

Description

The SX80P02NF uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

$V_{DS} = -20V$ $I_D = -80A$

$R_{DS(ON)} < 5.2m\Omega$ @ $V_{GS}=4.5V$

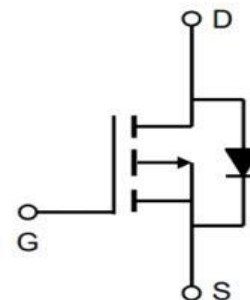
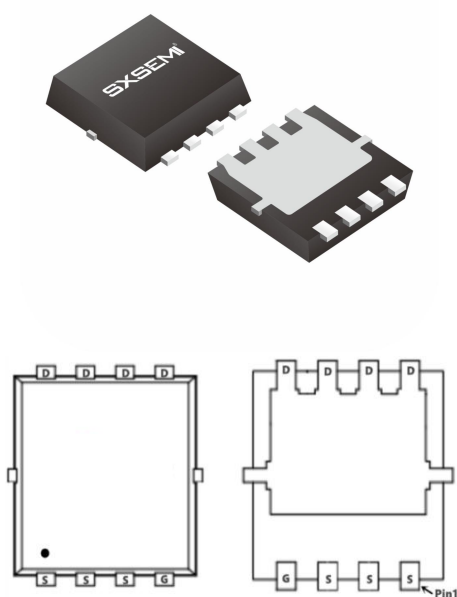
Application

Battery protection

Load switch

Uninterruptible power supply

PDFN5*6-8L



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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-20	V
V_{GS}	Gate-Source Voltage	± 12	V
$I_D @ T_c=25^{\circ}C$	Continuous Drain Current, V_{GS} @ -4.5V ¹	-80	A
$I_D @ T_c=70^{\circ}C$	Continuous Drain Current, V_{GS} @ -4.5V ¹	-44	A
I_{DM}	Pulsed Drain Current ²	-300	A
E_{AS}	Single Pulse Avalanche Energy	180	mJ
$P_D @ T_c=25^{\circ}C$	Total Power Dissipation ³	43.1	W
T_{STG}	Storage Temperature Range	-55 to 150	$^{\circ}C$
T_J	Operating Junction Temperature Range	-55 to 150	$^{\circ}C$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	25	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	2.9	$^{\circ}C/W$

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	VGS = 0V, ID = -250μA	-20	-	-	V
IGSS	Gate-body Leakage current	VDS = 0V, VGS = ±12V	-	-	±100	nA
IDSS	Zero Gate Voltage Drain Current T _J =25°C	VDS = -20V, VGS = 0V	-	-	-1	μA
IDSS	Zero Gate Voltage Drain Current T _J =100°C		-	-	-100	
VGS(th)	Gate-Threshold Voltage	VDS = VGS, ID = -250μA	-0.4	-0.7	-1.0	V
RDS(on)	Drain-Source On-Resistance ⁴	VGS = -4.5V, ID = -10A	-	3.8	5.2	mΩ
RDS(on)	Drain-Source On-Resistance ⁴	VGS = -2.5V, ID = -10A	-	5.0	6.8	
gfs	Forward Transconductance ⁴	VDS = -4.5V, ID = -10A	-	56	-	S
Ciss	Input Capacitance	VDS = -10V, VGS = 0V, f = 1MHz	-	4770	-	pF
Coss	Output Capacitance		-	665	-	
Crss	Reverse Transfer Capacitance		-	570	-	
Rg	Gate Resistance	f = 1MHz	-	9.6	-	Ω
Qg	Total Gate Charge	VGS = -4.5V, VDS = -10V, ID = -10A	-	55	-	nC
Qgs	Gate-Source Charge		-	5.2	-	
Qgd	Gate-Drain Charge		-	10	-	
td(on)	Turn-On Delay Time	VGS = -4.5V, VDD = -10V, RG = 3Ω, ID = -10A	-	22	-	ns
tr	Rise Time		-	38	-	
td(off)	Turn-Off Delay Time		-	110	-	
tf	Fall Time		-	62	-	
VSD	Diode Forward Voltage ⁴	IS = -10A, VGS = 0V	-	-	-1.2	V
IS	Continuous Source Current	TC=25°C	-	-	-70	A

Note :

- 1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 2OZ copper.
- 2、The EAS data shows Max. rating. The test condition is VDD=-25V, VGS=-10V, L=0.4mH, I AS = -20A.
- 3、The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$
- 3、The power dissipation is limited by 150°C junction temperature
- 4、The data is theoretically the same as I D and I DM , in real applications , should be limited by total power dissipation.

Typical Characteristics

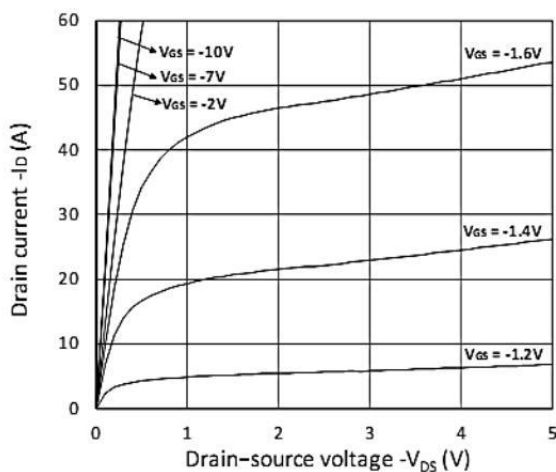


Figure 1. Output Characteristics

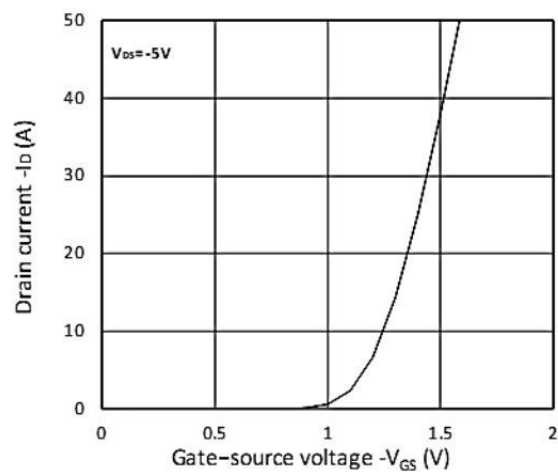


Figure 2. Transfer Characteristics

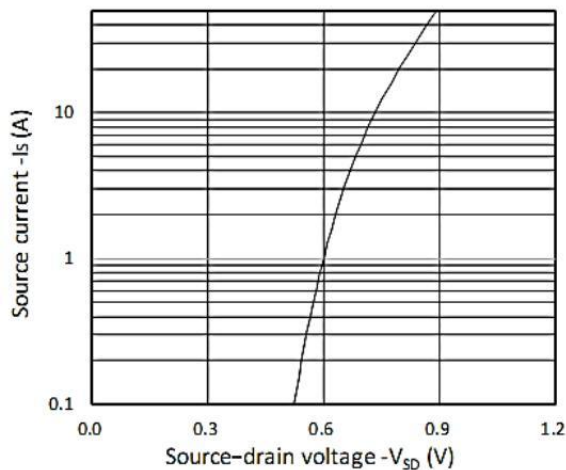


Figure 3. Forward Characteristics of Reverse

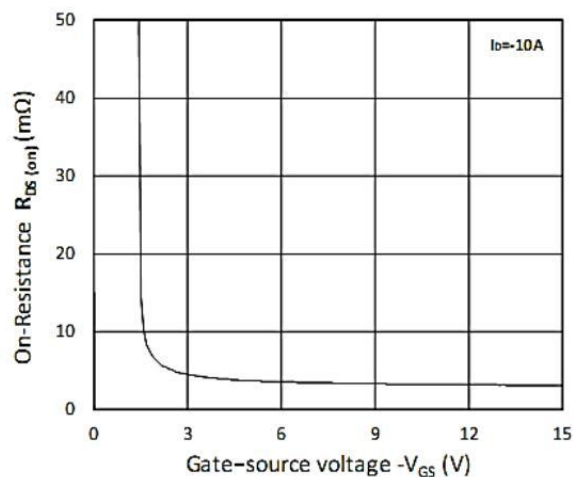


Figure 4. R_DS(ON) vs. V_GS

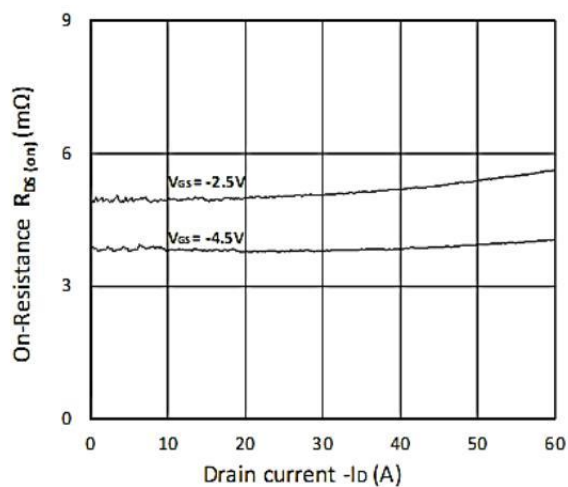


Figure 5. R_DS(ON) vs. I_D

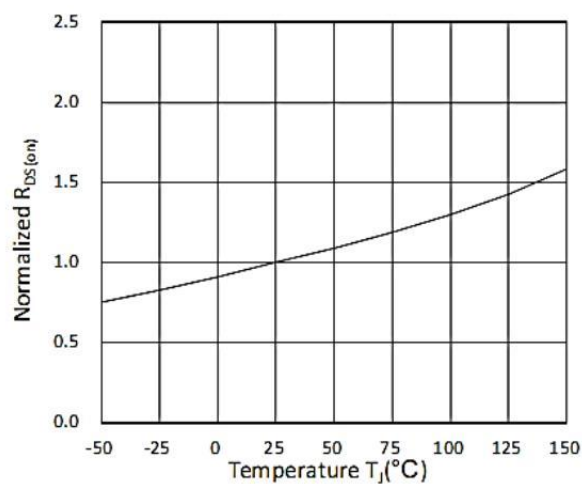


Figure 6. Normalized R_DS(on) vs. Temperature

Typical Characteristics

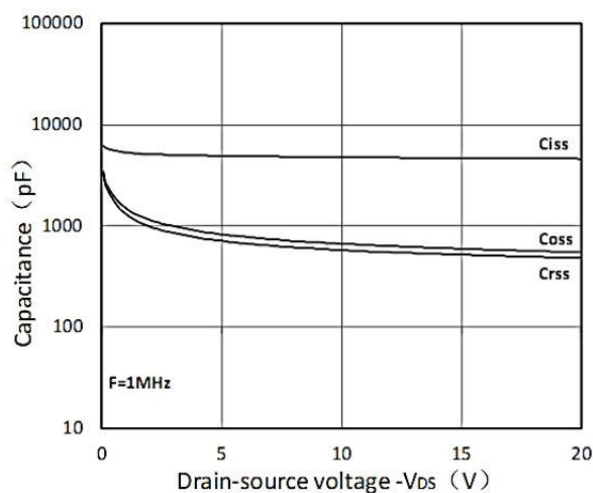


Figure 7. Capacitance Characteristics

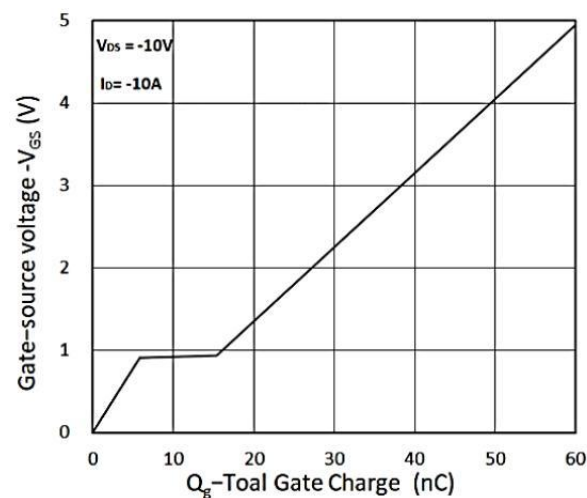


Figure 8. Gate Charge Characteristics

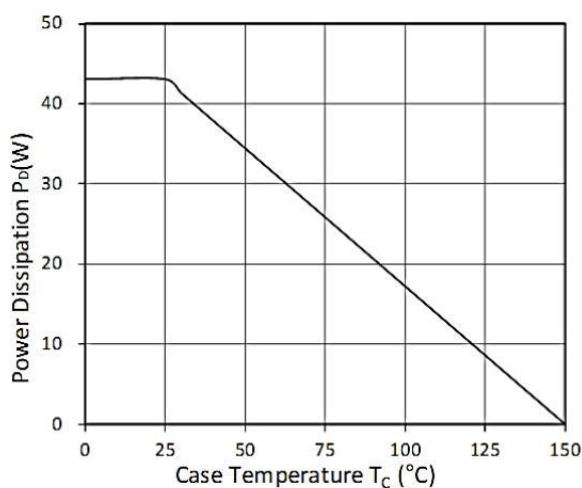


Figure 9. Power Dissipation

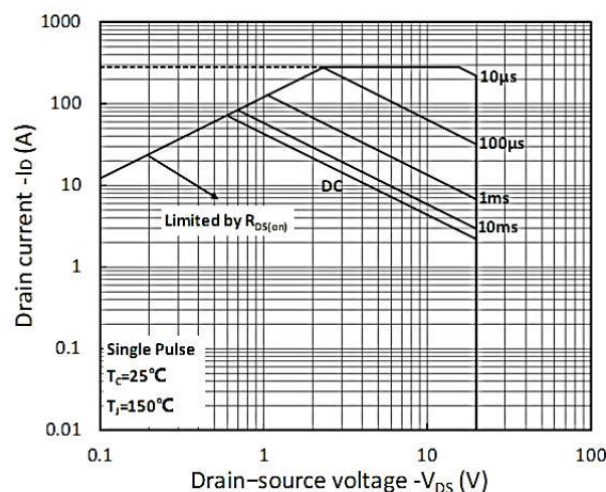


Figure 10. Safe Operating Area

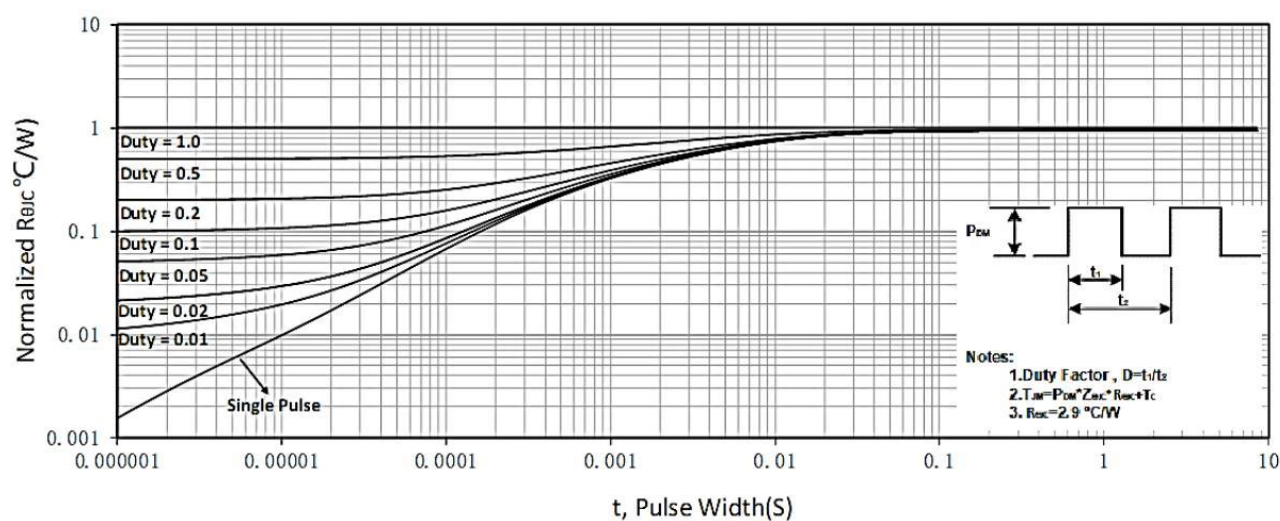
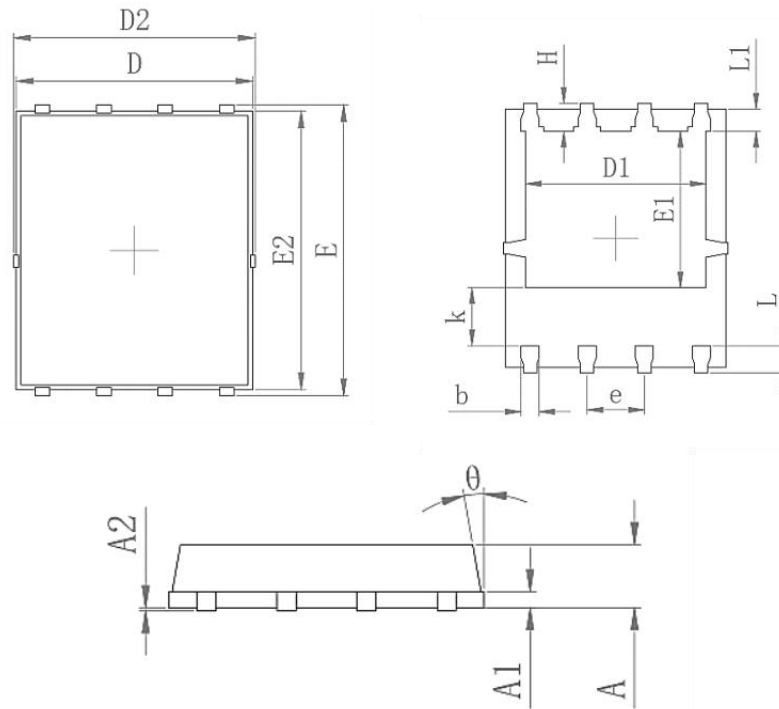


Figure 11 Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-PDFN5X6-8L-XZT Single



Symbol	Common	
	mm	
	Mim	Max
A	0.90	1.10
A1	0.254 REF	
A2	0-0.05	
D	4.824	4.976
D1	3.910	4.110
D2	4.944	5.076
E	5.924	6.076
E1	3.375	3.575
E2	5.674	5.826
b	0.350	0.450
e	1.270	
L	0.534	0.686
L1	0.424	0.576
K	1.190	1.390
H	0.549	0.701
Φ	8°	12°

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	PDFN5*6-8L		5000