

Description

The SX100N25MP 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

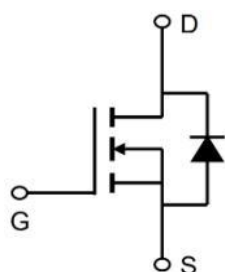
$V_{DS} = 250V$ $I_D = 100A$

$R_{DS(ON)} < 33m\Omega$ @ $V_{GS}=10V$

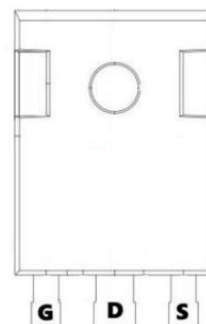
Application

UPS

BLDC



TO-247-3L



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

Symbol	Parameter	Rating	Units
VDSS	Drain-to-Source Voltage	250	V
ID@TA=25°C	Continuous Drain Current VGS @ 10V	100	A
ID@TA=100°C	Continuous Drain Current VGS @ 10V	750	A
IDM	Pulsed Drain Current (pulse width limited by T _{JM})	300	A
VGS	Gate-to-Source Voltage	±30	V
EAS	Single Pulse Avalanche Energy	895	mJ
IAR a1	Avalanche Current	45	A
dv/dt ^{a2}	Peak Diode Recovery dv/dt	5.0	V/ns
PD	Power Dissipation	360	W
TJ, Tstg	Operating Junction and Storage Temperature Range	-55 to 150	°C
TL	Maximum Temperature for Soldering	300	°C
RθJC	Thermal Resistance, Junction-to-Case	0.45	°C/W
RθJA	Thermal Resistance, Junction-to-Ambient	60	°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	250	275	--	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	--	28	33	mΩ
VGS(TH)	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	3.6	4.5	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	--	7000		pF
Coss	Output Capacitance		--	480		pF
Crss	Reverse Transfer Capacitance		--	210		pF
td(ON)	Turn-on Delay Time	I _D =35A, V _{DS} =50V V _{GS} =10V, R _g =2.5Ω	--	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 =35A, V _{DD} =100V V _{GS} =10V	--	200	--	nC
Q _{gs}	Gate to Source Charge		--	28	--	nC
Q _{gd}	Gate to Drain ("Miller") Charge		--	60	--	nC
ISD	Continuous Source Current (Body Diode)		--	--	58	A
ISM	Maximum Pulsed Current (Body Diode)		--	--	230	A
VSD	Diode Forward Voltage	I _S =35A, V _{GS} =0V	--	--	1.2	V
trr	Reverse Recovery Time	I _S =30A, T _j =25°C, V _{DD} =50V dI _F /dt=100A/μs, V _{GS} =0V	--	120	--	ns
Q _{rr}	Reverse Recovery Charge		--	0.55	--	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 . I_{AS} = 35A, 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.

Typical Characteristics

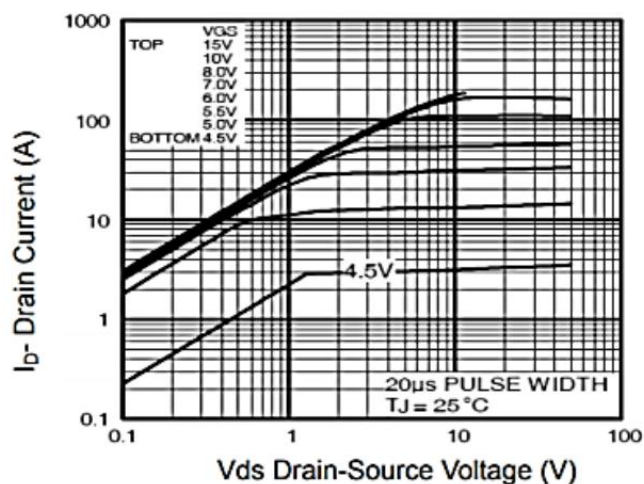


Figure 1 Output Characteristics

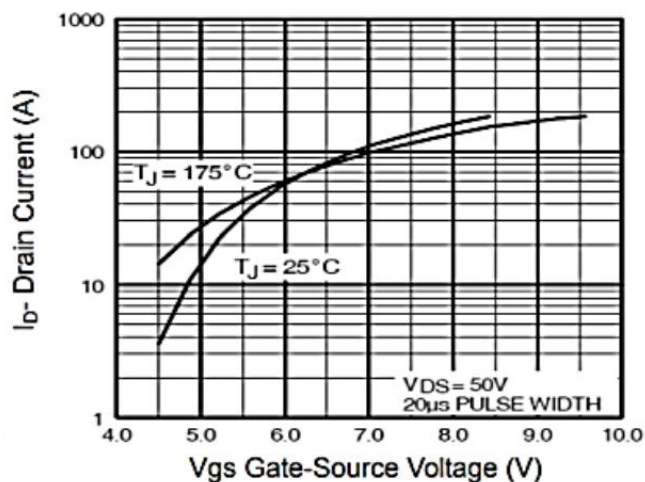


Figure 2 Transfer Characteristics

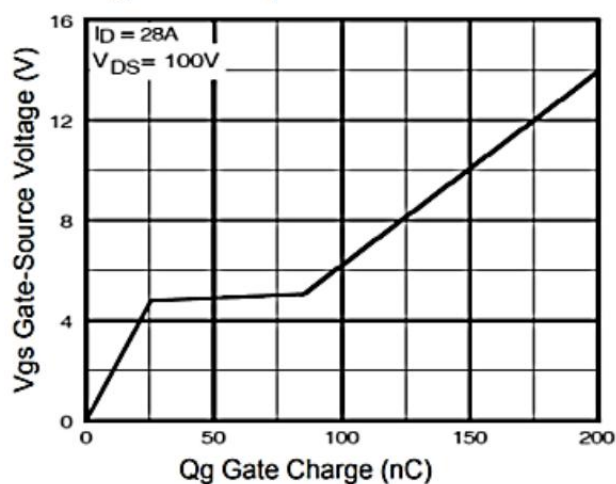


Figure 5 Gate Charge

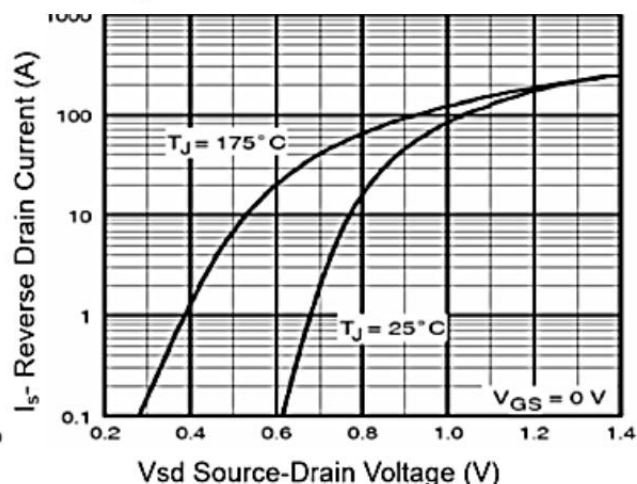


Figure 6 Source- Drain Diode Forward

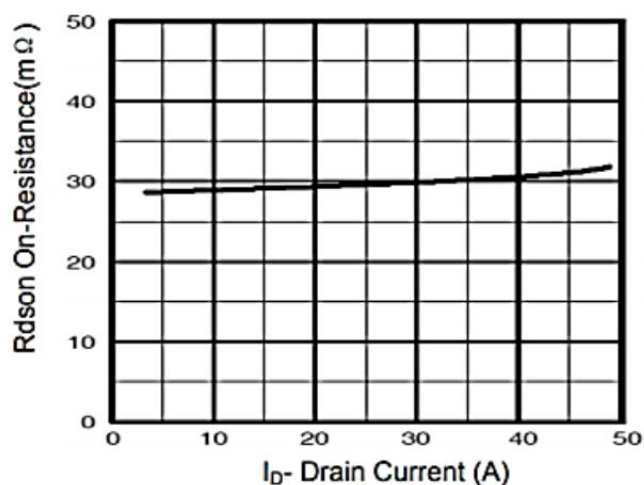


Figure 3 Rdson- Drain Current

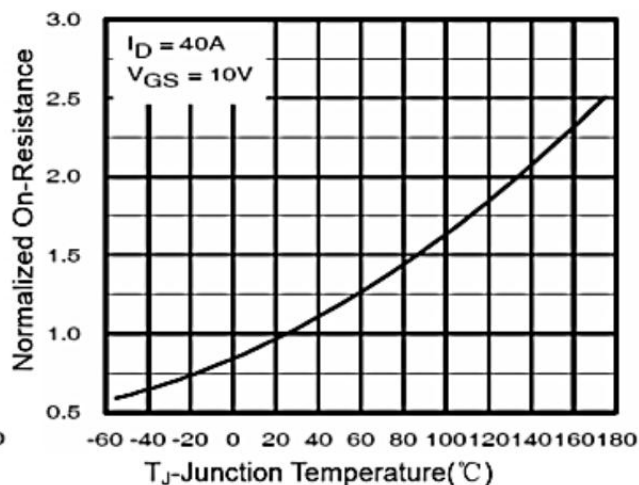


Figure 4 Rdson-Junction Temperature

Typical Characteristics

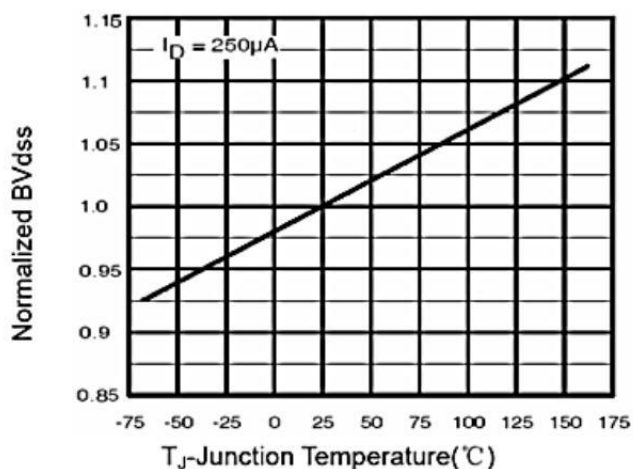


Figure 9 BV_{DSS} vs Junction Temperature

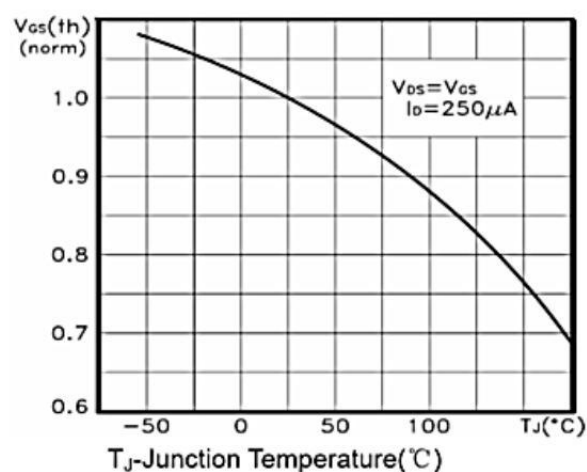


Figure 10 $V_{GS(th)}$ vs Junction Temperature

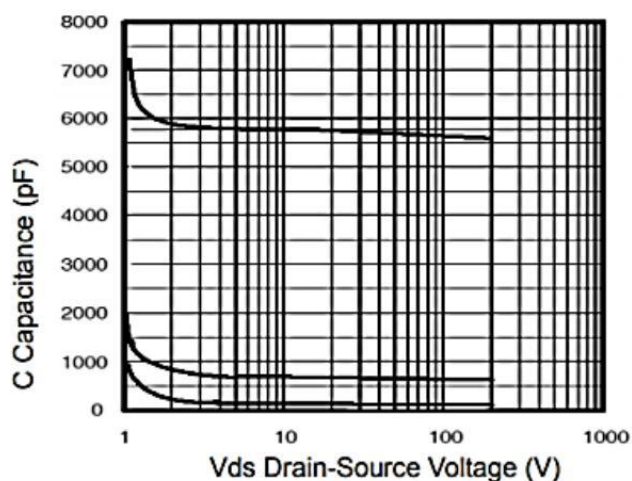


Figure 7 Capacitance vs V_{DS}

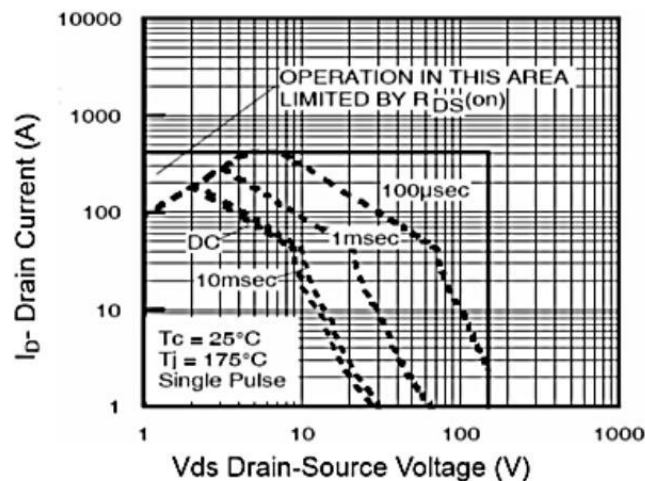


Figure 8 Safe Operation Area

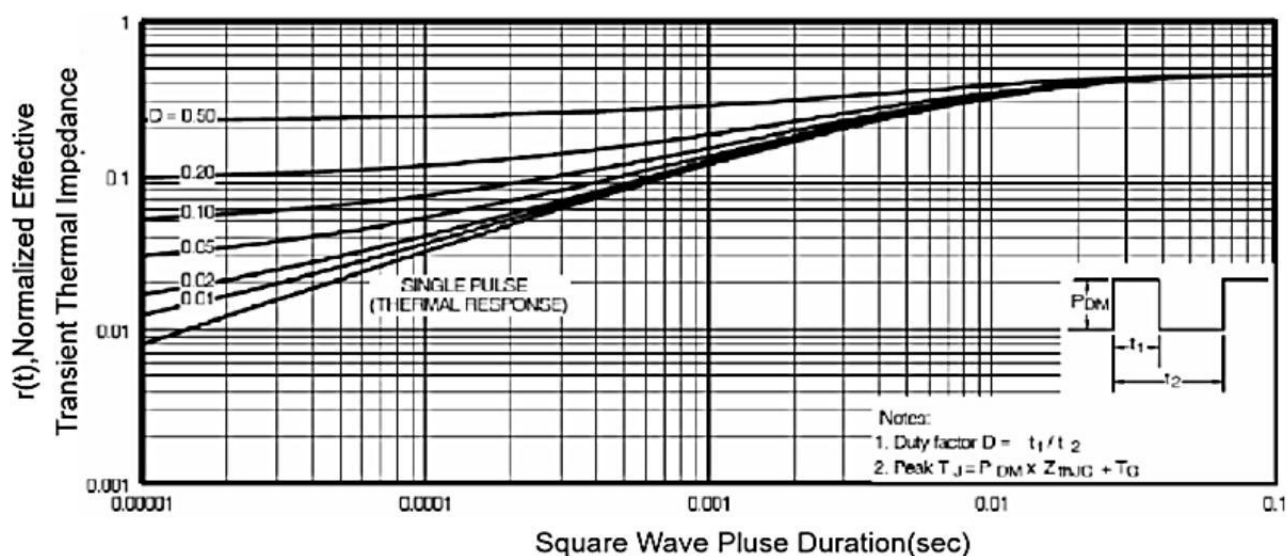
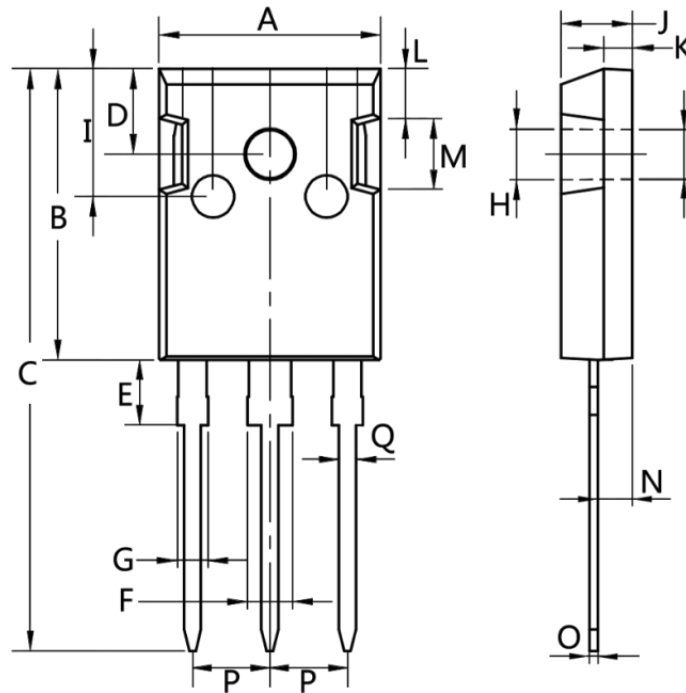


Figure 11 Normalized Maximum Transient Thermal Impedance

MOSFET 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