



RF LDMOS 12.5V 10W Transistor, 2.0-2.5GHz

Description

The ITCN25010C6 is a 10W RF LDMOS, designed for multiple applications, within 2 to 2.5GHz. The transistor is available in a cost effective 10*6mm, surface mount, QFN package with 100% DC production test to ensure the quality and consistency.

It can be used in CW, Pulse and multiple modulation mode.

There is no guarantee of performance when this part is used in applications designed Outside of these frequencies.

•Typical RF Performance On Innegration fixture

$V_{DD} = 12.5\text{ V}$, $I_{DQ} = 300\text{ mA}$, Pulse CW, Pulse Width=20 us, Duty cycle=10%.

Application 1: 2.4-2.5GHz Class AB

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff (%)	P1dB Gain (dB)	P3dB (dBm)	P3dB (W)	P3dB Eff (%)
2400	39.82	9.6	49.5	16.33	40.85	12.2	53.3
2450	39.48	8.9	48.8	16.34	40.66	11.7	53.1
2500	39.15	8.2	47.5	16.39	40.48	11.2	52.3

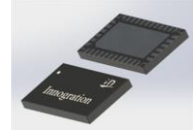
Features

- High Efficiency and Linear Gain Operations
- Integrated ESD Protection
- Excellent thermal stability, low HCI drift
- Large Positive and Negative Gate/Source Voltage Range for Improved Class C Operation
- Pb-free, RoHS-compliant

Suitable Applications

- GNSS Amplifier
- L or S band radio link
- 2450MHz ISM , WIFI AP

ITCN25010C6



QFN 10*6mm

Figure 1:Pin Definition(Top View)



Pin No.	Symbol	Description
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
2,5,7,12,13,18,20,23,25,30,31,36	GND	DC/RF Ground
Others	NC	No connection
Package Base	GND	DC/RF Ground.

**Table 1. Maximum Ratings**

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DS}	+40	Vdc
Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+13.6	Vdc
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 $T_c = 85^\circ\text{C}$, $T_J = 200^\circ\text{C}$, DC test	$R_{\theta JC}$	2	°C/W

Table 3. ESD Protection Characteristics

Test Methodology	Class
Human Body Model (per JESD22--A114)	Class 2

Table 4. Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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DC Characteristics

Drain-Source Voltage $V_{GS} = 0$, $I_{DS} = 100\mu\text{A}$	$V_{(BR)DS}$		43		V
Zero Gate Voltage Drain Leakage Current ($V_{DS} = 12.5\text{V}$, $V_{GS} = 0\text{V}$)	I_{DSS}	—	—	1	μA
Gate--Source Leakage Current ($V_{GS} = 9\text{V}$, $V_{DS} = 0\text{V}$)	I_{GSS}	—	—	1	μA
Gate Threshold Voltage ($V_{DS} = 12.5\text{V}$, $I_D = 600\mu\text{A}$)	$V_{GS(th)}$	—	2	—	V
Gate Quiescent Voltage ($V_{DD} = 12.5\text{V}$, $I_D = 200\text{mA}$, Measured in Functional Test)	$V_{GS(Q)}$	—	2.6	—	V

Load Mismatch (In Innogrator Test Fixture, 50 ohm system): $V_{DD} = 12.5\text{Vdc}$, $I_{DQ} = 390\text{mA}$, $f = 2300\text{MHz}$

VSWR 10:1 at 10W pulse CW Output Power	No Device Degradation
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TYPICAL CHARACTERISTICS

2.4-2.5GHz application

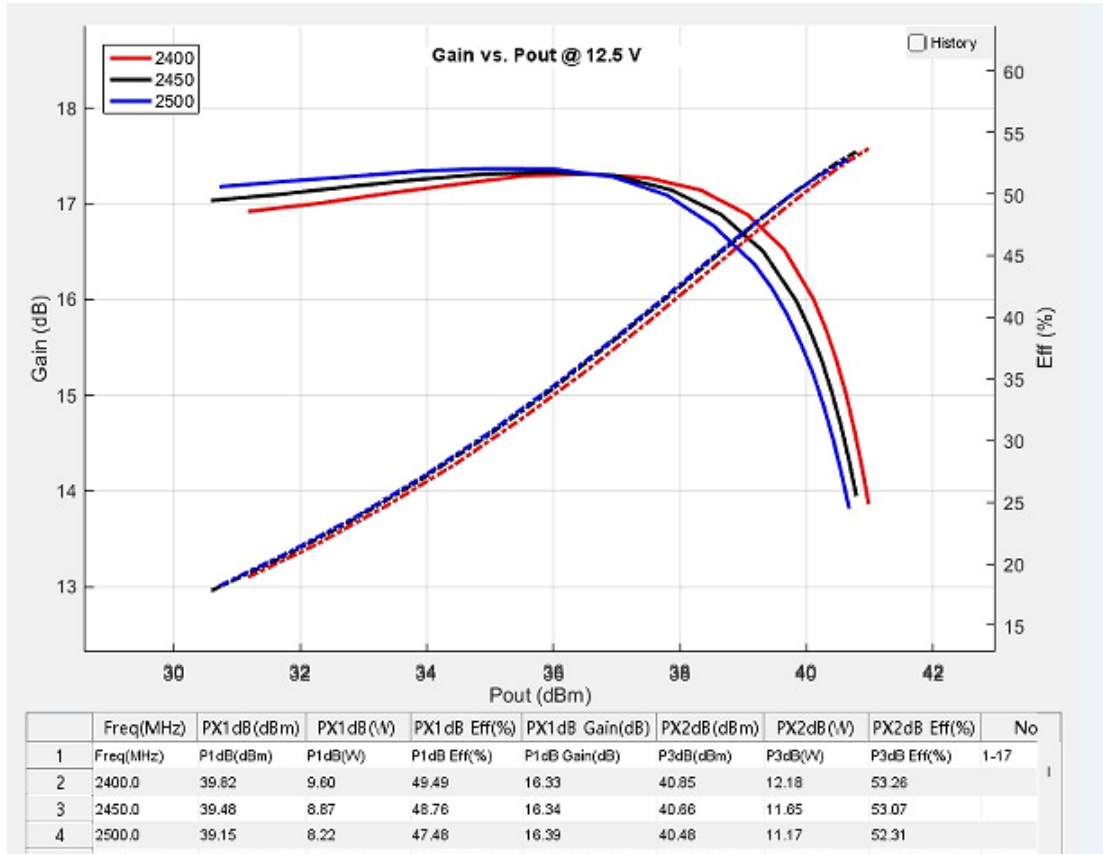


Figure 2. Power Gain and Drain Efficiency as Function of Pulse Output Power

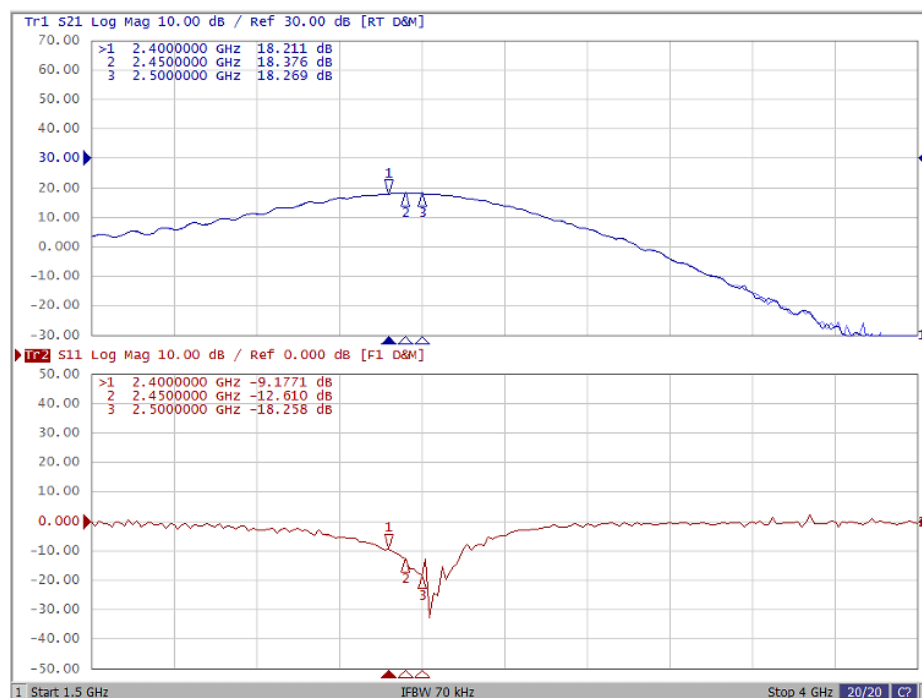
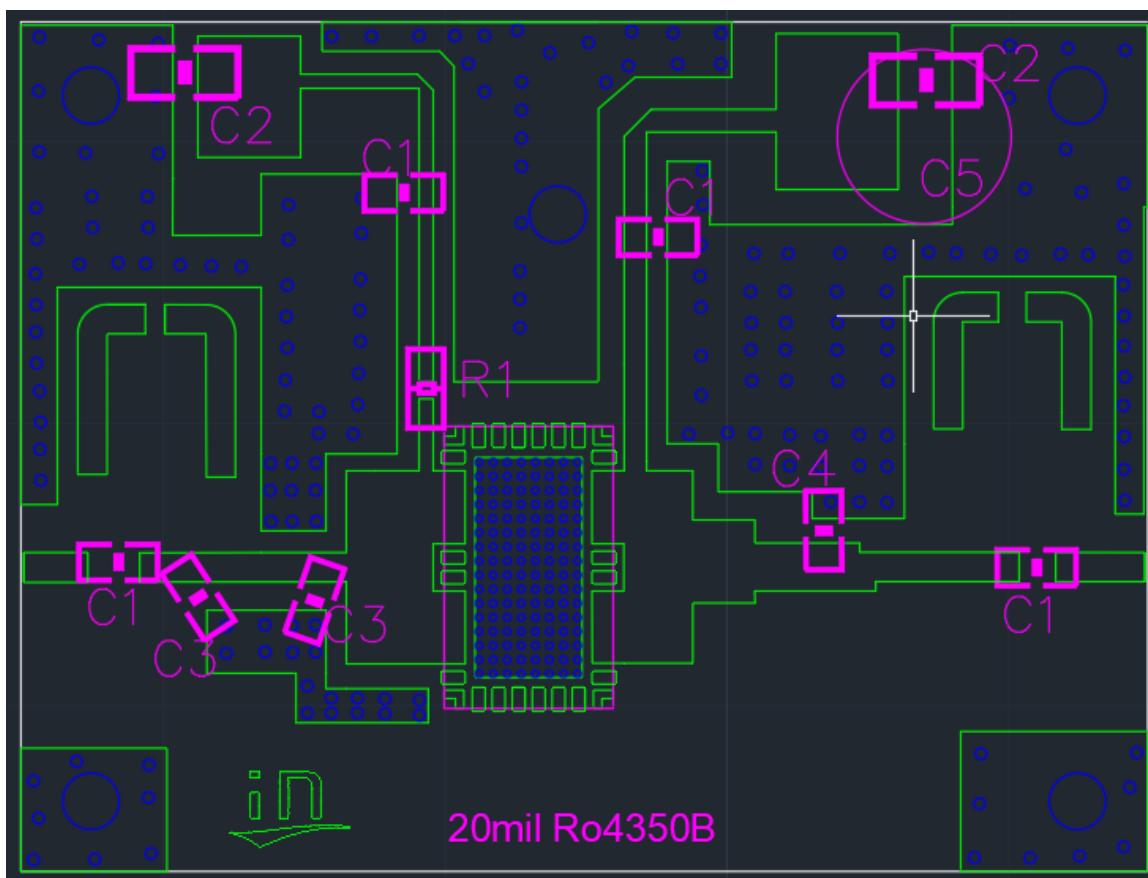


Figure 3. Network analyzer output S11/S21 VDS = 12.5Vdc, Idq= 300mA



Reference Circuit of Test Fixture Assembly Diagram
RO4350B 20mils(Layout upon request)

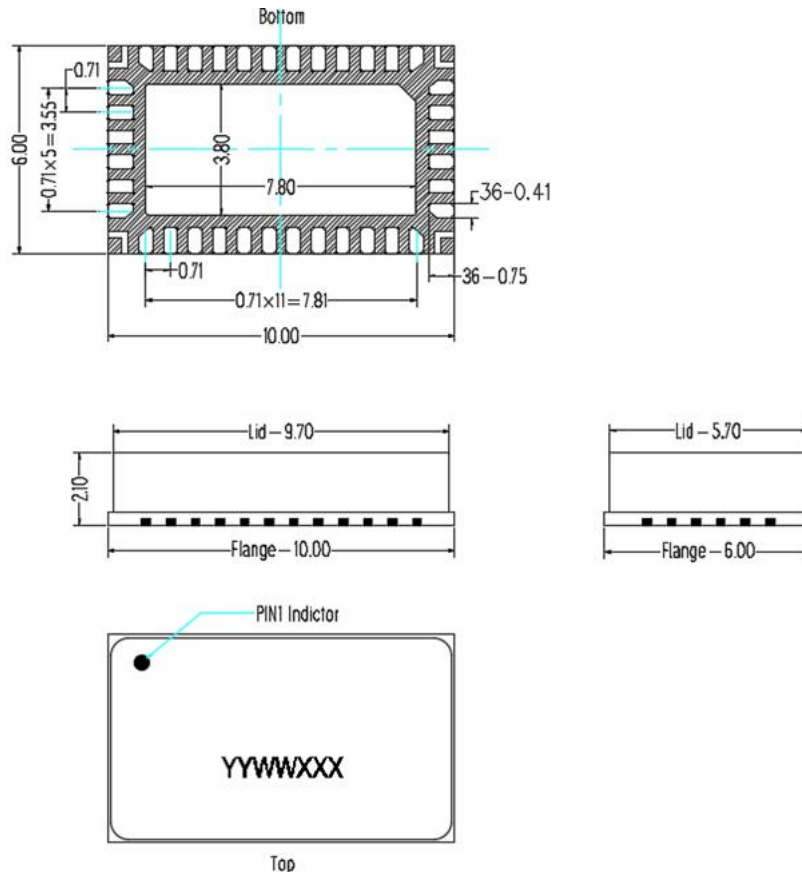


Component	Value	Quantity
C1	12pF	4
C2	10uF	2
R1	10 ohm	1
C3	1.1pF	2
C4	1.8pF	1
C5	470uF	1



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
2025/7/10	V1.0	Datasheet Creation

Application data based on ZXY-25-9

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