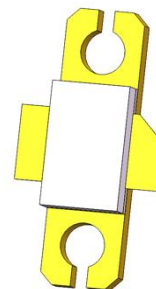


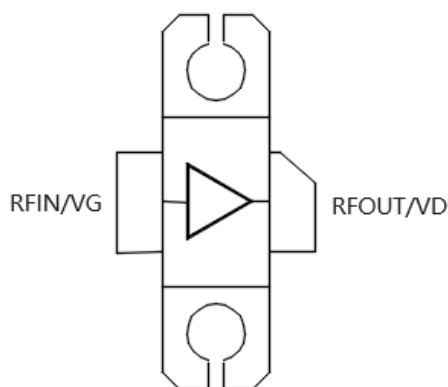
DC-7.5GHz, 25W, 28V, GaN RF Transistor

General Description

The GNNT7444H is a wideband pre-matched gallium nitride (GaN) high electron mobility transistor (HEMT), The device operates from DC to 7.5GHz with a 28V supply rail. Its typical saturated power is 25W@6.9GHz (P_{sat}). The P_{sat} gain is 10dB@6.9GHz above, and drain efficiency is 48% above. The device is in an industry standard YJ201 ceramic package.



Block diagram



Features

- Operating Frequencies: DC-7.5GHz
- Output Power (P_{sat}): 25W@6.9GHz
- Power Gain: 10dB@6.9GHz
- $DE@P_{sat}$: 48.8%@6.9GHz
- Operating Voltage: 28 V
- Support CW & Pulse mode

Typical Application Data

- 6.1GHz-6.7GHz: $P_{sat} \geq 44\text{dBm}$
- 6.7GHz-7.3GHz: $P_{sat} \geq 44\text{dBm}$

Recommended Operating Conditions

Parameter	Value
Drain-Source Voltage (V_D)	28 V (Typ)
Quiescent Current (I_{DQ})	50 mA (Typ)
Gate-Source Voltage(V_G)	-2.18 V (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 .

Absolute Maximum Ratings

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}), $T_A = 25^\circ \text{C}$	36 dBm

RF Characteristics, 6.7GHz-7.3GHz EVB

Note:

1. Test condition: $T_A = 25^\circ \text{C}$, $V_D = 28\text{V}$, $I_{DQ} = 50 \text{mA}$, CW

Symbol	Parameter	Min	Typ	Max	Unit
G_{LIN}	Linear Gain	-	13	-	dB
P_{sat}	Output Power	-	25	-	W
DE_{sat}	Drain Efficiency	-	48	-	%
G_{sat}	Gain	-	10	-	dB

Thermal Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance	-	2	-	°C/W

Test Data, 6.1GHz-6.7GHz EVB

Test Condition: TA = 25 °C, VD = 28 V, IDQ = 50mA, CW

Freq(GHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	ID(A)	DE(%)
6.1	44.0	25.12	10.0	2.00	44.86%
6.2	44.5	28.18	10.6	2.00	50.33%
6.3	44.8	30.20	10.8	1.92	56.17%
6.4	44.5	28.18	10.5	2.00	50.33%
6.5	44.3	26.92	10.4	1.94	49.55%
6.6	44.5	28.18	10.5	1.90	52.98%
6.7	44.3	26.92	10.3	1.86	51.68%

Test Data, 6.7GHz-7.3GHz EVB

Test Condition: TA = 25 °C, VD = 28 V, IDQ = 50mA, CW

Freq(GHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	ID(A)	DE(%)
6.7	44.5	28.18	10.0	1.95	51.62%
6.8	44.5	28.18	10.5	1.94	51.88%
6.9	44.3	26.92	11.0	1.97	48.80%
7.0	44.6	28.84	11.0	1.96	52.55%
7.1	44.4	27.54	11.1	1.82	54.05%
7.2	44.2	26.30	10.3	1.80	52.19%
7.3	44.1	25.70	10.3	1.77	51.86%

ESD Protection Characteristics

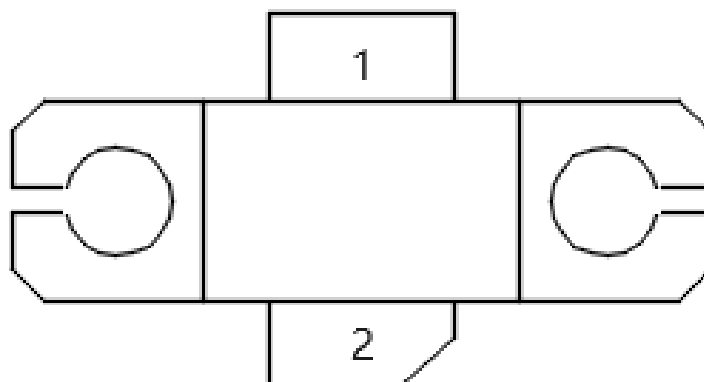
Test Methodology	Class	Standard
Human Body Model	± 225V	JEDEC Standard JS-001-2017
Charge Device Model	± 1000V	JEDEC Standard JS-002-2018

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.

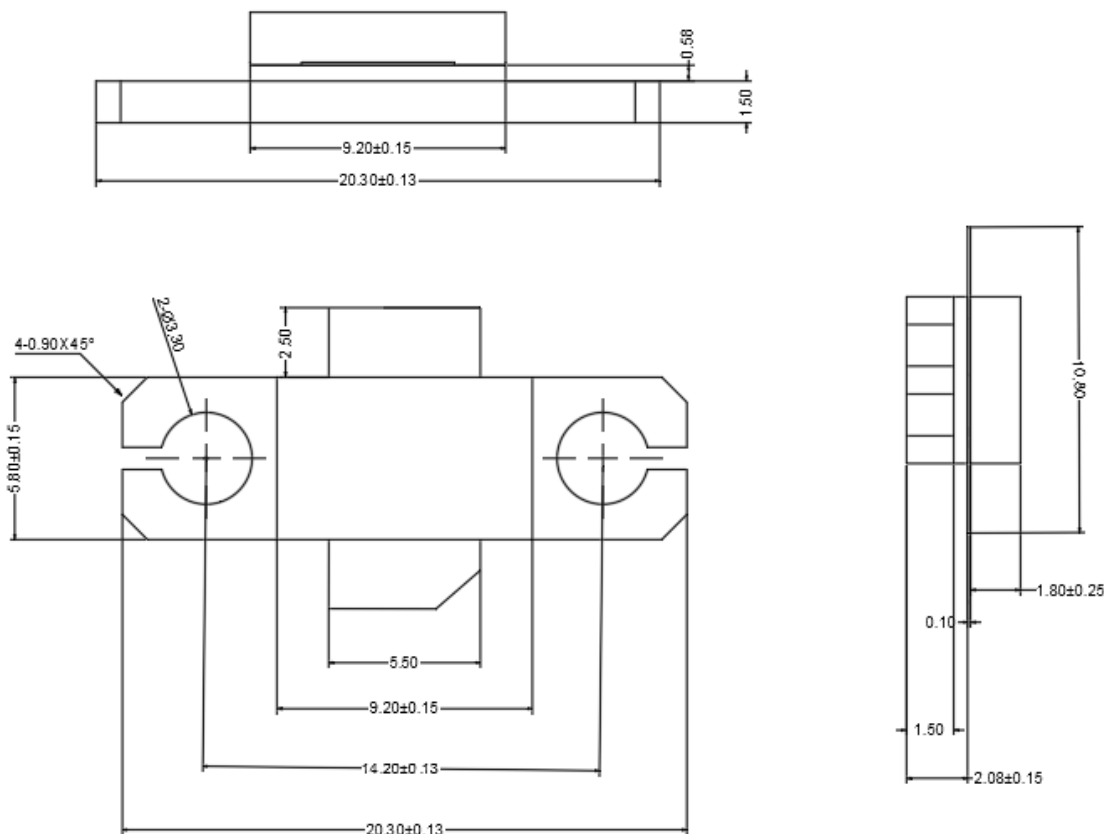
RoHS Compliance

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 Configuration



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
2025/7/1	1.0	Preliminary Datasheet