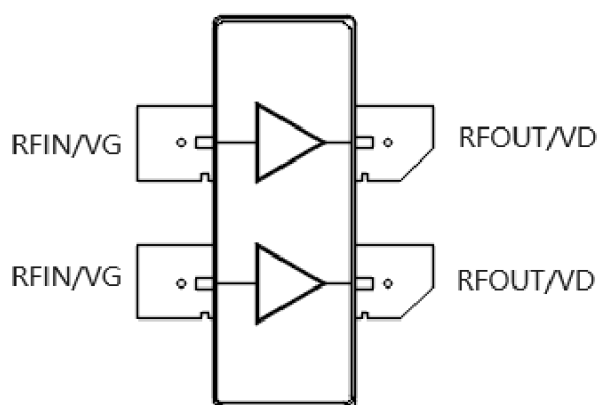
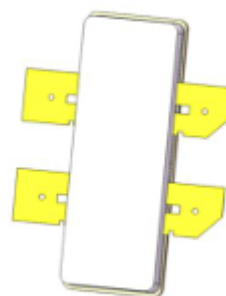


6.5-7.5GHz, 125W, 28V, GaN RF Transistor

General Description

The GNNT7551HP is a wideband pre-matched gallium nitride(GaN) high electron mobility transistor (HEMT) , The device operates from 6.5GHz to 7.5GHz with a 28V supply rail. Its typical saturated power is 125W@7GHz(P_{sat}). The P_{sat} gain is 8.8dB@6.7GHz above, drain efficiency is 43% above. The device is in an industry standard YJ802 ceramic package.



Features

- Operating Frequencies: 6.5-7.5GHz
- Output Power (P_{sat}): 125W@7GHz
- Power Gain: 8.8dB@6.7GHz
- $DE@P_{sat}$: 43.8%@6.8GHz
- Operating Voltage: 28 V
- Support CW & Pulse mode

Typical Application Data

- 6.7GHz-7.3GHz: $P_{sat} \geq 50.7\text{dBm}$

Recommended Operating Conditions

Parameter	Value
Drain-Source Voltage (V_D)	28 V (Typ)
Quiescent Current (I_{DQ})	150mA (Typ)
Gate-Source Voltage(V_G)	-2.35 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 (P_{in}), $T_A = 25^\circ \text{C}$	44 dBm

RF Characteristics, 6.7GHz-7.5GHz 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	11.5	12	12.5	dB
P_{sat}	Output Power	-	125	-	W
DE_{sat}	Drain Efficiency	-	45	-	%
G_{sat}	Gain	-	9	-	dB

Thermal Characteristics

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

Test Data, 6.7GHz-7.3GHz

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

Freq(GHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	ID(A)	DE(%)
6.7	50.7	117.49	8.8	9.47	44.31
6.8	50.8	120.23	8.9	9.80	43.81
6.9	50.8	120.23	8.8	9.61	44.68
7.0	51.0	125.89	9.5	8.82	50.98
7.1	51.1	128.82	9.7	9.10	50.56
7.2	50.8	120.23	9.0	8.85	48.52
7.3	50.9	123.03	9.4	8.43	52.12

ESD Protection Characteristics

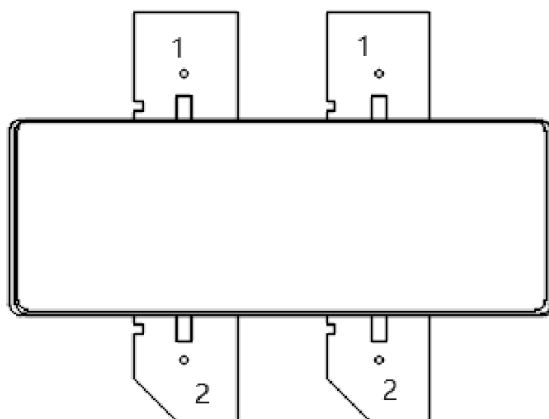
Test Methodology	Class	Standard
Human Body Model	± 225V	JEDEC Standard JS-001-2017
Charge Device Model	± 1000V	JEDEC Standard JS-002-2018

Solderability

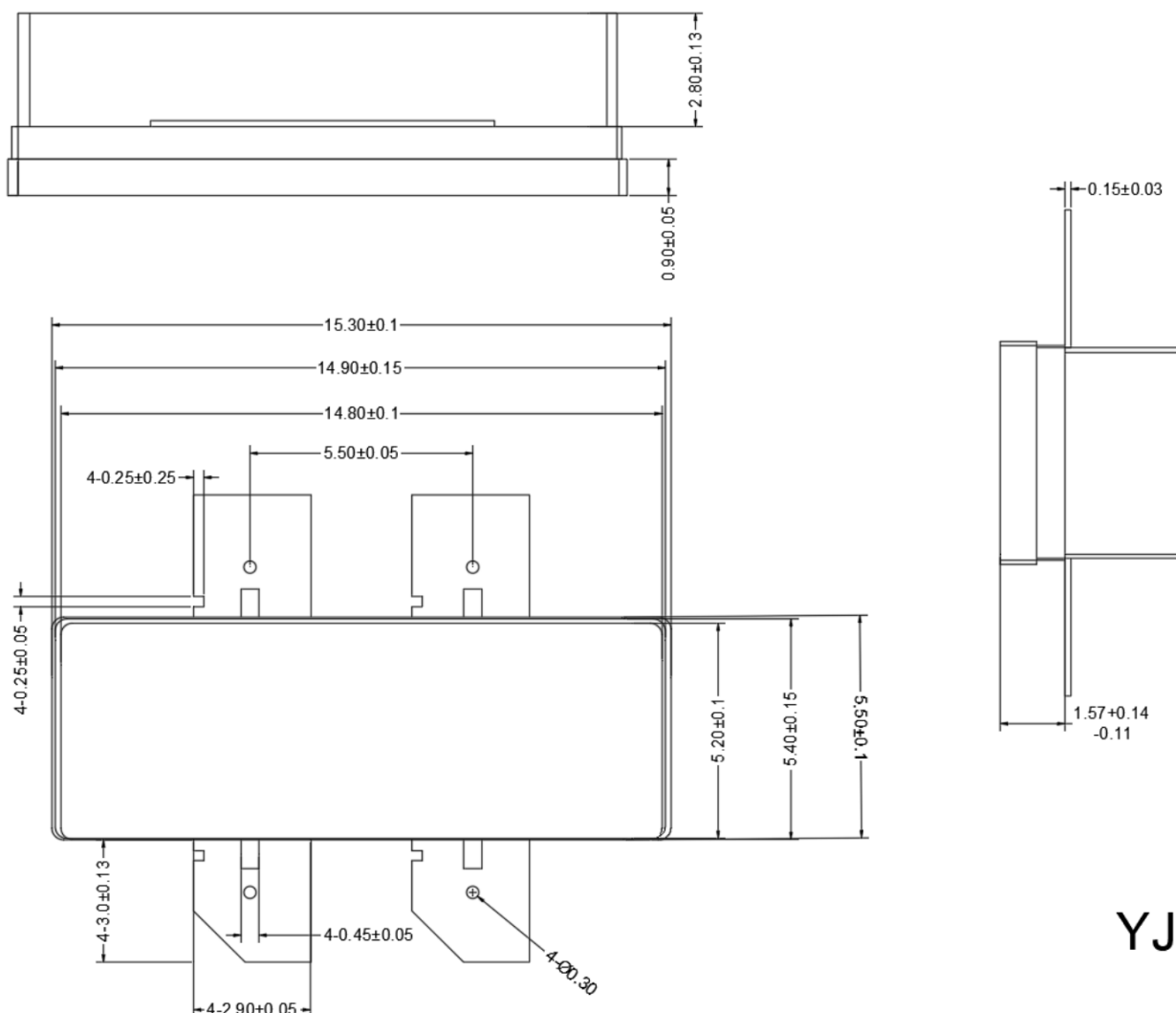
This package is lead-free/RoHS-compliant. The plating material on the leads is NiAu. It is compatible with both lead-free (maximum 260 °C reflow temperature) and tin-lead (maximum 245°C reflow temperature) soldering processes.

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



YJ802

Note:

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

Revision History

Data	Revision	Datasheet Status
2025/6/29	1.0	Preliminary Datasheet