

# ITEV01600B4C LDMOS TRANSISTOR

Document Number: ITEV01600B4C  
Product Datasheet V1.0

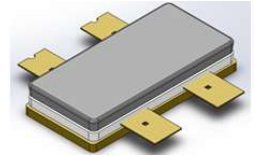
## 600W, 50V High Power RF LDMOS FETs

### Description

The ITEV01600B4C is a 600-watt capable, high performance, unmatched LDMOS FET, designed for HF/VHF. It can be used for both CW and pulse application.

It is featured for high power and high ruggedness, low cost, suitable for ISM RF Energy application.

**ITEV01600B4C**



- Typical Performance (On Innogration 13.56MHz fixture with device soldered):

ITEV01600B4C VGS=3.36V VDS=50V IDQ=200mA CW						
Freq(MHz)	Pout(dBm)	Pout(W)	IDS(A)	Pin(dBm)	Gain(dB)	Eff(%)
13.56	58.07	641.2	16.38	42	16.07	78.29
13.56	57.86	610.9	15.96	41	16.86	76.56
13.56	57.63	579.4	15.54	40	17.63	74.57
13.56	57.38	547.0	15.09	39	18.38	72.50
13.56	57.11	514.0	14.67	38	19.11	70.08
13.56	56.82	480.8	14.21	36.99	19.83	67.68
13.56	56.45	441.6	13.68	35.98	20.47	64.56
13.56	56.01	399.0	13.09	34.99	21.02	60.97

### Features

- High Efficiency and Linear Gain Operations
- Integrated ESD Protection
- On chip RC network enable high stability and ruggedness
- Large Positive and Negative Gate/Source Voltage Range for Improved Class C Operation
- Excellent thermal stability, low HCI drift
- Compliant to Restriction of Hazardous Substances (RoHS) Directive 2002/95/EC

**Table 1. Maximum Ratings**

Rating	Symbol	Value	Unit
Drain--Source Voltage	$V_{DSS}$	135	Vdc
Gate--Source Voltage	$V_{GS}$	-7 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 ,Case Temperature 80°C, 600W CW, 50 Vdc, IDQ = 200 mA	$R_{\theta JC}$	0.4	°C/W
Transient thermal impedance from junction to case $T_j = 150^\circ C$ ; $t_p = 100 \mu s$ ; Duty cycle = 20 %	$Z_{th}$	0.08	°C/W

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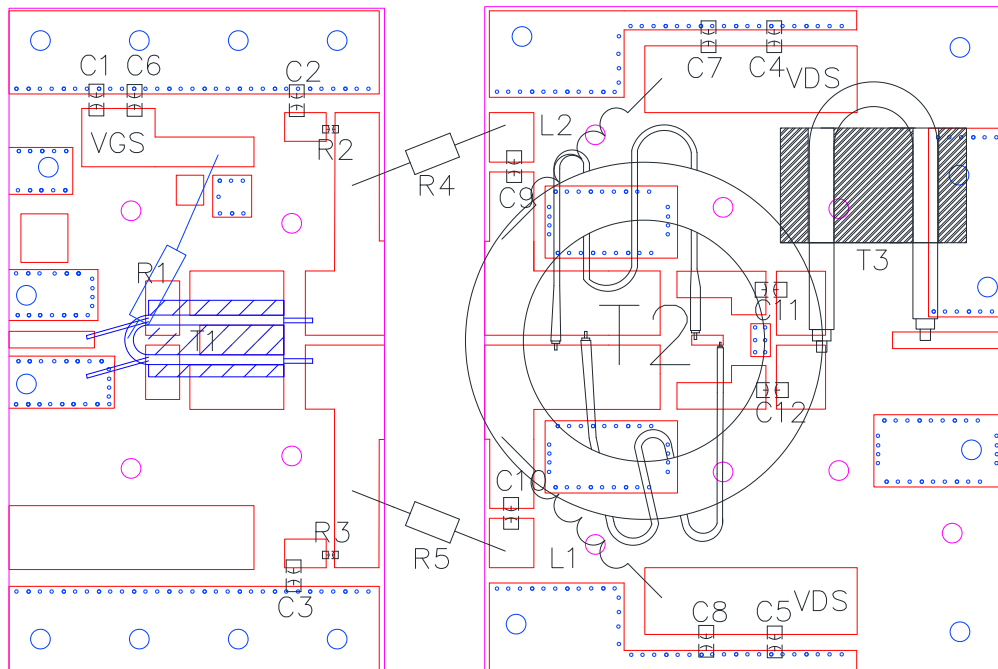
**Table 3. ESD Protection Characteristics**

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

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

Characteristic	Symbol	Min	Typ	Max	Unit
<b>DC Characteristics (Per Side)</b>					
Drain-Source Voltage V <sub>GS</sub> =0, I <sub>DS</sub> =18.0mA	V <sub>(BR)DSS</sub>	130			V
Zero Gate Voltage Drain Leakage Current (V <sub>DS</sub> = 50V, V <sub>GS</sub> = 0 V)	I <sub>DSS</sub>			1	μA
Gate—Source Leakage Current (V <sub>GS</sub> = 10 V, V <sub>DS</sub> = 0 V)	I <sub>GSS</sub>			1	μA
Gate Threshold Voltage (V <sub>DS</sub> = 50V, I <sub>D</sub> = 600 μA)	V <sub>GS(th)</sub>		2.6		V
Gate Quiescent Voltage (V <sub>DD</sub> = 50 V, I <sub>D</sub> = 200 mA, Measured in Functional Test)	V <sub>GS(Q)</sub>		3.36		V
Common Source Input Capacitance (V <sub>GS</sub> = 0V, V <sub>DS</sub> =50 V, f = 1 MHz) Each section side of device measured	C <sub>ISS</sub>		200		pF
Common Source Output Capacitance (V <sub>GS</sub> = 0V, V <sub>DS</sub> =50 V, f = 1 MHz) Each section side of device measured	C <sub>OSS</sub>		50		pF
Common Source Feedback Capacitance (V <sub>GS</sub> = 0V, V <sub>DS</sub> =50 V, f = 1 MHz) Each section side of device measured	C <sub>RSS</sub>		1		pF

## Reference Circuit of Test Fixture (13.56MHz)

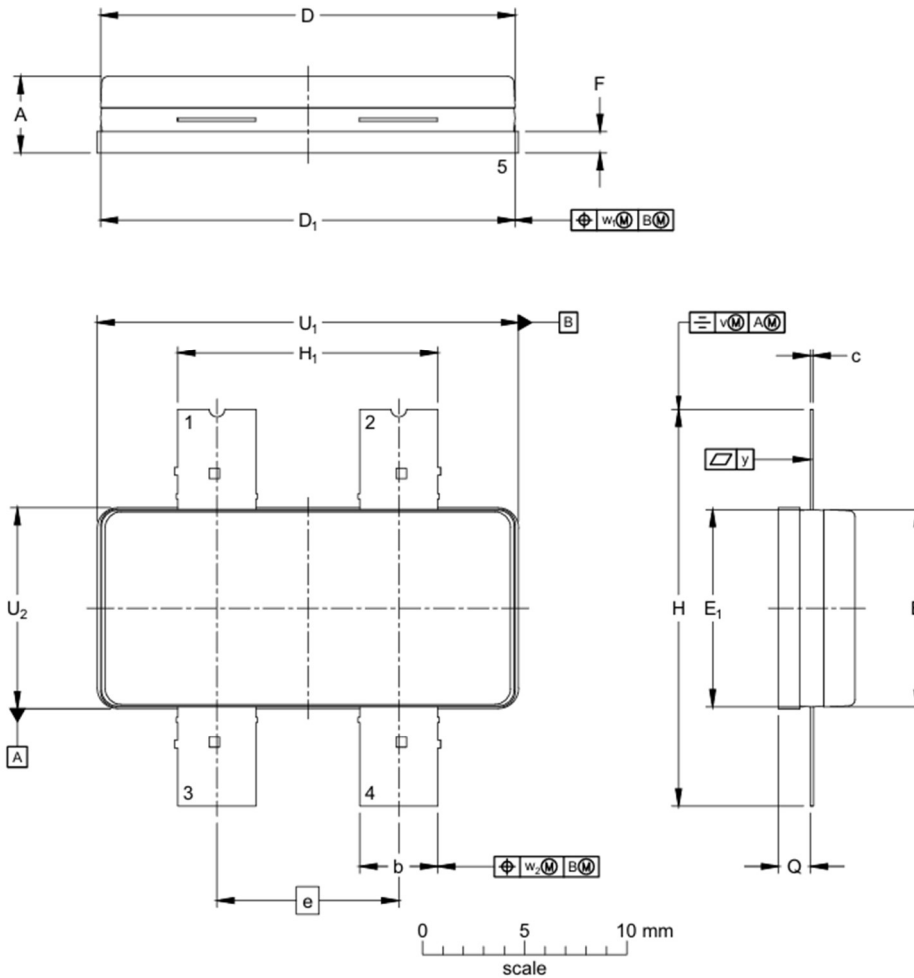


Component	Description	Suggestion
C1~C5	10uF Ceramic multilayer capacitor	
C6~C12	Ceramic multilayer capacitor, 10nF	
R1	300 $\Omega$	
R2,R3	10 $\Omega$	
R4,R5	200 $\Omega$	
L1,L2	T68-2,12turns 1.5mm	
T1	4:1 No43, d=1mm	
T2	4:1 No.43 12.5ohm coaxial, 300mm	SFF-12.5-1.5
T3	25ohm No.43 150mm	SFF-25-1.5
PCB	0.762mm [0.030"] thick, $\epsilon_r=3.48$ , Rogers RO4350B, 1 oz. copper	

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## Earless Flanged Plastic Air Cavity Package; 4 leads



Dimensions																		
Unit	A	b	c	D	D <sub>1</sub>	E	E <sub>1</sub>	e	F	H	H <sub>1</sub>	Q <sup>(1)</sup>	U <sub>1</sub>	U <sub>2</sub>	v	w <sub>1</sub>	w <sub>2</sub>	y
max	4.01	3.91	0.18	20.42	20.37	9.80	9.75		1.14	19.53	12.83	1.68	20.70	9.91	0.50	0.50	0.50	0.10
nom								8.89										
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
2024/3/28	Rev 1.0	Preliminary Datasheet ,migrated from B4 to B4C

Application data based on HL-23-05/LBG-24-12

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