XG5007HS GaN TRANSISTOR

Document Number: XG5007HS
Preliminary Datasheet V1.0

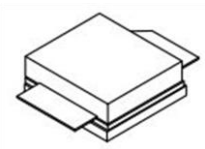
Gallium Nitride 28V 70W, 1-5GHz RF Power Transistor

Description

The XG5007HS itself is a 70W 28V GaN HEMT, implemented with patented match topology at both input and output side, enable extremely wideband applications with frequencies from 1 to 6GHz. **In typical full band operation， it can deliver >40W. When operated at higher voltage like 32V, it can deliver 50W across the full band**.

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

XG5007HS



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

XG5007HS^{V0} VGS=-2.25V VDS=28V IDQ=190mA CW								
Freq (MHz)	**Psat (dBm)**	**Psat (W)**	**IDS (A)**	**Pin (dBm)**	**Gain (dB)**	**Eff(%)**	**2nd （dBc）**	**3rd （dBc）**
700	44.43	27.7	1.41	37.40	7.03	70.25	-10.50	-14.10
800	45.36	34.4	1.76	37.80	7.56	69.72	-13.50	-14.40
1000	46.30	42.7	2.28	38.00	8.30	66.82	-15.40	-12.50
1500	46.46	44.3	2.71	38.16	8.30	58.33	-12.00	-12.80
2000	46.60	45.7	3.37	38.40	8.20	48.44	-16.00	-20.60
2500	47.78	60.0	4.70	39.60	8.18	45.58	-14.50	-22.60
3000	47.60	57.5	4.33	39.10	8.50	47.46	-27.40	-29.40
3500	46.86	48.5	4.12	39.43	7.43	42.07	/	/
4000	46.73	47.1	4.76	39.35	7.38	35.34	/	/
4500	46.89	48.9	5.27	39.35	7.54	33.12	/	/
5000	46.54	45.1	4.10	39.00	7.54	39.27	/	/

***32V data upon request**

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
Maximum Forward Gate Current	Igmax	16.8	mA
Storage Temperature Range	Tstg	-65 to +150	°C
Case Operating Temperature	T_C	+150	°C
Operating Junction Temperature(See note 1)	T_J	+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 T_C= 85°C, T_J=200°C,FEA	$R_{\theta JC-DC}$	2.3	°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}=16.8mA	V_{DSS}	150			V
Gate Threshold Voltage	V_{DS} = 28V, I_D =16.8mA	V_{GS}(th)		-2.7		V
Gate Quiescent Voltage	V_{DS} =28V, I_{DS}=190mA, Measured in Functional Test	$V_{GS(Q)}$		-2.25		V

Reference Circuit of Test Fixture Assembly Diagram

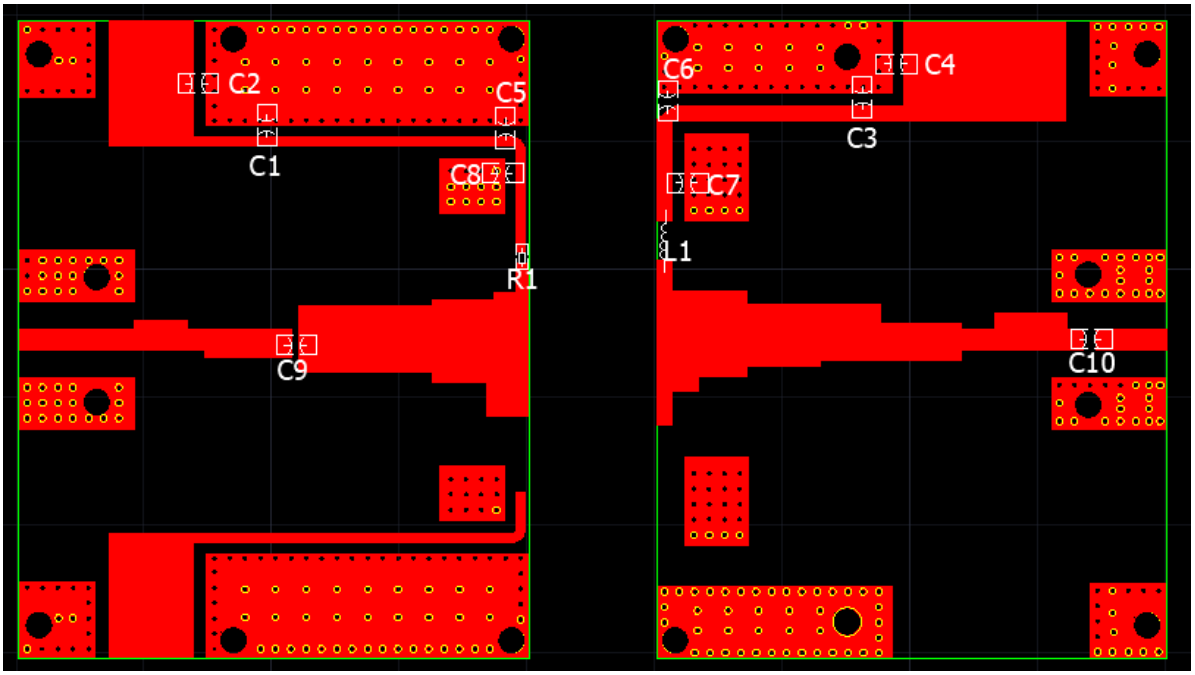
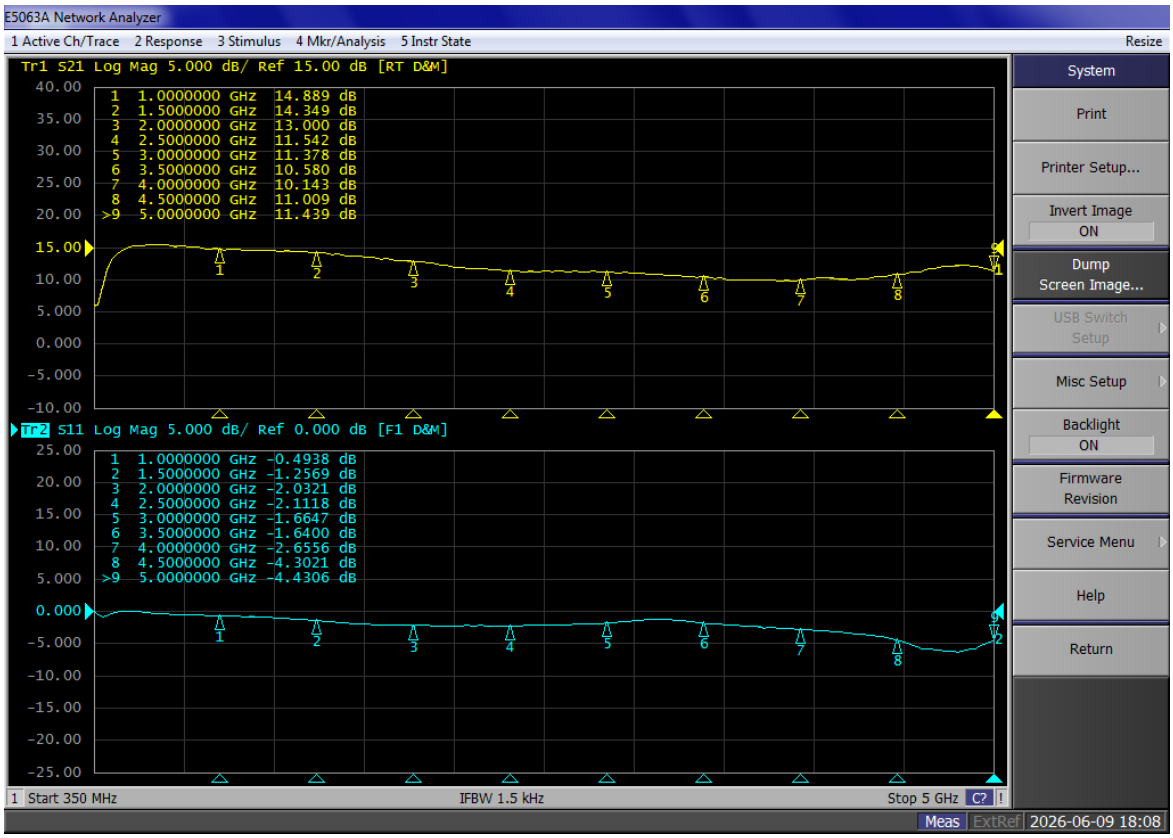


Figure 1. Test Circuit Component Layout (1-5GHz)

Table 4. Test Circuit Component Designations and Values

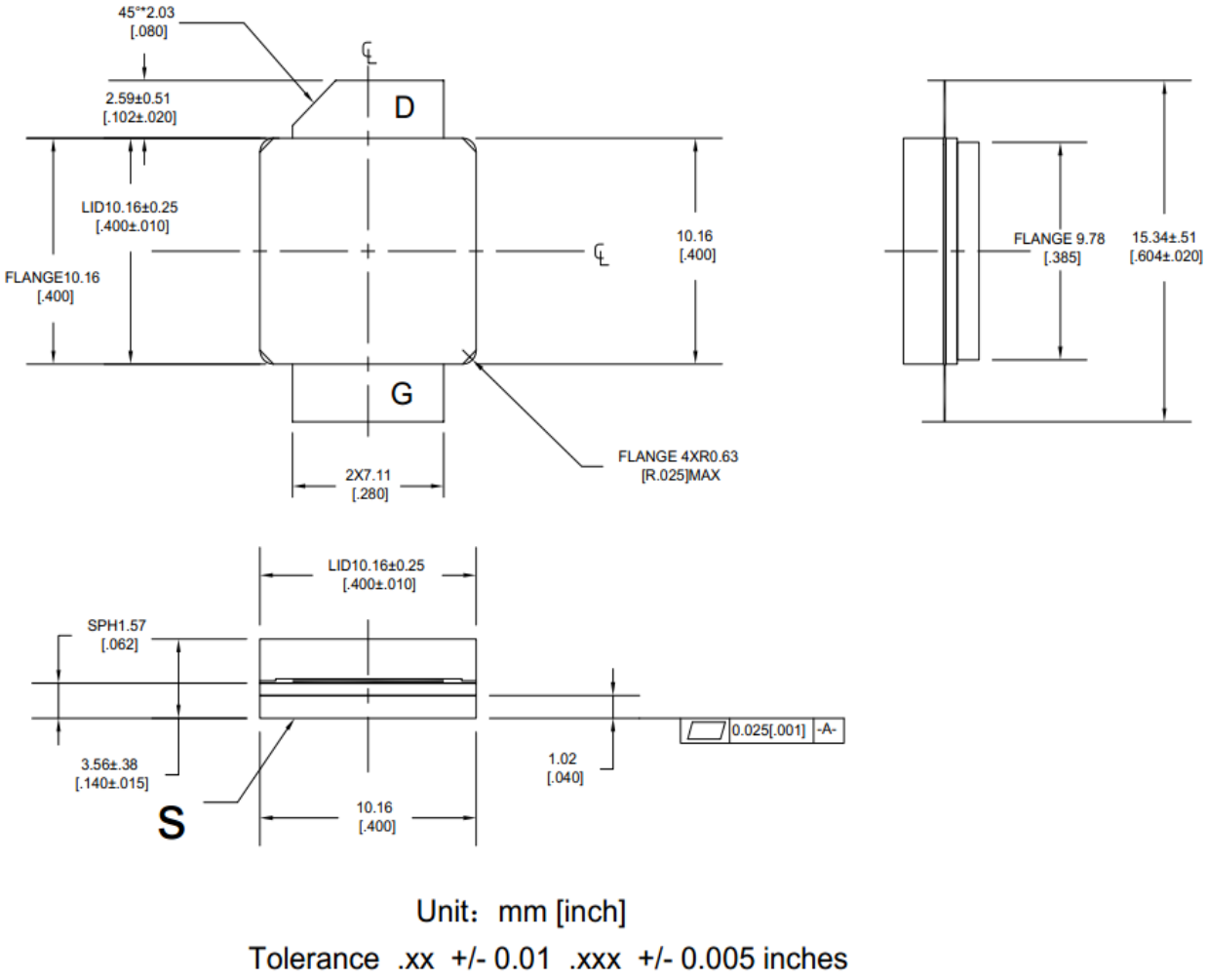
Component	Description	Suggested Manufacturer
C1~C4	10uF/200V-1210	Ceramic multilayer capacitor
C5~C7	10nF/200V-1210	Ceramic multilayer capacitor
C8	100pF	
C9	8.2pF	
C10	5.6pF	ATC600S
R1	10Ω-1206	Chip Resistor
L1	1mm wire ， 3mm inner diameter， 1Turns	DIY
PCB	Rogers4350B 30mil	

Figure 2. Network Analyzer S11/S21 output (Vgs=-2.25V, Vds=28V, Idq=190mA)



Package Outline

Flanged ceramic package; 2 leads



Unit: mm [inch]

Tolerance .xx +/- 0.01 .xxx +/- 0.005 inches

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2026/6/10	V1.0	Preliminary datasheet creation

Application data based on TC-26-21

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