

UTD351LAE3-R-VB Datasheet

N-Channel 30-V (D-S) MOSFET

PRODUCT SUMMARY						
V _{DS} (V)	R _{DS(on)} (Ω)	I _D (A) ^a	Q _g (Typ.)			
30	0.030 at V _{GS} = 10 V	6.5	4.5 nC			
30	0.033 at V _{GS} = 4.5 V	6.0	4.5110			

FEATURES

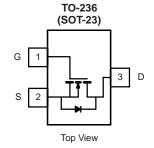
- Halogen-free According to IEC 61249-2-21
 Definition
- Trench Power MOSFET
- 100 % R_g Tested
- Compliant to RoHS Directive 2002/95/EC

APPLICATIONS

DC/DC Converter

GC





S N-Channel MOSFET

Parameter		Symbol	Limit	Unit	
Drain-Source Voltage		V _{DS}	30	V	
Gate-Source Voltage		V _{GS}	± 20	v	
	T _C = 25 °C		6.5 ^a		
Continuous Drain Current ($T_1 = 150 \ ^{\circ}C$)	T _C = 70 °C	l _D	6.0		
	T _A = 25 °C	טי	5.3		
	T _A = 70 °C		5.0	A	
Pulsed Drain Current		I _{DM}	25]	
	T _C = 25 °C		1.4		
Continuous Source-Drain Diode Current	T _A = 25 °C	Is	0.9 ^{b, c}		
	T _C = 25 °C		1.7		
Maximum Power Dissipation	T _C = 70 °C	P _D	1.1	w	
	T _A = 25 °C	U'U	1.1 ^{b, c}	vv	
	T _A = 70 °C]	0.7 ^{b, c}	1	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	- 55 to 150	°C	
Soldering Recommendations (Peak Tempera	ature) ^{d, e}		260		

THERMAL RESISTANCE RATINGS							
Parameter	Symbol	Typical	Maximum	Unit			
Maximum Junction-to-Ambient ^{b, d}	t ≤ 5 s	R _{thJA}	90	115	°C/W		
Maximum Junction-to-Foot (Drain) Steady Stat		R _{thJF}	60	75	0/11		

Notes:

a. Package limited

b. Surface Mounted on 1" x 1" FR4 board.

c. t = 5 s.

d. Maximum under steady state conditions is 130 °C/W.

SPECIFICATIONS $T_J = 25 \text{ °C}$, unless otherwise noted							
Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit	
Static							
Drain-Source Breakdown Voltage	V _{DS}	$V_{GS} = 0 V, I_{D} = 250 \mu A$	30			V	
V _{DS} Temperature Coefficient	$\Delta V_{DS}/T_{J}$	I _D = 250 μΑ		31		mV/°C	
V _{GS(th)} Temperature Coefficient	$\Delta V_{GS(th)}/T_J$	ημη 200 μη		- 5			
Gate-Source Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}$, $I_D = 250 \ \mu A$	0.7	1.1	2.0	V	
Gate-Source Leakage	I _{GSS}	$V_{DS} = 0 V, V_{GS} = \pm 20 V$			± 100	nA	
Zana Cata Maltana Drain Current	1	$V_{DS} = 30 \text{ V}, \text{ V}_{GS} = 0 \text{ V}$			1	μA	
Zero Gate Voltage Drain Current	IDSS	$V_{DS} = 30 \text{ V}, \text{ V}_{GS} = 0 \text{ V}, \text{ T}_{J} = 55 \text{ °C}$			10		
On-State Drain Current ^a	I _{D(on)}	$V_{DS} \ge 5 \text{ V}, \text{ V}_{GS} = 10 \text{ V}$	10			Α	
	D	V _{GS} = 10 V, I _D = 3.2 A		0.030			
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = 4.5 V, I _D = 2.8 A		0.033		Ω	
Forward Transconductance ^a	9 _{fs}	V _{DS} = 15 V, I _D = 4.8 A		11		S	
Dynamic ^b					L		
Input Capacitance	C _{iss}			335		1	
Output Capacitance	C _{oss}	V _{DS} = 15 V, V _{GS} = 0 V, f = 1 MHz		45		pF	
Reverse Transfer Capacitance	C _{rss}			17			
		V _{DS} = 15 V, V _{GS} = 10 V, I _D = 3.4 A		4.5	6.7		
Total Gate Charge	Qg			2.1	3.2		
Gate-Source Charge	Q _{gs}	V _{DS} = 15 V, V _{GS} = 4.5 V, I _D = 3.4 A		0.85			
Gate-Drain Charge	Q _{gd}			0.65			
Gate Resistance	R _g	f = 1 MHz	0.8	4.4	8.8	Ω	
Turn-On Delay Time	t _{d(on)}			12	20		
Rise Time	t _r	$V_{DD} = 15 \text{ V}, \text{ R}_{1} = 5.6 \Omega$		50	75	-	
Turn-Off Delay Time	t _{d(off)}	$I_D \cong 2.7 \text{ A}, V_{GEN} = 4.5 \text{ V}, R_q = 1 \Omega$		12	20		
Fall Time	t _f			22	35		
Turn-On Delay Time	t _{d(on)}			5	10	ns	
Rise Time	t _r	V_{DD} = 15 V, R_L = 5.6 Ω		12	20	-	
Turn-Off Delay Time	t _{d(off)}	$I_D \cong 2.7 \text{ A}, V_{GEN} = 10 \text{ V}, \text{ R}_g = 1 \Omega$		10	15		
Fall Time	t _f	5		5	10		
Drain-Source Body Diode Characteristic							
Continuous Source-Drain Diode Current	۱ _S	T _C = 25 °C			1.4		
Pulse Diode Forward Current	I _{SM}				15	A	
Body Diode Voltage	V _{SD}	I _S = 2.7 A, V _{GS} = 0 V		0.8	1.2	V	
Body Diode Reverse Recovery Time	t _{rr}			10	20	ns	
Body Diode Reverse Recovery Charge	Q _{rr}			5	10	nC	
Reverse Recovery Fall Time	ta	$I_F = 2.7 \text{ A}, \text{ dI/dt} = 100 \text{ A/}\mu\text{s}, \text{ T}_J = 25 ^\circ\text{C}$		6	-		
Reverse Recovery Rise Time t _b				4		ns	

Notes:

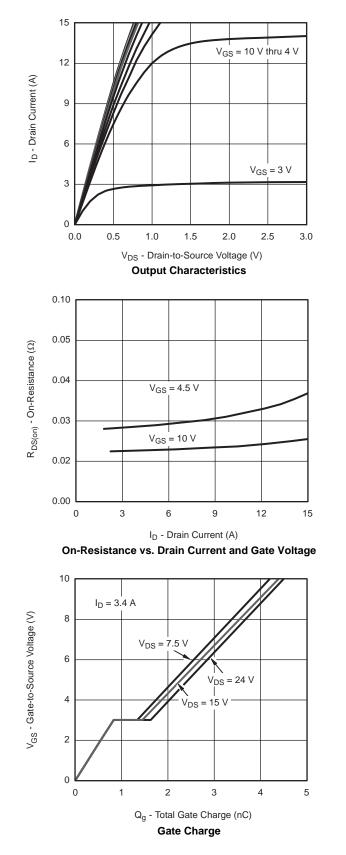
a. Pulse test; pulse width \leq 300 $\mu s,$ duty cycle \leq 2 %

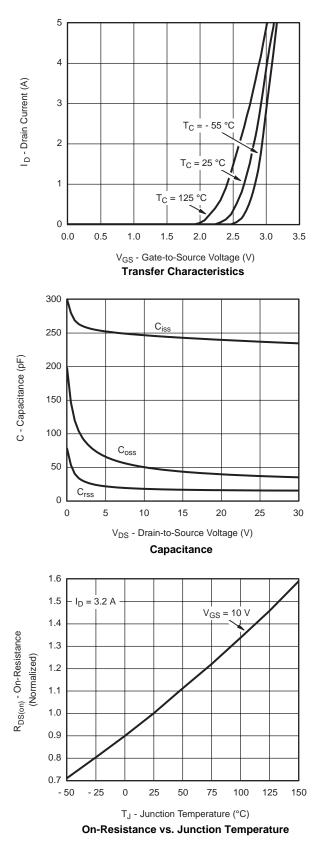
b. Guaranteed by design, not subject to production testing.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

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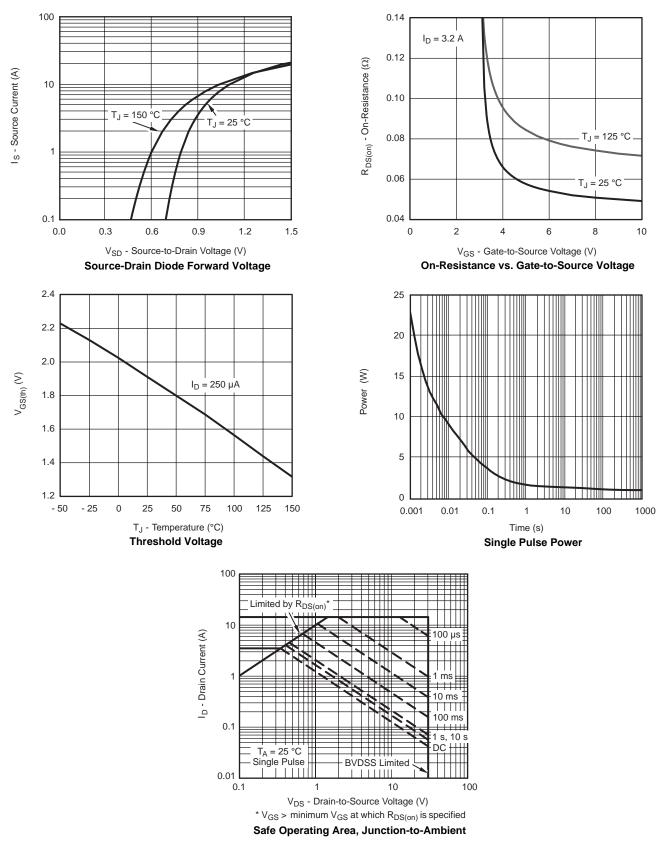




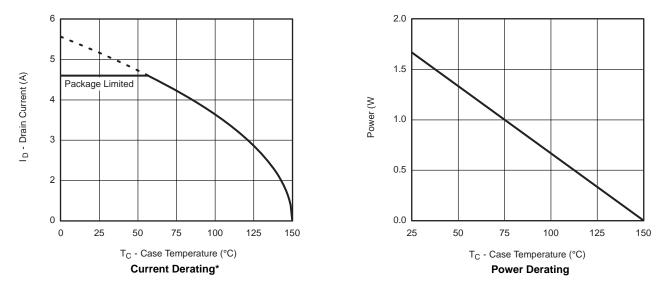


服务热线:400-655-8788



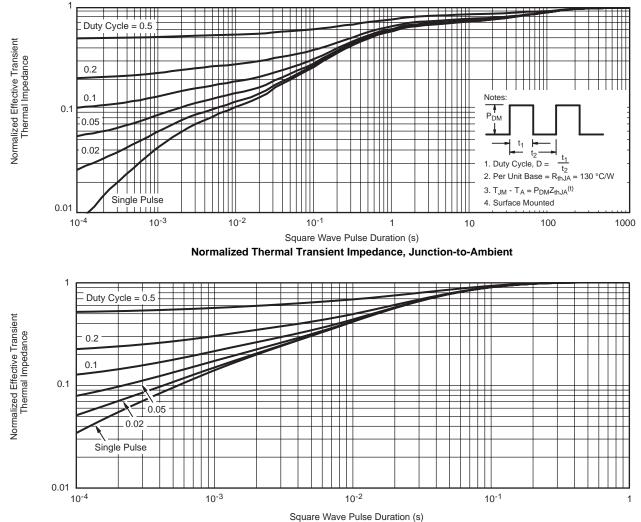






* The power dissipation P_D is based on $T_{J(max)}$ = 150 °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit.





Normalized Thermal Transient Impedance, Junction-to-Foot



SOT-23 (TO-236): 3-LEAD







Dim	MILLIN	IETERS	INCHES		
	Min	Max	Min	Max	
Α	0.89	1.12	0.035	0.044	
A ₁	0.01	0.10	0.0004	0.004	
A ₂	0.88	1.02	0.0346	0.040	
b	0.35	0.50	0.014	0.020	
С	0.085	0.18	0.003	0.007	
D	2.80	3.04	0.110	0.120	
E	2.10	2.64	0.083	0.104	
E ₁	1.20	1.40	0.047	0.055	
е	0.95 BSC		0.0374 Ref		
e ₁	1.90 BSC		0.0748 Ref		
L	0.40	0.60	0.016	0.024	
L ₁	0.64 Ref		0.025 Ref		
S	0.50 Ref		0.020 Ref		
q	3°	8°	3°	8°	
ECN: S-03946-Rev. K, 09- DWG: 5479	Jul-01				

UTD351LAE3-R-VB



RECOMMENDED MINIMUM PADS FOR SOT-23



Recommended Minimum Pads Dimensions in Inches/(mm)

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