



Gallium Nitride 28V 80W, RF Power Transistor

Description

The XTAH30080GX is a 80W internally matched, GaN HEMT, designed for multiple applications, especially LTE/LTE-A/LTE-U up to 3GHz. In its typical 0.5-3G broadband application, it can deliver 60W, and typical 0.3-1G broadband application, it can deliver 70W across the full band

- Typical performance (on 0.5-3GHz wideband fixture with device soldered)

V_{ds}=28V, V_{gs}=-2.26V, I_{dq}=100mA, Test signal: CW

Freq(MHz)	Pin(dBm)	Pout(dBm)	Pout(W)	IDS(A)	Gain(dB)	Eff(%)	2 nd	3 rd
500	34.54	49.21	83.37	4.64	14.67	64.17	-14.30	-12.5
700	31.18	48.28	67.30	3.6	17.1	66.76	-18.40	-17.2
800	33.19	48.29	67.45	3.72	15.1	64.76	-14.10	-13.4
1000	34.25	48.51	70.96	4.14	14.26	61.21	-13.20	-11.5
1500	36.49	49.04	80.17	5	12.55	57.26	-17.50	-25.4
2000	38.21	49.07	80.72	5.89	10.86	48.95		
2500	38.7	50.2	104.71	6.7	11.5	55.82		
3000	38.13	48.8	75.86	4.73	10.67	57.28		

- Typical performance (on 0.3-1GHz wideband fixture with device soldered)

V_{ds}=28V, V_{gs}=-2.26V, I_{dq}=100mA, Test signal: CW

Freq(MHz)	Pin(dBm)	Pout(dBm)	Pout(W)	IDS(A)	Gain(dB)	Eff(%)	2 nd	3 rd
300	31	49.64	92.04	4.87	18.64	67.50	-12.20	-13.8
400	27.5	49.27	84.53	4.07	21.77	74.17	-26.00	-13.2
500	26.5	48.93	78.16	4.25	22.43	65.68	-20.70	-13.9
600	30.3	49.4	87.10	5.06	19.1	61.47	-15.50	-14.5
700	33.7	49.8	95.50	5	16.1	68.21	-11.60	-12.8
800	32.6	49.47	88.51	5.33	16.87	59.31	-13.30	-17.9
900	30.8	49	79.43	3.91	18.2	72.55	-13.20	-26.5
1000	29.8	49.2	83.18	4.31	19.4	68.92	-12.40	-29.1

Applications and Features

- Suitable for wireless communication infrastructure, wideband amplifier, EMC testing, ISM etc.
- High Efficiency and Linear Gain Operations
- Thermally Enhanced Industry Standard Package
- High Reliability Metallization Process
- Excellent thermal Stability and Excellent Ruggedness
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

Important Note: Proper Biasing Sequence for GaN HEMT Transistors

Turning the device ON

1. Set V_{GS} to the pinch-off (V_P) voltage, typically -5 V
2. Turn on V_{DS} to nominal supply voltage (28V)
3. Increase V_{GS} until I_{DS} current is attained
4. Apply RF input power to desired level

Turning the device OFF

1. Turn RF power off
2. Reduce V_{GS} down to V_P, typically -5 V
3. Reduce V_{DS} down to 0 V
4. Turn off V_{GS}

XTAH30080GX

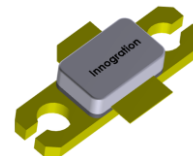




Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DS}	150	Vdc
Gate--Source Voltage	V_{GS}	-10,+2	Vdc
Operating Voltage	V_{DD}	40	Vdc
Maximum Forward Gate Current @ $T_C = 25^{\circ}\text{C}$	I_{gmax}	21.8	mA
Storage Temperature Range	T_{stg}	-65 to +150	$^{\circ}\text{C}$
Case Operating Temperature	T_C	+150	$^{\circ}\text{C}$
Operating Junction Temperature(See note 1)	T_J	+200	$^{\circ}\text{C}$

Note: 1. Continuous operation at maximum junction temperature will affect MTTF
2. Bias Conditions should also satisfy the following expression: $P_{diss} < (T_J - T_C) / R_{JC}$ and $T_C = T_{case}$

Table 2. Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case $T_C = 85^{\circ}\text{C}$, $T_J = 200^{\circ}\text{C}$, RF CW operation	$R_{\theta JC}$	1.4	C/W

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

DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = -8\text{V}$; $I_{DS} = 21.8\text{mA}$	V_{DSS}	150			V
Gate Threshold Voltage	$V_{DS} = 28\text{V}$, $I_D = 100\text{mA}$	$V_{GS(th)}$		-2.3		V

0.5-3GHz

Typical performance

Figure 2: Network analyzer output S11/S21

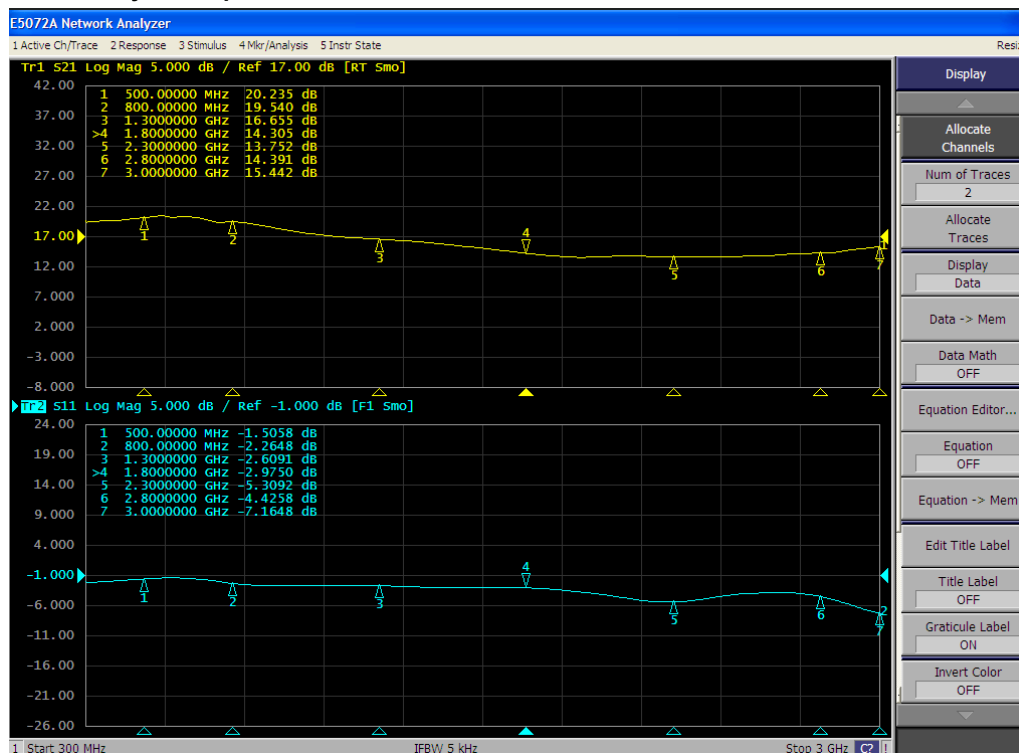
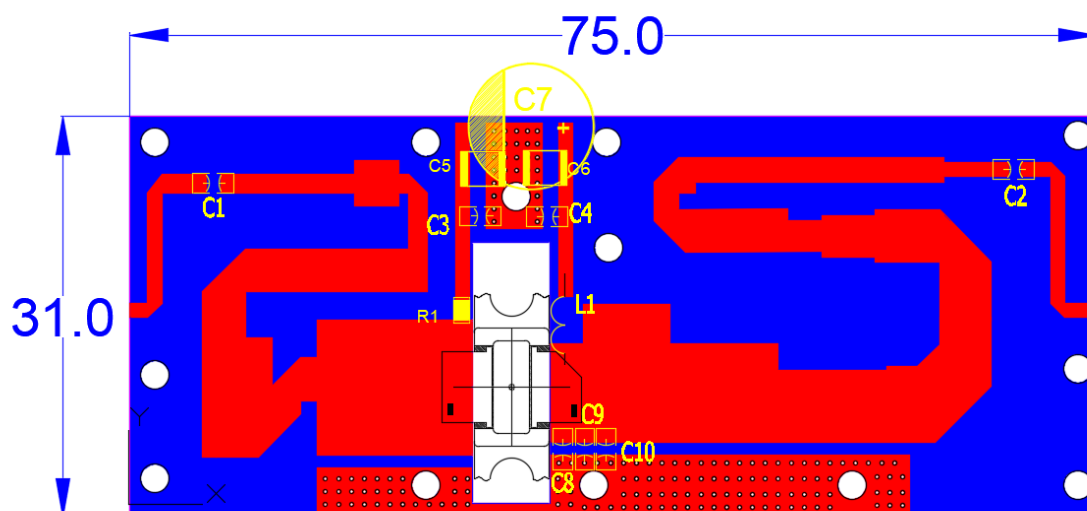


Figure 3: Picture of application board

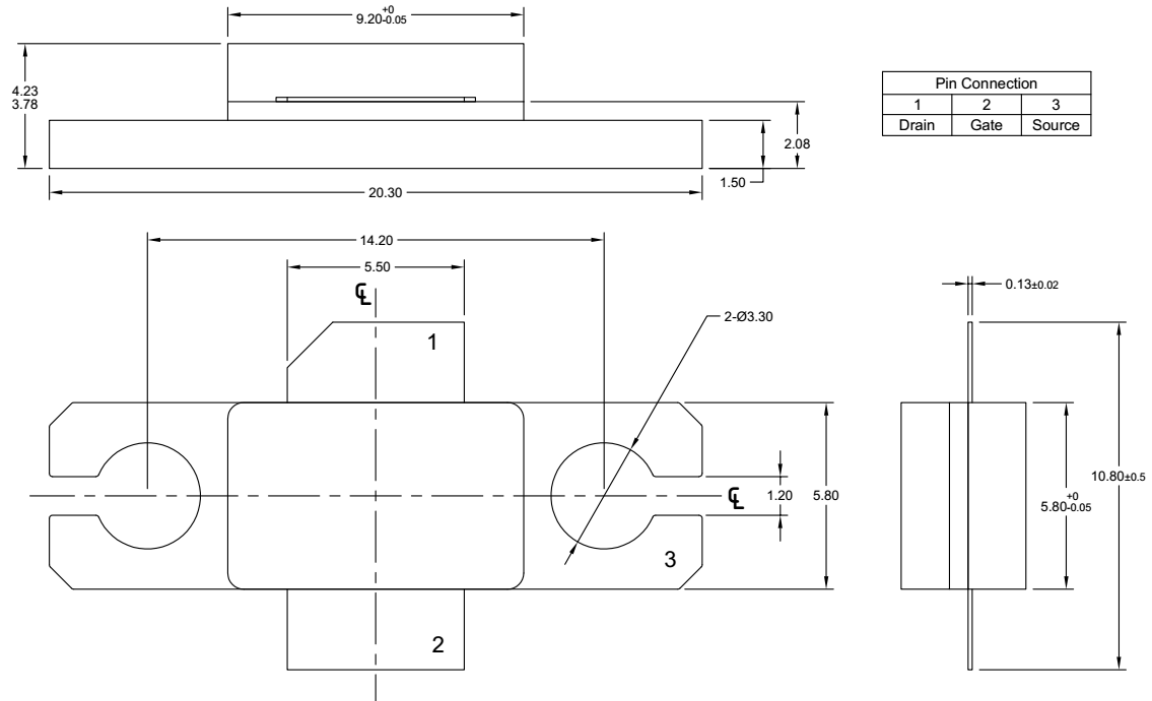


Component	Description	Suggestion
C7	470uF/63V	
C5,C6	10uF	10uF/100V
C1,C2, C3, C4	18pF(MQ300805)	
C8, C9	0.9pF(MQ300805)	
C10	0.5pF(MQ300805)	
R1	Chip Resistor,10Ω	0805
PCB	20mil Rogers 4350B	



Package Outline

Flanged ceramic package; 2 leads



Unit: mm
Tolerances(unless specified): x.x ±0.1
x.xx ±0.05

OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-GXB					10/10/2017

Figure 1. Package Outline PKG-G2E



Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2025/8/1	V1.0	Preliminary Datasheet Creation

Application based on YHG-25-28/29

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