



GaN HEMT 28V, 60W, General purpose RF Power Transistor

Description

The XTAH30060C9 is a 60W GaN HEMT, designed for multiple applications, up to 3GHz.

The transistor is available in a highly cost effective 12*10mm, surface mount, QFN package with 100% DC production test to ensure the quality and consistency.

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.

XTAH30060C9



● Typical RF Performance with device soldered through high density and plated grounding vias

XTAH30060C9 Class AB Vds= 28V, Vg=-2.54V, Idq=60mA CW							
Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff (%)	P1dB Gain (dB)	P3dB (dBm)	P3dB (W)	P3dB Eff (%)
2400	46.27	42.4	57.5	19.69	48.31	67.8	69.3
2450	45.87	38.6	58.2	19.84	48.09	64.4	71.5
2500	45.32	34.0	57.6	19.71	47.7	61.0	72.0

Applications

- S band power amplifier
- L band power amplifier
- ISM/RF Energy power amplifier

Important Note: Proper Biasing Sequence for GaN HEMT Transistors

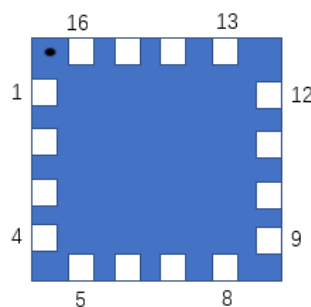
Turning the device ON

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

Pin Configuration and Description (Top view)



Pin No.	Symbol	Description
5-8	RF IN/Vgs	RF Input/Gate bias
13-16	RF OUT/Vds	RF Output/Drain bias
1-4,9-12	NC	Can be left as either no use or grounding
Package Base	GND	DC/RF Ground. Proposed to be soldered to heatsink plane directly for the best CW thermal and RF performance. Soldered through vias or copper coin allowed for pulsed CW applications, but will result in excessive junction temperatures and different RF performance



Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DS}	+150	Vdc
Gate--Source Voltage	V_{GS}	-8 to +0.5	Vdc
Operating Voltage	V_{DD}	36	Vdc
Maximum gate current	I_{gs}	13.6	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 $T_C = 85^\circ\text{C}$, at $P_{diss} = 30\text{W}$	$R_{\theta JC}$	3.3	°C /W

Table 3. Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

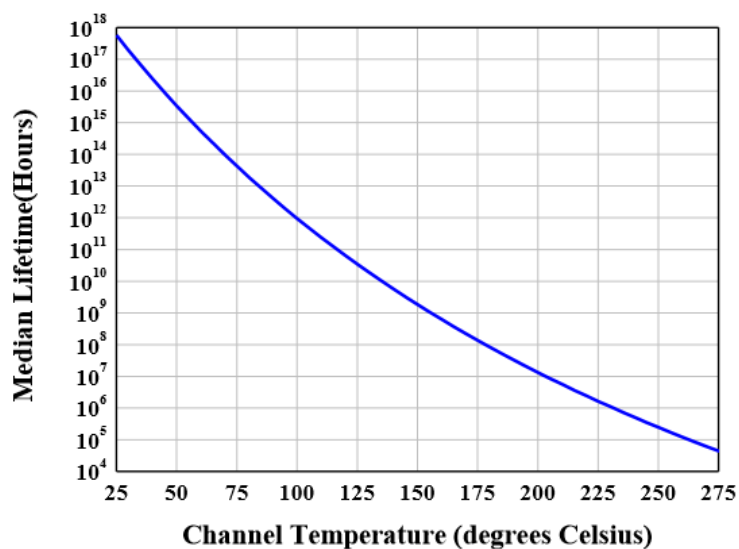
DC Characteristics (main path, measured on wafer prior to packaging)

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = -8\text{V}$; $I_{DS} = 13.6\text{mA}$	V_{DSS}		150		V
Gate Threshold Voltage	$V_{DS} = 10\text{V}$, $I_D = 13.6\text{mA}$	$V_{GS(th)}$	-4		-2	V
Gate Quiescent Voltage	$V_{DS} = 28\text{V}$, $I_{DS} = 60\text{mA}$, Measured in Functional Test	$V_{GS(Q)}$		-2.5		V

Ruggedness Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Load mismatch capability	2.5GHz, $P_{out} = 60\text{W}$ Pulsed CW All phase, No device damages	VSWR		10:1		

Figure 2: Median Lifetime vs. Channel Temperature



2.4-2.5GHz

Typical performance

Figure 3: Efficiency and power gain as function of Pout

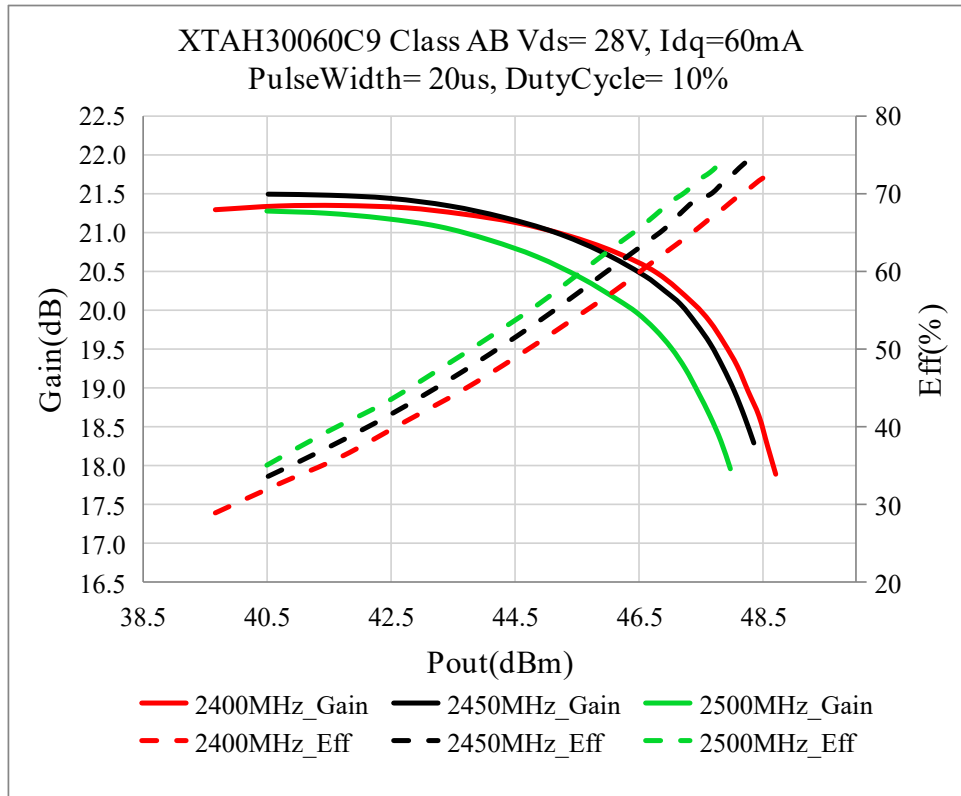


Figure 4: Network analyzer output S11/S21

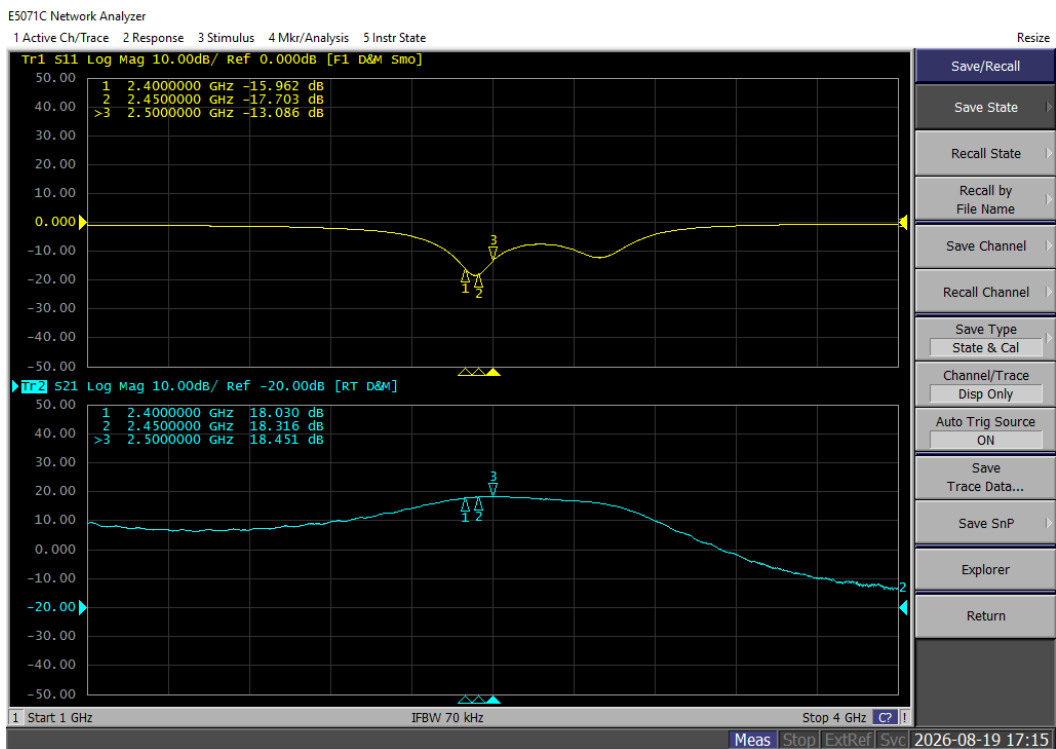


Figure 5: Picture of application board

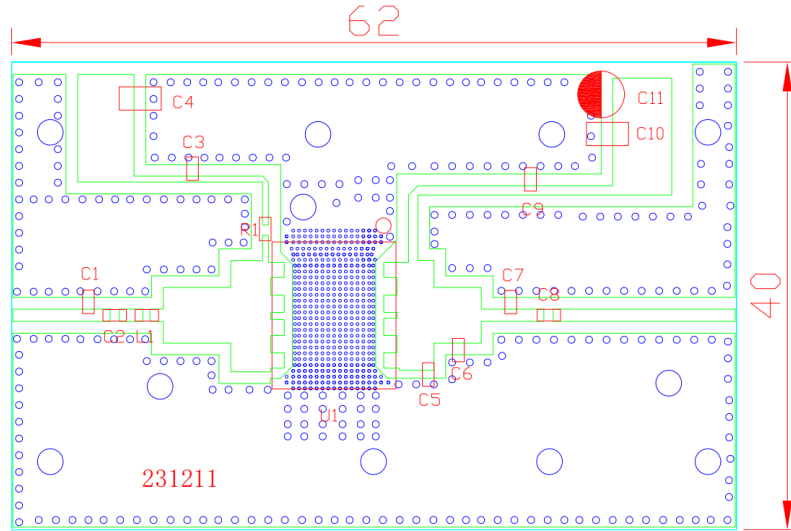
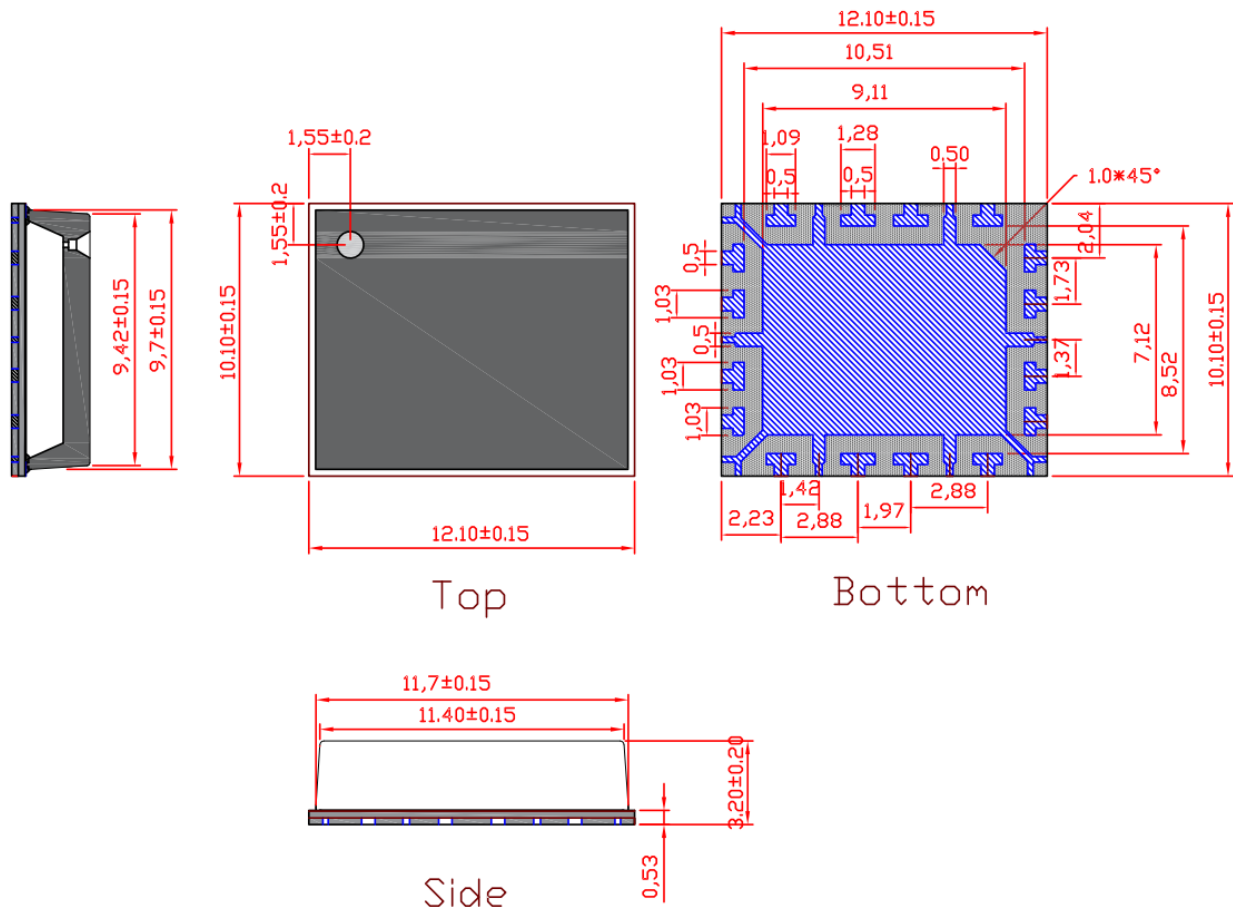


Table 4. Bill of materials of application board (PCB layout upon request, RO4350B 20mils)

Component	Value	Footprint
C1, C5	0.6PF	Yuan Lu_0603
C2, C3, C8, C9	12PF	Yuan Lu_0603
C4, C10	1UF	1210
C6	0.8PF	Yuan Lu_0603
C7	1.5PF	Yuan Lu_0603
C11	470UF/63V	
L1	2.2NH	0603
U1	XTAH30060C9	QFN 12*10



Package Dimensions (Unit:mm)



Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2026/8/20	V1.0	Preliminary Datasheet Creation

Application data based on: LBG-26-33

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