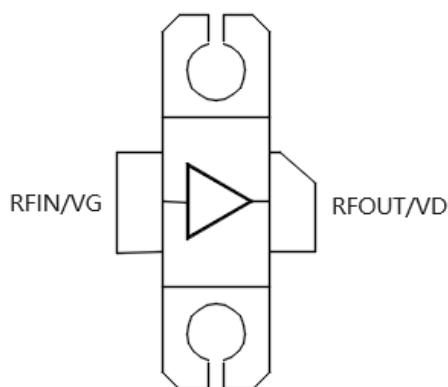
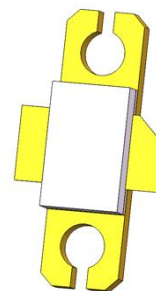


5.0-6.0GHz, 60W, 28V, GaN RF Transistor

General Description

The GNNT6048H is a wideband pre-matched gallium nitride (GaN) high electron mobility transistor (HEMT), The device operates from 5.0 to 6.0GHz with a 28V supply rail. Its typical saturated power is 60W@6.0GHz (P_{sat}). The P_{sat} gain is 8dB@6.0GHz above, and drain efficiency is 55% above. The device is in an industry standard YJ201 ceramic package.



Features

- Operating Frequencies: 5.0-6.0GHz
- Output Power (P_{sat}): 60W@6.0GHz
- Power Gain: 8dB@6.0GHz
- $DE@P_{sat}$: 55%@6.0GHz
- Operating Voltage: 28 V
- Support CW & Pulse mode

Typical Application Data

- 5.1GHz-5.3GHz: $P_{sat} \geq 48\text{dBm}$
- 5.7GHz-5.9GHz: $P_{sat} \geq 47.9\text{dBm}$
- 5.0GHz-6.0GHz: $P_{sat} \geq 46\text{dBm}$

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)	-2.81V (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}), $T_A = 25^\circ \text{C}$	41 dBm

RF Characteristics, 5.7GHz-5.9GHz EVB

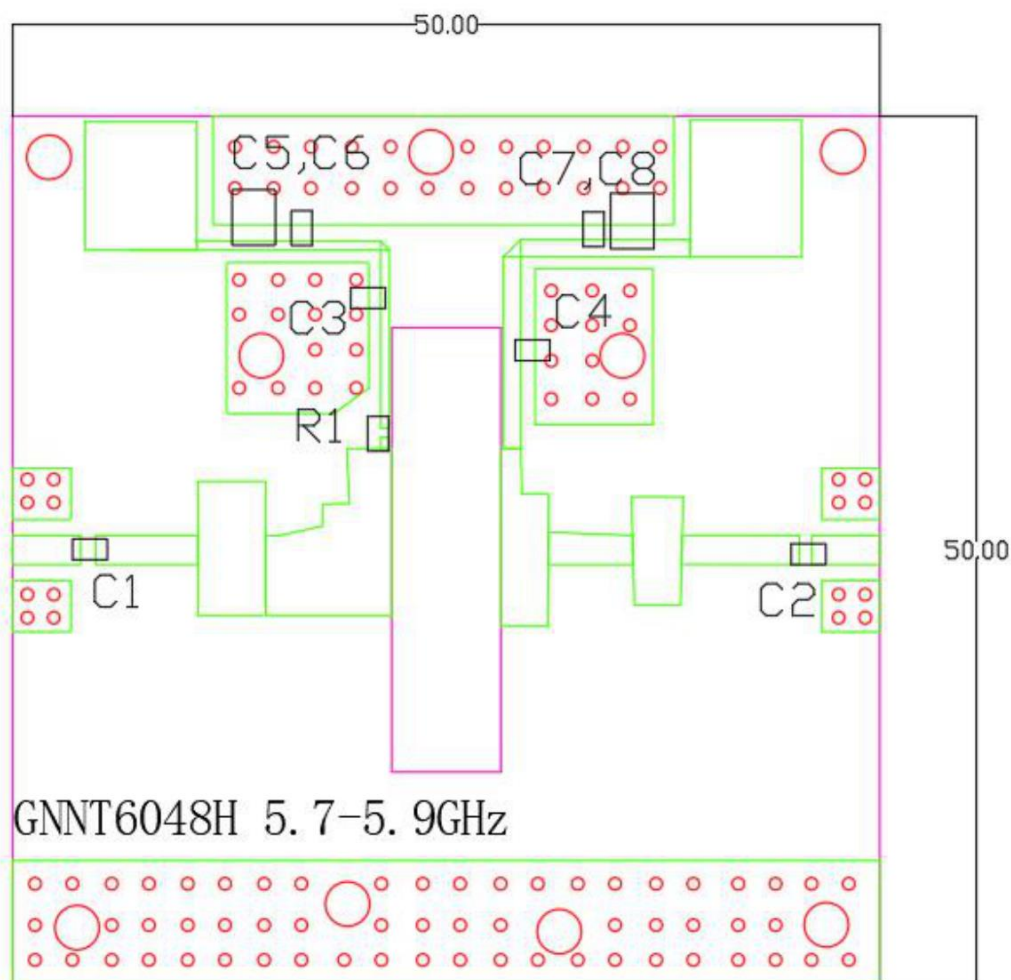
Note:

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	-	11	-	dB
P_{sat}	Output Power	-	60	-	W
DE_{sat}	Drain Efficiency	-	55	-	%
G_{sat}	Gain	-	8	-	dB

Thermal Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance	-	1.8	-	°C/W



GNNT6048H 5.7-5.9GHz

Note:

1. The board material used for the EVB is RO4350B with a thickness of 762um (30mil).
2. Matching circuit about 42.2mm*28.1mm

5.7GHz-5.9GHz EVB BOM list

Location	Value	Brand	Size
C1,C2,C3,C4	2.7pF	ATC	600F
C5,C8	10uF	Murata	1210
C6,C7	1000pF	Murata	0805
R1	16Ω	YAGEO	0805
PCB	RO4350B		30mil

Test Data, 5.7GHz-5.9GHz

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

Freq(GHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	ID(A)	DE(%)
5.7	47.9	61.7	8.1	4.2	52.5%
5.8	48.2	66.1	8.2	4.4	53.6%
5.9	47.9	61.7	8.1	3.8	58.0%

ESD Protection Characteristics

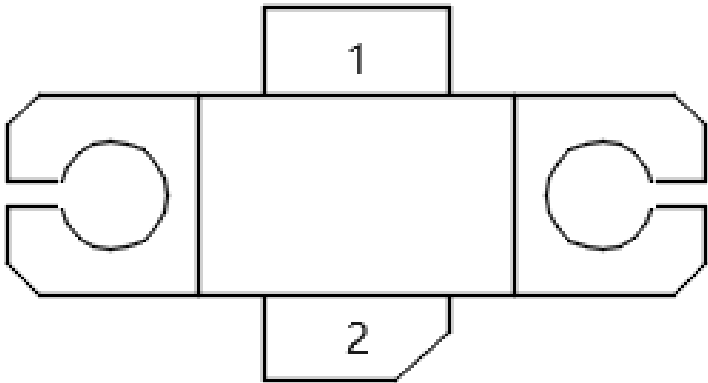
Test Methodology	Class	Standard
Human Body Model	± 225V	JEDEC Standard JS-001-2017
Charge Device Model	± 1000V	JEDEC Standard JS-002-2018

Solderability

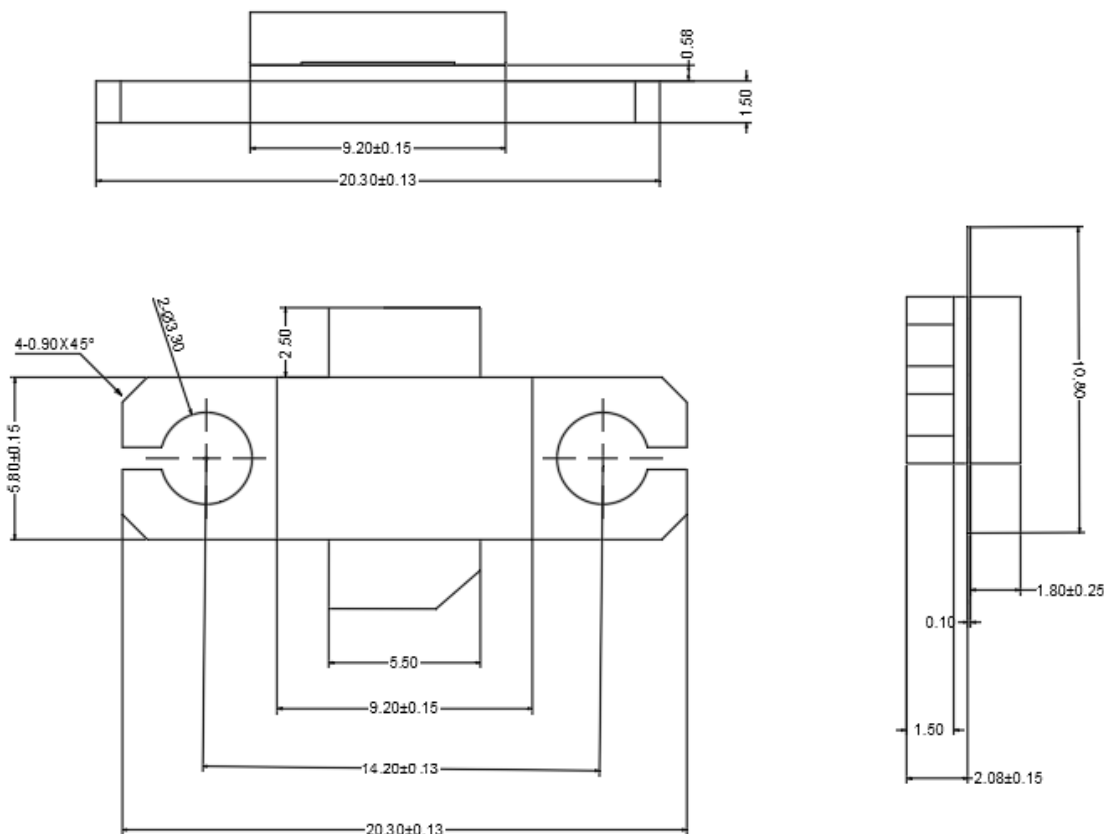
This package is lead-free/RoHS-compliant. The plating material on the leads is NiAu. It is compatible with both lead-free (maximum 260 °C reflow temperature) and tin-lead (maximum 245°C reflow temperature) soldering processes.

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
2023/12/1	1.0	Preliminary Datasheet
2024/3/10	2.0	Rectify error
2024/6/12	2.1	Uniform the format
2025/2/18	2.2	Add PCB layout