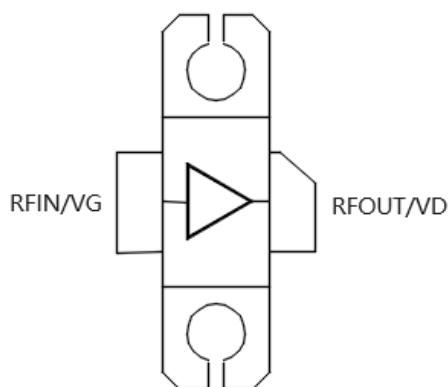
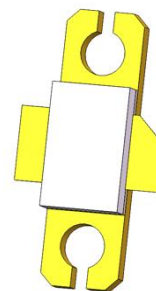


5.7-7.8GHz, 60W, 28V, GaN RF Transistor

General Description

The GNNT7048H is a wideband pre-matched gallium nitride (GaN) high electron mobility transistor (HEMT), The device operates from 5.7 to 7.8GHz with a 28V supply rail. Its typical saturated power is 60W@7.0GHz (P_{sat}). The P_{sat} gain is 9.5dB@7.0GHz above, and drain efficiency is 53% above. The device is in an industry standard YJ201 ceramic package.



Features

- Operating Frequencies: 5.7-7.8GHz
- Output Power (P_{sat}): 60W@7.0GHz
- Power Gain: 9.5dB@7.0Hz
- $DE@P_{sat}$: 53%@7.0GHz
- Operating Voltage: 28 V
- Support CW & Pulse mode

Typical Application Data

- 6.0GHz-7.3GHz: $P_{sat} \geq 47.7\text{dBm}$
- 6.0GHz-6.3GHz: $P_{sat} \geq 48.3\text{dBm}$
- 6.3GHz-6.6GHz: $P_{sat} \geq 48.2\text{dBm}$
- 6.6GHz-6.9GHz: $P_{sat} \geq 48.2\text{dBm}$
- 6.9GHz-7.2GHz: $P_{sat} \geq 48.3\text{dBm}$
- 7.5GHz-7.8GHz: $P_{sat} \geq 47.4\text{dBm}$

Recommended Operating Conditions

Parameter	Value
Drain-Source Voltage (V_D)	28 V (Typ)
Quiescent Current (I_{DQ})	200 mA (Typ)
Gate-Source Voltage(V_G)	-2.3V (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}), $T_A = 25^\circ \text{C}$	43 dBm

RF Characteristics, 6.0GHz-7.3GHz 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	10	11	-	dB
P_{sat}	Output Power	50	60	-	W
DE_{sat}	Drain Efficiency	44	50	58	%
G_{sat}	Gain	7	8	-	dB

Thermal Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance	-	1.0	-	°C/W

Test Data, 6.0GHz-7.3GHz

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

Freq(GHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	ID(A)	DE(%)
6.0	48.10	64.57	7.60	4.58	50.35%
6.1	48.40	69.18	8.10	4.22	58.55%
6.2	47.88	61.38	9.20	3.77	58.14%
6.3	48.00	63.10	8.40	4.19	53.78%
6.4	48.30	67.61	8.20	4.42	54.63%
6.5	47.90	61.66	8.00	4.08	53.97%
6.6	47.90	61.66	7.50	4.50	48.94%
6.7	47.90	61.66	7.50	4.56	48.29%
6.8	47.90	61.66	7.20	4.70	46.85%
6.9	48.00	63.10	7.80	4.66	48.36%
7.0	47.90	61.66	7.40	4.62	47.67%
7.1	47.80	60.26	8.10	4.82	44.65%
7.2	48.00	63.10	8.20	4.65	48.46%
7.3	47.70	58.88	7.80	4.42	47.58%

Test Data, 6.0GHz-6.3GHz

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

Freq(GHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	ID(A)	DE(%)
6.0	48.60	72.44	9.30	5.05	51.23%
6.1	48.70	74.13	9.20	4.65	56.94%
6.2	48.30	67.61	9.30	4.38	55.13%
6.3	48.30	67.61	9.20	4.77	50.62%

Test Data, 6.3GHz-6.6GHz

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

Freq(GHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	ID(A)	DE(%)
6.3	48.40	69.18	9.70	5.05	48.93%
6.4	48.50	70.79	9.80	5.22	48.44%
6.5	48.40	69.18	9.50	4.72	52.35%
6.6	48.20	66.07	9.30	4.86	48.55%

Test Data, 6.6GHz-6.9GHz

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

Freq(GHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	I_D (A)	DE(%)
6.6	48.50	70.79	9.10	5.16	49.00%
6.7	48.50	70.79	10.00	5.21	48.53%
6.8	48.40	69.18	9.20	5.25	47.06%
6.9	48.20	66.07	8.80	4.92	47.96%

Test Data, 6.9GHz-7.2GHz

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

Freq(GHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	I_D (A)	DE(%)
6.9	48.70	74.13	9.10	5.05	52.43%
7.0	48.40	69.18	9.50	4.64	53.25%
7.1	48.40	69.18	9.30	4.77	51.80%
7.2	48.30	67.61	9.20	4.74	50.94%

Test Data, 7.5GHz-7.8GHz

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

Freq(GHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	I_D (A)	DE(%)
7.5	48.6	72.44	8.3	4.88	53.02%
7.6	48.3	67.61	8.1	4.47	54.02%
7.7	47.8	60.26	8.2	4.1	52.49%
7.8	47.4	54.95	8	4	49.07%

ESD Protection Characteristics

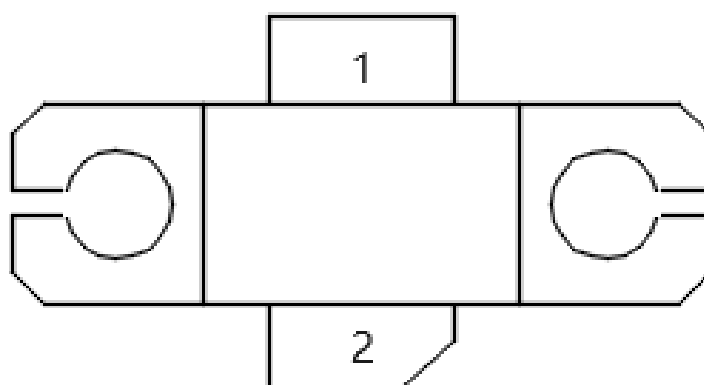
Test Methodology	Class	Standard
Human Body Model	$\pm 225\text{ V}$	JEDEC Standard JS-001-2017
Charge Device Model	$\pm 1000\text{ V}$	JEDEC Standard JS-002-2018

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.

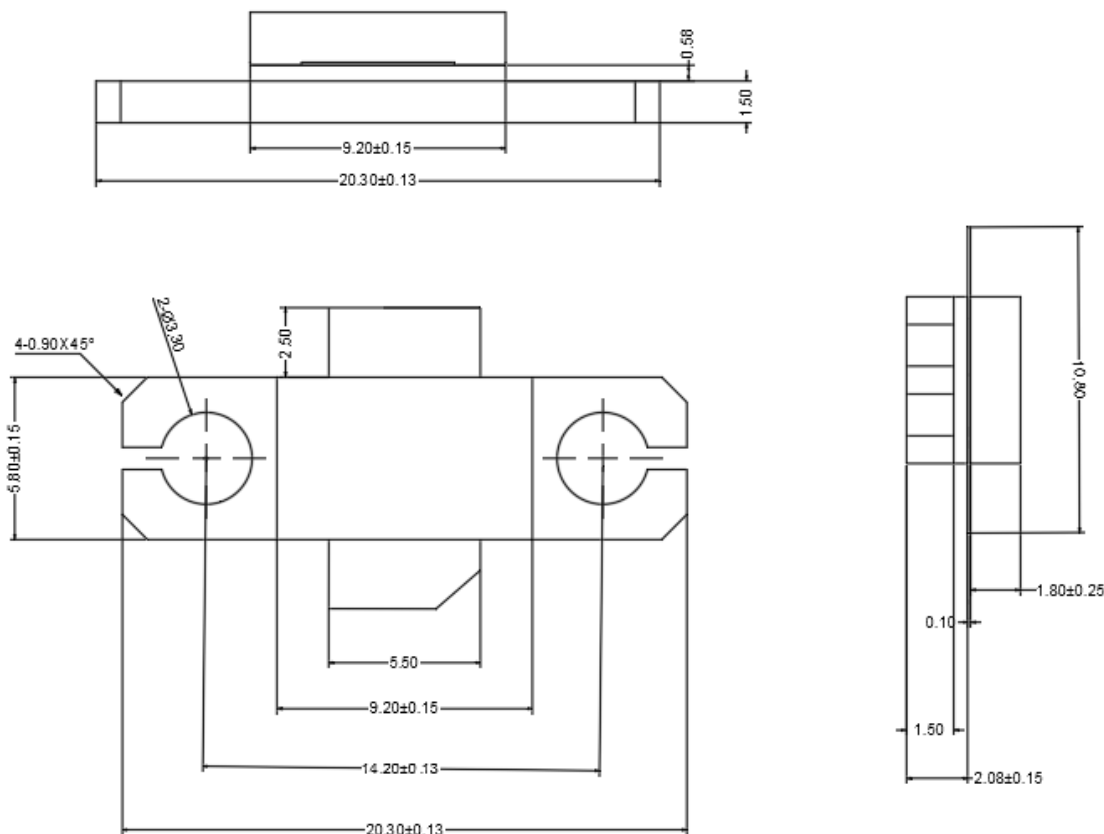
RoHS Compliance

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
2025/7/20	2.0	Update data
2025/12/22	3.0	Update data