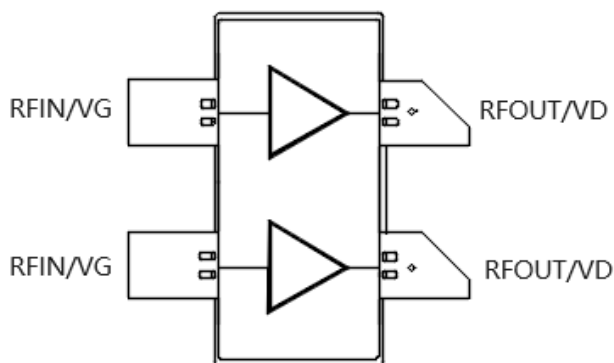


DC-3.0GHz, 250W, 28V, GaN RF Transistor

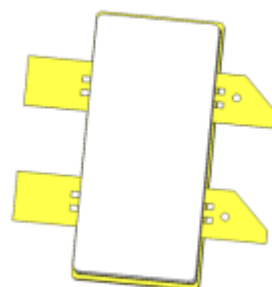
General Description

The GNNT3054HP 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 270W@2.4GHz(P_{sat}).The P_{sat} gain is 13dB@2.4GHz above, drain efficiency is 55% above. The device is in an industry standard YJ803 ceramic package.



Features

- Operating Frequencies: DC-3.0GHz
- Output Power (P_{sat}): 270 W@2.4GHz
- Power Gain: 13dB@2.4GHz
- $DE@P_{sat}$: 55%@2.4GHz
- Operating Voltage: 28V
- Support Pulse mode



Typical Application Data

- 2.3GHz-2.5GHz: $P_{sat} \geq 54.4\text{dBm}$

Recommended Operating Conditions

Parameter	Value
Drain-Source Voltage (V_D)	28 V (Typ)
Quiescent Current (I_{DQ})	200mA (Typ)
Gate-Source Voltage(V_G)	-2.4V (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, 2.3GHz-2.5GHz 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	16	-	dB
P_{sat}	Output Power	-	270	-	W
DE_{sat}	Drain Efficiency	-	55	-	%
G_{sat}	Gain	-	13	-	dB

Thermal Characteristics

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

Test Data,2.3GHz-2.5GHz

Test Condition: $T_A = 25\text{ }^{\circ}\text{C}$, $V_D = 28\text{ V}$, $I_{DQ} = 200\text{ mA}$, CW

Freq(GHz)	Psat(dBm)	Psat(W)	Power Gain(dB)	I_D (A)	DE(%)
2.3	54.40	275.4	13.1	17.70	55.6
2.4	54.46	279.3	13.4	17.00	58.7
2.5	54.50	281.8	13.5	16.00	62.9

ESD Protection Characteristics

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

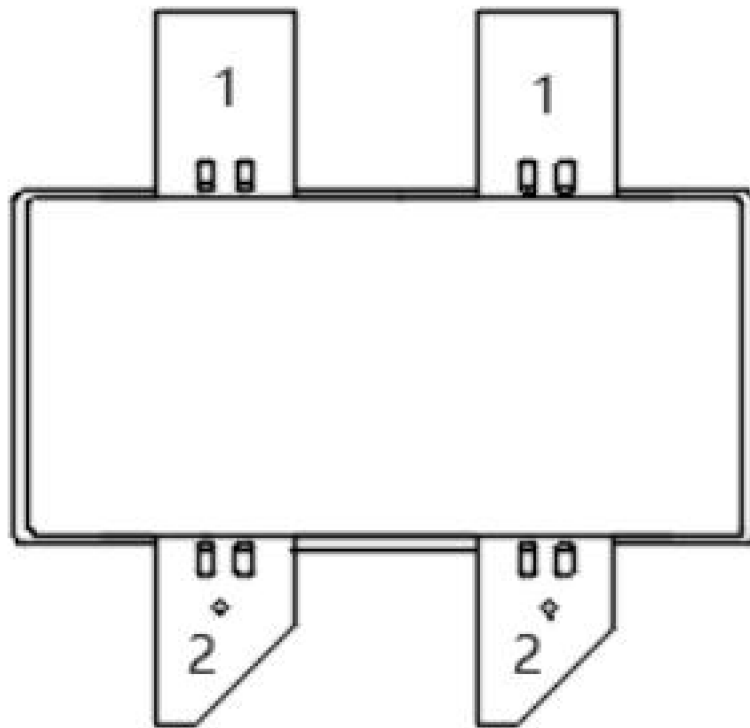
Solderability

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

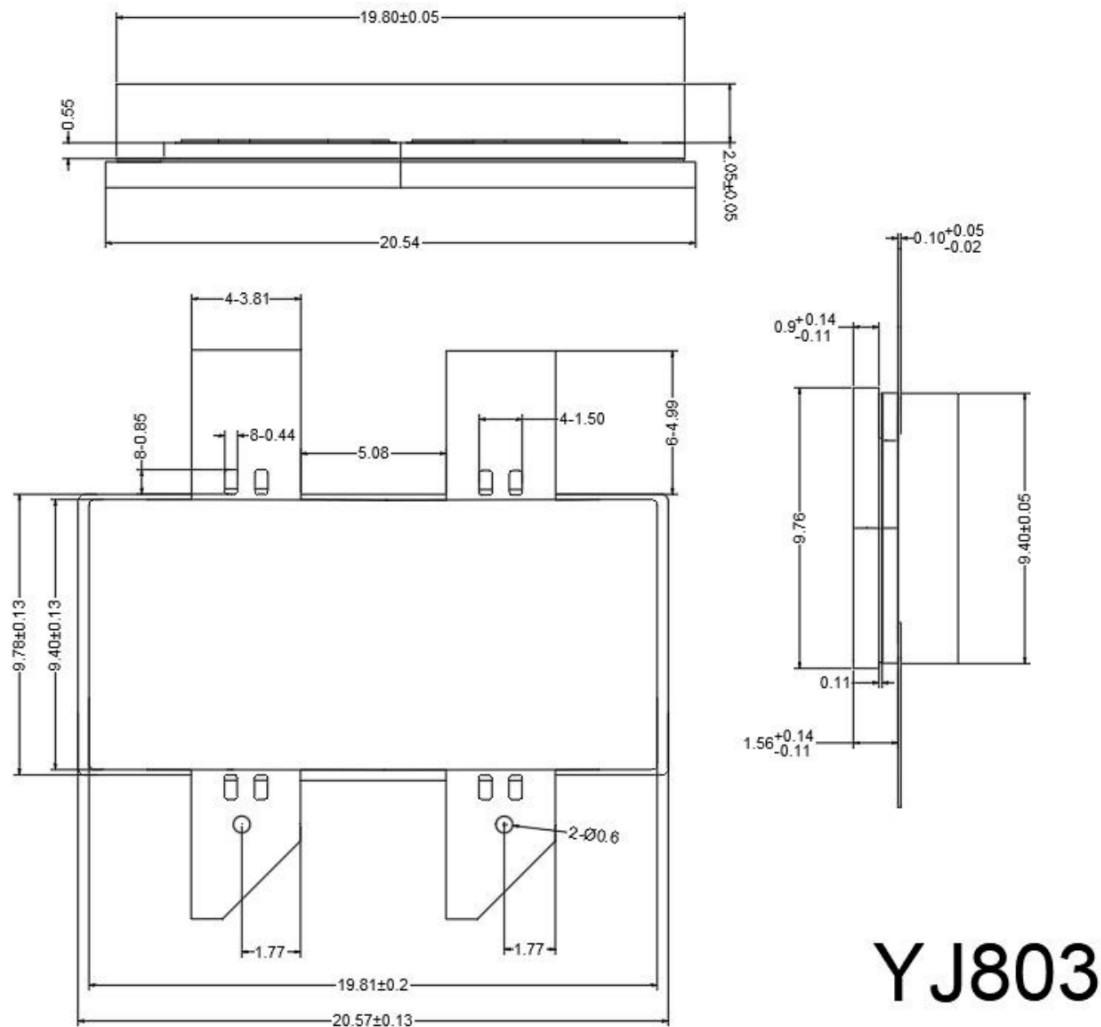
This part is compliant with 2015/863/ and EU 2011/65/EC RoHS directive (Restrictions on the Use of Certain Hazardous Substances in Electrical and Electronic Equipment).

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



Note:

1. All dimensions are in millimeters.
2. All dimension tolerances are +/- 0.10 or +/- 0.20 mm.

Revision History

Data	Revision	Datasheet Status
2024/7/14	1.0	Preliminary Datasheet