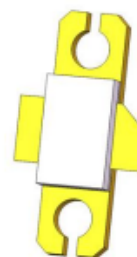


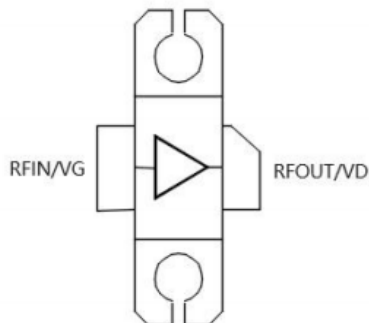
DC-1.5GHz, 80W, 28V, GaN RF Transistor

General Description

GNNT1549H is a wideband pre-matched gallium nitride (GaN) high electron mobility transistor (HEMT). The device operates from DC to 1.5GHz with a 28V supply rail. Its typical saturated power is 80W@700MHz (P_{sat}). The P_{sat} gain is 13dB@700MHz above, and drain efficiency is 60% above. The device is in an industry standard YJ201 ceramic package.



Block Diagram



Features

- Operating Frequencies: DC-1.5GHz
- Output Power (P_{sat}): 80W@700MHz
- Power Gain: 13dB@700MHz
- DE@ P_{sat} : 60%@700MHz
- Operating Voltage: 28 V
- Support CW & Pulse mode

Typical Application Data

- 860MHz-1080MHz: $P_{sat} \geq 49\text{dBm}$
- 650MHz-865MHz: $P_{sat} \geq 49\text{dBm}$

Recommended Operating Conditions

Parameter	Value
Drain-Source Voltage (V_D)	28 V (Typ)
Quiescent Current (I_{DQ})	200mA (Typ)
Gate-Source Voltage (V_G)	-2.75V (Typ)

Note:

1. All the RF spec tested under recommended conditions.
2. Bias-up Procedure: Set V_G to the pinch-off (V_P) voltage, typically -5 V, then turn on V_D to nominal supply voltage (28V)
3. Bias-down Procedure: Turn off RF signal, then turn off V_D and wait 1 second to allow drain capacitor dissipation, turn off V_G .

Note:

1. Operating outside the rated range may cause irreversible damage to the device.

Parameter	Range Value
Drain-Source Breakdown Voltage (BV_{DS})	120 V
Drain-Source Voltage Range, (V_D)	20 to 32 V
Gate-Source Voltage Range, (V_G)	-10 to +1 V
Operating Temperature Range	-40 to 125°C
Storage Temperature Range	-65 to 150°C
Maximum Input Power, CW (P_{in}), $T_A = 25^\circ\text{C}$	41 dBm

RF Characteristics, 650MHz-865MHz EVB

Note:

1. Test condition: $T_A = 25^\circ\text{C}$, $V_D = 28\text{V}$, $I_{DQ} = 200\text{ mA}$, CW

Symbol	Parameter	Min	Typ	Max	Unit
G_{LIN}	Linear Gain	-	17	-	dB
P_{sat}	Output Power	-	80	-	W
DE_{sat}	Drain Efficiency	-	60	-	%
G_{sat}	Gain	-	14	-	dB

Thermal Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance	-	2.1	-	$^\circ\text{C/W}$

Test Data, 650MHz-865MHz

Test condition: TA = 25 °C, VD = 28V, IDQ = 200 mA, C

Freq(MHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	ID(A)	DE(%)
650	49.80	95.50	15.2	5.25	64.97%
700	49.40	87.10	13.7	5.19	59.93%
750	50.50	112.20	14.6	5.96	67.24%
800	50.60	114.82	14.6	5.55	73.88%
865	49.53	89.74	13.7	4.33	74.02%

Test Data, 860MHz-1080MHz

Test condition: TA = 25 °C, VD = 28V, IDQ = 200 mA, C

Freq(MHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	ID(A)	DE(%)
860	49.50	89.13	13.0	5.17	61.57%
915	49.30	85.11	13.0	5.00	60.80%
970	49.45	88.10	13.1	5.22	60.28%
1025	49.80	95.50	13.2	5.20	65.59%
1080	49.30	85.11	13.1	4.60	66.08%

ESD Protection Characteristics

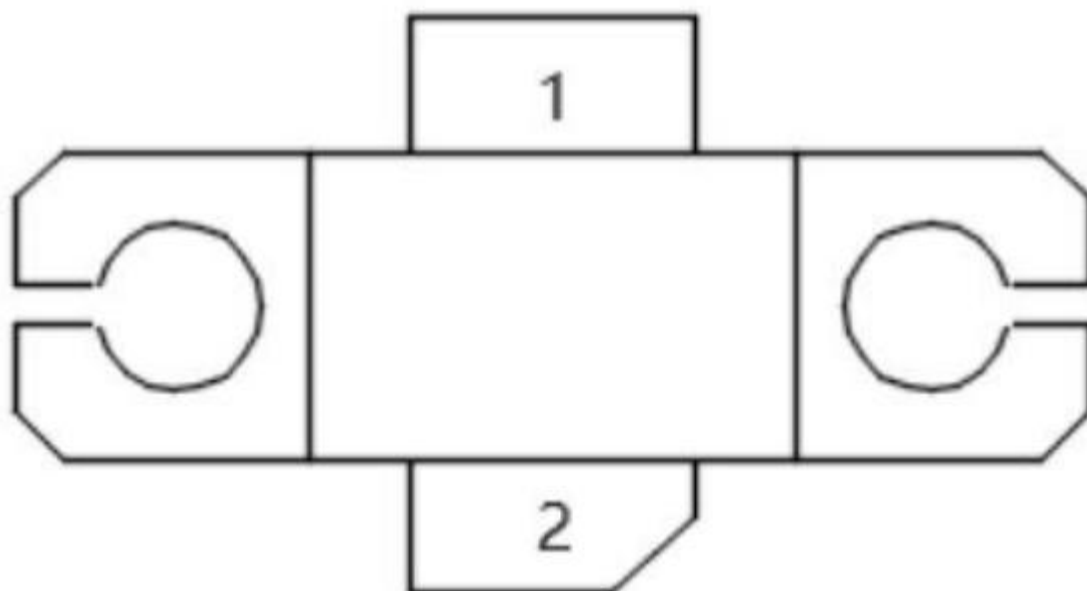
Test Methodology	Class	Standard
Human Body Model	±225V	JEDEC Standard JS-001-2017
Charge Device Model	± 1000V	JEDEC Standard JS-002-2018

Solderability

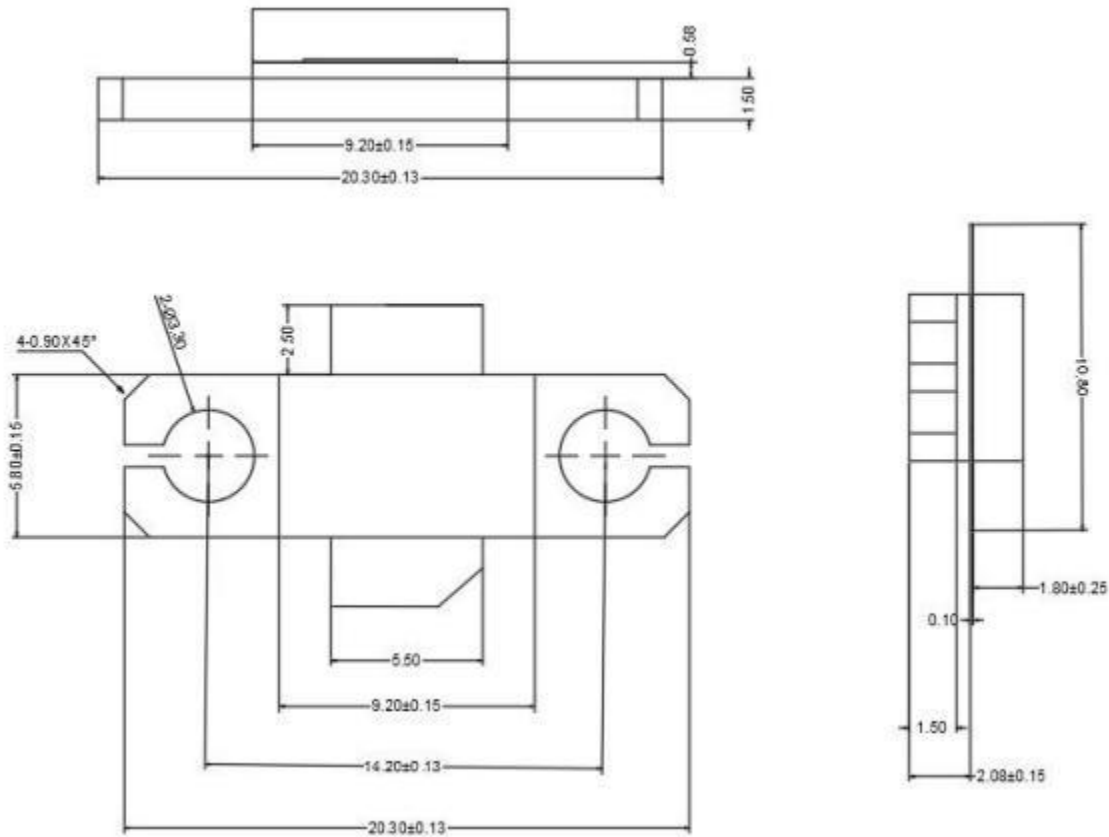
This package is lead-free/RoHS-compliant. The plating material on the leads is NiAu. It is compatible with both lead-free (maximum 260 °C reflow temperature) and tin-lead (maximum 245°C reflow temperature) soldering processes.

RoHs Compliance

This part is compliant with 2015/863/ and EU 2011/65/EC RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment).



PIN	Symbol	Description
1	V_G / RF IN	Gate voltage / RF Input to be matched to 50 ohms;
2	V_D / RF OUT	Drain voltage / RF Output to be matched to 50 ohms
--	Source	Source connected to ground, It needs to be welded onto the substrate under the window of PCB



YJ201

Note:

1. All dimensions are in millimeters.
2. All dimension tolerances are ± 0.10 or ± 0.20 mm.

Revision History

Data	Revision	Datasheet Status
2025/12/19	1.0	Preliminary Datasheet