

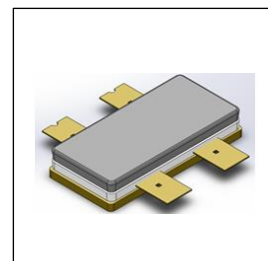
ITGV10160B4C LDMOS TRANSISTOR

Document Number: ITGV10160B4C
Preliminary Datasheet V1.0

40Wx2, HF to UHF, 28V High Power RF LDMOS FETs

Description

The ITGV10160B4C is a 80-watt, Push Pull, high performance, highly rugged, unmatched LDMOS transistor, designed for any general applications at frequencies from HF to UHF, in new generation highly cost effective open cavity package.



- Typical broadband CW performance

ITGV10160B4C VGS=3.3V VDS=28V IDQ=100mA CW								
Freq(MHz)	Pout(dBm)	Pout(W)	IDS(A)	Pin(dBm)	Gain(dB)	Eff(%)	2 nd (dBc)	3 rd (dBc)
100	49.9	97.72	5.68	32.03	17.87	61.45	-19.3	-9.6
150	50.22	105.20	6.02	31.8	18.42	62.41	-29.1	-10.6
200	50.48	111.69	6.17	31.71	18.77	64.65	-33.6	-11.1
250	50.66	116.41	5.96	31.3	19.36	69.76	-32.9	-11.0
300	50.23	105.44	5.33	30.18	20.05	70.65	-47.9	-11.1
350	50.16	103.75	5.70	29.86	20.3	65.01	-39.9	-13.8
400	49.86	96.83	5.55	29.84	20.02	62.31	-33.4	-15.7
450	49.6	91.20	5.63	30.04	19.56	57.85	-31.5	-16.4
500	48.83	76.38	5.15	30	18.83	52.97	-36.0	-22.7

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

- 30-88MHz (Ground communication)
- 54-88MHz (TV VHF I)
- 88-108MHz (FM)
- 136-174MHz (Commercial ground communication)
- Laser Exciter
- Synchrotron
- MRI
- Plasma generator
- Weather Radar

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
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Thermal Resistance, Junction to Case $T_C = 85^{\circ}\text{C}$, $T_J = 200^{\circ}\text{C}$, DC test	$R_{\theta JC}$	0.9	$^{\circ}\text{C/W}$
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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
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DC Characteristics (per half section)

Drain-Source Voltage $V_{GS} = 0$, $I_{DS} = 1.0\text{mA}$	$V_{(BR)DSS}$		110		V
Zero Gate Voltage Drain Leakage Current ($V_{DS} = 75\text{V}$, $V_{GS} = 0\text{V}$)	I_{DSS}	—	—	1	μA
Zero Gate Voltage Drain Leakage Current ($V_{DS} = 28\text{V}$, $V_{GS} = 0\text{V}$)	I_{DSS}	—	—	1	μA
Gate--Source Leakage Current ($V_{GS} = 10\text{V}$, $V_{DS} = 0\text{V}$)	I_{GSS}	—	—	1	μA
Gate Threshold Voltage ($V_{DS} = 28\text{V}$, $I_D = 600\mu\text{A}$)	$V_{GS(th)}$	—	2.65	—	V
Gate Quiescent Voltage ($V_{DD} = 28\text{V}$, $I_D = 750\text{mA}$, Measured in Functional Test)	$V_{GS(Q)}$	—	3.5	—	V

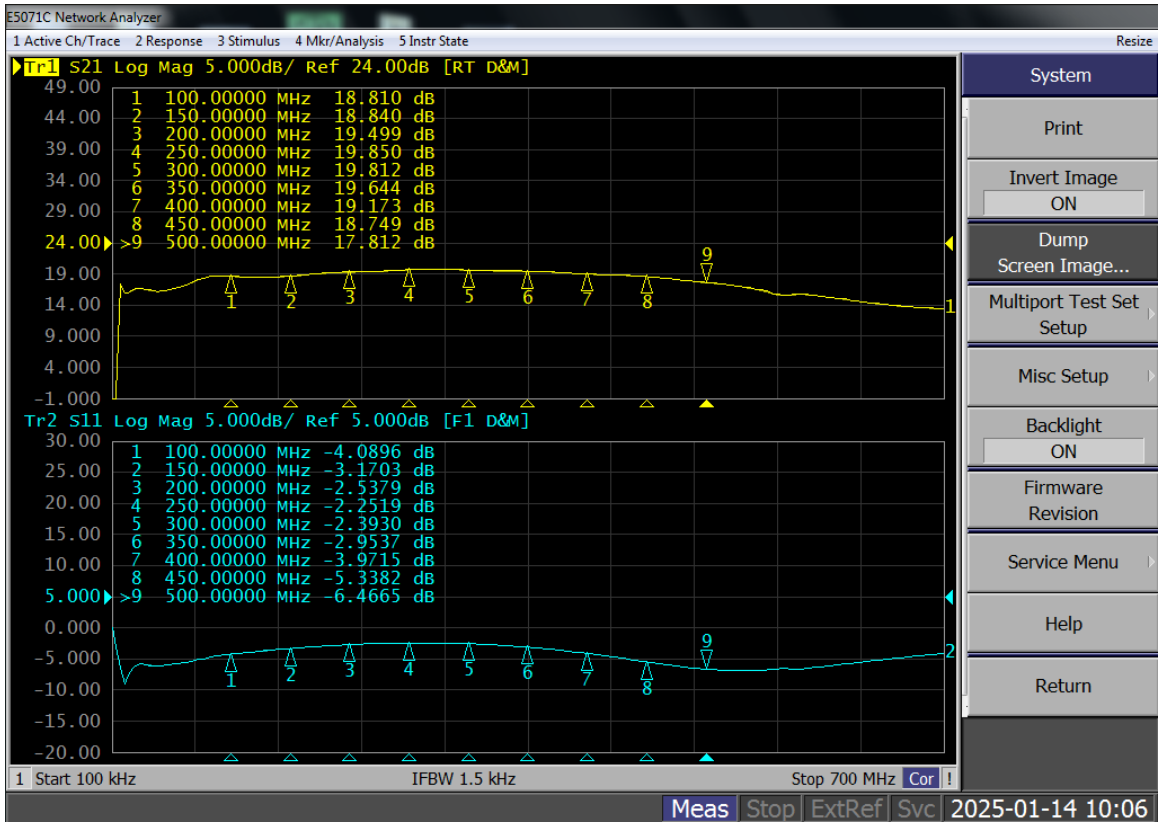
Load Mismatch (In Innogration Test Fixture, 50 ohm system): $V_{DD} = 28\text{Vdc}$, $I_{DQ} = 750\text{mA}$, $f = 700\text{MHz}$, pulse width:100us, duty cycle:10%

Load 10:1 All phase angles, at 80W Pulsed CW Output Power	No Device Degradation
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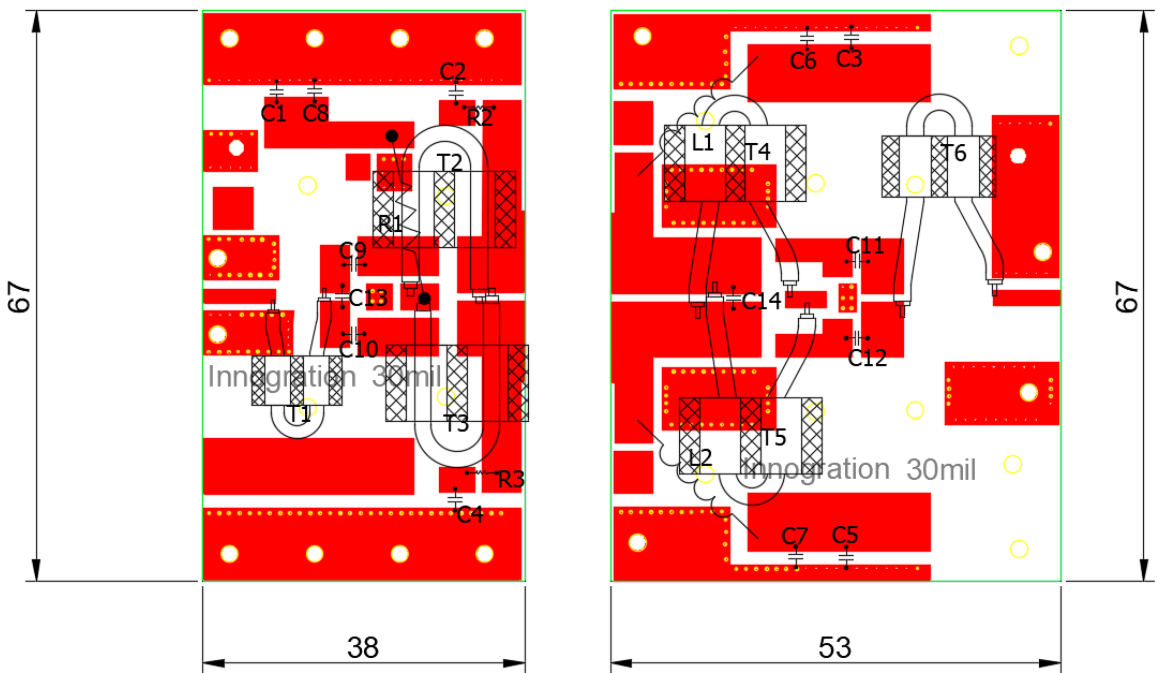
100-500MHz

TYPICAL CHARACTERISTICS

Figure 1: Network analyzer output S11/221



Reference Circuit of Test Fixture Assembly Diagram



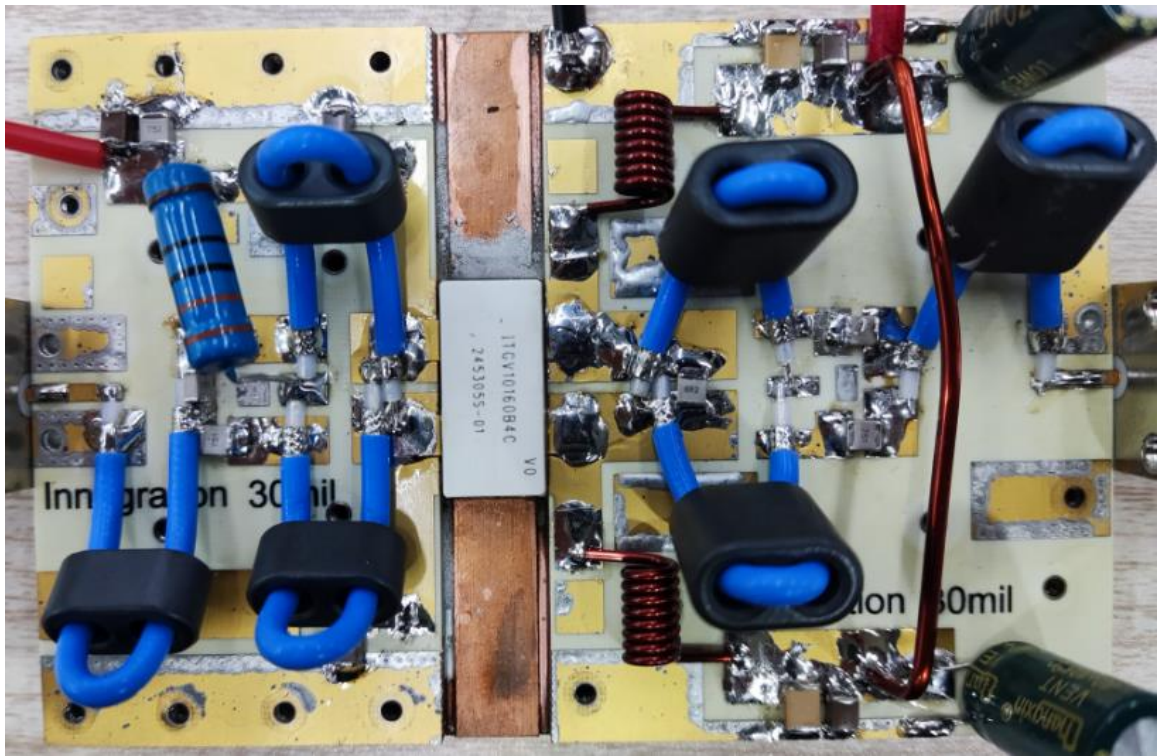
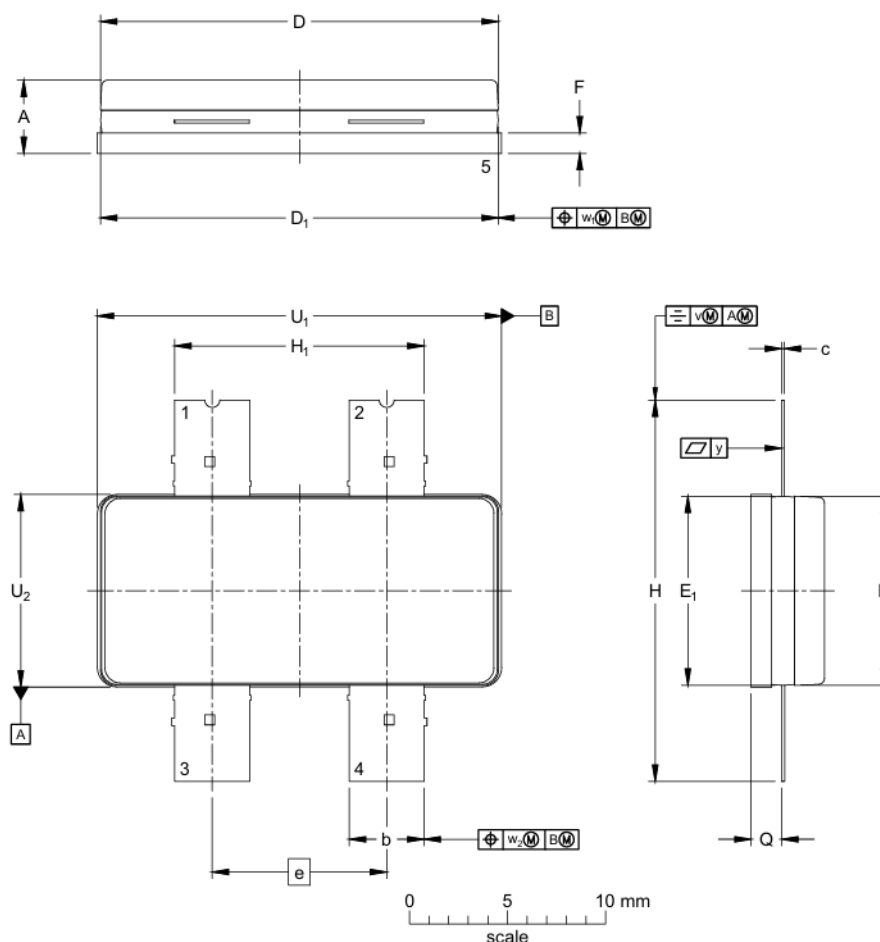


Table 5. Test Circuit Component Designations and Values

Component	Description	Suggestion
C1~C5	10uF/1210	Ceramic Multilayer Capacitor
C6,C7	10nF/1812	Ceramic Multilayer Capacitor
C8~C12	750pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ301111
C13	2.2pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ301111
C14	6.2pF	BEIJING YUANLU HONGYUAN ELECTRONIC TECHNOLOGY CO., LTD.MQ301111
T1	50ohm 65mm	SFRFBU-086-50 BN-61-1502
T2,T3	25ohm 65mm	SFRFBU-086-25 BN-61-1502
T4,T5	50ohm 65mm	SFRFBU-086-25 BN-61-202
T6	50ohm 65mm	SFRFBU-086-50 BN-61-202
L1,L2	φ 1mm Inner diameter 3.5mm 8 turns	DIY
R1	330 Ω	Resistor
R2,R3	51 Ω/1206	Chip Resistor
PCB	30Mil Rogers4350	

Earless Flanged Plastic Air Cavity Package; 4 leads



Dimensions		A	b	c	D	D ₁	E	E ₁	e	F	H	H ₁	Q ⁽¹⁾	U ₁	U ₂	v	w ₁	w ₂	y
mm	max	4.01	3.91	0.18	20.42	20.37	9.80	9.75	8.89	1.14	19.53	12.83	1.68	20.70	9.91	0.50	0.50	0.50	0.10
	min	3.40	3.71	0.13	20.12	20.17	9.50	9.55		0.94	19.33	12.57	1.45	20.50	9.70				

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2025/1/16	Rev 1.0	Preliminary Datasheet Creation

Application data based on HL-25-03

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