ITEV05251A2C LDMOS TRANSISTOR

Document Number: ITEV05251A2C
Preliminary Datasheet V1.0

250W,50V High Power RF LDMOS FETs

ITEV05251A2C

Description

The ITEV05251A2C is a 250watt capable, high performance, internally matched LDMOS FET, designed for RF Energy or ISM application centered at 433MHz, in cost effective 12*10mm QFN plastic package,

It can be soldered on PCB through high density grounding vias or soldered directly on heatsink, according to different applications.

- Typical CW performance(on Innogration test board with device soldered on heatsink directly)
  50V, Idq=10mA

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff(%)	P1dB Gain(dB)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)
433	53.35	216.5	71.4	21.75	54.1	257.1	74.3

Recommended driver: ITGV22010P3

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

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DSS}	+110	Vdc
Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+55	Vdc
Storage Temperature Range	Tstg	-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°C, T_J=200°C, DC test, soldered on heatsink	$R_{\theta JC}$	0.65	°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 ℃ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics (per half section)					
Drain-Source Voltage V_{GS}=0, I_{DS}=1.0mA	$V_{(BR)DSS}$		110		V
Zero Gate Voltage Drain Leakage Current	I_{DSS}	——	——	1	μA

(V_{DS} = 75V, V_{GS} = 0 V)					
Zero Gate Voltage Drain Leakage Current (V_{DS} = 50V, V_{GS} = 0 V)	I_{DSS}	——	——	1	μA
Gate--Source Leakage Current (V_{GS} = 10 V, V_{DS} = 0 V)	I_{GSS}	——	——	1	μA
Gate Threshold Voltage (V_{DS} = 50V, I_D = 600 μA)	$V_{GS(th)}$	——	2.65	——	V
Gate Quiescent Voltage (V_{DD} =50 V, I_D = 500 mA, Measured in Functional Test)	$V_{GS(Q)}$	——	3.7	——	V

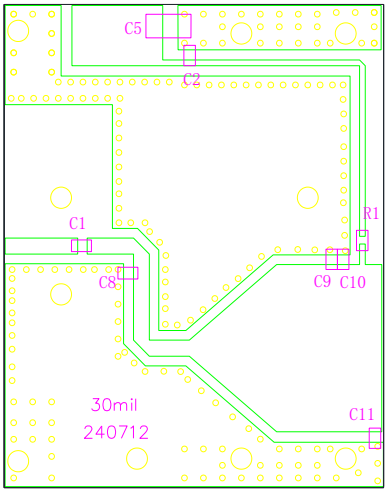
Load Mismatch (In Innogration Test Fixture, 50 ohm system): V_{DD} = 50 Vdc, I_{DQ} = 100 mA, f =433MHz, pulse width:100us, duty cycle:10%

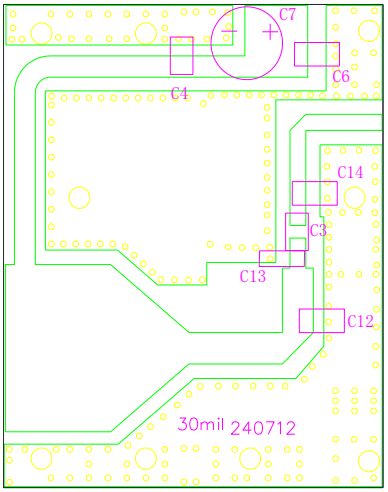
Load 10:1 All phase angles, at 250W Pulsed CW Output Power	No Device Degradation

TYPICAL CHARACTERISTICS

Figure 2: Network analyzer output S11/221

Reference Circuit of Test Fixture Assembly Diagram





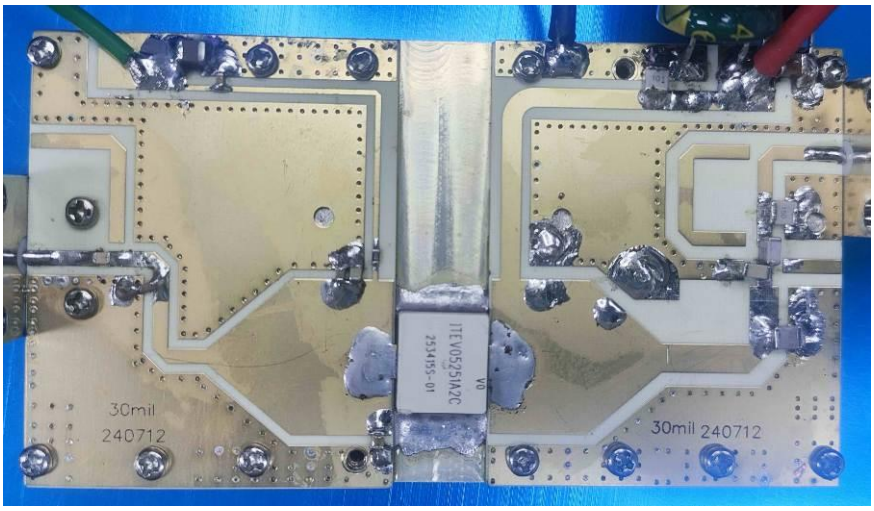
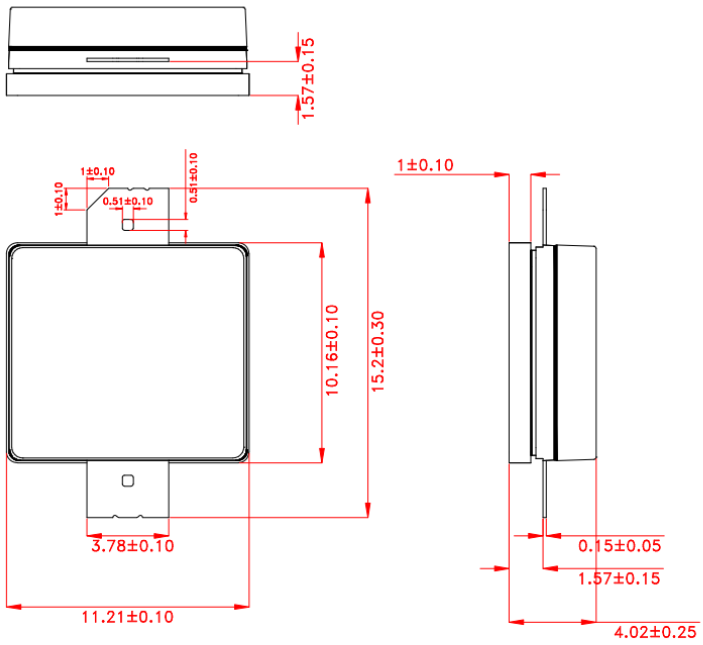
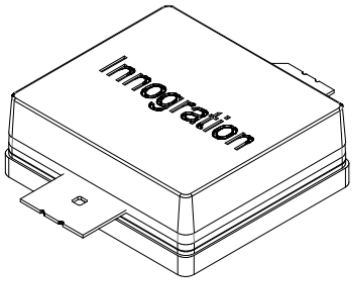


Table 5. Test Circuit Component Designations and Values

Designator	Comment	Footprint	Quantity
C1	3.9 pF/250V	0603/0805	1
C2	100 pF /250V	0603/0805	1
C3, C4	100 pF /250V	1210	2
C5, C6	10 uF/100V	1210	2
C7	1000 uF/63V		1
C8, C9, C10	20 pF/250V	0603/0805	3
C11	30 pF/250V	0603/0805	1
C12	3.9 pF/250V	1210	1
C13	6.8 pF/250V	1210	1
C14	15 pF /250V	1210	1
R1	10 Ω	0603	1

Package Dimensions （Unit:mm）





Unit:mm

Tolerance ±0.10mm,Except as Noted.

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2025/9/8	Rev 1.0	Preliminary Datasheet Creation

Application data based on LSM-25-25

Disclaimers

Specifications are subject to change without notice. Innogration believes the information contained within this data sheet to be accurate and reliable. However, no responsibility is assumed by Innogration for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Innogration . Innogration makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose.“Typical” parameters are the average values expected by Innogration in large quantities and are provided for information purposes only. These values can and do vary in different applications and actual performance can vary over time. All operating parameters should be validated by customer’s technical experts for each application. Innogration 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 Innogration 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, pls check with Innogration and authorized distributors