



Gallium Nitride 28V, 250W, 1.3-1.5GHz RF Power Transistor

Description

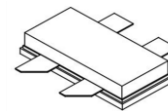
The NK1522HS is a 250W, both input and output matched GaN HEMT, ideal for multiple applications from 1.3-1.5GHz, with leading performance. It can support CW, pulse or any modulated signal.

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

- Typical performance across 1.3-1.5GHz class AB application circuit with device soldered

VDS= 28V, IDQ=200mA(Vgs=-2.71V) CW

NK1522HS



Freq (MHz)	Psat (dBm)	Psat (W)	Ids (A)	Pin (dBm)	Gain (dB)	Eff (%)	2nd (dBI)
1300	54.03	252.9	15.14	40.78	13.25	60.00	-20.1
1350	54.44	278.0	15.06	39.6	14.84	65.92	-22
1400	54.37	273.5	15.6	40.48	13.89	62.62	-16.1
1450	54.63	290.4	15.45	40.36	14.27	67.13	-19.4
1500	54.14	259.4	13.5	41.75	12.39	68.63	-20.7

Applications

- L band power amplifier
- GPS, Beidou jammer
- 1.5GHz LTE 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

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
Maximum gate current	I _{gs}	72	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 = 85°C, at T _J =200°C	R _{θJC}	0.8	°C /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	VGS=-8V; IDS=72mA	V _{DSS}		150		V
Gate Threshold Voltage	VDS =10V, ID = 72mA	V _{GS(th)}	-4		-2	V



Gate Quiescent Voltage	VDS =50V, IDS=10mA, Measured in Functional Test	V _{GS(Q)}		-2.71		V
------------------------	--	--------------------	--	-------	--	---

Ruggedness Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Load mismatch capability	1.4 GHz, Pout=250W Pulsed CW All phase, No device damages	VSWR		10:1		

Figure 3: Network analyzer output, S11 and S21 (VDS=28V VGS=-2.75V IDQ=450mA)

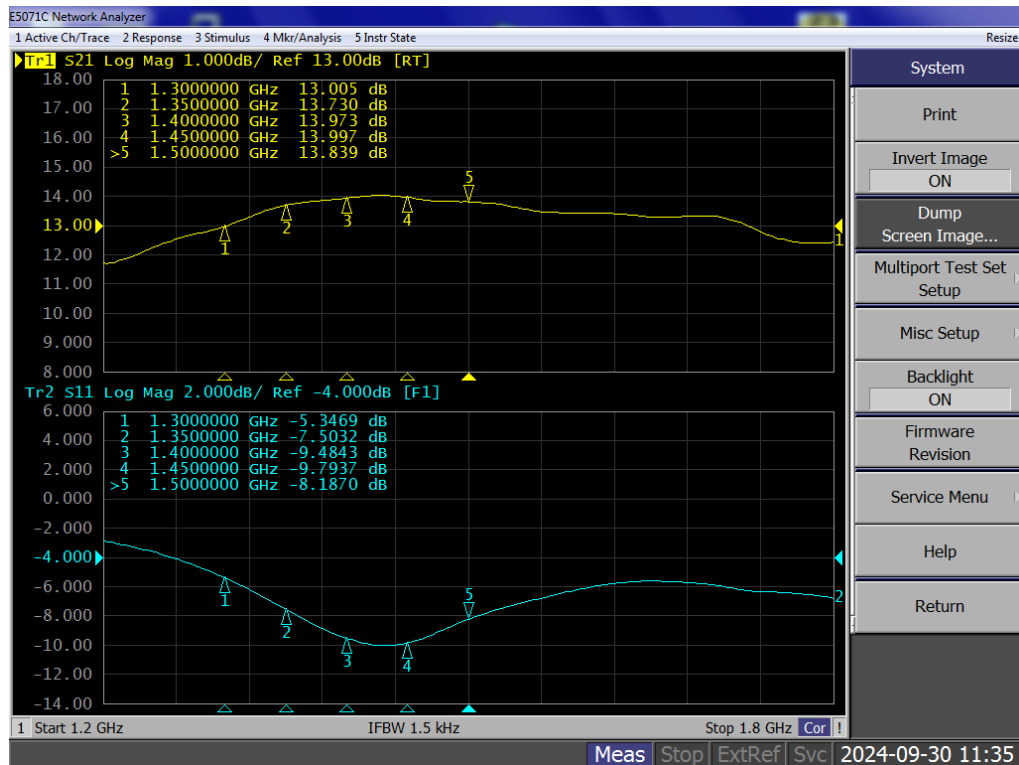


Figure 4: Picture of application board 1.3-1.5GHz class AB

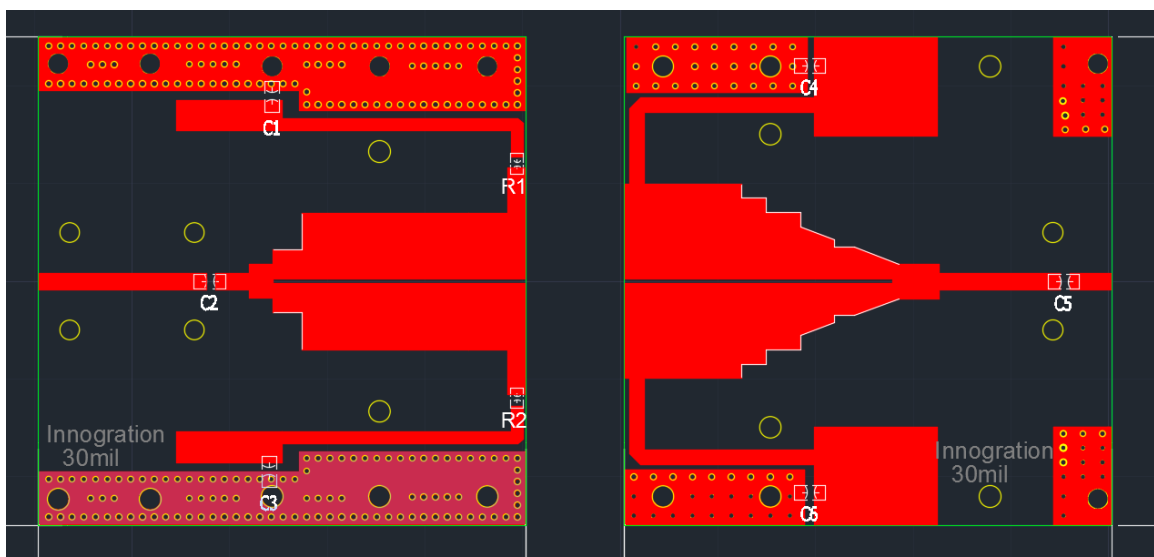


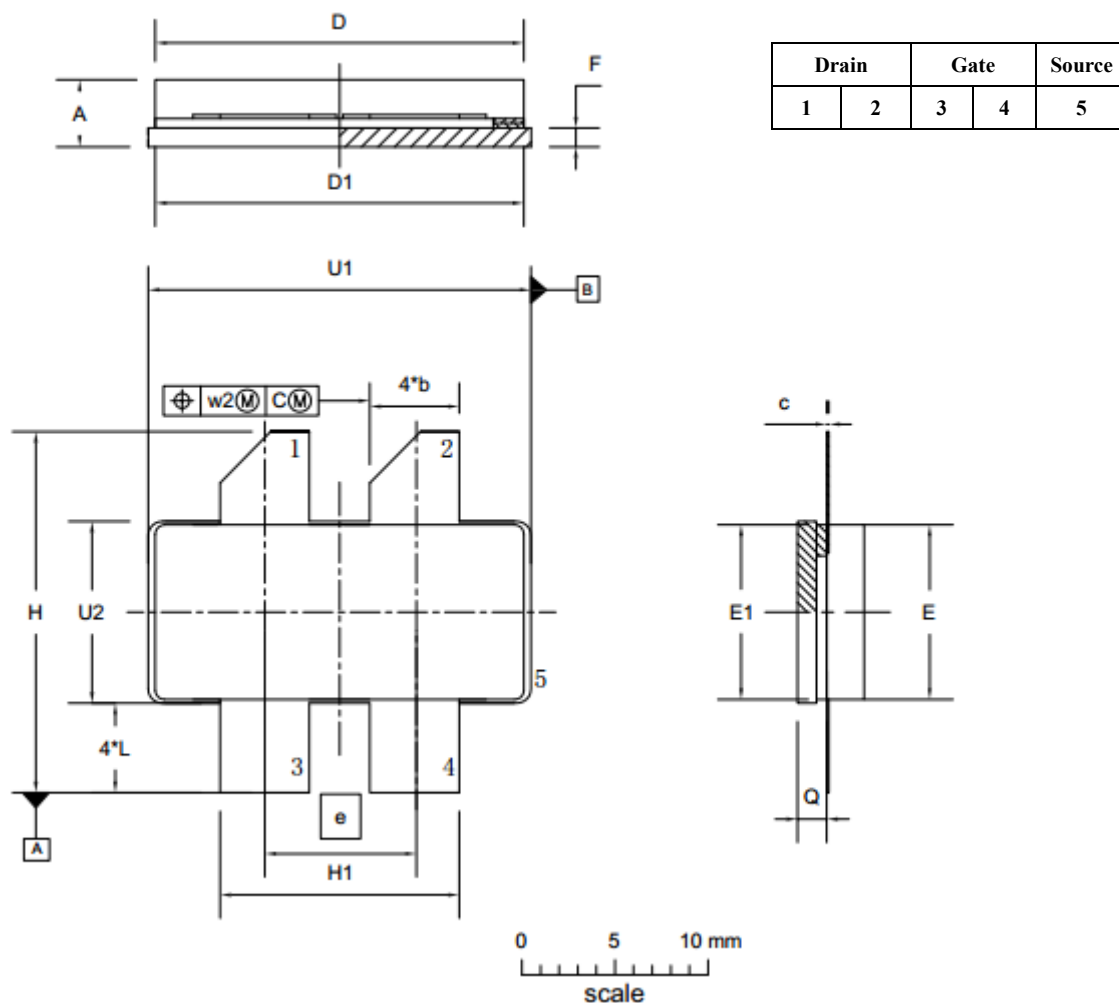


Table 4. Bill of materials of application board (PCB layout upon request)

C1,C3,C4,C6	10uF/1210	/
C2	33pF/0603	/
C5	33pF/MQ301111	BEIJING YUANLU HONGYUAN ELECTRONICTECHNOLOGY CO., LTD.
R1,R2	10 Ω /1206	/



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
2024/10/11	V1.0	Preliminary Datasheet Creation

Application data based on: SJJ-24-09

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.