

Description

The SX120P03NF 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

$V_{DS} = -30V$ $I_D = -120A$

$R_{DS(ON)} < 5.0m\Omega$ @ $V_{GS} = -10V$

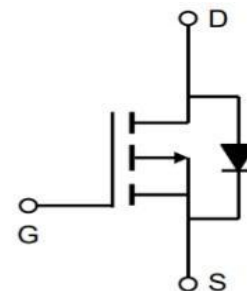
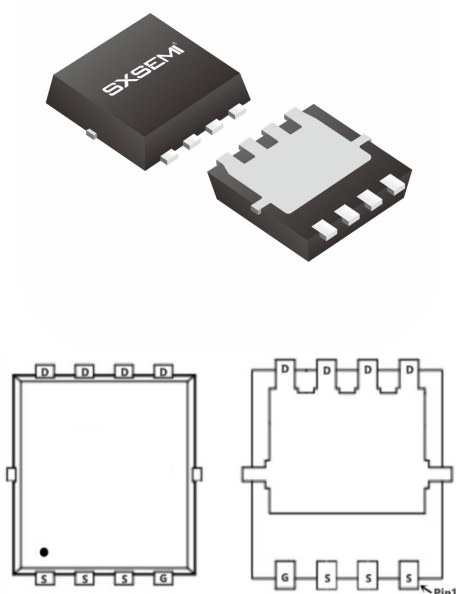
Application

Lithium battery protection

Wireless impact

Mobile phone fast charging

PDFN5*6-8L



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

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	-30	V
VGS	Gate-Source Voltage	±20	V
ID@TC=25°C	Continuous Drain Current, VGS @ -10V1	-120	A
ID@TC=100°C	Continuous Drain Current, VGS @ -10V1	-65	A
IDM	Pulsed Drain Current2	-360	A
EAS	Single Pulse Avalanche Energy3	225	mJ
IAS	Avalanche Current	-60	A
PD@TC=25°C	Total Power Dissipation4	103	W
TSTG	Storage Temperature Range	-55 to 150	°C
TJ	Operating Junction Temperature Range	-55 to 150	°C
RθJA	Thermal Resistance Junction-Ambient 1	25	°C/W
RθJC	Thermal Resistance Junction-Case1	1.46	°C/W

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	VGS=0V, ID= -250μA	-30	-33	-	V
IDSS	Zero Gate Voltage Drain Current	VDS= -30V, VGS=0V,	-	-	-1	μA
IGSS	Gate to Body Leakage Current	VDS=0V, VGS= ±20V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID= -250μA	-1.0	-1.6	-2.5	V
RDS(on)	Static Drain-Source on-Resistance	VGS= -10V, ID= -30A	-	3.8	5.0	mΩ
		VGS= -4.5V, ID= -20A	-	5.8	8.2	
Ciss	Input Capacitance	VDS= -15V, VGS=0V, f=1.0MHz	-	9400	-	pF
Coss	Output Capacitance		-	1000	-	pF
Crss	Reverse Transfer Capacitance		-	767	-	pF
Qg	Total Gate Charge	VDS= -15V, ID= -30A, VGS= -10V	-	42	-	nC
Qgs	Gate-Source Charge		-	8.4	-	nC
Qgd	Gate-Drain("Miller") Charge		-	11.2	-	nC
td(on)	Turn-on Delay Time	VDD= -15V, ID= -30A, VGS= -10V, RGEN=2.5Ω	-	15	-	ns
tr	Turn-on Rise Time		-	16	-	ns
td(off)	Turn-off Delay Time		-	69	-	ns
tf	Turn-off Fall Time		-	27	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	-90	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-360	A
VSD	Drain to Source Diode Forward Voltage	VGS=0V, IS= -30 A		-0.8	-1.2	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 .The EAS data shows Max. rating .
- 3、The power dissipation is limited by 175°C junction temperature
- 4、EAS condition: T_J=25°C , VDD= -24V, VG= -10V, RG=7Ω, L=0.1mH, IAS= -60A
- 5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

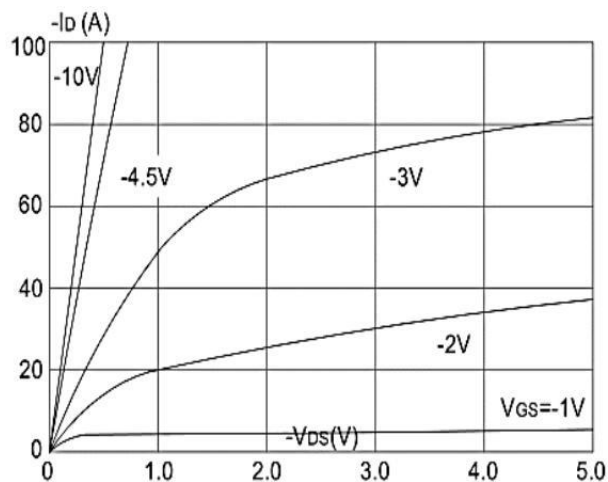


Figure1: Output Characteristics

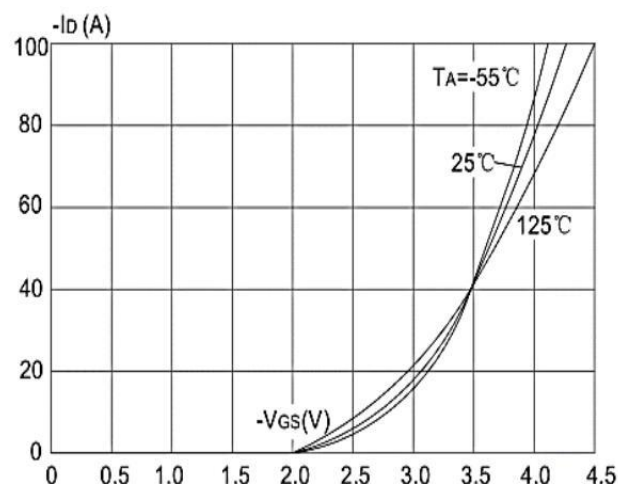


Figure 2: Typical Transfer Characteristics

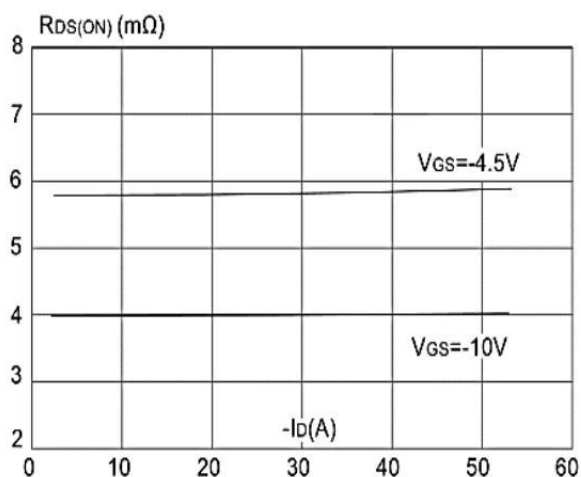


Figure 3: On-resistance vs. Drain Current

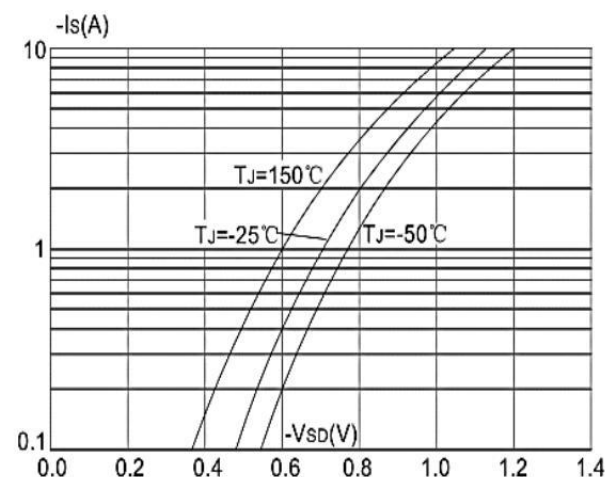


Figure 4: Body Diode Characteristics

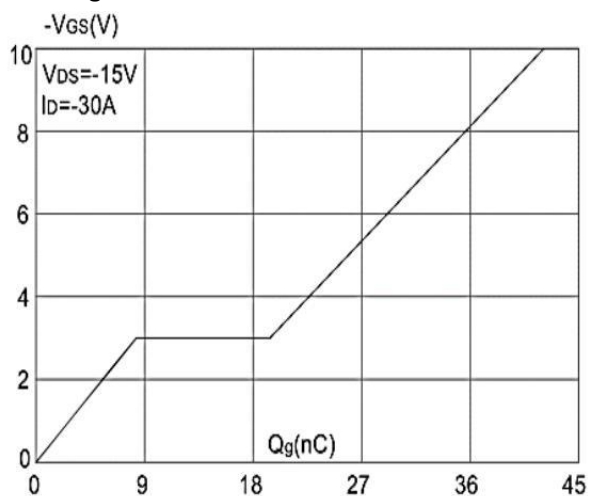


Figure 5: Gate Charge Characteristics

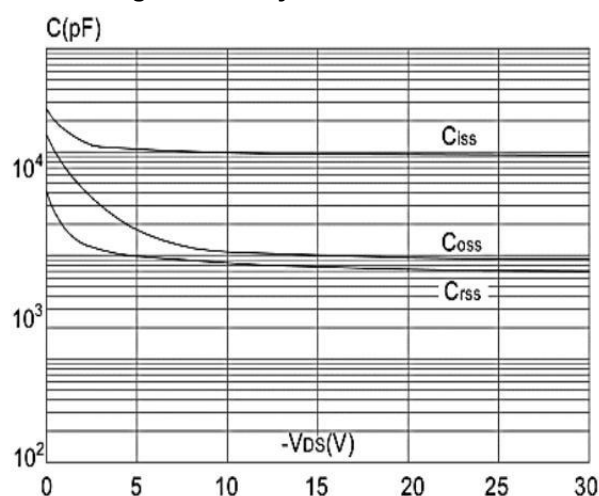


Figure 6: Capacitance Characteristics

Typical Characteristics

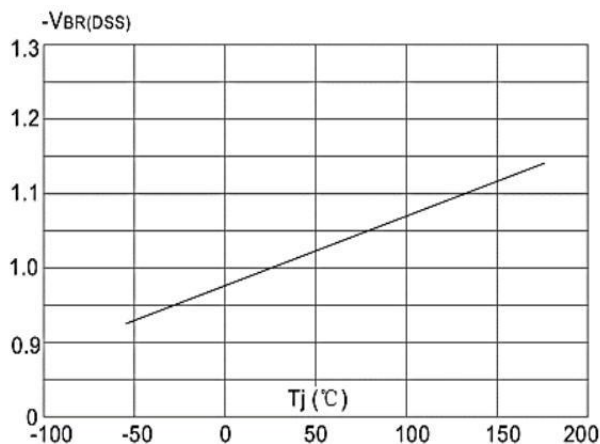


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

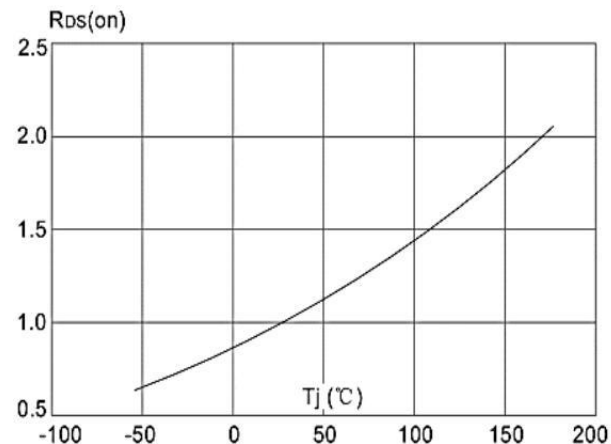


Figure 8: Normalized on Resistance vs. Junction Temperature

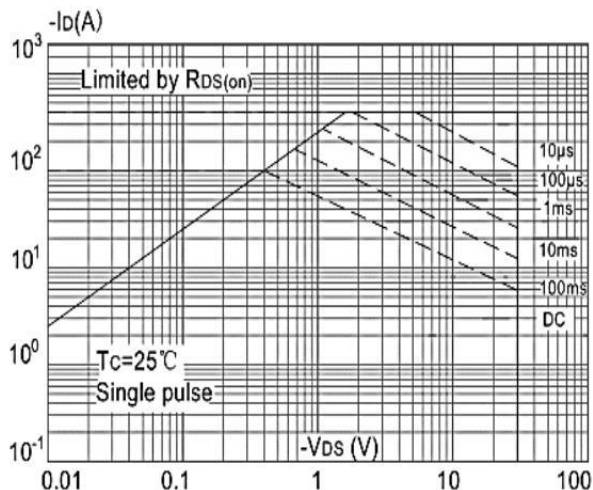


Figure 9: Maximum Safe Operating Area

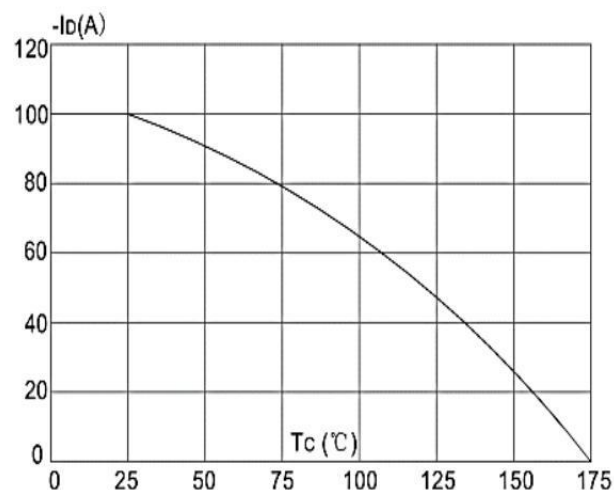


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

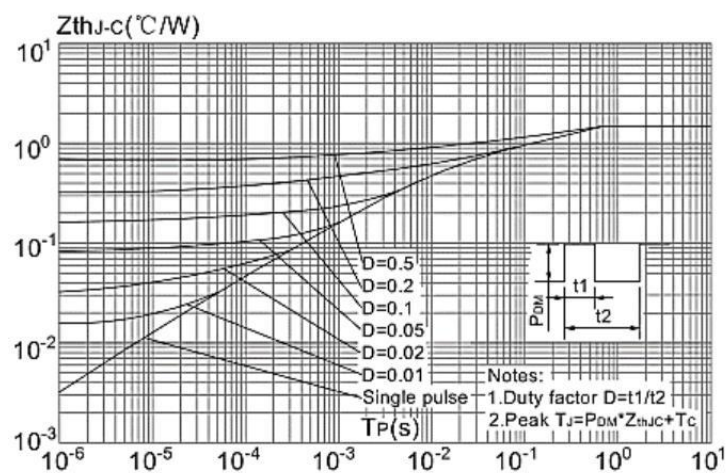
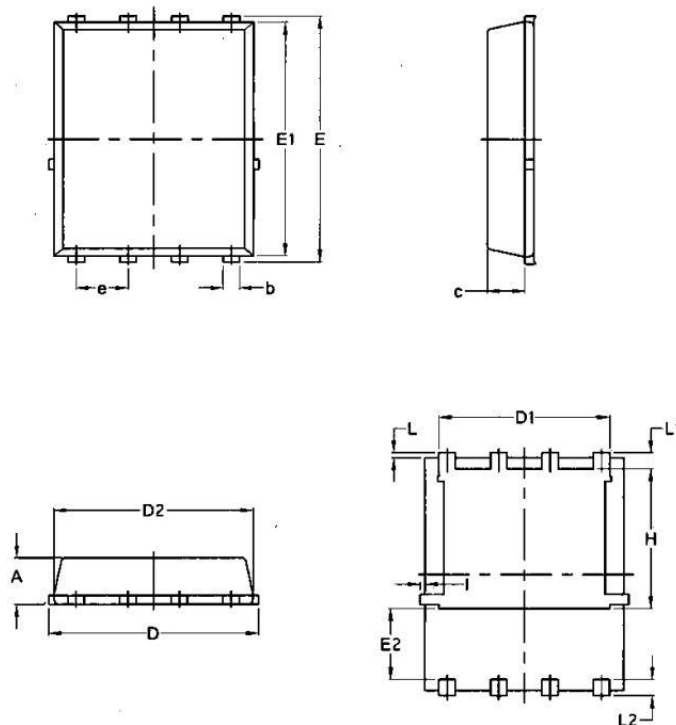


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

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	PDFN5*6-8L		5000