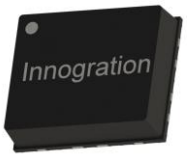
70W,12.5V High Power RF LDMOS FETs

ITGH09240RC9



Description

The ITGH09240RC9 is a 70-watt, highly rugged and stablied, input matched LDMOS FET, designed for commercial and industrial applications at frequencies up to 520MHz. It can be used in linear or saturated power amplifier, for CW and pulsed signal, and any modulation format.

It is also featured by its lower cost of plastic open cavity in 12*10mm QFN package,for surface mount on PCB through high density vias or on heatsink directly

- Typical UHF CW Performance at 520M On Innogration fixture with device soldered
  Vds=12.5V, Idq=400mA, ,CW

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff(%)	P1dB Gain(dB)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)
520	47.66	58.3	60.8	13	48.8	75	68

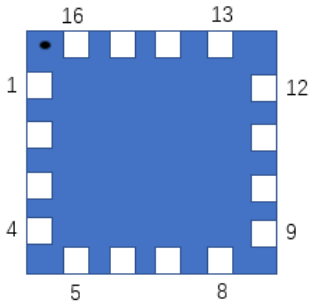
Features

- 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

- HF to UHF Land mobile radio (LMR)
- ISM applications

Pin Configuration and Description （Top view）



Pin No.	Symbol	Description
5-8	RF IN/Vgs	RF Input/Gate bias
13-16	RF OUT/Vds	RF Output/Drain bias
Others	NC	Can be left as either no use or grounding
Package Base	GND	DC/RF Ground. Proposed to be soldered to heatsink plane directly for the best CW thermal and RF performance. Soldered through vias or copper coin allowed for pulsed CW applications, but will result in excessive junction temperatures and different RF performance

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}	+24	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	RθJC	0.4	°C/W

Table 3. ESD Protection Characteristics

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

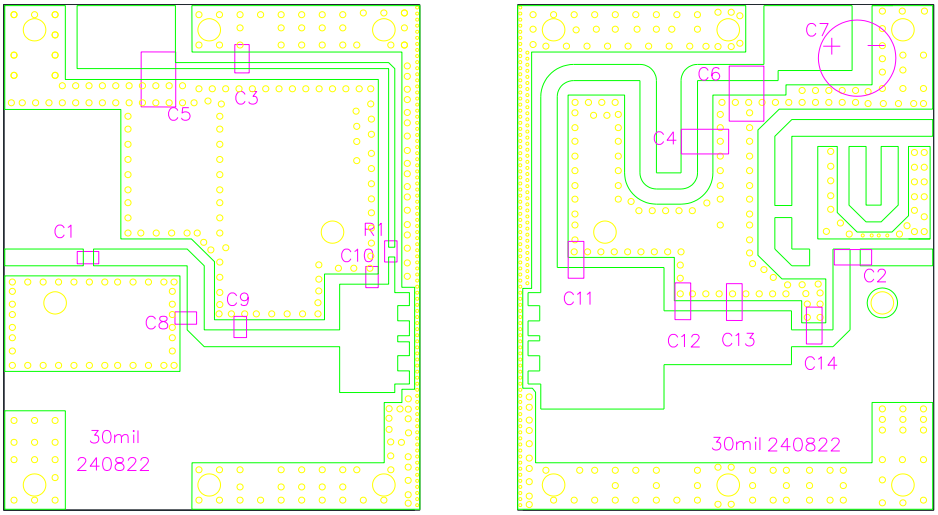
Table 4. Electrical Characteristics (TA = 25 ℃ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics					
Drain-Source Voltage V_{GS}=0, I_{DS}=100uA	$V_{(BR)DSS}$		65		V
Zero Gate Voltage Drain Leakage Current (V_{DS} = 13.6V, V_{GS} = 0 V)	I_{DSS}	——	——	1	μA
Gate--Source Leakage Current (V_{GS} = 9 V, V_{DS} = 0 V)	I_{GSS}	——	——	1	μA
Gate Threshold Voltage (V_{DS} = 13.6V, I_D = 600 μA)	$V_{GS}(th)$	——	2	——	V
Gate Quiescent Voltage (V_{DD} = 13.6V, I_D = 400mA, Measured in Functional Test)	$V_{GS(Q)}$	——	2.6	——	V

Load Mismatch (In Innogration Test Fixture, 50 ohm system): V_{DD} = 13.6Vdc, I_{DQ} = 400 mA, f = 520 MHz

VSWR 10:1 at 70W pulse CW Output Power	No Device Degradation

Reference Circuit of Test Fixture Assembly Diagram
520MHz RO4350B 30mils



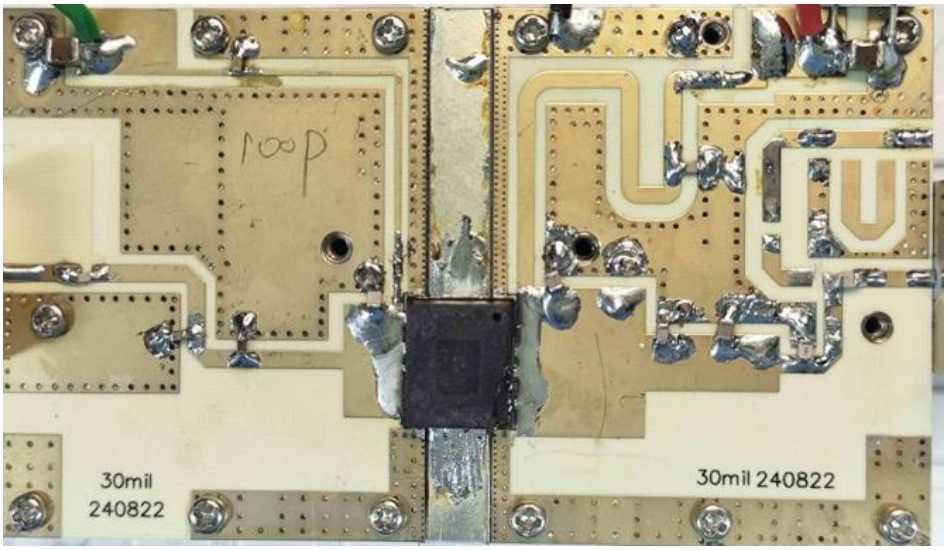


Figure 5. Test Circuit Component Layout

Table 5. Test Circuit Component Designations and Values

Designator	Comment	Footprint	Quantity
C1	10 pF	0805	1
C2, C3, C4	100 pF	0805	3
C5, C6	10 uF/100V	1210	2
C7	1000 uF/63V		1
C8,	3.3 pF	0805	2
C9, C11, C12, C13	20 pF	0805	4
C10	30 pF	0805	1
C14	6.8 pF	0805	1
R1	10 Ω	0603	1

Figure 1: Network analyzer Output S21/S11

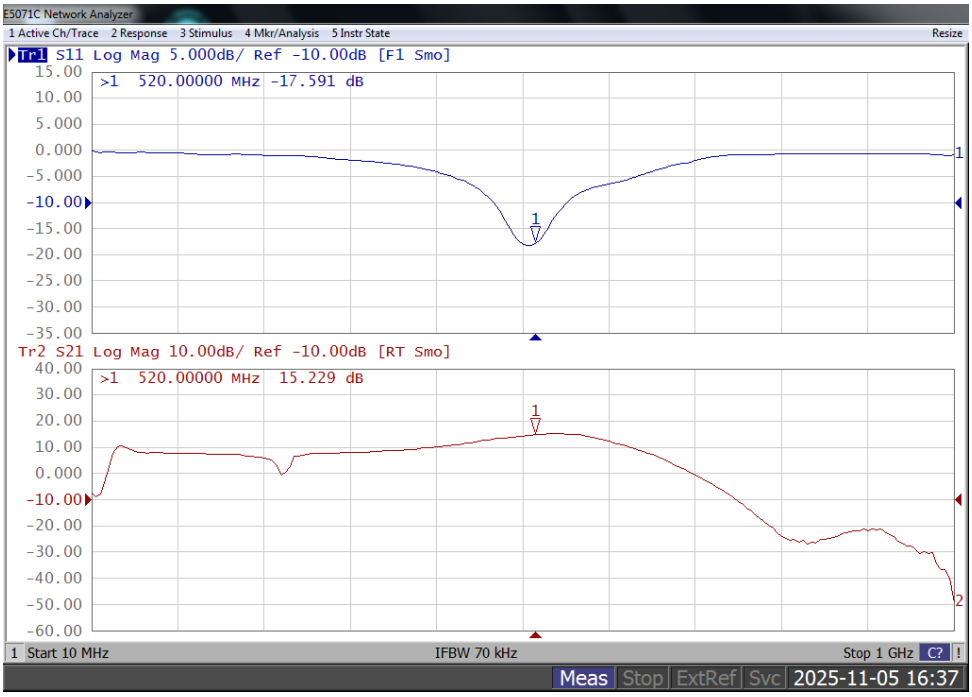
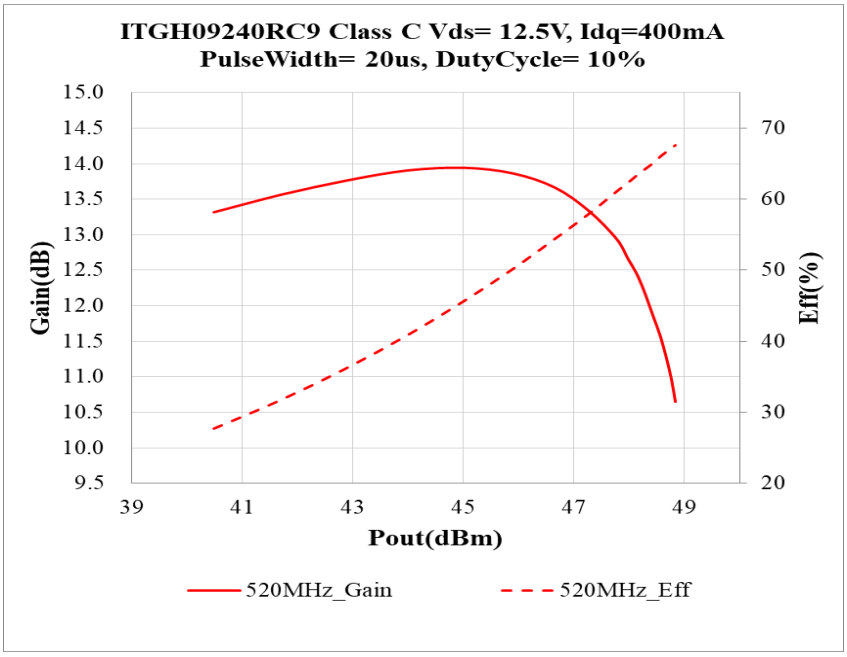
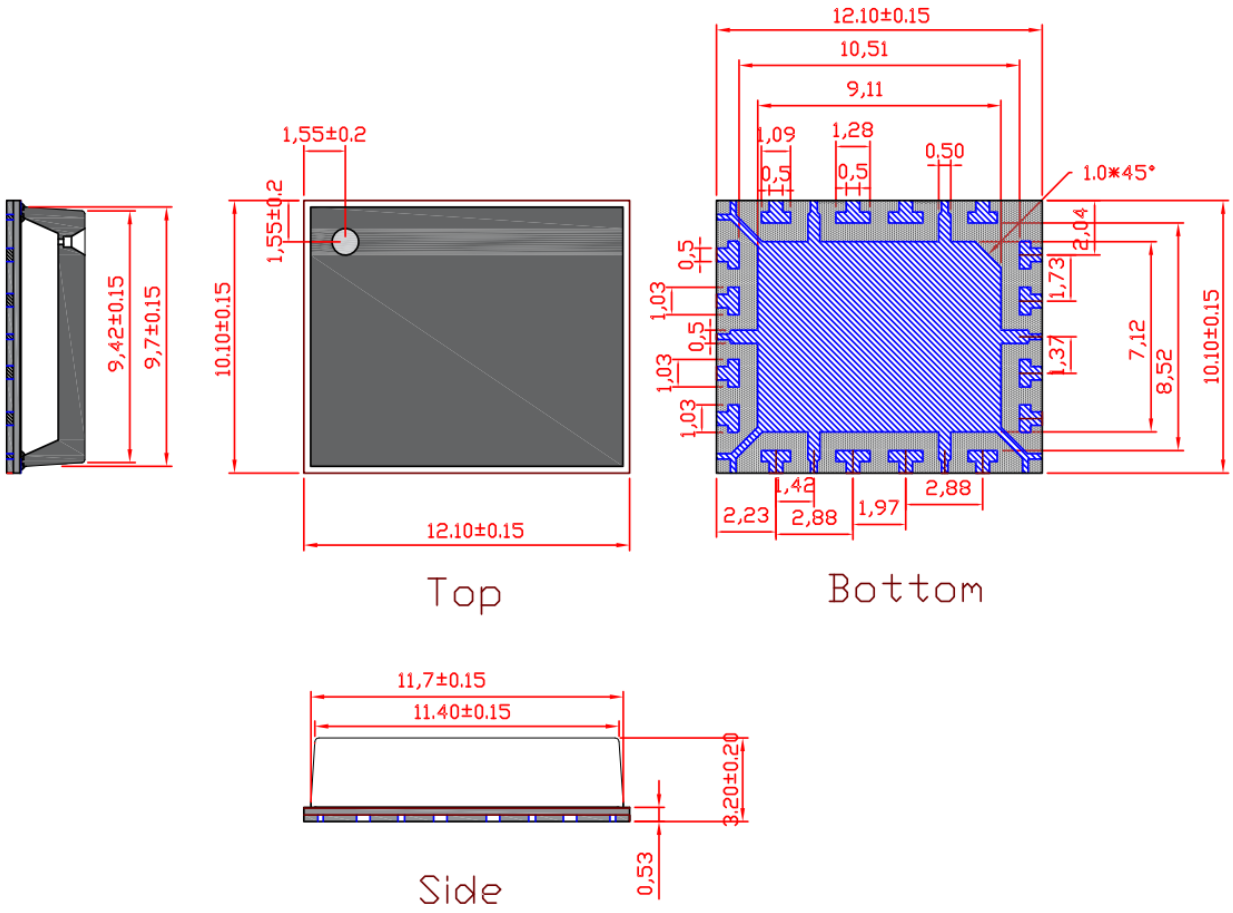


Figure 2: Power gain and efficiency as function of Pout



Package Dimensions



Revision history

Table 7. Document revision history

Date	Revision	Datasheet Status
2025/11/5	Rev 1.0	Preliminary Datasheet

Application data based on LSM-25-33

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