

Description

The SX120N08MP uses advanced trench 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

$V_{DS} = 80V$ $I_D = 120A$

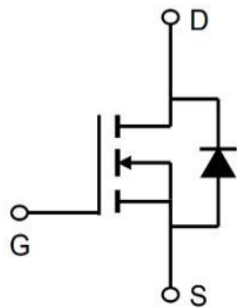
$R_{DS(ON)} < 5.2m\Omega$ $V_{GS}=10V$

Application

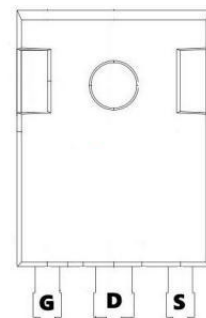
Battery protection

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	80	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_{D@TC=25^{\circ}C}$	Continuous Drain Current, $V_{GS} @ 10V$	120	A
$I_{D@TC=100^{\circ}C}$	Continuous Drain Current, $V_{GS} @ 10V$	100	A
I_{DM}	Pulsed Drain Current	480	A
EAS	Single Pulse Avalanche Energy	560	mJ
IAS	Avalanche Current	53.4	A
$PD@TC=25^{\circ}C$	Total Power Dissipation ⁴	220	W
TSTG	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	0.70	$^{\circ}C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case	60	$^{\circ}C/W$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V(BR)DSS	Drain-source breakdown voltage	V _{GS} =0V, I _D =250uA	80	92		V
V _{GS} (th)	Gate threshold voltage	V _{DS} =V _{GS} , I _D =250uA T _J =25°C	2.0	3.0	4.0	V
I _{DSS}	Zero gate voltage drain current	V _{DS} =80V, V _{GS} =0V T _J =25°C	-		1	μA
I _{DSS}	Zero gate voltage drain current	V _{DS} =80V, V _{GS} =0V T _J =125°C		- 5		μA
I _{GSS}	Gate-source leakage current	V _{GS} =20V, V _{DS} =0V	-	-	100	nA
R _{DS(on)}	Drain-source on-state resistance	V _{GS} =10V, I _D =50A, T _J =25°C	-	4.5	5.2	mΩ
g _{fs}	Transconductance	V _{DS} =5V, I _D =50A	-	80	-	S
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =40V, f=1MHz	-	4032	-	pF
C _{oss}	Output Capacitance		-	546	-	pF
C _{rss}	Reverse Transfer Capacitance	V _{GS} =10V, V _{DS} =40V, I _D =25A	-	35	-	pF
Q _G	Gate Total Charge		-	65.7	-	nC
Q _{gs}	Gate-Source charge		-	24.9	-	nC
Q _{gd}	Gate-Drain charge		-	13.9	-	nC
t _{d(on)}	Turn-on delay time	T _J =25°C, V _{GS} =10V, V _{DS} =40V, R _L =3Ω	-	20.1	-	ns
t _r	Rise time		-	38	-	ns
t _{d(off)}	Turn-off delay time		-	45.1	-	ns
t _f	Fall time		-	21	-	ns
R _G	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	2	-	Ω
V _{SD}	Body Diode Forward Voltage	V _{GS} =0V, I _{SD} =50A	-	0.9	1.2	V
t _{rr}	Body Diode Reverse Recovery Time	I _F =20A, dI/dt=500A/μs	-	61	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =20A, dI/dt=500A/μs	-	340	-	nC

Note :

- 1、The data tested by surface mounted on a 1 inch² FR-4 board with 2OZ copper.
- 2、The data tested by pulsed , pulse width .The EAS data shows Max. rating .
- 3、The test cond ≅ 300us duty cycle ≅ 2%, duty cycle ition is V_{DD}=64V_{GS}=10V, L=0.1mH, I_{AS}=53.8A
- 4、The power dissipation is limited by 175°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

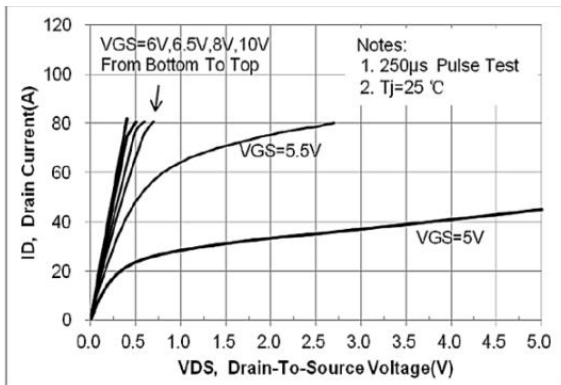


Figure 1. Typ. Output Characteristics (Tj=25 °C)

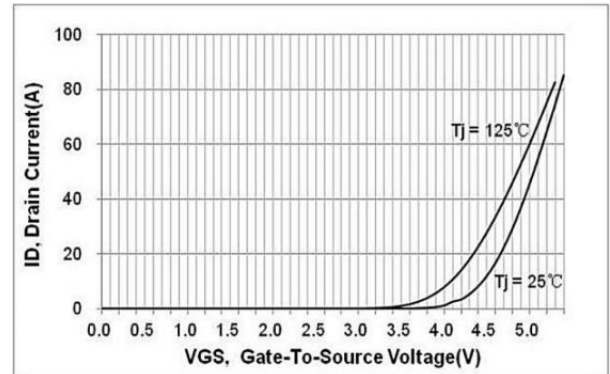


Figure 2. Transfer Characteristics

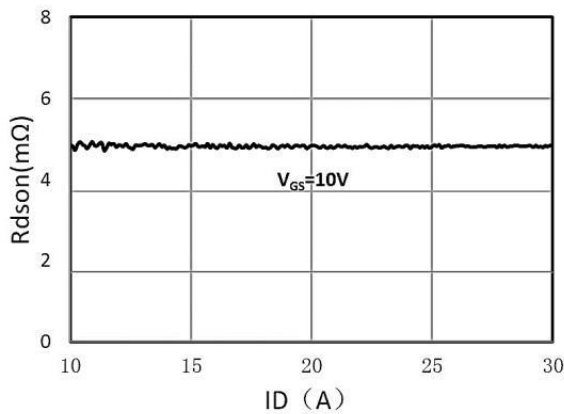


Figure 3. On-Resistance vs. Drain Current and Gate Voltage Figure

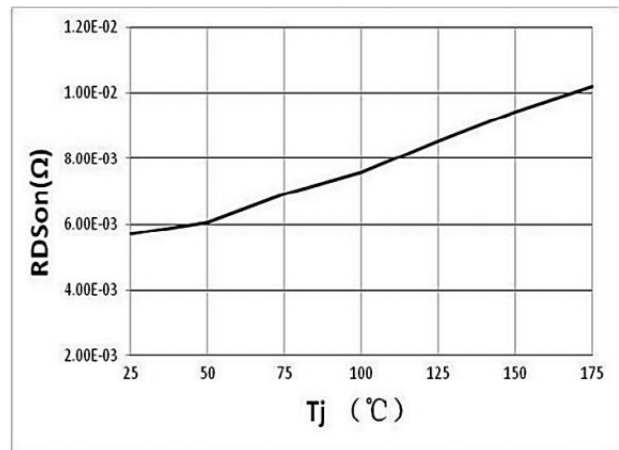


Figure 4. On-Resistance vs. Junction Temperature

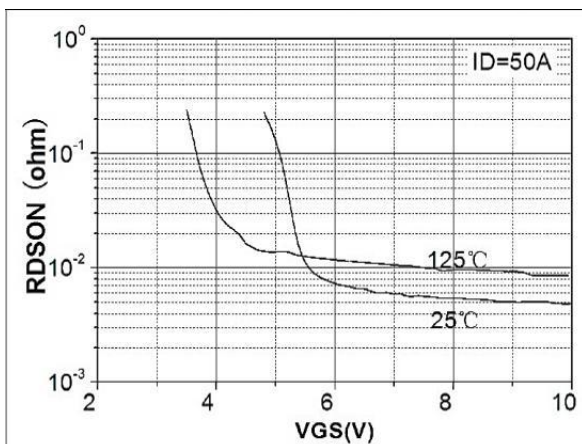


Figure 5. On-Resistance vs. Gate-Source Voltage

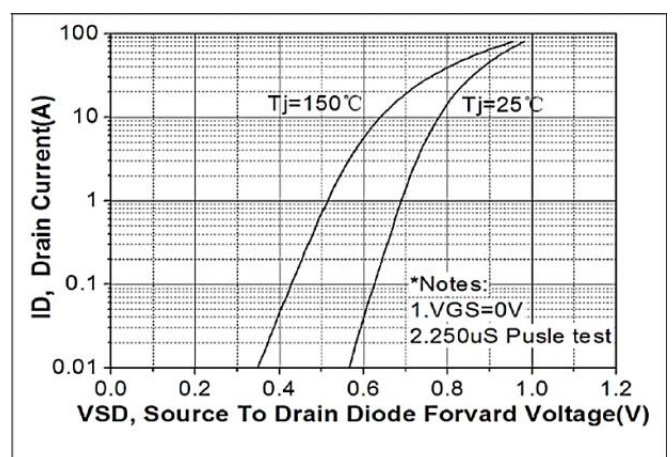


Figure 6 . Body-Diode Characteristics

Typical Characteristics

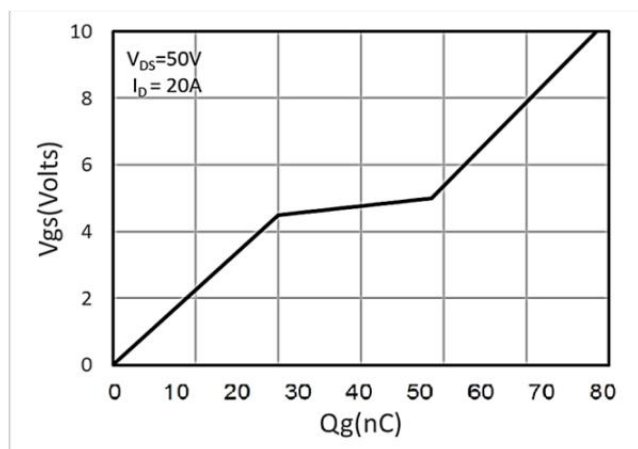


Figure 7. Gate-Charge Characteristics

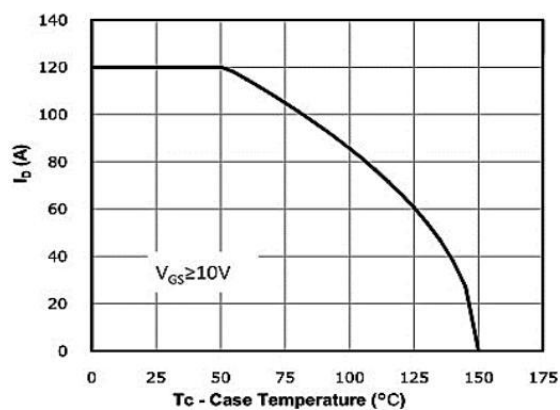


Figure 8. Drain Current Derating

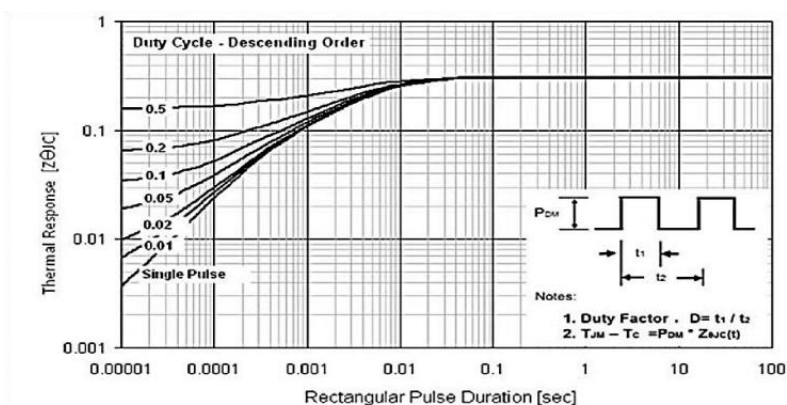


Figure 9: Normalized Maximum Transient Thermal Impedance

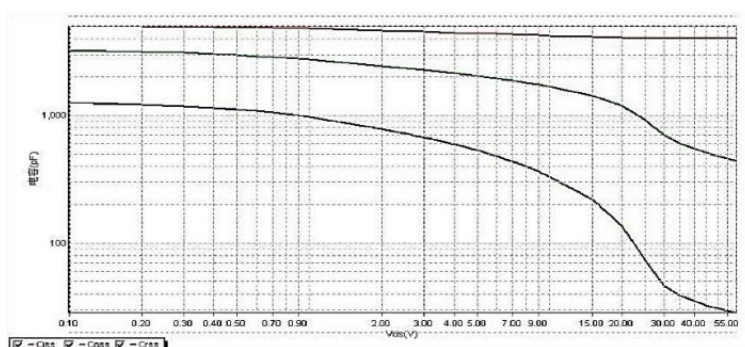
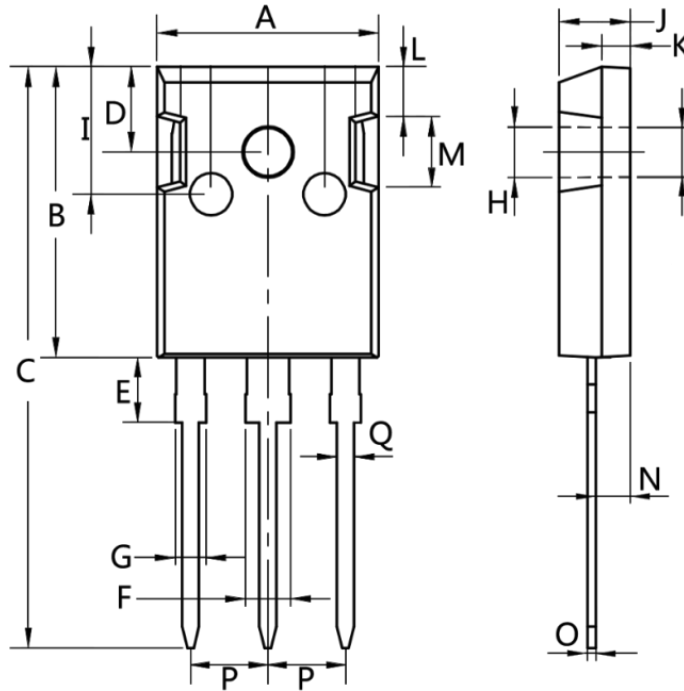


Figure 10. Capacitance Characteristics

Package Mechanical Data-TO-247-3L-SLK


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