

Description

The SX10N15D 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

$V_{DS} = 150V$ $I_D = 10A$

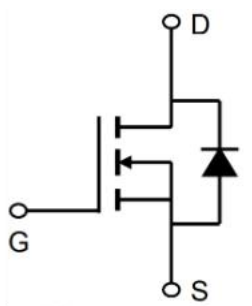
$R_{DS(ON)} < 285m\Omega @ V_{GS}=10V$

Application

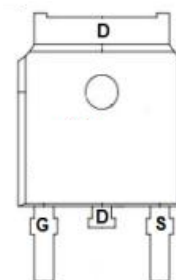
Automotive lighting

Load switch

Uninterruptible power supply



TO-252-3L



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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	150	V
VGS	Gate-Source Voltage	±20	V
$I_D @ T_C=25^\circ C$	Drain Current, $V_{GS} @ 10V$	10	A
$I_D @ T_C=100^\circ C$	Drain Current, $V_{GS} @ 10V$	6.1	A
IDM	Pulsed Drain Current ¹	30	A
$P_D @ T_C=25^\circ C$	Total Power Dissipation	32.1	W
$P_D @ T_A=25^\circ C$	Total Power Dissipation ³	20.5	W
TSTG	Storage Temperature Range	-55 to 150	°C
TJ	Operating Junction Temperature Range	-55 to 150	°C
RθJA	Maximum Thermal Resistance, Junction-ambient	62.5	°C/W
RθJC	Maximum Thermal Resistance, Junction-case	3.9	°C/W

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

Symbol	Parameter	Limit	Min	Typ	Max	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	150	170		V
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID=250μA	1.2	1.8	2.5	V
IGSS	Gate Leakage Current	VDS=0V, VGS=±20V			±100	nA
IDSS	Zero Gate Voltage Drain Current	VDS=150V, VGS=0V			1	μA
RDS(ON)	Drain-Source On-Resistance	VGS=10V, ID= 7A		230	285	mΩ
RDS(ON)	Drain-Source On-Resistance	VGS=4.5V, ID= 6A		250	320	mΩ
VSD	Diode Forward Voltage	IS=1.8A, VGS=0V		0.8	1.2	V
Qg	Total Gate Charge	VDS=75V, VGS=10V, ID=10A		17.5		nC
Qgs	Gate-Source Charge			4.5		nC
Qgd	Gate-Drain Charge			4.7		nC
Ciss	Input Capacitance	VDS=25V, VGS=0V, f=1MHz		538		pF
Coss	Output Capacitance			55		pF
Crss	Reverse Transfer Capacitance			21		pF
td(on)	Turn-On Delay Time	VDS=75V, RL =10.68Ω, VGEN=10V, RG=6Ω		11.6		ns
tr	Turn-On Rise Time			9.3		ns
td(off)	Turn-Off Delay Time			29.3		ns
tf	Turn-Off Fall Time			3.7		ns

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=10A
- 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

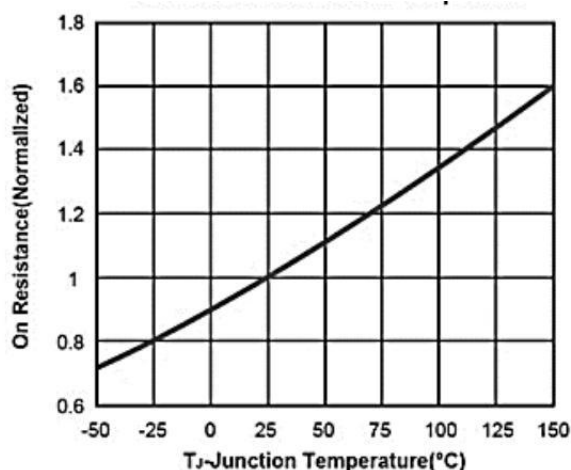


Fig.1 On Resistance Vs Junction Temperature

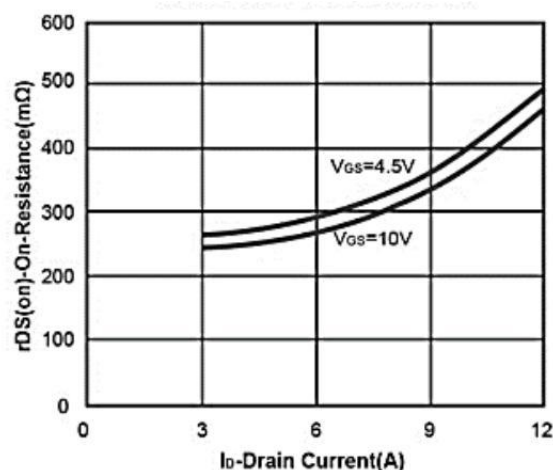


Fig.2 On-Resistance Vs. Drain Current

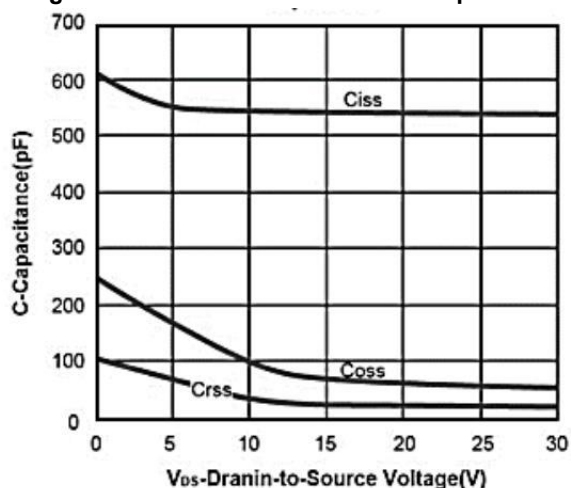


Fig.3 Capacitance

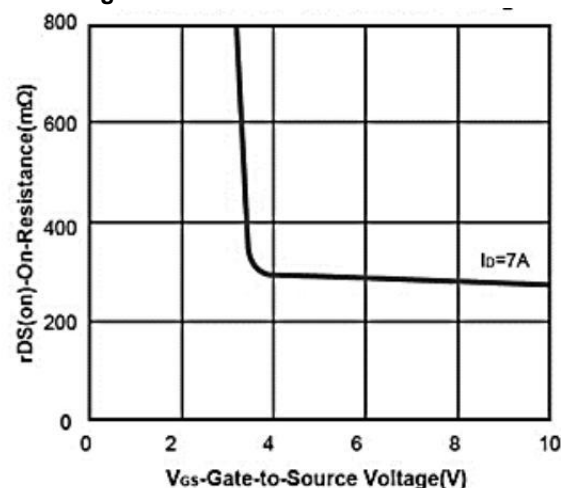


Fig.4 On-Resistance Vs. Gate-to-Source Voltage

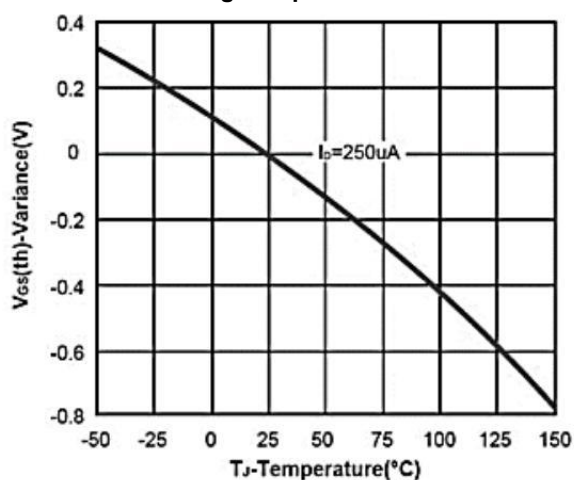


Fig.5 Threshold Voltage

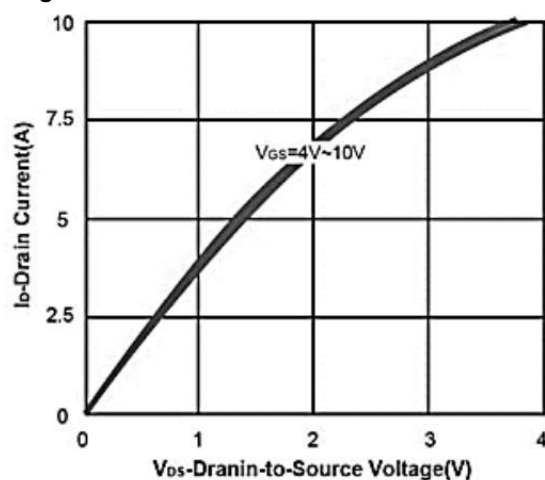
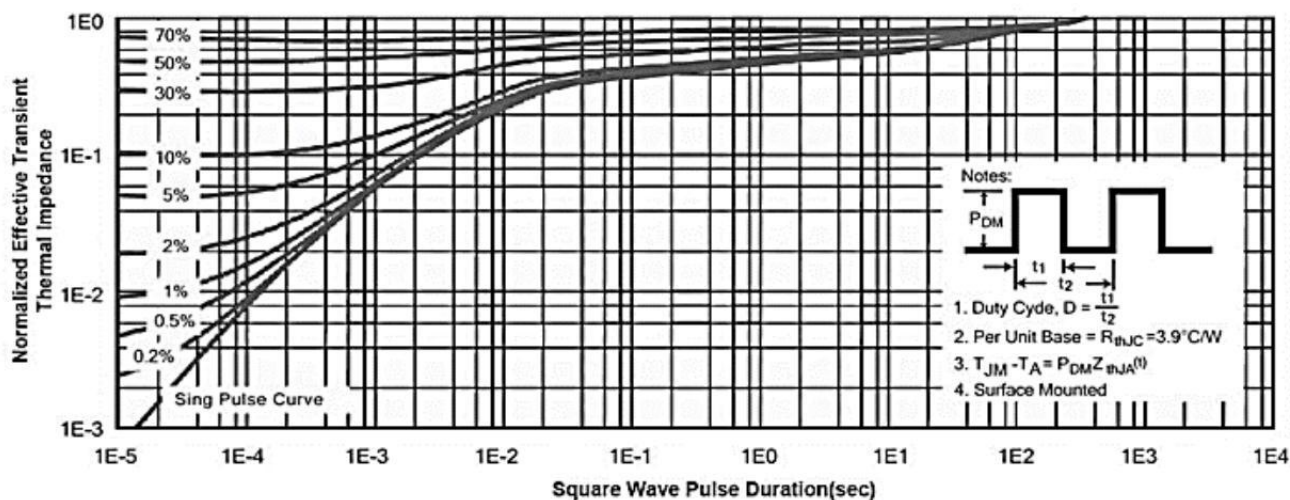
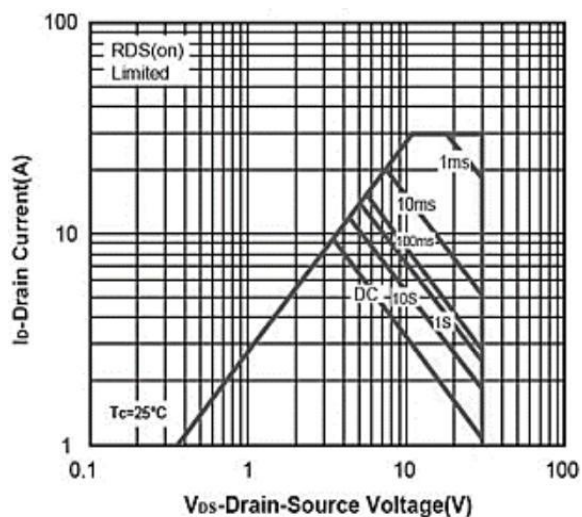
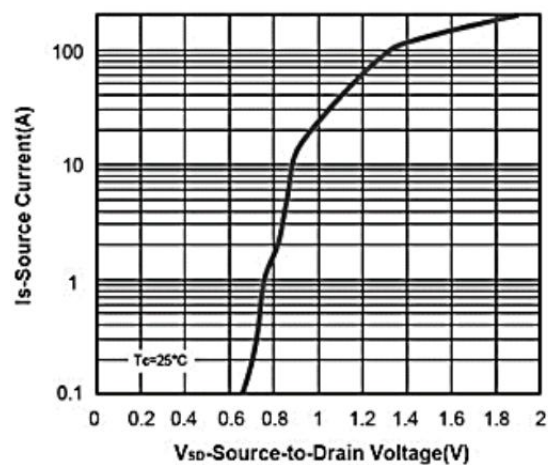
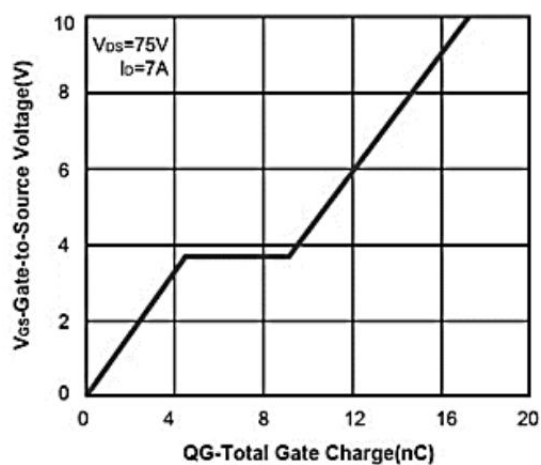
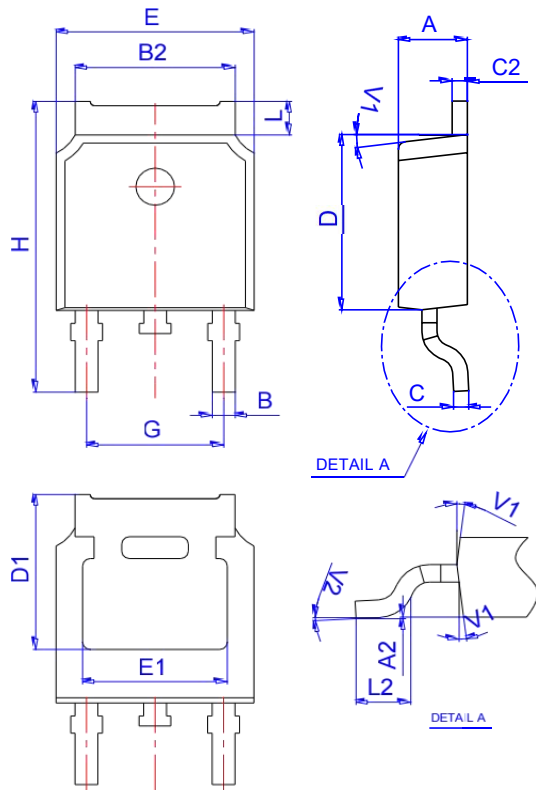


Fig.6 On-Region Characteristics

Typical Characteristics



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