



Gallium Nitride 50V, 35W, 2.45GHz RF Power Transistor

STAV25035C6

Description

The STAV25035C6 is a 35watt, CW capable, GaN HEMT, ideal for general applications from 2.4 to 2.5GHz. It features high gain, high efficiency and low cost, in 10*6mm plastic open cavity package, enabling surface mounted on PCB through grounding vias directly.



There is no guarantee of performance when this part is used outside of stated frequencies.

- Typical Class AB RF CW performance with device soldered through grounding vias
Vds=50V, Vgs=-2V

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff (%)	P1dB Gain (dB)	P3dB (dBm)	P3dB (W)	P3dB Eff (%)
2400	44.65	29.2	65.7	20.41	45.95	39.4	74.5
2450	44.29	26.9	64.8	19.72	45.82	38.2	74.6
2500	44.17	26.1	65.8	19.28	45.65	36.7	75.2

Applications

- 2.45GHz RF Energy
- S band amplifier

Important Note: Proper Biasing Sequence for GaN HEMT Transistors

Turning the device ON

1. Set VGS to the pinch-off (VP) voltage, typically -5 V
2. Turn on VDS to nominal supply voltage
3. Increase VGS until IDS current is attained
4. Apply RF input power to desired level

Turning the device OFF

1. Turn RF power off
2. Reduce VGS down to VP, typically -5 V
3. Reduce VDS down to 0 V
4. Turn off VGS

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V _{DSS}	+200	Vdc
Gate--Source Voltage	V _{GS}	-8 to +0.5	Vdc
Operating Voltage	V _{DD}	55	Vdc
Maximum gate current	I _{gs}	4.8	mA
Storage Temperature Range	T _{stg}	-65 to +150	°C
Case Operating Temperature	T _c	+150	°C
Operating Junction Temperature	T _j	+225	°C

Table 2. Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case by FEA T _c = 85°C, at Pout=35W CW, mounted on high density vias	R _{θJC}	4	°C /W

Table 3. Electrical Characteristics (TA = 25°C unless otherwise noted)

DC Characteristics (measured on wafer prior to packaging)

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
----------------	------------	--------	-----	-----	-----	------



Drain-Source Breakdown Voltage	VGS=-8V; IDS=4.8mA	V _{DSS}		200		V
Gate Threshold Voltage	VDS =10V, ID = 4.8mA	V _{GS(th)}	-4	-3	-2	V
Gate Quiescent Voltage	VDS =50V, IDS=48mA, Measured in Functional Test	V _{GS(Q)}		-3		V

Ruggedness Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Load mismatch capability	2.45GHz, Pout=35W pulse CW All phase, No device damages	VSWR		10:1		

Figure 1: Pin Definition(Top View)



Pin No.	Symbol	Description
1-7,12,13,18-25,30,31,36	GND	DC/RF Ground
8,9,10,11,14,15,16,17	Vgs/RF In	Vgs and RF input
26,27,28,29,32,33,34,35	Vds/RF out	Vds and RF output
Package Base	GND	DC/RF Ground.

Typical characters

Figure 2: Efficiency and power gain as function of Pout

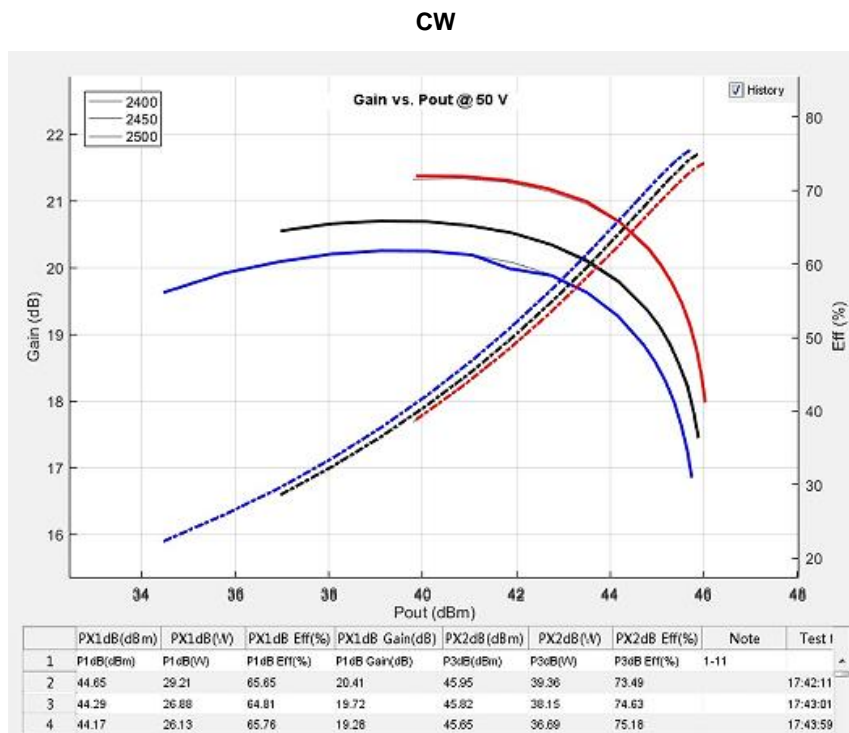


Figure 3: Network plot for S11/S21

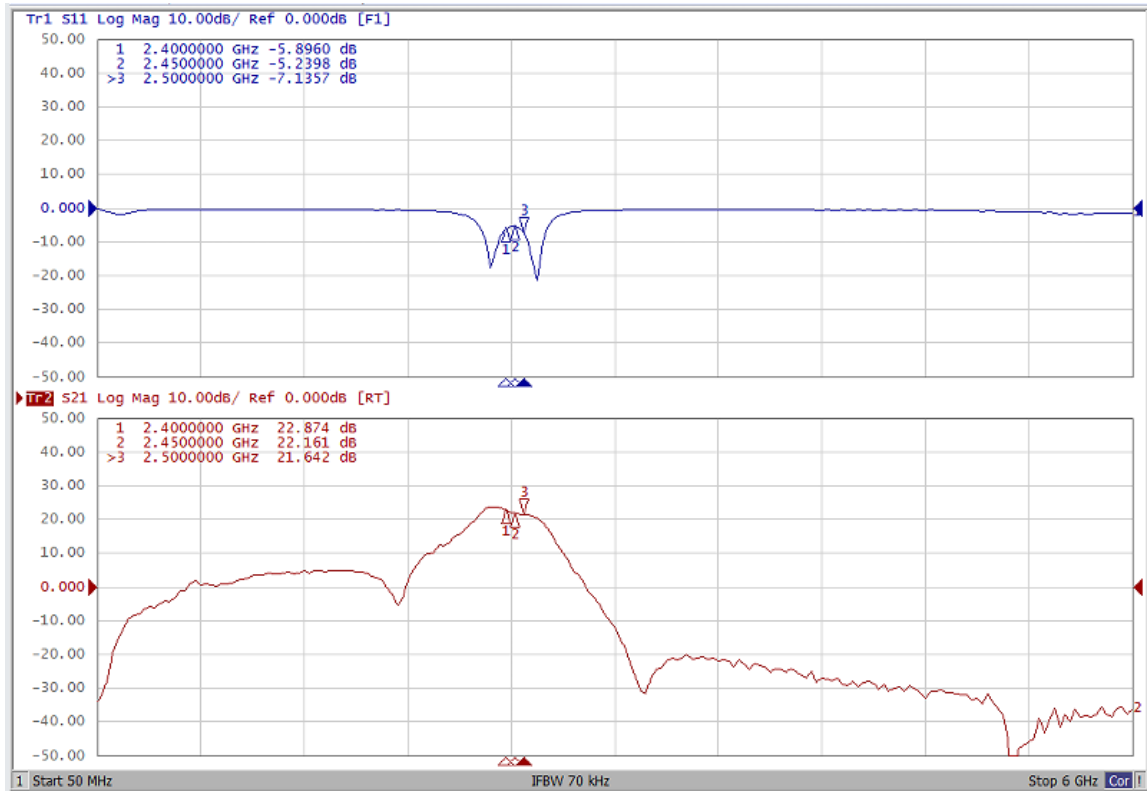


Figure 4: Picture of application board of 3.4-3.8GHz

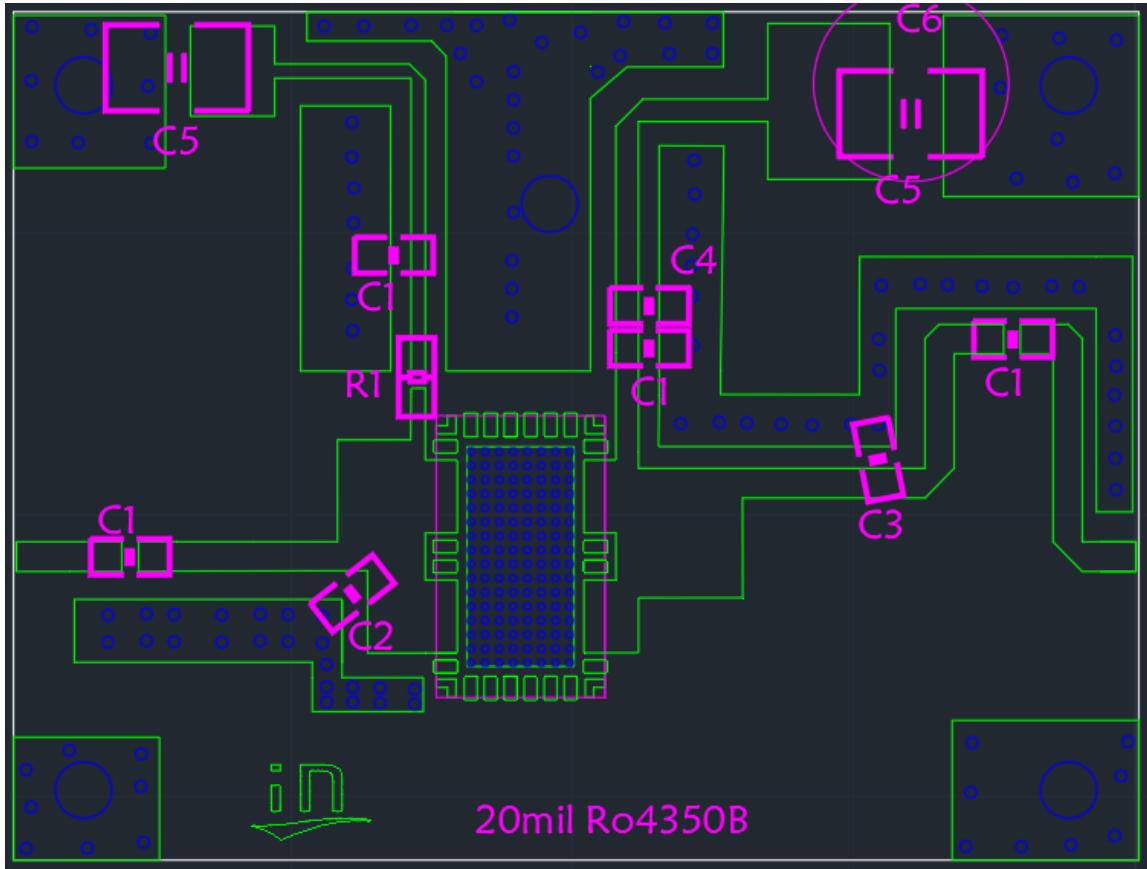




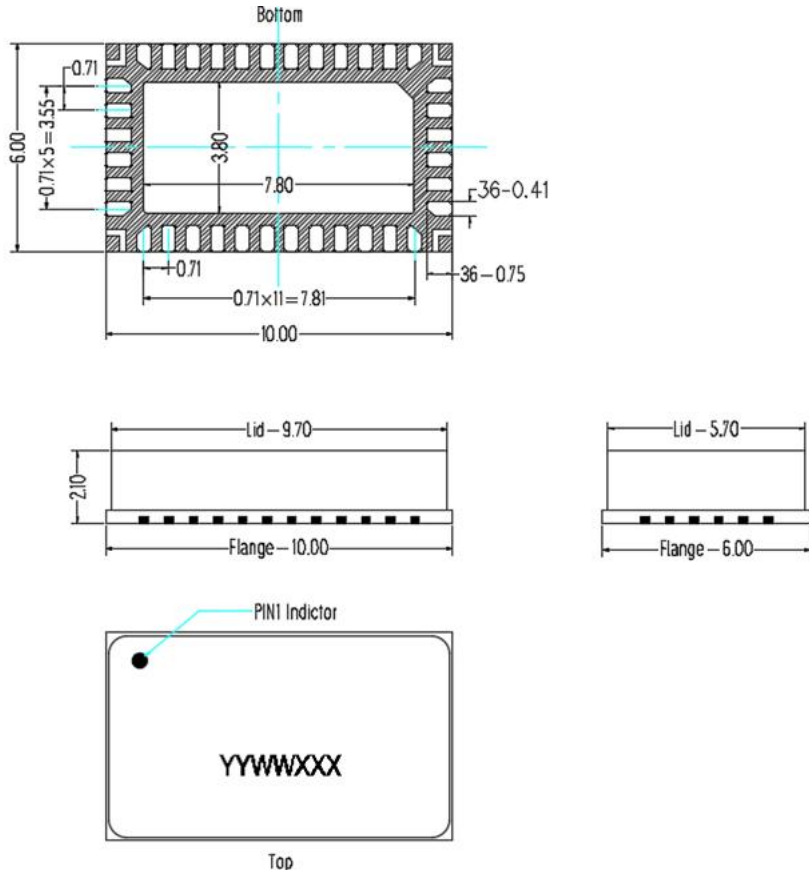
Table 4. Bill of materials of application board (RO4350B 20mils,PCB layout upon request)

BOM		
Component	Value	Quantity
C1	12pF	4
C5	10uF	2
R1	10 ohm	1
C4	1uF	1
C3	1.2pF	1
C2	3pF	1
C6	470uF	1



Package Dimensions

10*6 Plastic Package



Notes:

1. All dimensions are in mm;
2. The tolerances unless specified are ± 0.2 mm.

Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2024/9/28	V1.0	Preliminary Datasheet Creation

Application data based on: ZXY-24-34

Notice

Specifications are subject to change without notice. Innegration believes the information within the data sheet to be reliable. Innegration makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose.

“Typical” parameter is the average values expected by Innegration in quantities and are provided for information purposes only. It can and do vary in different applications and related performance can vary over time. All parameters should be validated by customer’s technical experts for each application.

Innegration products are not designed, intended or authorized for use as components in applications intended for surgical implant into the body or to support or sustain life, in applications in which the failure of the Innegration product could result in personal injury or death or in applications for planning, construction, maintenance or direct operation of a nuclear facility.

For any concerns or questions related to terms or conditions, please check with Innegration and authorized distributors

Copyright © by Innegration (Suzhou) Co.,Ltd.