Description

The SX30N15HD uses advanced technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

V_{DS} = 150V I_D =30A

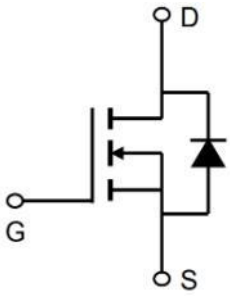
$R_{DS(ON)}$ < 78mΩ@ V_{GS}=10V

Application

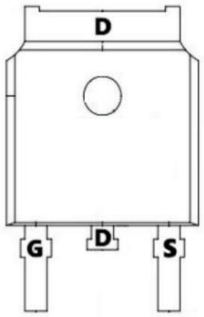
Automative lighting

Load switch

Uninterruptible power supply



TO-252-3L



Absolute Maximum Ratings (TC=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	150	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Drain Current, V_{GS} @ 10V	30	A
I_D@T_C=100℃	Drain Current, V_{GS} @ 10V	21	A
IDM	Pulsed Drain Current[1]	90	A
P_D@T_C=25℃	Total Power Dissipation	60	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
RθJA	Maximum Thermal Resistance, Junctionambient	62.5	℃/W
RθJC	Maximum Thermal Resistance, Junction-case	2.5	℃/W

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	150	175	-	V
IGSS	Gate-body Leakage current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
IDSS	Zero Gate Voltage Drain Current T_J= 25℃	V_{DS} = 150V, V_{GS} = 0V	-	-	1	uA
IDSS	Zero Gate Voltage Drain Current T_J= 100℃		-	-	100	uA
VGS(th)	Gate-Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2.0	3.0	4.5	V
RDS(on)	Drain-Source On-Resistance[2]	V_{GS} = 10V, I_D = 10A	-	63	78	mΩ
RDS(on)	Drain-Source On-Resistance[2]	V_{GS} = 4.5V, I_D = 8A		72	90	
gfs	Transconductance	V_{DS}= 5V, I_D= 10A	-	23	-	S
Ciss	Input Capacitance	V_{DS} = 75V, V_{GS} = 0V, f = 1MHz	-	630	-	pF
Coss	Output Capacitance		-	50	-	
Crss	Reverse Transfer Capacitance		-	13.5	-	
R_g	Gate Resistance	V_{GS} = 0V, V_{DS} Open, f = 1MHz	-	5	-	Ω
Q_g	Total Gate Charge	V_{GS} = 10V,V_{DD} = 75V, I_D= 10A	-	11	-	nC
Qgs	Gate-Source Charge		-	1.2	-	
Qgd	Gate-Drain Charge		-	4	-	
td(on)	Turn-On Delay Time	V_{GS} = 10V, V_{DD} = 75V, R_G = 10Ω, I_D= 10A	-	9.8	-	nS
t_r	Rise Time		-	6	-	
td(off)	Turn-Off Delay Time		-	15	-	
t_f	Fall Time		-	4.1	-	
VSD	Diode Forward Voltage[2]	I_S = 10A, V_{GS} = 0V	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	V_R = 75V,I_F = 10A, dI/dt= 100A/μs	-	55	-	nS
Q_{rr}	Body Diode Reverse Recovery Charge		-	124	-	nC

Note :

1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.

2、The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%

3、The EAS data shows Max. rating . The test condition is VDD=72V,VGS=10V,L=0.1mH,IAS=13A

4、The power dissipation is limited by 150℃ junction temperature

5、The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.

Typical Characteristics

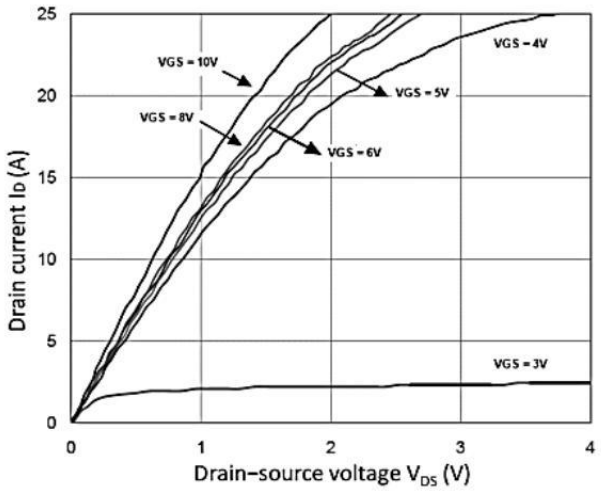


Figure 1. Output Characteristics

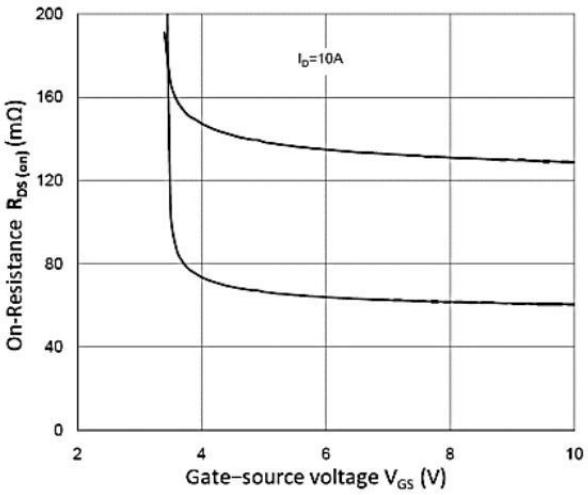


Figure 2. R DS (on) vs. V GS

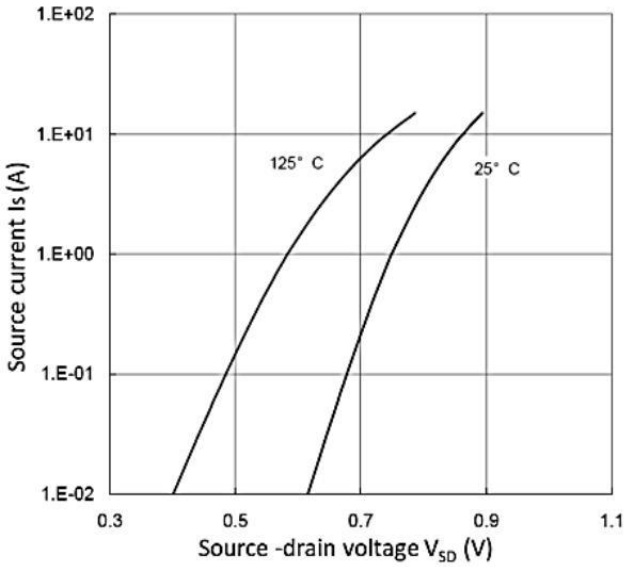


Figure 3. Forward Characteristics of Reverse

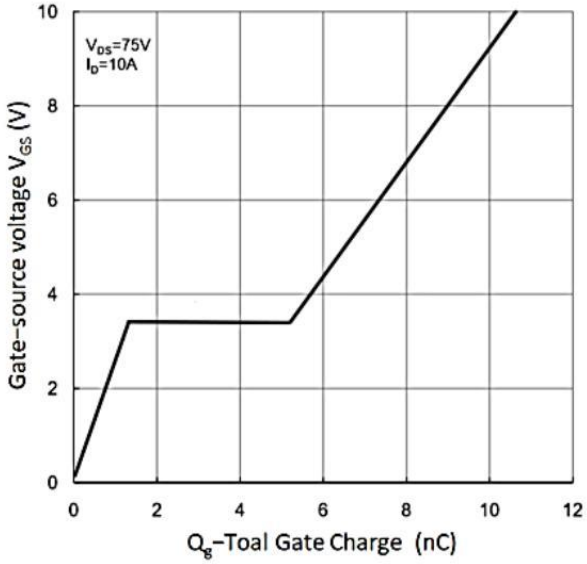


Figure 4. Gate Charge Characteristics

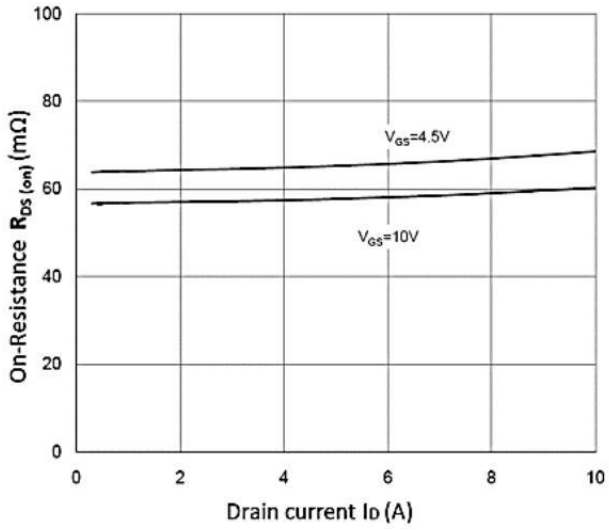


Figure 5. RDS(ON) vs. ID

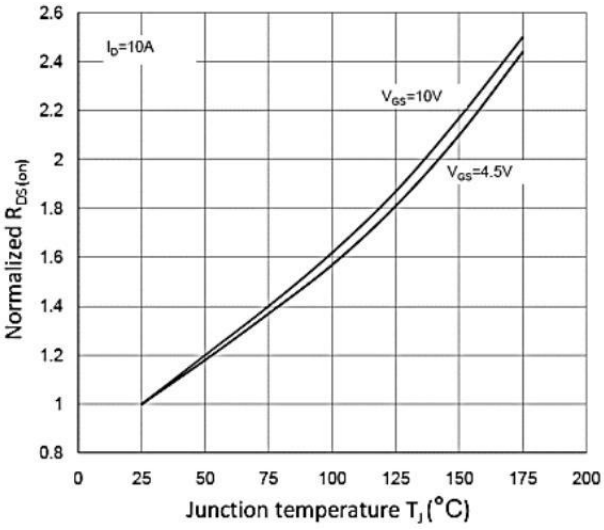


Figure 6. Normalized RDS(on) vs. TJ

Typical Characteristics

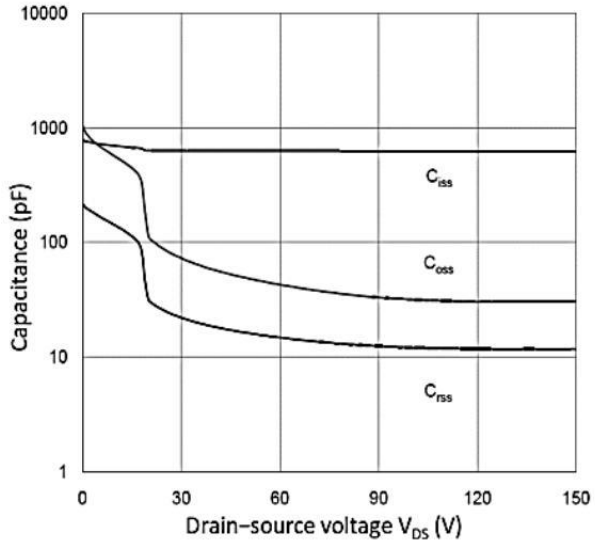


Figure 7. Capacitance Characteristics

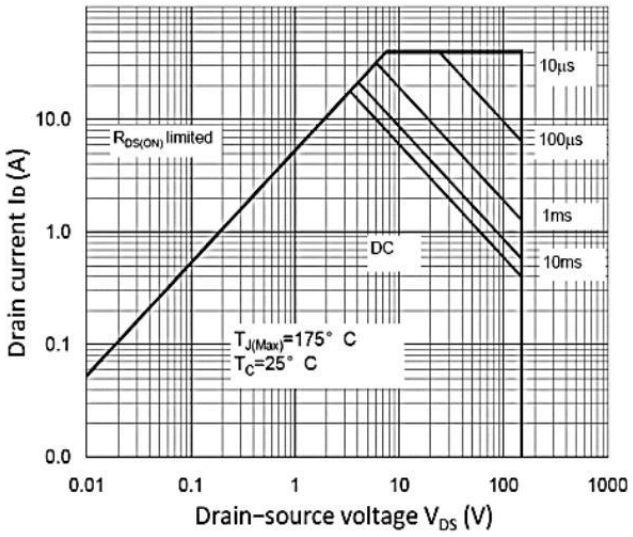


Figure 8. Safe Operating Area

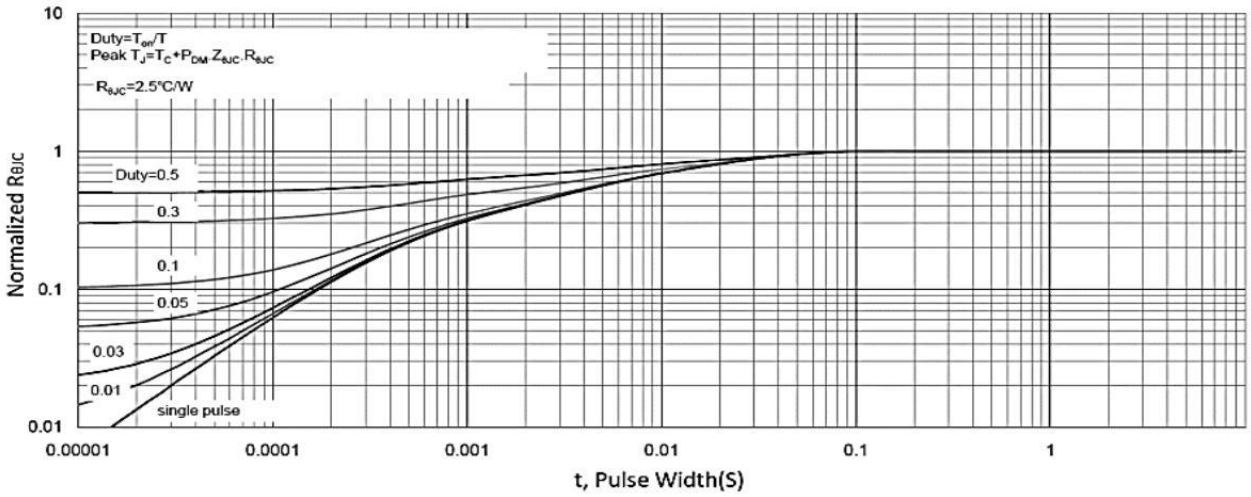


Figure 9. Normalized Maximum Transient Thermal Impedance

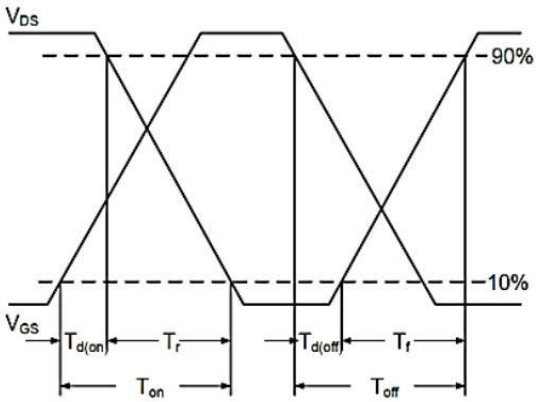


Figure 10. Switching Time Waveform

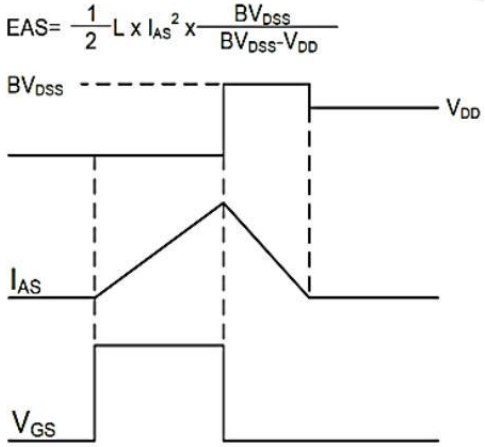
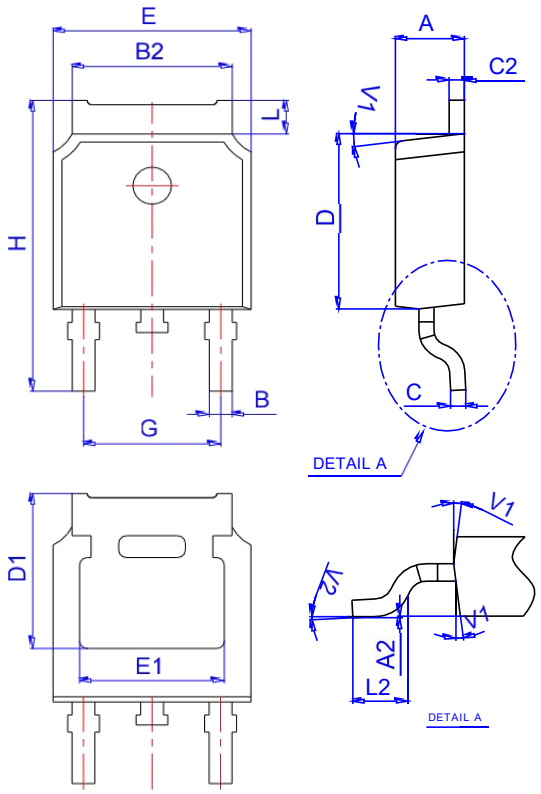


Figure 11. Unclamped Inductive Switching

Package Mechanical Data: TO-252-3L



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	TO-252-3L		2500