



RF LDMOS 12.5V 30W Transistor, UHF

Description

The ITCN09030A2C is a 30W RF LDMOS, designed for multiple applications, within UHF band typically within 764-941MHz. The transistor is available in new generation highly cost effective open cavity package. It can be used in CW, Pulse and multiple modulation mode.

Ideally good solution for 800MHz mobile radio stations

• Typical RF Performance On Innegration fixture **by single device**

$V_{DD} = 12.5\text{ V}$, $I_{DQ} = 280\text{ mA}$, CW

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff(%)	P1dB Gain(dB)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)
764	43.99	25.1	48.2	14.2	45.85	38.4	56.3
820	44.72	29.7	63.7	14.76	45.57	36.1	68.9
870	44.19	26.2	72.0	13.78	44.58	30.0	74.6

$V_{DD} = 12.5\text{ V}$, $I_{DQ} = 810\text{ mA}$, WCDMA 1 Carrier

Freq (MHz)	Pout (dBm)	CCDF (dB)	ACPR (dBc)	Gain (dB)	Eff (%)
764	33	10.01	-47.7	16.7	12.2
820	33	10.27	-50.4	17.5	13.7
870	33	9.97	-50.2	17.0	15.1

• Typical RF Performance On Innegration fixture **by 2 devices combined**

$V_{DD} = 12.5\text{ V}$, $I_{DQ} = 560\text{ mA}$, CW

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff(%)	P1dB Gain(dB)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)
784	47.06	50.9	52.6	12.56	48.17	65.7	58.0
804	47.32	53.9	59.1	12.66	48.19	65.9	64.0
824	47.41	55.1	65.0	12.76	48.02	63.3	68.8

$V_{DD} = 12.5\text{ V}$, $I_{DQ} = 1600\text{ mA}$, WCDMA 1 Carrier

Freq (MHz)	Pout (dBm)	CCDF (dB)	ACPR (dBc)	Gain (dB)	Eff (%)
764	36	10.35	-47.1	15.3	12.2
820	36	10.27	-50.9	15.6	14.2
870	36	10.17	-48.4	16.9	15.6

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

- 915MHz ISM
- UHF Power amplifier
- Mobile radio amplifier

ITCN09030A2C





Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DS}	+40	Vdc
Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+13.6	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 $T_c = 85^\circ\text{C}$, $T_J = 200^\circ\text{C}$, DC test	$R_{\theta JC}$	0.6	°C/W

Table 3. ESD Protection Characteristics

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

Table 4. Electrical Characteristics ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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DC Characteristics

Drain-Source Voltage $V_{GS}=0$, $I_{DS}=100\mu\text{A}$	$V_{(BR)DS}$		43		V
Zero Gate Voltage Drain Leakage Current ($V_{DS} = 12.5\text{V}$, $V_{GS} = 0\text{V}$)	I_{DSS}	—	—	1	μA
Gate--Source Leakage Current ($V_{GS} = 9\text{V}$, $V_{DS} = 0\text{V}$)	I_{GSS}	—	—	1	μA
Gate Threshold Voltage ($V_{DS} = 12.5\text{V}$, $I_D = 600\mu\text{A}$)	$V_{GS(th)}$	2		—	V
Gate Quiescent Voltage ($V_{DD} = 12.5\text{V}$, $I_D = 800\text{mA}$, Measured in Functional Test)	$V_{GS(Q)}$	—	2.9	—	V

Load Mismatch (In Innegration Test Fixture, 50 ohm system): $V_{DD} = 12.5\text{Vdc}$, $I_{DQ} = 800\text{mA}$, $f = 900\text{MHz}$

VSWR 10:1 at 30W pulse CW Output Power	No Device Degradation
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Single device

TYPICAL CHARACTERISTICS

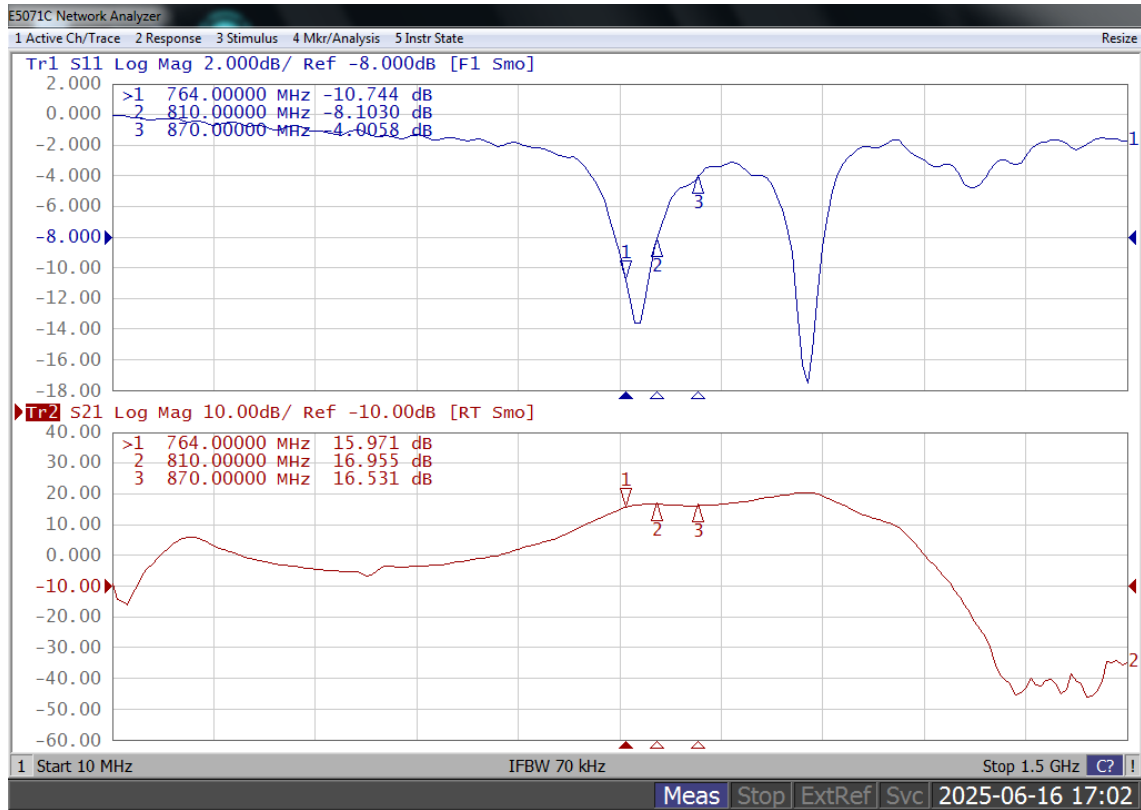
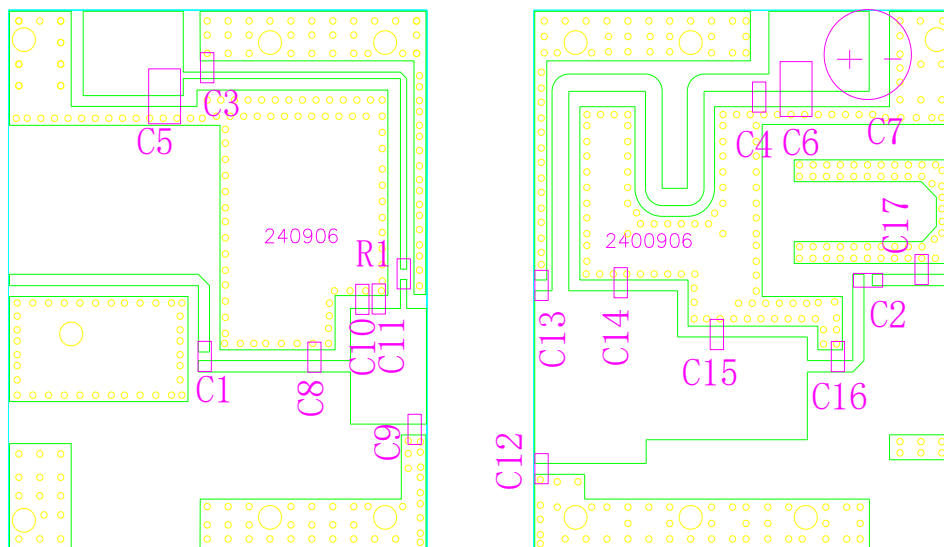


Figure 3. Network analyzer output S11/S21 VDS = 12.5Vdc, Idq= 800mA

Reference Circuit of Test Fixture Assembly Diagram RO4350B 20mils(Layout upon request)





Designator	Comment	Footprint	Quantity
C1	6.8 pF	0603/0805	1
C2, C3, C4,	68 pF	0603/0805	3
C5, C6	10 uF/100V	1210	2
C7	470 uF/63V		1
C8, C16	8.2 pF	0603/0805	2
C9, C12, C13	10 pF	0603/0805	3
C10	3.3 pF	0603/0805	1
C11	12 pF	0603/0805	1
C14, C15	2.0 pF	0603/0805	2
C17	1.0 pF	0603/0805	1
R1	10 Ω	0603	1

2 devices combined

TYPICAL CHARACTERISTICS

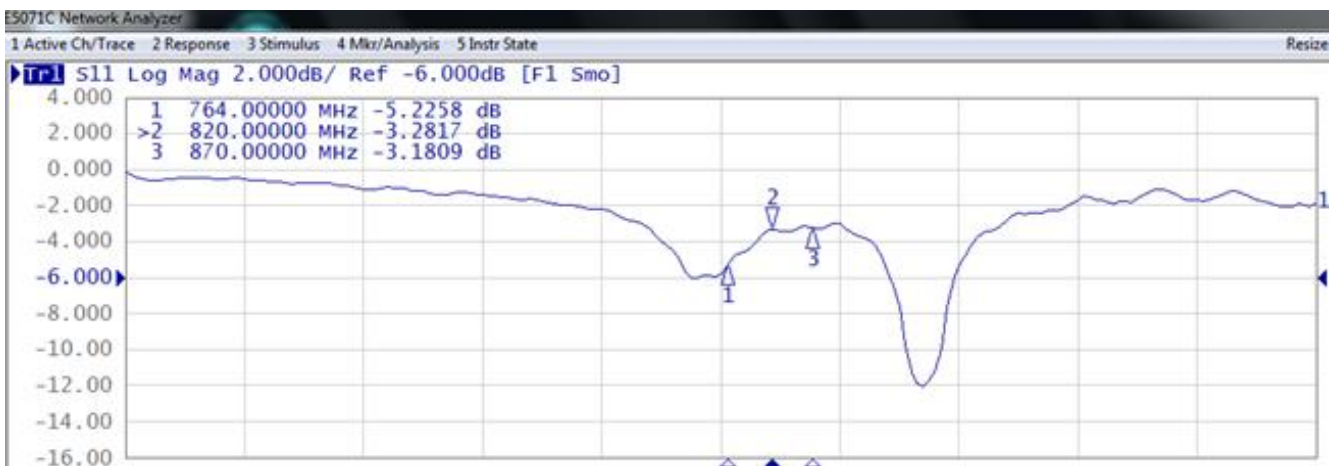
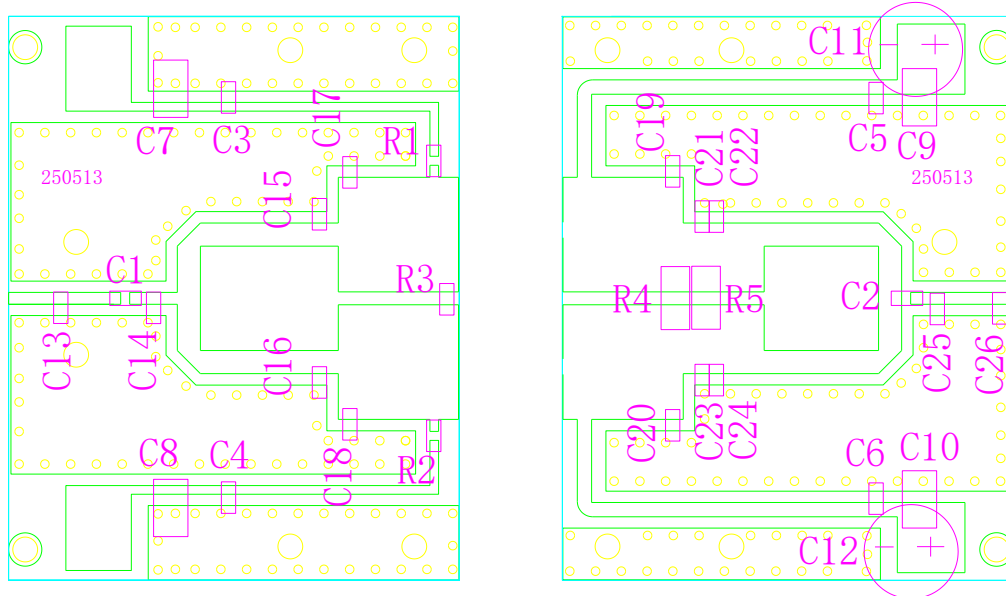


Figure 4. Network analyzer output S11/VDS = 12.5Vdc, Idq= 800mA



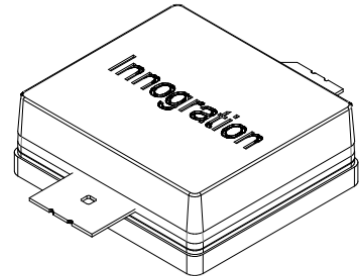
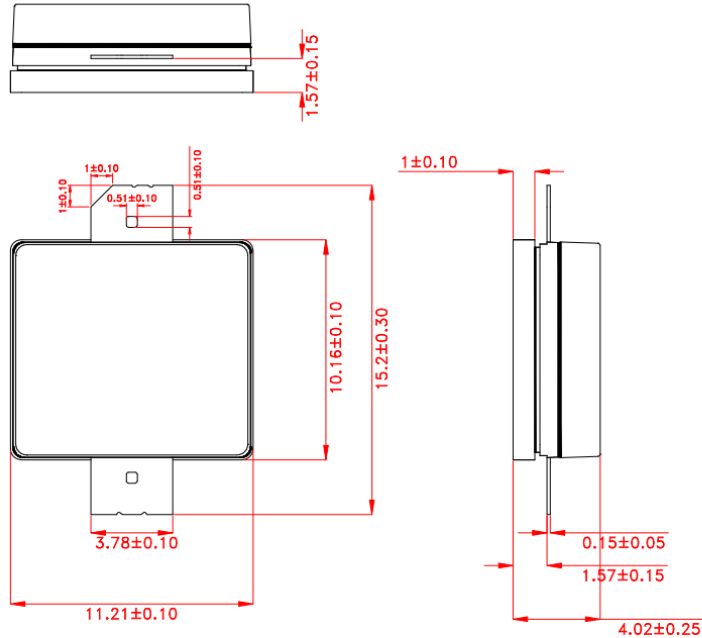
Reference Circuit of Test Fixture Assembly Diagram RO4350B 20mils(Layout upon request)



Designator	Comment	Footprint	Quantity
C1	6.8 pF	0603/0805	1
C2, C3, C4, C5, C6	68 pF	0603/0805	5
C7, C8, C9, C10	10 uF/100V	1210	4
C11, C12	470 uF/63V		2
C13	2 pF	0603/0805	1
C14	4.7 pF	0603/0805	1
C15, C16, C21, C22, C23, C24	6.8 pF	0603/0805	6
C17, C18	15 pF	0603/0805	2
C19, C20	10 pF	0603/0805	2
C25	1.5 pF	0603/0805	1
C26	5.1 pF	0603/0805	1
R1,R2. R3	10 Ω	0603	3
R4, R5	10 Ω	1206	2



Package Dimensions



Unit:mm

Tolerance ±0.10mm, Except as Noted.

Revision history

Table 4. Document revision history

Date	Revision	Datasheet Status
2025/5/29	V1.0	Datasheet Creation
2025/6/16	V1.1	Modify the application data after matching adjustment
2025/7/6	V1.2	Add 2pcs combined data

Application data based on LSM-25-15/19

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