

Description

The SX30P03DF 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

$V_{DS} = -30V$ $I_D = -38A$

$R_{DS(ON)} < 16m\Omega$ @ $V_{GS} = -10V$

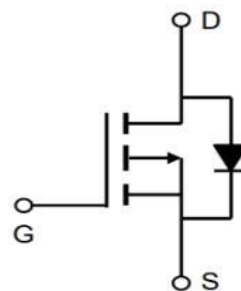
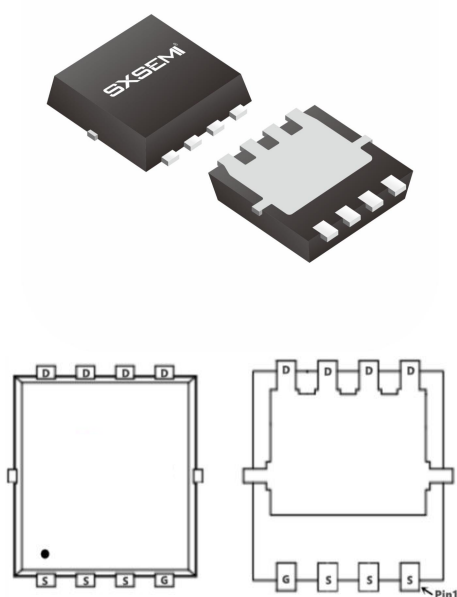
Application

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
V _{DS}	Drain-Source Voltage	-30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D @TC=25°C	Continuous Drain Current, V _{GS} @ -10V ¹	-38	A
I _D @TC=100°C	Continuous Drain Current, V _{GS} @ -10V ¹	-25	A
I _{DM}	Pulsed Drain Current ²	-70	A
E _{AS}	Single Pulse Avalanche Energy ³	172.2	mJ
I _{AS}	Avalanche Current	-38	A
P _D @TC=25°C	Total Power Dissipation ⁴	34.7	W
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C
R _{θJA}	Thermal Resistance Junction-Ambient	62.5	°C/W
R _{θJC}	Thermal Resistance Junction-Case ¹	3.6	°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	-33	-	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	-1.2	-1.5	-2.5	V
RDS(on)	Static Drain-Source on-Resistance note3	V _{GS} = -10V, I _D = -10A	-	12	16	mΩ
		V _{GS} = -4.5V, I _D = -5A	-	18	25	
C _{iss}	Input Capacitance	V _{DS} = -15V, V _{GS} =0V, f=1.0MHz	-	1550	-	pF
C _{oss}	Output Capacitance		-	327	-	pF
Crss	Reverse Transfer Capacitance		-	278	-	pF
Q _g	Total Gate Charge	V _{DS} = -15V, I _D = -9.1A, V _{GS} = -10V	-	30	-	nC
Q _{gs}	Gate-Source Charge		-	5.3	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	7.6	-	nC
td(on)	Turn-on Delay Time	V _{DD} = -15V, I _D = -6A, V _{GS} = -10V, R _{GEN} =2.5Ω	-	14	-	ns
t _r	Turn-on Rise Time		-	20	-	ns
td(off)	Turn-off Delay Time		-	95	-	ns
t _f	Turn-off Fall Time		-	65	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	-10	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-40	A
VSD	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S = -11A	-	-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 ≦ 300us , duty cycle ≦ 2%
- 3、The EAS data shows Max. rating . The test condition is VDD=-25V,VGS=-10V,L=0.1mH,IAS=-5A
- 4、The power dissipation is limited by 150°C 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

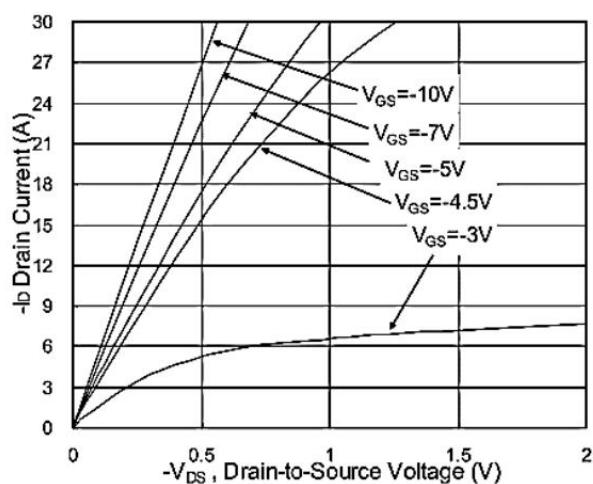


Fig.1 Typical Output Characteristics

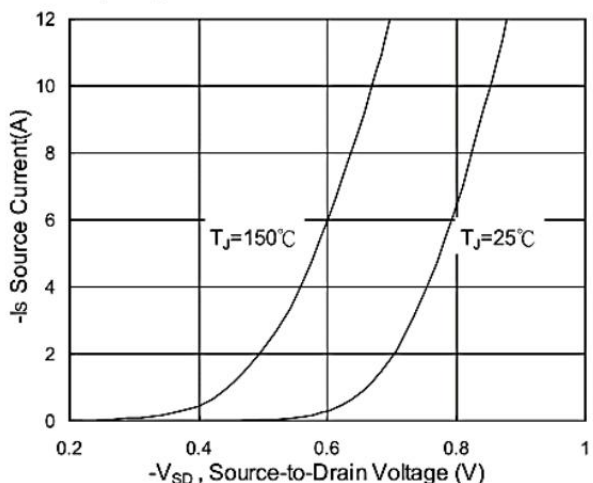


Fig.3 Forward Characteristics of Reverse

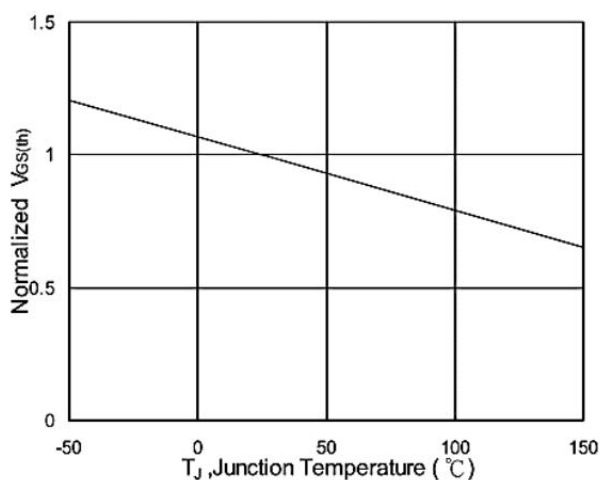


Fig.5 Normalized $V_{GS(th)}$ v.s T_J

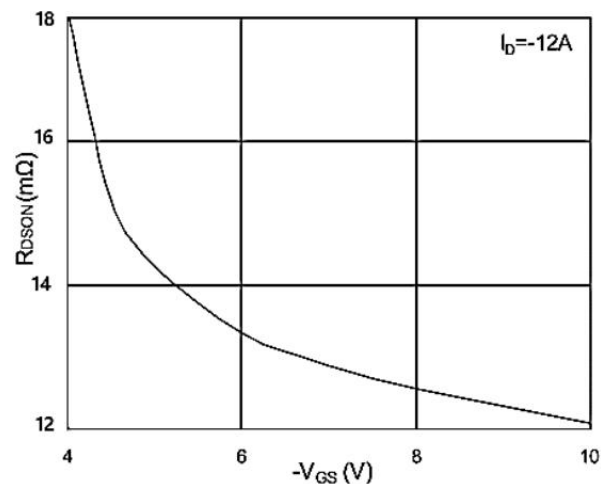


Fig.2 On-Resistance v.s Gate-Source

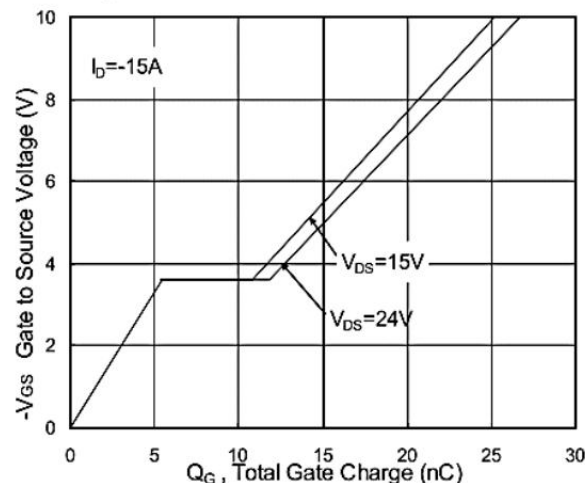


Fig.4 Gate-Charge Characteristics

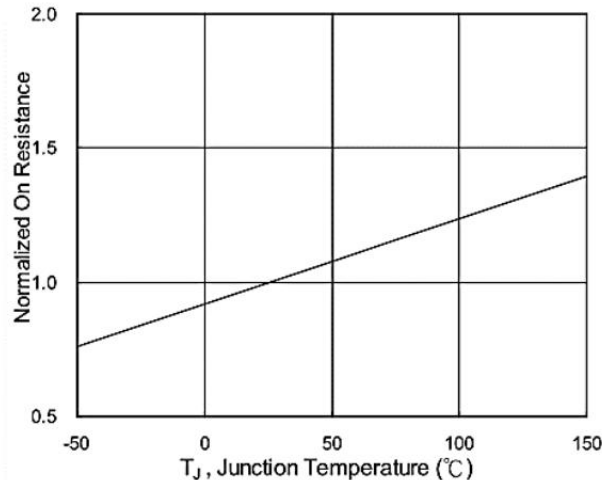
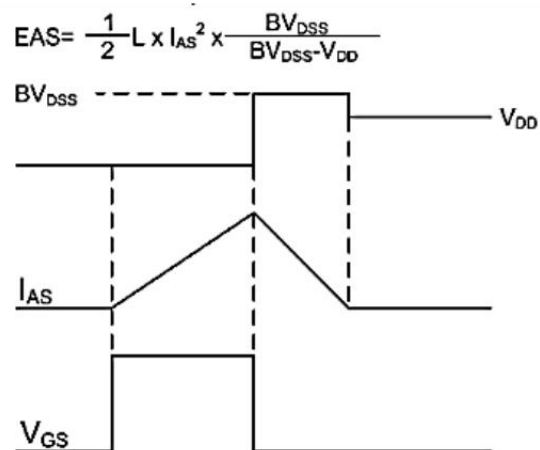
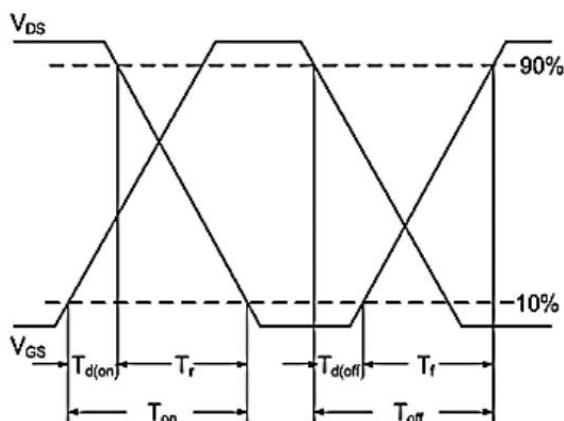
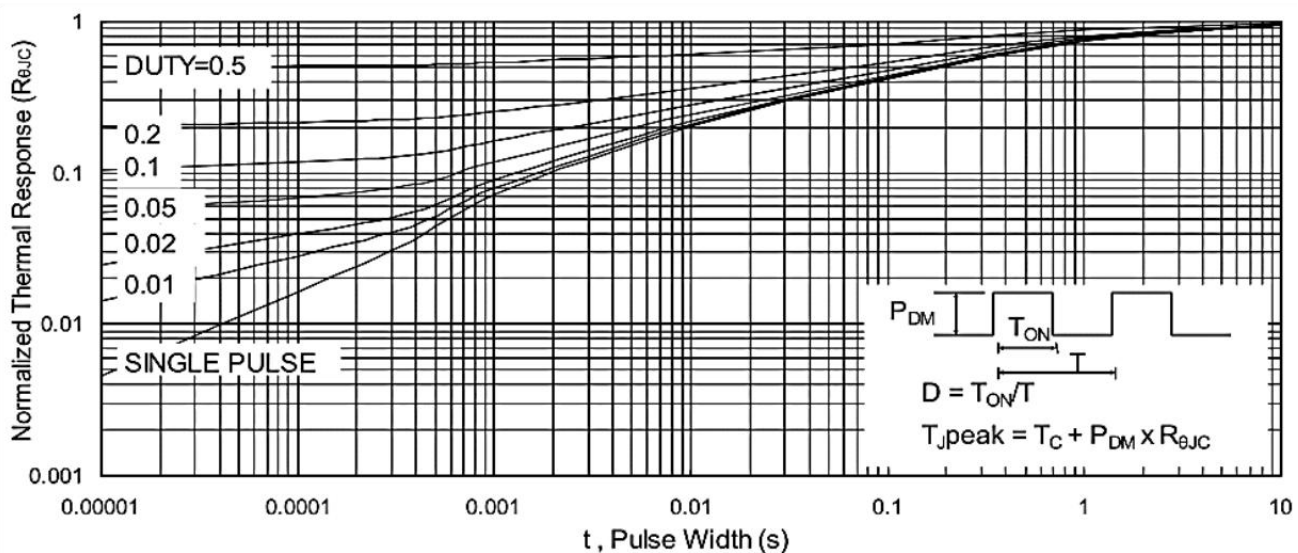
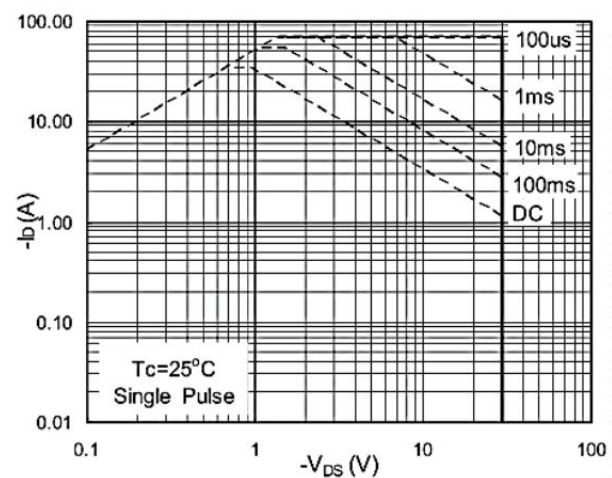
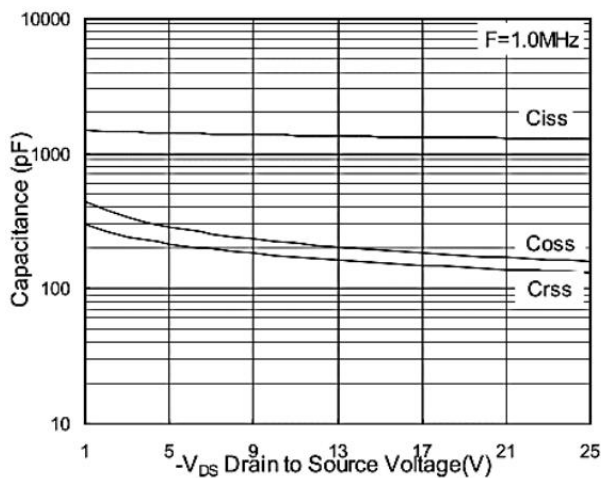
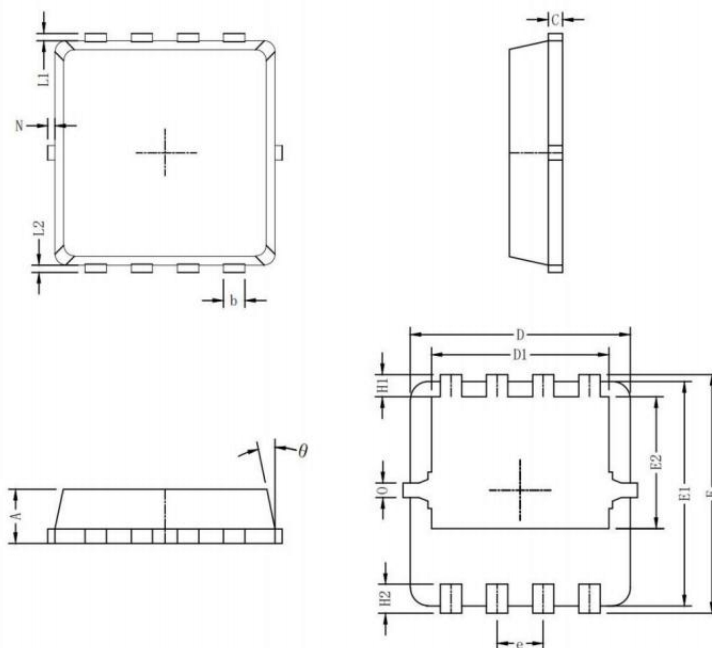


Fig.6 Normalized $R_{DS(on)}$ v.s T_J

Typical Characteristics



Package Mechanical Data:PDFN3x3-8L



Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	0.65	0.75	0.90
b	0.20	0.30	0.40
C	0.15	0.20	0.25
D	3.00	3.10	3.20
D1	2.30	2.45	2.60
E	3.15	3.30	3.45
E1	3.00	3.10	3.20
E2	1.50	1.75	2.00
e	0.65 BSC.		
H1	0.21	0.31	0.52
H2	0.30	0.40	0.50
L1/L2	0.10 REF.		
θ	8°	12°	13°
N	0	-	0.15
0	0.2 REF.		

Package Marking and Ordering Information

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