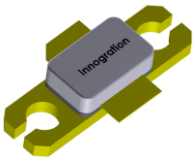
Gallium Nitride 28V 80W, RF Power Transistor

XTAH30080GX



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)

Vds=28V, Vgs=-2.26V, Idq=100mA, Test signal: CW

Freq(MHz)	Pin(dBm)	Pout(dBm)	Pout(W)	IDS(A)	Gain(dB)	Eff(%)	2nd	3rd
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)

Vds=28V, Vgs=-2.26V, Idq=100mA, Test signal: CW

Freq(MHz)	Pin(dBm)	Pout(dBm)	Pout(W)	IDS(A)	Gain(dB)	Eff(%)	2nd	3rd
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 VGS to the pinch--off (VP) voltage, typically –5 V
2. Turn on VDS to nominal supply voltage (28V)
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}	-10,+2	Vdc
Operating Voltage	V_{DD}	40	Vdc
Maximum Forward Gate Current @ TC = 25°C	Igmax	21.8	mA
Storage Temperature Range	Tstg	-65 to +150	°C
Case Operating Temperature	T_C	+150	°C
Operating Junction Temperature(See note 1)	T_J	+200	°C

Note: 1. Continuous operation at maximum junction temperature will affect MTTF
2.Bias Conditions should also satisfy the following expression: Pdiss < (Tj – Tc) / RJC and Tc = Tcase

Table 2. Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case T_C= 85°C, T_J=200°C, RF CW operation	RθJC	1.4	C/W

Table 3. Electrical Characteristics (T_C = 25℃ unless otherwise noted)

DC Characteristics

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

0.5-3GHz

Typical performance

Figure 2: Network analyzer output S11/S21

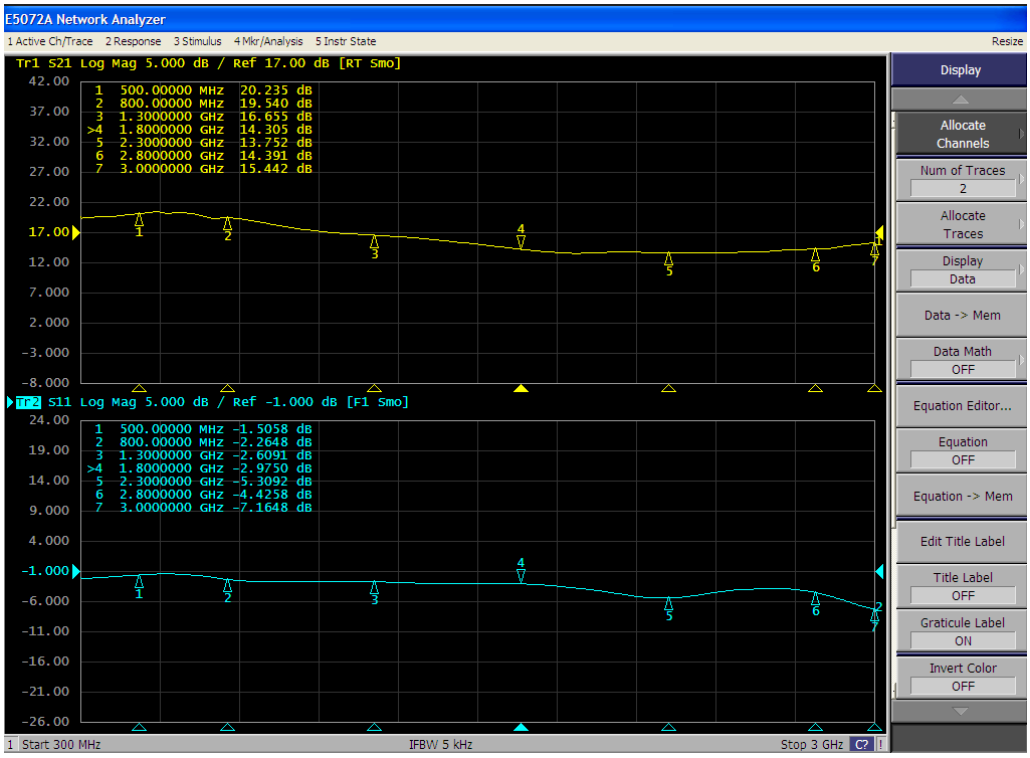
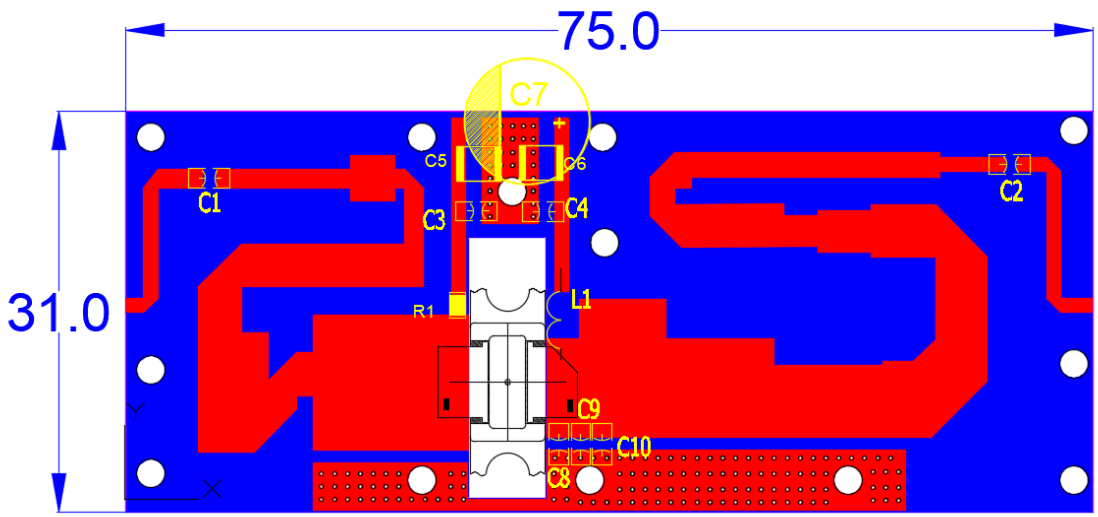


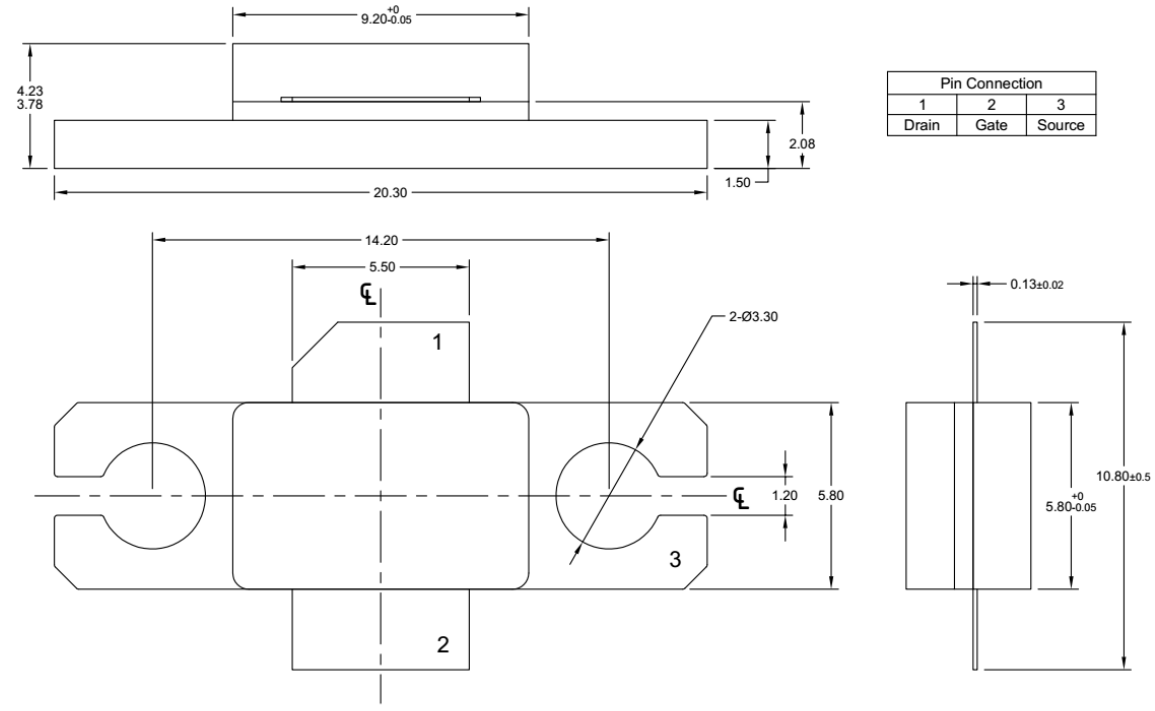
Figure 3: Picture of application board



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



Pin Connection		
1	2	3
Drain	Gate	Source

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

Notice