

Description

The SX150N20MP 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

$V_{DS} = 200V$ $I_D = 150A$

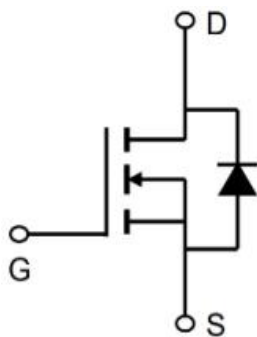
$R_{DS(ON)} < 11.5m\Omega$ @ $V_{GS}=10V$

Application

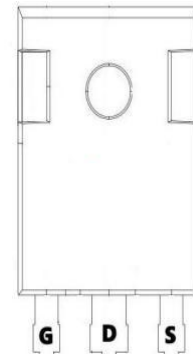
Load Switch

PWM Application

Power management



TO-247-3L



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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-to-Source Voltage	200	V
$I_{D@TA=25^\circ C}$	Continuous Drain Current V_{GS} @ 10V	150	A
$I_{D@TA=70^\circ C}$	Continuous Drain Current V_{GS} @ 10V	98	A
I_{DM}^{a1}	Pulsed Drain Current (pulse width limited by T_{JM})	520	A
V_{GS}	Gate-to-Source Voltage	± 20	V
EAS	Single Pulse Avalanche Energy	1350	mJ
PD	Power Dissipation	520	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	175, -55 To +175	$^\circ C$
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	0.24	$^\circ C / W$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	45	$^\circ C / W$

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	200	220	--	V
IDSS	Drain to Source Leakage Current	V _{DS} =200V, V _{GS} =0V, T _a =25°C	--	--	1.0	μA
		V _{DS} =200V, V _{GS} =0V, T _a =125°C	--	--	100	μA
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 =80A	--	9.5	11.5	mΩ
VGS(TH)	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	3.5	4.5	5.0	V
gfs	Forward Trans conductance	V _{DS} =25V, I _D =40A	50	65	--	S
R _g	Gate Resistance	V _{GS} =0V V _{DS} open f=1.0MHz		1.4		Ω
Ciss	Input Capacitance	V _{GS} =0V V _{DS} =25V f=1.0MHz	--	12042	--	pF
Coss	Output Capacitance		--	520	--	pF
Crss	Reverse Transfer Capacitance		--	292	--	pF
td(ON)	Turn-on Delay Time	I _D =80A, V _{DS} =100V V _{GS} =10V, R _g =5Ω	--	45	--	ns
t _r	Rise Time		--	70	--	ns
td(OFF)	Turn-Off Delay Time		--	110	--	ns
t _f	Fall Time		--	90	--	ns
Q _g	Total Gate Charge	I _D =80A, V _{DD} =100V V _{GS} =10V	--	85	--	nC
Q _{gs}	Gate to Source Charge		--	15	--	nC
Q _{gd}	Gate to Drain ("Miller") Charge		--	25	--	nC
ISD	Continuous Source Current (Body Diode)	I _S =80A, V _{GS} =0V	--	--	150	A
ISM	Maximum Pulsed Current (Body Diode)		--	--	520	A
VSD	Diode Forward Voltage		--	--	1.2	V
trr	Reverse Recovery Time	I _S =80A, T _j =25°C, V _{DD} =50V dI _F /dt=100A/μs, V _{GS} =0V	--	120	--	ns
Q _{rr}	Reverse Recovery Charge		--	700	--	uC

Note :

- 1、The data tested by surface mounted on a 1 inch2 FR-4 board with 20Z copper.
- 2、The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%
- 3、The EAS data shows Max. rating . The test condition is T_J = 25°C, L=0.3mH, R_G=25Ω, V_{DD}=50V , V_{GS}=10V
- 4、The ISD=40A,di/dt≤100A/us, VDD≤BVDS, Start T_J=25°C
- 5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

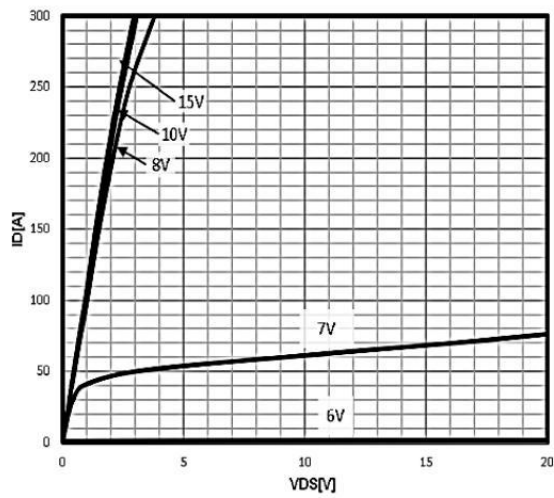


Figure1:Typ output characteristics

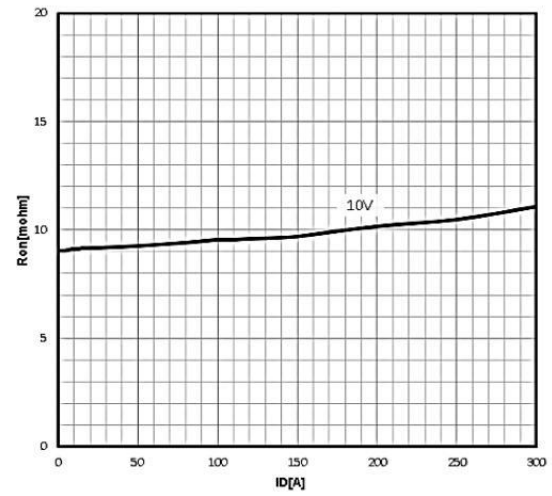


Figure2:Typ drain-source on resistance

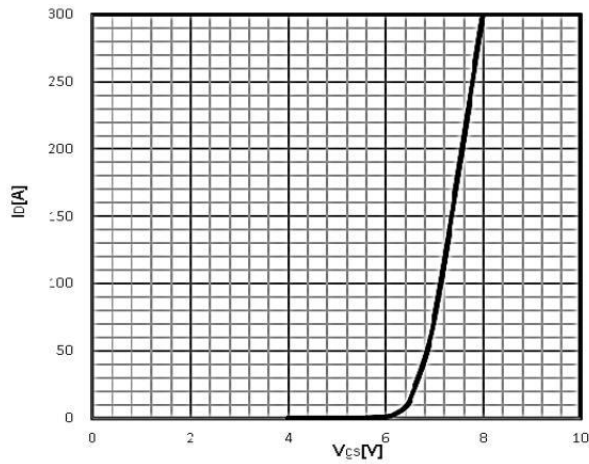


Figure3:Typ. transfer characteristics

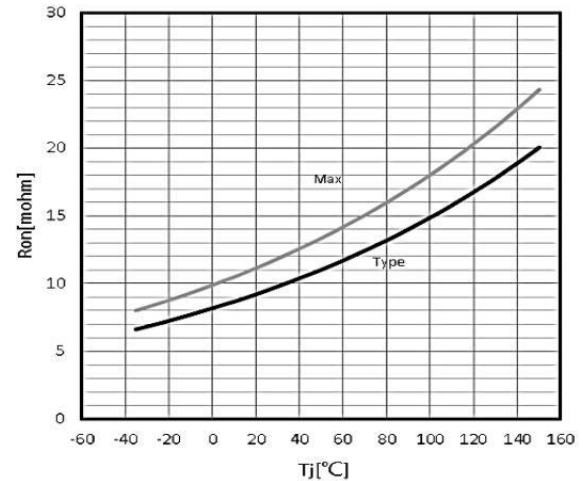


Figure4: Drain-source on-state resistance

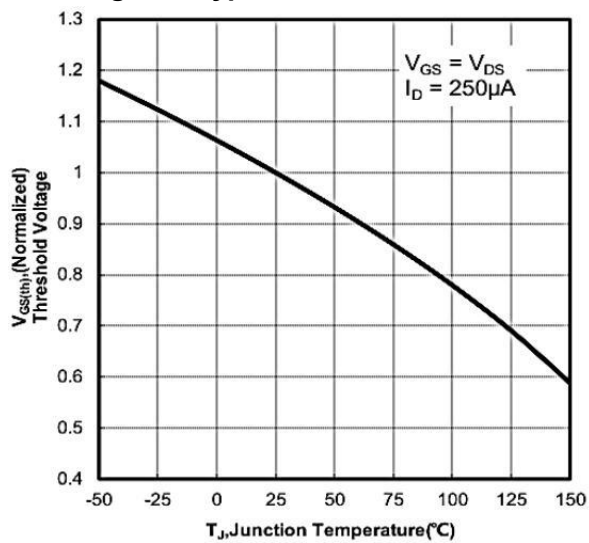


Figure5: Gate Threshold Voltage

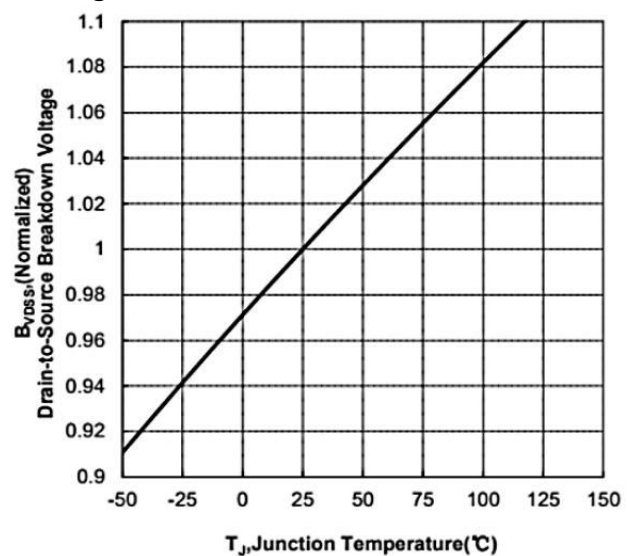


Figure6: Drain-source breakdown voltage

Typical Characteristics

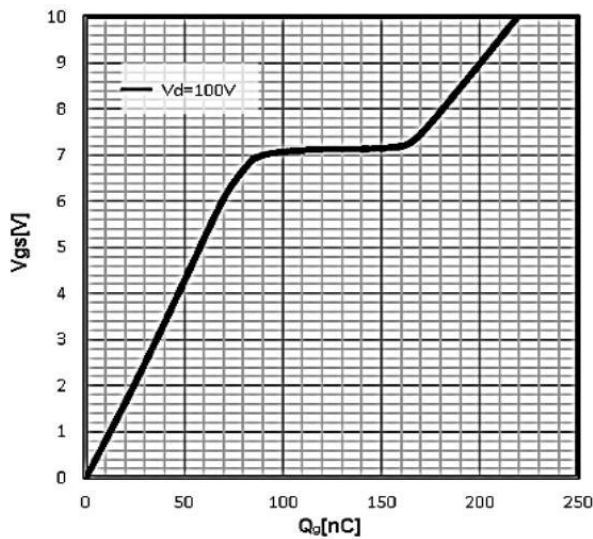


Figure7:gate charge

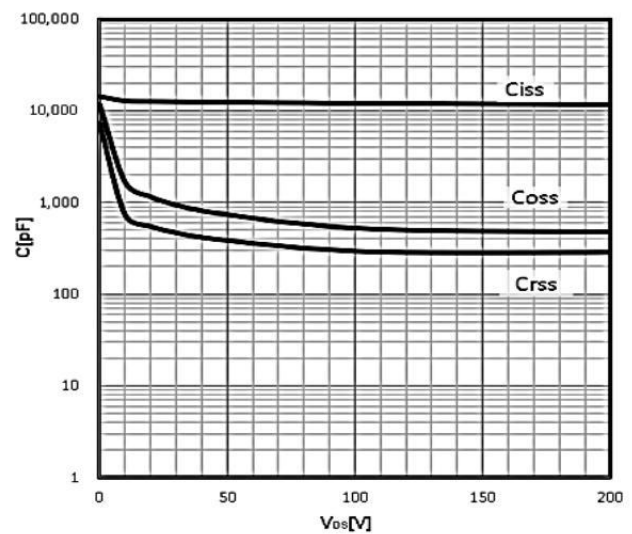


Figure8:capacitances

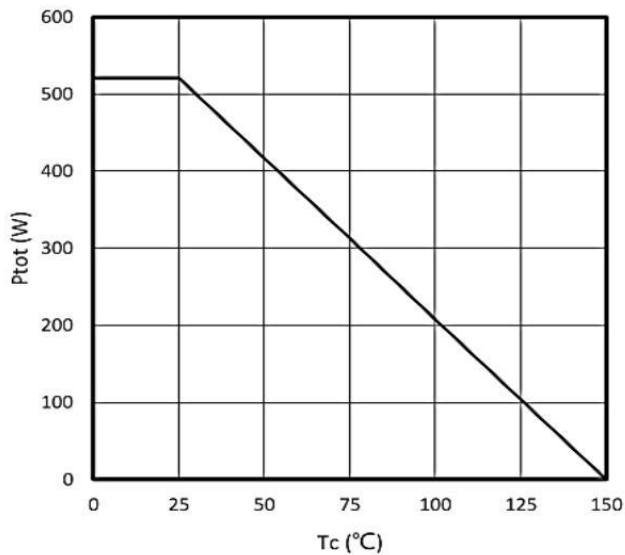


Figure9:Power Dissipation

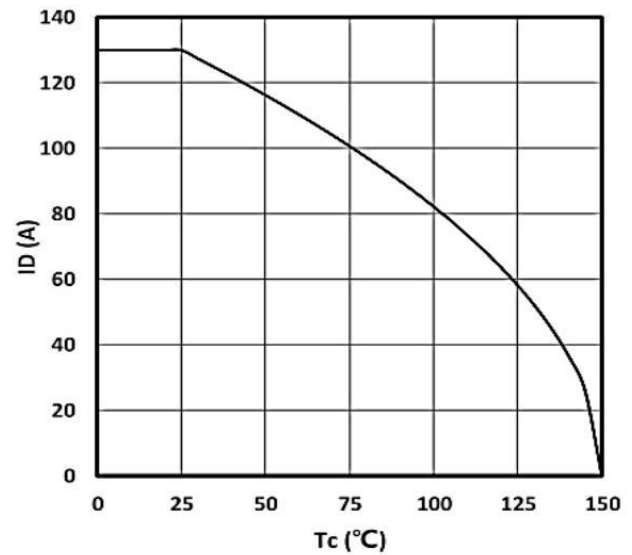


Figure10:Maximum Drain Current

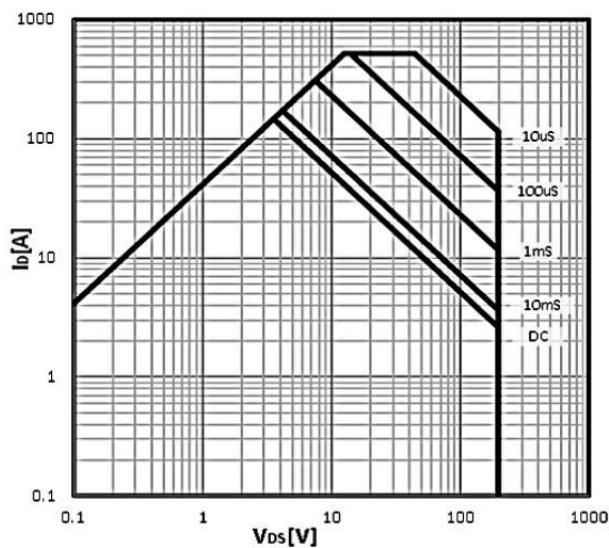


Figure11:Safe operating area

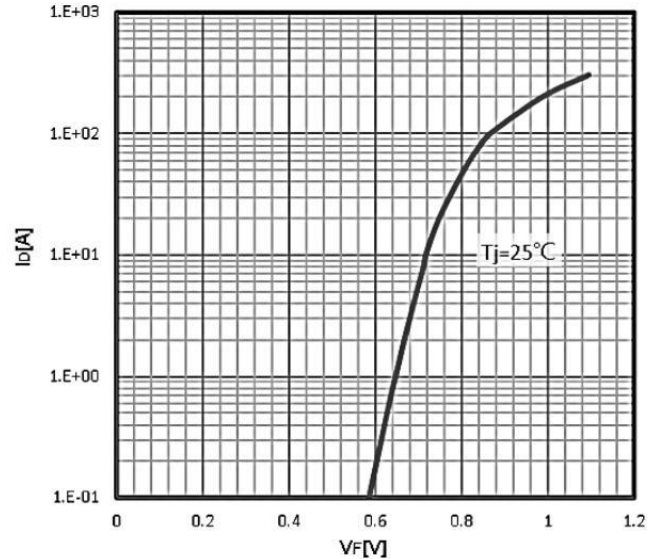


Figure12:Body Diode Forward Voltage Variation

Typical Characteristics

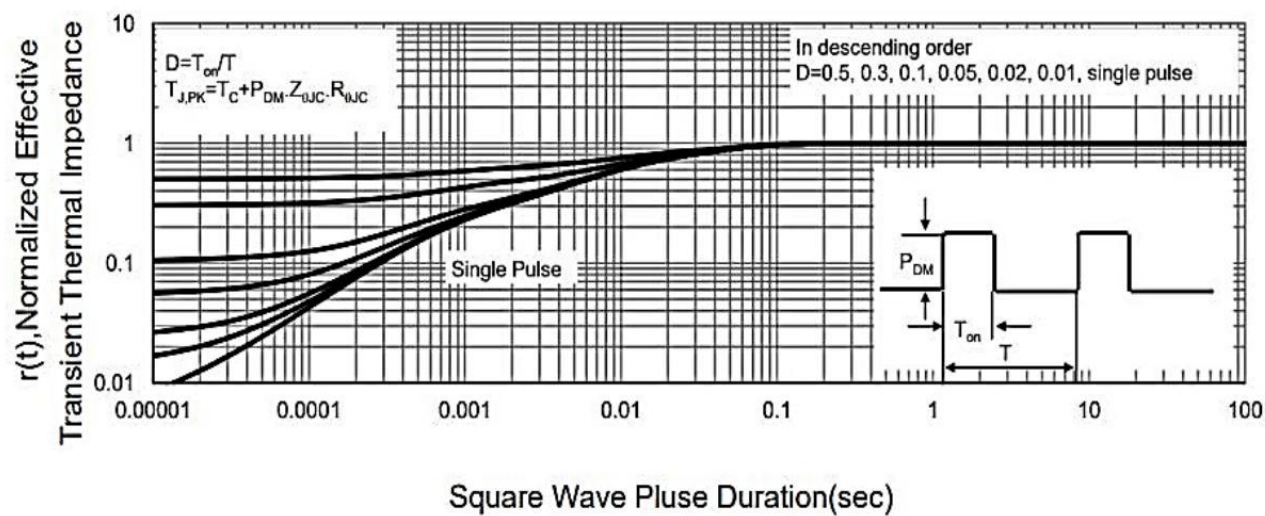
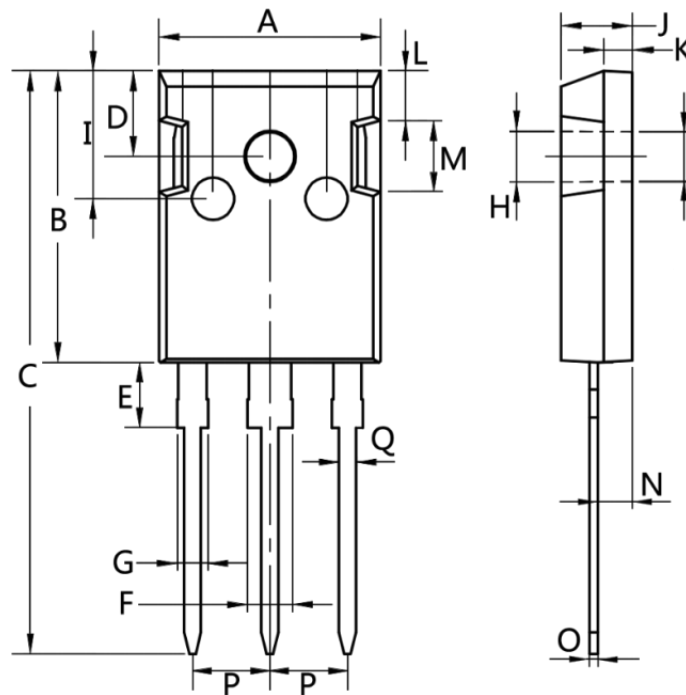


Figure13:Max. transient thermal impedance

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		360