



# 15W,28V Plastic RF LDMOS Transistor

**ITEH09015C6**

## Description

The ITEH09015C6 is a 15-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 31-32dBm 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 Innogrator fixture with device soldered).

• Freq (MHz)	Pout (dBm)	CCDF (dB)	ACPR (dBc)	Gain (dB)	Efficiency (%)
758	32.01	9.53	-46.6	19.0	22.3
780	32.00	9.58	-48.1	18.6	22.5
803	32.00	9.46	-47.0	19.0	22.7

## Features

- High Efficiency and Linear Gain Operations
- Large Positive and Negative Gate/Source Voltage Range for Improved Class C Operation
- Integrated ESD Protection
- Excellent thermal stability, low HCI drift
- 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 <sub>DSS</sub>	+65	Vdc
Gate--Source Voltage	V <sub>GS</sub>	-10 to +10	Vdc
Operating Voltage	V <sub>DD</sub>	+28	Vdc
Storage Temperature Range	T <sub>stg</sub>	-65 to +150	°C
Case Operating Temperature	T <sub>c</sub>	+150	°C
Operating Junction Temperature	T <sub>j</sub>	+225	°C

**Table 2. Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Thermal Resistance, Junction to Case T <sub>c</sub> = 85°C, DC test	R <sub>θJC</sub>	6	°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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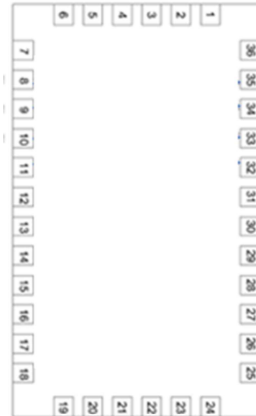
**DC Characteristics**

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	$\mu A$
Gate--Source Leakage Current $(V_{GS} = 11V, V_{DS} = 0V)$	$I_{GSS}$	—	—	1	$\mu A$
Gate Threshold Voltage $(V_{DS} = 28V, I_D = 600\mu A)$	$V_{GS(th)}$	—	2	—	V
Gate Quiescent Voltage $(V_{DD} = 28V, I_D = 110mA, \text{Measured in Functional Test})$	$V_{GS(Q)}$	—	2.6	—	V

**Load Mismatch (In Innogrations Test Fixture, 50 ohm system):**  $V_{DD} = 28Vdc, I_{DQ} = 110mA, f = 800MHz$

VSWR 10:1 at 15W 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	Vgs/RF In	Vgs and RF input
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

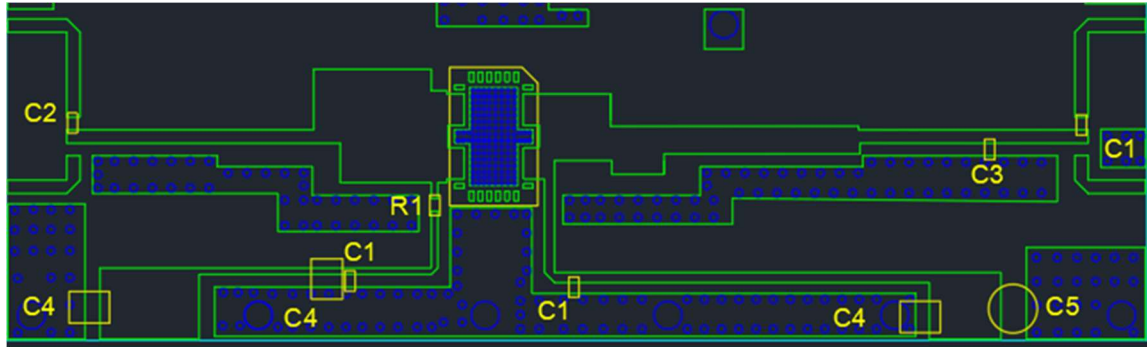


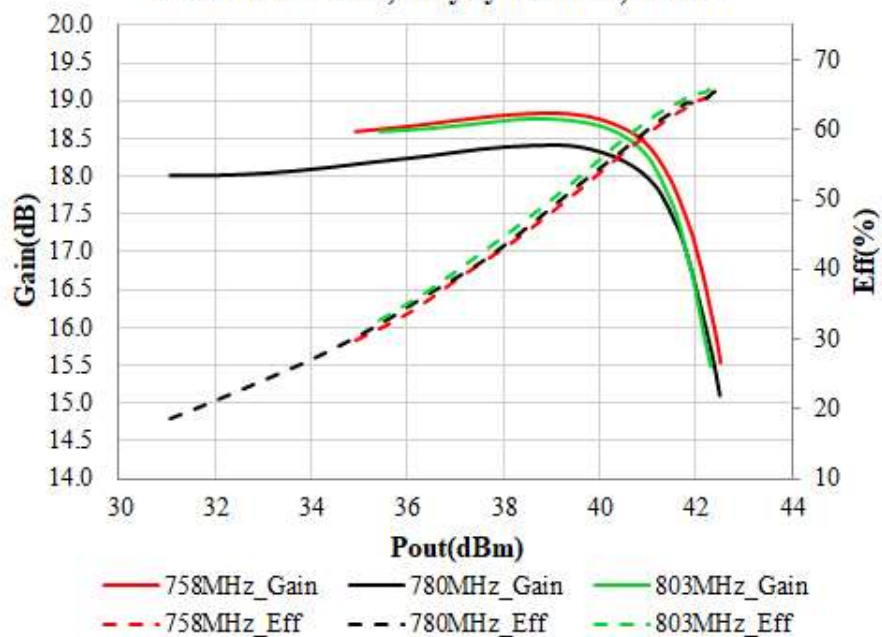
Figure 2. Test Circuit Component Layout

Table 5. Test Circuit Component Designations and Values

Component	Value	Quantity
U1	ITEH09015C6	1
C1	68pF	3
C4	10uF/63V	3
R1	10 $\Omega$	1
C5	470uF/63V	1
C2	6.8pF	1
C3	2.7pF	1

### TYPICAL CHARACTERISTICS

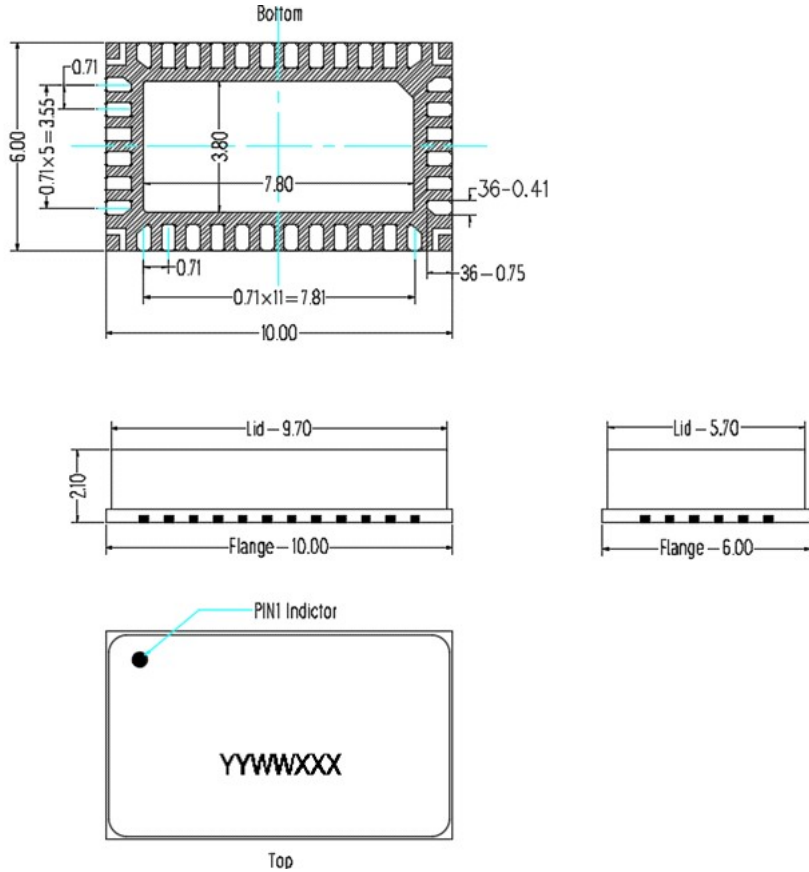
STAV Class AB  $V_{ds}=28V$ ,  $I_{dq}=84.4mA$   
PulseWidth= 20us, DutyCycle= 10%, DEMO1





### Package Dimensions

#### 10\*6 Plastic Package



Notes:

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

### Revision history

Table 7. Document revision history

Date	Revision	Datasheet Status
2023/8/2	Rev 1.0	Preliminary Datasheet

#### Application data based on ZXY-23-06

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