Description

The SX250N06GF uses advanced technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 10V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

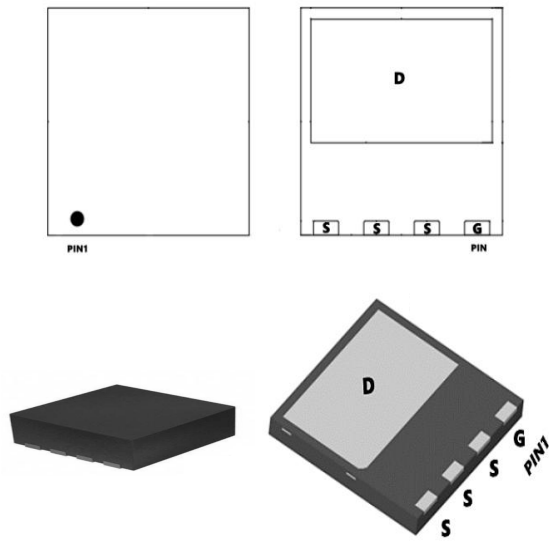
V_{DS} = 60V I_D =250A

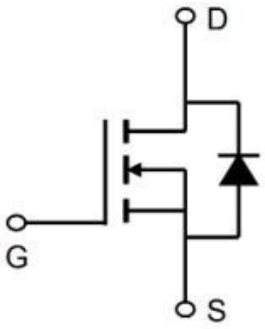
$R_{DS(ON)}$ < 2.7mΩ @ V_{GS}=10V

Application

Battery protection

UPS





Absolute Maximum Ratings (T_C=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	60	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current[1,6]	250	A
I_D@T_C=100℃	Continuous Drain Current[1,6]	140	A
IDM	Pulsed Drain Current[2]	240	A
EAS	Single Pulse Avalanche Energy[3]	585	mJ
IAS	Avalanche Current	55	A
P_D@T_C=25℃	Total Power Dissipation[4]	168	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta JA}$	Thermal Resistance Junction-Ambient [1]	12	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case[1]	1.5	℃/W

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Symbol	Parameter	Test Conditions	Min	Type	Max	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	V_{GS} = 0V, I_D = 250μA	60	66	-	V
IGSS	Gate-body Leakage Current	V_{DS} = 0V, V_{GS} = ±20V	-	-	±100	nA
IDSS T_J=25°C	Zero Gate Voltage Drain Current	V_{DS} = 60V, V_{GS} = 0V	-	-	1	μA
IDSS T_J=100°C	Zero Gate Voltage Drain Current		-	-	100	
VGS(th)	Gate-Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	2.0	2.8	4.0	V
RDS(on)	Drain-Source On-Resistance[4]	V_{GS} = 10V, I_D = 20A	-	1.9	2.7	mΩ
gfs	Forward Transconductance[4]	V_{DS} = 5V, I_D = 20A	-	78	-	S
Ciss	Input Capacitance	V_{DS} = 30V, V_{GS} =0V, f =1MHz	-	5245	-	pF
Coss	Output Capacitance		-	1090	-	
Crss	Reverse Transfer Capacitance		-	25	-	
RG	Gate Resistance	f =1MHz	-	2.2	-	Ω
Q_g	Total Gate Charge	V_{GS} = 10V, V_{DS} = 30V, I_D= 20A	-	72.5	-	nC
Qgs	Gate-Source Charge		-	19.5	-	
Qgd	Gate-Drain Charge		-	14	-	
td(on)	Turn-on Delay Time	V_{GS} =10V, V_{DD} = 30V, R_G = 3Ω, I_D= 20A	-	26.5	-	ns
t_r	Rise Time		-	15	-	
td(off)	Turn-off Delay Time		-	73	-	
t_f	Fall Time		-	18	-	
trr	Body Diode Reverse Recovery Time	I_F=20A , dI/dt=100A/μs	-	25	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	90	-	nC
VSD	Diode Forward Voltage[4]	I_S = 20A, V_{GS} = 0V	-	-	1.2	V
IS	Continuous Source Current T_C=25°C	-	-	-	125	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℃ junction temperature

4、EAS condition: TJ=25℃, VDD=48V, VG=10V, RG=25Ω, L=0.1mH, IAS= 55A

5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

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Typical Characteristics

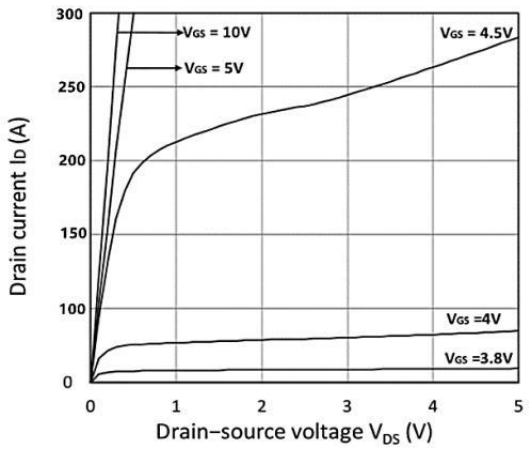


Figure 1. Output Characteristics

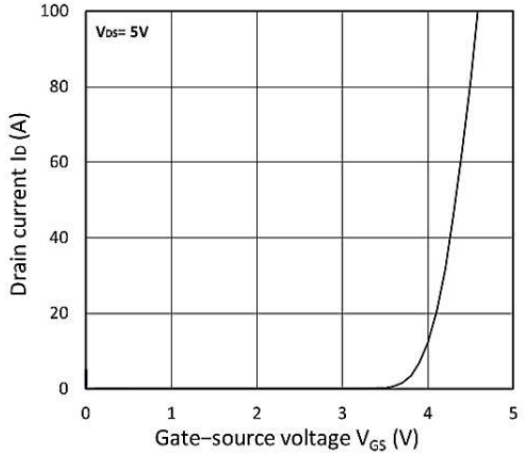


Figure 2. Transfer Characteristics

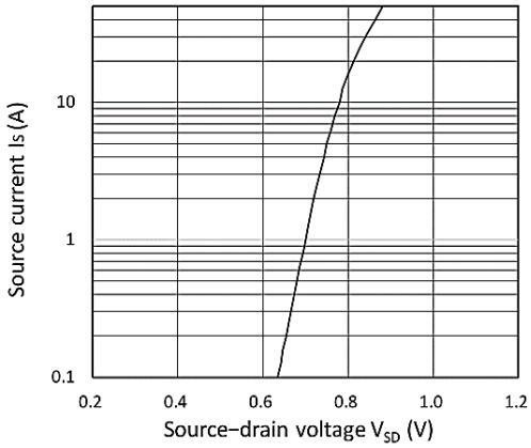


Figure 3. Forward Characteristics of Reverse

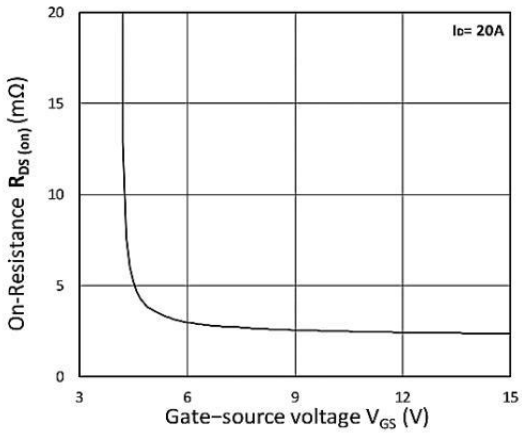


Figure 4. RDS(ON) vs. VGS

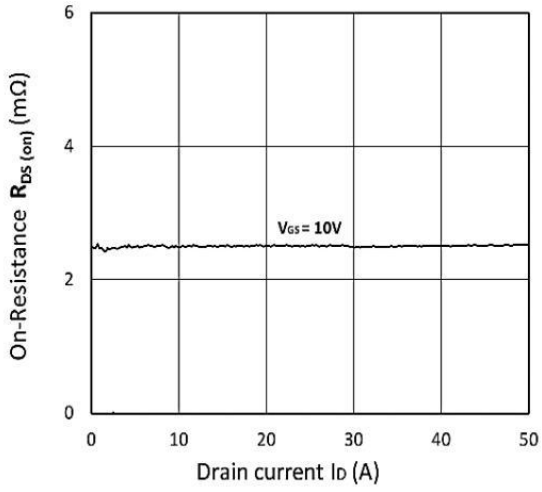


Figure 5. R DS(ON) vs. ID

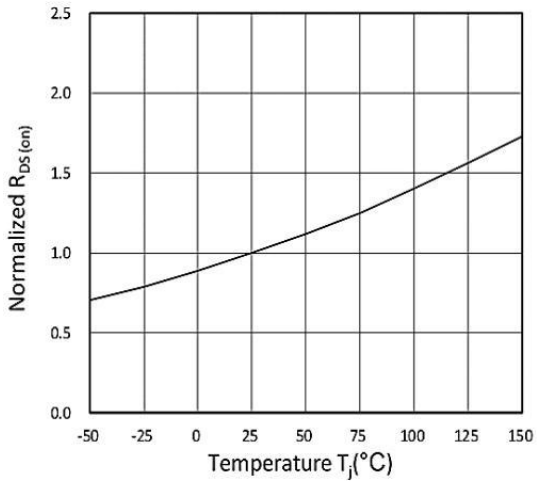


Figure 6. Normalized R DS(on) vs. Temperature

Typical Characteristics

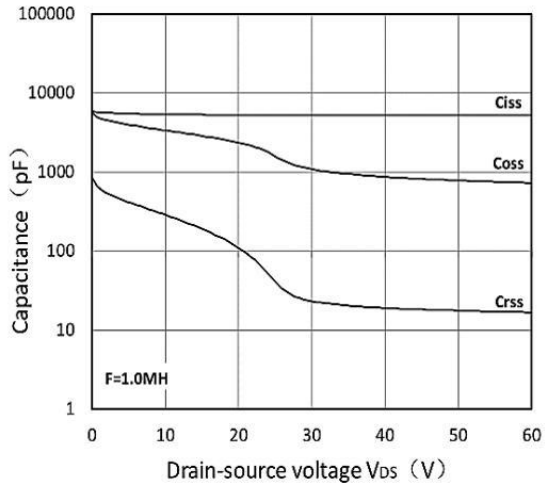


Figure 7. Capacitance Characteristics

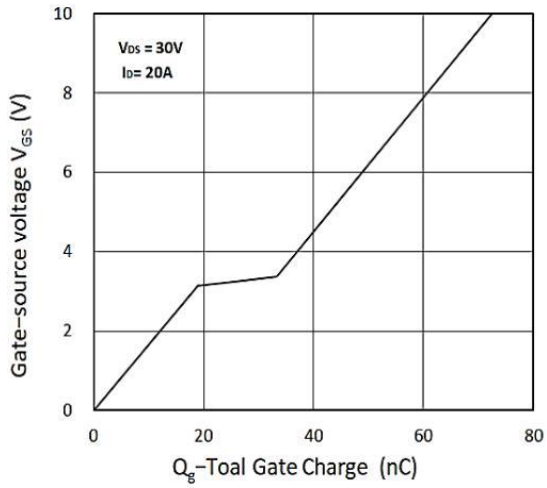


Figure 8. Gate Charge Characteristics

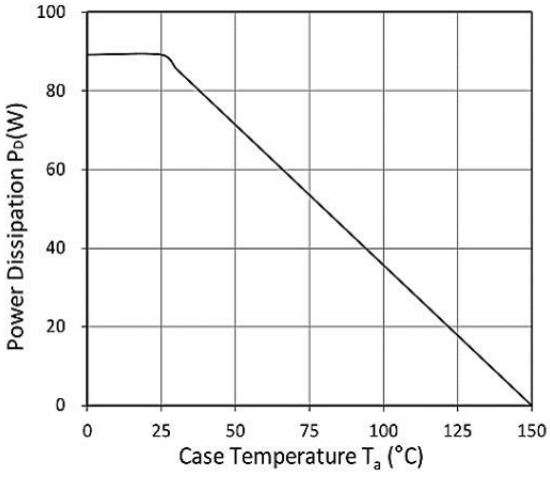


Figure 9. Power Dissipation

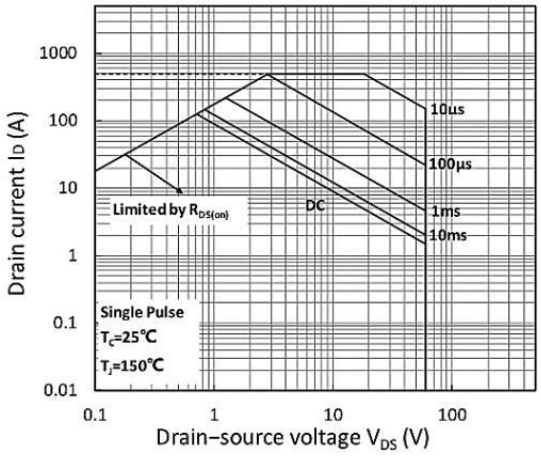


Figure10. Safe Operating Area

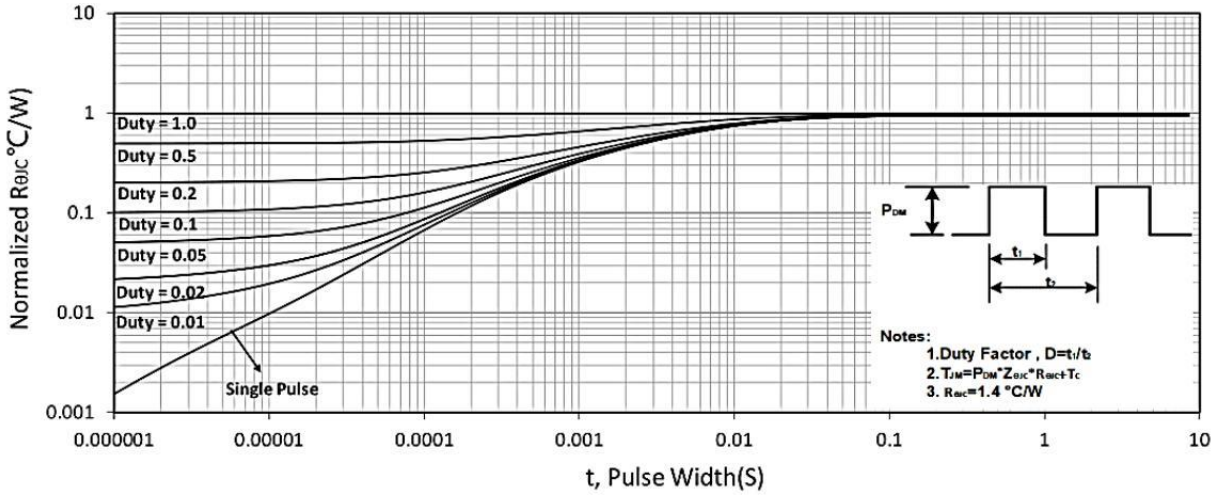
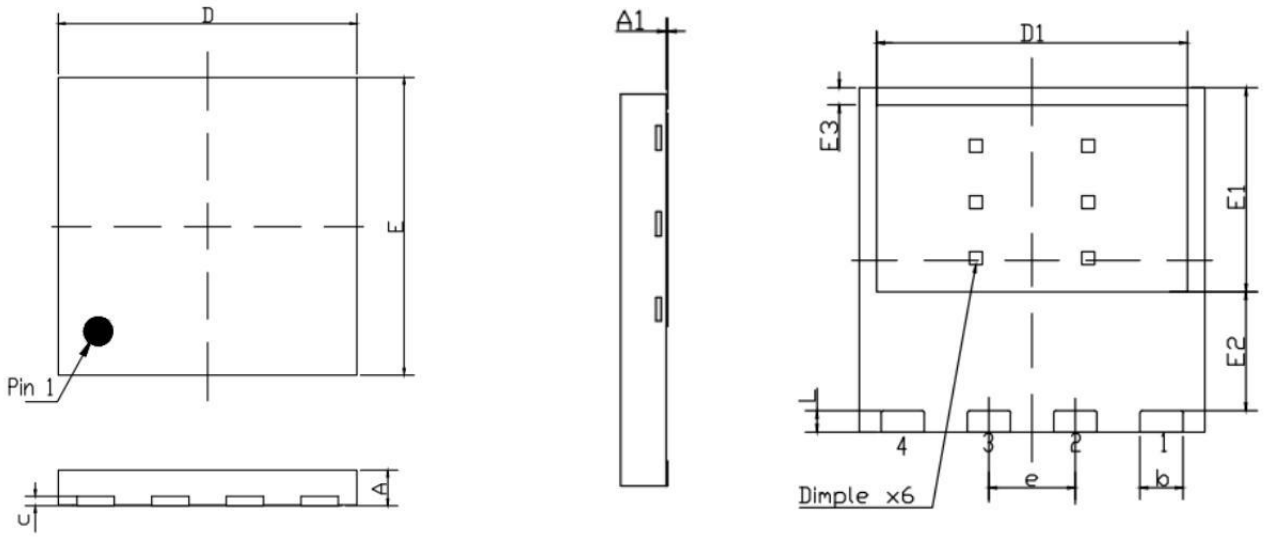


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-DFN8*8-4L



Symbols	Dimension in mn			Dimension in inches		
	Min	Nom	Max	Min	Nom	Max
A	0.800	0.850	1.10	0.031	0.033	0.043
A1	---	---	0.050	----	----	0.002
D	7.900	8.000	8.100	0.311	0.315	0.319
D1	7.10	7.20	7.30	0.279	0.283	0.287
E	7.900	8.000	8.100	0.311	0.315	0.319
E1	4.65	4.75	4.85	0.183	0.187	0.191
E2	2.65	2.75	2.85	0.104	0.108	0.112
E3	0.30	0.40	0.50	0.012	0.016	0.020
b	0.900	1.000	1.10	0.035	0.039	0.043
e	2.00 BSC			0.079 BSC		
c	0.15	0.25	0.35	0.006	0.010	0.014
L	0.40	0.50	0.60	0.016	0.020	0.024

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	DFN8X8-4L		5000