



30W,28V Plastic RF LDMOS Transistor

ITEH09030C6

Description

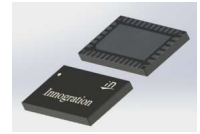
The ITEH09030C6 is a 30-watt, highly rugged, LDMOS transistor, designed for any general applications at frequencies up to 1GHz, in 10*6mm QFN plastic package, supporting surface mounted on PCB through high density grounding vias.

It can be tuned to meet 34-35dBm WCDMA or LTE ACLR without DPD needed purely by back off operation.

It can also support equivalent CW operation by surface mounted through vias

- Typical 758-803MHz Class AB RF Performance (On Innegration fixture with device soldered).
V_{ds}= 28V, I_{dq}=240mA, high linearity tuning

Freq (MHz)	P _{out} (dBm)	CCDF (dB)	ACPR (dBc)	Gain (dB)	Efficiency (%)
758	35.01	9.66	-47.4	17.7	21.3
780	35.00	9.69	-47.2	17.5	21.7
803	35.00	9.51	-46.1	18.1	22.4



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

- P band power amplifier
- All 4G/5G cellular application within 0.7 to 1GHz

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}	+28	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°C, DC test	R _{θJC}	3.2	°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 Voltage $V_{GS}=0, I_{DS}=100\mu A$	$V_{(BR)DSS}$		65		V
Zero Gate Voltage Drain Leakage Current $(V_{DS} = 28V, V_{GS} = 0V)$	I_{DSS}	—	—	1	μA
Gate--Source Leakage Current $(V_{GS} = 11V, V_{DS} = 0V)$	I_{GSS}	—	—	1	μA
Gate Threshold Voltage $(V_{DS} = 28V, I_D = 600\mu A)$	$V_{GS(th)}$	—	2	—	V
Gate Quiescent Voltage $(V_{DD} = 28V, I_D = 200mA, \text{Measured in Functional Test})$	$V_{GS(Q)}$	—	2.6	—	V

Load Mismatch (In Innogrations Test Fixture, 50 ohm system): $V_{DD} = 28Vdc, I_{DQ} = 200mA, f = 800MHz$

VSWR 10:1 at 30W pulse CW Output Power	No Device Degradation
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Figure 1: Pin Definition (Top View)



Pin No.	Symbol	Description
8,9,10,11,14,15,16,17	Vgs/RF In	Vgs and RF input
26,27,28,29,32,33,34,35	Vds/RF out	Vds and RF output
2,5,7,12,13,18,20,23,25,30,31,36	GND	DC/RF Ground
Others	NC	No connection
Package Base	GND	DC/RF Ground.

758-803MHz application board

Reference Circuit of Test Fixture Assembly Diagram 20mils RO4350B

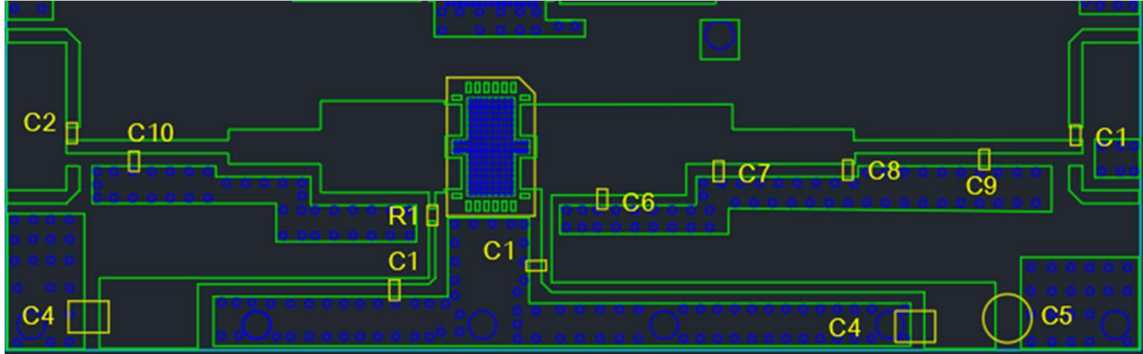
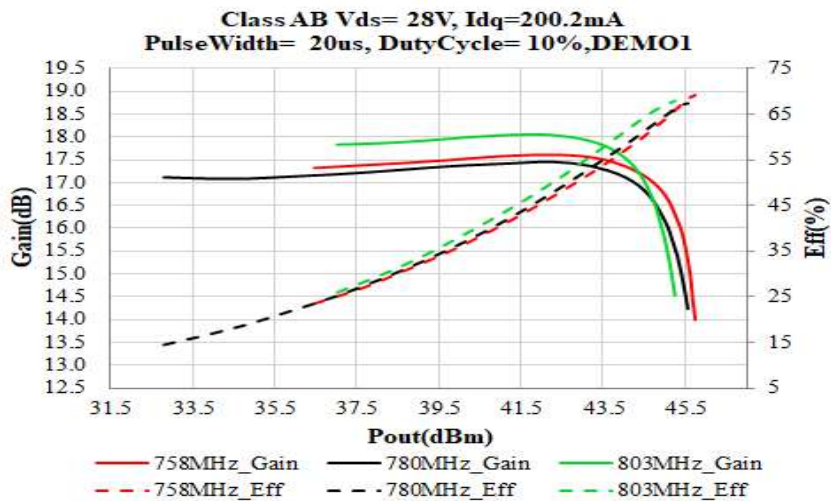


Figure 2. Test Circuit Component Layout

Table 5. Test Circuit Component Designations and Values

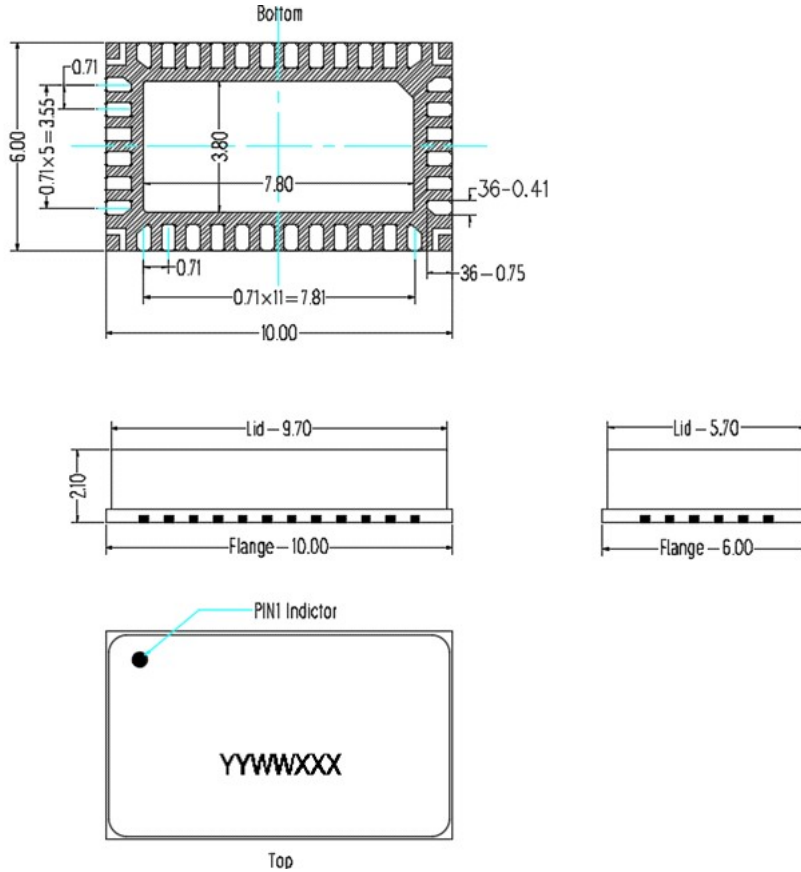
Component	Value	Quantity
U1	ITEH09030C6	1
C1	68pF	3
C4	10uF/63V	2
R1	10 Ω	1
C5	470uF/63V	1
C2	6.8pF	1
C10	1.8pF	1
C6	0.7pF	1
C7	0.5pF	1
C8	0.4pF	1
C9	5.6pF	1

TYPICAL CHARACTERISTICS



Package Dimensions

10*6 Plastic Package



Notes:

1. All dimensions are in mm;
2. The tolerances unless specified are ± 0.2 mm.

Revision history

Table 7. Document revision history

Date	Revision	Datasheet Status
2023/8/8	Rev 1.0	Preliminary Datasheet

Application data based on ZXY-23-07

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