

Description

The SX60P03DF 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

$V_{DS} = -30V$ $I_D = -60A$

$R_{DS(ON)} < 8.5m\Omega$ @ $V_{GS} = -10V$

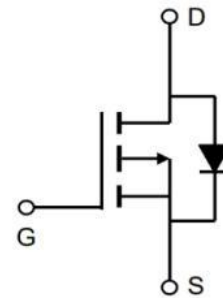
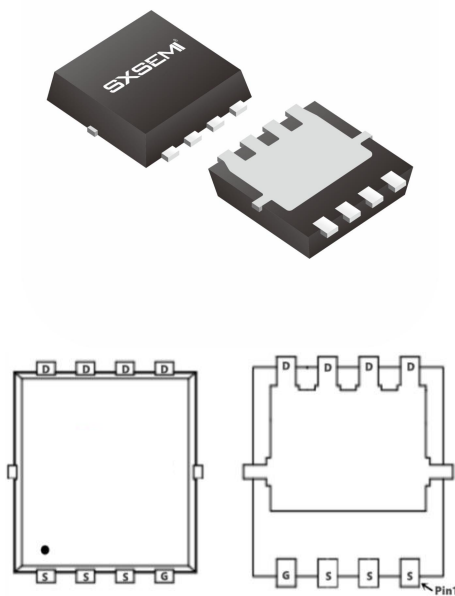
Application

Lithium battery protection

Wireless impact

Mobile phone fast charging

PDFN3*3-8L



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 @ -10V	-60	A
ID@TC=100°C	Continuous Drain Current, VGS @ -10V	-57	A
IDM	Pulsed Drain Current ²	-200	A
EAS	Single Pulse Avalanche Energy ³	125	mJ
IAS	Avalanche Current	-40	A
PD@TC=25°C	Total Power Dissipation ⁴	69	W
TSTG	Storage Temperature Range	-55 to 150	°C
TJ	Operating Junction Temperature Range	-55 to 150	°C
RθJA	Thermal Resistance Junction-Ambient ¹	85	°C/W
RθJC	Thermal Resistance Junction-Case ¹	1.6	°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	V _{GS} =0V, I _D = -250μA	-30	-	-	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} = -30V, V _{GS} =0V,	-	-	-1	μA
IGSS	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D = -250μA	-1.0	-1.6	-2.5	V
RDS(on)	Static Drain-Source on-Resistance note3	V _{GS} = -10V, I _D = -30A	-	6.5	8.5	mΩ
		V _{GS} = -4.5V, I _D = -20A	-	11	13.5	
Ciss	Input Capacitance	V _{DS} = -15V, V _{GS} =0V, f=1.0MHz	-	3564	-	pF
Coss	Output Capacitance		-	416	-	pF
Crss	Reverse Transfer Capacitance		-	373	-	pF
Qg	Total Gate Charge	V _{DD} = -15V, I _D = -20A, V _{GS} = -10V	-	37	-	nC
Qgs	Gate-Source Charge		-	6.5	-	nC
Qgd	Gate-Drain("Miller") Charge		-	9.4	-	nC
td(on)	Turn-on Delay Time	V _{DD} = -15V, I _D = -30A, V _{GS} = -10V, R _{GEN} =2.5Ω	-	16	-	ns
tr	Turn-on Rise Time		-	21	-	ns
td(off)	Turn-off Delay Time		-	68	-	ns
tf	Turn-off Fall Time		-	52	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	-60	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	180	A
VSD	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S = -30A	-	-	-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 , V_{DD}= -24V, V_G= -10V, R_G=7Ω, 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

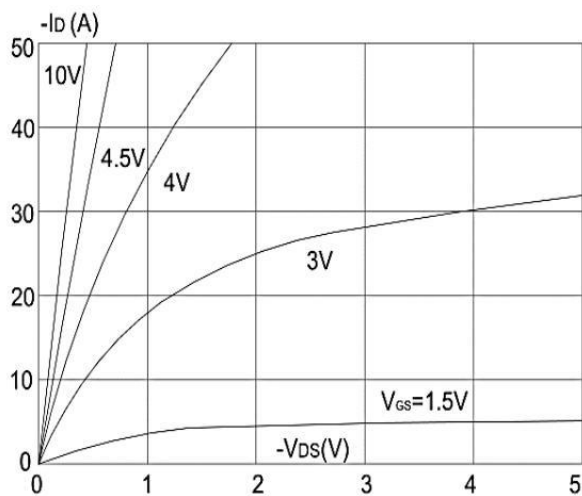


Figure1: Output Characteristics

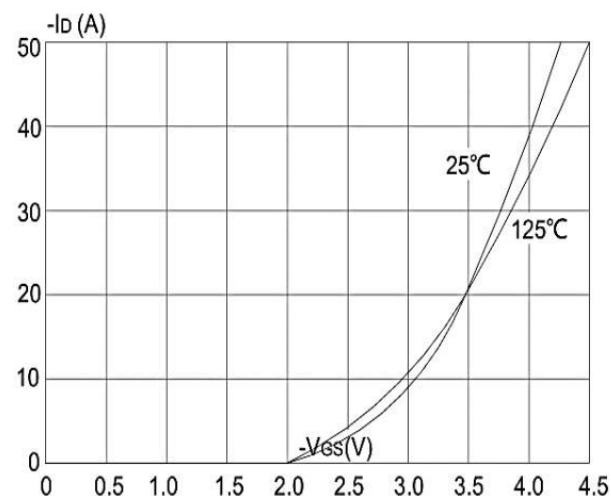


Figure 2: Typical Transfer Characteristics

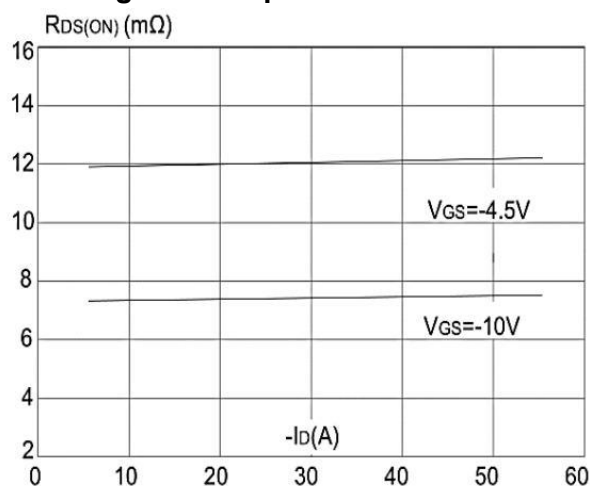


Figure 3: On-resistance vs. Drain Current

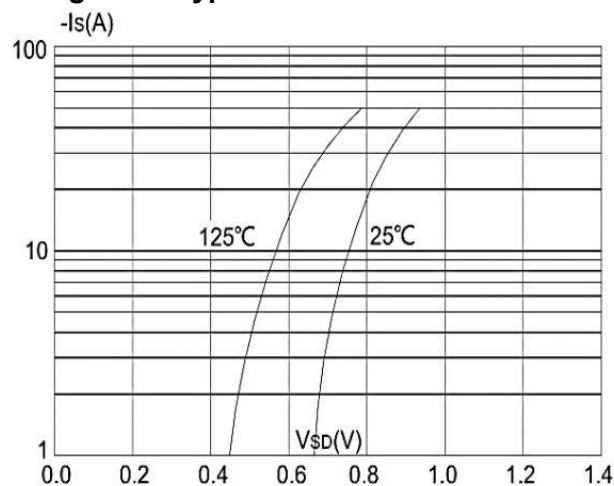


Figure 4: Body Diode Characteristics

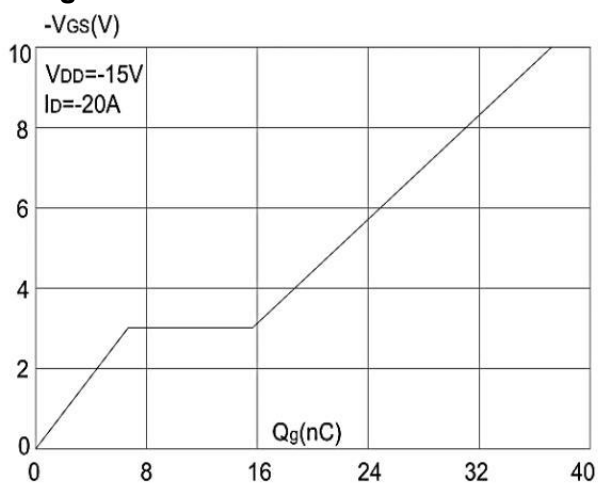


Figure 5: Gate Charge Characteristics

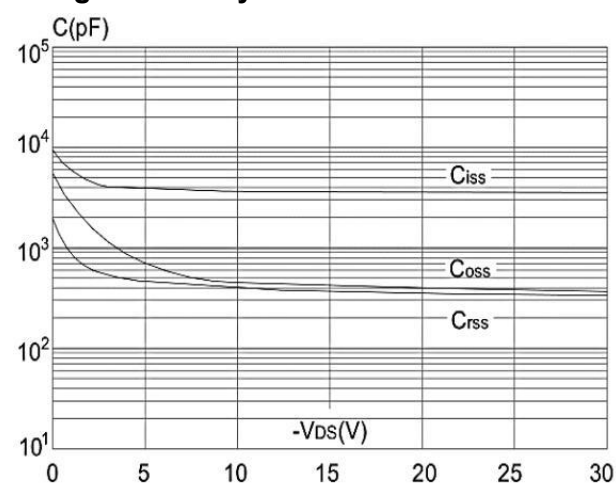


Figure 6: Capacitance Characteristics

Typical Characteristics

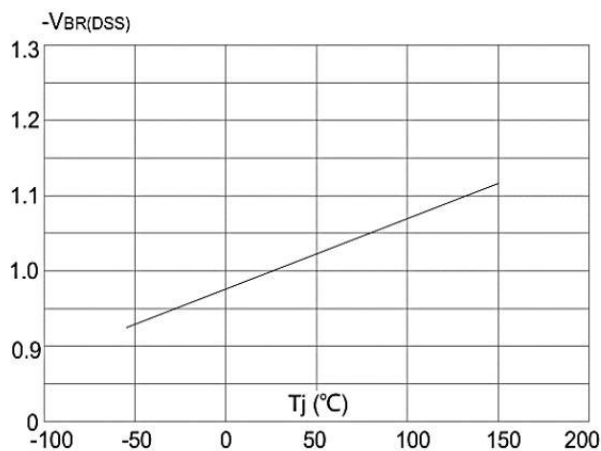


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

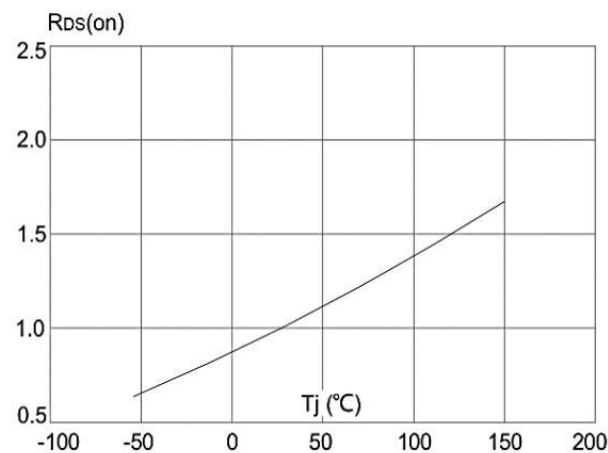


Figure 8: Normalized on Resistance vs. Junction Temperature

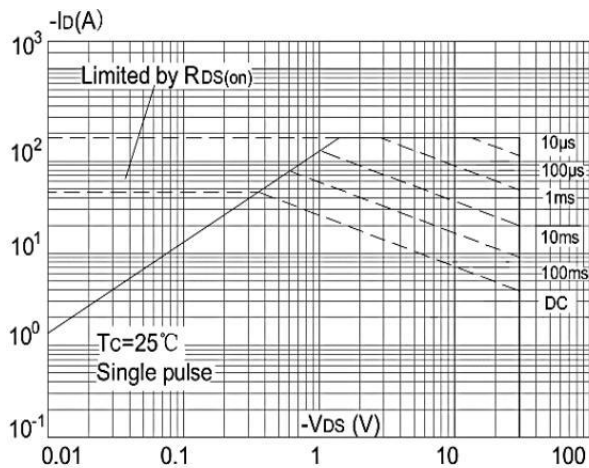


Figure 9: Maximum Safe Operating Area

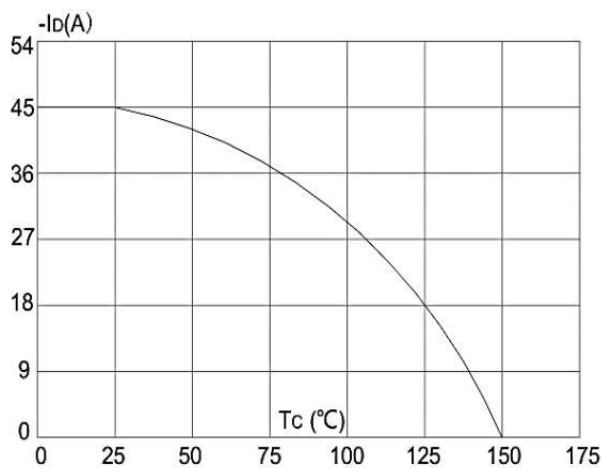


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

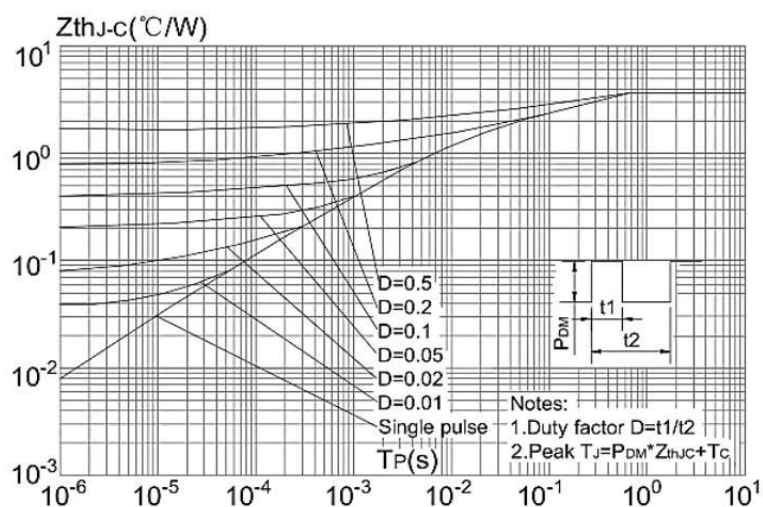
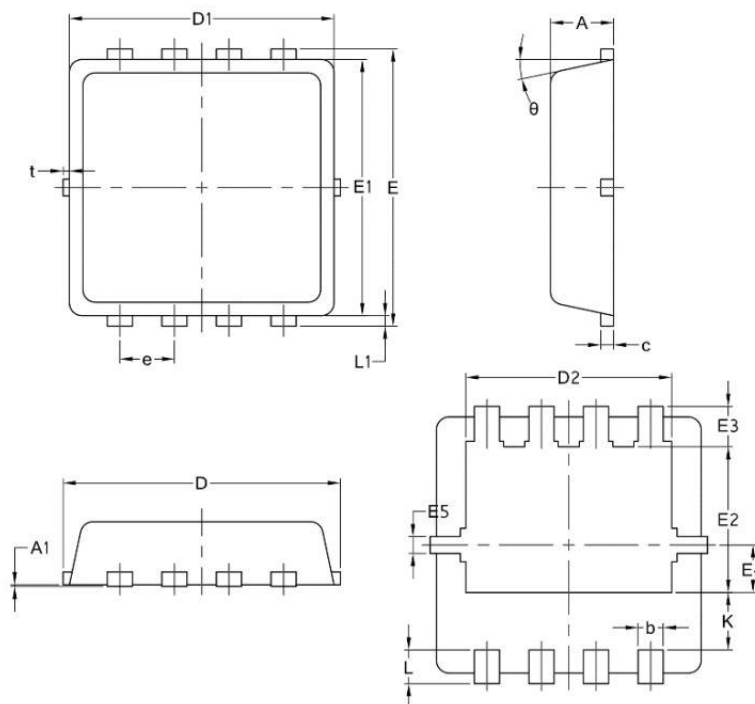


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

Package Mechanical Data-PDFN3*3-8L-JQ Single


Symbol	Common		
	mm		
	Mim	Nom	Max
A	0.70	0.75	0.85
A1	/	/	0.05
b	0.20	0.30	0.40
c	0.10	0.152	0.25
D	3.15	3.30	3.45
D1	3.00	3.15	3.25
D2	2.29	2.45	2.65
E	3.15	3.30	3.45
E1	2.90	3.05	3.20
E2	1.54	1.74	1.94
E3	0.28	0.48	0.65
E4	0.37	0.57	0.77
E5	0.10	0.20	0.30
e	0.60	0.65	0.70
K	0.59	0.69	0.89
L	0.30	0.40	0.50
L1	0.06	0.125	0.20
t	0	0.075	0.13
Φ	10	12	14

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	PDFN3*3-8L		5000