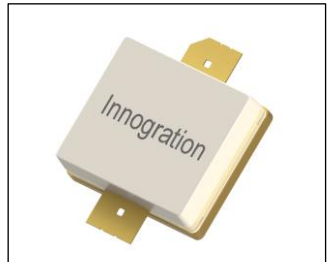




GaN HEMT 28V, 2450MHz 100W, RF Power Transistor

Description

The GTAH25100A2C is a 100W GaN HEMT, designed for ISM/RF Energy application at 2.45GHz. It can be used in CW, Pulse and any other modulation modes. There is no guarantee of performance when this part is used in applications designed Outside of these frequencies.



- Typical 2.4-2.5GHz full band class AB RF Performance with device soldered
Vds=28V, Vgs=-3V

Voltage(V)	Pin(dBm)	Psat(dBm)	Psat(W)	Gain(dB)	Eff(%)
28	38	>50.5	>110	12.5	72
32	38	>51.5	>140	13.5	72

Applications

- S band power amplifier
- ISM/RF Energy 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

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V _{DSS}	+150	Vdc
Gate--Source Voltage	V _{GS}	-8 to +0.5	Vdc
Operating Voltage	V _{DD}	36	Vdc
Maximum gate current	I _{gs}	30	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 P _{diss} =40W	R _{θJC}	1.5	°C /W

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

DC Characteristics (measured on wafer prior to packaging)

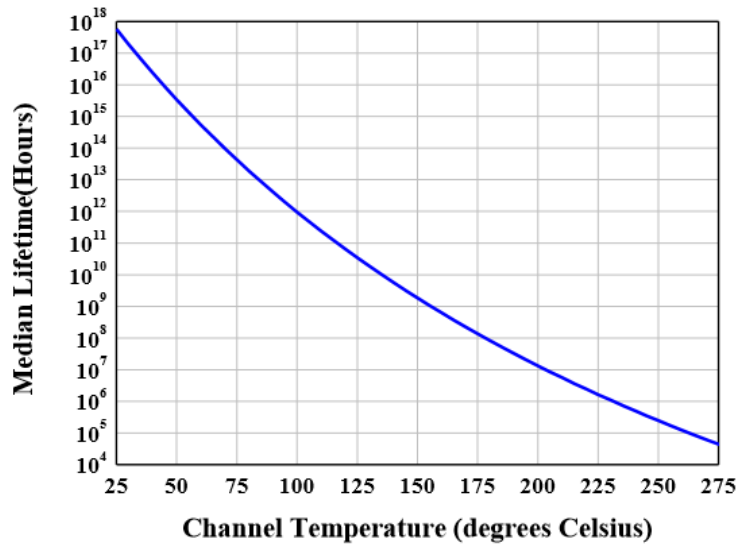
Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	VGS=-8V; IDS=30mA	V _{DSS}		200		V
Gate Threshold Voltage	VDS =10V, ID = 30mA	V _{GS(th)}	-4		-2	V
Gate Quiescent Voltage	VDS =28V, IDS=250mA, Measured in Functional Test	V _{GS(Q)}		-2.4		V



Ruggedness Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Load mismatch capability	2.5GHz, Pout=100W Pulsed CW All phase, No device damages	VSWR		10:1		

Figure 2: Median Lifetime vs. Channel Temperature



Typical performance

Figure 5: Network analyzer output S11/S21

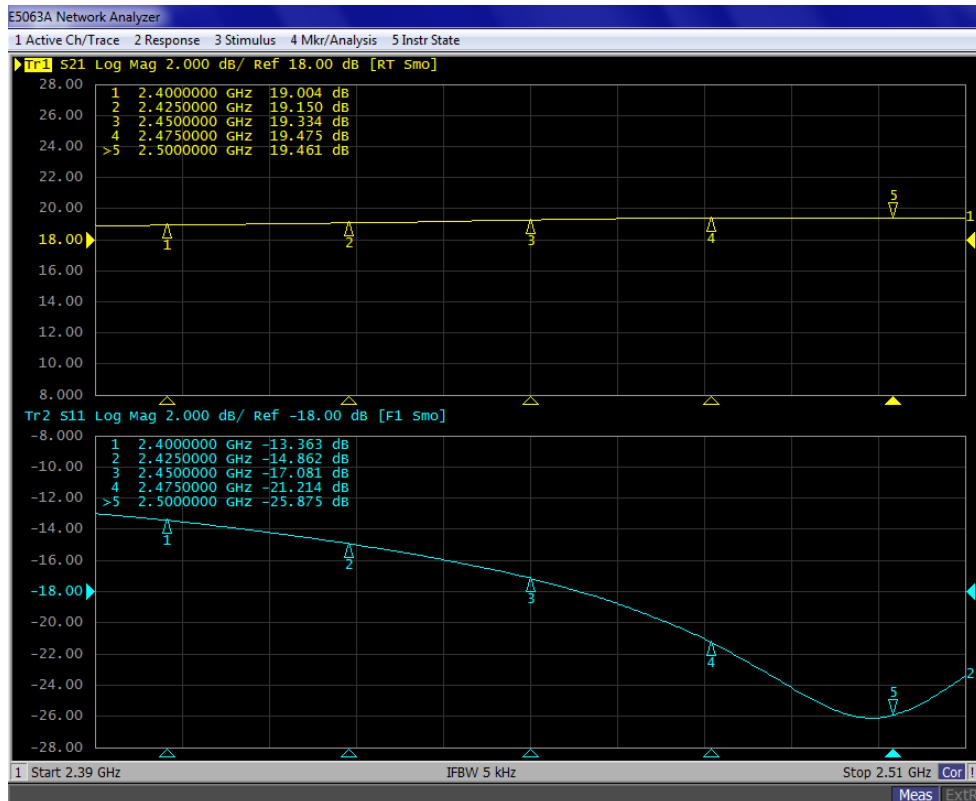


Figure 5: Picture of application board

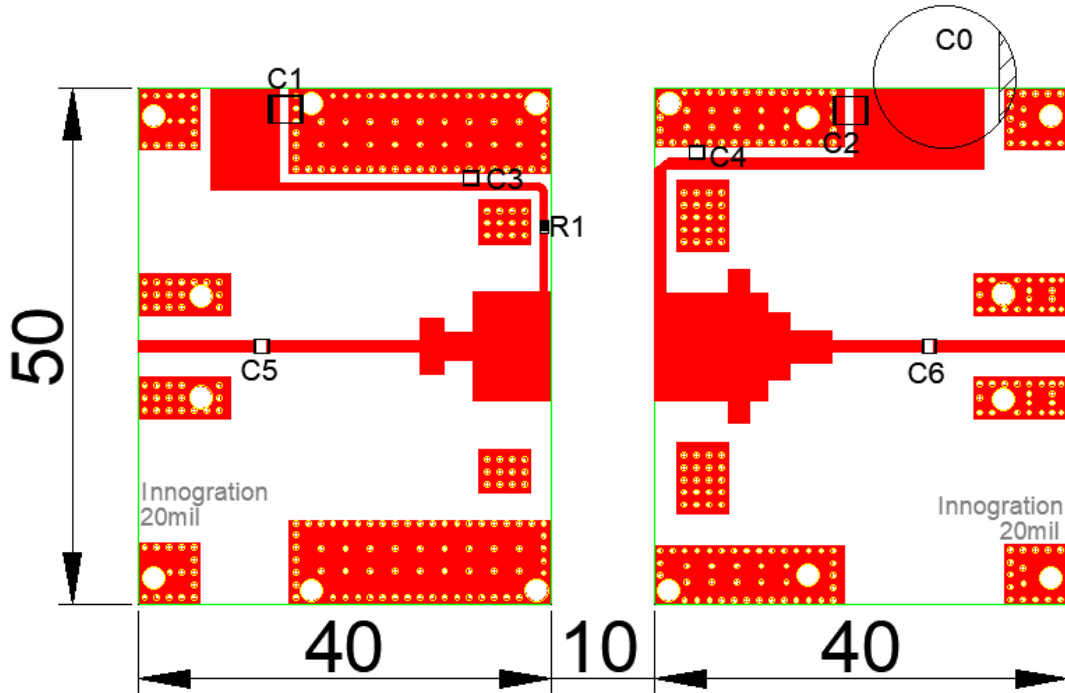
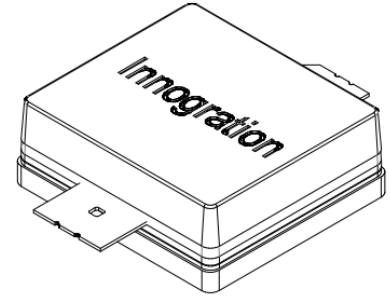
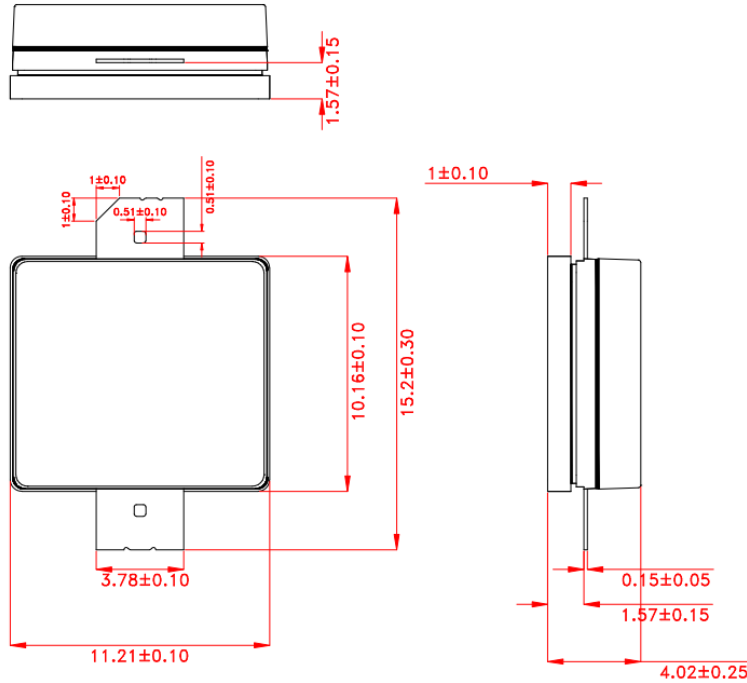


Table 4. Bill of materials of application board (PCB layout upon request)

Component	Description	Suggestion
C0	1000uF/63V	
C1, C2	10uF	1210
C3, C4	10pF	Beijing YuanLu HongYuan Electronic Technology CO.,LTD MQ100505
C5, C6	8pF	Beijing YuanLu HongYuan Electronic Technology CO.,LTD MQ100505
R1	Chip Resistor, 10Ω	0805
PCB	Rogers 4350b, thickness 20 mils, 1oz copper	



Package Dimensions (Unit:mm)



Unit:mm
Tolerance ± 0.10 mm, Except as Noted.

Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2024/9/3	V1.0	Preliminary Datasheet Creation

Application data based on: RXT-24-42

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