

Description

The SX220N06MP uses advanced 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

$V_{DS} = 60V$ $I_D = 220A$

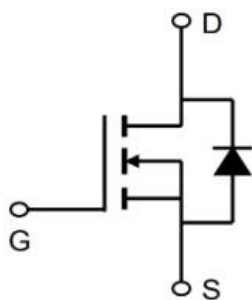
$R_{DS(ON)} < 3m\Omega$ @ $V_{GS}=10V$

Application

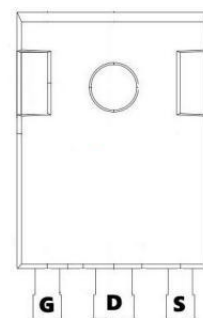
Battery protection

Load switch

Uninterruptible power supply



TO-247-3L



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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^{\circ}C$	Continuous Drain Current ^{1,6}	220	A
$I_D@T_C=100^{\circ}C$	Continuous Drain Current ^{1,6}	136	A
I_{DM}	Pulsed Drain Current ²	660	A
E_{AS}	Single Pulse Avalanche Energy ³	101	mJ
I_{AS}	Avalanche Current	130	A
$P_D@T_C=25^{\circ}C$	Total Power Dissipation ⁴	168	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	40	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	1.5	$^{\circ}C/W$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D =250μA	60	67		V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =60V, V _{GS} =0V			1	μA
IGSS	Gate-Body Leakage Current	V _{GS} = ±20V, V _{DS} =0V			±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D =250μA	2.0	2.6	4.0	V
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} = 10V, I _D =20A		2.4	3.0	mΩ
		V _{GS} = 6V, I _D =15A		4.2	5.0	
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=100KHZ		5950		pF
C _{oss}	Output Capacitance			1250		
C _{rss}	Reverse Transfer Capacitance			85		
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =50V, I _D =50A		93		nC
Q _{gs}	Gate-Source Charge			17		
Q _{gd}	Gate-Drain Charge			14		
Q _{rr}	Reverse Recovery Charge	I _F =25A, di/dt=100A/us		73		
t _{rr}	Reverse Recovery Time			68		
t _{d(on)}	Turn-on Delay Time	V _{GS} =10V, V _{DD} =30V, I _D =25A R _{GEN} =2Ω		22.5		ns
t _r	Turn-on Rise Time			6.7		
t _{d(off)}	Turn-off Delay Time			80.3		
t _f	Turn-off fall Time			26.9		
V _{SD}	Diode Forward Voltage	I _S =20A, V _{GS} =0V			1.2	V
I _S	Maximum Body-Diode Continuous Current				200	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 ≤ 300us , duty cycle ≤ 2%
- 3、The EAS data shows Max. rating . The test condition is V_{DD}=48V, V_{GS}=10V, L=0.1mH I_{AS}=130A
- 4、The power dissipation is limited by 150°C junction temperature
- 5、The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation

Typical Characteristics

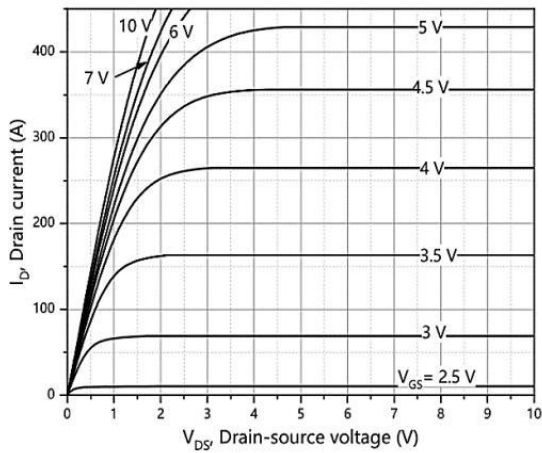


Figure 1. Typ. output characteristics

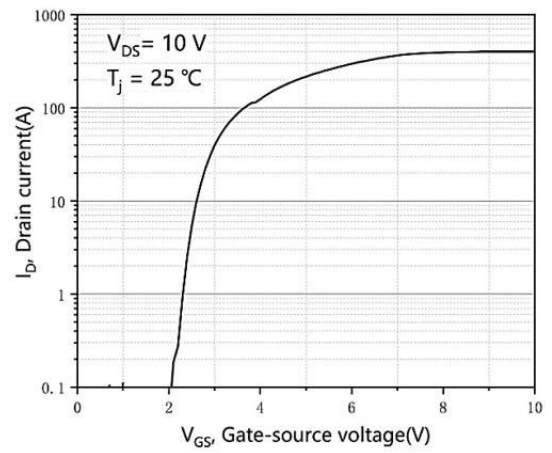


Figure 2. Typ. transfer characteristics

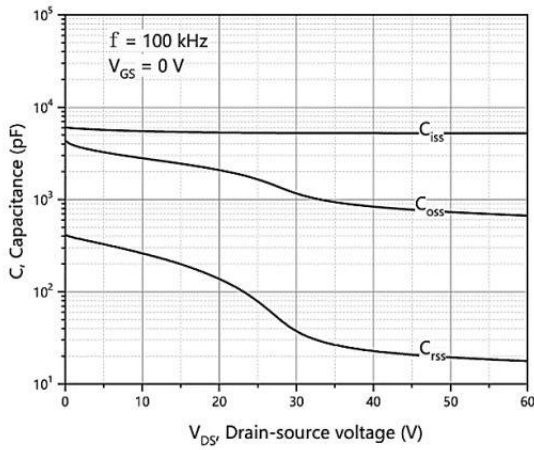


Figure 3. Typ. capacitances

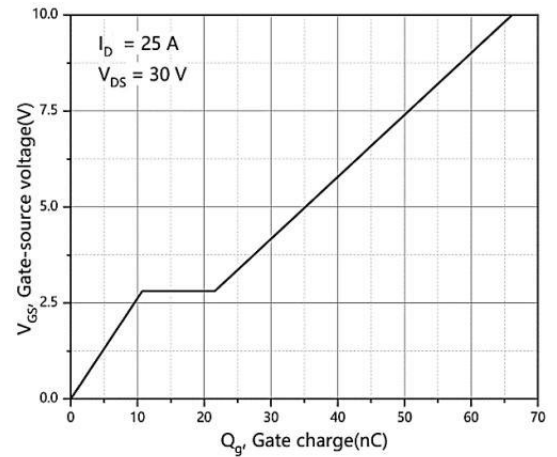


Figure 4. Typ. gate charge

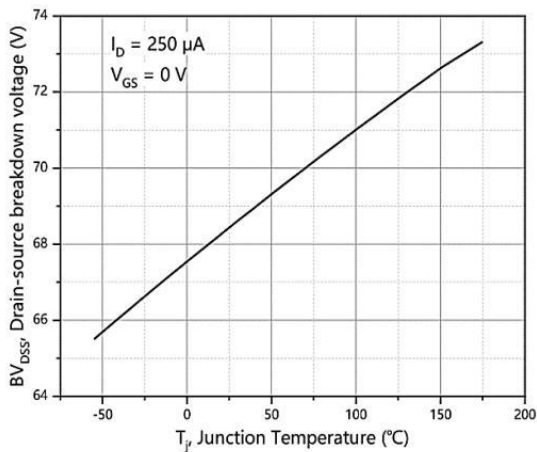


Figure 5. Drain-source breakdown voltage

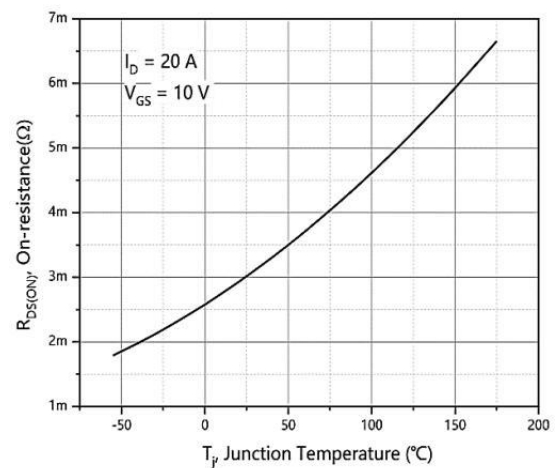


Figure 6. Drain-source on-state resistance

Typical Characteristics

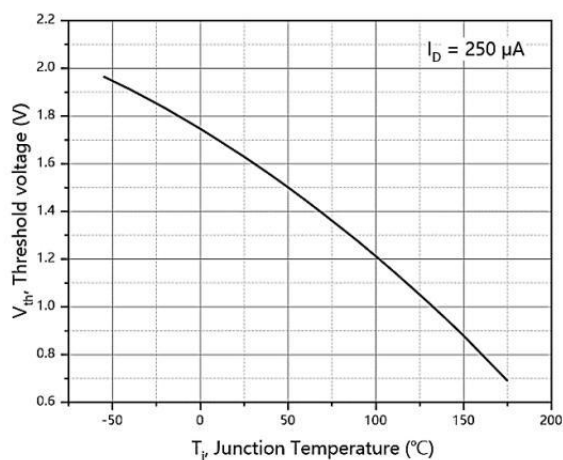


Figure 7. Threshold voltage

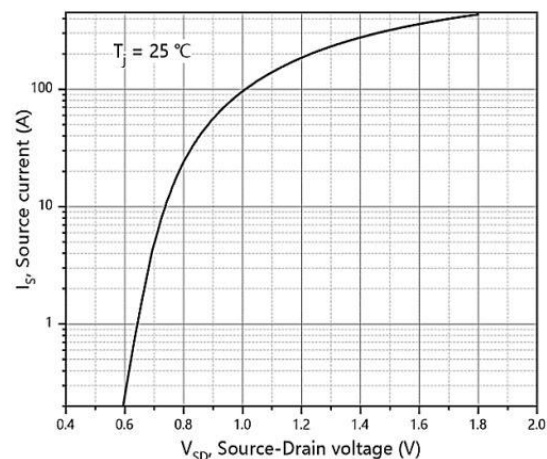


Figure 8. Forward characteristic of body diode

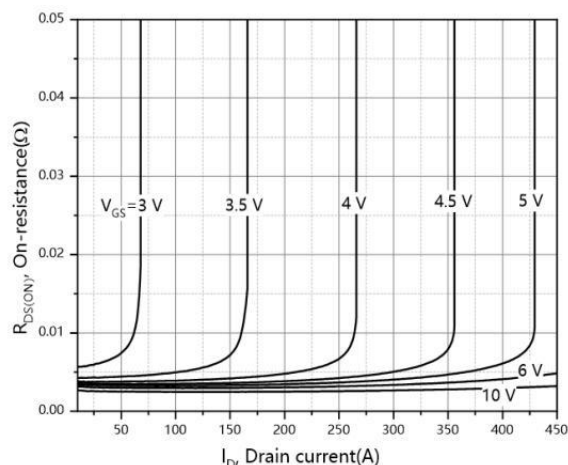


Figure 9. Drain-source on-state resistance

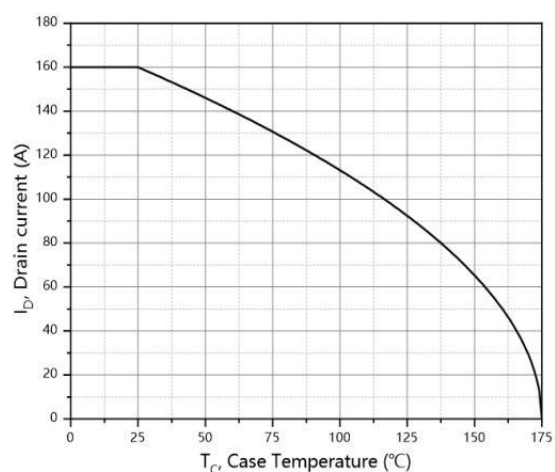


Figure 10. Drain current

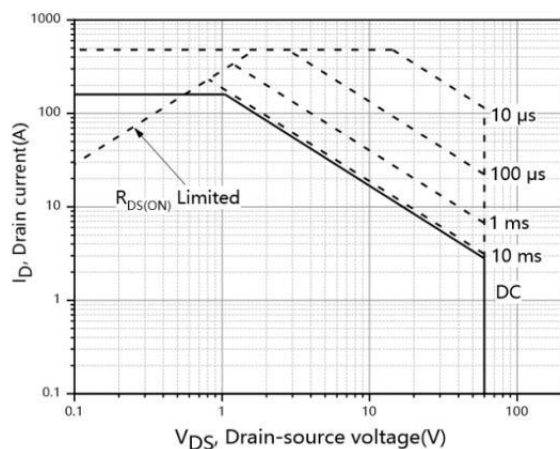


Figure 11. Safe operation area $T_C=25\text{ }^{\circ}\text{C}$

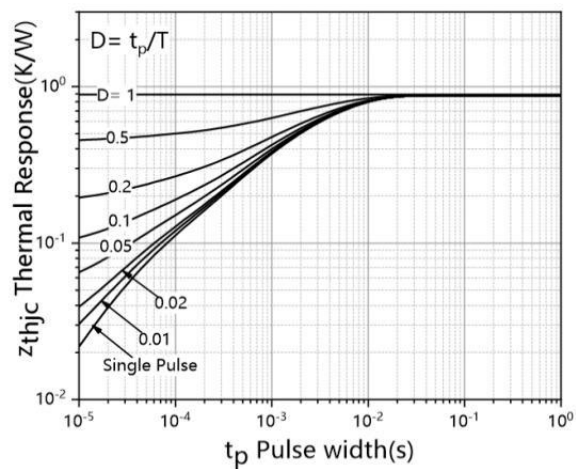
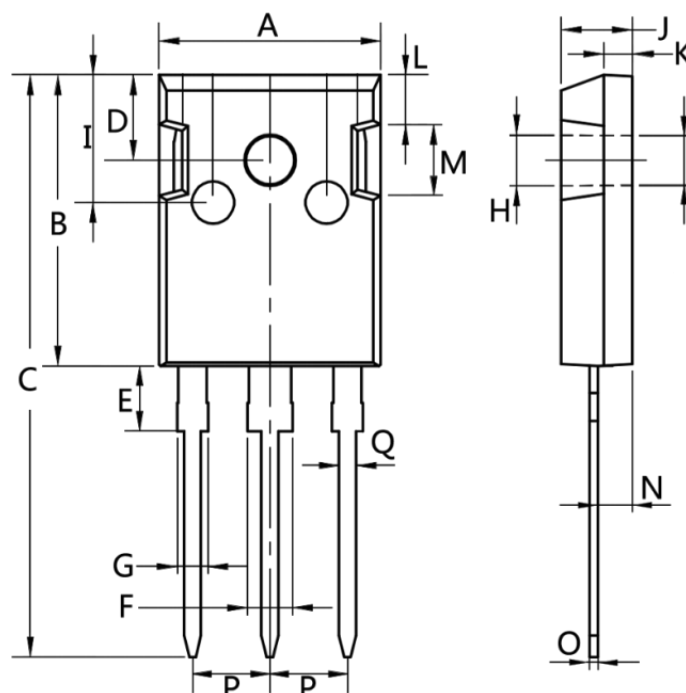


Figure 12. Max. transient thermal impedance

Package Mechanical Data-TO-247-3L


Dim.	Min.	Max.
A	15.0	16.0
B	20.0	21.0
C	41.0	42.0
D	5.0	6.0
E	4.0	5.0
F	2.5	3.5
G	1.75	2.5
H	3.0	3.5
I	8.0	10.0
J	4.9	5.1
K	1.9	2.1
L	3.5	4.0
M	4.75	5.25
N	2.0	3.0
O	0.55	0.75
P	Typ 5.08	
Q	1.2	1.3

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	TO-247-3L		330