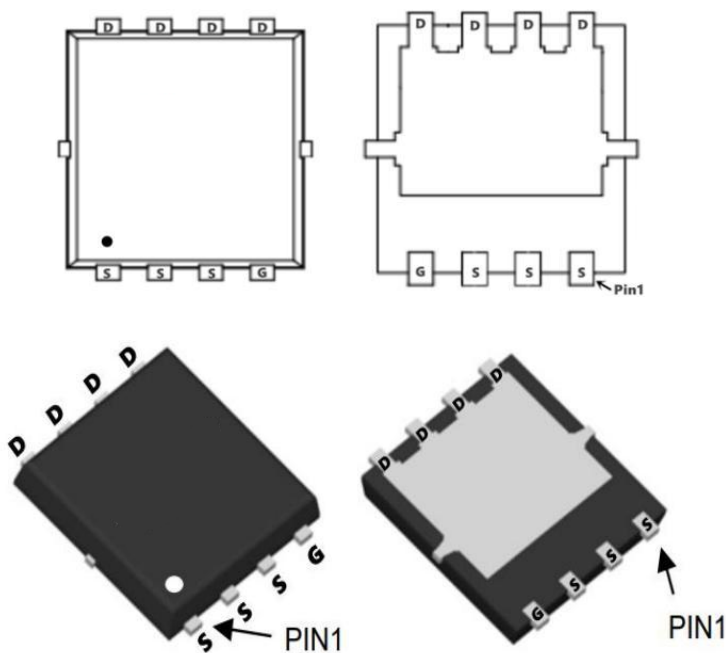


Description

The SX80N06NF 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

$V_{DS} = 60V$ $I_D = 80A$

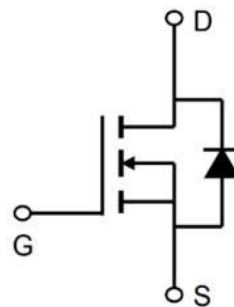
$R_{DS(ON)} < 6.0m\Omega$ @ $V_{GS}=10V$

Application

Battery protection

Load switch

Uninterruptible power supply



Absolute Maximum Ratings@ $T_J=25^\circ C$ (unless otherwise specified)

Symbol	Parameter	Value	Unit
V_{DS}	Drain source voltage	60	V
V_{GS}	Gate source voltage	± 20	V
$I_D @ T_c = 25^\circ C$	Continuous drain current ¹⁾	80	A
$I_D @ T_c = 100^\circ C$	Continuous drain current ¹⁾	45	A
I_{DM}	Pulsed drain current ²⁾	210	A
I_{AS}	Diode forward current	70	A
$P_D @ T_c = 25^\circ C$	Power dissipation	87	W
E_{AS}	Single pulsed avalanche energy ³⁾	66	mJ
T_{stg}, T_J	Operation and storage temperature	-55 to 150	$^\circ C$
$R_{\theta JC}$	Thermal resistance, junction-case	1.44	$^\circ C/W$
$R_{\theta JA}$	Thermal resistance, junction-ambient ⁴⁾	62	$^\circ C/W$

Electrical Characteristics (T_J=25°C, unless otherwise noted)

Symbol	Parameter	Test condition	Min.	Typ.	Max	Unit
BVDSS	Drain-source breakdown voltage	V _{GS} =0 V, I _D =250 μA	60	72		V
V _{GS(th)}	Gate threshold voltage	V _{DS} =V _{GS} , I _D =250 μA	1.2	1.8	2.5	V
R _{DS(ON)}	Drain-source on-state resistance	V _{GS} =10 V, I _D =20 A		4.5	6.0	mΩ
R _{DS(ON)}	Drain-source on-state resistance	V _{GS} =4.5 V, I _D =10 A		6.4	10	mΩ
I _{GSS}	Gate-source leakage current	V _{GS} =±20 V			±100	nA
I _{DSS}	Drain-source leakage current	V _{DS} =60 V, V _{GS} =0 V			1	μA
R _g	Gate Resistance	f=1MHz		2.8		Ω
C _{iss}	Input capacitance	V _{GS} =0 V, V _{DS} =50 V, f=100 kHz		2136		pF
C _{oss}	Output capacitance			331.5		pF
C _{rss}	Reverse transfer capacitance			10.6		pF
t _{d(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
t _{d(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
Q _{gd}	Gate-drain charge			6.1		nC
V _{plateau}	Gate plateau voltage			3.6		V
V _{SD}	Diode forward voltage	I _S =20 A, V _{GS} =0 V			1.3	V
t _{rr}	Reverse recovery time	I _S =25A, di/dt=100 A/μs		50.3		ns
Q _{rr}	Reverse recovery charge			45.1		nC
I _{rrm}	Peak reverse recovery current			1.5		A

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 .The EAS data shows Max. rating .
- 3、The power dissipation is limited by 175°C junction temperature
- 4、EAS condition: T_J=25°C , V_{DD}=25V, V_{GS}=10V, L=0.1Mh, I_{AS}=40A
- 5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

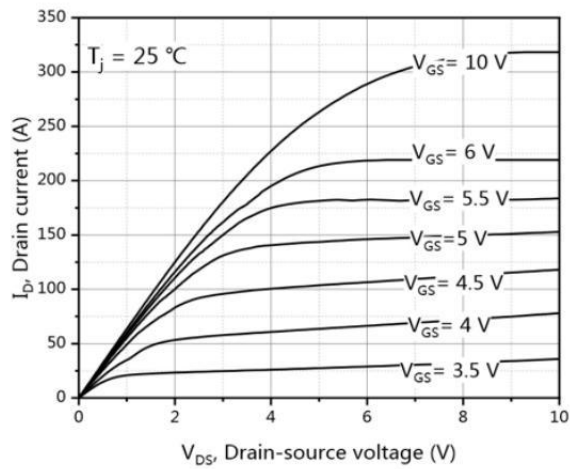


Figure1.Type Output Charcteristics

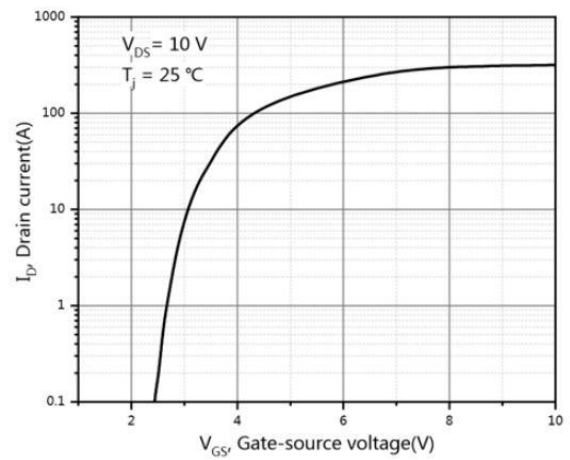


Figure2.Type Transfer Characteristics

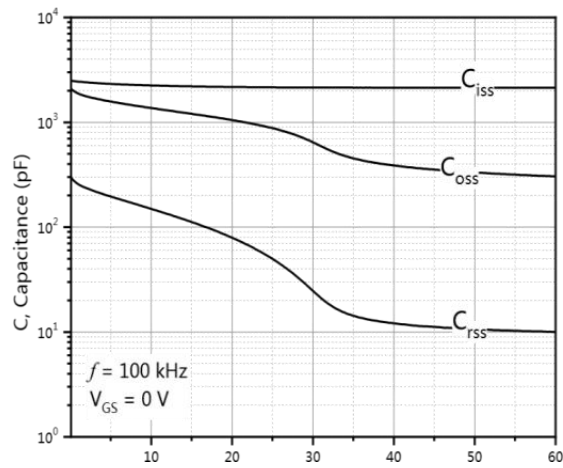


Figure3.Type Capacitances

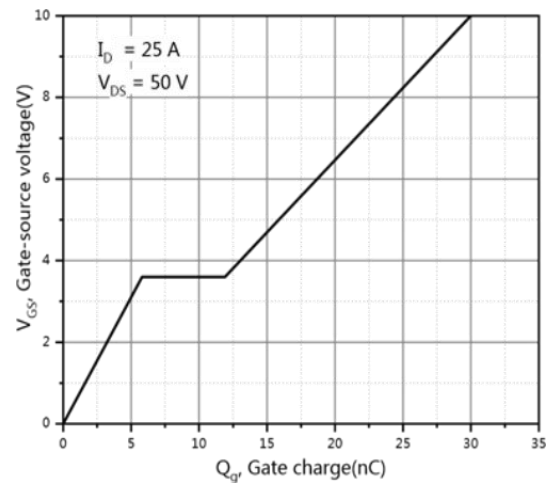


Figure4.Type Gate Charge

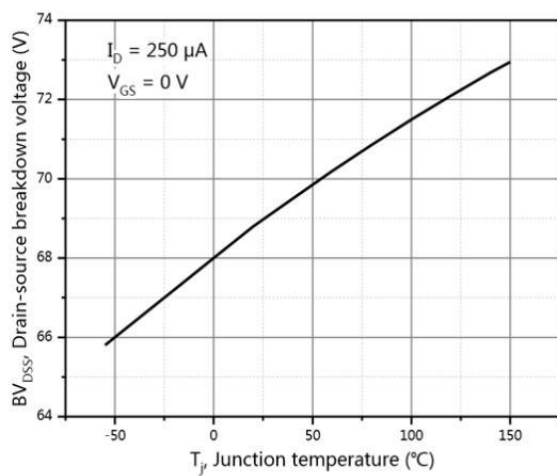


Figure5.Drain-source Breakdown Voltage

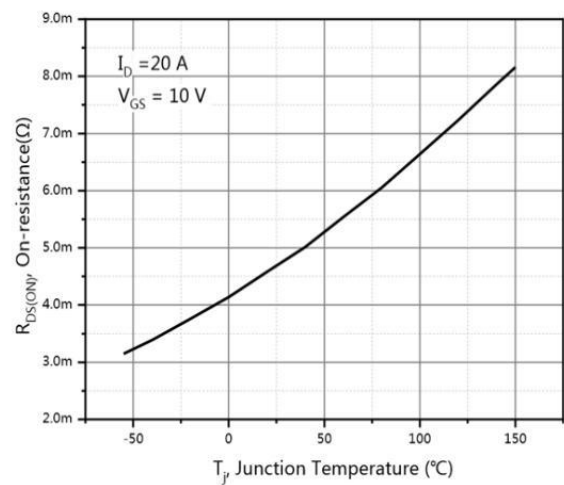


Figure6.Drain-source on-state resistance

Typical Characteristics

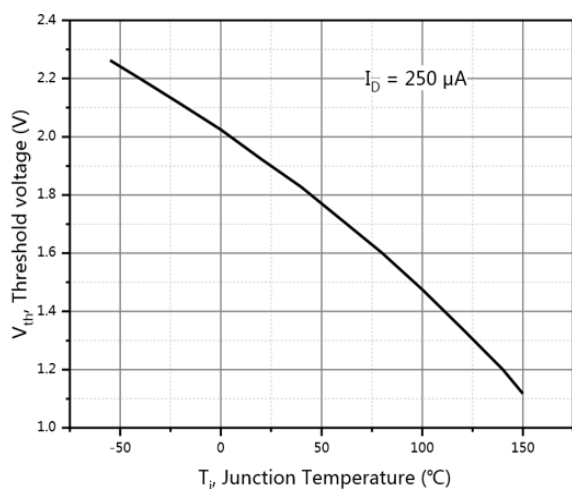


Figure7.Threshold Voltage

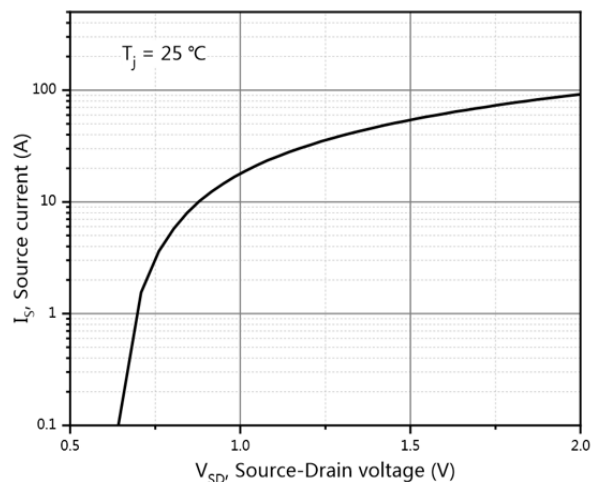


Figure8.Forward characteristic of body diode

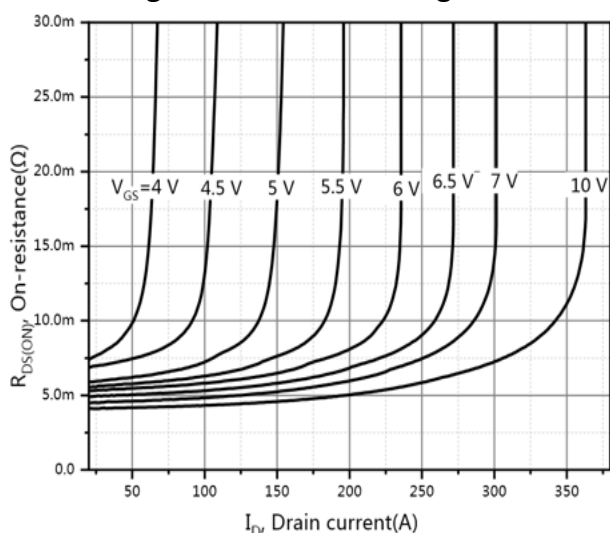


Figure9.Drani-source on-state resistance

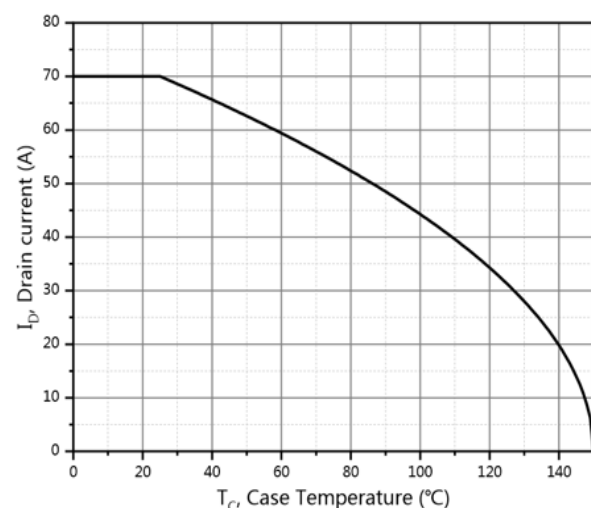


Figure10.Drain-current

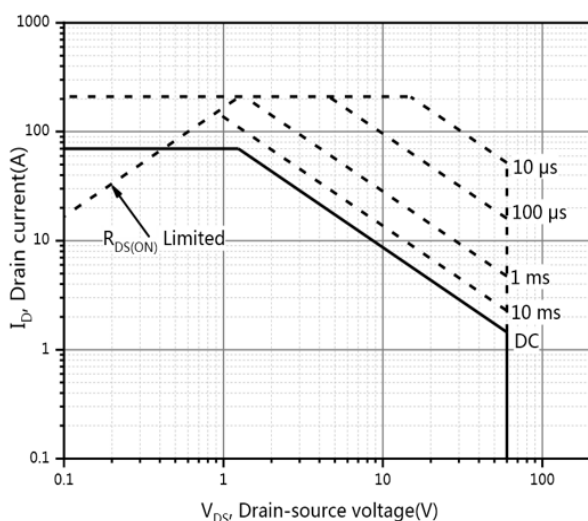


Figure11.Safe operation area fo Tc=25°C

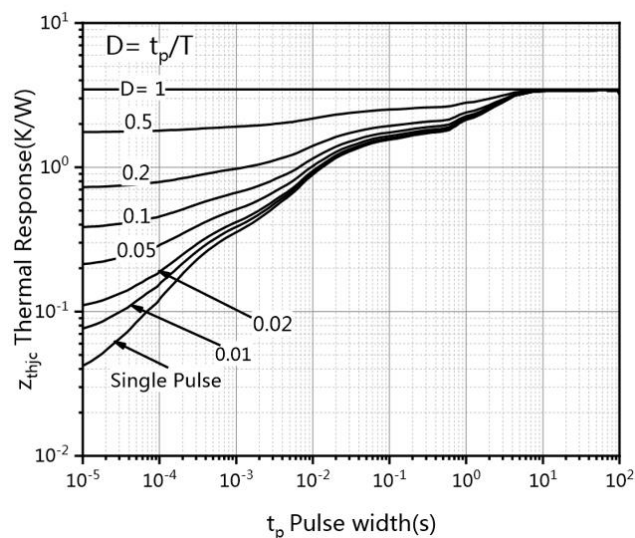
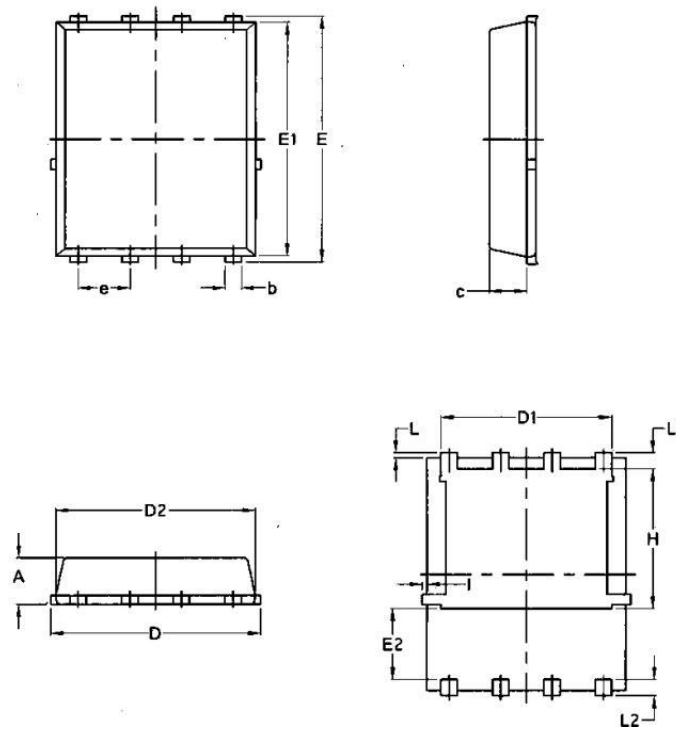


Figure12.Safe operation area fo PDFN5*6-8L

Package Mechanical Data-PDFN5*6-8L-JQ Single


Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	PDN5*6-8L		5000