



7W,5-6GHz 28V Plastic RF LDMOS Transistor

ITEH58007C6

Description

The ITEH58007C6 is a 7-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.

- Typical 5.3-5.9GHz Class AB RF Performance (On Innegration fixture with device soldered).



Freq (GHz)	Pulse CW Signal ⁽¹⁾			P _{avg} =27.5dBm WCDMA Signal ⁽²⁾		
	Gain P1 (dB)	P3dB (W)	Eff (%)	Gp (dB)	η _D (%)	ACPR _{5M} (dBc)
5.3	9.8	8.2	39	11.9	14.2	-42.0
5.6	10.5	8.5	42	12.8	14.0	-44.0
5.9	10	7.9	42	12.3	13.8	-45.6

(1) I_{dq}=6mA; (2) I_{dq}=60mA

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

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}	4.1	°C/W

Table 3. ESD Protection Characteristics

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



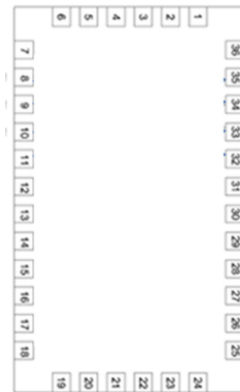
Table 4. Electrical Characteristics (TA = 25 °C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
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 ($V_{DD} = 28V, I_D = 60mA$, Measured in Functional Test)	$V_{GS(Q)}$	—	2.7	—	V

Load Mismatch (In Innegration Test Fixture, 50 ohm system): $V_{DD} = 28Vdc, I_{DQ} = 60mA, f = 5000MHz$

VSWR 10:1 at 12W 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
5300-5900MHz RO4350B 20mils

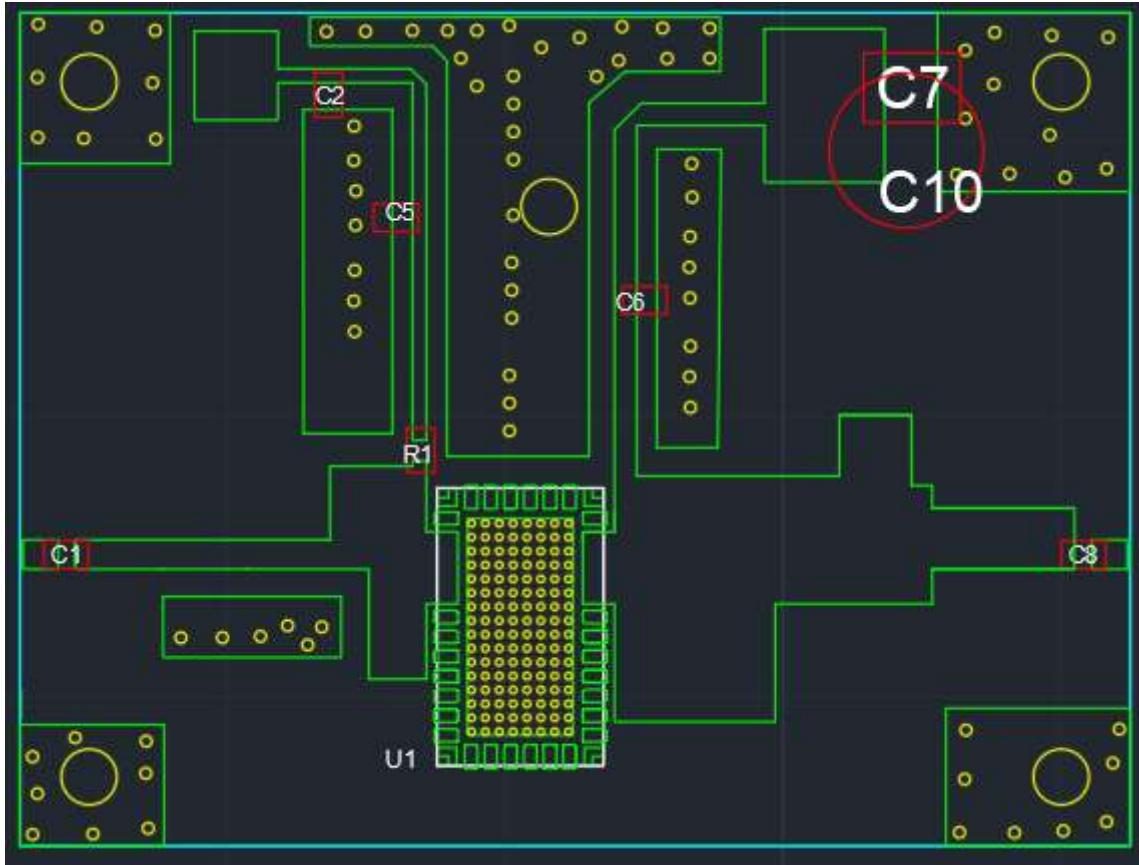


Figure 2. Test Circuit Component Layout

Table 5. Test Circuit Component Designations and Values

BOM		
C2,C7	10uF/63V	1210
C1,C5,C6,C8	3.9pF	0603
R1	10 ohm	0603
C10	470uF	



TYPICAL CHARACTERISTICS

Figure 3. Power Gain and Drain Efficiency as function of Power Out at different bias conditions(Left: Idq=6mA; Right: Idq=60mA)

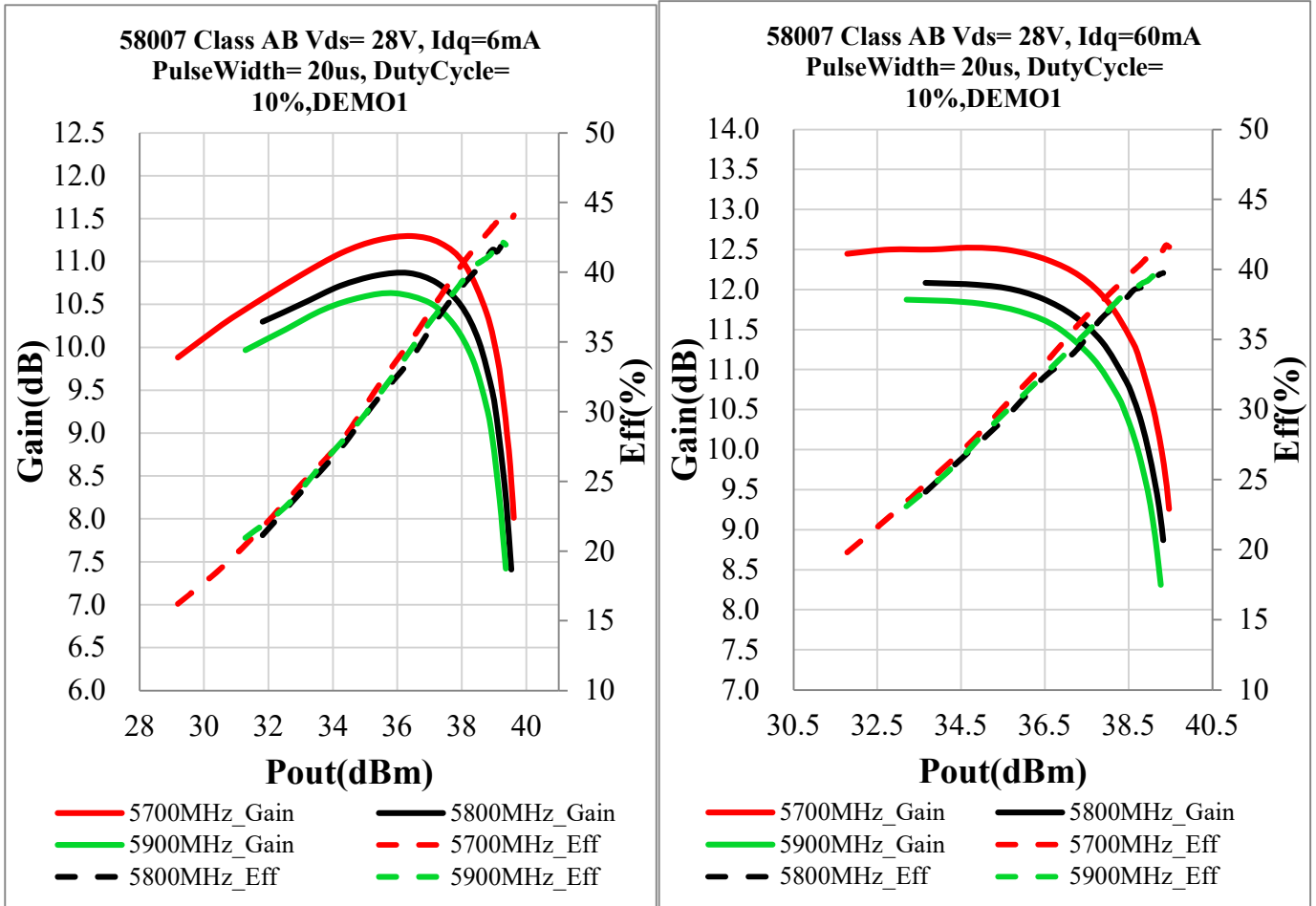
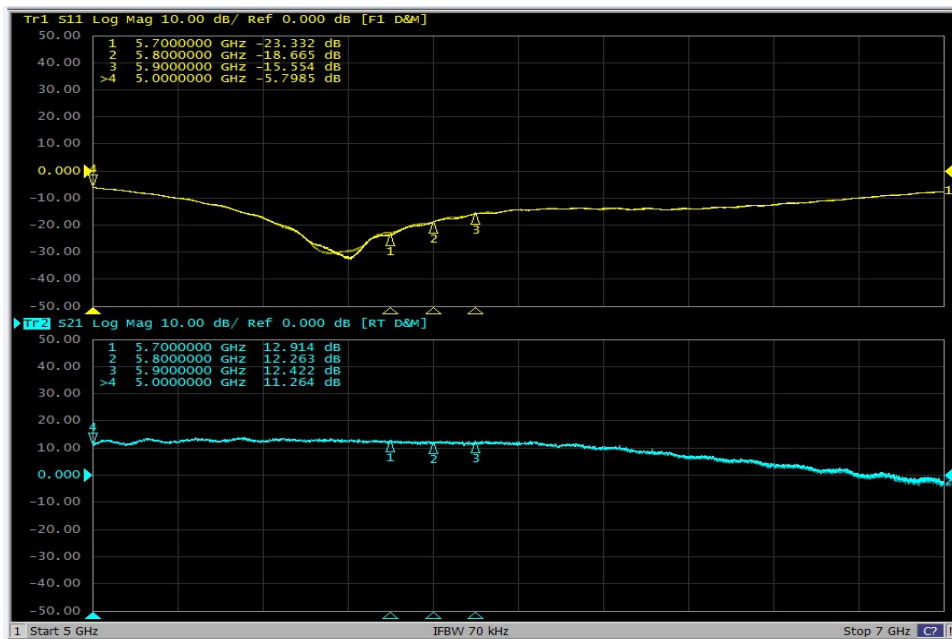
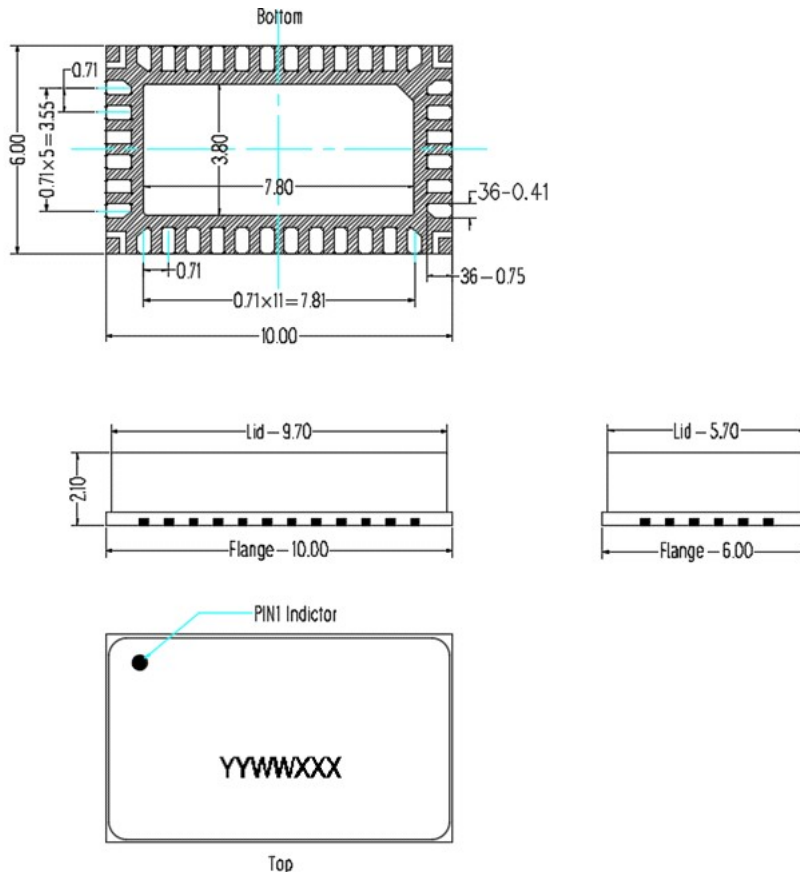


Figure 4. Network analyzer output S11/S21



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
2022/8/15	Rev 1.0	Preliminary Datasheet
2022/12/9	Rev 1.1	Update on Pin Definition

Application data based on ZXY-22-32

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