

XU5807H GaN TRANSISTOR

Document Number: XU5807H
Preliminary Datasheet V1.0

GaN 28V 35W, 0.7-6GHz RF Power Transistor

Description

The XU5807H is a 35W 28V GaN HEMT, implemented with patented match topology at both input and output side, enable extremely wideband applications with frequencies from 0.7 to 6GHz. It can support CW, and pulse or any modulation format. When operated at higher voltage like 32V, it can deliver increased power > 45W across the full band.

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

- Typical CW performance (on Innogration wide band fixture with device soldered)

XU5807HS ^{V0} VGS=-2.24V VDS=28V IDQ=180mA CW								
Freq (MHz)	Psat (dBm)	Psat (W)	IDS (A)	Pin (dBm)	Gain (dB)	Eff(%)	2 nd (dBc)	3 rd (dBc)
700	46.40	43.7	2.63	37.10	9.30	59.28	-13.80	-12.70
1000	46.83	48.2	2.67	38.31	8.52	64.47	-16.30	-13.20
2000	46.60	45.7	3.57	39.57	7.03	45.73	-11.80	-14.20
2500	46.75	47.3	4.12	39.60	7.15	41.02	-14.90	-29.00
3000	46.47	44.4	4.72	39.95	6.52	33.57	-17.00	-29.00
3500	46.43	44.0	4.75	40.12	6.31	33.05	-28.30	-24.70
4000	46.54	45.1	4.49	40.00	6.54	35.86	/	/
4500	46.62	45.9	4.77	39.97	6.65	34.38	/	/
5000	46.50	44.7	4.70	39.75	6.75	33.94	/	/
5500	46.16	41.3	5.22	39.90	6.26	28.26	/	/
6000	46.16	41.3	4.61	39.70	6.46	32.00	/	/

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

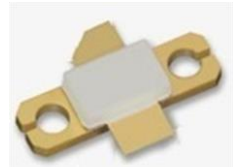
Turning the device OFF

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 (Not simultaneous, TC = 25°C unless otherwise noted)

Rating	Symbol	Value	Unit
Drain--Source Voltage	V _{DSS}	150	Vdc
Gate--Source Voltage	V _{GS}	-10,+2	Vdc
Operating Voltage	V _{DD}	32	Vdc

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Maximum Forward Gate Current	Igmax	16.8	mA
Storage Temperature Range	Tstg	-65 to +150	°C
Case Operating Temperature	Tc	+150	°C
Operating Junction Temperature(See note 1)	Tj	+225	°C

1. Continuous operation at maximum junction temperature will affect MTTF

Table 2. Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case Tc= 85°C, Tj=200°C,FEA	RθJC-DC	2.3	°C/W

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

DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	VGS=-8V; ID=16.8mA	VDS	150			V
Gate Threshold Voltage	VDS = 28V, ID =16.8mA	VGS(th)		-2.7		V
Gate Quiescent Voltage	VDS =28V, ID=200mA, Measured in Functional Test	VGS(Q)		-2.2		V

Reference Circuit of Test Fixture Assembly Diagram

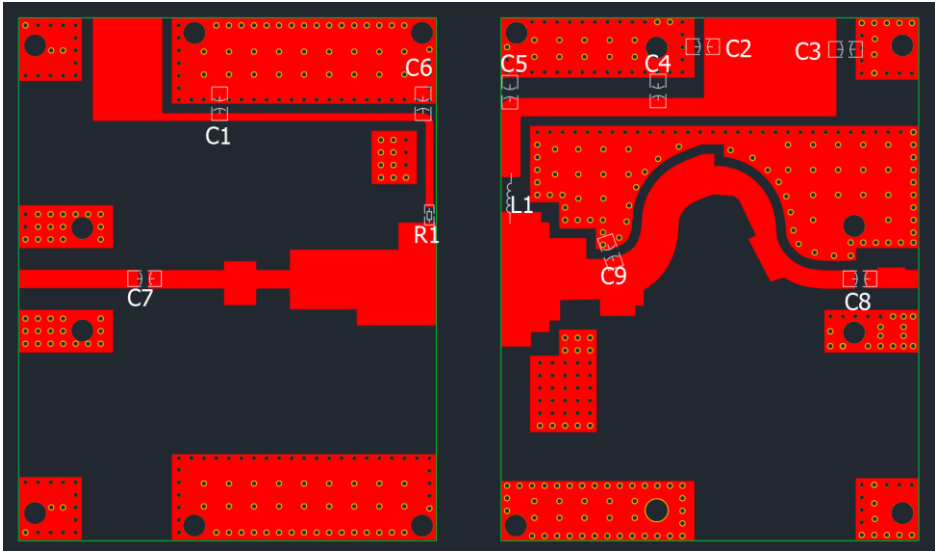


Figure 1. Test Circuit Component Layout (0.7-6GHz)

Table 4. Test Circuit Component Designations and Values

Component	Description	Suggested Manufacturer
C1~C4	10uF/200V-1210	Ceramic multilayer capacitor
C5, C6	10nF/200V-1210	Ceramic multilayer capacitor
C7	8.2pF	ATC600S
C8	5.6pF	
C9	0.3pF	
R1	10 Ω -1206	Chip Resistor
L1	1mm wire , 3mm inner diameter, 1Turns	DIY
PCB	Rogers4350B 30mil	

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Package Outline

Flanged ceramic package; 2 leads

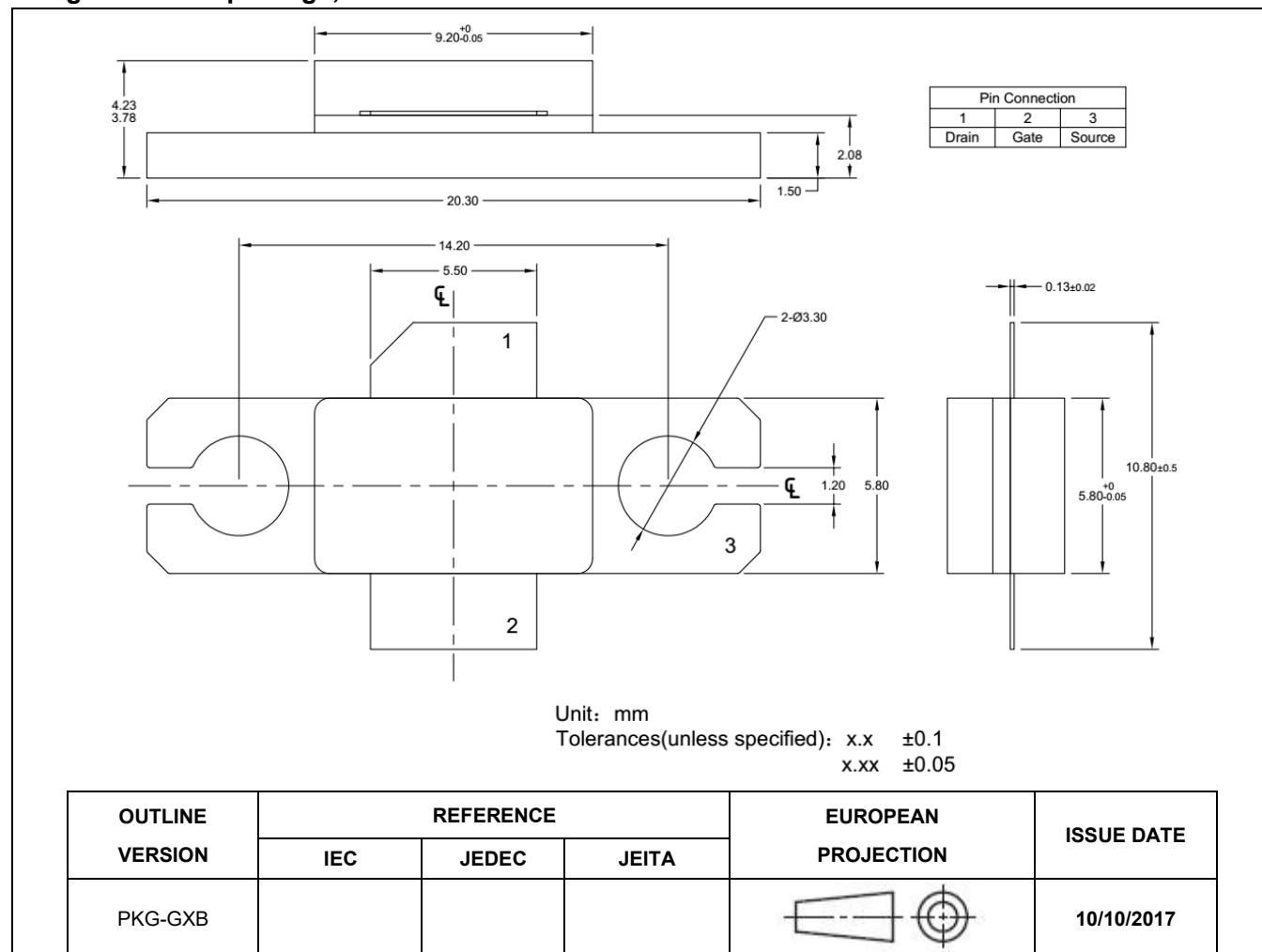


Figure 1. Package Outline PKG-G2E

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Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2026/7/10	V1.0	Preliminary datasheet creation

Application data based on TC-26-24

Notice

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