



20W,50V Plastic RF LDMOS Transistor

Description

The ITGV27020C6 is a 10-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 Innegration fixture with device soldered).

V_{ds}=50V

Freq (MHz)	Pulse CW Signal Idq=5mA			P _{avg} =31dBm WCDMA Signal, Idq=65mA		
	Gain P1dB (dB)	P4dB (W)	Eff@P4dB (%)	Gp (dB)	Eff(%)	ACPR _{5M} (dBc)
2500	15.46	22.0	46.2	17.7	12.8	-43.2
2600	16.22	23.7	53.7	18.6	14.1	-45.5
2700	15.06	20.7	47.4	17.5	13.4	-45.5

ITGV27020C6



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	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}	4.5	°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}		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 = 65mA, Measured in Functional Test)	V _{GS(Q)}	—	3.45	—	V

Load Mismatch (In Innegration Test Fixture, 50 ohm system): V_{DD} = 50Vdc, I_{DQ} = 65 mA, f = 2700 MHz

VSWR 10:1 at 20W 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.

2.5-2.7GHz application board

Reference Circuit of Test Fixture Assembly Diagram 20mils RO4350B

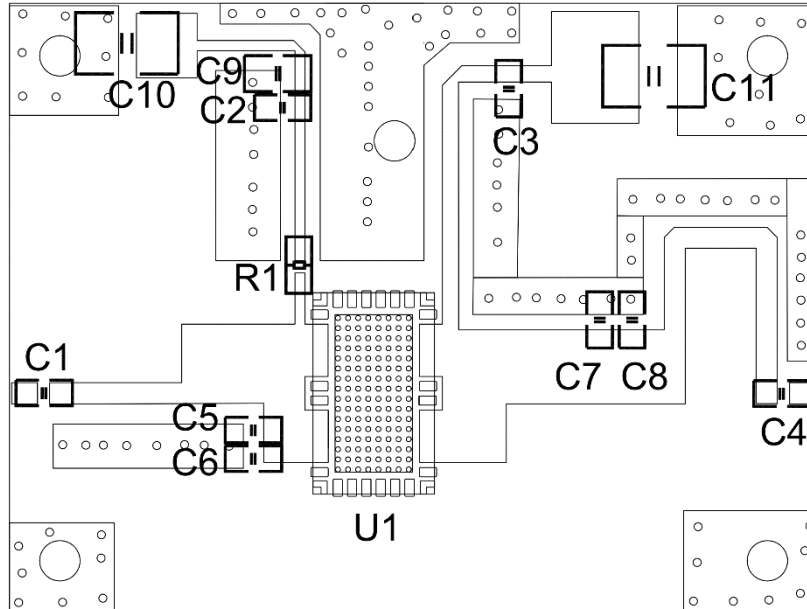


Figure 2. Test Circuit Component Layout

Table 5. Test Circuit Component Designations and Values

Reference	Footprint	Value	Quantity
C2, C3, C4	0603	22pF/250V	3
C1	0603	3.0pF/250V	1
C5	0603	0.2pF/250V	1
C6	0603	1.6pF/250V	1
C7	0603	1.0pF/250V	1
C8	0603	1.5pF/250V	1
C9	0603	10uF/16V	1
C10, C11	1210	10uF/100V	2
R1	0603	10R	1
U1	C6	ITGV27020C6	1

TYPICAL CHARACTERISTICS

Figure 2. Power Gain and Drain Efficiency as function of Power Output at $I_{dQ} = 65\text{mA}$

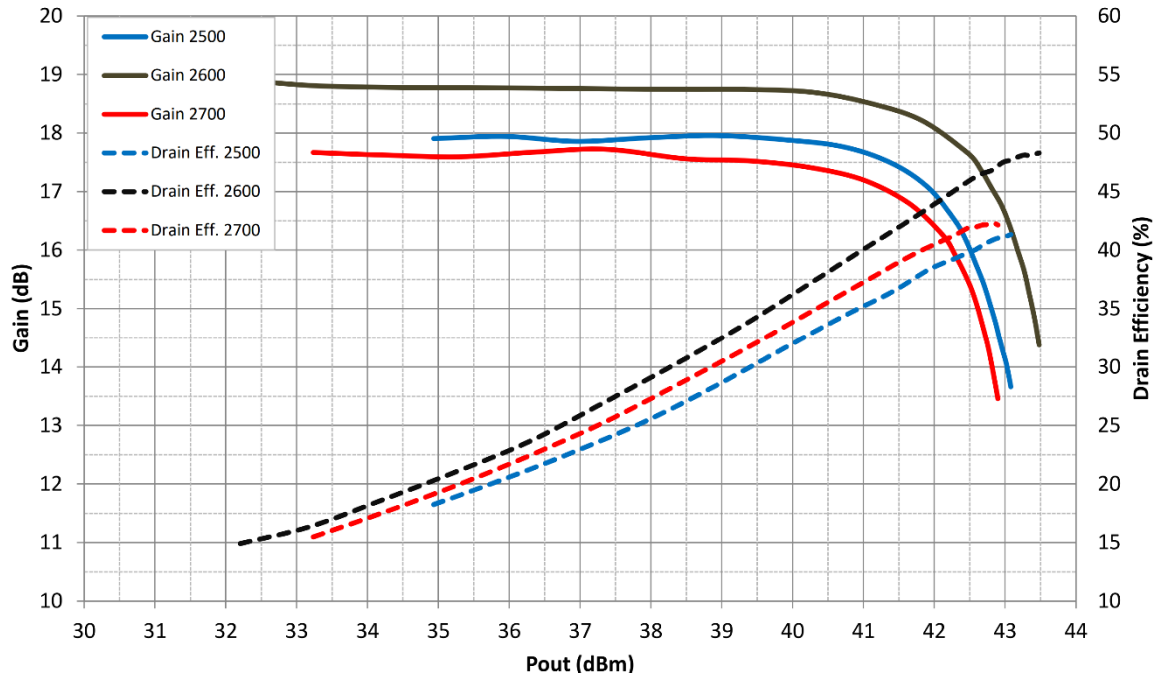
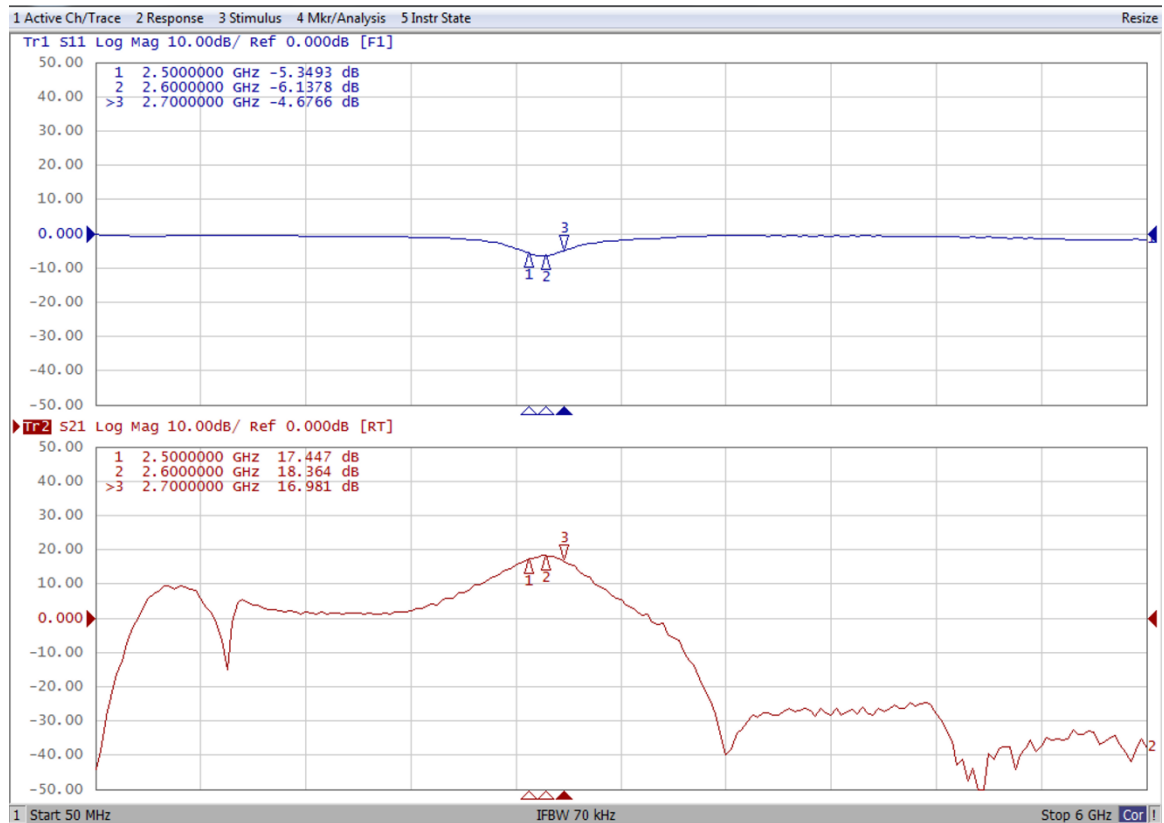


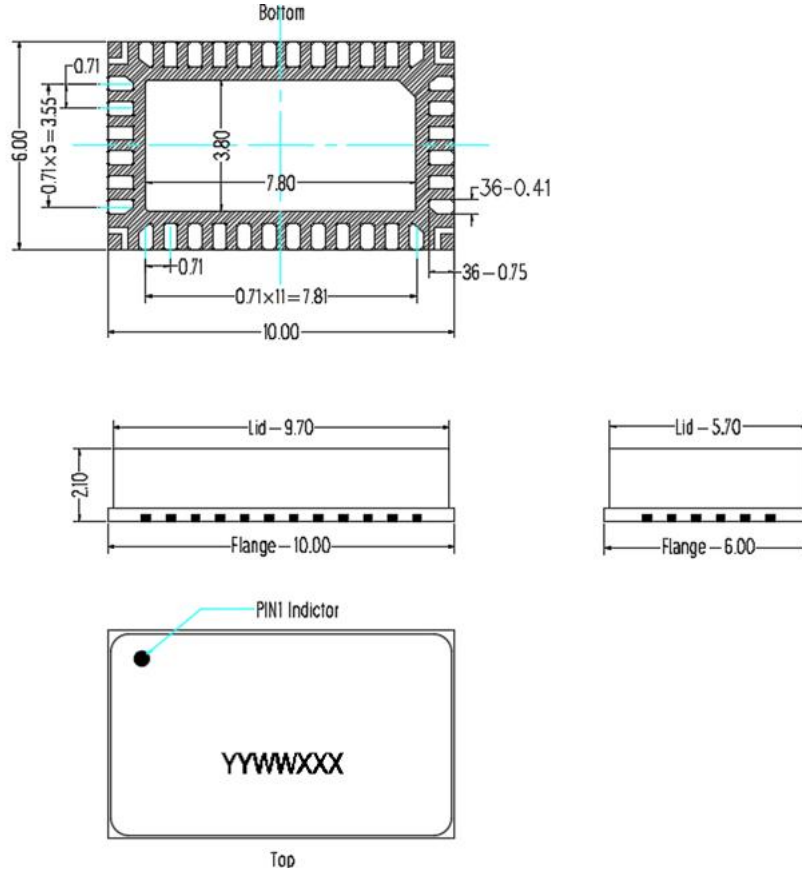
Figure 3. Network analyzer output S11/S21





Package Dimensions

10*6 Plastic Package



Notes:

1. All dimensions are in mm;
2. The tolerances unless specified are $\pm 0.2\text{mm}$.

Revision history

Table 7. Document revision history

Date	Revision	Datasheet Status
2024/9/20	Rev 1.0	Preliminary Datasheet

Application data based on ZBB-24-40

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