

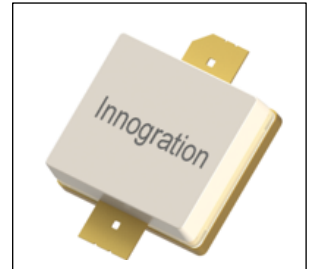


2.4-2.5GHz, 50W, High Power RF LDMOS FETs

Description

The ITEH25050A2C is a single-ended 50W, internally matched LDMOS FETs, designed for multiple use especially RF Energy application including cooking, heating and medical with frequencies from 2400 to 2500MHz.

- Typical CW Performance (on Innogrations fixture with device soldered)



V_{ds}=28V, V_{gs}=2.2V

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff(%)	P1dB Gain(dB)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)
2400	47.21	52.6	53.3	15.08	48.15	65.3	55.5
2450	46.8	47.8	54.5	15.35	47.68	58.6	56.3
2500	46.1	40.7	54.9	15.09	46.99	52	55.6

Recommended driver: ITEH40004P3

Features

- High Efficiency and Linear Gain Operations
- Integrated ESD Protection
- Internally Matched for Ease of Use
- Large Positive and Negative Gate/Source Voltage Range for Improved Class C Operation
- Excellent thermal stability, low HCI drift
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V _{DSS}	65	Vdc
Gate--Source Voltage	V _{GS}	-10 to +10	Vdc
Operating Voltage	V _{DD}	+32	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 _{case} = 85°C, T _j = 200°C, DC Power supply	R _{θJC}	1	°C/W

Table 3. ESD Protection Characteristics

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

Table 4. Electrical Characteristics (TA = 25 °C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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DC Characteristics

Drain-Source Breakdown Voltage (V _{GS} =0V; I _D =100uA)	V _{DSS}	65	---	---	V
Zero Gate Voltage Drain Leakage Current	I _{DSS}	---	---	10	μA



($V_{DS} = 28\text{ V}$, $V_{GS} = 0\text{ V}$)					
Gate--Source Leakage Current ($V_{GS} = 6\text{ V}$, $V_{DS} = 0\text{ V}$)	I_{GSS}	---	---	1	μA
Gate Threshold Voltage ($V_{DS} = 28\text{ V}$, $I_D = 600\text{ uA}$)	$V_{GS(th)}$	---	1.75	---	V
Gate Quiescent Voltage ($V_{DD} = 28\text{ V}$, $I_{DQ} = 300\text{ mA}$, Measured in Functional Test)	$V_{GS(Q)}$		2.66		V

Load Mismatch (In Innegration Test Fixture, 50 ohm system): $V_{DD} = 28\text{ Vdc}$, $I_{DQ} = 5\text{ mA}$, $f = 2450\text{ MHz}$

VSWR 10:1 at 50W pulse CW Output Power	No Device Degradation
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Figure 2 Efficiency and power gain as function of Pout

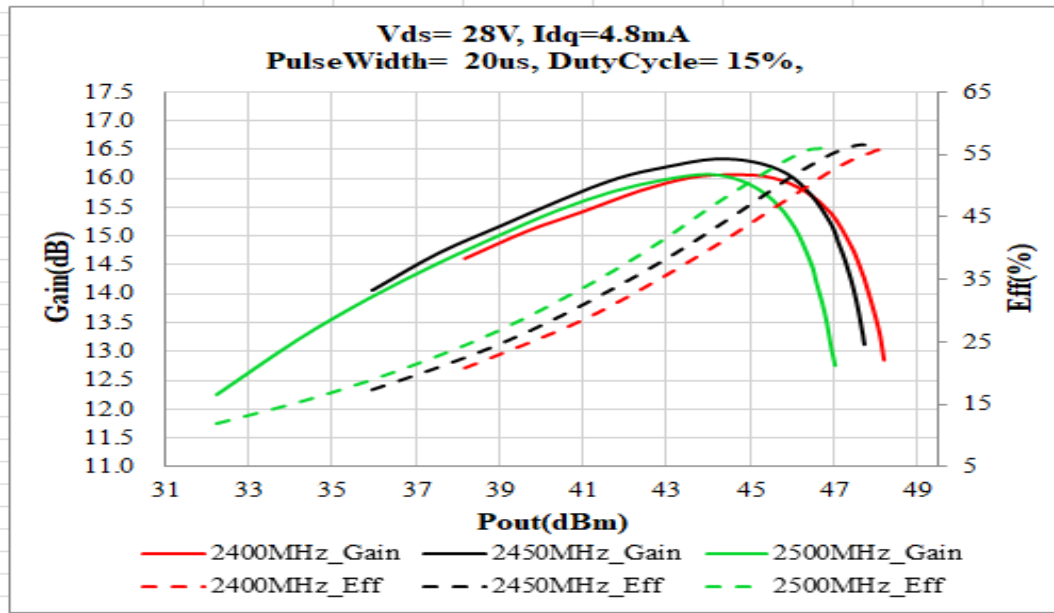


Figure 3: Network analyzer output, S11 and S21

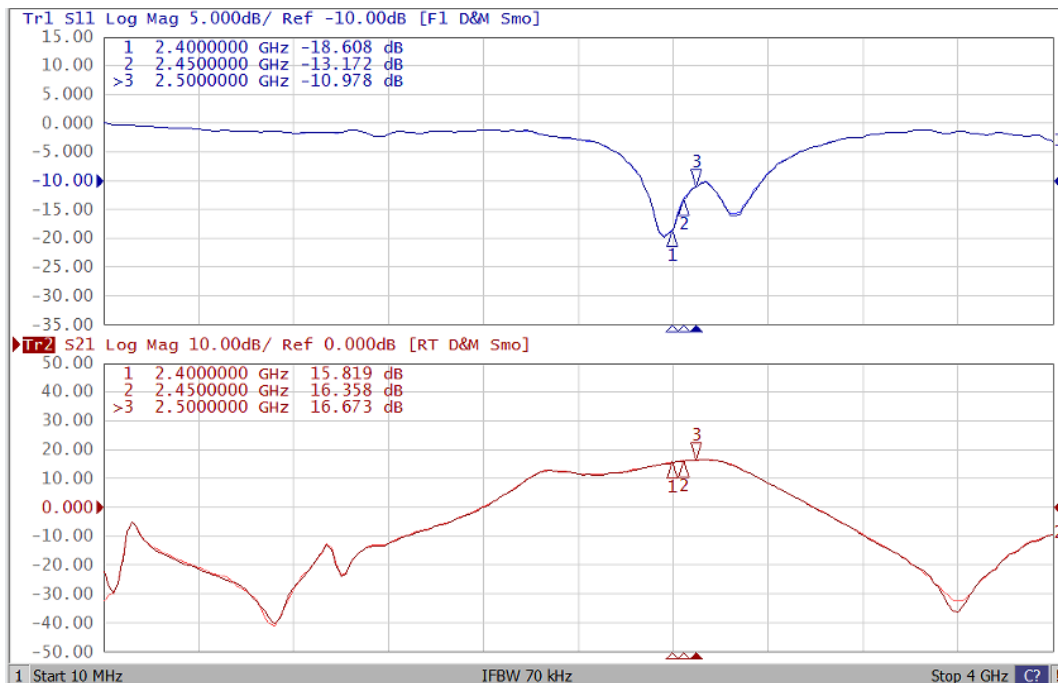


Figure 4: Layout picture (original Gerber file upon request)

Board material: Ro 4350B, Er = 3.48, thickness 20 mils, 1oz copper, unit mm ,

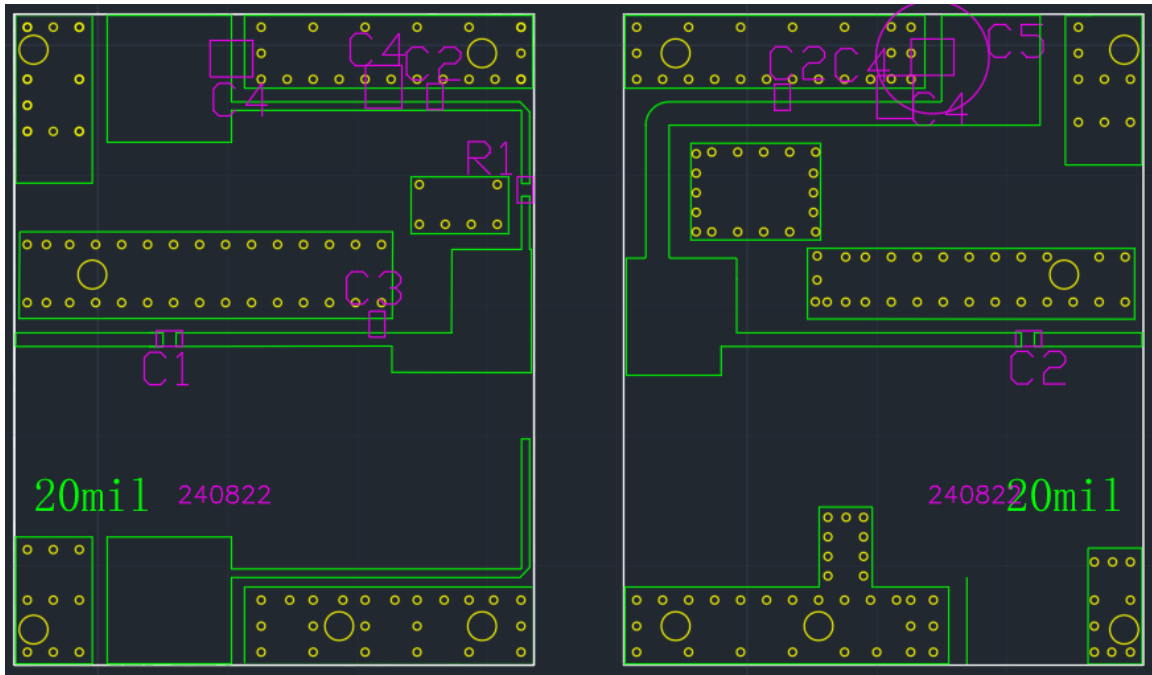
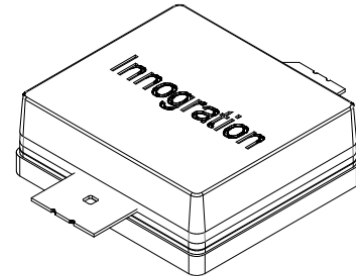
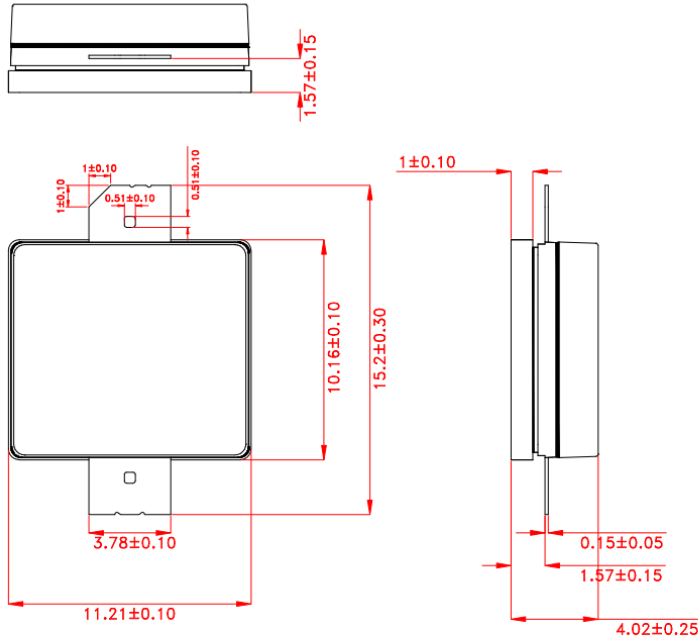


Table 5. List of components

Component	Value	Quantity
C1	3pF	1
C2	12pF	3
R1	10 ohm	1
C3	0.2pF	1
C4	10uF	4
C5	470uF	1



Package Dimensions (Unit:mm)



Unit:mm

Tolerance ± 0.10 mm, Except as Noted.

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2024/9/27	V1	Preliminary Datasheet Creation

Application data based on ZXY-24-33

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