



GaN 70W,2-6.2GHz ,28~32V,RF Power Transistor

Description

The GTAH60070BY4 is a 28V 70W device, both input and output matched GaN HEMT, ideal for multiple applications within 2 to 6.2GHz. It can support CW and pulse CW, and any other modulation signals

In its typical wideband application, it can deliver minimum 40-50W Psat across the full band of 2 to 6.2GHz within 28~32V.

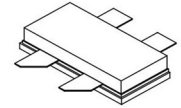
There is no guarantee of performance when this part is used outside of stated frequencies.

- Typical performance across 2-6.2GHz class AB application circuit with device soldered

Vds=32V Vgs=-2.5V Idq=100mA (28V data upon request) and Pin=41dBm data in later pages

Recommended driver: GMAH2060-10C9, Predriver: GMAH0065-2

GTAH60070BY4



Freq(MHz)	Pin(dBm)	Psat(dBm)	Psat(W)	Ids(A)	Gain(dB)	Eff(%)
2000	37.2	47.7	59.2	3.73	10.6	56.6
2100	38.0	48.1	64.0	4.06	10.0	56.3
2200	38.6	48.2	66.4	4.44	9.7	53.4
2300	38.2	47.9	61.1	4.52	9.6	48.3
2400	38.7	48.0	63.1	5.10	9.3	44.2
2500	38.3	47.7	59.0	5.00	9.4	42.2
2600	38.9	48.1	63.8	5.18	9.1	44.0
2700	38.8	48.4	68.4	6.09	9.5	40.1
2800	38.9	48.1	64.4	5.44	9.2	42.3
2900	38.8	48.1	65.0	5.24	9.4	44.3
3000	38.8	48.3	67.8	5.19	9.5	46.6
3100	38.4	48.1	64.6	4.88	9.7	47.3
3200	39.9	48.9	78.2	5.99	9.0	46.6
3300	39.7	49.0	79.4	5.81	9.3	48.8
3400	39.8	49.0	78.9	5.60	9.2	50.3
3500	39.7	48.9	78.2	5.23	9.2	53.4
3600	39.3	48.8	75.7	4.91	9.5	55.1
3700	39.6	48.7	73.8	4.79	9.0	55.0
3800	39.5	48.7	74.6	4.75	9.2	56.1
3900	39.1	48.6	71.9	4.74	9.5	54.2
4000	38.8	48.1	64.4	4.32	9.3	53.3
4100	39.4	48.4	69.5	4.93	9.0	50.3
4200	39.3	48.5	71.1	4.91	9.2	51.7
4300	38.9	48.2	66.7	4.50	9.3	52.9
4400	38.9	48.2	66.4	4.33	9.4	54.7
4500	38.9	48.2	66.4	4.25	9.3	55.8
4600	38.8	48.0	63.1	4.10	9.2	55.0
4700	38.4	47.6	58.1	3.84	9.2	54.0
4800	39.2	47.7	59.3	3.91	8.6	54.2
4900	38.6	47.4	54.6	3.74	8.8	52.1



5000	39.1	47.4	54.7	3.83	8.3	51.0
5100	38.6	47.2	51.9	3.80	8.6	48.8
5200	38.8	47.1	51.3	3.83	8.3	47.8
5300	38.4	46.6	45.9	3.65	8.2	44.9
5400	38.9	46.6	45.3	3.88	7.7	41.7
5500	39.0	46.9	48.8	4.31	7.9	40.4
5600	38.9	46.8	47.3	4.43	7.8	38.1
5700	39.9	47.7	58.7	5.50	7.8	38.1
5800	39.1	47.8	60.0	5.42	8.7	39.5
5900	38.1	47.5	56.2	4.94	9.5	40.7
6000	37.9	47.5	56.1	4.82	9.6	41.6
6100	38.6	47.5	55.7	4.69	8.8	42.4
6200	38.5	47.0	50.0	4.31	8.5	41.4

Applications

- S and C band power amplifier
- 5G wideband power amplifier

Important Note: Proper Biasing Sequence for GaN HEMT Transistors

Turning the device ON

1. Set VGS to the pinch-off (VP) voltage, typically -5 V
2. Turn on VDS to nominal supply voltage
3. Increase VGS until IDS current is attained
4. Apply RF input power to desired level

Turning the device OFF

1. Turn RF power off
2. Reduce VGS down to VP, typically -5 V
3. Reduce VDS down to 0 V
4. Turn off VGS

Figure 1: Pin Connection definition

Transparent top view (Backside grounding for source)

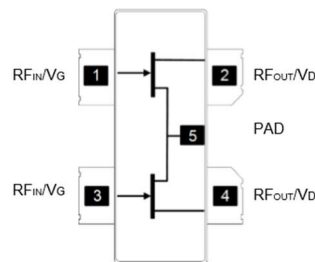


Table 1. Maximum Ratings

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
Maximum gate current	I_{gs}	18	mA
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 by FEA $T_c = 25^\circ\text{C}$, at $P_{out} = 70\text{W}$ CW at 4GHz	$R_{\theta JC}$	1.2	$^\circ\text{C}/\text{W}$

Table 3. Electrical Characteristics (TA = 25°C unless otherwise noted)

DC Characteristics (measured on wafer prior to packaging)

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = -8\text{V}$; $I_{DS} = 18\text{mA}$	V_{DSS}		150		V
Gate Threshold Voltage	$V_{DS} = 10\text{V}$, $I_D = 18\text{mA}$	$V_{GS(th)}$	-4		-2	V
Gate Quiescent Voltage	$V_{DS} = 28\text{V}$, $I_{DS} = 100\text{mA}$, Measured in Functional Test	$V_{GS(Q)}$		-2.5		V

Ruggedness Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Load mismatch capability	4GHz, $P_{out} = 70\text{W}$ Pulsed CW All phase, No device damages	VSWR		10:1		

Typical performance
2000-6200MHz

Figure 3: Picture of application board ,class AB

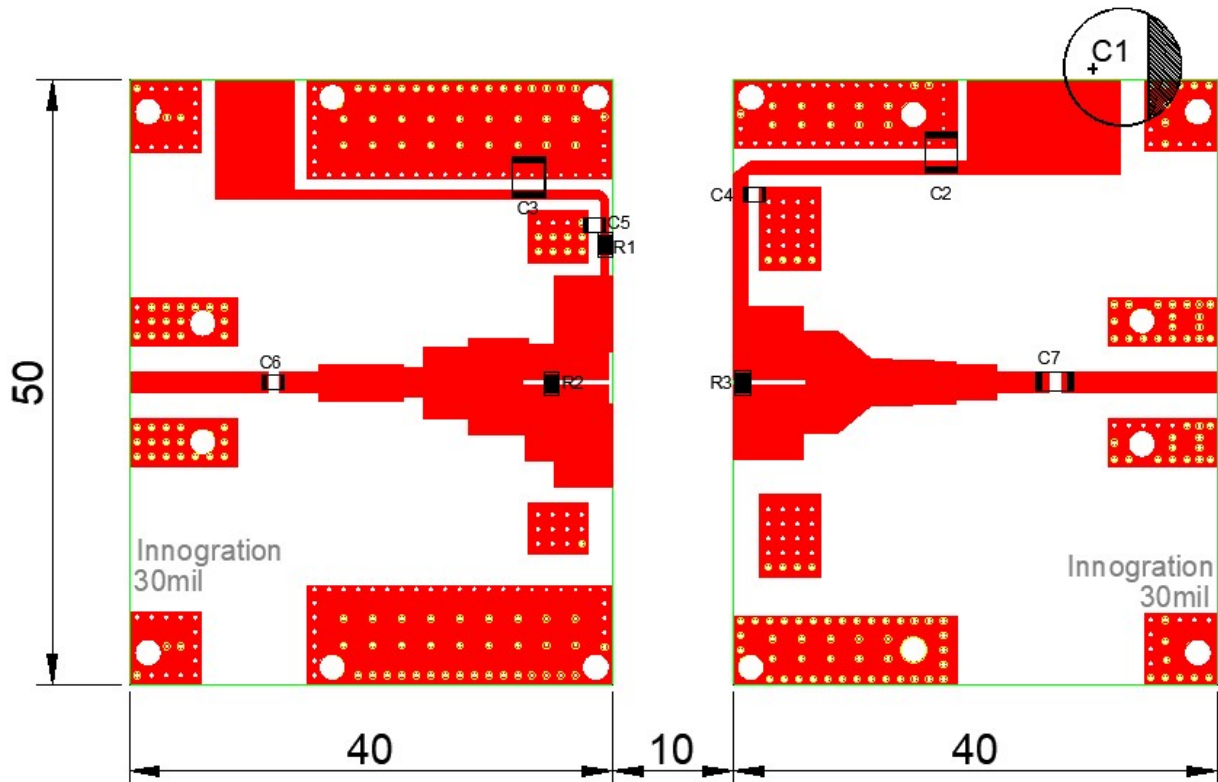


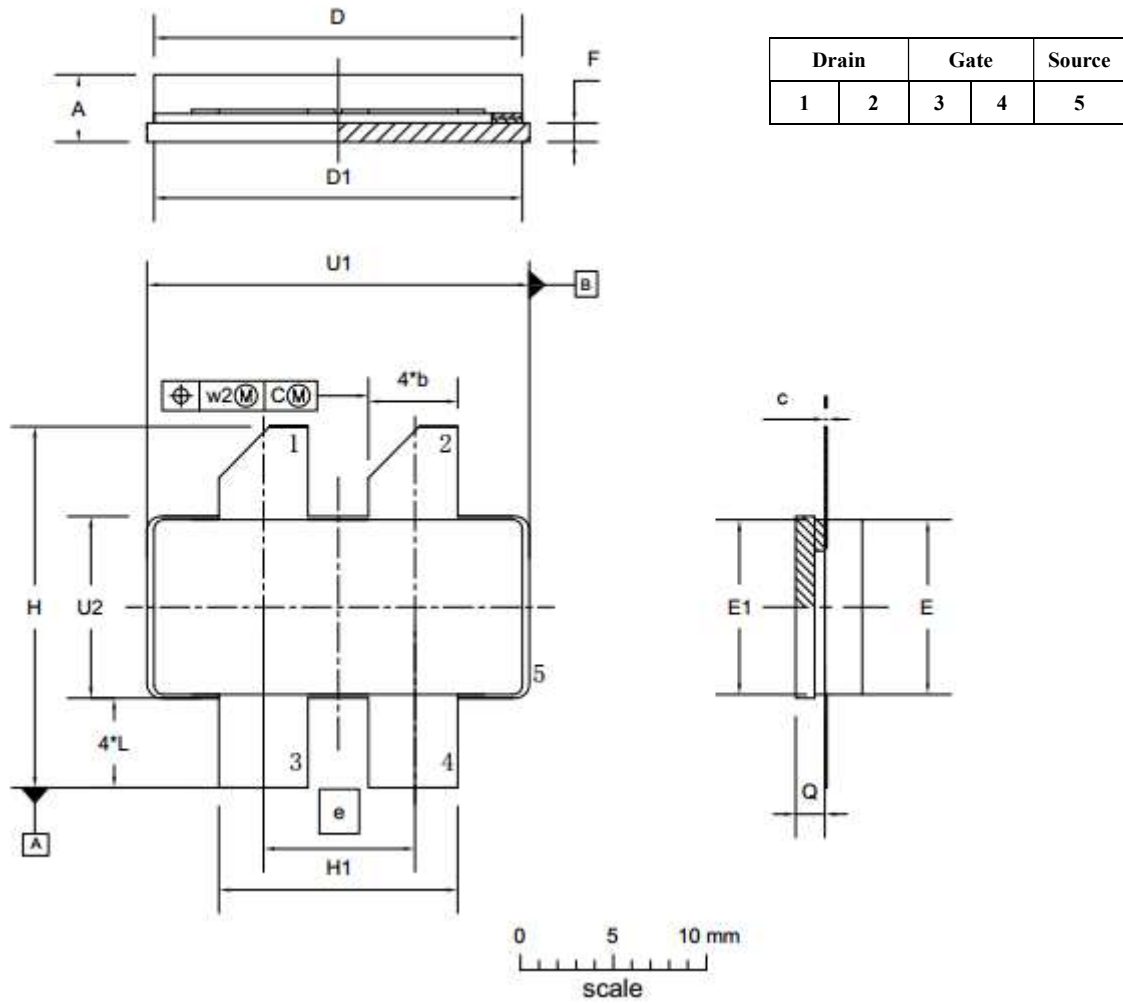


Table 4. Bill of materials of application board (PCB layout upon request)

Component	Description	Suggestion
C1	1000uF/63V	
C2,C3	10uF	1210
C4,C5,C6	5.1pF	MQ300805
C7	4.7pF	MQ301111
R1	Chip Resistor,10Ω	0805
R2,R3	Chip Resistor,10Ω	1206
PCB	30 mil Rogers 4350b	



Earless Flanged Ceramic Package; 4 leads



UNIT	A	b	c	D	D ₁	e	E	E ₁	F	H	H ₁	L	Q	U ₁	U ₂	W ₁	W ₂
mm	4.72	4.67	0.15	20.02	19.96	7.90	9.50	9.53	1.14	19.94	12.98	5.33	1.70	20.70	9.91	0.25	0.51
	3.43	4.93	0.08	19.61	19.66		9.30	9.25	0.89	18.92	12.73	4.32	1.45	20.45	9.65		
inches	0.186	0.194	0.006	0.788	0.786	0.311	0.374	0.375	0.045	0.785	0.511	0.210	0.067	0.815	0.390	0.01	0.02
	0.135	0.184	0.003	0.772	0.774		0.366	0.364	0.035	0.745	0.501	0.170	0.057	0.805	0.380		

OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-B4					03/12/2013



Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2023/12/19	V1.0	Product Datasheet Creation

Application data based on: RXT-23-49

Notice

Specifications are subject to change without notice. Innogrations believes the information within the data sheet to be reliable. Innogrations makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose.

“Typical” parameter is the average values expected by Innogrations in quantities and are provided for information purposes only. It can and do vary in different applications and related performance can vary over time. All parameters should be validated by customer’s technical experts for each application.

Innogrations 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 Innogrations 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, please check with Innogrations and authorized distributors

Copyright © by Innogrations (Suzhou) Co.,Ltd.