

Description

The SX70N15D 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

$V_{DS} = 150V$ $I_D = 70A$

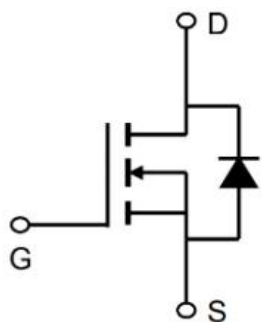
$R_{DS(ON)} < 28m\Omega @ V_{GS}=10V$

Application

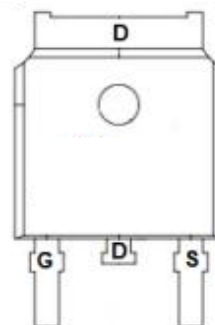
Automotive lighting

Load switch

Uninterruptible power supply



TO-252-3L



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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	150	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_C=25^\circ C$	Drain Current, $V_{GS} @ 10V$	70	A
$I_D @ T_C=100^\circ C$	Drain Current, $V_{GS} @ 10V$	50	A
I_{DM}	Pulsed Drain Current ¹	210	A
EAS	Single pulsed avalanche energy	210	mJ
$P_D @ T_C=25^\circ C$	Total Power Dissipation	60	W
TSTG	Storage Temperature Range	-55 to 150	°C
T_J	Operating Junction Temperature Range	-55 to 150	°C
$R_{\theta JA}$	Maximum Thermal Resistance, Junction-ambient	62.5	°C/W
$R_{\theta JC}$	Maximum Thermal Resistance, Junction-case	1.25	°C/W

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

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
BVDSS	Drain-source breakdown voltage	VGS=0 V, ID=250 μA	150	167		V
VGS(th)	Gate threshold voltage	VDS=VGS, ID=250 μA	2.0	3.0	4.0	V
RDS(ON)	Drain-source on-state resistance	VGS=10 V, ID=30 A		22	28	mΩ
IGSS	Gate-source leakage current	VGS=20 V			100	nA
		VGS=-20 V			-100	
IDSS	Drain-source leakage current	VDS=150 V, VGS=0 V			1	μA
RG	Gate resistance	f=1 MHz, Open drain		4		Ω
Ciss	Input capacitance	VGS=0V, VDS=75V, f=1MHz		1040		pF
Coss	Output capacitance			138		pF
Crss	Reverse transfer capacitance			8.2		pF
td(on)	Turn-on delay time	VGS=10V, VDS=75 V, RG=2 Ω, ID=30 A		21.4		ns
tr	Rise time			35.4		ns
td(off)	Turn-off delay time			40		ns
tf	Fall time			12.2		ns
Qg	Total gate charge	VGS=10V, VDS=75V, ID=30 A		15.2		nC
Qgs	Gate-source charge			5.4		nC
Qgd	Gate-drain charge			5.8		nC
trr	Reverse recovery time	VR=50 V, IS=65A, di/dt=100 A/μs		68		ns
Qrr	Reverse recovery charge			95		nC
Irrm	Peak reverse recovery current			210		A
VSD	Diode forward voltage	IS=30A, VGS=0 V			1.3	V

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=40A
- 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

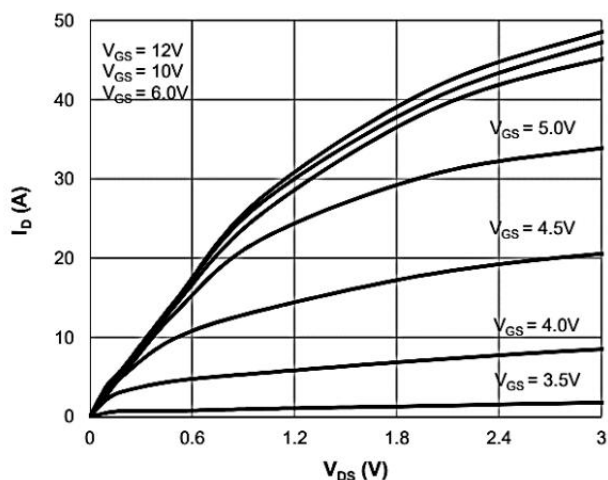


Figure 1: Saturation Characteristics

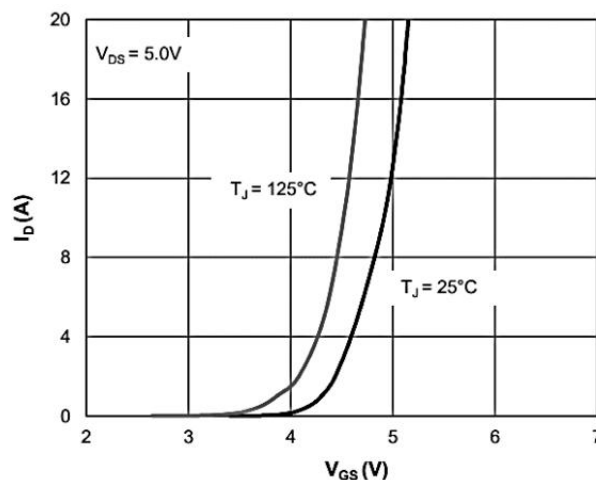


Figure 2: Transfer Characteristics

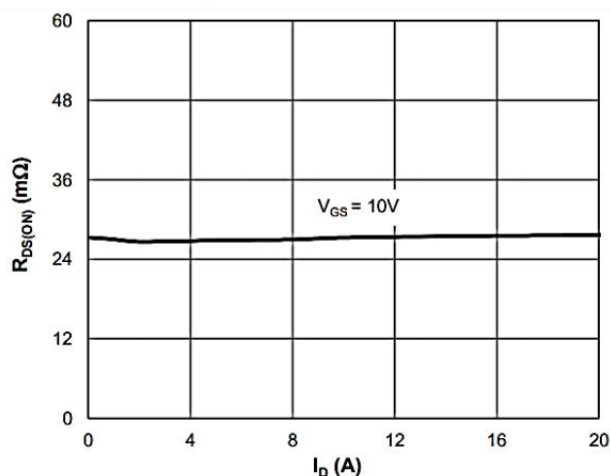


Figure 3: $R_{DS(ON)}$ vs. Drain Current

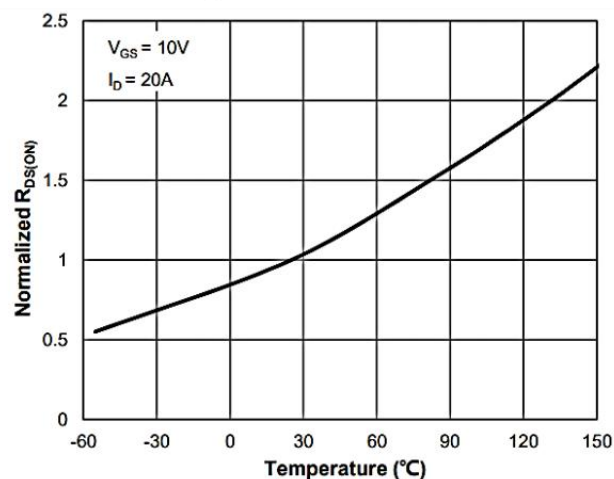


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

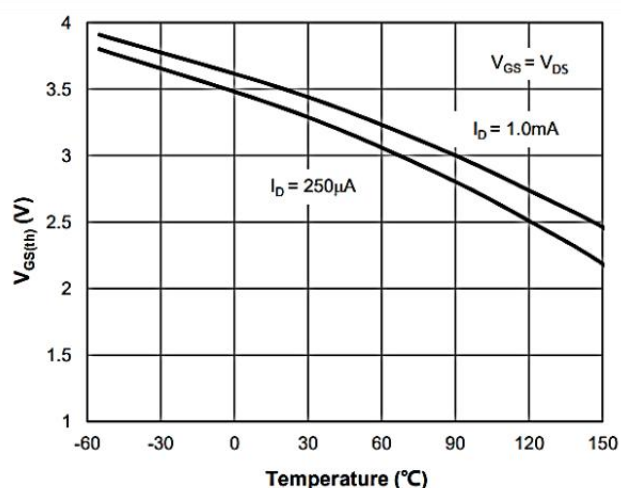


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

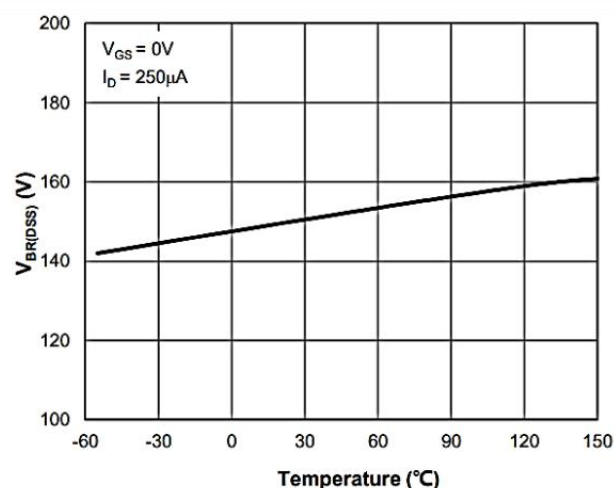


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

Typical Characteristics

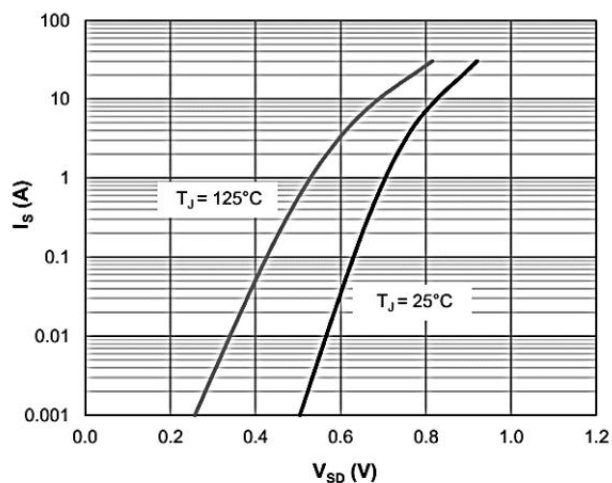


Figure 7: Body-Diode Characteristics

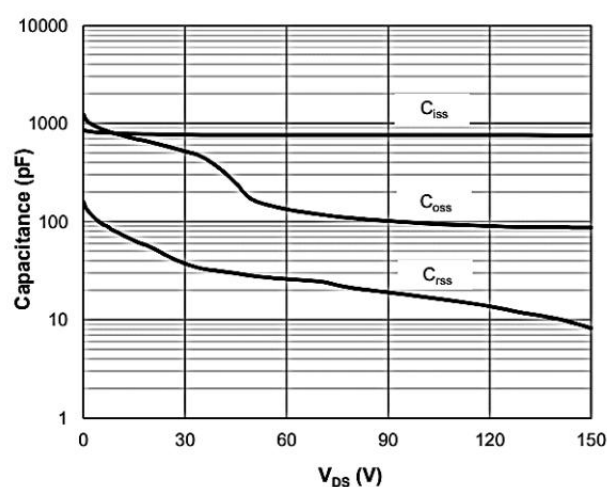


Figure 8: Capacitance Characteristics

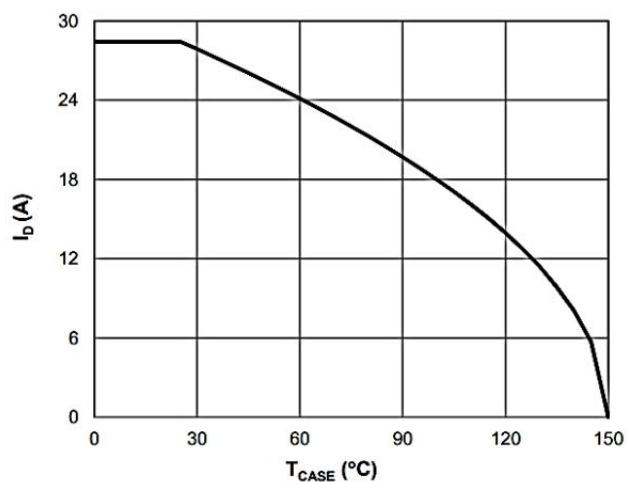


Figure 9: Current De-rating

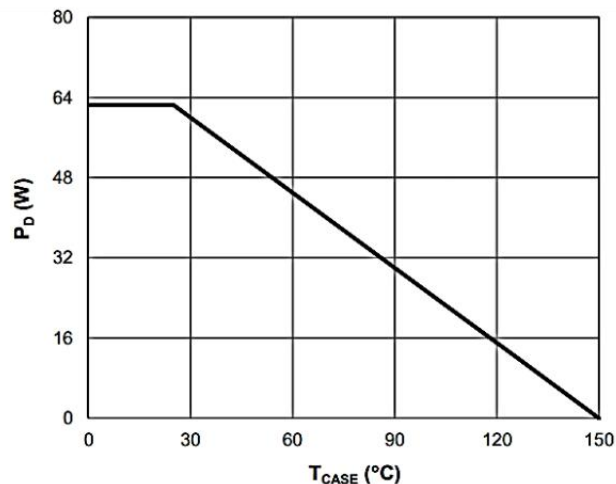


Figure 10: Power De-rating

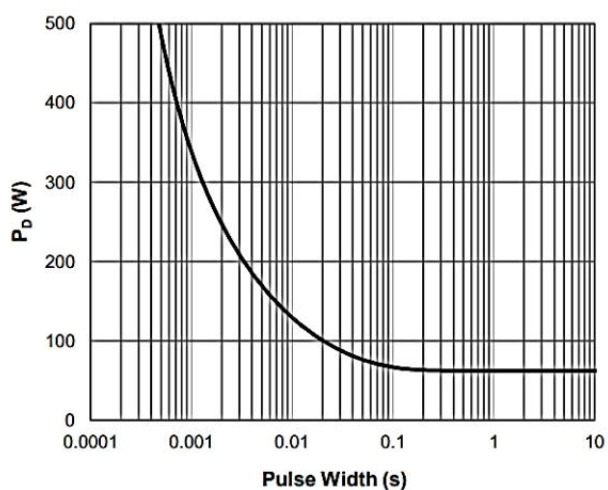


Figure 11: Single Pulse Power Rating, Junction-to-Case

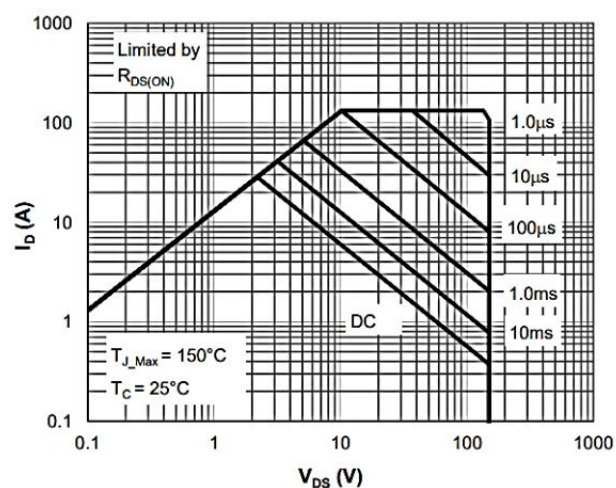
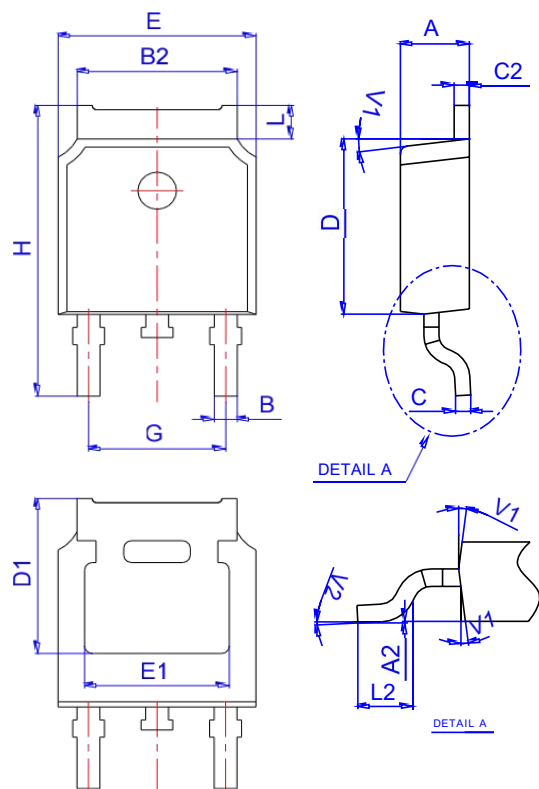


Figure 12: Maximum Safe Operating Area

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