

Description

The SX28N15D uses advanced technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

$V_{DS} = 150V$ $I_D = 28A$

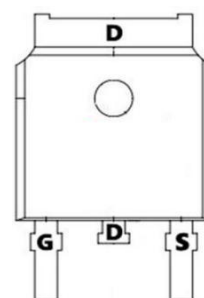
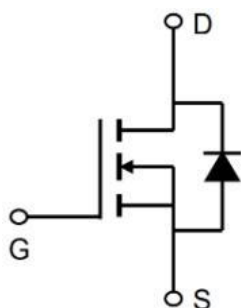
$R_{DS(ON)} < 62m\Omega @ V_{GS}=10V$

Application

Automotive lighting

Load switch

Uninterruptible power supply



Absolute Maximum Ratings (TC=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_C=25^\circ C$	Drain Current, $V_{GS} @ 10V$	28	A
$I_D @ T_C=100^\circ C$	Drain Current, $V_{GS} @ 10V$	16	A
I_{DM}	Pulsed Drain Current ¹	84	A
$P_D @ T_C=25^\circ C$	Total Power Dissipation	60	W
TSTG	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
$R_{\theta JA}$	Maximum Thermal Resistance, Junction-ambient	62.5	$^\circ C/W$
$R_{\theta JC}$	Maximum Thermal Resistance, Junction-case	2.5	$^\circ C/W$

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	-	-	V
IGSS	Gate-body Leakage current	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
IDSS	Zero Gate Voltage Drain Current T _J = 25°C	V _{DS} = 150V, V _{GS} = 0V	-	-	1	
IDSS	Zero Gate Voltage Drain Current T _J = 100°C		-	-	100	
VGS(th)	Gate-Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1.2	2.0	2.5	V
RDS(on)	Drain-Source On-Resistance ²	V _{GS} = 10V, I _D = 10A	-	52	62	mΩ
RDS(on)	Drain-Source On-Resistance ²	V _{GS} = 4.5V, I _D = 8A	-	56	75	
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
Q _{gs}	Gate-Source Charge		-	1.2	-	
Q _{gd}	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°C 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

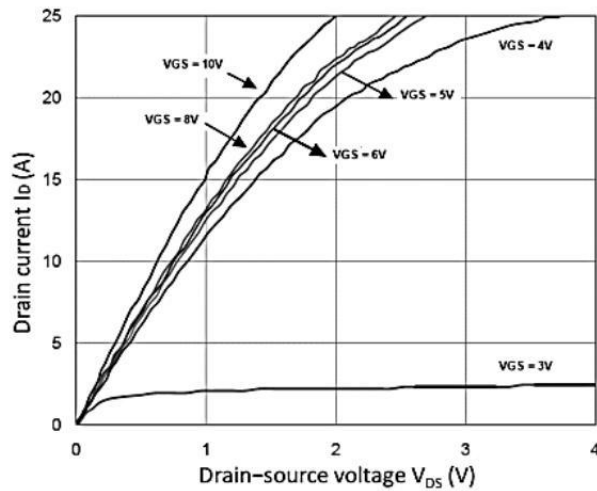


Figure 1. Output Characteristics

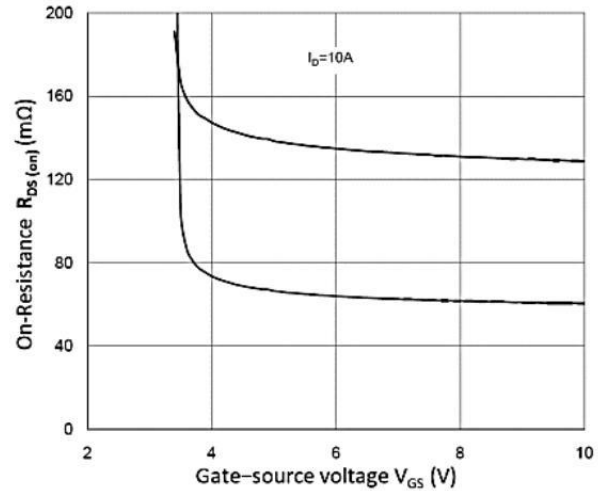


Figure 2. $R_{DS(on)}$ vs. V_{GS}

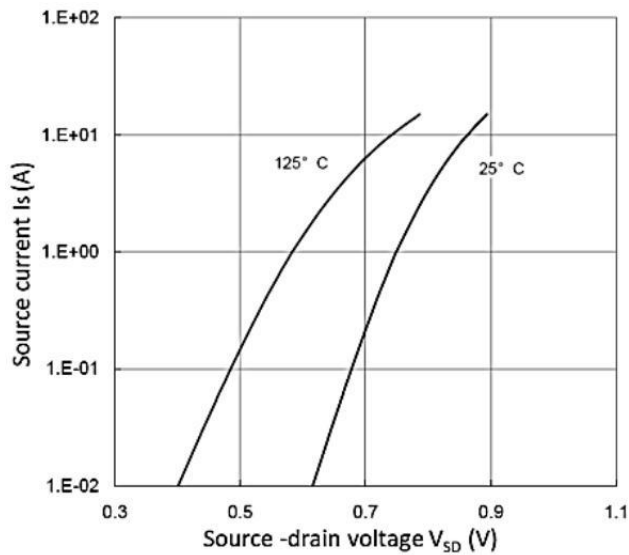


Figure 3. Forward Characteristics of Reverse

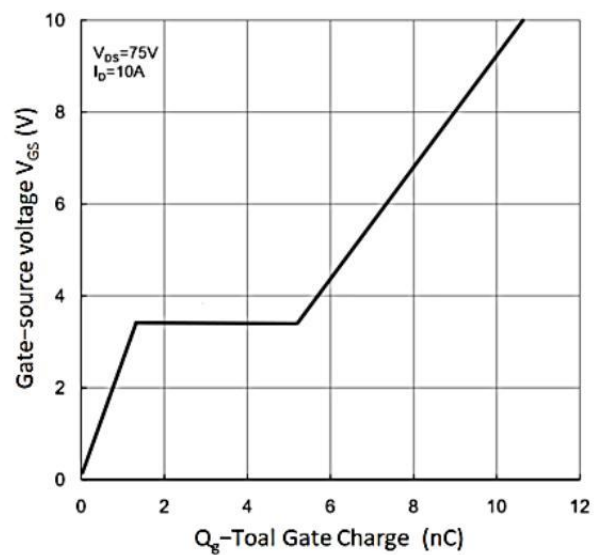


Figure 4. Gate Charge Characteristics

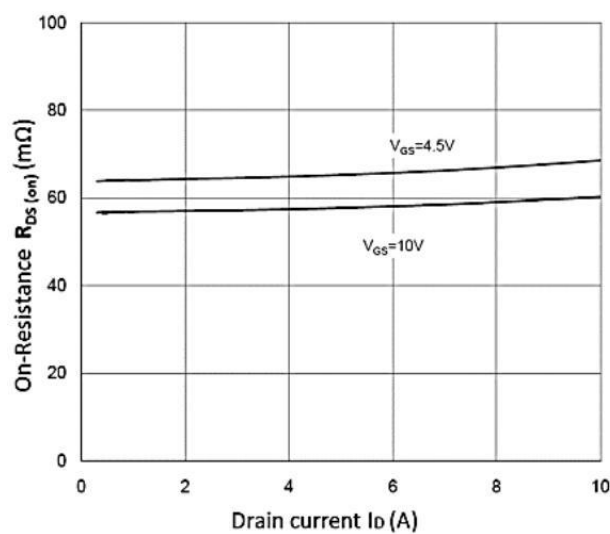


Figure 5. $R_{DS(ON)}$ vs. I_D

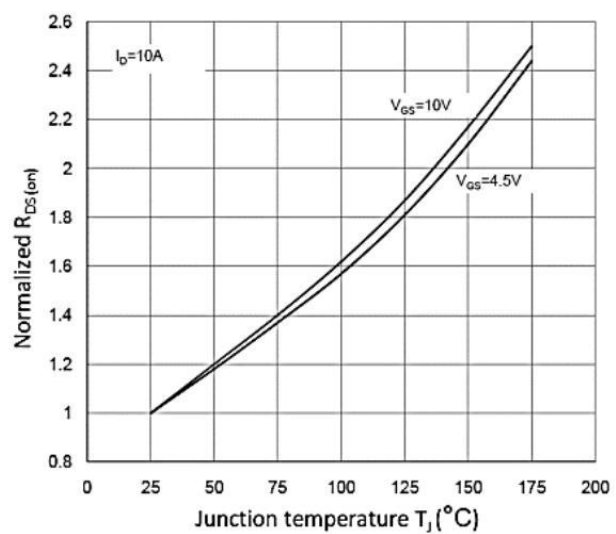


Figure 6. Normalized $R_{DS(on)}$ vs. T_J

Typical Characteristics

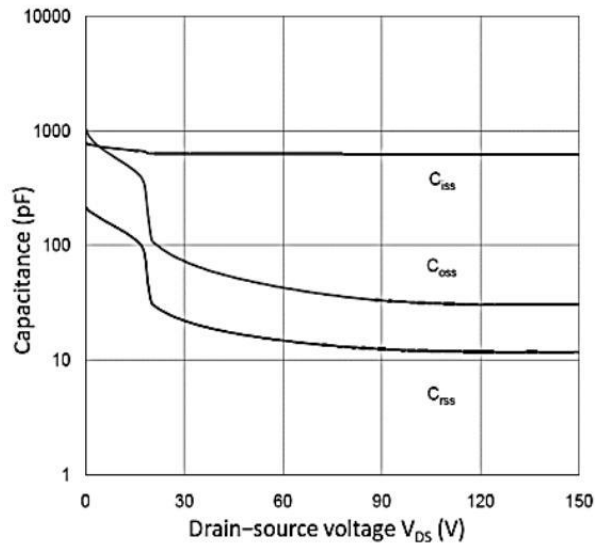


Figure 7. Capacitance Characteristics

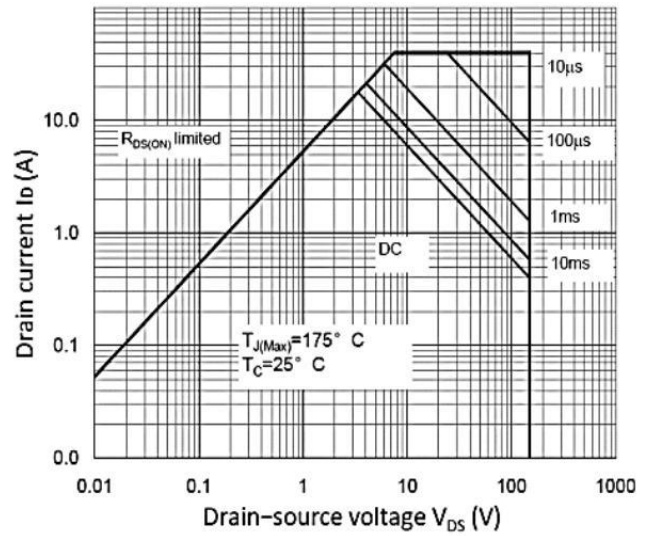


Figure 8. Safe Operating Area

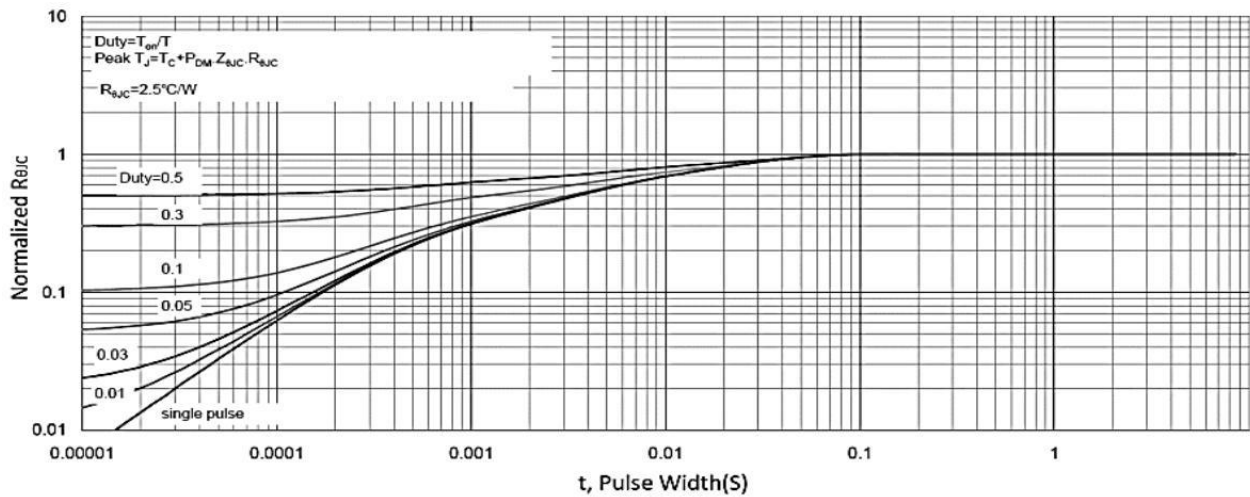


Figure 9. Normalized Maximum Transient Thermal Impedance

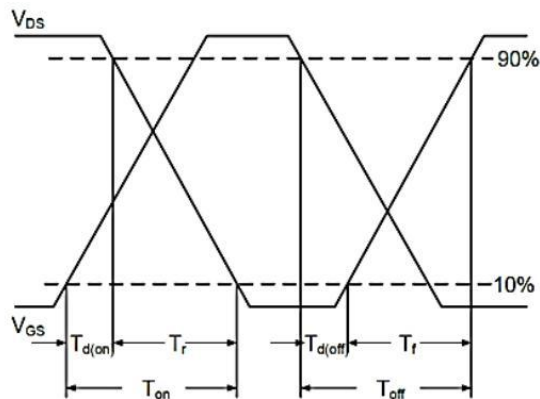


Figure 10. Switching Time Waveform

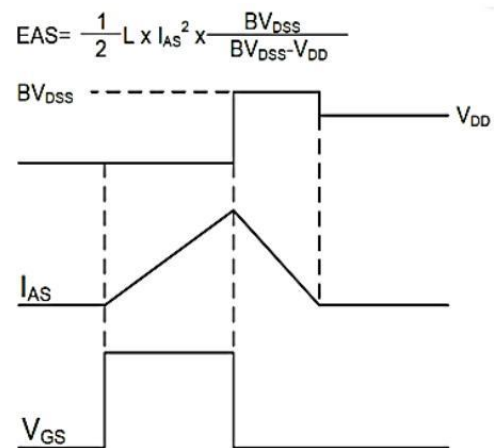
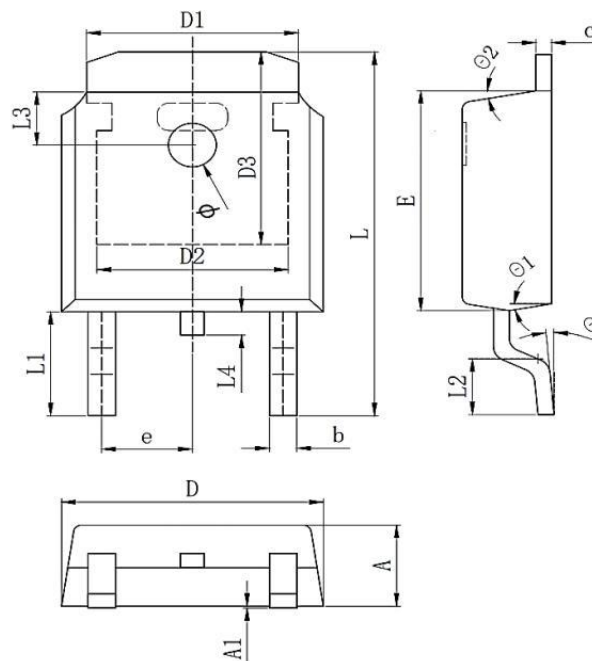


Figure 11. Unclamped Inductive Switching

Package Mechanical Data-TO-252-3L



Symbol	Dim in mm		
	Min	Typ	Max
A	2.1	2.3	2.5
A1	0	0.064	0.128
b	0.64	0.75	0.86
c	0.45	0.52	0.6
D	6.4	6.6	6.8
D1	5.33REF		
D2	4.83REF		
D3	5.25REF		
E	5.9	6.1	6.3
e	2.286TYP		
L	9.8	10.1	10.4
L1	2.888REF		
L2	1.4	1.5	1.7
L3	1.65REF		
L4	0.6	0.8	1
φ	1.1	1.2	1.3
θ	0°		10°
θ1	5°		10°
θ2	5°		10°

Package Marking and Ordering Information

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