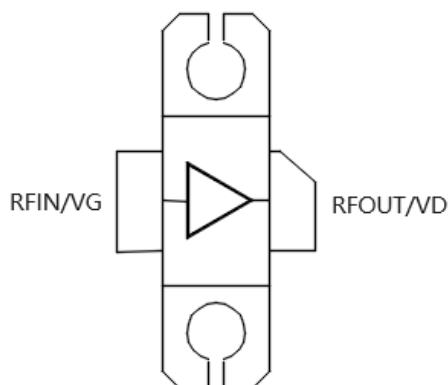
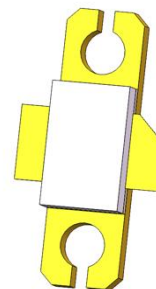


DC-3.0GHz, 125W, 28V, GaN RF Transistor

General Description

The GNNT3051H is a wideband pre-matched gallium nitride (GaN) high electron mobility transistor (HEMT), The device operates from DC to 3.0GHz with a 28V supply rail. Its typical saturated power is 125W@2400MHz (P_{sat}).

The P_{sat} gain is 12dB@2700MHz above, and drain efficiency is 59% above. The device is in an industry standard YJ201 ceramic package.



Features

- Operating Frequencies: DC-3.0GHz
- Output Power (P_{sat}): 125W@2400 MHz
- Power Gain: 12dB@2700MHz
- $DE@P_{sat}$: 59%@2700 MHz
- Operating Voltage: 28 V
- Support CW & Pulse mode

Typical Application Data

- 2400MHz-2700MHz: $P_{sat} \geq 50.8\text{dBm}$

Recommended Operating Conditions

Parameter	Value
Drain-Source Voltage (V_D)	28 V (Typ)
Quiescent Current (I_{DQ})	150 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 (V_{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}), $T_A = 25^\circ\text{C}$	42dBm

RF Characteristics, 2.4GHz-52.7GHz EVB

Note:

1. Test condition: $T_A = 25^\circ\text{C}$, $V_D = 28\text{V}$, $I_{DQ} = 150\text{mA}$, CW

Symbol	Parameter	Min	Typ	Max	Unit
G_{LIN}	Linear Gain	-	15	-	dB
P_{sat}	Output Power	-	125	-	W
DE_{sat}	Drain Efficiency	-	55	-	%
G_{sat}	Gain	-	12	-	dB

Thermal Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance	-	0.85	-	$^\circ\text{C}/\text{W}$

Test Data, 2400MHz-2700MHz

Test Condition: TA = 25 °C, VD = 28 V, IDQ = 150 mA, CW

Freq(MHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	ID(A)	DE(%)
2400	51.0	125.9	11.8	8.7	51.7
2500	51.0	125.9	12.2	7.7	58.4
2600	51.1	128.8	12.4	8.2	56.1
2700	50.8	120.2	12.5	7.2	59.6

ESD Protection Characteristics

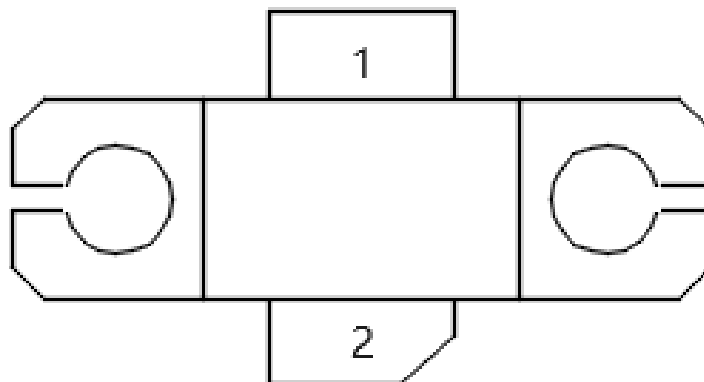
Test Methodology	Class	Standard
Human Body Model	±225V	JEDEC Standard JS-001-2017
Charge Device Model	±1000V	JEDEC Standard JS-002-2018

Solderability

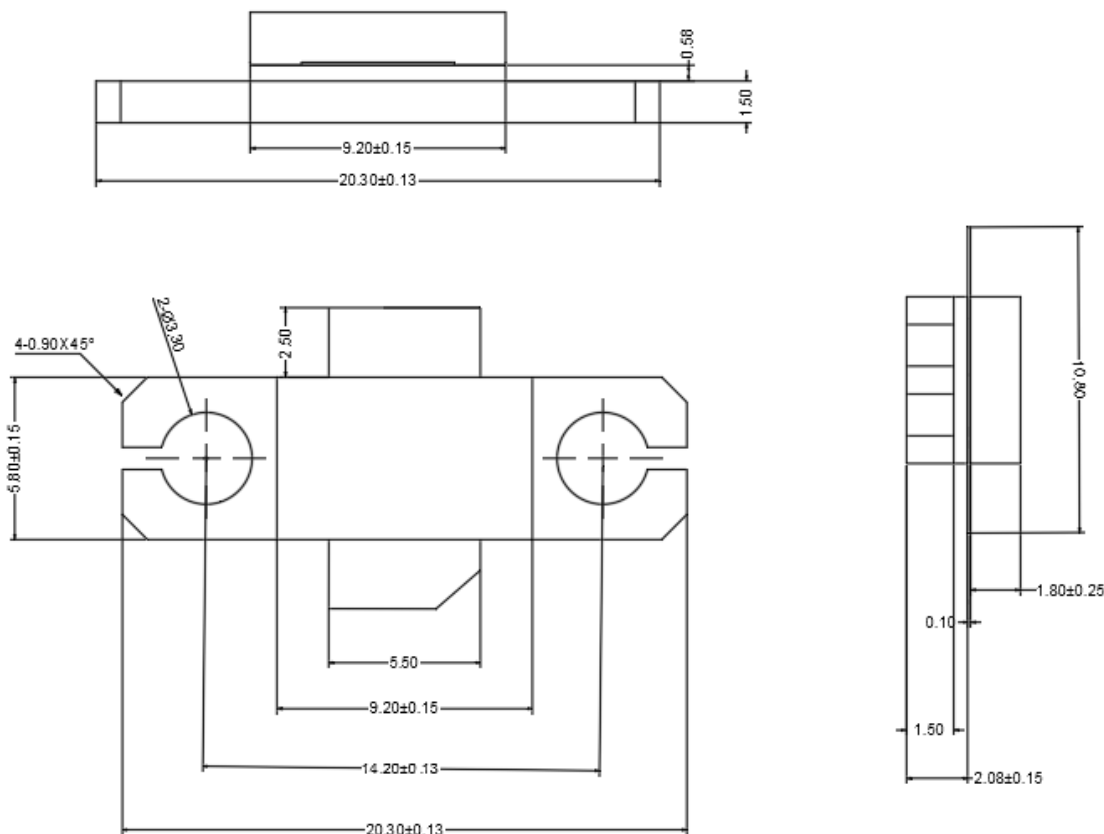
This package is lead-free/RoHS-compliant. The plating material on the leads is NiAu. It is compatible with both lead-free (maximum 260 °C reflow temperature) and tin-lead (maximum 245°C reflow temperature) soldering processes.

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
2025/1/13	1.0	Preliminary Datasheet
2025/08/15	2.0	Update Die