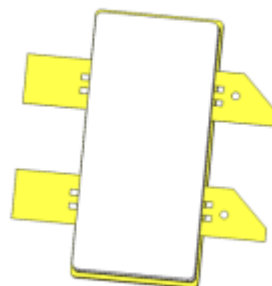


DC-3.0GHz, 150W, 28V, GaN RF Transistor

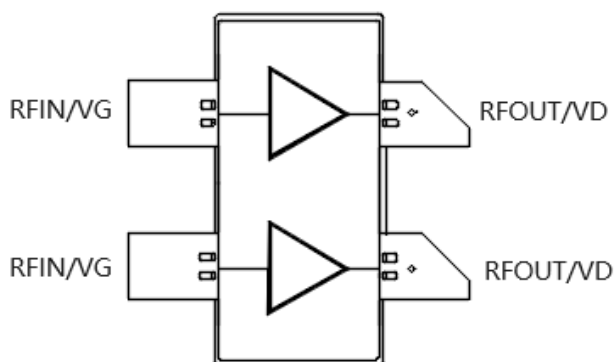
General Description

The GNNT3052HP 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 150W@2.5GHz(P_{sat}). The P_{sat} gain is 12dB@2.5GHz above, drain efficiency is 55% above. The device is in an industry standard YJ803 ceramic package.



Typical Application Data

- 0.4GHz-3.0GHz: $P_{sat} \geq 50.0\text{dBm}$



Features

- Operating Frequencies: DC-3.0GHz
- Output Power (P_{sat}): 150 W@2.5GHz
- Power Gain: 12dB@3.0GHz
- $DE@P_{sat}$: 55%@2.5GHz
- Operating Voltage: 28 V
- Support CW & Pulse mode

Recommended Operating Conditions

Parameter	Value
Drain-Source Voltage (V_D)	28 V (Typ)
Quiescent Current (I_{DQ})	200mA (Typ)
Gate-Source Voltage(V_G)	-2.2V (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}), $T_A = 25^\circ \text{C}$	46 dBm

RF Characteristics, 0.4GHz-3.0GHz 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	-	-	dB
P_{sat}	Output Power	100	-	-	W
DE_{sat}	Drain Efficiency	38	45	-	%
G_{sat}	Gain	10.5	-	-	dB

Thermal Characteristics

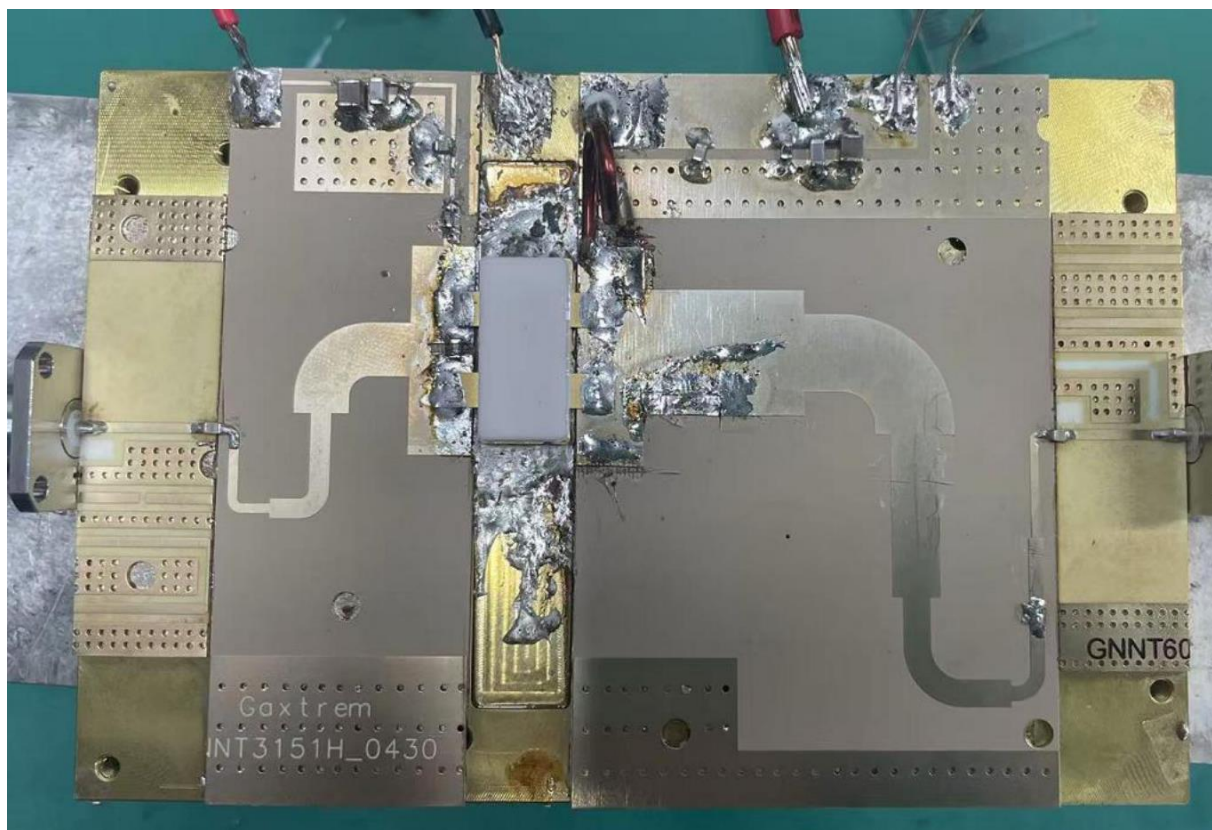
Symbol	Parameter	Min	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance	-	-	-	$^\circ\text{C/W}$

Test Data,0.4GHz-3.0GHz

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

Freq(GHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	ID(A)	DE(%)
0.4	50.4	109.6	10.6	8.0	48.9%
0.5	50.3	107.1	10.5	6.4	59.8%
0.6	50.4	109.6	11.6	6.7	58.4%
0.7	50.9	123.0	12.0	8.1	54.2%
0.8	51.3	134.9	12.8	8.0	59.8%
0.9	50.8	120.2	12.8	6.5	66.1%
1.0	50.1	102.3	11.2	6.3	58.0%
1.1	50.7	117.5	12.5	7.6	55.2%
1.2	50.8	120.2	12.1	7.8	54.7%
1.3	51.2	131.8	13.2	8.1	57.8%
1.4	50.5	112.2	12.7	6.5	61.2%
1.5	50.6	114.8	14.0	7.1	57.4%
1.6	50.3	107.1	11.3	10.3	37.2%
1.7	51.4	138.0	11.8	10.7	46.1%
1.8	51.2	131.8	13.1	9.6	49.0%
1.9	51.6	144.5	12.1	9.5	54.3%
2.0	51.6	144.5	11.8	9.5	54.3%
2.1	51.0	125.9	11.5	10.1	44.5%
2.2	51.4	138.0	12.0	10.1	48.8%
2.3	51.4	138.0	12.6	9.8	50.3%
2.4	50.8	120.2	13.3	9.4	45.7%
2.5	50.5	112.2	11.1	10.5	38.2%
2.6	51.0	125.9	13.2	10.6	42.2%
2.7	51.5	141.2	13.3	10.6	47.6%
2.8	51.2	131.8	14.3	9.1	51.5%
2.9	50.7	117.5	12.0	10.3	40.5%
3.0	50.8	120.2	13.4	10.4	41.3%

0.4GHz-3.0GHz Demo PCB



ESD Protection Characteristics

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

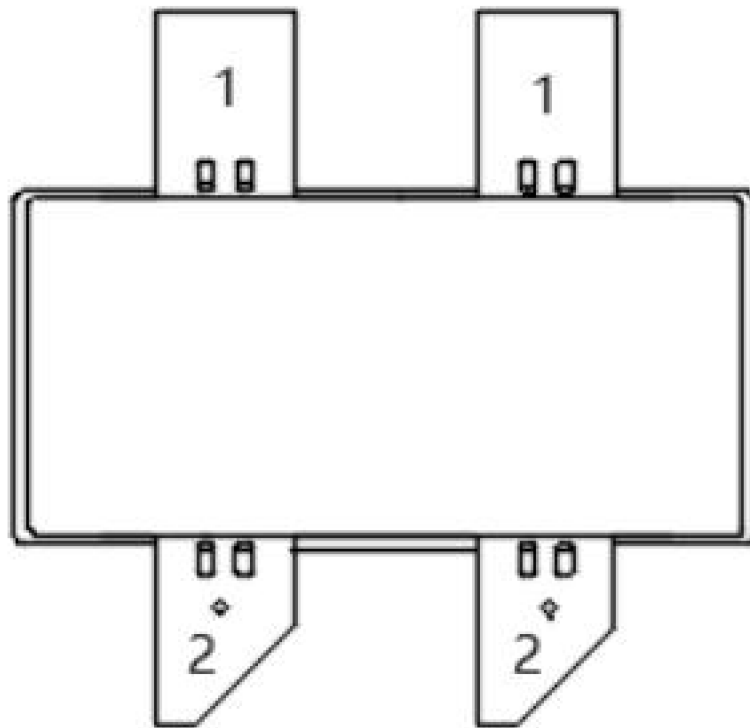
Solderability

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

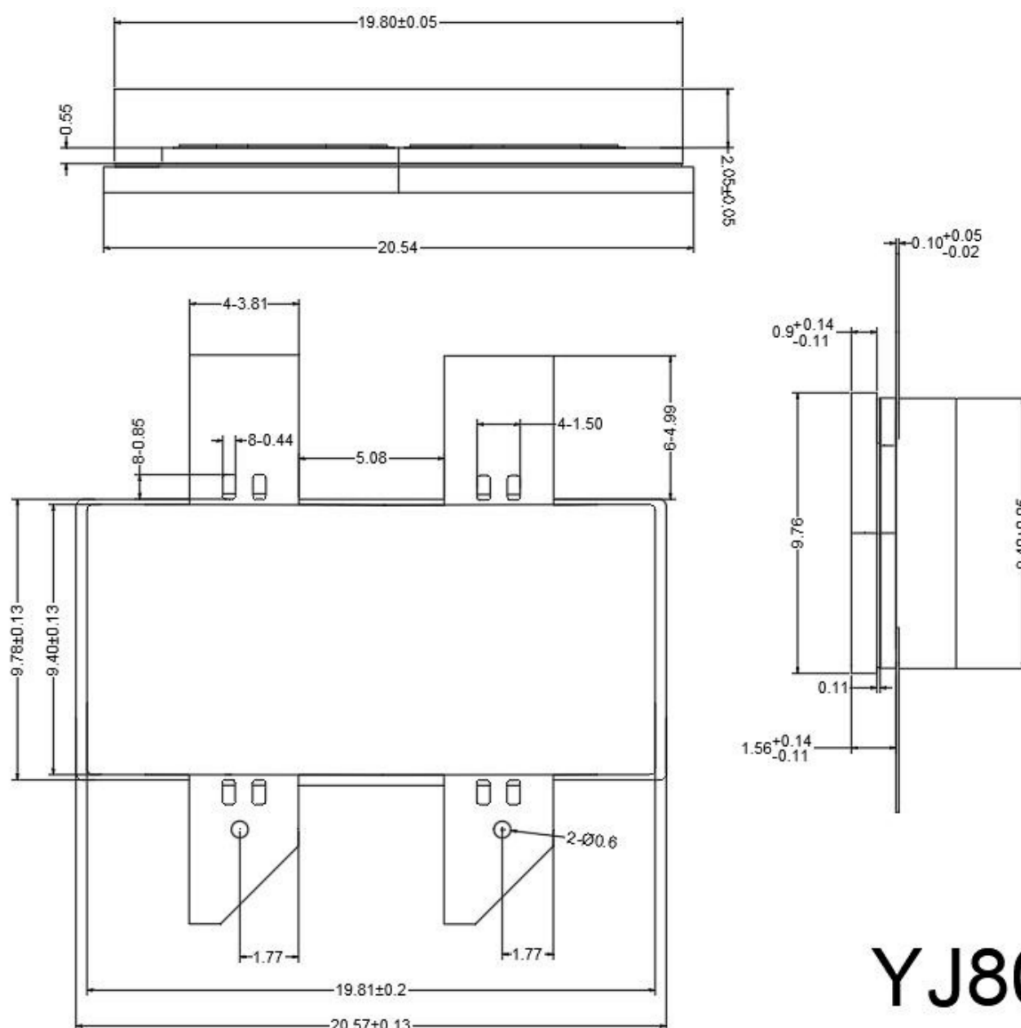
This part is compliant with 2015/863/ and EU 2011/65/EC RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment).

Pin Configuration



PIN	Symbol	Description
1	V_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

Package Dimensions



YJ803

Note:

1. All dimensions are in millimeters.
2. All dimension tolerances are ± 0.10 or ± 0.20 mm.

Revision History

Data	Revision	Datasheet Status
2025/08/22	1.0	Preliminary Datasheet
2025/08/22	1.1	Add 0.4-3.0GHz Demo PCB photo