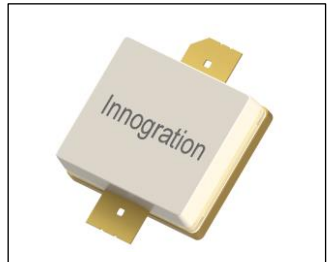




## GaN HEMT 28V, 2450MHz 70W, RF Power Transistor

### Description

The GTAH25070A2C is a 70W 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  
V<sub>ds</sub>=28V, V<sub>gs</sub>=-3V

Voltage(V)	Pout(dBm)	Psat(W)	Gain(dB)	Eff(%)
28	48.9~49.2	78~84	14.2-15.5	75-78
32	49.9-50.3	98~106	14.5-15.9	73-75

Recommended driver: ITEH40004P3 or GTAH80004PD

### 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 V<sub>GS</sub> to the pinch-off (V<sub>P</sub>) voltage, typically -5 V
2. Turn on V<sub>DS</sub> to nominal supply voltage
3. Increase V<sub>GS</sub> until I<sub>DS</sub> current is attained
4. Apply RF input power to desired level

#### Turning the device OFF

1. Turn RF power off
2. Reduce V<sub>GS</sub> down to V<sub>P</sub>, typically -5 V
3. Reduce V<sub>DS</sub> down to 0 V
4. Turn off V<sub>GS</sub>

**Table 1. Maximum Ratings**

Rating	Symbol	Value	Unit
Drain--Source Voltage	V <sub>DSS</sub>	+150	Vdc
Gate--Source Voltage	V <sub>GS</sub>	-8 to +0.5	Vdc
Operating Voltage	V <sub>DD</sub>	36	Vdc
Maximum gate current	I <sub>gs</sub>	18	mA
Storage Temperature Range	T <sub>stg</sub>	-65 to +150	°C
Case Operating Temperature	T <sub>C</sub>	+150	°C
Operating Junction Temperature	T <sub>J</sub>	+225	°C

**Table 2. Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case by FEA T <sub>C</sub> = 85°C, at P <sub>diss</sub> =25W	R <sub>θJC</sub>	2.3	°C /W

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

#### DC Characteristics ( measured on wafer prior to packaging)

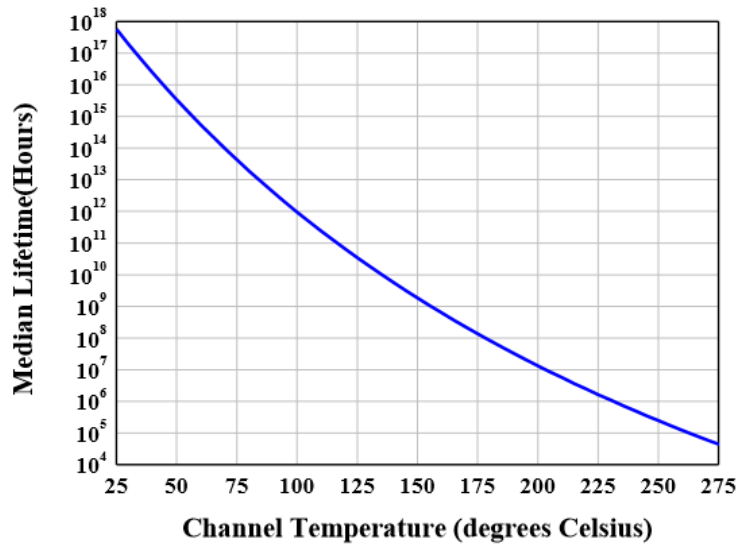
Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V <sub>GS</sub> =-8V; I <sub>DS</sub> =18mA	V <sub>DSS</sub>		200		V
Gate Threshold Voltage	V <sub>DS</sub> =10V, I <sub>D</sub> = 18mA	V <sub>GS(th)</sub>	-4		-2	V
Gate Quiescent Voltage	V <sub>DS</sub> =28V, I <sub>DS</sub> =330mA, Measured in Functional Test	V <sub>GS(Q)</sub>		-2.5		V



Ruggedness Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Load mismatch capability	2.5GHz, Pout=70W 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

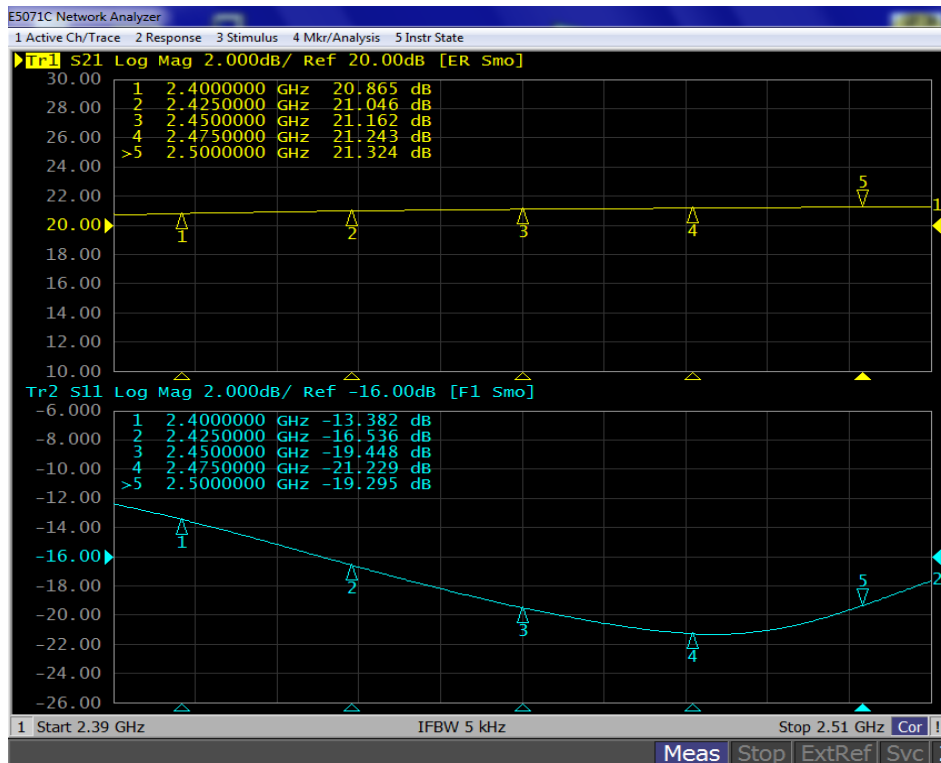


Figure 5: Picture of application board

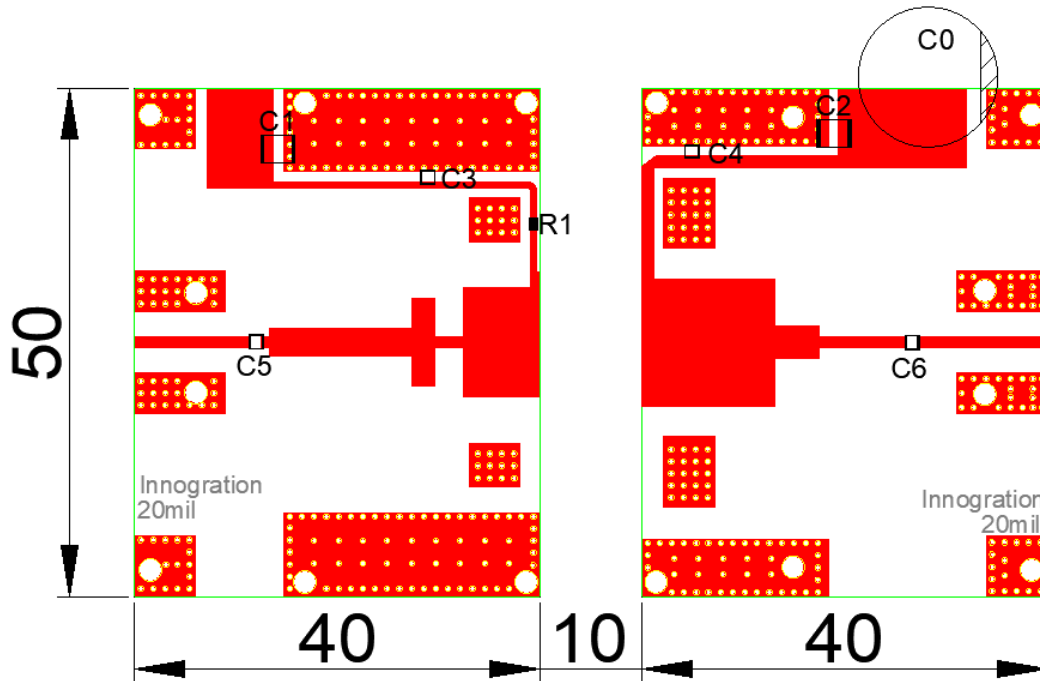
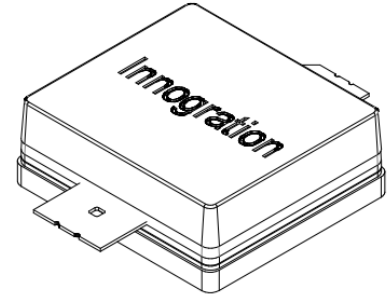
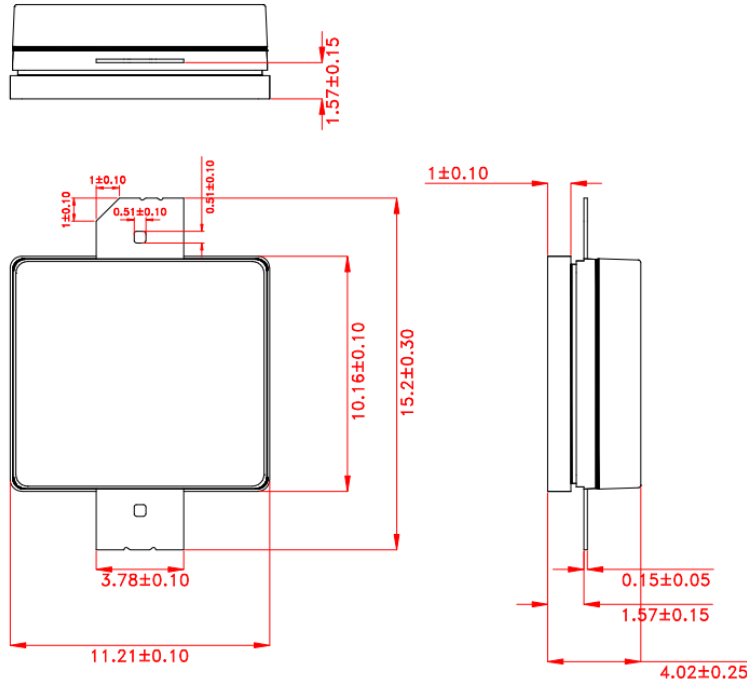


Table 4. Bill of materials of application board (PCB layout upon request)

Component	Description	Suggestion
C0	1000uF/63V	
C1, C2	10uF	1210
C3, C4	10pF	Beijing YuanLu HongYuan Electronic Technology CO.,LTD MQ100505
C5, C6	8.2pF	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  $\pm 0.10$ mm, Except as Noted.

### Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2024/9/24	V1.0	Preliminary Datasheet Creation

Application data based on: RXT-24-46

### Notice

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