



10W,5-6GHz 28V Plastic RF LDMOS Transistor

ITEH58010C6

Description

The ITEH58010C6 is a 10-watt, highly rugged, LDMOS transistor, designed for any general applications at frequencies 5 to 6GHz, in 10*6mm QFN plastic package, supporting surface mounted on PCB through high density grounding vias.

It can deliver excellent linearity at 28dBm without DPD.

- Typical 5.7-5.9GHz Class AB RF Performance (On Innegration fixture with device soldered).

$V_{DS}=28V$, $I_{dQ}=100mA$, $V_{gs}=2.74V$



Freq (GHz)	Pulse CW Signal ⁽¹⁾			$P_{avg}=32dBm$ WCDMA Signal ⁽²⁾		
	Gain P1 (dB)	P3dB (W)	Eff (%)	Gp (dB)	η_D (%)	ACPR _{5M} (dBc)
5.7	11.6	11.6	38	12.5	17.5	-41.2
5.8	11.5	11.8	40	12.6	18.1	-39.4
5.9	11.5	11.9	39	12.1	17.8	-40.8

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

- C band power amplifier
- 5G cellular power amplifier within 5-6GHz
- WIFI High power access point
- GaAs HBT lower cost replacement

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DS}	+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 $T_C=85^{\circ}C$, $T_J=200^{\circ}C$, DC test	$R_{\theta JC}$	1.8	°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 ($V_{DD} = 28V$, $I_D = 100mA$, Measured in Functional Test)	$V_{GS(Q)}$	—	2.7	—	V

Load Mismatch (In Innegration Test Fixture, 50 ohm system): $V_{DD} = 28Vdc$, $I_{DQ} = 100mA$, $f = 6000MHz$

VSWR 10:1 at 10W 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.

Reference Circuit of Test Fixture Assembly Diagram 5700-5900MHz RO4350B 20mils

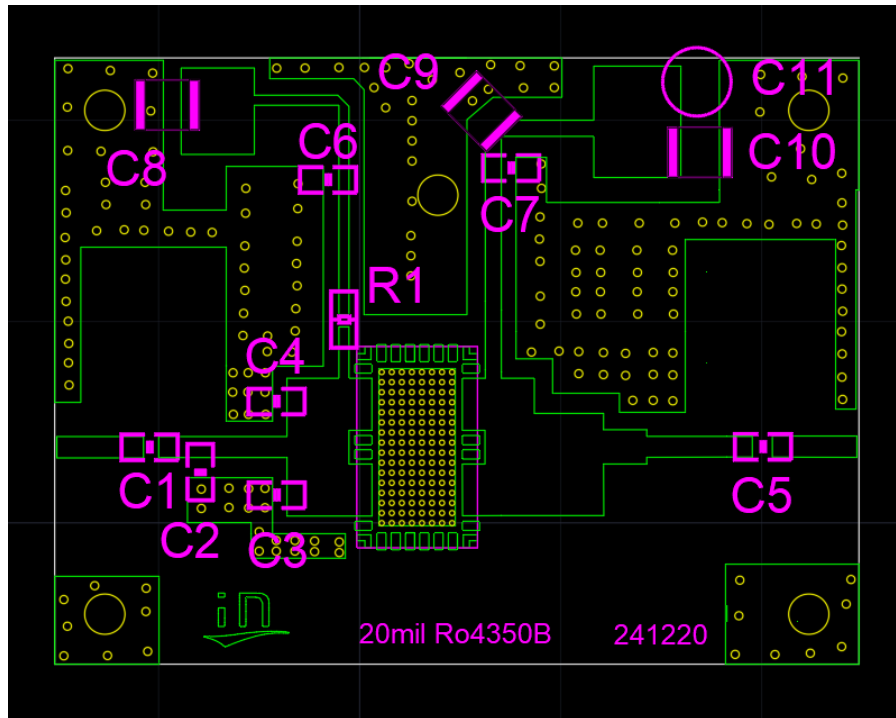


Figure 2. Test Circuit Component Layout

Table 5. Test Circuit Component Designations and Values

Component	Value	Quantity
U1	ITEH58010C6	1
C1、 C5、 C6、 C7	3.9pF	4
C2、 C3、 C4	0.3pF	3
C8、 C9、 C10	10uF/63V	3
C11	470uF/63V	1
R1	10 Ω	1

TYPICAL CHARACTERISTICS

Figure 3. Power Gain and Drain Efficiency as function of Power Out

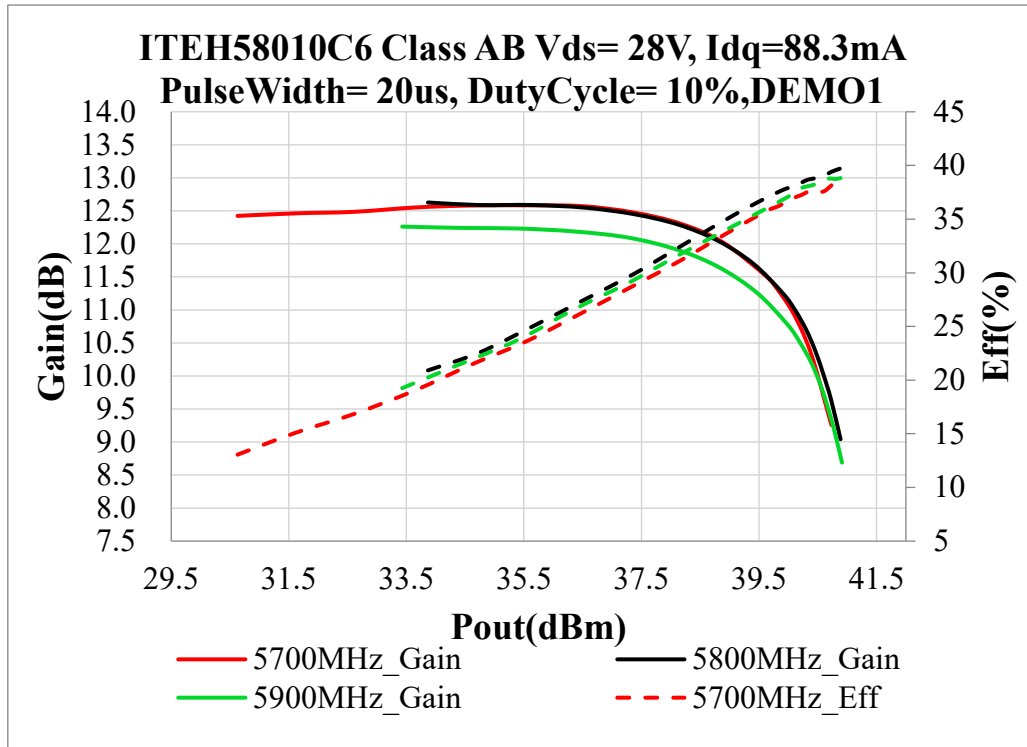
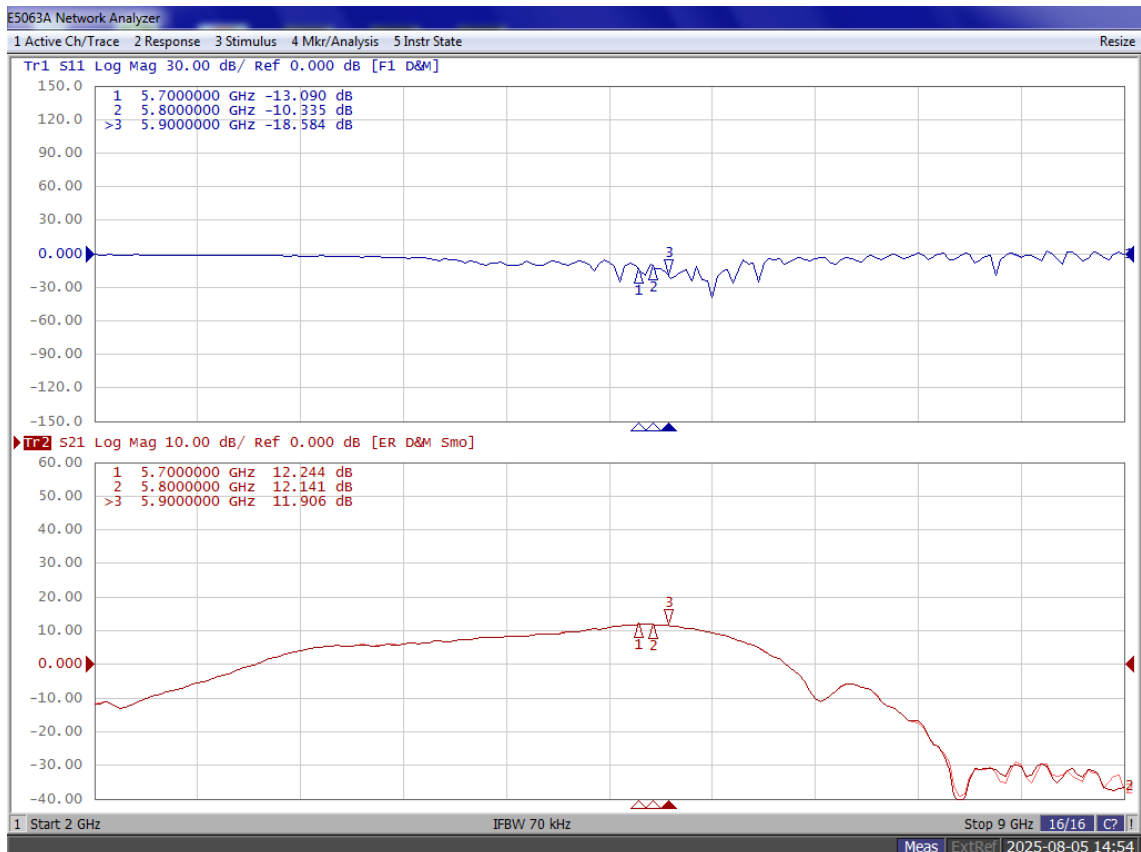


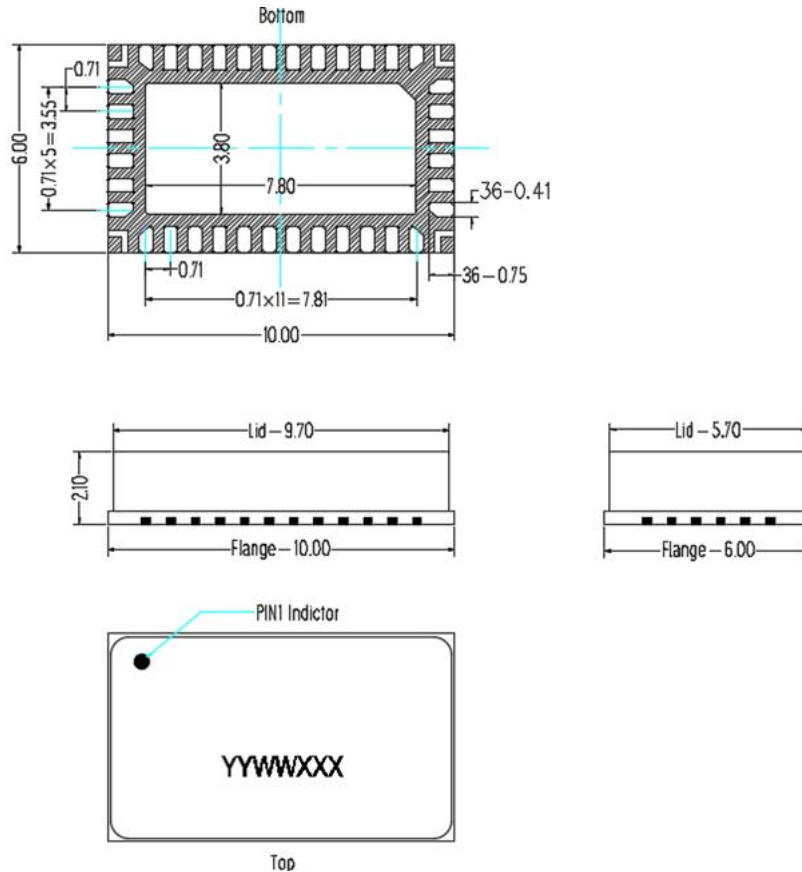
Figure 4. Network analyzer output S11/S21





Package Dimensions

10*6 Plastic Package



Notes:

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

Revision history

Table 7. Document revision history

Date	Revision	Datasheet Status
2025/8/6	Rev 1.0	Preliminary Datasheet

Application data based on ZYX-25-33

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