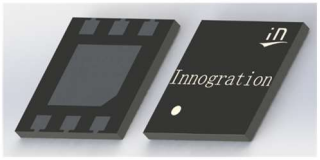
GaN 28V 10W, C band General RF Power Transistor

XTAH78011P2



DFN 4*4.5mm

Description

The XTAH78011P2 is a 10W pre matched GaN HEMT, designed for multiple applications, within C band, especially 6-8GHz. The transistor is available in a cost effective 4*4.5mm, surface mount, DFN package with 100% DC production test to ensure the quality and consistency. It can be used in CW, Pulse and multiple modulation mode. **It increases the gain of XTAH80010PD at C band higher end**

- Typical Performance of class AB circuit (On different Innogration fixtures):

V_{DS}= 28V，I_{dq}=30mA，V_{gs} =-2.45V, CW							
Freq (MHz)	**P1dB (dBm)**	**P1dB (W)**	**P1dB Eff (%)**	**P1dB Gain (dB)**	**P3dB (dBm)**	**P3dB (W)**	**P3dB Eff (%)**
6000	39.31	8.5	47.7	12.94	40.89	12.3	53.8
6200	39.25	8.4	49.1	12.83	40.81	12.1	54.7
6400	39.26	8.4	45.5	12.21	40.8	12.0	50.6
6600	39.44	8.8	47.3	12.28	40.89	12.3	51.2
6800	39.28	8.5	49.6	11.95	40.54	11.3	52.3
7000	38.61	7.3	47.2	11.38	40.01	10.0	50.1

Applications and Features

- Suitable for wireless communication infrastructure, wideband amplifier, EMC testing, ISM etc.
- High Efficiency and Linear Gain Operations
- Thermally Enhanced Industry Standard Package
- High Reliability Metallization Process
- Excellent thermal Stability and Excellent Ruggedness
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

Important Note: Proper Biasing Sequence for GaN HEMT Transistors

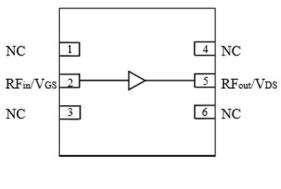
Turning the device ON

1. Set VGS to the pinch--off (VP) voltage, typically –5 V
2. Turn on VDS to nominal supply voltage (28V)
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

Pin Configuration and Description(Top view)



(Top View)

Figure 1. Pin Connection

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DSS}	125	Vdc
Gate--Source Voltage	V_{GS}	-10,+2	Vdc
Operating Voltage	V_{DD}	40	Vdc
Maximum Forward Gate Current @ TC = 25°C	Igmax	2.5	mA
Storage Temperature Range	Tstg	-65 to +150	°C
Case Operating Temperature	T_C	+150	°C
Operating Junction Temperature(See note 1)	T_J	+200	°C
Total Device Power Dissipation (Derated above 25°C, see note 2)	Pdiss	21	W

Note: 1. Continuous operation at maximum junction temperature will affect MTTF
2.Bias Conditions should also satisfy the following expression: Pdiss < (Tj – Tc) / RJC and Tc = Tcase

Table 2. Thermal Characteristics

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case T_C= 85°C, T_J=200°C, RF CW operation	RθJC	5.5	℃/W

Table 3. Electrical Characteristics (T_C = 25℃ unless otherwise noted)

DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{GS}=-8V; I_{DS}=2.5mA	V_{DSS}		125		V
Gate Threshold Voltage	V_{DS} = 28V, I_D =2.5mA	V_{GS}(th)		-2.7		V
Gate Quiescent Voltage	V_{DS} =28V, I_{DS}=30mA, Measured in Functional Test	$V_{GS(Q)}$		-2.45		V

6-7GHz

TYPICAL CHARACTERISTICS

Figure 2. Network analyzer Output S11/S21

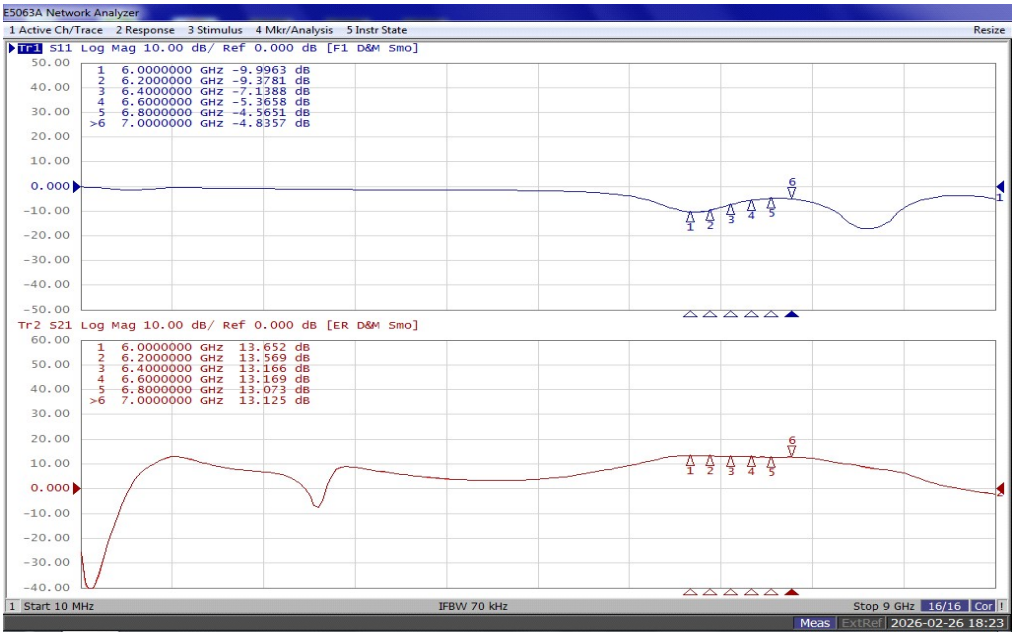
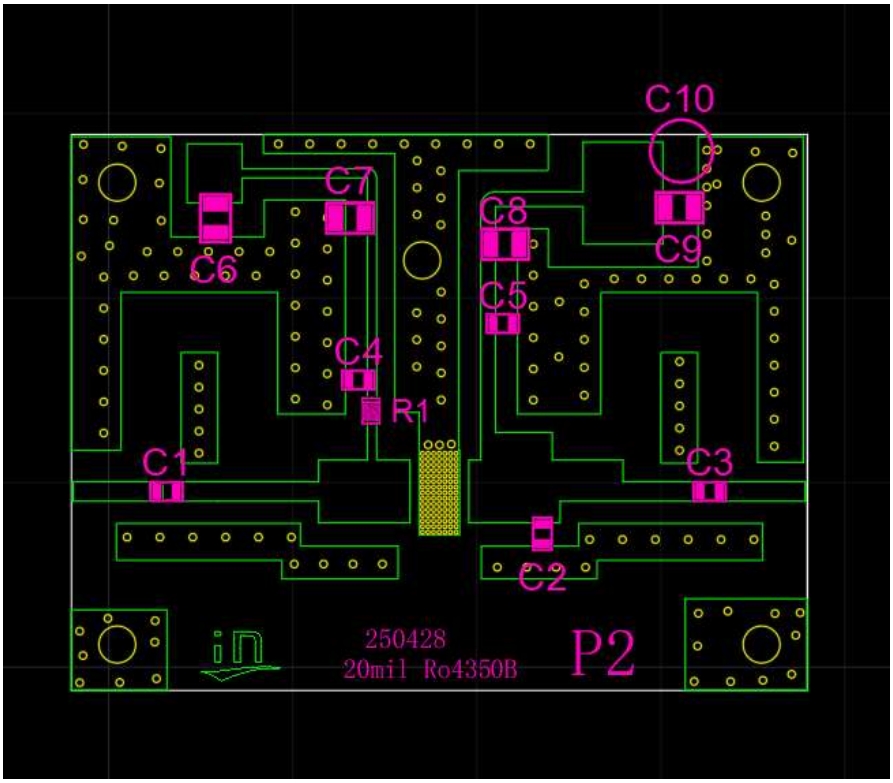


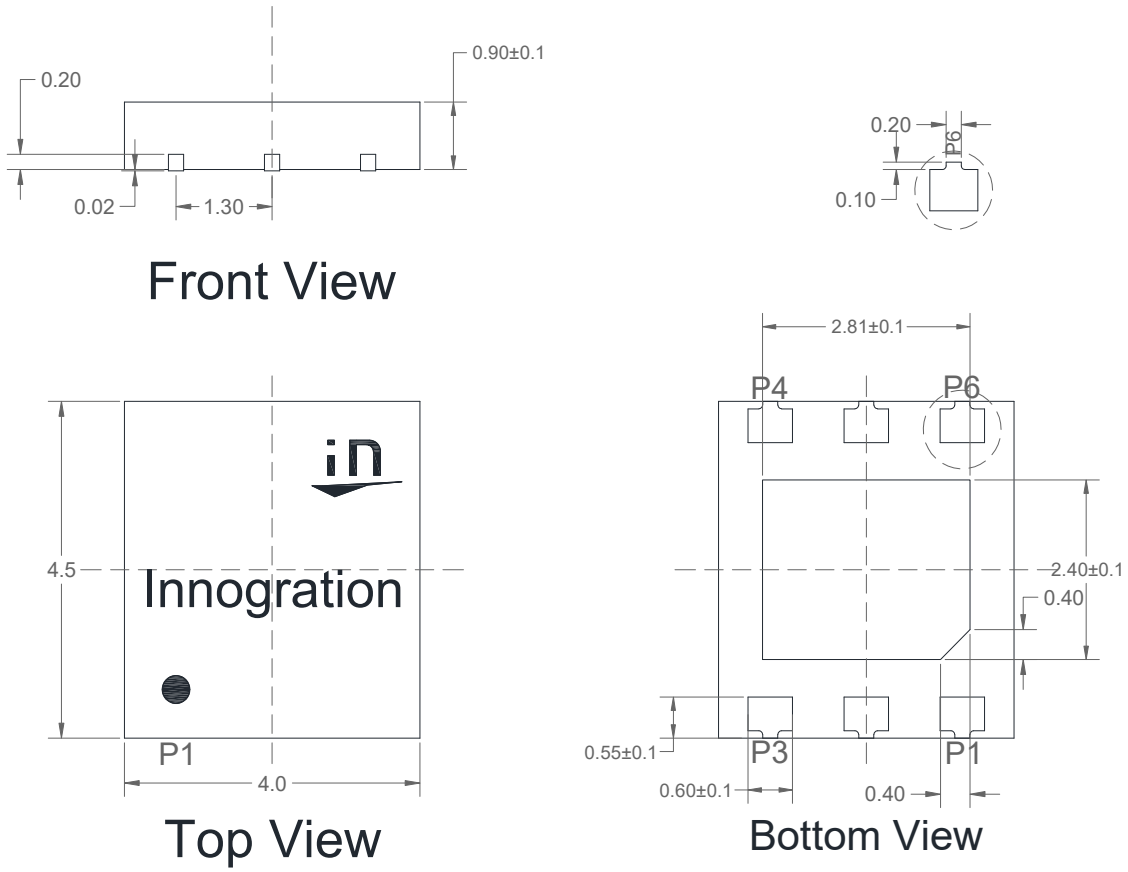
Figure 3. PCB layout and bill of materials



Component	Value	Suggestion	Quantity
U1	XTAH78011P2		1
C1、 C3、C4、C5	3.3pF	GQM2195C2E3R3BB12D	4
C2	0.2pF	GQM2195C2E0R2BB12D	1
C6、 C7、C8、C9	10uF/63V	GRM32EC72A106KE05	4
C10	470uF/63V	EEVFK1J471M	1
R1	10 Ω	ERJPA3F10R0V	1

Package Dimensions

4.0*4.5mm Plastic Package



Unit: mm

Notes:

1. All dimensions are in mm;
2. The tolerances unless specified are ±0.1mm.

Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2026/2/28	**V1.0**	**Preliminary Datasheet Creation**

Application data based on ZYX-26-02

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