Description

The SX200N12T uses advanced 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} = 120V （**Type：135V**） I_D =200A

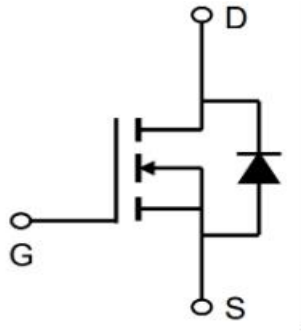
$R_{DS(ON)}$ < 3.8mΩ @ V_{GS}=10V

Application

BMS

UPS

Power Management Switches



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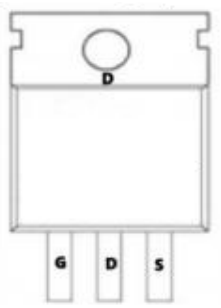


Absolute Maximum Ratings (TC=25℃unless otherwise noted)

Symbol	Parameter	Rating	Units
VDS	Drain-Source Voltage	120	V
VGS	Gate-Source Voltage	±20	V
I_D@T_C=25℃	Continuous Drain Current, V_{GS} @ 10V	200	A
I_D@T_C=100℃	Continuous Drain Current, V_{GS} @ 10V	150	A
IDM	Pulsed Drain Current	600	A
EAS	Single Pulse Avalanche Energy	530	mJ
IAS	Avalanche Current	45	A
P_D@T_C=25℃	Total Power Dissipation[4]	240	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction-Case	0.75	℃/W

Electrical Characteristics (T_C=25℃unless otherwise noted)

Symbol	Parameter	Test Conditions	Min.	Type	Max.	Unit
VDSS	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	120	135	-	V
IGSS	Gate-body Leakage current	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
IDSS	Zero Gate Voltage Drain Current T_J=25°C	V_{DS}=120V, V_{GS}=0V	-	-	1	μA
IDSS	Zero Gate Voltage Drain Current T_J=100°C		-	-	100	
VGS(th)	Gate-Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	2.0	2.9	4.0	V
RDS(on)	Drain-Source on-Resistance[2]	V_{GS}=10V, I_D=20A	-	2.9	3.8	mΩ
RDS(on)	Drain-Source on-Resistance[2]	V_{GS}=6V, I_D=20A		3.8	5.8	mΩ
Ciss	Input Capacitance	V_{DS}=60V, V_{GS}=0V, f=1MHz	-	5240	-	pF
Coss	Output Capacitance		-	739	-	
Crss	Reverse Transfer Capacitance		-	12	-	
R_g	Gate Resistance	V_{GS}=0V, V_{DS}=0V, f =1MHz	-	1.7	-	Ω
Q_g	Total Gate Charge	VDD=60V, ID =45A, VGS=0 to 10V	-	19	-	nC
Qgs	Gate-Source Charge		-	11	-	
Qgd	Gate-Drain Charge		-	75	-	
td(on)	Turn-on Delay Time	VDD =60V, VGS =10V, ID=45A, RG=10Ω	-	59	-	ns
t_r	Rise Time		-	41	-	
td(off)	Turn-off Delay Time		-	96	-	
t_f	Fall Time		-	33	-	
VSD	Diode Forward Voltage[2]	I_F = 20A, V_{GS} = 0V	-	0.8	1.2	V
IS	Continuous Source Current[1,5]	V_G=V_D=0V , Force Current	-	-	200	A
trr	Body Diode Reverse Recovery Time	VR=60V I_F=35A, dI/dt=100A/μs	-	70	-	ns
Q_{rr}	Body Diode Reverse Recovery Charge		-	200	-	nC

Notes:

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 ≤ 300us , duty cycle ≤ 2%

3、The EAS data shows Max. rating . The test condition is V_{DD}=50V, V_{GS}=10V, L=0.5mH, I_{AS}=45A

4、The power dissipation is limited by 150°Cjunction 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

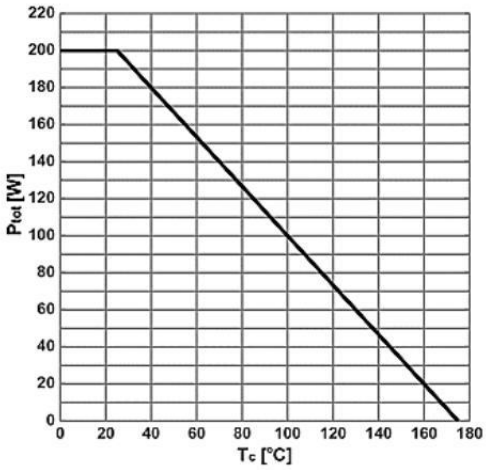


Figure 1. Power dissipation

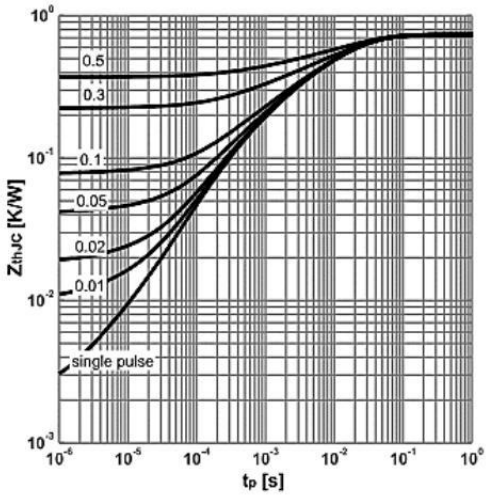


Figure 2. Max. transient thermal impedance

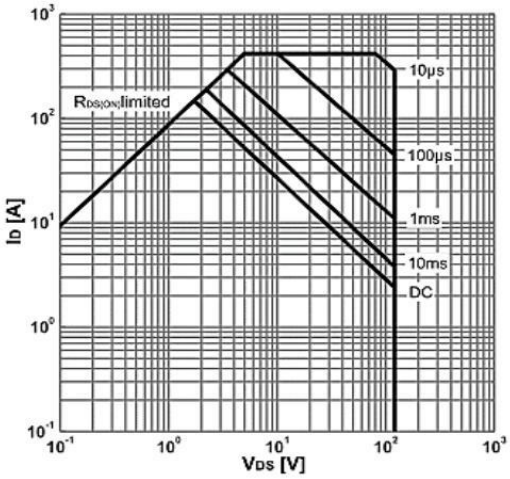


Figure 3. Safe operating area

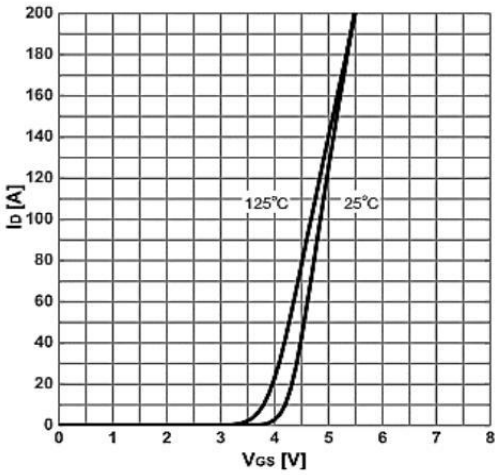


Figure 4. Type. transfer characteristics

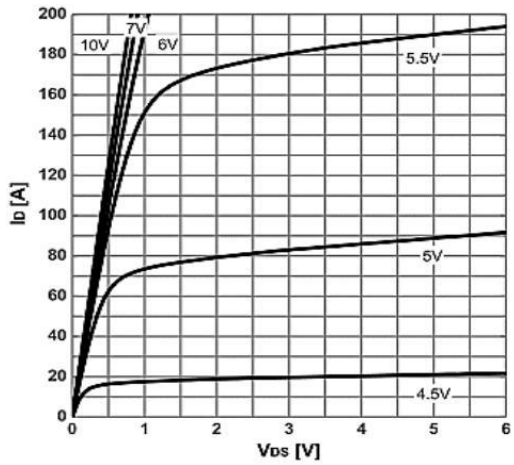


Figure 5. Typ. output characteristics(Tj 25℃)

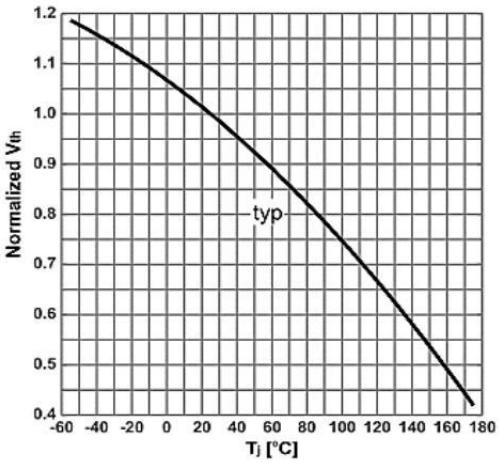


Figure 6. Typ. output characteristics(Tj 125℃)

Typical Characteristics

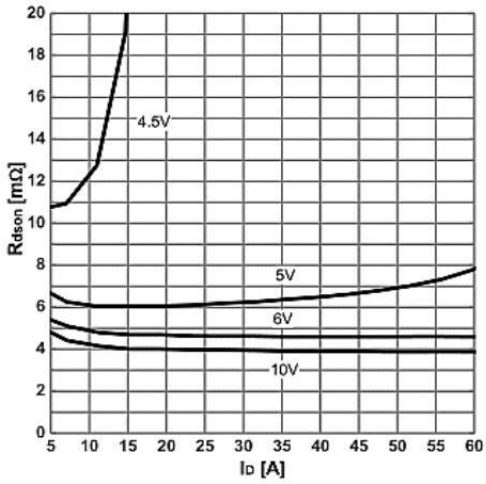


Figure 7. On-state resistance vs. Drain current

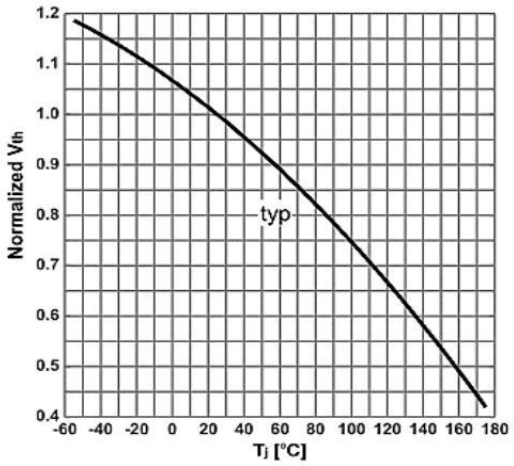


Figure 6. Gate threshold voltage vs. Junction Temperature

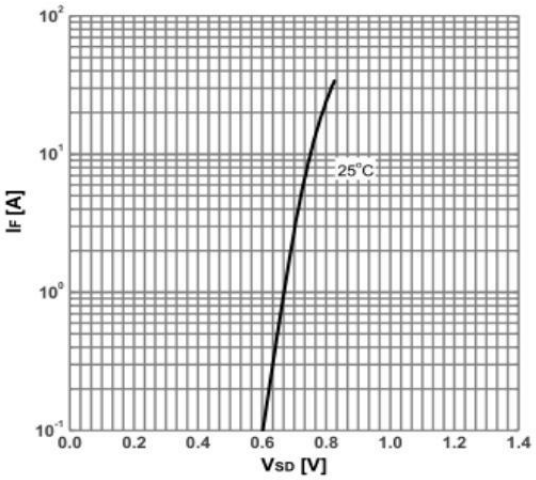


Figure 9. Forward characteristics of reverse diode

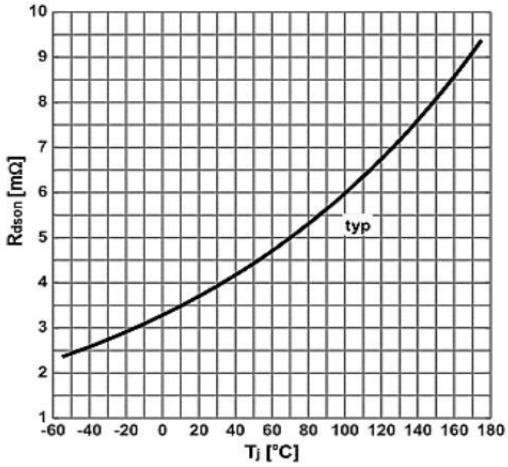


Figure 8. On-state resistance vs. Junctiontemperature

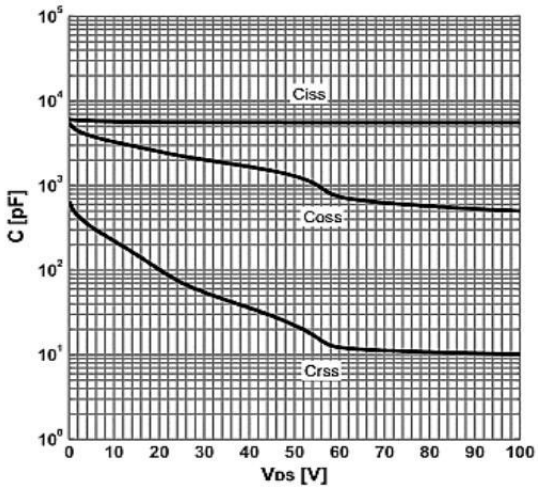


Figure9 Typ. capacitances

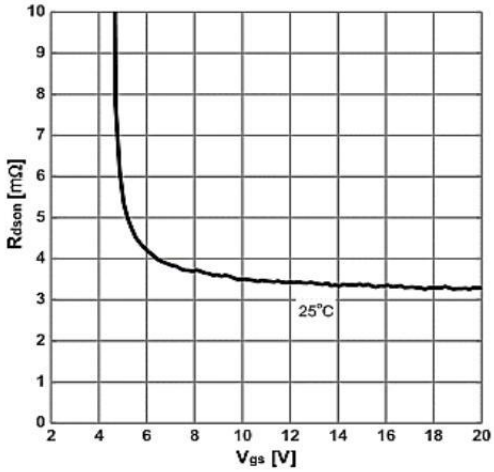


Figure11. On-state resistance vs. Vgs characteristics

Typical Characteristics

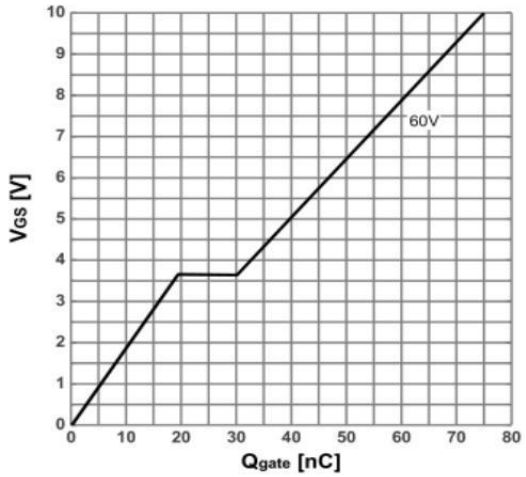
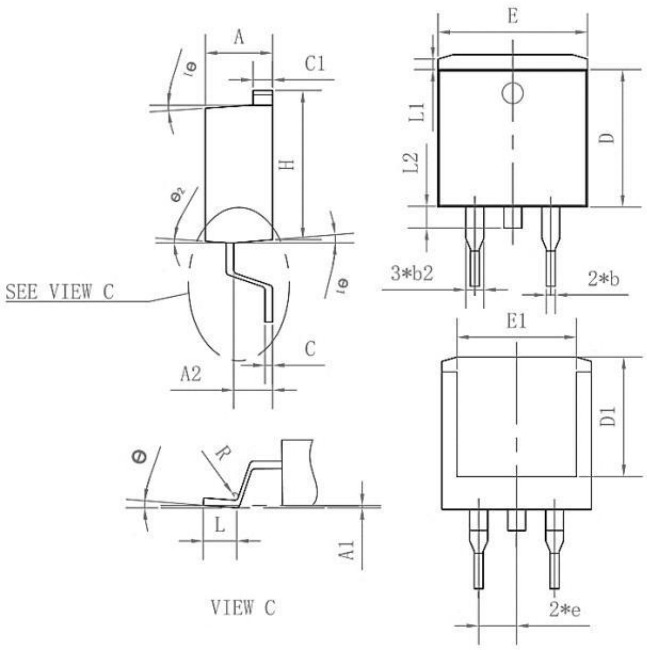


Figure 13: Typ. gate charge

Package Mechanical Data-TO-263-3L



Symbol	Common		
	mm		
	Mim	Nom	Max
A	4.35	4.47	4.60
A1	0.09	0.10	0.11
A2	2.30	2.40	2.70
b	0.70	0.80	1.00
b2	1.25	1.36	1.50
C	0.45	0.50	0.65
C1	1.29	1.30	9.40
D	9.10	9.20	9.30
D1	7.90	8.00	8.10
E	9.85	10.00	10.20
E1	7.90	8.00	8.10
H	15.30	15.50	15.70
e	-	2.54	-
L	2.34	2.54	2.74
L1	1.00	1.10	1.20
L2	1.30	1.40	1.50
R	0.24	0.25	0.26
θ	0°	4°	8°
Θ1	4°	7°	10°
Θ2	0°	3°	6°

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	TO-263-3L		800