

Description

The SX15N10Y uses advanced trench 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

$V_{DS} = 100V$ $I_D = 14.1A$

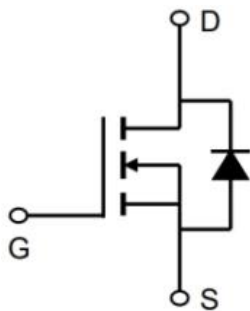
$R_{DS(ON)} < 105m\Omega$ @ $V_{GS}=10V$

Application

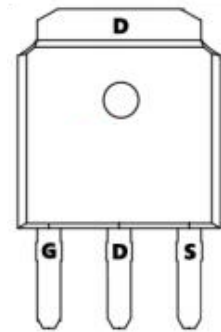
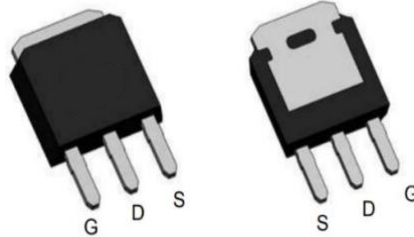
Load Switch

PWM Application

Power management



TO-251-3L



Absolute Maximum Ratings ($T_c=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_c=25^\circ C$	Drain Current, V_{GS} @ 10V	14.1	A
$I_D @ T_c=100^\circ C$	Drain Current, V_{GS} @ 10V	8.1	A
I_{DM}	Pulsed Drain Current ¹	28	A
$P_D @ T_c=25^\circ C$	Total Power Dissipation	20.8	W
$P_D @ T_A=25^\circ C$	Total Power Dissipation ³	2	W
E_{AS}	Single Pulse Avalanche Energy ⁴	8	mJ
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
R_{thj-c}	Maximum Thermal Resistance, Junction-case	6	$^\circ C/W$
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient	62.5	$^\circ C/W$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	100	107	-	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =100V, V _{GS} =0V,	-	-	1.0	μA
IGSS	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	2.0	2.5	V
RDS(on)	Static Drain-Source on-Resistance note3	V _{GS} =10V, I _D =10A	-	88	105	mΩ
		V _{GS} =4.5V, I _D =8A	-	93	125	mΩ
Ciss	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1.0MHz	-	610	-	pF
Coss	Output Capacitance		-	40	-	pF
Crss	Reverse Transfer Capacitance		-	25	-	pF
Qg	Total Gate Charge	V _{DS} =30V, I _D =10A, V _{GS} =10V	-	12	-	nC
Qgs	Gate-Source Charge		-	2.2	-	nC
Qgd	Gate-Drain("Miller") Charge		-	2.5	-	nC
td(on)	Turn-on Delay Time	V _{DS} =30V, I _D =5A, R _G =1.8Ω, V _{GS} =10V	-	7	-	ns
t _r	Turn-on Rise Time		-	5	-	ns
td(off)	Turn-off Delay Time		-	16	-	ns
t _f	Turn-off Fall Time		-	6	-	ns
IS	Continuous Source Current ^{1,5}	V _G =V _D =0V , Force Current	-	-	10	A
ISM	Pulsed Source Current ^{2,5}		-	-	40	A
VSD	Diode Forward Voltage ²	V _{GS} =0V, I _S =10A	-	-	1.2	V
t _{rr}	Body Diode Reverse Recovery Time	I _F =10A, dI/dt=100A/μs	-	21	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	21	-	nC

Note :

1.The data tested by surface mounted on a 1 inch² 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 V_{DD}=25V,V_{GS}=10V, L=0.1mH,I_{AS}=11A 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.

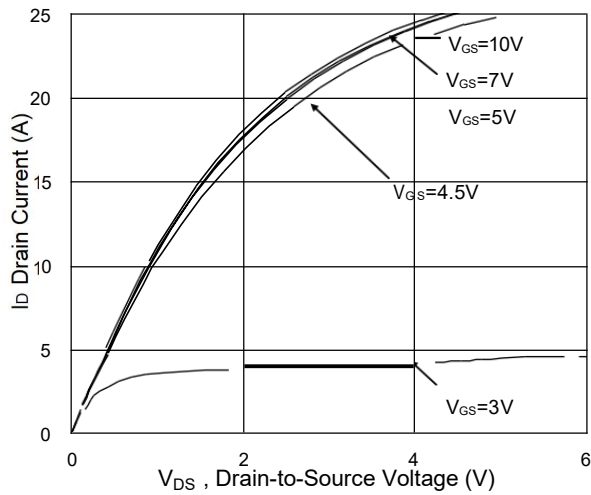


Fig.1 Typical Output Characteristics

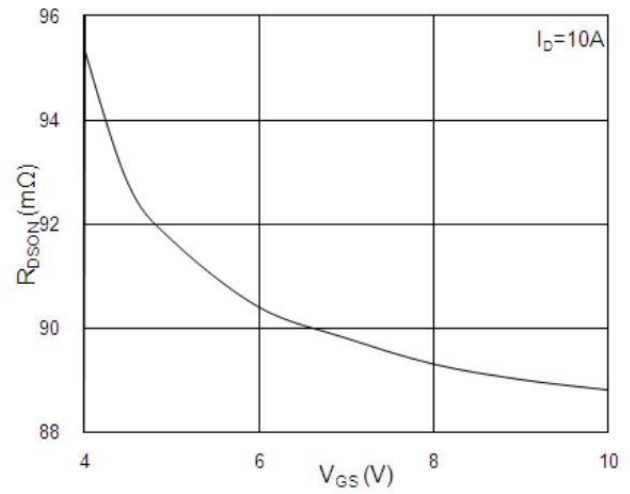


Fig.2 On-Resistance vs. Gate-Source

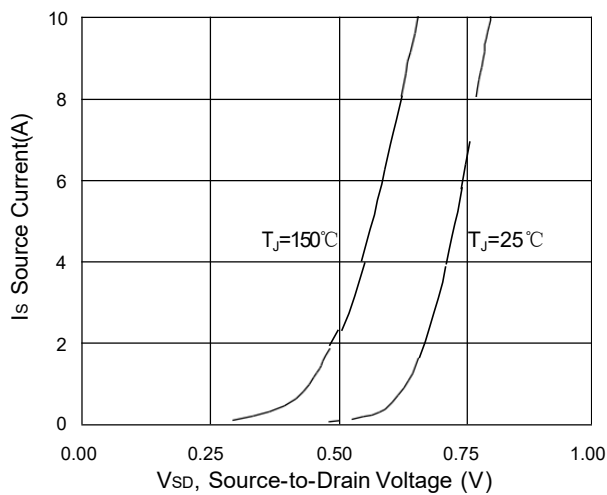


Fig.3 Forward Characteristics Of Reverse

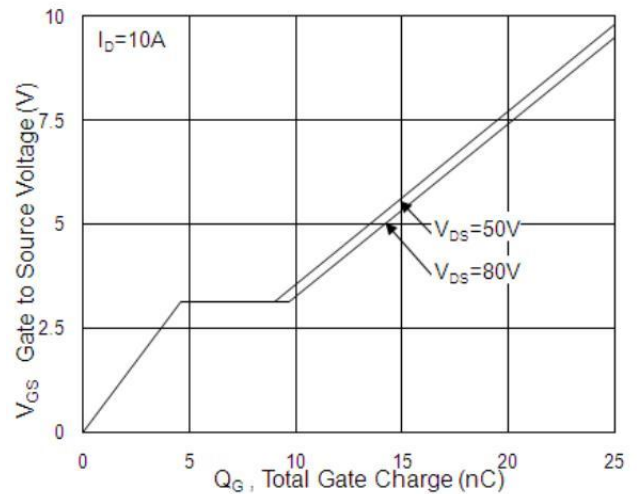


Fig.4 Gate-Charge Characteristics

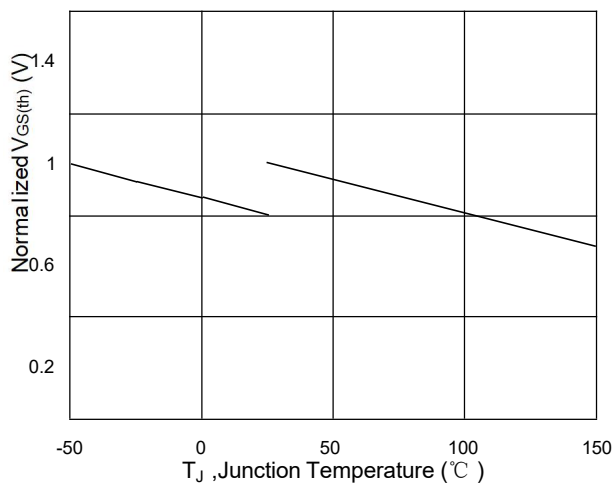


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

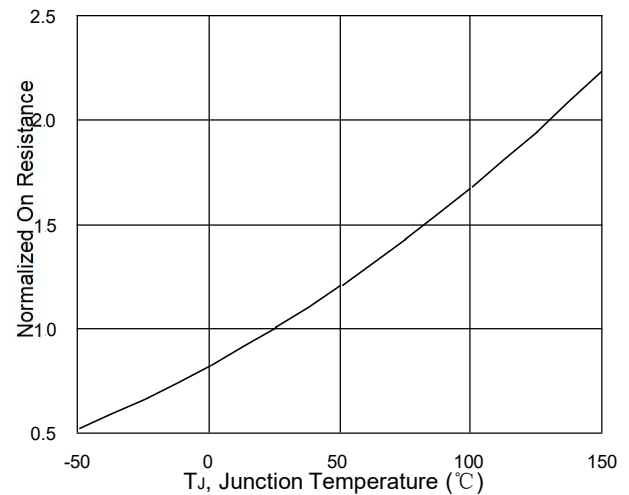
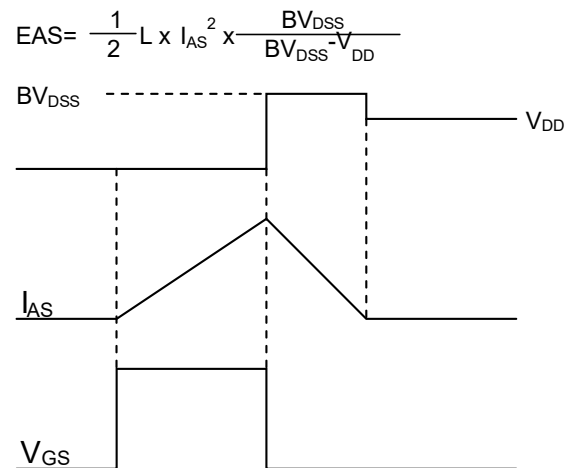
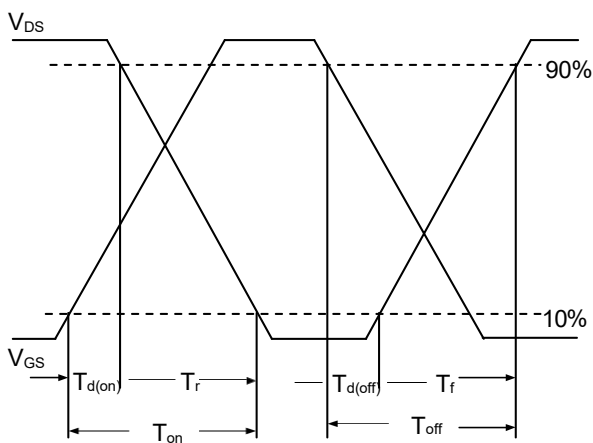
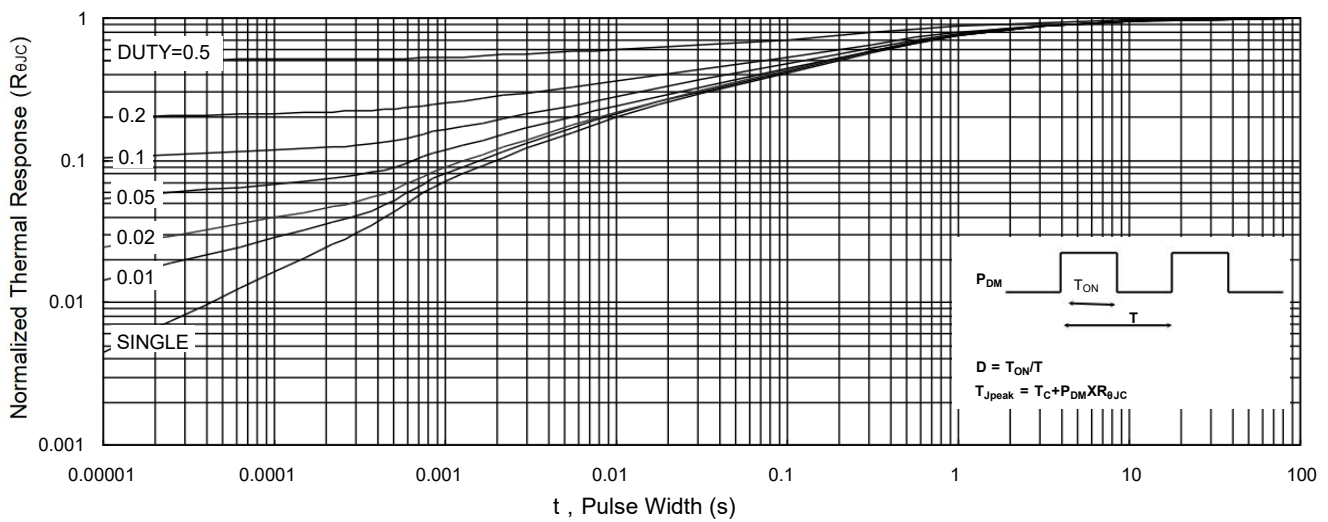
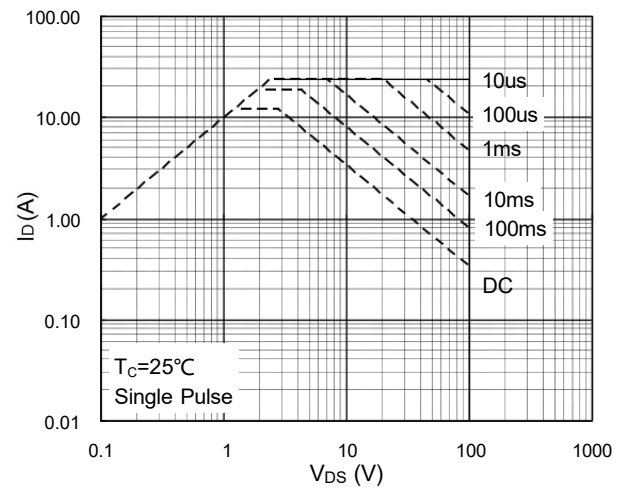
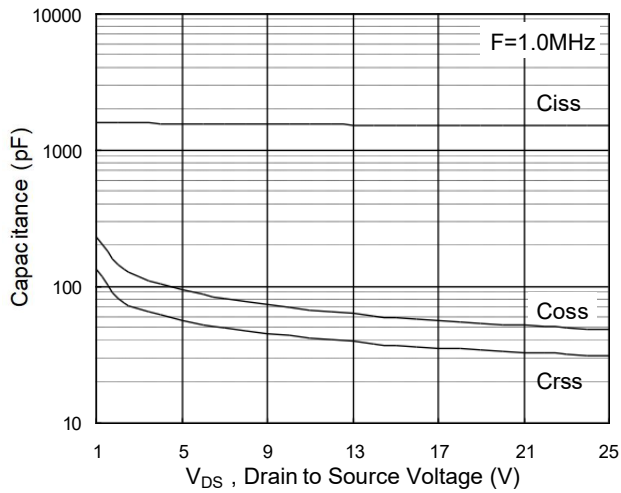
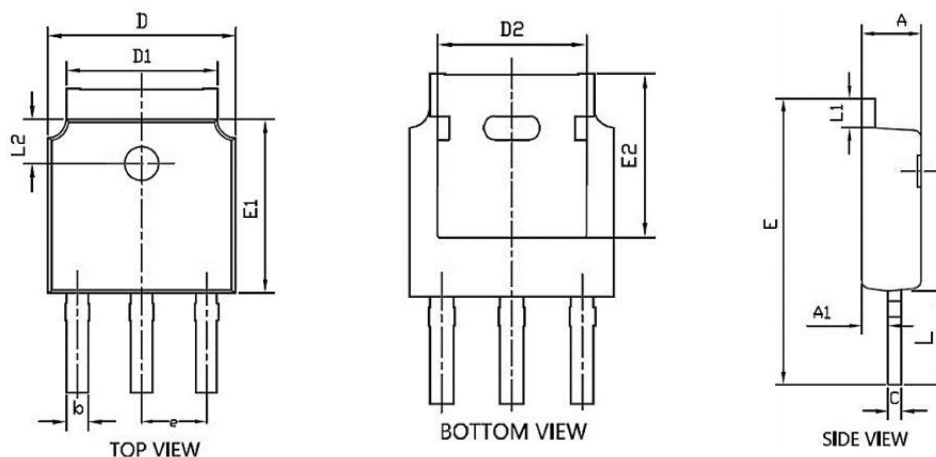


Fig.6 Normalized $R_{DS(on)}$ vs. T_J



$$EAS = \frac{1}{2} L \times I_{AS}^2 \times \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$

Package Mechanical Data-TO-251-3L



Symbol	Common		
	mm		
	Mim	Nom	Max
A	2.2	2.3	2.4
A1	0.9	1.0	1.1
b	0.66	0.76	0.86
C	0.46	0.52	0.58
D	6.50	6.6	6.7
D1	5.15	5.3	5.45
D2	4.6	4.8	4.95
E	10.4	----	11.5
E1	6.0	6.1	6.2
E2	5.400REF		
e	2.286BSC		
L	3.5	4.0	4.3
L1	0.9	---	1.27
L2	1.4	---	1.9

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	TO-251-3L		4000