

Description

The SX120N25MP uses advanced **Trench** technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as high as 12V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

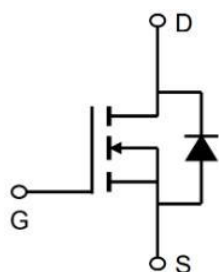
$V_{DS} = 250V$ $I_D = 120A$

$R_{DS(ON)} < 18m\Omega$ @ $V_{GS}=10V$

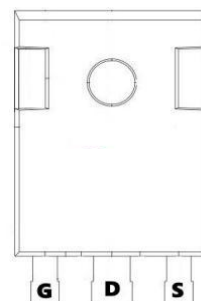
Application

UPS

BLDC



TO-247-3L



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

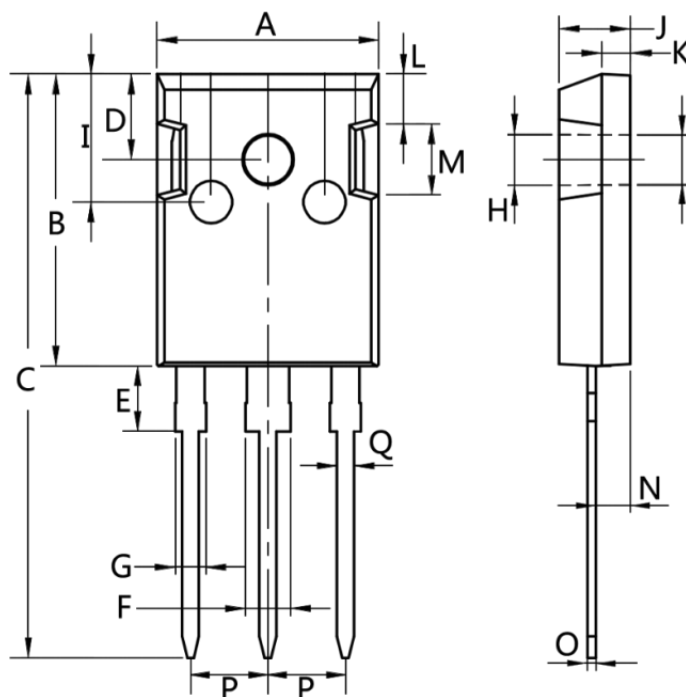
Symbol	Parameter	Rating	Units
VDSS	Drain-to-Source Voltage	250	V
$I_D@T_A=25^\circ\text{C}$	Continuous Drain Current $V_{GS} @ 10V$	120	A
$I_D@T_A=100^\circ\text{C}$	Continuous Drain Current $V_{GS} @ 10V$	80	A
IDM	Pulsed Drain Current (pulse width limited by T_{JM})	460	A
VGS	Gate-to-Source Voltage	± 30	V
EAS	Single Pulse Avalanche Energy	600	mJ
EAr1	Avalanche Energy, Repetitive	150	mJ
IAR a1	Avalanche Current	90	A
dv/dt^{a2}	Peak Diode Recovery dv/dt	10	V/ns
PD	Power Dissipation	720	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	-55 to 150	$^\circ\text{C}$
TL	Maximum Temperature for Soldering	300	$^\circ\text{C}$
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.22	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	40	$^\circ\text{C}/\text{W}$

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
VDSS	Drain to Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	250	265	--	V
IDSS	Drain to Source Leakage Current	V _{DS} =250V, V _{GS} =0V, T _a =25°C	--	--	1.0	μA
		V _{DS} =250V, V _{GS} =0V, T _a =125°C	--	--	100	
IGSS(F)	Gate to Source Forward Leakage	V _{GS} =+20V	--	--	100	nA
IGSS(R)	Gate to Source Reverse Leakage	V _{GS} =-20V	--	--	-100	nA
RDS(ON)	Drain-to-Source On-Resistance	V _{GS} =10V, I _D =35A	--	14	18	mΩ
VGS(TH)	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	3.6	4.1	5.0	V
gfs	Forward Trans conductance	V _{DS} =10V, I _D =35A	100	--	--	S
R _g	Gate Resistance	V _{GS} =0V V _{DS} open f=1.0MHz		1.5		Ω
Ciss	Input Capacitance	V _{GS} =0V V _{DS} =25V f=1.0MHz	--	14000		pF
Coss	Output Capacitance		--	960		pF
Crss	Reverse Transfer Capacitance		--	420		pF
td(ON)	Turn-on Delay Time	I _D =35A, V _{DS} =50V V _{GS} =10V, R _g =2.5Ω	--	90	--	ns
t _r	Rise Time		--	140	--	ns
td(OFF)	Turn-Off Delay Time		--	220	--	ns
t _f	Fall Time		--	180	--	ns
Q _g	Total Gate Charge	I _D =35A, V _{DD} =100V V _{GS} =10V	--	400	--	nC
Q _{gs}	Gate to Source Charge		--	56	--	nC
Q _{gd}	Gate to Drain ("Miller") Charge		--	120	--	nC
ISD	Continuous Source Current (Body Diode)		--	--	120	A
ISM	Maximum Pulsed Current (Body Diode)		--	--	480	A
VSD	Diode Forward Voltage	I _S =35A, V _{GS} =0V	--	--	1.2	V
t _{rr}	Reverse Recovery Time	I _S =30A, T _j =25°C, V _{DD} =50V dI _F /dt=100A/μs, V _{GS} =0V	--	240	--	ns
Q _{rr}	Reverse Recovery Charge		--	1.1	--	uC

Note :

- 1、The data tested by surface mounted on a 1 inch2 FR-4 board with 2OZ copper.
- 2、The EAS data shows Max. rating . IAS = 70A, R_G = 25Ω, V_{DD}=50V , V_{GS}=10V, Starting T_J = 25 °C
- 3、The test condition is Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%
- 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.

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