



9W,28V Plastic RF LDMOS Transistor

ITEH38009C6

Description

The ITEH38009C6 is a 9-watt, highly rugged, LDMOS transistor, designed for any general applications at frequencies up to 3.8GHz, in 10*6mm QFN plastic package, supporting surface mounted on PCB through high density grounding vias.

It is part of low power general purpose plastic LDMOS with pin to pin compatibility.

• Typical 3.3-3.6GHz Class AB RF Performance (On Innogrator fixture with device soldered).

VDS=28V, IDQ=70mA, Vgs=2.74V, Pout=29dBm, 100MHz NR



Freq (MHz)	Gain (dB)	EFF (%)	ACPR (dBc)
3300	14.07	15.5	-47.1
3450	13.84	14.9	-47.2
3600	13.10	14.8	-47.2

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

- All 4G/5G cellular application below 3.8GHz

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, T _j =200°C, DC test	R _{θJC}	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} =100uA	V _{(BR)DSS}		65		V
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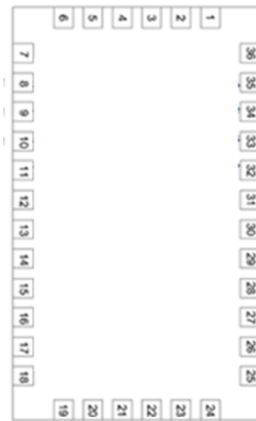


Zero Gate Voltage Drain Leakage Current ($V_{DS} = 28V, V_{GS} = 0V$)	I_{DSS}	—	—	1	μA
Gate--Source Leakage Current ($V_{GS} = 11V, V_{DS} = 0V$)	I_{GSS}	—	—	1	μA
Gate Threshold Voltage ($V_{DS} = 28V, I_D = 600\mu A$)	$V_{GS(th)}$	—	2	—	V
Gate Quiescent Voltage ($V_{DD} = 28V, I_D = 70mA$, Measured in Functional Test)	$V_{GS(Q)}$	—	2.7	—	V

Load Mismatch (In Innegration Test Fixture, 50 ohm system): $V_{DD} = 28V_{dc}, I_{DQ} = 70mA, f = 3600MHz$

VSWR 10:1 at 9W 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.

**Reference Circuit of Test Fixture Assembly Diagram
3300-3600MHz RO4350B 20mils**

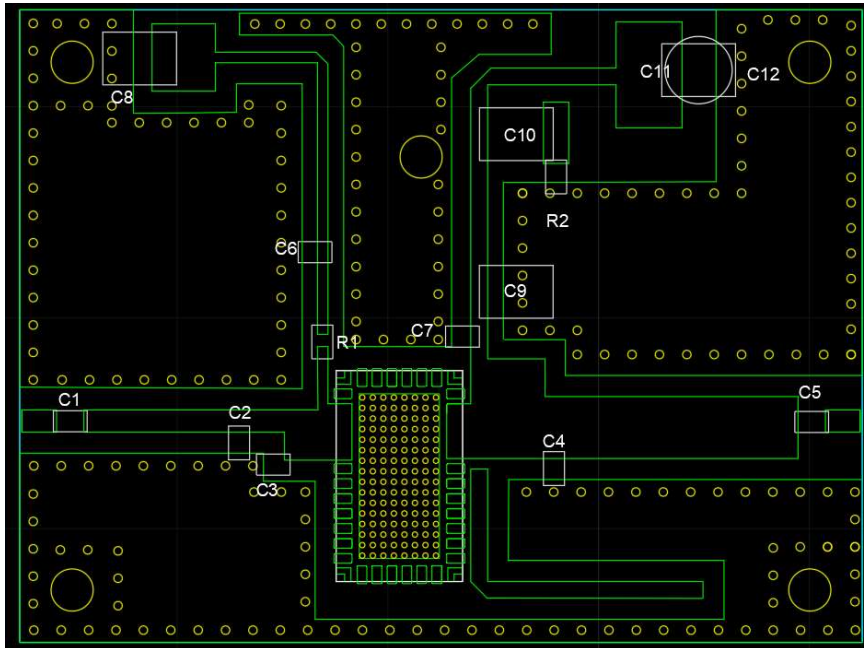


Figure 2. Test Circuit Component Layout

Table 5. Test Circuit Component Designations and Values

Component	Value	Quantity
U1	ITEH38009C6	1
C1、C5、C6、C7	8.2pF	4
C8、C9、C10、C11	10uF/63V	4
R1、R2	10 Ω	2
C12	470uF/63V	1
C2	1.2pF	1
C3	0.5pF	1
C4	1.8Pf	1

TYPICAL CHARACTERISTICS

Figure 3. ACPR Performance at 29dBm under 100MHz NR signal test

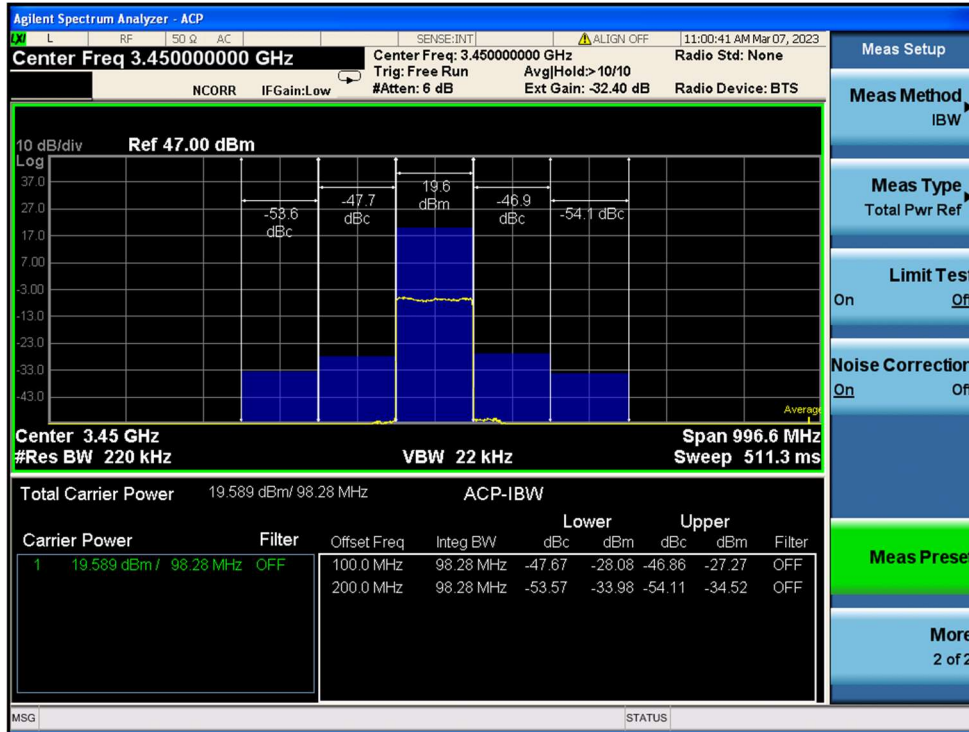
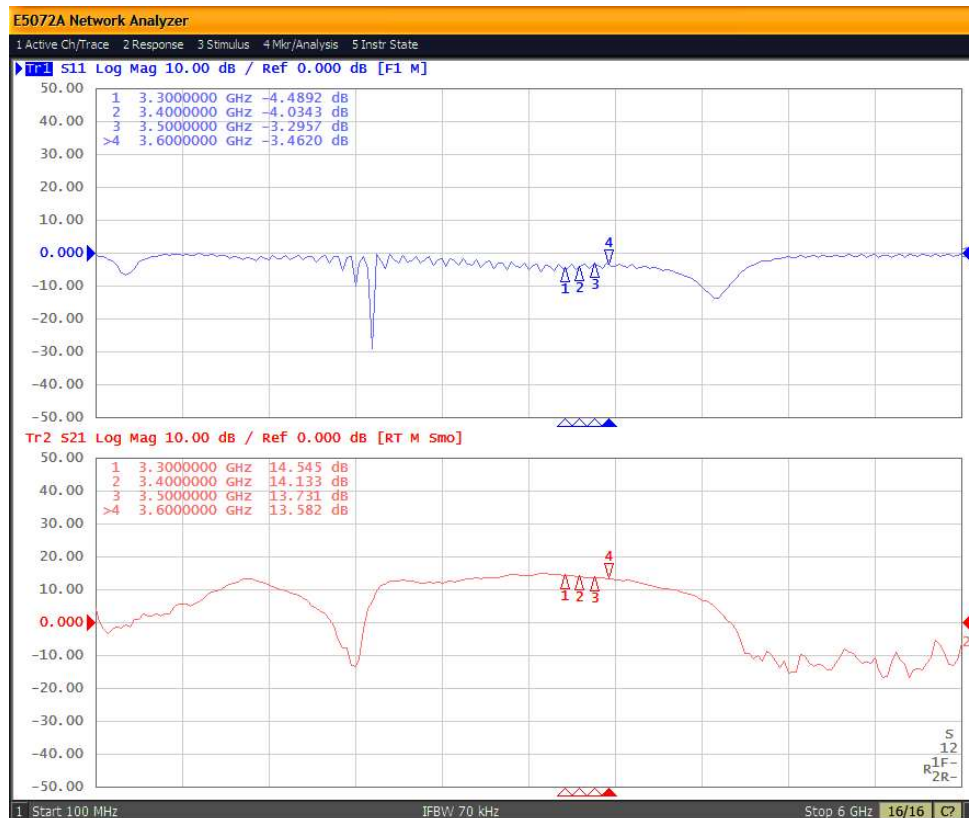


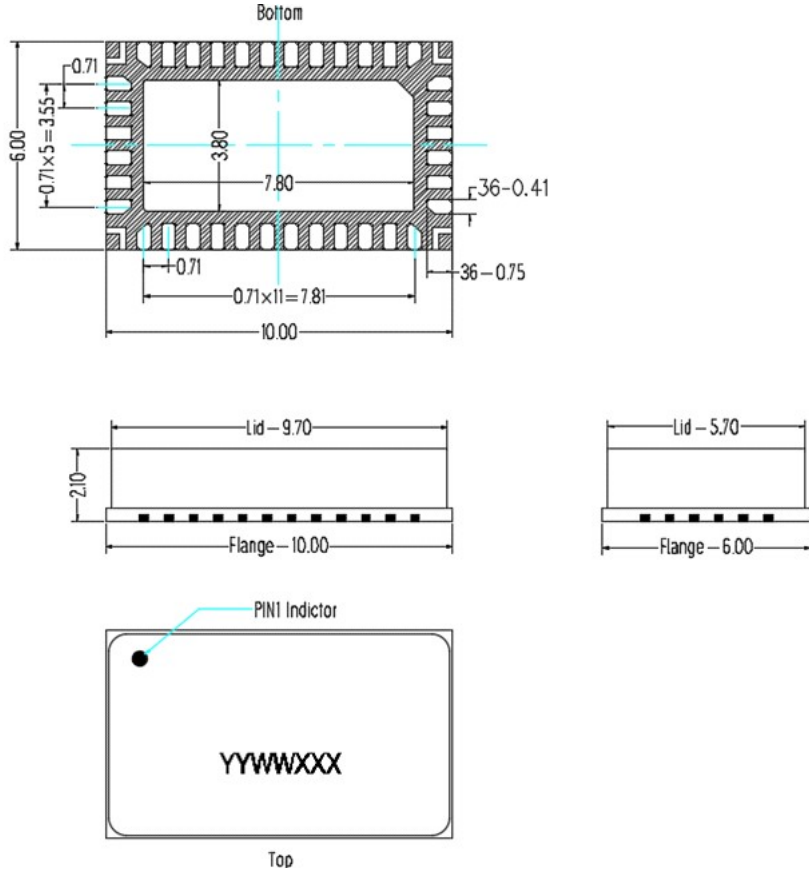
Figure 4. Network analyzer output S11/S21





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
2023/3/7	Rev 1.0	Preliminary Datasheet

Application data based on ZXY-23-03

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