



GaN 50V, 2400W, DC-0.7GHz RF Power Transistor

Description

The XQ072K4RVPS is a 1200W, input matched GaN HEMT, ideal for multiple applications from DC-0.7GHz, with leading efficiency

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

XQ072K4RVPS



- Typical performance across 410-520MHz class AB application circuit with device soldered

XQ072K4RVPS ^{VI} VGS=-3.47V VDS=50V IDQ=140mA Pulse width 100us 10%								
Freq (MHz)	Pout (dBm)	Pout (W)	IDS (A)	Pin (dBm)	Gain (dB)	Eff (%)	2nd (dBc)	3rd (dBc)
410	63.51	2243.88	6.28	45.97	17.54	71.46	-30.5	-28.6
420	63.71	2349.63	6.25	46.64	17.07	75.19	-31.5	-26.3
430	63.76	2376.84	6.15	46.45	17.31	77.30	-29.3	-28.5
440	63.76	2376.84	6.05	45.67	18.09	78.57	-29.1	-37.2
450	63.66	2322.74	5.95	44.90	18.76	78.08	-29.4	-45.0
460	63.65	2317.39	5.91	45.05	18.6	78.42	-29.2	-45.5
470	63.64	2312.06	5.89	45.14	18.5	78.51	-28.3	-40.0
480	63.72	2355.05	5.96	45.86	17.86	79.03	-28.0	-38.9
490	63.74	2365.92	5.99	46.42	17.32	79.00	-26.8	-39.5
500	63.74	2365.92	5.99	46.78	16.96	79.00	-25.7	-38.5
510	63.77	2382.32	6.04	47.17	16.6	78.88	-25.0	-37.2
520	63.87	2437.81	6.13	47.68	16.19	79.54	-25.2	-30.7
530	63.64	2312.06	5.94	47.95	15.69	77.85	-26.1	-35.1

Applications

- P band power amplifier
- UHF TV
- Wideband power amplifier
- ISM

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

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V _{DSS}	+200	Vdc



Gate--Source Voltage	V_{GS}	-10 to +2	Vdc
Operating Voltage	V_{DD}	55	Vdc
Maximum gate current	I_{GS}	320	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 $P_{diss} = 800\text{W}$	$R_{\theta JC}$	0.15	°C /W

R_j under pulsed CW will be varied and lower than above DC test one, check with us for details

Table 3. Electrical Characteristics ($T_A = 25^{\circ}\text{C}$ unless otherwise noted)

DC Characteristics (measured on wafer prior to packaging)

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = -8\text{V}$; $I_{DS} = 320\text{mA}$	V_{DSS}		200		V
Gate Threshold Voltage	$V_{DS} = 10\text{V}$, $I_D = 320\text{mA}$	$V_{GS(th)}$	-4		-2	V
Gate Quiescent Voltage	$V_{DS} = 50\text{V}$, $I_{DS} = 1500\text{mA}$, Measured in Functional Test	$V_{GS(Q)}$		-3.3		V

Ruggedness Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Load mismatch capability	0.7GHz, $P_{out} = 2400\text{W}$ Pulsed CW All phase, No device damages	VSWR		10:1		



410-530MHz

Figure 2: Network analyzer output, S11 and S21 (VDS=50V VGS=-3.2V IDQ=1500mA)



Figure 3: Picture of application board 0.4-0.5GHz class AB

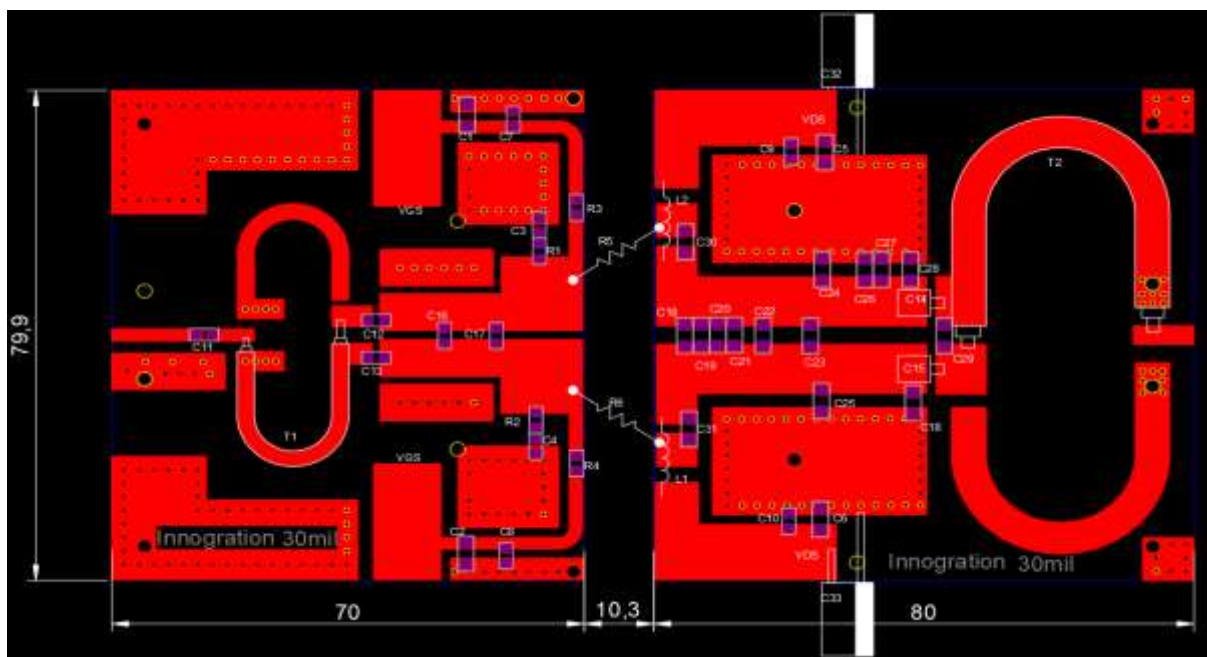




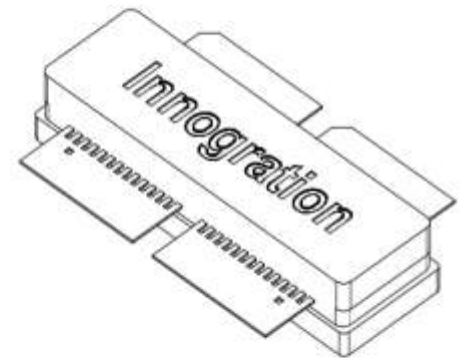
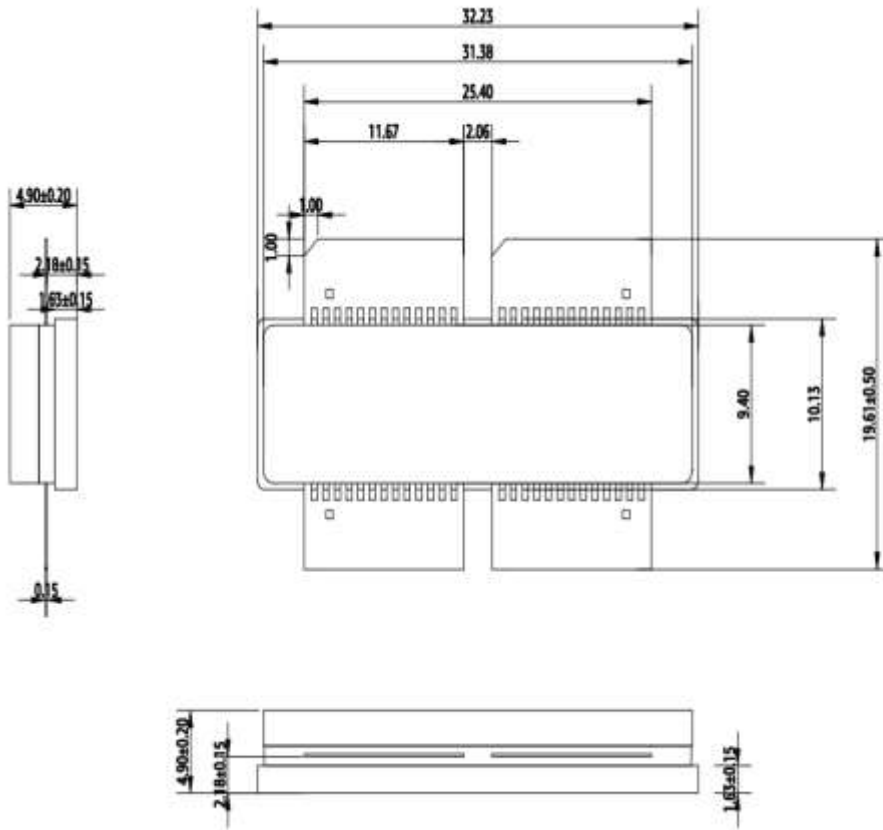
Table 4. Bill of materials of application board (PCB layout upon request)

Component	Description	Suggestion
C1~C6	10uF 1210	TDK
C7~C10	75pF MQ101111	
C11~C13	20pF MQ101111	
C14,C15	91pF MCM-1-300V-D-100J	
C16,C24,C25,C26,C27,C29	5.6pF MQ101111	
C17	30pF MQ301111	
C18,C20,C21	9.1pF MQ101111	
C19	24pF MQ101111	
C22	15pF MQ101111	
C23	10pF MQ301111	
C28	5.1pF MQ101111	
C30,C31	1000pF MQ101111	
C32,C33	4700uF/63V	Electrolytic Capacitor
R1,R2	10 Ω 1206	Chip Resistor
R3,R4	18 Ω 1206	Chip Resistor
R5,R6	150 Ω	/
T1	25ohm 60mm	SFT-25-3
T2	25ohm 90mm	SFT-25-3
L1,L2	1.5mm enamelled wire, inner diameter 5mm, 3 turns	DIY
PCB	30Mil Rogers4350B	



Package Outline

Earless Flanged Plastic Air Cavity Package; 4 leads



Unit:mm

Tolerance ±0.10mm, Except as Noted.

Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2026/9/8	V1.0	Preliminary Datasheet Creation

Application data based on: HL-26-35

Notice

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

"Typical" parameter is the average values expected by Innegration 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.

Innegration 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 Innegration 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 Innegration and authorized distributors

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