



## 600W, 28V High Power RF LDMOS FETs

### Description

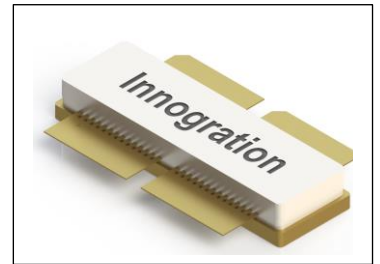
The ITGH09600D4C is a 600W capable, internally matched, **single ended**, 28V LDMOS. Designed for multiple application up to 600MHz, especially ISM and RF Energy at 433MHz etc. It can be configured as Class AB or Class C for CW or pulsed CW.

**Please notice both leads at input and output are internally connected**

• Typical 433MHz CW Performance (on Innogrations fixture with device soldered)

$V_{ds}=28V, V_{gs}=2V$

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff(%)	P1dB Gain(dB)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)
433	57.17	521.7	69.2	22.73	57.91	618.2	71.2



### 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 $T_{case}= 25^{\circ}C, DC$ Power supply	$R_{\theta JC}$	0.15	°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 ( $V_{GS}=0V; I_D=100\mu A$ )	$V_{DSS}$	65	---	---	V
Zero Gate Voltage Drain Leakage Current	$I_{DSS}$	---	---	10	$\mu A$



( $V_{DS} = 28\text{ V}$ , $V_{GS} = 0\text{ V}$ )					
Gate--Source Leakage Current ( $V_{GS} = 6\text{ V}$ , $V_{DS} = 0\text{ V}$ )	$I_{GSS}$	---	---	1	$\mu\text{A}$
Gate Threshold Voltage ( $V_{DS} = 28\text{ V}$ , $I_D = 600\text{ uA}$ )	$V_{GS(th)}$	---	1.75	---	V
Gate Quiescent Voltage ( $V_{DD} = 28\text{ V}$ , $I_{DQ} = 500\text{ mA}$ , Measured in Functional Test)	$V_{GS(Q)}$		2.5		V

Load Mismatch (In Innogrations Test Fixture, 50 ohm system):  $V_{DD} = 28\text{ Vdc}$ ,  $I_{DQ} = 100\text{ mA}$ ,  $f = 433\text{ MHz}$

VSWR 10:1 at 600W pulse CW Output Power	No Device Degradation
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### 433MHz

Figure 1 Efficiency and power gain as function of Pout at Vds=28V

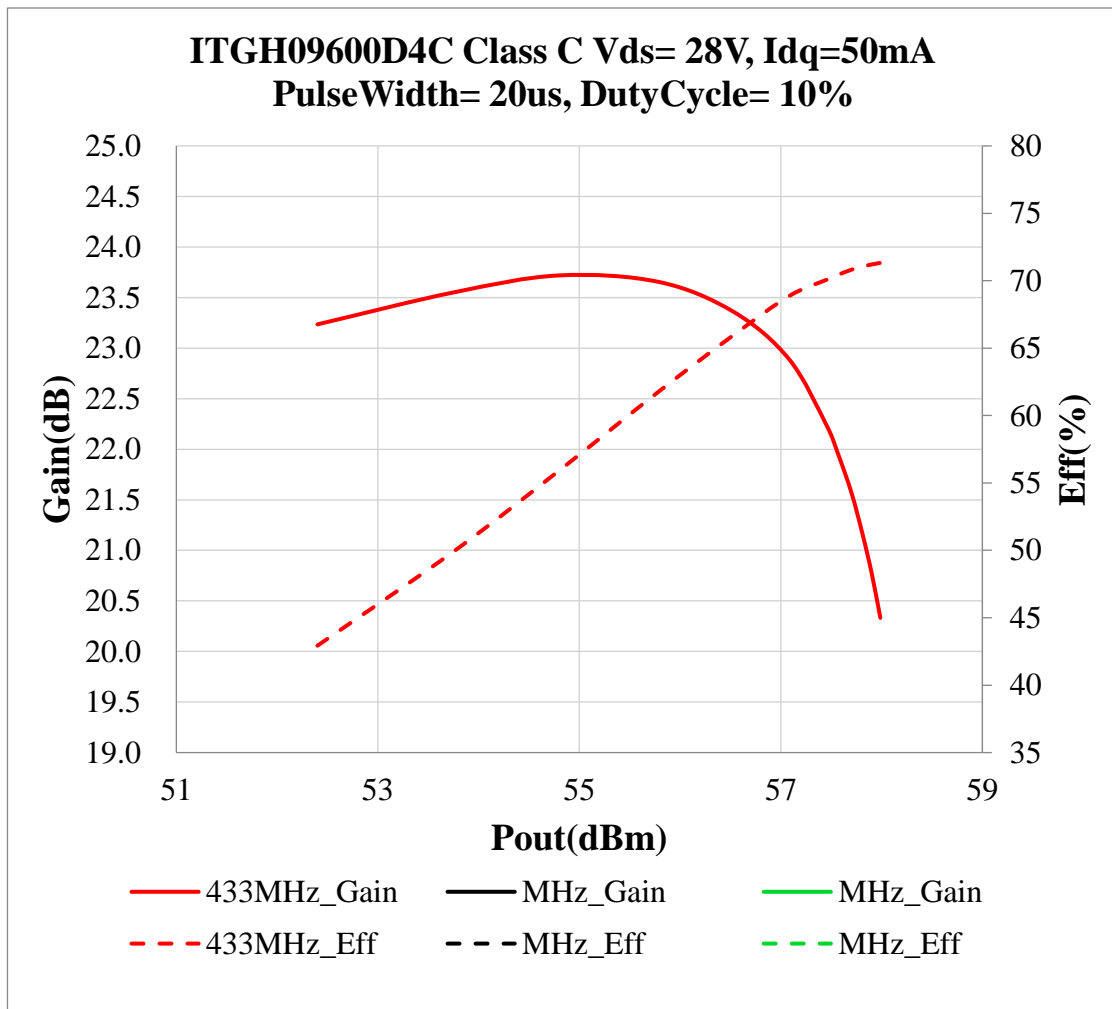




Figure 2: Network analyzer output, S11 and S21

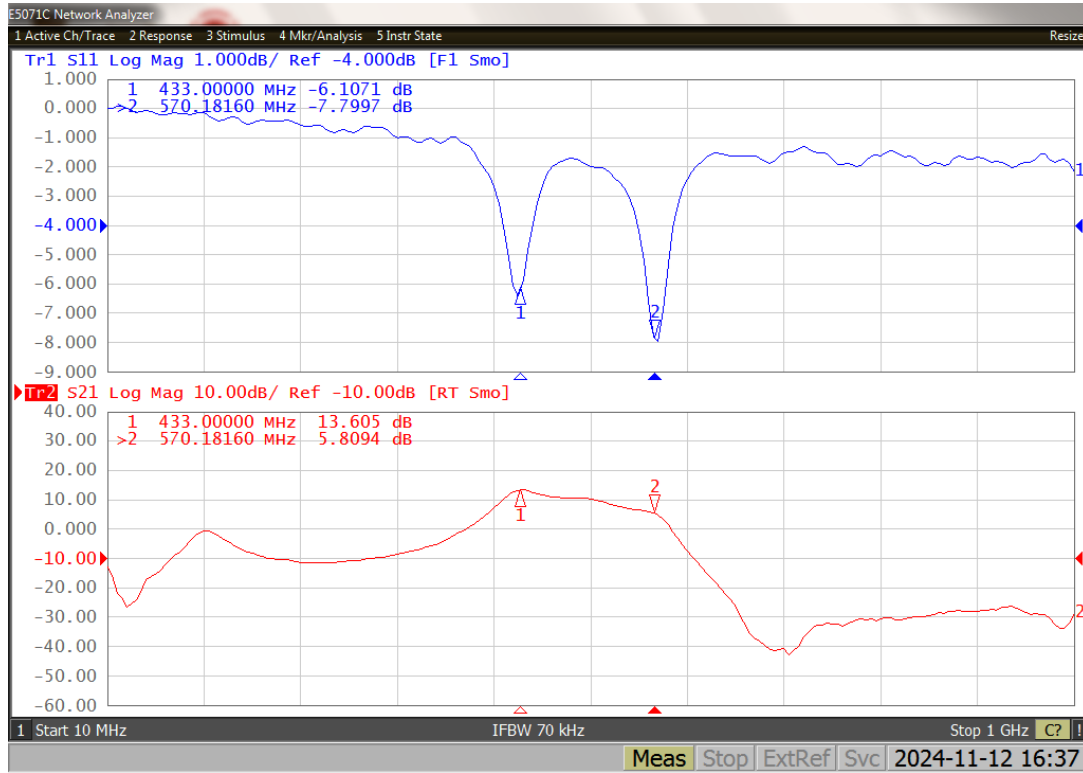
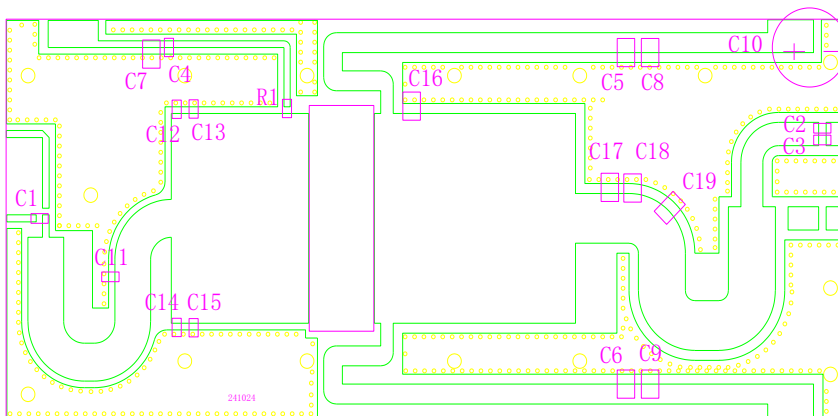
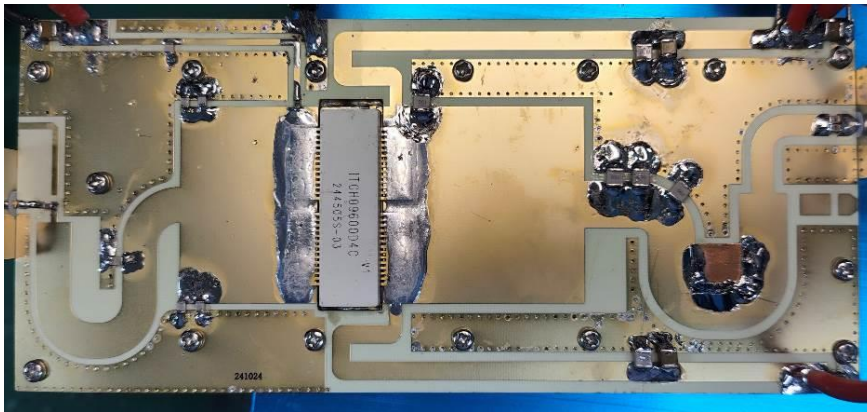


Figure 3: Layout picture (original Gerber file upon request)



PCB: RO4350B 20mils

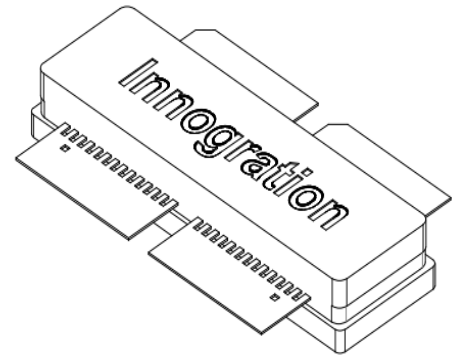
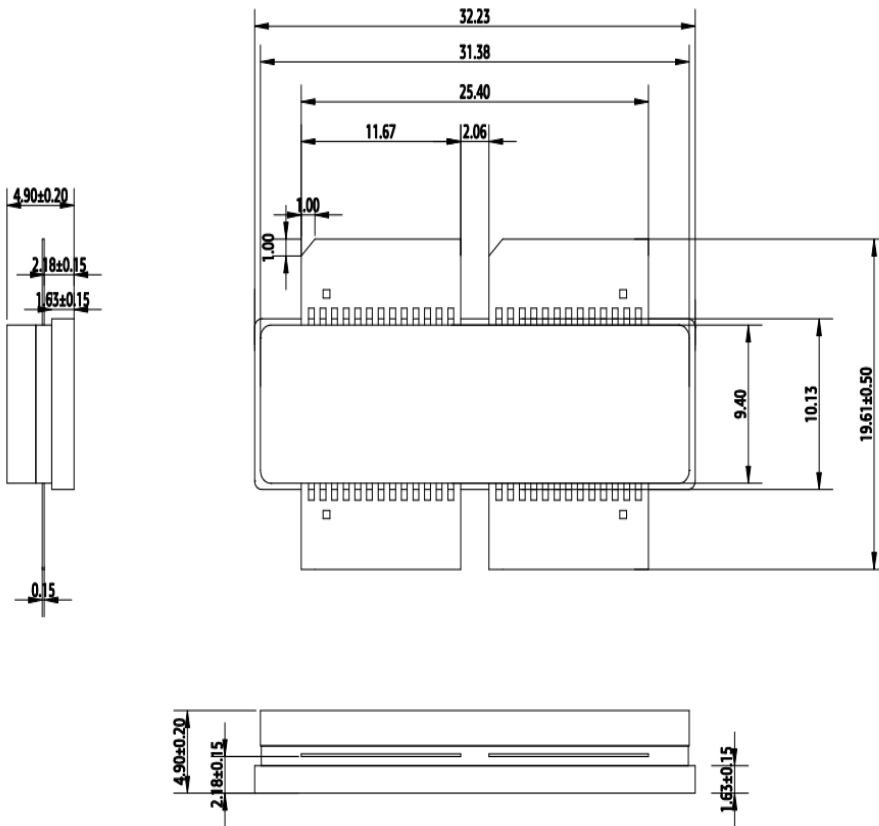


Table 5. List of components

Designator	Footprint	Comment	Quantity
C1	0603/0805	10 pF	1
C2, C3	0805	82 pF	2
C4	0603/0805	150 pF	1
C5, C6	1210	150 pF	2
C7, C8, C9	1210	10uF/100V	3
C10		1000uF/63V	1
C11, C12, C13, C14, C15	0603/0805	30 pF	5
C16, C19	1210	15 pF	2
C17, C18	1210	18 pF	2
R1	0603/0805	10Ω	1



Earless Flanged Plastic Air Cavity Package; 4 leads



Unit:mm  
Tolerance ±0.10mm, Except as Noted.

Table 5. Document revision history

Date	Revision	Datasheet Status
2024/11/13	V1	Preliminary Datasheet Creation

Application data based on LSM-24-23

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