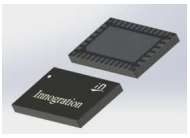
6W,50V Plastic RF LDMOS Transistor

ITGV27006C6



Description

The ITGV27006C6 is a 6-watt, highly rugged, LDMOS transistor, designed for any general applications at frequencies up to 2.7GHz, in 10*6mm QFN plastic package, supporting surface mounted on PCB through high density grounding vias.

At deep back off, It can be the good candidate as driver or predriver for 50V GaN transistors, as it is highly cost effective and DPD friendly

- Typical **2.5-2.7GHz narrow band** Class AB RF Performance (On Innogration fixture with device soldered).

Vds=50V

Freq (MHz)	Pulse CW Signal(1)			P_{avg}=25dBm WCDMA Signal(2)		
	Gain P1dB (dB)	P3dB (W)	Eff@P3dB (%)	Gp (dB)	Eff(%)	$ACPR_{5M}$ (dBc)
2500	14.14	6.4	40	15.2	9.57	-41.32
2600	15.71	6.7	43	16.5	10.07	-41.84
2700	14.60	6.2	40	15.6	9.73	-42.15

(1)Idq=5mA, (2) Idq=30mA

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 power amplifier driver
- All 4G/5G cellular application within 2.3 to 2.7GHz
- RF Energy at 2.45GHz

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DSS}	+110	Vdc
Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+55	Vdc
Storage Temperature Range	Tstg	-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	$R_{\theta JC}$	12	°C/W

Table 3. ESD Protection Characteristics

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

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

Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics					
Drain-Source Voltage V_{GS}=0, I_{DS}=100uA	$V_{(BR)DSS}$		110		V
Zero Gate Voltage Drain Leakage Current (V_{DS} = 90V, V_{GS} = 0 V)	I_{DSS}	——	——	1	μA
Gate--Source Leakage Current (V_{GS} = 11 V, V_{DS} = 0 V)	I_{GSS}	——	——	1	μA
Gate Threshold Voltage (V_{DS} = 50V, I_D = 600 μA)	$V_{GS(th)}$	——	2	——	V
Gate Quiescent Voltage (V_{DD} = 50V, I_D = 30mA, Measured in Functional Test)	$V_{GS(Q)}$	——	3.6	——	V

Load Mismatch (In Innogration Test Fixture, 50 ohm system): V_{DD} = 50Vdc, I_{DQ} = 60 mA, f = 2700 MHz

VSWR 10:1 at 6W pulse CW Output Power	No Device Degradation

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.

2.6GHz application board

Reference Circuit of Test Fixture Assembly Diagram
20mils RO4350B

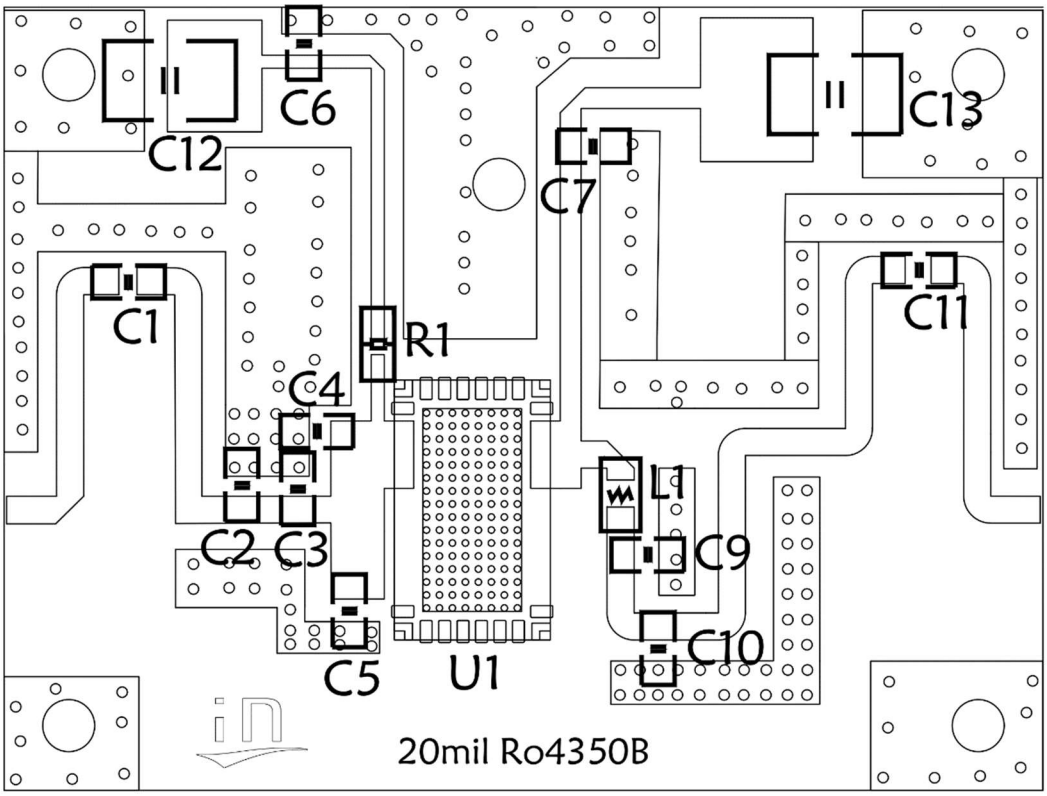


Figure 2. Test Circuit Component Layout

Table 5. Test Circuit Component Designations and Values

Reference	Footprint	Value	Quantity
C1, C6, C7, C11	0603	10pF/250V	4
C2, C9	0603	0.3pF/250V	2
C3	0603	1.1pF/250V	1
C4, C5	0603	1.5pF/250V	2
C10	0603	1.0pF/250V	1
L1	0603	2.2nH	1
C12, C13	1210	10uF/100V	2
R1	0603	10R	1
U1	C6	ITGV27006C6	1

TYPICAL CHARACTERISTICS

Figure 2. Power Gain and Drain Efficiency as function of Power Output at Idq =5mA

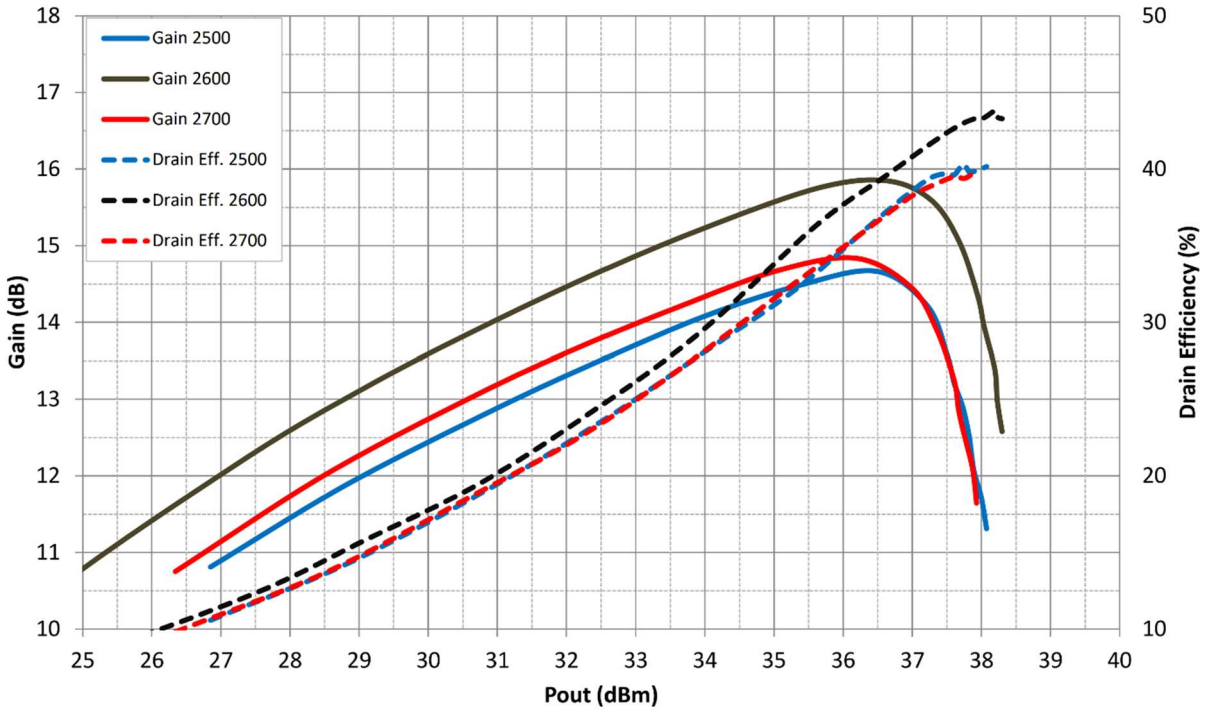
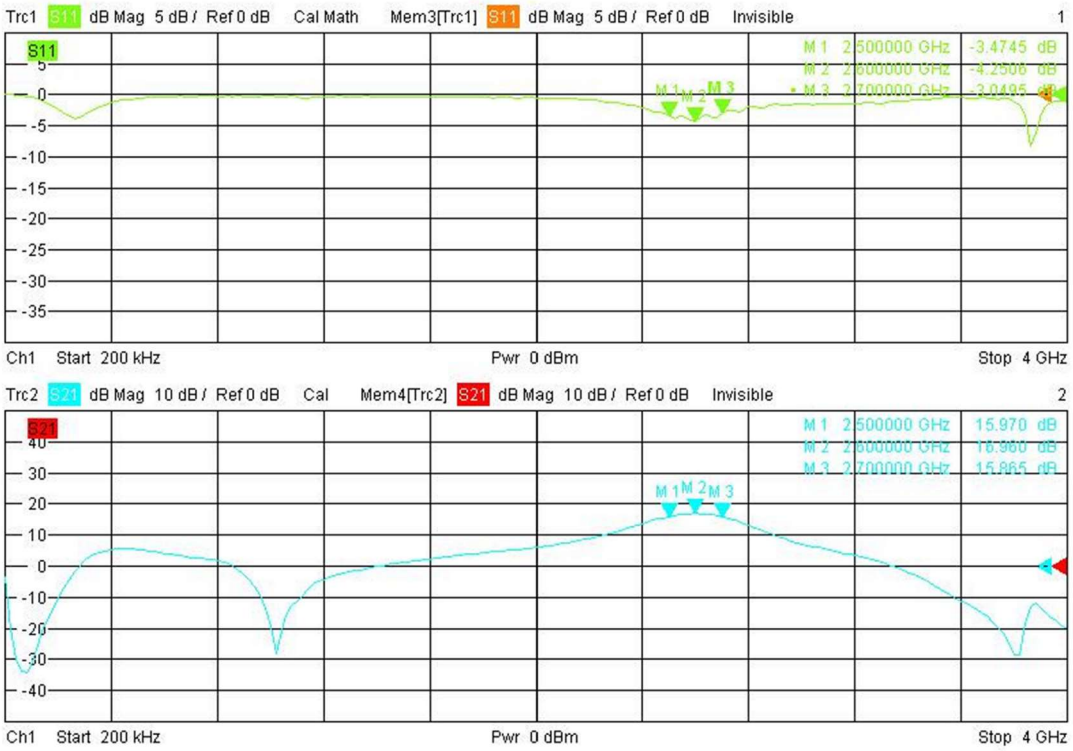
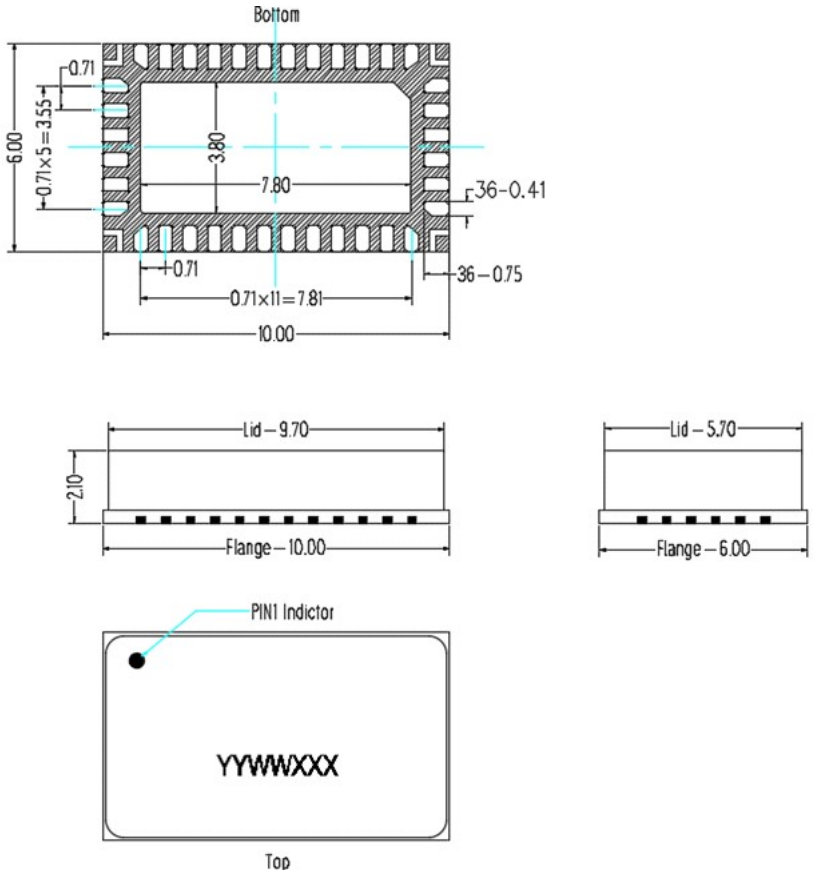


Figure 3.Network analyzer output S11/S21



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
2023/9/25	**Rev 1.0**	**Preliminary Datasheet**

Application data based on ZBB-23-30

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