12

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