



45W,28V Plastic RF LDMOS Transistor

ITEH35045C6

Description

The ITEH35045C6 is a 45-watt, highly rugged, LDMOS transistor, designed for any general applications at frequencies 2.7 to 3.5GHz, in 10*6mm QFN plastic package, supporting surface mounted on PCB through high density grounding vias.

• Typical 2.7-3.1GHz Class AB RF Performance (On Innegration fixture with device soldered).

VDS=28V, IDQ=10mA, Vgs=2.4V

Freq	P1dB	P1dB	P1dB Eff	P1dB Gain	P3dB	P3dB	P3dB Eff
(MHz)	(dBm)	(W)	%	dB	(dBm)	(W)	%
2700.00	47.07	50.90	46.09	9.75	47.62	57.83	47.60
2900.00	46.92	49.25	48.45	9.79	47.66	58.29	49.88
3100.00	46.32	42.81	48.39	9.71	46.76	47.39	48.82

• Typical 3.1-3.5GHz Class AB RF Performance (On Innegration fixture with device soldered).

VDS=28V, IDQ=10mA, Vgs=2.4V

Freq	P1dB	P1dB	P1dB	P1dB	P3dB	P3dB	P3dB
(MHz)	(dBm)	(W)	Eff (%)	Gain (dB)	(dBm)	(W)	Eff (%)
3100	46.71	46.9	40.7	10.81	47.53	56.6	43.0
3400	46.43	44.0	45.8	11.38	47.15	51.9	47.1
3500	45.89	38.8	42.8	10.99	46.59	45.6	43.7

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

- S band pulse power amplifier

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
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Thermal Resistance, Junction to Case $T_C = 85^{\circ}\text{C}$, $T_J = 200^{\circ}\text{C}$, DC test	$R_{\theta JC}$	0.5	$^{\circ}\text{C/W}$
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Table 3. ESD Protection Characteristics

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

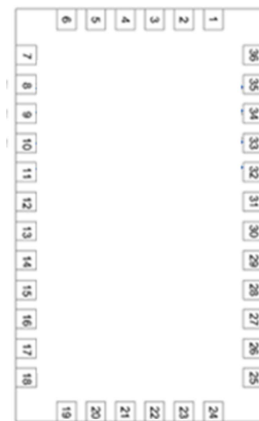
Table 4. Electrical Characteristics ($T_A = 25^{\circ}\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics					
Drain-Source Voltage $V_{GS} = 0$, $I_{DS} = 100\mu\text{A}$	$V_{(BR)DSS}$		65		V
Zero Gate Voltage Drain Leakage Current ($V_{DS} = 28\text{V}$, $V_{GS} = 0\text{V}$)	I_{DSS}	—	—	1	μA
Gate--Source Leakage Current ($V_{GS} = 11\text{V}$, $V_{DS} = 0\text{V}$)	I_{GSS}	—	—	1	μA
Gate Threshold Voltage ($V_{DS} = 28\text{V}$, $I_D = 600\mu\text{A}$)	$V_{GS(th)}$	—	2	—	V
Gate Quiescent Voltage ($V_{DD} = 28\text{V}$, $I_D = 10\text{mA}$, Measured in Functional Test)	$V_{GS(Q)}$	—	2.4	—	V

Load Mismatch (In Innegration Test Fixture, 50 ohm system): $V_{DD} = 28\text{Vdc}$, $I_{DQ} = 10\text{mA}$, $f = 3500\text{MHz}$

VSWR 10:1 at 45W 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.

3100-3500MHz

Reference Circuit of Test Fixture Assembly Diagram RO4350B 20mils

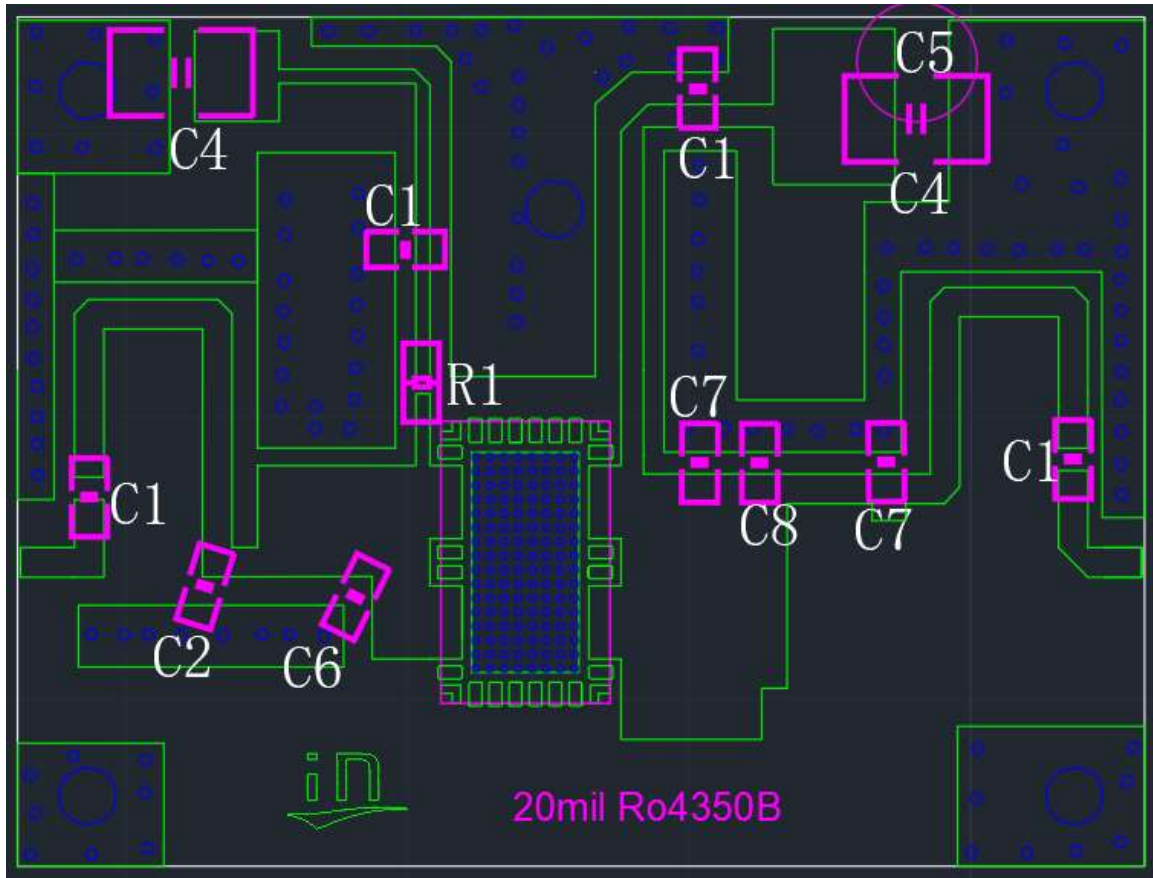


Figure 2. Test Circuit Component Layout

Table 5. Test Circuit Component Designsations and Values

Component	Value	Quantity
C1	8.2pF	4
C4	10uF	2
R1	10 ohm	1
C2	0.5pF	1
C5	470uF	1
C6	1.2pF	1
C7	0.1pF	2
C8	1.1pF	1

TYPICAL CHARACTERISTICS

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

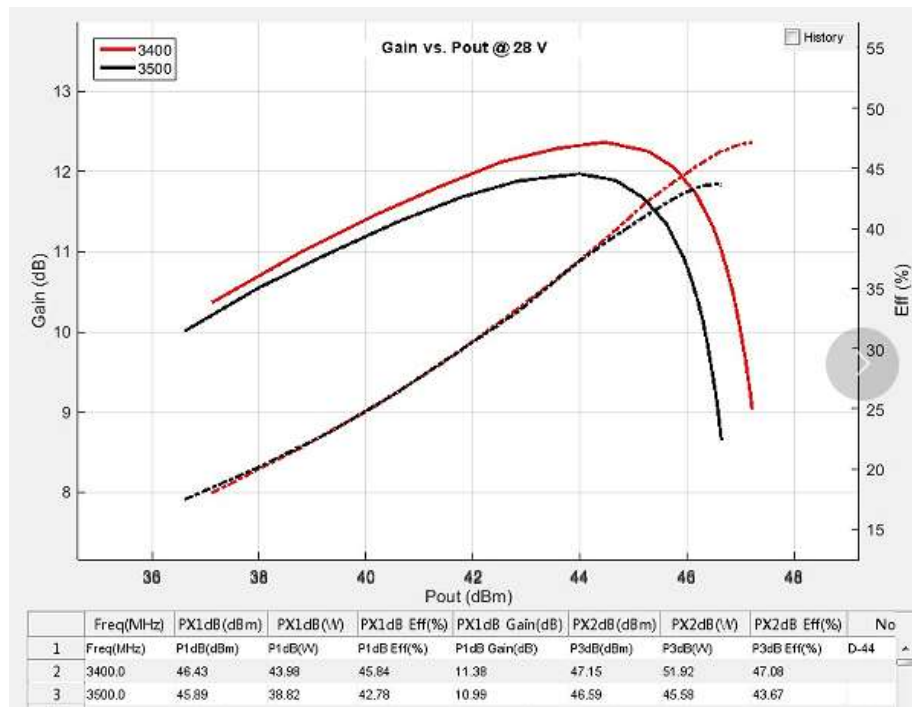
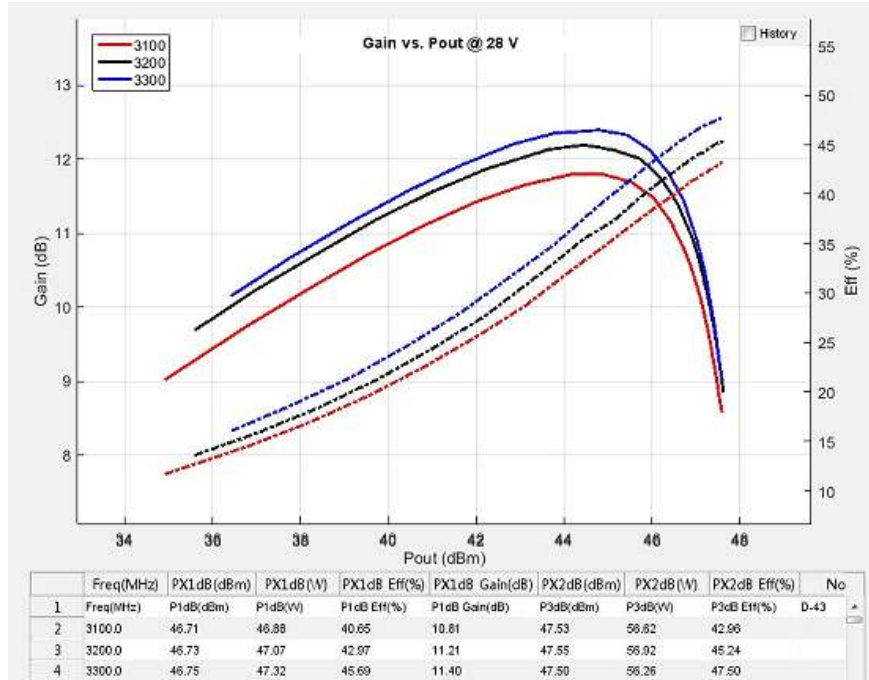




Figure 4. Network analyzer output S11/S21



2700-3100MHz

Reference Circuit of Test Fixture Assembly Diagram
RO4350B 20mils

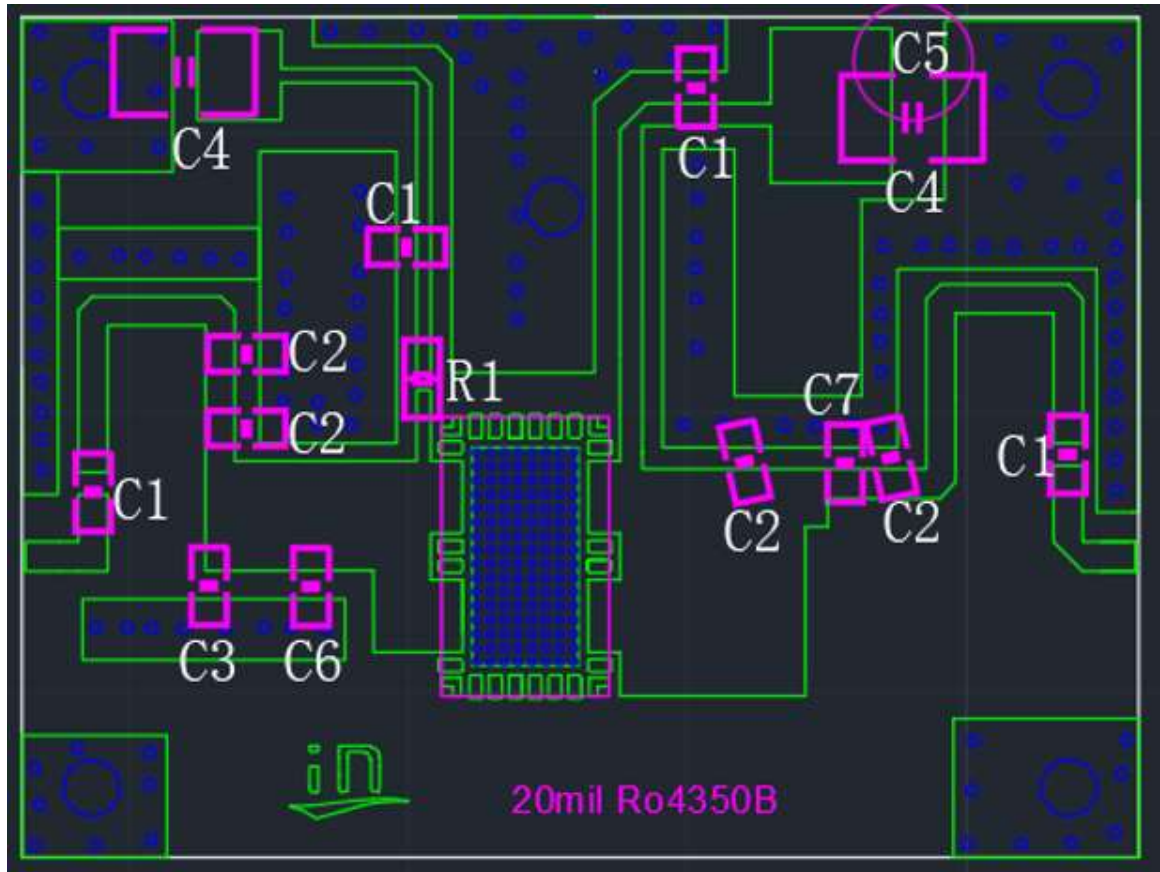


Figure 2. Test Circuit Component Layout

Table 6. Test Circuit Component Designations and Values

Component	Value	Quantity
C1	8.2pF	4
C4	10uF	2
R1	10 ohm	1
C2	0.2pF	4
C5	470uF	1
C6	1.5pF	1
C7	1.1 pF	1
C3	0.3 pF	1

TYPICAL CHARACTERISTICS

Figure 5. Power Gain and Drain Efficiency as function of Power Out

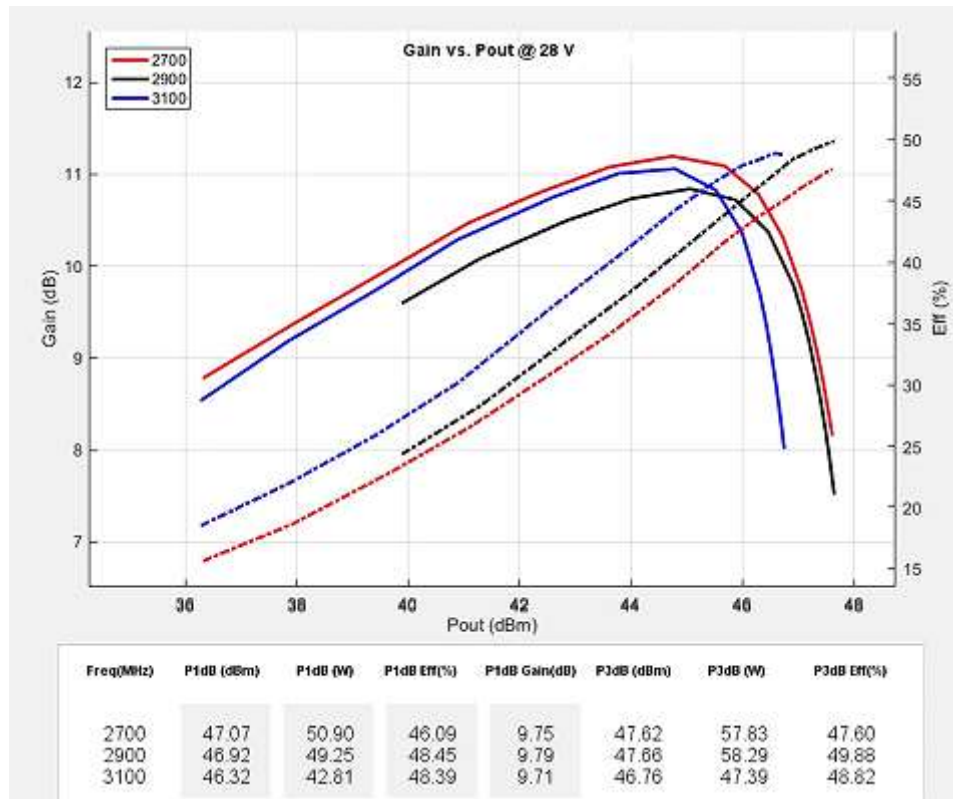
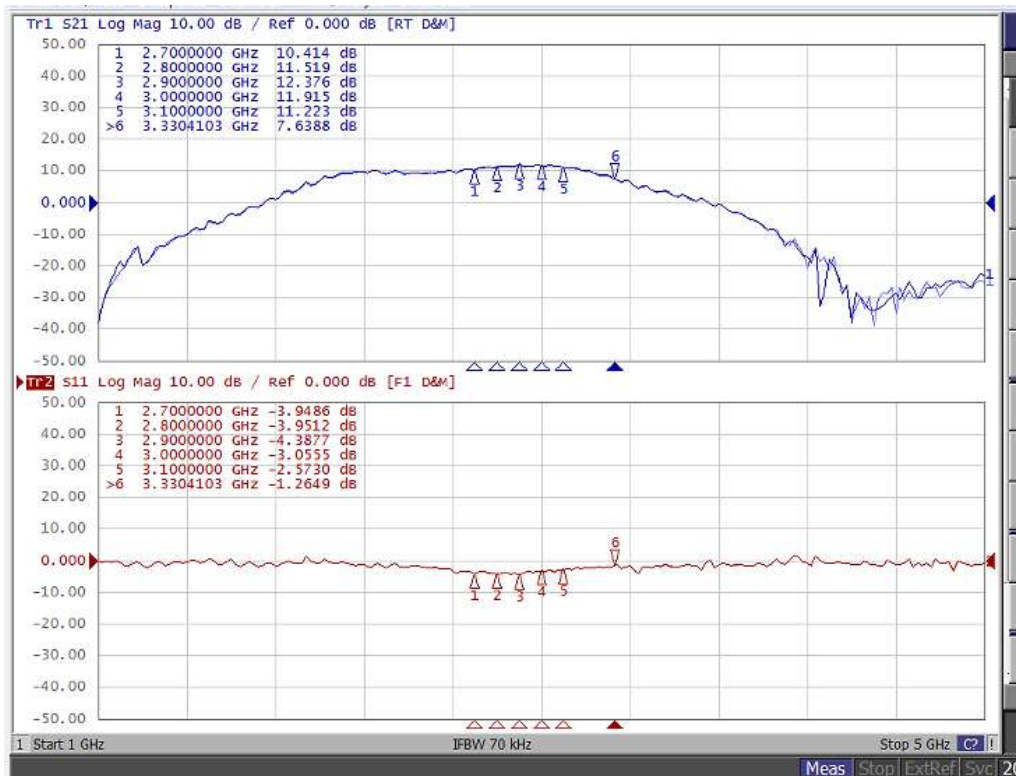


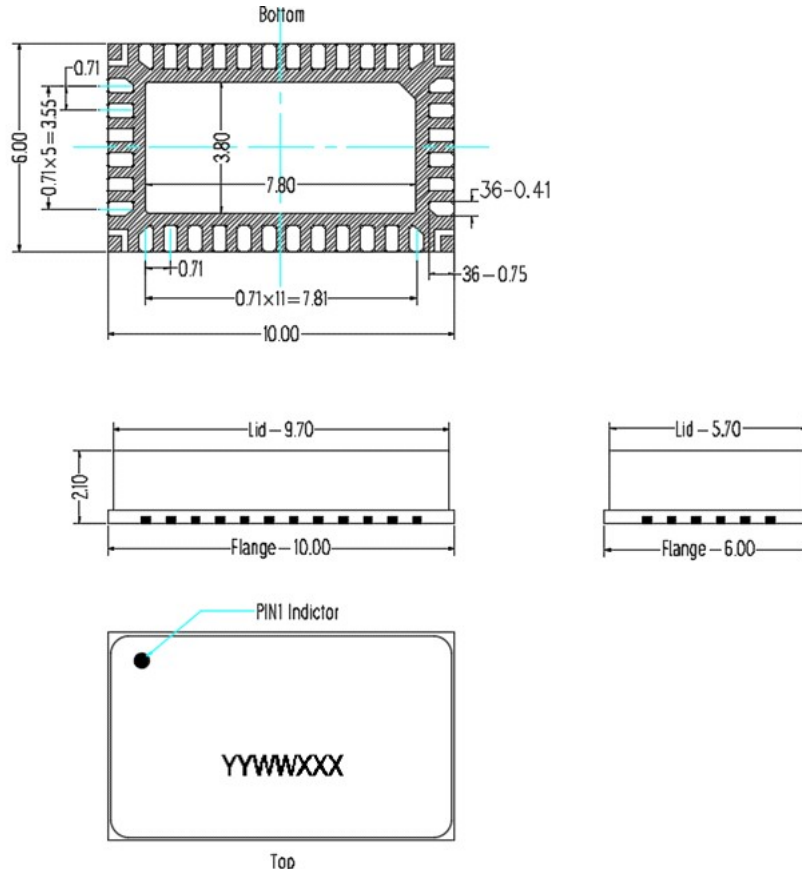
Figure 6. Network analyzer output S11/S21





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
2024/5/17	Rev 1.0	Preliminary Datasheet

Application data based on ZXY-24-13/14

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