60V N-Channel Enhancement Mode MOSFET

Description

The SX100N06D 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

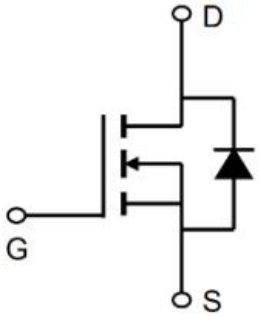
V_{DS} = 60V I_D =100A

$R_{DS(ON)}$ < 6.0mΩ @ V_{GS}=10V

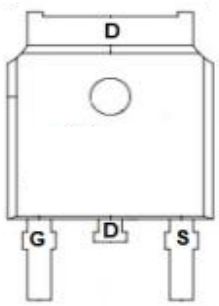
Application

Battery protection

UPS



TO-252-3L



Absolute Maximum Ratings@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Value	Unit
VDS	Drain source voltage	60	V
VGS	Gate source voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V[1]	100	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V[1]	70	A
IDM	Pulsed drain current[2)]	210	A
EAS	Single pulsed avalanche energy[)]	265	mJ
P_D@T_C=25℃	Total Power Dissipation[4]	87	W
Tstg，Tj	Operation and storage temperature	-55 to 150	℃
RθJC	Thermal resistance, junction-case	1.44	℃/W
RθJA	Thermal resistance, junction-ambient[4)]	62	℃/W

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Parameter	Symbol	Test condition	Min.	Typ.	Max	Unit
BVDSS	Drain-source breakdown voltage	V_{GS}=0 V, I_D=250 μA	60	65		V
VGS(th)	Gate threshold voltage	V_{DS}=V_{GS}, I_D=250 μA	1.0	1.6	2.5	V
RDS(ON)	Drain-source on-state resistance	V_{GS}=10 V, I_D=20 A		4.2	6	mΩ
RDS(ON)	Drain-source on-state resistance	V_{GS}=4.5 V, I_D=10 A		6.4	10	mΩ
IGSS	Gate-source leakage current	V_{GS}=±20 V			±100	nA
IDSS	Drain-source leakage current	V_{DS}=60 V, V_{GS}=0 V			1	μA
Rg	Gate Resistance	f=1MHz, Open drain		2.8		Ω
Ciss	Input capacitance	V_{GS}=0 V, V_{DS}=50 V, f=100 kHz		2136		pF
Coss	Output capacitance			331.5		pF
Crss	Reverse transfer capacitance			10.6		pF
td(on)	Turn-on delay time	V_{GS}=10 V, V_{DS}=50 V, R_G=2 Ω, I_D=25 A		22.9		ns
t_r	Rise time			6.5		ns
td(off)	Turn-off delay time			45.7		ns
t_f	Fall time			20.4		ns
Q_g	Total gate charge	I_D=25 A, V_{DS}=50 V, V_{GS}=10 V		30		nC
Q_{gs}	Gate-source charge			5.8		nC
Qgd	Gate-drain charge			6.1		nC
Vplateau	Gate plateau voltage			3.6		V
VSD	Diode forward voltage	I_S=20 A, V_{GS}=0 V			1.3	V
trr	Reverse recovery time	I_S=25A, di/dt=100 A/μs		50.3		ns
Q_{rr}	Reverse recovery charge			45.1		nC
Irrm	Peak reverse recovery current			1.5		A

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 VDD=25V,VGS=10V,L=0.1mH,IAS=15A

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

5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation

Typical Characteristics

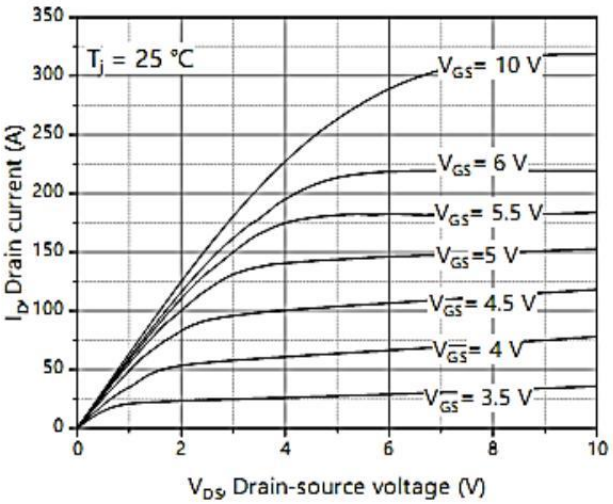


Figure 1. Typ. output characteristics

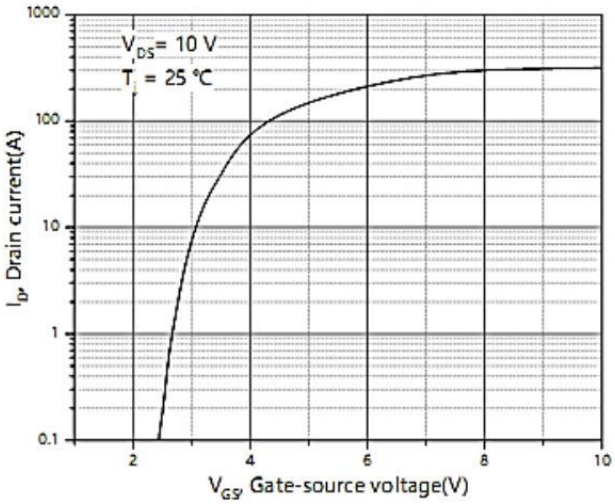


Figure 2. Typ. transfer characteristics

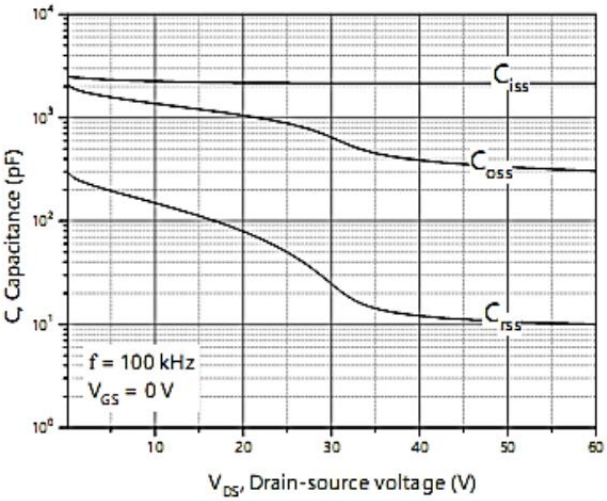


Figure 3. Typ. capacitances

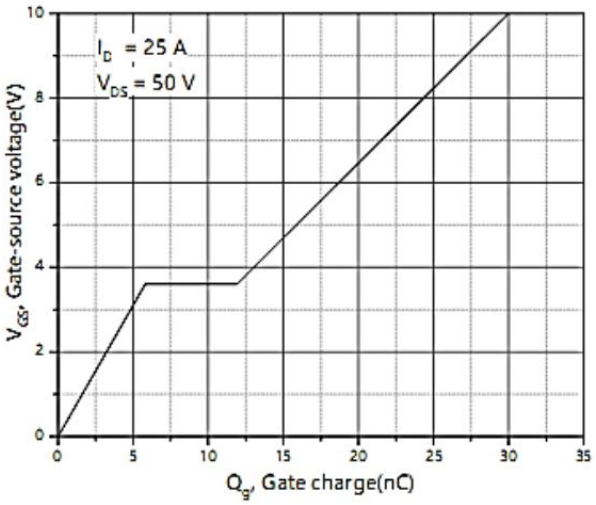


Figure 4. Typ. gate charge

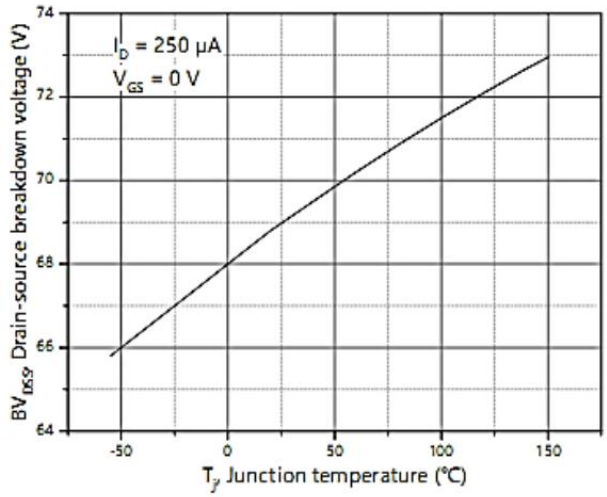


Figure 5. Drain-source breakdown voltage

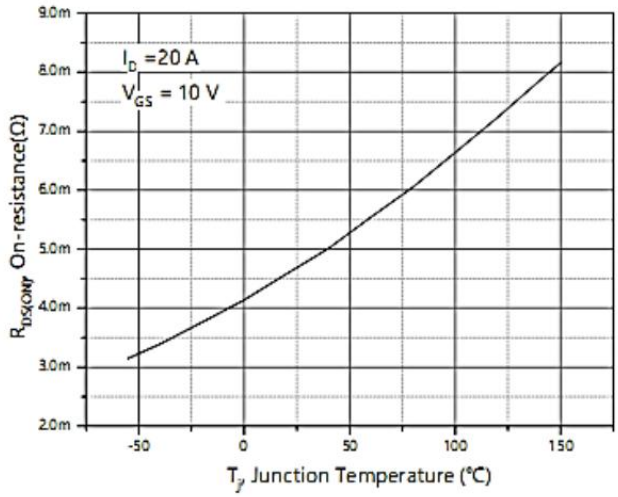


Figure 6. Drain-source on-state resistance

Typical Characteristics

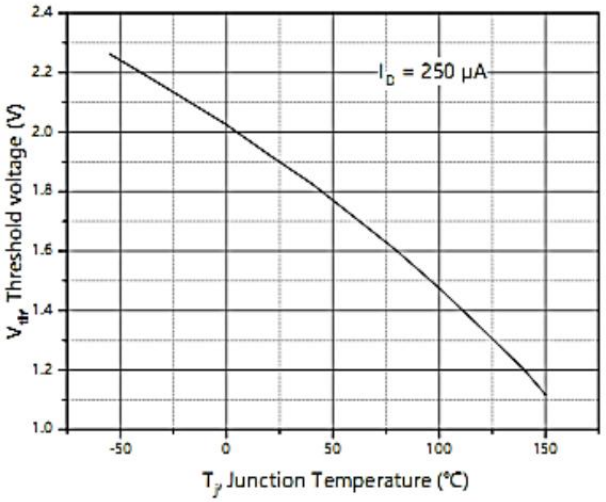


Figure 7. Threshold voltage

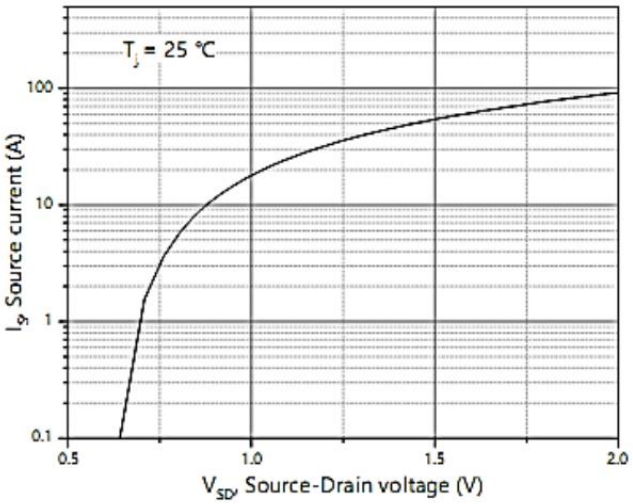


Figure 8. Forward characteristic of body diode

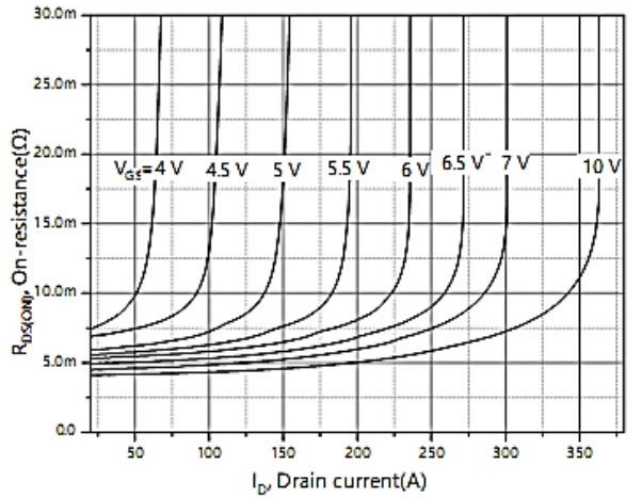


Figure 9. Drain-source on-state resistance

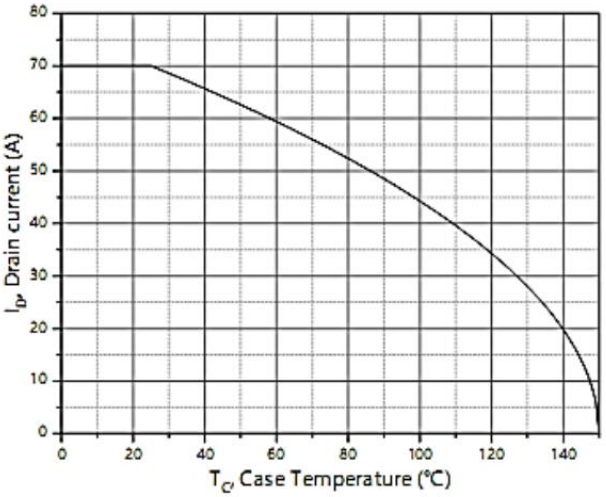


Figure 10. Drain current

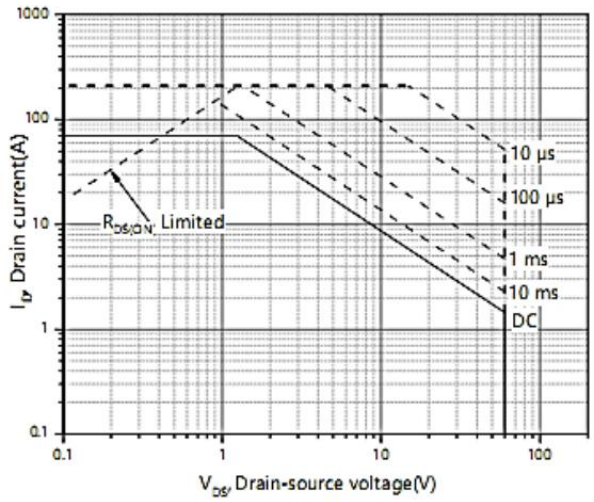


Figure 11. Safe operation area T_C=25 °C

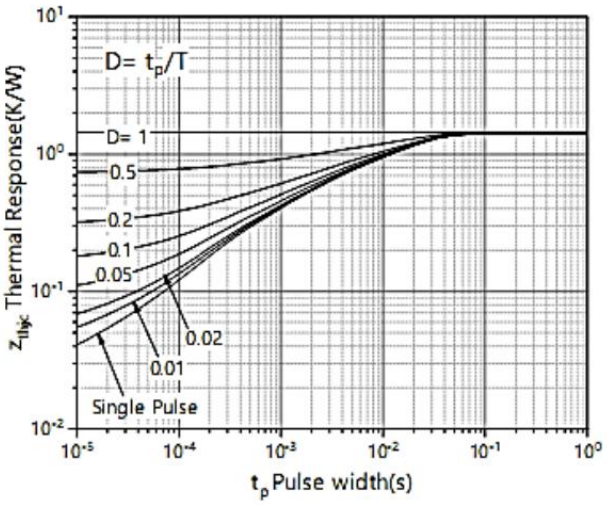
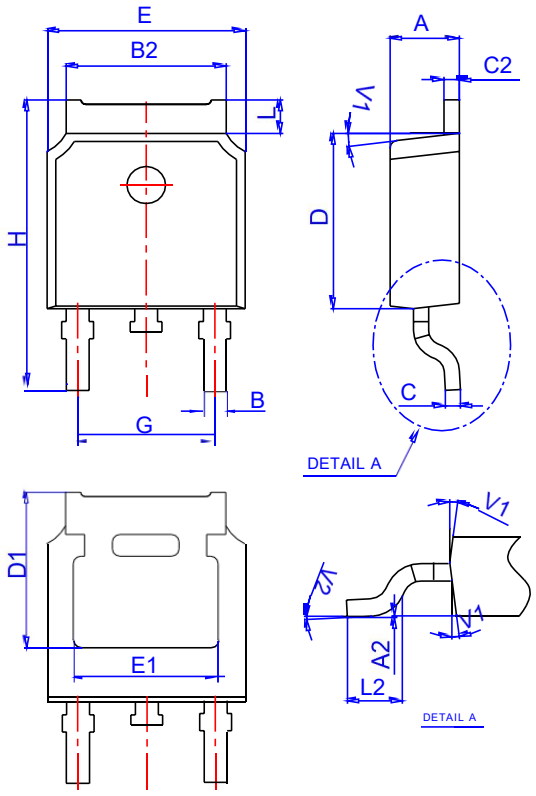


Figure 12. Max. transient thermal impedance

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