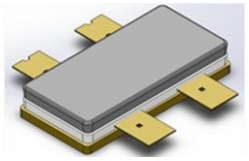
Gallium Nitride 28V, 200W,0.7-1.8GHz RF Power Transistor

Description

GTAH18201B4C



The GTAH18201B4C is a 200W，both input and output matched GaN HEMT, ideal for multiple applications within L band up to 1.8GHz. **Please be noticed that both leads at input and output side are internally connected.** In typical application like 1.3-1.8G, 1.1-1.7G etc, it can deliver >180W CW with high efficiency

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

- Typical performance across 1.35-1.78GHz class AB application circuit with device soldered

VDS= 28V, IDQ=100mA(Vgs=-2.6V) T=25 C,

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff(%)	P1dB Gain(dB)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)
1300	52.11	162.6	61.4	17.96	53.1	204.3	67.2
1350	52.11	162.7	65.2	18.42	52.93	196.2	70.5
1400	51.91	155.4	65.3	18.47	52.78	189.5	71.1
1450	51.65	146.1	62.6	18.98	52.67	184.8	69.1
1500	51.58	144.0	60.5	18.54	52.63	183.3	66.8
1550	51.37	137.0	57.0	18.69	52.63	183.4	64.0
1600	51.54	142.6	56.0	18.93	52.82	191.4	63.0
1650	51.61	144.9	54.7	18.72	53.05	201.9	62.6
1700	51.69	147.6	54.4	19.13	53.29	213.3	63.2
1750	51.79	151.2	55.5	19.65	53.47	222.2	64.7
1800	51.77	150.3	56.7	19.48	53.44	220.7	66.0

Applications

- L band 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)

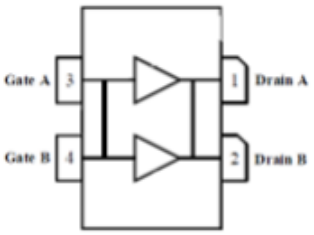


Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DSS}	+150	Vdc
Gate--Source Voltage	V_{GS}	-10 to +2	Vdc
Operating Voltage	V_{DD}	32	Vdc
Maximum gate current	Igs	49	mA
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 by FEA T_C= 85°C, at Tj=200°C	$R_{\theta JC}$	0.9	°C /W

Table 3. Electrical Characteristics (TA = 25℃ 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=49mA	V_{DSS}		150		V
Gate Threshold Voltage	VDS =10V, ID = 49mA	$V_{GS(th)}$	-4		-2	V
Gate Quiescent Voltage	VDS =50V, IDS=100mA, Measured in Functional Test	$V_{GS(Q)}$		-2.59		V

Ruggedness Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Load mismatch capability	1.8GHz, Pout=200W Pulsed CW All phase, No device damages	VSWR		10:1		

Figure 2: Median Lifetime vs. Channel Temperature

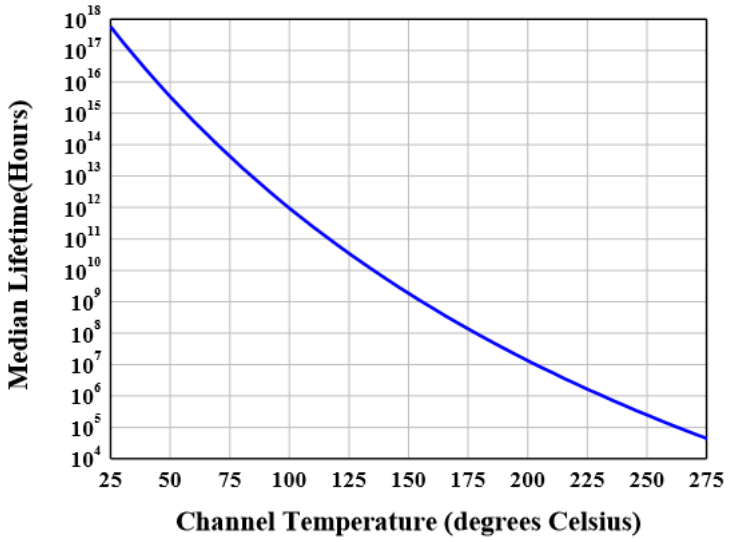


Figure 3: Network analyzer output, S11 and S21 (1.3-1.8GHz Class AB)

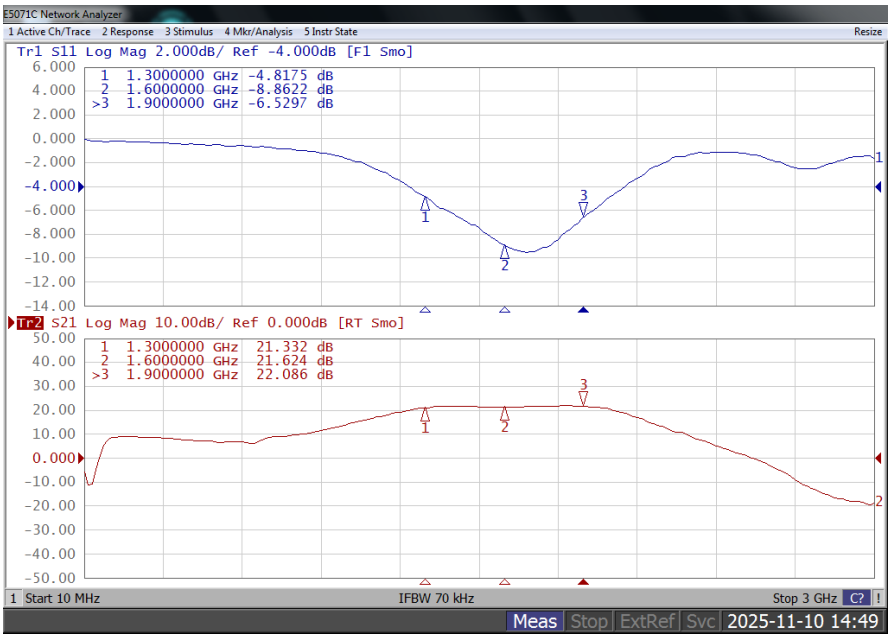


Figure 4: Picture of application board 1.3-1.8GHz class AB

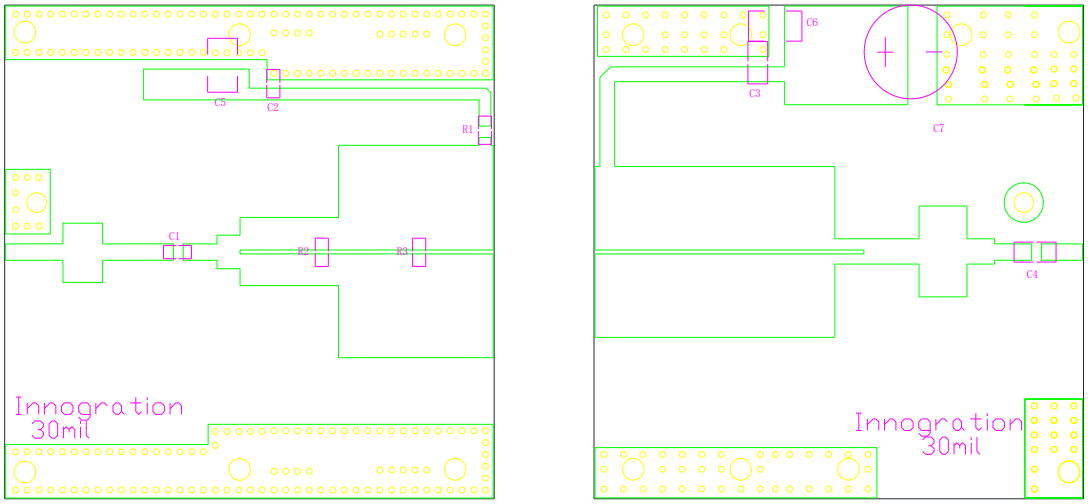
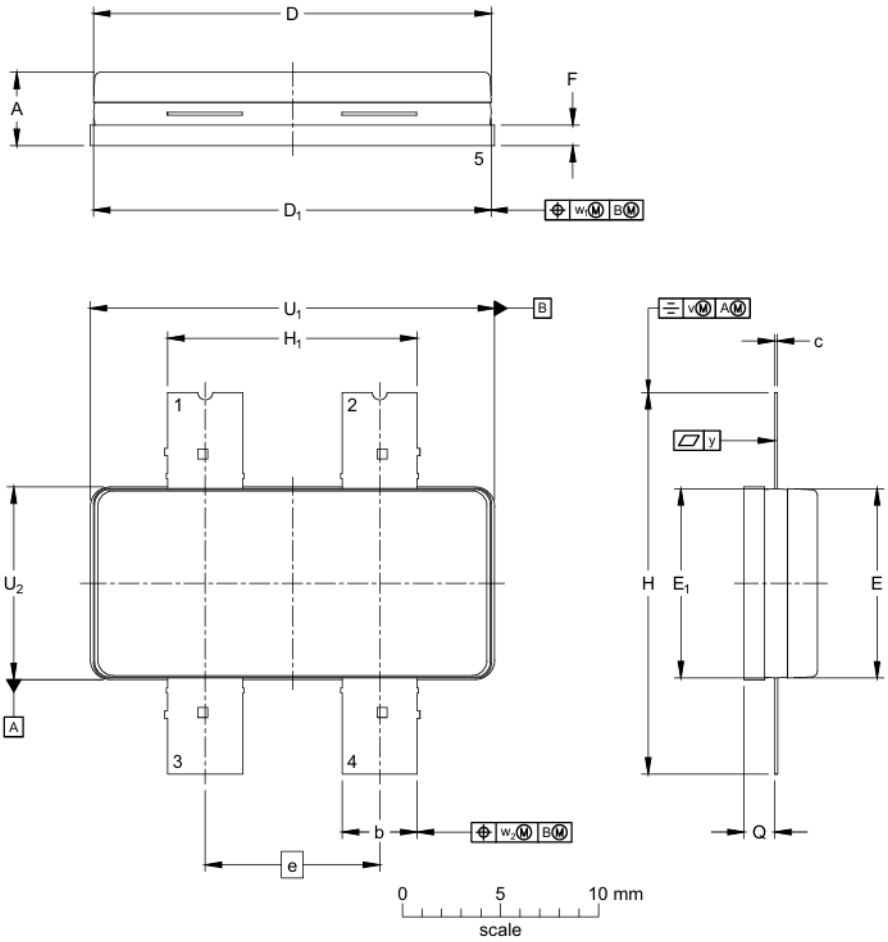


Table 4. Bill of materials of application board (PCB layout upon request)

Designator	Comment	Footprint	Quantity
C1	10 pF/250V	0603/0805	3
C2, C3, C4	30 pF /250V	0805	1
C5, C6	10 uF/100V	1210	2
C7	470 uF/63V		1
R1, R2, R3	10 Ω	0603	3

Earless Flanged Plastic Air Cavity Package; 4 leads



Dimensions

Unit		A	b	c	D	D_1	E	E_1	e	F	H	H_1	Q(1)	U_1	U_2	v	w_1	w_2	y
mm	max	4.01	3.91	0.18	20.42	20.37	9.80	9.75		1.14	19.53	12.83	1.68	20.70	9.91	0.50	0.50	0.50	0.10
	nom								8.89										
	min	3.40	3.71	0.13	20.12	20.17	9.50	9.55		0.94	19.33	12.57	1.45	20.50	9.70				

Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2025/11/13	**V1.0**	**Preliminary Datasheet Creation**

Application data based on: LSM-25-35

Notice

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