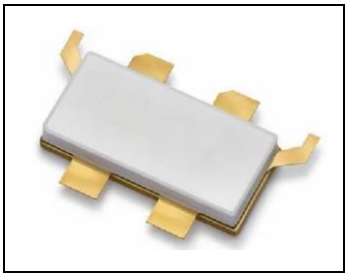
2.0-6.0GHz, 40W, GaN Fully matched PA Module



Description

The GMAH2060-40B4V is a 40-watt,single stage integrated Power Amplifier Module, designed For application with frequencies from 2.0 to 6.0GHz. **Within 2-4GHz, it can deliver 50W CW** . The module is 50 Ω input/output matched and requires minimal external components.

There is no guarantee when device used outside the stated bands

V_{DS} = 28V , V_{GS}= -2.45V , I_{dq} = 200mA

Freq(MHz)	Pin(dBm)	Pout(dBm)	Pout(W)	IDS(A)	Gain(dB)	Eff(%)	2nd Harmonic	3rd Harmonic
2000	38.40	48.70	74.1	4.82	10.30	54.9	-19.4	-13.0
2500	38.60	48.02	63.4	4.63	9.42	48.9	-13.4	-17.8
2800	39.15	47.37	54.6	5.10	8.22	38.2	-13.7	-34.7
3000	39.45	47.86	61.1	5.54	8.41	39.4	-13.6	-40.6
3500	36.70	48.70	74.1	4.74	12.00	55.9	-16.2	-40.0
4000	37.02	47.87	61.2	4.08	10.85	53.6	-36.1	-57.0
4500	38.55	46.65	46.2	4.69	8.10	35.2	-	-
5000	39.25	47.00	50.1	5.10	7.75	35.1	-	-
5500	38.25	47.12	51.5	4.35	8.87	42.3	-	-
6000	38.45	46.72	47.0	3.88	8.27	43.3	-	-

Product Features

- Operating Frequency Range: 2.0-6.0GHz
- Operating Drain Voltage(Recommended): +28V (Up to 32V)
- 50 Ω Input/Output (External DC block capacitor needed)
- Psat≥40W (CW)
- Small signal gain:>12dB, Power gain:>8dB
- Minimum Psat efficiency:>35%
- 20*10 mm metal RF package
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

Applications

- Power Amplifiers within L/S/C band
- Test Instrumentation
- EMC Amplifier Drivers
- 2-way Radios

Table 1. Maximum Ratings

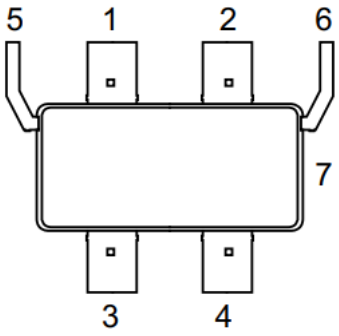
Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DSS}	150	Vdc
Gate--Source Voltage	V_{GS}	-10 to +2	Vdc
Operating Voltage	V_{DD}	+32	Vdc
Storage Temperature Range	Tstg	-65 to +150	°C
Case Operating Temperature	T_C	+150	°C

Operating Junction Temperature	T_J	+225	°C

Table 2. Thermal Characteristics

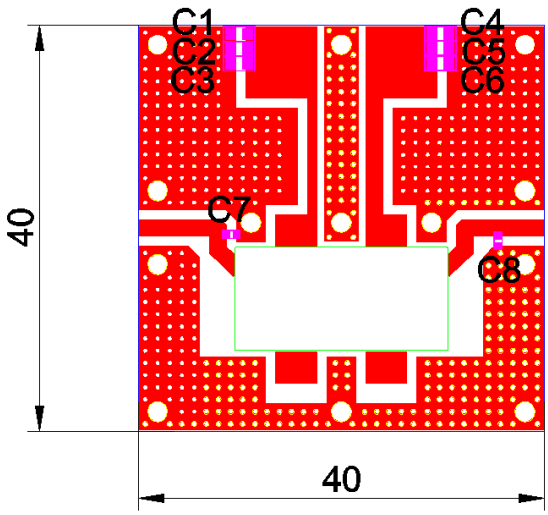
Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case T_C= 25°C, Pout=40W at 5GHz, FEA	$R_{\theta JC}$	2.0	°C/W

Pin Definition



Pin No.	Symbol	Description
5	Pin	RF Input
6	Pout	RF Output
1	Vgs	Gate Bias
2	Vds	Drain Bias
3,4	NC	No connection
7	Source	Source, grounding

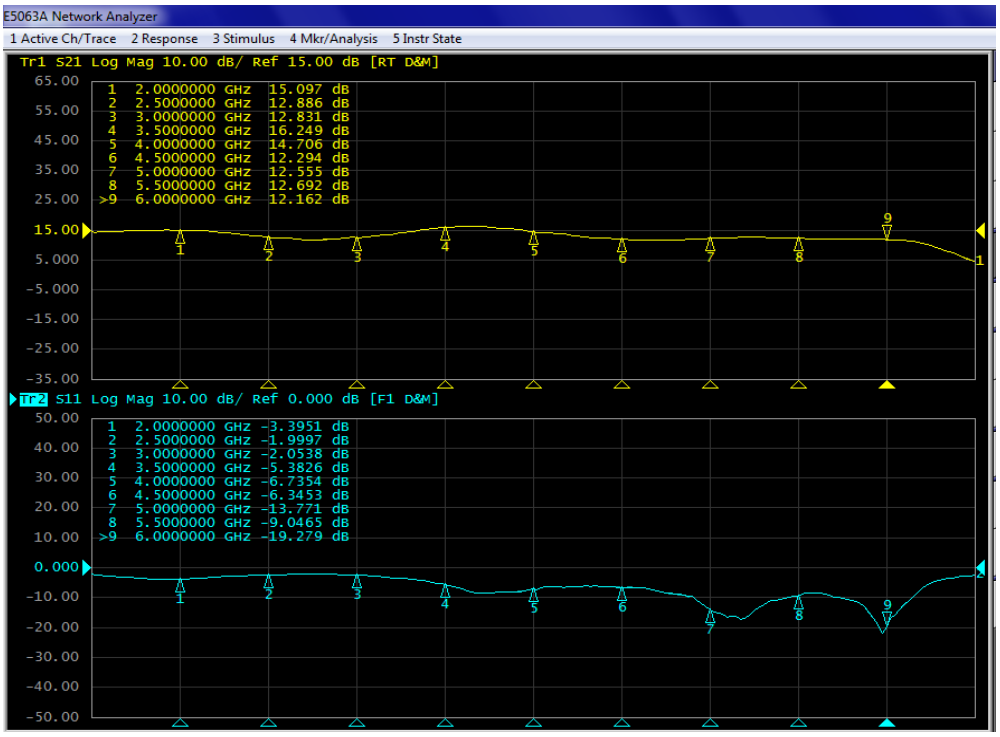
Typical application circuit



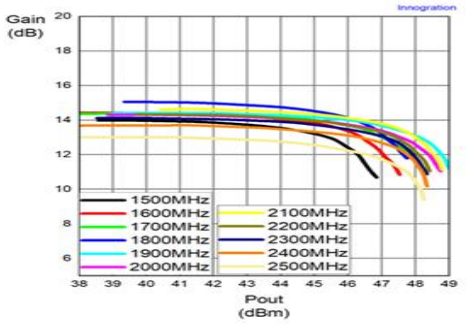
Component	Description	Suggested Manufacturer / Series Number
C1 C4	10 uF	TDK
C2 C5	120 pF	MQ301111
C3 C6	8.2 pF	MQ301111
C7	0.3 pF	ATC 600F
C8	0.2 pF	ATC 600F
PCB	30Mil Rogers 4350	Rogers

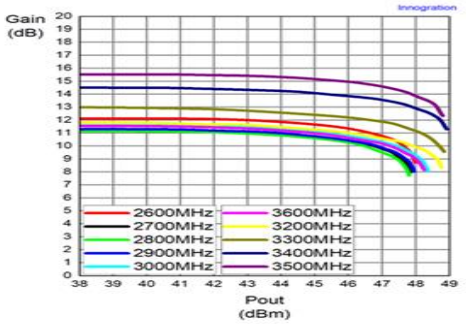
Typical performance

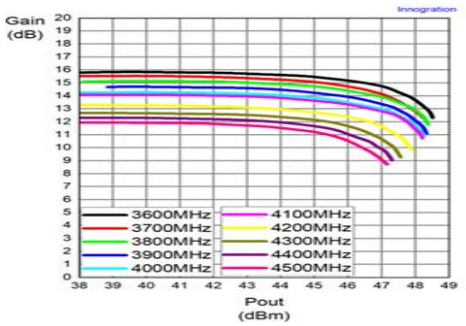
Network analyzer output S21/S11, Vds=28V, Idq=200mA

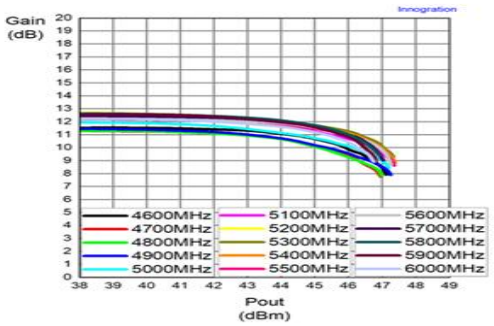


Pulse 100us 10%
Vgs=-2.45V Vds=28V Idq=200mA

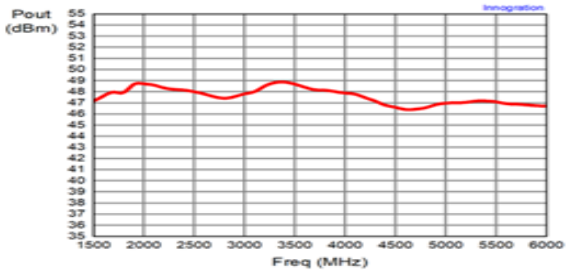


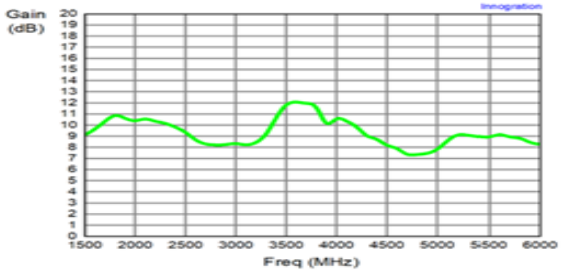


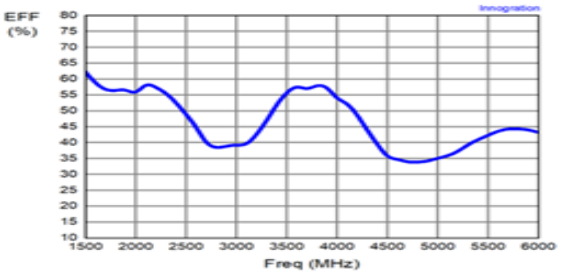


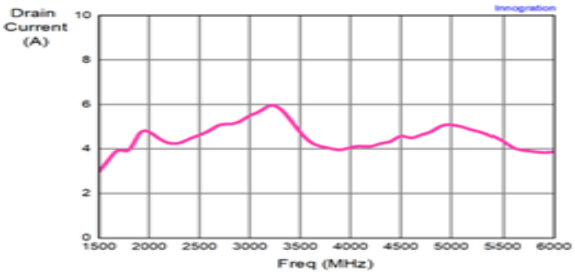


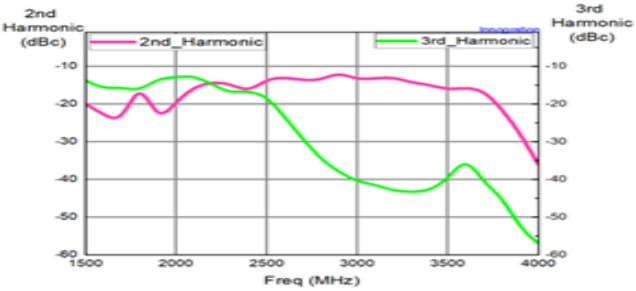
CW Test
Vgs=-2.45V Vds=28V Idq=200mA



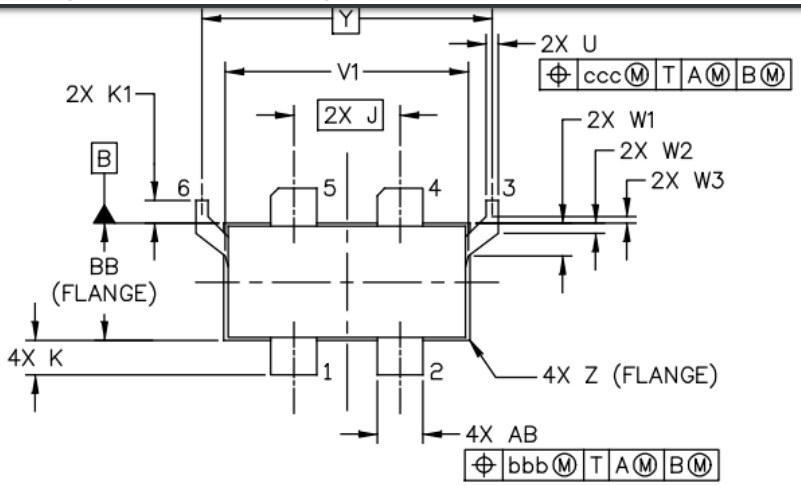


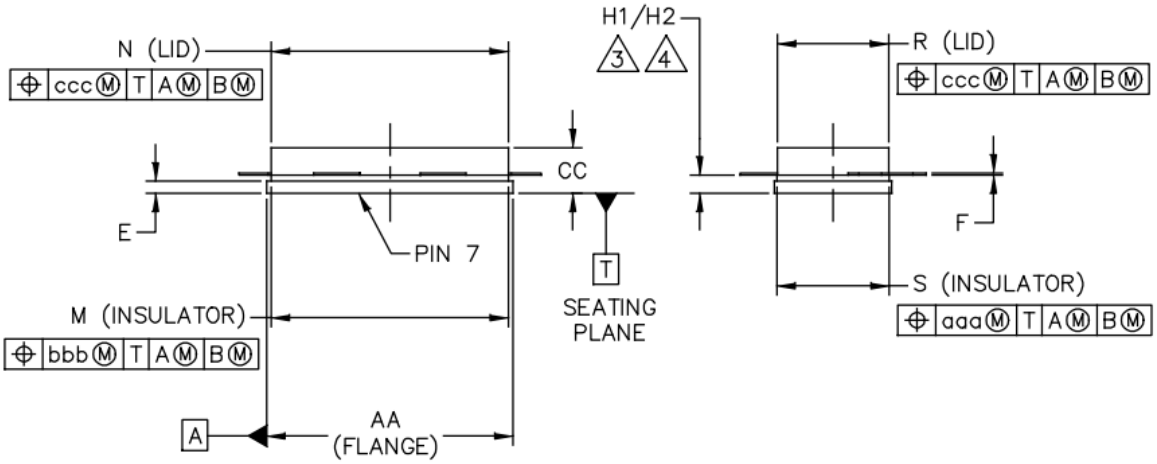






Earless Flanged Ceramic Package; 6 leads- BY4V





DIM	INCH MIN	INCH MAX	MILLIMETER MIN	MILLIMETER MAX	DIM	INCH MIN	INCH MAX	MILLIMETER MIN	MILLIMETER MAX
AA	.805	.815	20.45	20.70	R	.365	.375	9.27	9.53
BB	.380	.390	9.65	9.91	S	.365	.375	9.27	9.53
CC	.125	.170	3.18	4.32	U	.035	.045	0.89	1.14
E	.035	.045	0.89	1.14	V1	.795	.805	20.19	20.45
F	.004	.007	0.10	0.18	W1	.0975	.1175	2.48	2.98
H1	.057	.067	1.45	1.70	W2	.0225	.0425	0.57	1.08
H2	.054	.070	1.37	1.78	W3	.0125	.0325	0.32	0.83
J	.350 BSC		8.89 BSC		Y	.956 BSC		24.28 BSC	
K	.0995	.1295	2.53	3.29	Z	R.000	R.040	R0.00	R1.02
K1	.070	.090	1.78	2.29	AB	.145	.155	3.68	3.94
M	.774	.786	19.66	19.96	aaa	.005		0.13	
N	.772	.788	19.61	20.02	bbb	.010		0.25	
					ccc	.015		0.38	

Revision history

Table 6. Document revision history

Date	Revision	Datasheet Status
2025/8/14	Rev 1.0	Advanced Datasheet
2025/9/11	Rev 1.0	Preliminary datasheet, finalized from 1.5-6GHz to 2-6GHz， Rth modification

Application data based on JF-25-17

Disclaimers

Specifications are subject to change without notice. Innogration believes the information contained within this data sheet to be accurate and reliable. However, no responsibility is assumed by Innogration for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Innogration . Innogration makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose.“Typical” parameters are the average values expected by Innogration in large quantities and are provided for information purposes only. These values can and do vary in different applications and actual performance can vary over time. All operating parameters should be validated by customer’s technical experts for each application. Innogration products are not designed, intended or authorized for use as components in applications intended for surgical implant into the body or to support or sustain life, in applications in which the failure of the Innogration product could result in personal injury or death or in applications for planning, construction, maintenance or direct operation of a nuclear facility. For any concerns or questions related to terms or conditions, pls check with Innogration and authorized distributors