



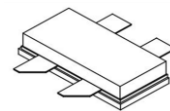
GaN 50V, 1200W, DC-1GHz RF Power Transistor

Description

The XK101K2RVPS is a 1200W, input matched GaN HEMT, ideal for multiple applications from DC-1GHz, with leading efficiency

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

XK101K2RVPS



- Typical performance across 0.4-0.5GHz class AB application circuit with device soldered

XK101K2RVPS VGS=-3.51V VDS=50V IDQ=400mA Pulse width 100us 10%								
Freq (MHz)	Pout (dBm)	Pout (W)	IDS (A)	Pin (dBm)	Gain (dB)	Eff (%)	2nd (dBc)	3rd (dBc)
400	60.15	1035.14	3.13	40.52	19.63	66.14	-33.5	-30.5
420	60.90	1230.27	3.77	40.58	20.32	65.27	-29.1	-30.6
440	61.24	1330.45	3.98	40.83	20.41	66.86	-32.3	-30.8
460	61.50	1413.56	3.92	41.45	20.35	77.22	-33.3	-31.5
480	61.34	1361.44	3.92	41.34	20	69.46	-30.6	-31.3
500	60.78	1196.74	3.62	41.09	19.69	66.12	-33.8	-31.1

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}	160	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
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Thermal Resistance, Junction to Case by FEA $T_C = 85^{\circ}\text{C}$, at $T_J = 200^{\circ}\text{C}$	$R_{\theta JC}$	0.2	$^{\circ}\text{C/W}$
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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	$V_{GS} = -8\text{V}$; $I_{DS} = 160\text{mA}$	V_{DSS}		200		V
Gate Threshold Voltage	$V_{DS} = 10\text{V}$, $I_D = 160\text{mA}$	$V_{GS(th)}$	-4		-2	V
Gate Quiescent Voltage	$V_{DS} = 50\text{V}$, $I_{DS} = 400\text{mA}$, Measured in Functional Test	$V_{GS(Q)}$		-3.5		V

Ruggedness Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Load mismatch capability	1GHz, $P_{out} = 1200\text{W}$ Pulsed CW All phase, No device damages	VSWR		5:1		

0.4-0.5GHz

Figure 2: Network analyzer output, S11 and S21 ($V_{DS} = 50\text{V}$ $V_{GS} = -3.2\text{V}$ $I_{DQ} = 1000\text{mA}$)

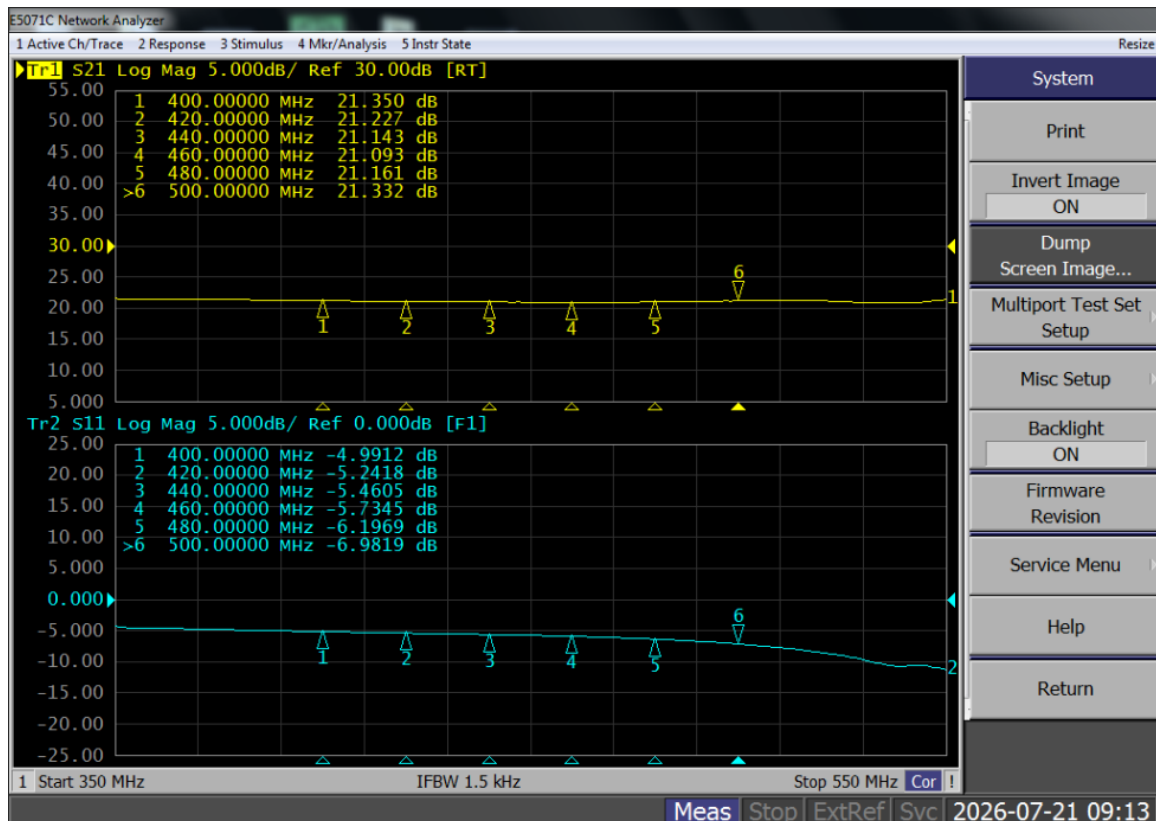


Figure 3: Picture of application board 0.4-0.5GHz class AB

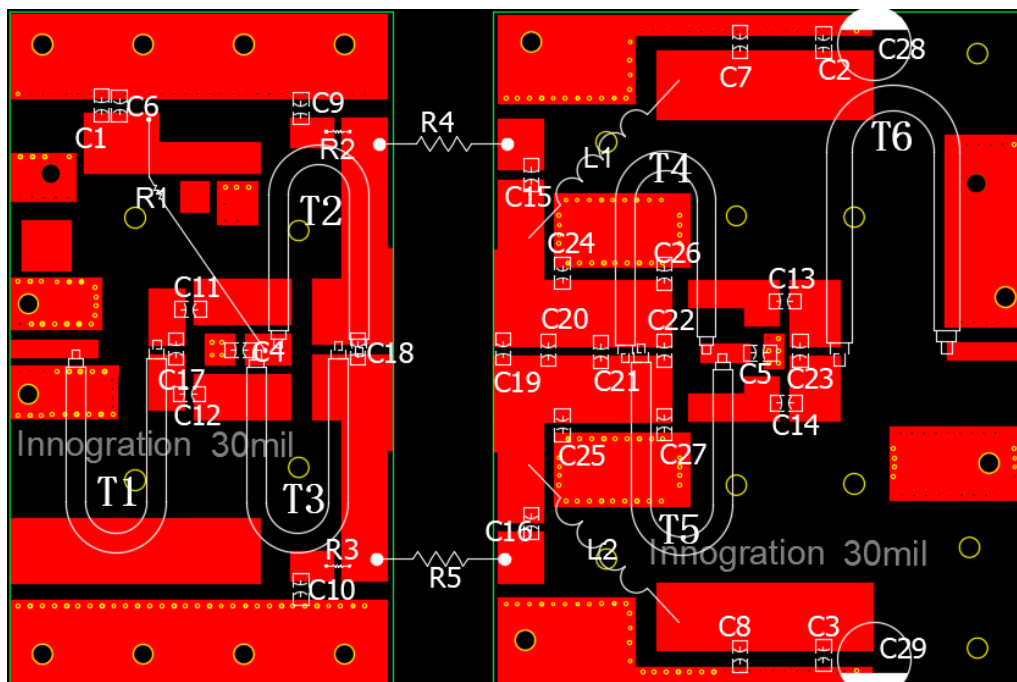
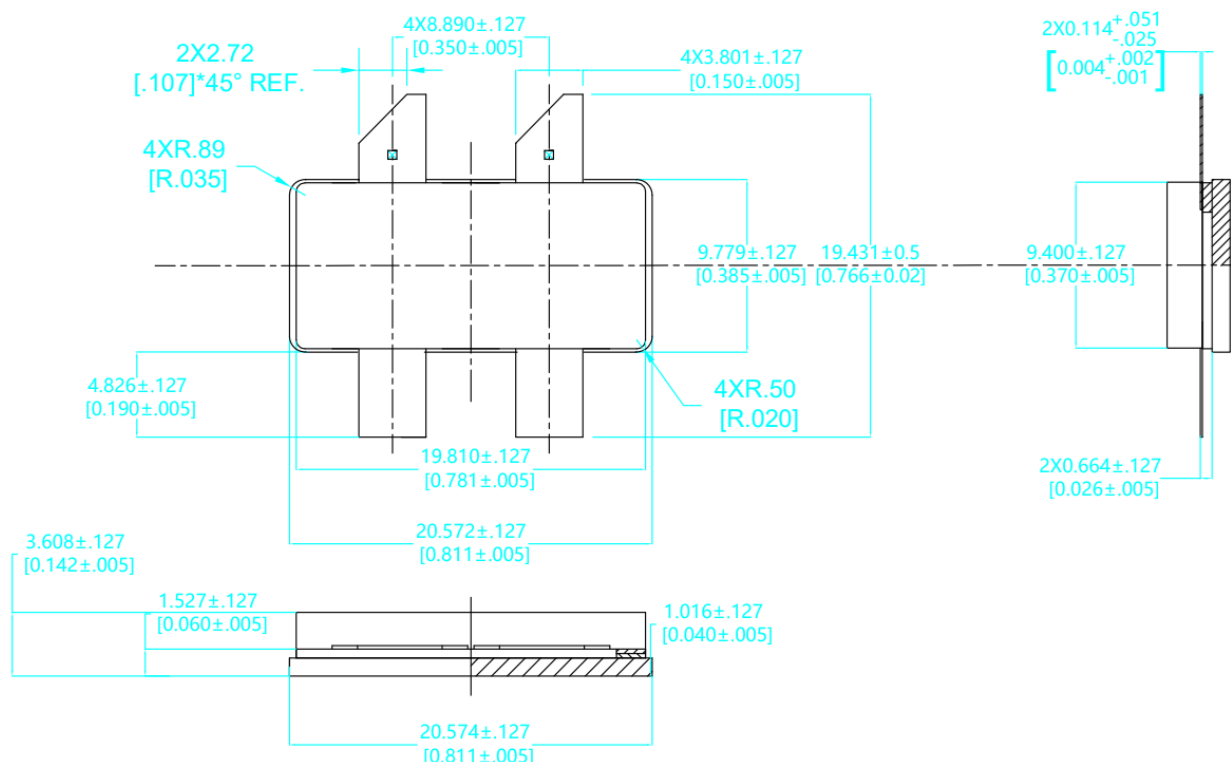


Table 4. Bill of materials of application board (PCB layout upon request)

Component	Description	Suggested Manufacturer
C1~C5	10uF 1210	TDK
C6~C16	560pF MQ101111	
C17	4.3+0.8pF MQ301111	
C18	27pF MQ101111	
C19	9.1pF MQ301111	
C20	15pF MQ301111	
C21	12pF MQ301111	
C22	8.2pF MQ301111	
C23	1.2pF MQ301111	
C24,C25	3pF MQ301111	
C26,C27	5.1pF MQ301111	
C28,C29	4700uF / 63V	
R1	200Ω	/
R2,R3	18Ω 1206	/
R4,R5	200Ω	TYT
L1,L2	1.5mm wire , 3mm inner diameter, 4Turns	DIY
T1,T6	50ohm 70mm RFSFBU-086-50	/
T2,T3	25ohm 70mm RFSFBU-086-25	/
T4,T5	16.7ohm 70mm SFF-16.7-1.5	/
PCB	Rogers 4350B 30mil	



Earless Flanged Ceramic Package; 4 leads



Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2026/7/22	V1.0	Preliminary Datasheet Creation

Application data based on: HL-26-27

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