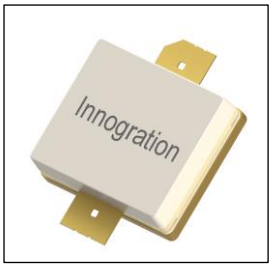
ITEV10240A2C LDMOS TRANSISTOR

Document Number: ITEV10240A2C
Preliminary Datasheet V1.0

120W, HF to UHF, 28V High Power RF LDMOS FETs



Description

The ITEV10240A2C is a 120-watt capable, high performance, highly rugged, unmatched LDMOS transistor, designed for any general applications at frequencies from HF to UHF, in new generation highly cost effective open cavity package.

- Typical CW performance with device soldered
  Vds= 28V, Idq=100mA(Vgs=3.24V)

Freq	P1dB	P1dB	P1dB Eff	P1dB Gain	P3dB	P3dB	P3dB Eff
(MHz)	(dBm)	(W)	%	dB	(dBm)	(W)	%
190	50.18	104.2	63.0	20.5	51.17	131.0	68.8
200	50.23	105.4	67.2	21.35	51.35	136.6	74.0
215	49.47	88.4	69.5	22.81	50.9	123.1	78.9

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

- 30-88MHz (Ground communication)
- 54-88MHz (TV VHF I)
- 88-108MHz (FM)
- 136-174MHz (Commercial ground communication)
- Laser Exciter
- Synchrotron
- MRI
- Plasma generator
- Weather Radar

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	$R_{\theta JC}$	0.7	°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)

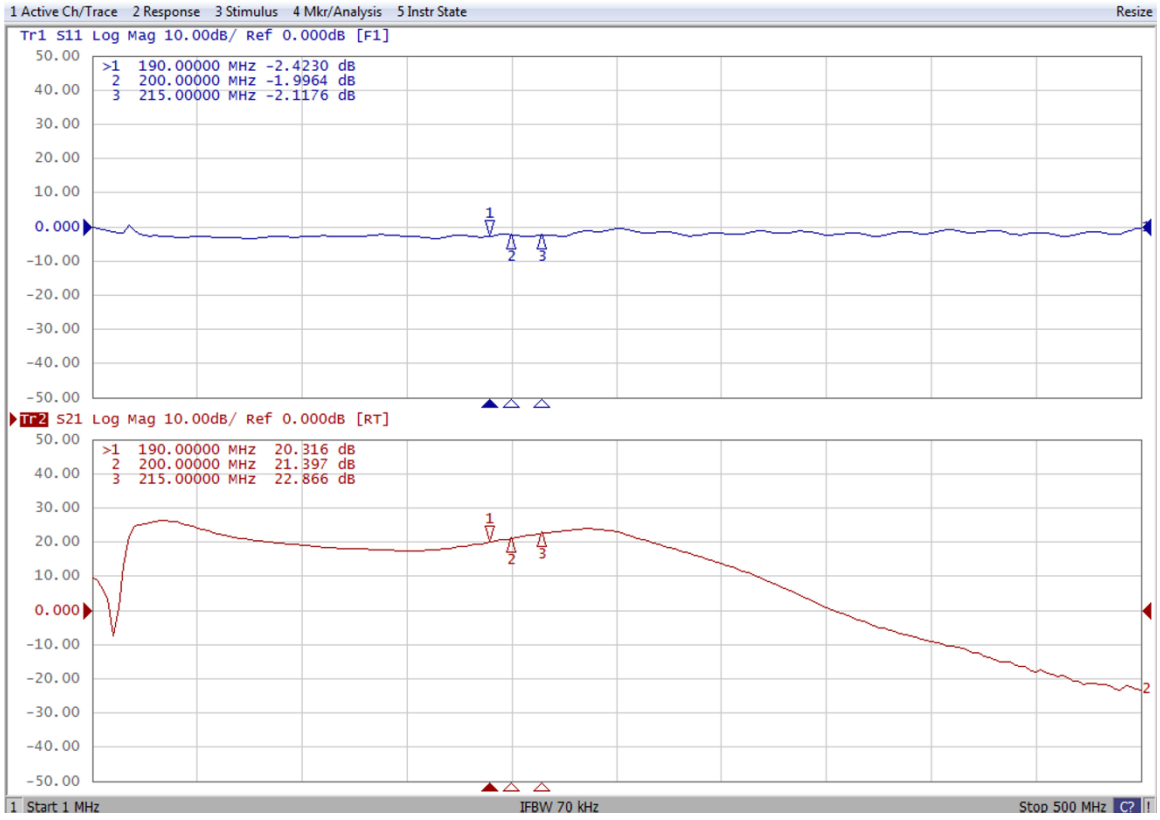
Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics (per half section)					
Drain-Source Voltage V_{GS}=0, I_{DS}=1.0mA	$V_{(BR)DSS}$		110		V
Zero Gate Voltage Drain Leakage Current (V_{DS} = 75V, V_{GS} = 0 V)	I_{DSS}	——	——	1	μA
Zero Gate Voltage Drain Leakage Current (V_{DS} = 28V, V_{GS} = 0 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} = 28V, I_D = 600 μA)	$V_{GS(th)}$	——	2.65	——	V
Gate Quiescent Voltage (V_{DD} = 28 V, I_D = 500 mA, Measured in Functional Test)	$V_{GS(Q)}$	——	3.72	——	V

Load Mismatch (In Innogration Test Fixture, 50 ohm system): V_{DD} = 28 Vdc, I_{DQ} = 500 mA, f =700MHz, pulse width:100us, duty cycle:10%

Load 10:1 All phase angles, at 120W Pulsed CW Output Power	No Device Degradation

TYPICAL CHARACTERISTICS

Figure 1: Network analyzer output S11/221



Reference Circuit of Test Fixture Assembly Diagram

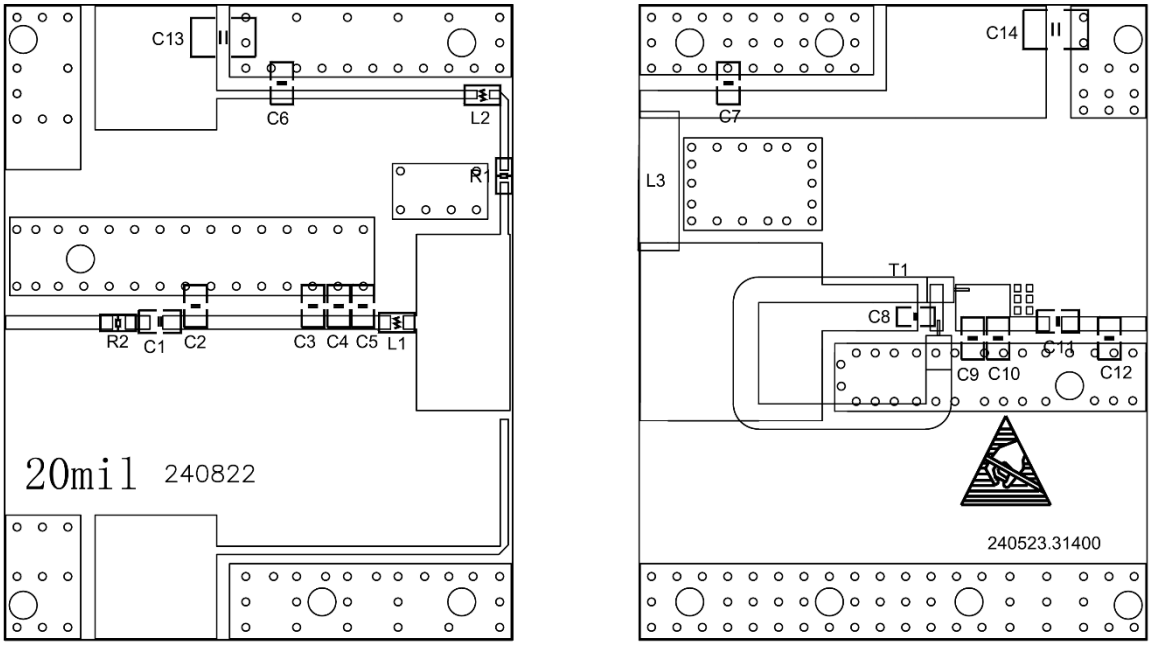
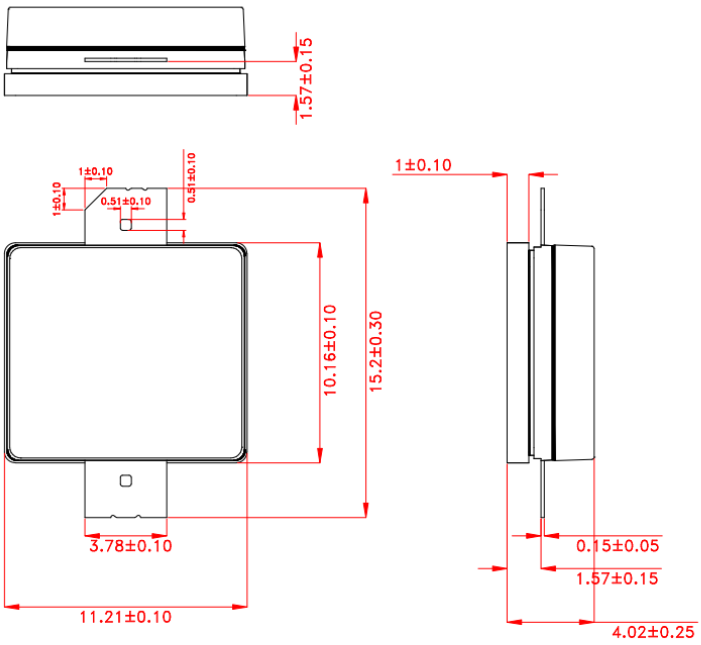
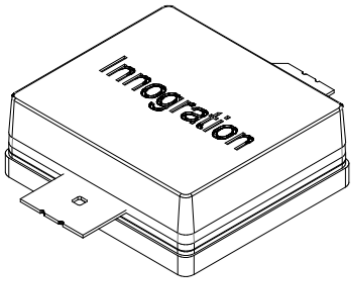


Table 5. Test Circuit Component Designations and Values

Reference	Footprint	Value	Quantity
C1, C6, C7, C11	0805	100pF/250V	4
C8	0805	150pF/250V	1
L1	0805	12nH	1
L2	0805	18nH	1
C2, C3, C9, C10	0805	8.2pF/250V	4
C4, C5	0805	12pF/250V	2
C12	0805	3.3pF/250V	1
T1		50ohm Coaxial line, length=90mm	1
C13, C14	1210	10uF/100V	2
L3		1.1mm wire, 4.1mm inner diameter, 12 turns	1
R1	0805	30R	1
R2	0805	3.3R	1
		ITEV10240A2C	1

Package Dimensions





Unit:mm

Tolerance ±0.10mm,Except as Noted.

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2024/11/1	Rev 1.0	Preliminary Datasheet Creation

Application data based on ZBB-24-48

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