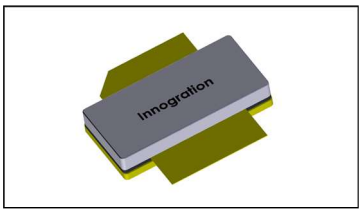
1.3-1.7GHz, 230W, 28V High Power RF LDMOS FETs

Description

The ITGH16231BY2 is a 230-watt, internally matched LDMOS FET, designed for multicarrier WCDMA/PCS/DCS/LTE base station and ISM applications with frequencies from 1300 to 1700 MHz. It Can be used in Class AB/B and Class C for all typical cellular base station modulation formats.



•Typical Performance (On Innogration fixture with device soldered):

ITGH16231BY2^{V0} Vgs=2.40V Vds=28V Idq=120mA CW								
Freq (MHz)	**Psat (dBm)**	**Psat (W)**	**IDS (A)**	**Pin (dBm)**	**Gain (dB)**	**Eff (%)**	**2nd （dBc）**	**3rd （dBc）**
1410	54.33	271.0	16.02	40.05	14.28	60.42	-39.8	-28.9
1420	54.13	258.8	15.30	40.12	14.01	60.42	-39.00	-29.00
1430	54.02	252.3	14.64	40.11	13.91	61.56	-38.00	-29.00
1440	53.80	239.9	13.94	39.96	13.84	61.46	-36.80	-30.60
1450	53.51	224.4	13.20	40.09	13.42	60.71	-36.00	-30.40
1460	53.30	213.8	12.60	40.26	13.04	60.60	-35.10	-30.70

Features

- High Efficiency and Linear Gain Operations
- Integrated ESD Protection
- Internally Matched for Ease of Use
- Excellent thermal stability, low HCI drift
- Large Positive and Negative Gate/Source Voltage Range for Improved Class C Operation
- Pb-free, RoHS-compliant

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}	+32	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	RθJC	0.32	°C/W

Table 3. ESD Protection Characteristics

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

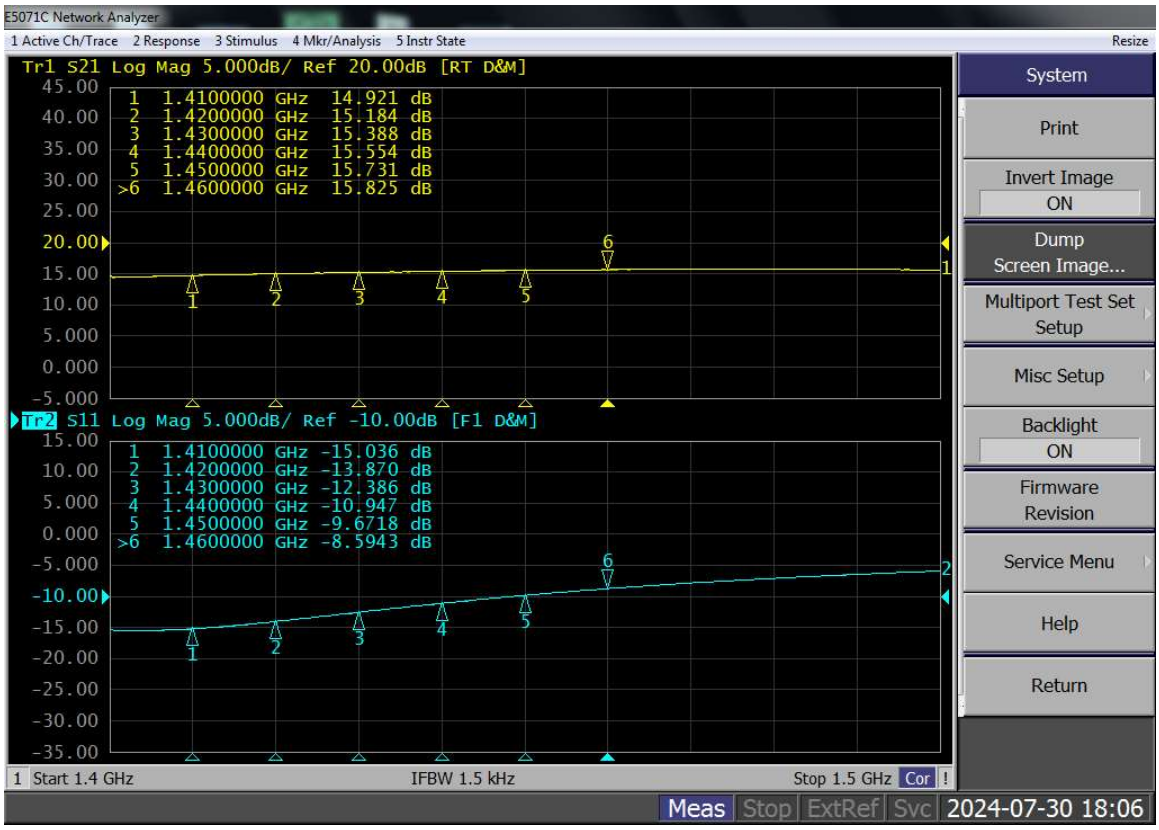
Table 4. Electrical Characteristics (TA = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics					
Drain-Source Breakdown Voltage (V_{GS}=0V; I_D=100uA)	V_{DSS}	65			V
Zero Gate Voltage Drain Leakage Current (V_{DS} = 28 V, V_{GS} = 0 V)	I_{DSS}			10	μA
Gate--Source Leakage Current (V_{GS} = 6 V, V_{DS} = 0 V)	I_{GSS}			1	μA
Gate Threshold Voltage (V_{DS} = 28V, I_D = 600 uA)	$V_{GS(th)}$		1.6		V
Gate Quiescent Voltage (V_{DD} = 28 V, I_{DQ} = 800 mA, Measured in Functional Test)	$V_{GS(Q)}$	2.2	2.7	3.2	V

Load Mismatch (In Innogration Test Fixture, 50 ohm system): V_{DD} = 28 Vdc, I_{DQ} = 800 mA, f = 1500 MHz

VSWR 10:1 at 230W pulse CW Output Power	No Device Degradation

Figure 1: Network analyzer output S11/S21 (Vds=28V, Idq=500mA)



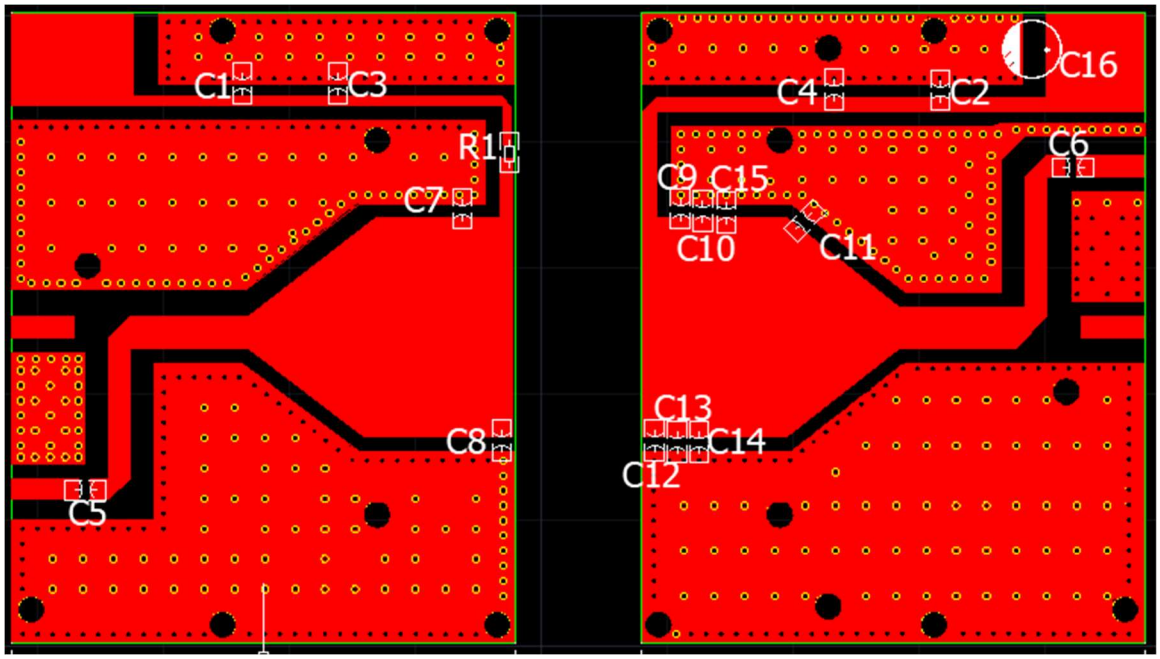
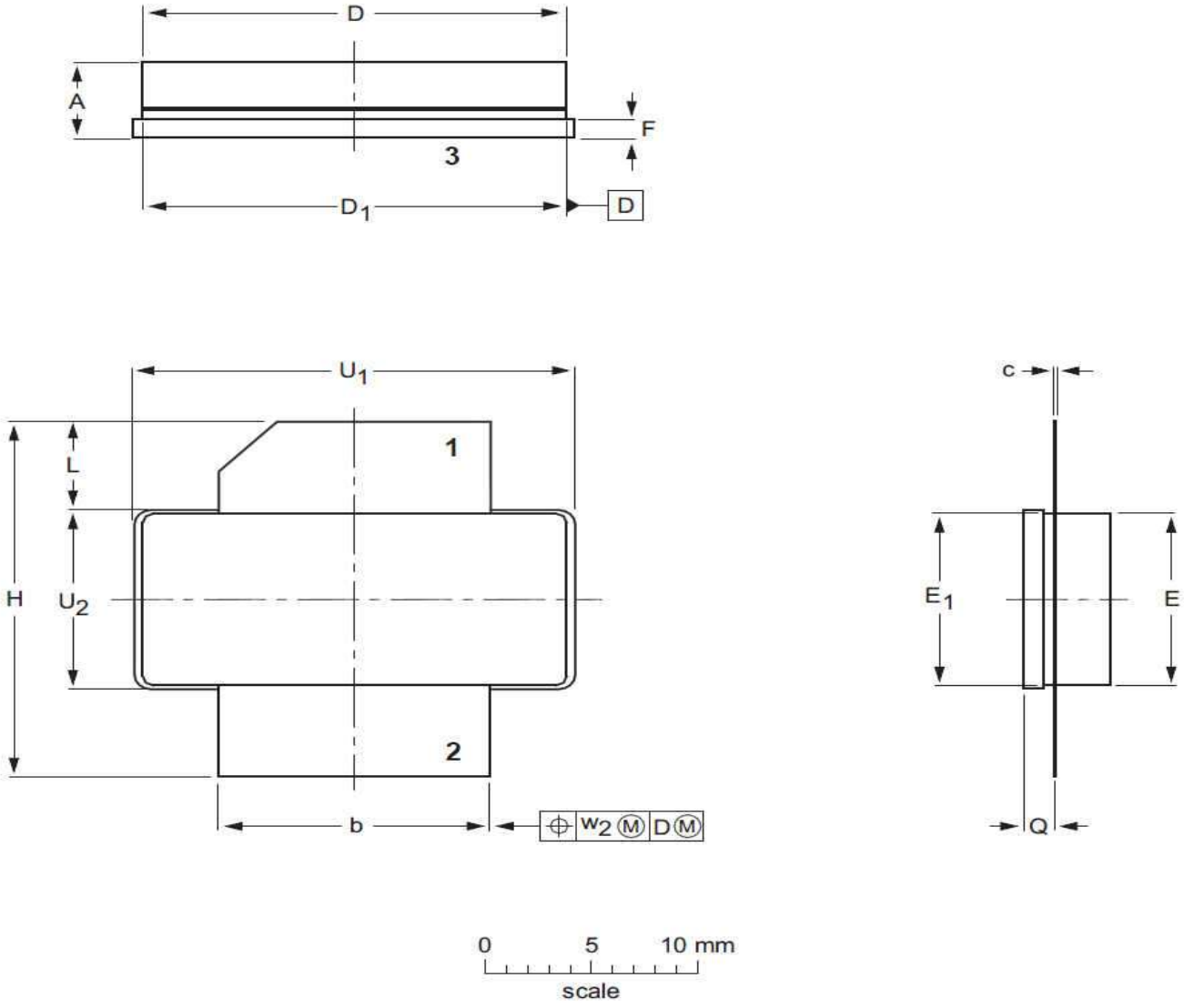


Table 5: BOM of Test Circuit(1350-1400MHz)

Component	Description	Suggestion
C1,C2	10uF/200V-1210	Ceramic multilayer capacitor
C3~C6	39pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ01111
C7	2.4pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ101111
C8	3.6pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ101111
C9	2.7pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ101111
C10,C13	0.8pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ101111
C11	3.6pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ101111
C12,C14	3pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ101111
C15	0.5pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ101111
C16	470uF/63V	Electrolytic Capacitor
R1	10Ω-1206	Chip Resistor
PCB	30Mil Rogers4350	

Package Outline Package Outline

Earless flanged ceramic package; 2 leads（1—DRAIN、2—GATE、3—SOURCE）



UNIT	A	b	c	D	D_1	E	E_1	F	H	L	Q	U_1	U_2	W_2
mm	4.72	12.83	0.15	20.02	19.96	9.50	9.53	1.14	19.94	5.33	1.70	20.70	9.91	0.25
	3.43	12.57	0.08	19.61	19.66	9.30	9.25	0.89	18.92	4.32	1.45	20.45	9.65	
inches	0.186	0.505	0.006	0.788	0.786	0.374	0.375	0.045	0.785	0.210	0.067	0.815	0.390	0.010
	0.135	0.495	0.003	0.772	0.774	0.366	0.364	0.035	0.745	0.170	0.057	0.805	0.380	

OUTLINE VERSION	REFERENCE			EUROPEAN PROJECTION	ISSUE DATE
	IEC	JEDEC	JEITA		
PKG-B2					03/12/2013

Revision history

Table 6. Document revision history

Date	Revision	Datasheet Status
2024/7/31	Rev 1.0	Preliminary datasheet creation to replace ITCH16230B2

Application data based on TC-24-48

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