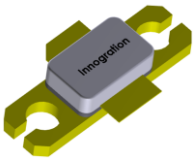
Gallium Nitride 28V 65W, RF Power Transistor

XTAH27065GX



Description

The XTAH27065GX is a 65W internally matched, GaN HEMT, designed for multiple applications, especially LTE/LTE-A/LTE-U from 1800-2700MHz. In its typical 2.1-2.8G broadband application, it can deliver more than 60W across the full band.

There is no guarantee of performance when this part is used in applications designed outside of these frequencies.

- Typical performance (on 2.1-2.8GHz wideband fixture with device soldered)

Vds=28V, Vgs=-2.3V, Idq=50mA, Test signal: CW

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff(%)	P1dB Gain(dB)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)
2100	47.39	54.8	60.9	16.06	48.34	68.2	67.3
2200	47.33	54.1	63.9	16.18	48.24	66.7	68.8
2300	47.47	55.9	65.5	16.46	48.32	67.9	70.1
2400	47.44	55.5	64.7	16.55	48.28	67.4	69.1
2500	47.52	56.5	63.4	16.8	48.37	68.7	67.7
2600	47.54	56.8	62.6	17.39	48.46	70.1	67.5
2700	47.11	51.4	60.7	17.98	48.33	68.1	67.2
2800	46.43	44.0	57.5	17.65	48.03	63.6	67.0

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	13.6	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
Total Device Power Dissipation (Derated above 25°C, see note 2)	Pdiss	70	W

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	$R_{\theta JC}$	2.52	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}=13.6mA	V_{DSS}	150			V
Gate Threshold Voltage	V_{DS} = 28V, I_D =13.6mA	V_{GS}(th)		-2.7		V

2.1-2.8GHz
Typical performance

Figure 2: Power gain, efficiency as function of Pout at 28V

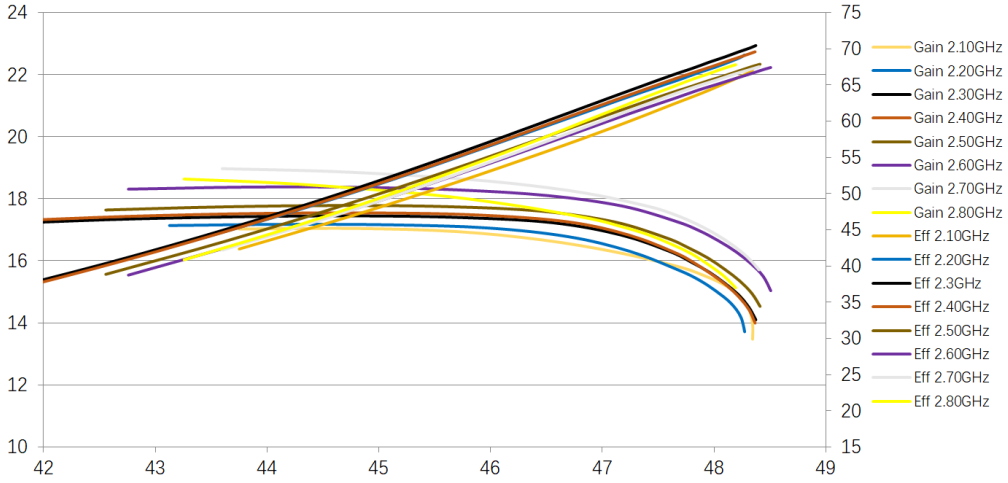


Figure 3: Network analyzer output S11/S21

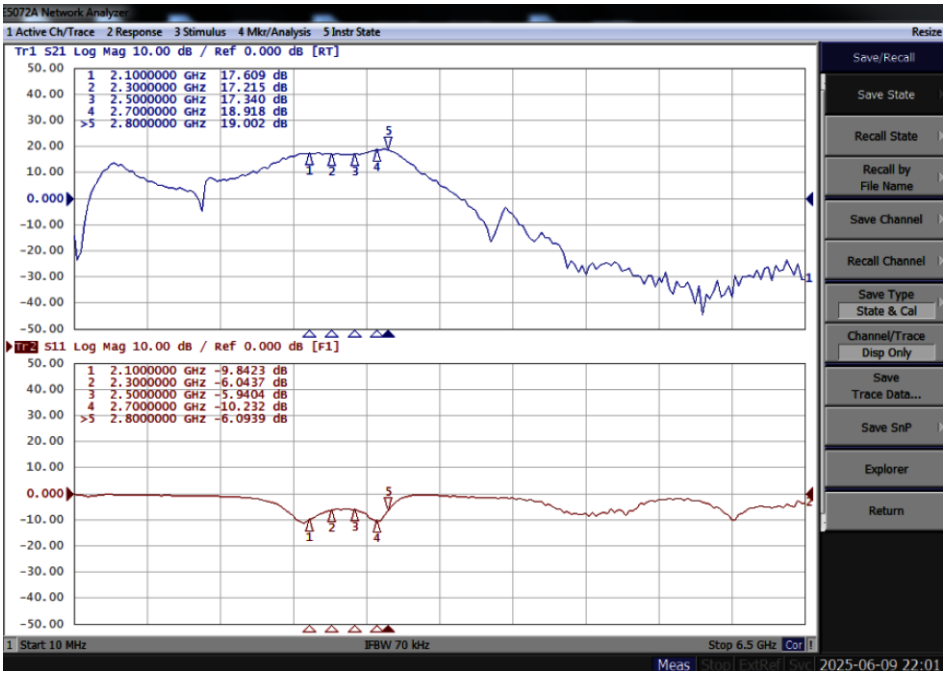
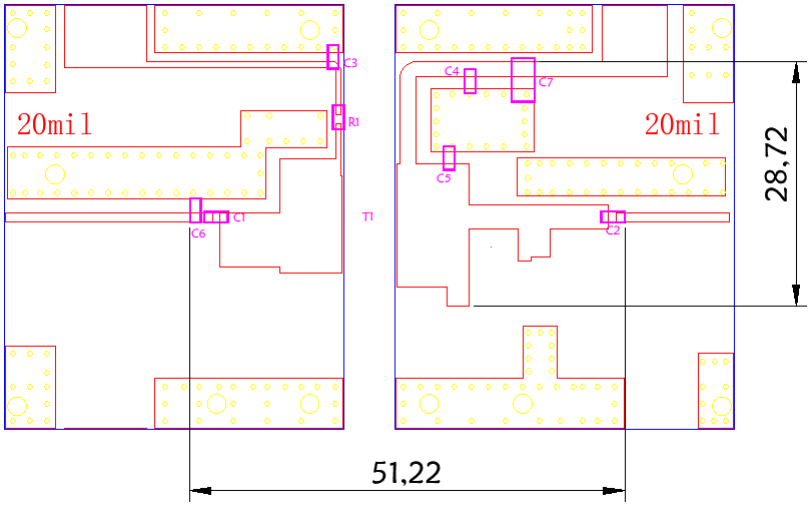


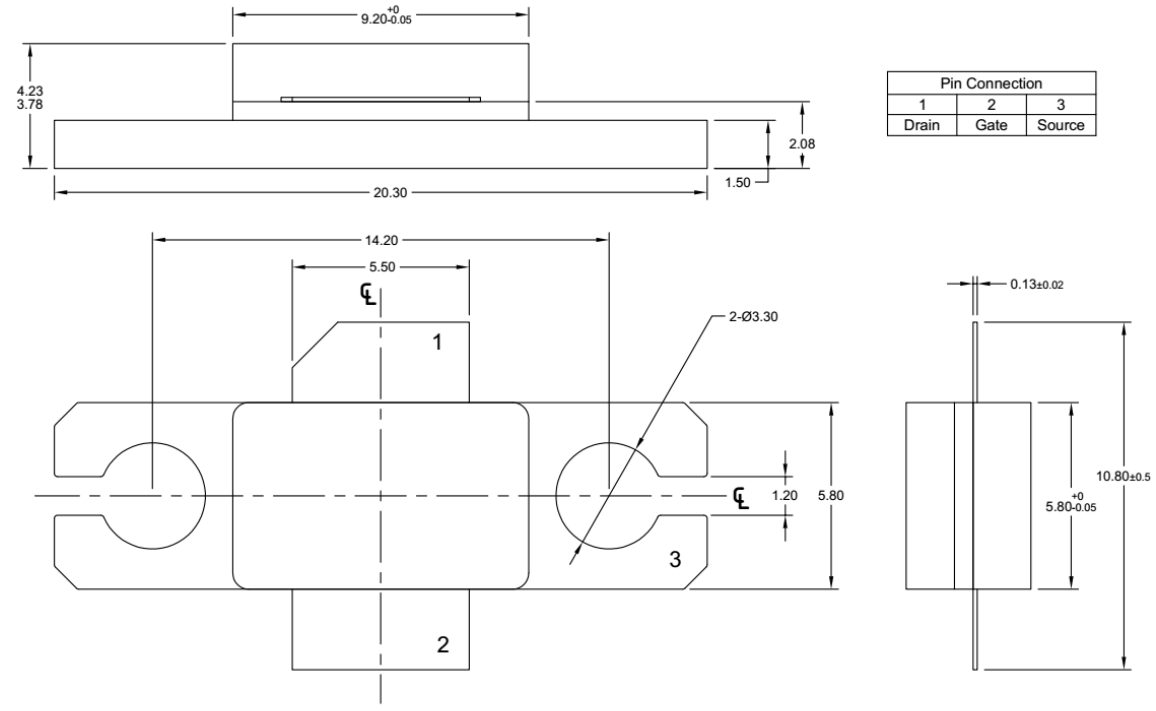
Figure 4: Picture of application board



Part	Quantity	Description	Part Number	Manufacture
C1,C2,C3,C4	4	10pFHigh Q Capacitor	251SHS100BSE	TEMEX
C5	1	1.1pFHigh Q Capacitor	251SHS1R1BSE	TEMEX
C6	1	0.4pFHigh Q Capacitor	251SHS0R4BSE	TEMEX
C7	1	10uF MLCC	GRM32EC72A106ME 05	Murata
R1	1	10Ω Power Resistor	ESR03EZPF100	ROHM
T1	1	65W GaN Transistor	XTAH27065GX	Innogration

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
2025/6/10	V1.0	Preliminary Datasheet Creation

Notice