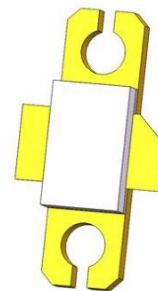


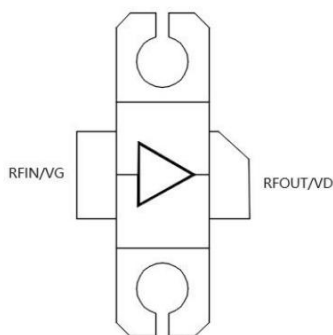
DC-6.0GHz, 20W, 28V, GaN RF Transistor

General Description

The GNNT6043H is a wideband pre-matched gallium nitride (GaN) high electron mobility transistor (HEMT), The device operates from DC to 6.0GHz with a 28V supply rail. Its typical saturated power is 20W@5.7GHz (P_{sat}). The P_{sat} gain is 12dB@5.7GHz above, and drain efficiency is 55% above. The device is in an industry standard YJ201 ceramic package.



Block diagram



Features

- Operating Frequencies: DC-6.0GHz
- Output Power (P_{sat}): 20W@5.7GHz
- Power Gain: 12dB@5.7GHz
- $DE@P_{sat}$: 55%@5.7GHz
- Operating Voltage: 28 V
- Support CW & Pulse mode

Typical Application Data

- 0.95GHz-1.25GHz: $P_{sat} \geq 43.2\text{dBm}$
- 3.5GHz-3.7GHz: $P_{sat} \geq 42.5\text{dBm}$
- 5.0GHz-6.0GHz: $P_{sat} \geq 43\text{dBm}$
- 5.7GHz-5.9GHz: $P_{sat} \geq 43.5\text{dBm}$

Recommended Operating Conditions

Parameter	Value
Drain-Source Voltage (V_D)	28 V (Typ)
Quiescent Current (I_{DQ})	100 mA (Typ)
Gate-Source Voltage(V_G)	-2.42 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 (Pin), $T_A = 25^\circ \text{C}$	35dBm

RF Characteristics, 5.7GHz-5.9GHz EVB

Note:

1. Test condition: $T_A = 25^\circ \text{C}$, $V_D = 28\text{V}$, $I_{DQ} = 100 \text{mA}$, CW

Symbol	Parameter	Min	Typ	Max	Unit
G_{LIN}	Linear Gain	-	15	-	dB
P_{sat}	Output Power	-	20	-	W
DE_{sat}	Drain Efficiency	-	55	-	%
G_{sat}	Gain	12	13	-	dB

Thermal Characteristics

Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance	-	4.5	-	°C/W

Test Data, 5.7GHz-5.9GHz

Test Condition: TA = 25 °C, VD = 28 V, IDQ = 100 mA, CW

Freq(GHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	ID(A)	DE(%)
5.7	43.63	23.07	12.27	1.46	56.43%
5.8	43.54	22.59	13.05	1.29	62.07%
5.9	43.44	22.08	13.02	1.28	61.61%

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

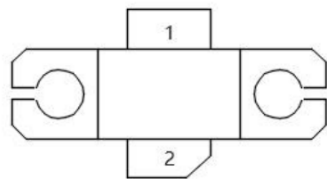
Solderability

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

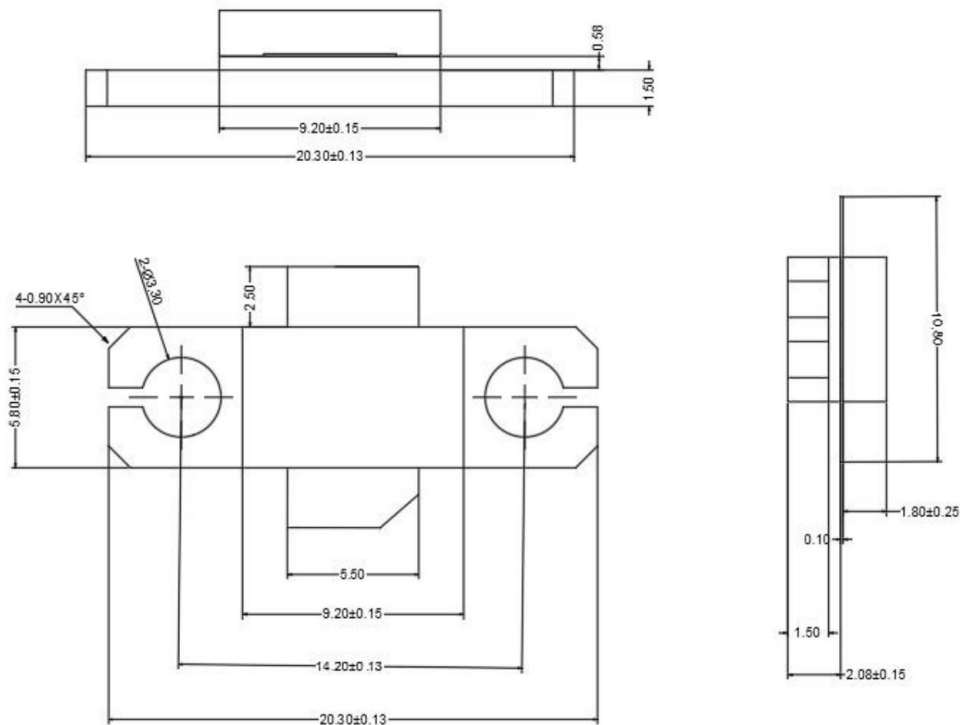
This part is compliant with 2015/863/ and EU 2011/65/EC RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment).

Pin Configuration



PIN	Symbol	Description
1	V_{GI} 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

Package Dimensions



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
2023/11/20	1.0	Preliminary Datasheet
2024/3/10	2.0	Rectify the errors
2024/6/11	2.1	Unify the format