

Description

The SX200N04NF uses advanced technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

$V_{DS} = 40V$ $I_D = 200A$

$R_{DS(ON)} < 1.0m\Omega$ @ $V_{GS}=10V$

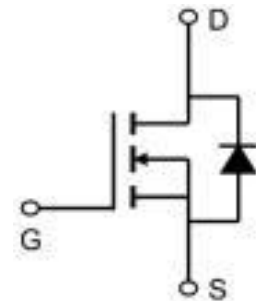
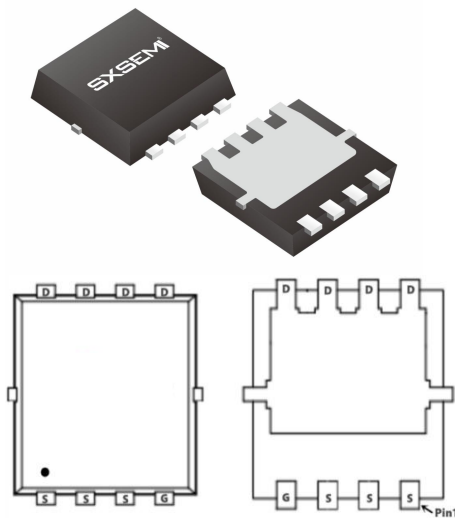
Application

BMS

BLDC

UPS

PDFN5*6-8L



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

Symbol	Parameter	Max.	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_C=25^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	200	A
$I_D@T_C=100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	130	A
I_{DM}	Pulsed Drain Current	800	A
E_{AS}	Single Pulsed Avalanche Energy	420	mJ
I_{AS}	Avalanche Current	70	A
$PD@T_C=25^\circ C$	Power Dissipation	68	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	25	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.4	$^\circ C/W$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	40	48	-	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =40V, V _{GS} =0V,	-	-	1.0	μA
IGSS	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} = ±20V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.5	2.5	V
RDS(on)	Static Drain-Source on-Resistance	V _{GS} =10V, I _D =30A	-	0.75	1.0	mΩ
		V _{GS} =4.5V, I _D =20A	-	1.1	1.5	mΩ
Ciss	Input Capacitance	V _{DS} =20V, V _{GS} =0V, f=1.0MHz	-	7400	-	pF
Coss	Output Capacitance		-	1930	-	pF
Crss	Reverse Transfer Capacitance		-	110	-	pF
Qg	Total Gate Charge	V _{DS} =20V, I _D =85A, V _{GS} =10V	-	125	-	nC
Qgs	Gate-Source Charge		-	18	-	nC
Qgd	Gate-Drain("Miller") Charge		-	13	-	nC
td(on)	Turn-on Delay Time	V _{DD} =20V, I _D =85A, R _G =1.6Ω, V _{GS} =10V	-	14.1	-	ns
tr	Turn-on Rise Time		-	7.9	-	ns
td(off)	Turn-off Delay Time		-	56.5	-	ns
tr	Turn-off Fall Time		-	9.6	-	ns
IS	Maximum Continuous Drain to Source Diode Forward Current		-	-	200	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	800	A
VSD	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =30A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	T _J =25°C, I _F =I _S , dI/dt=100A/μs	-	35	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	124	-	nC

Note :

- 1、The data tested by surface mounted on a 1 inch 2 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 VDD =32V,VGS =10V,L=0.1mH,IAS =70A
- 4、The power dissipation is limited by 150°C junction 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

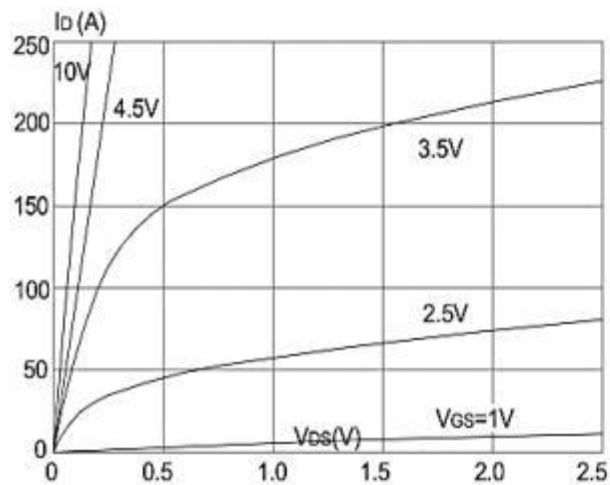


Figure1: Output Characteristics

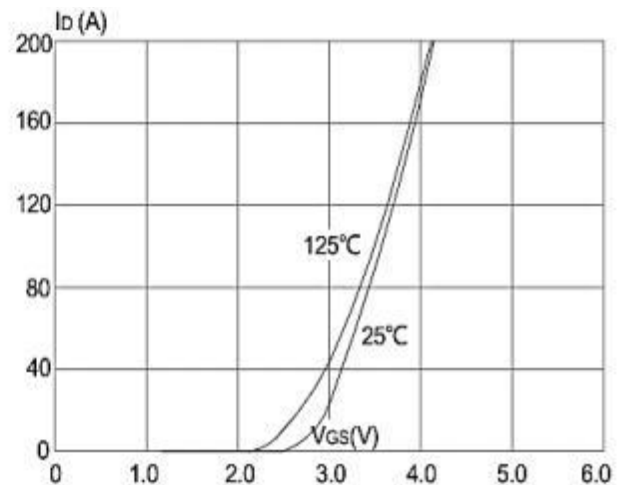


Figure 2: Typical Transfer Characteristics

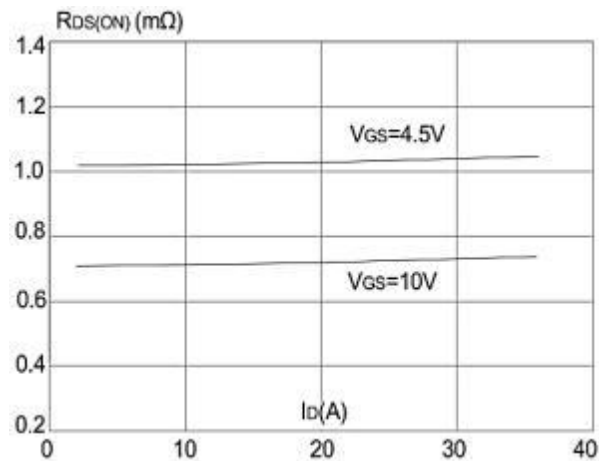


Figure 3: On-resistance vs. Drain Current

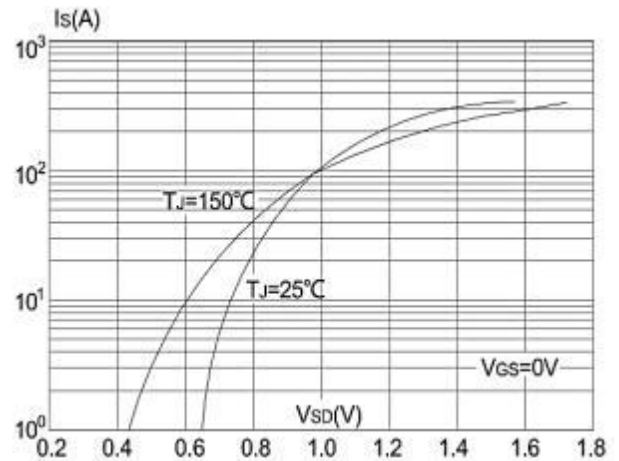


Figure 4: Body Diode Characteristics

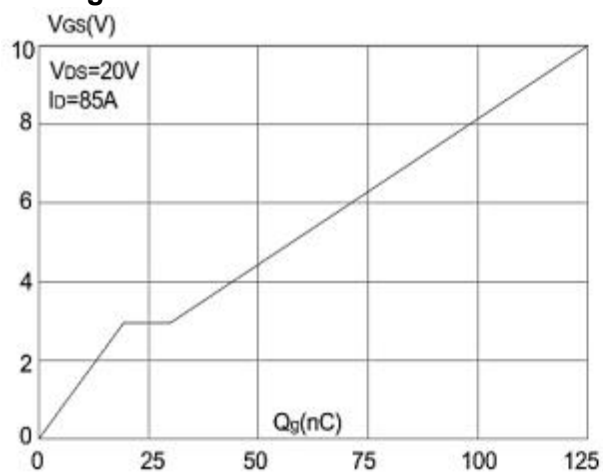


Figure 5: Gate Charge Characteristics

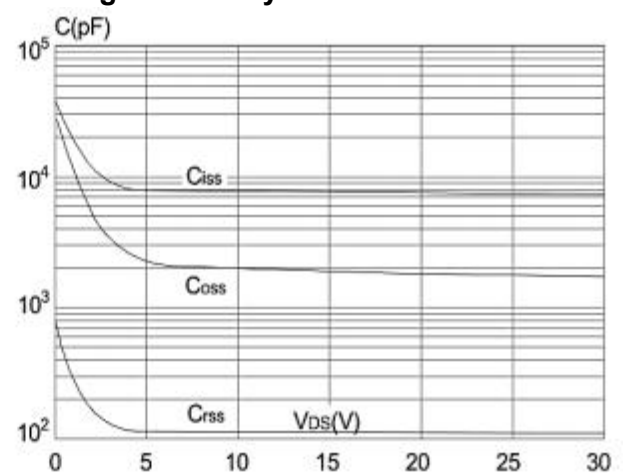


Figure 6: Capacitance Characteristics

Typical Characteristics

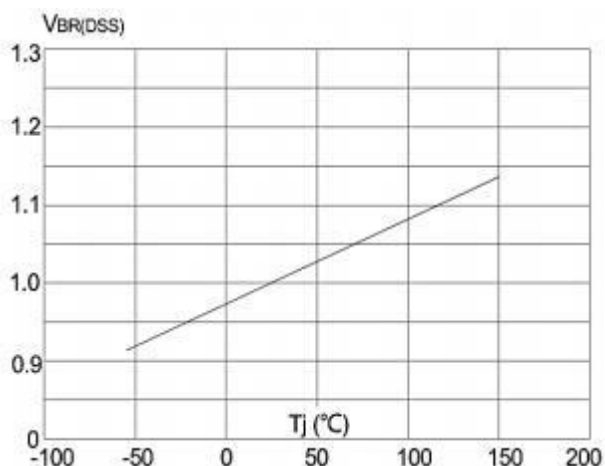


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

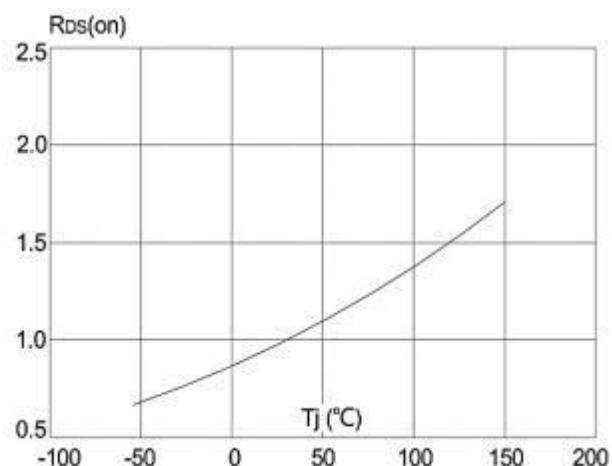


Figure 8: Normalized on Resistance vs. Junction Temperature

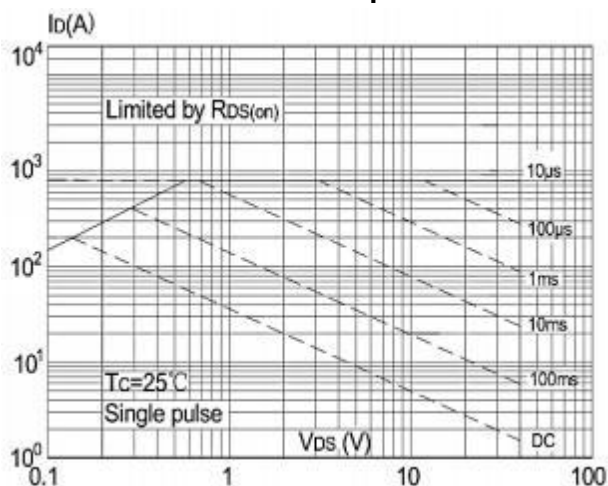


Figure 9: Maximum Safe Operating Area

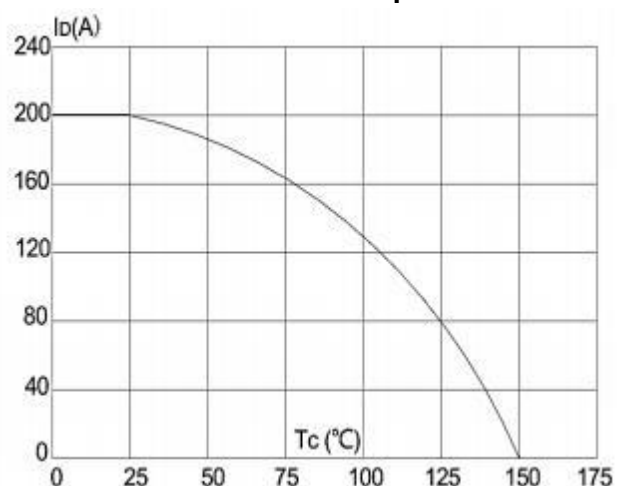


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

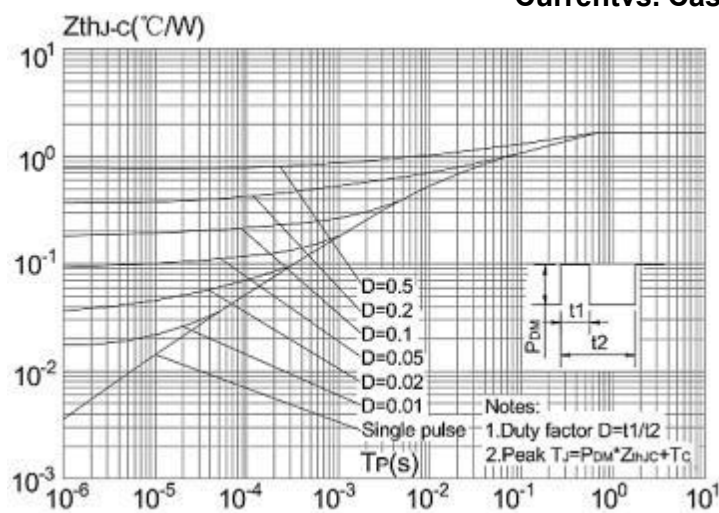
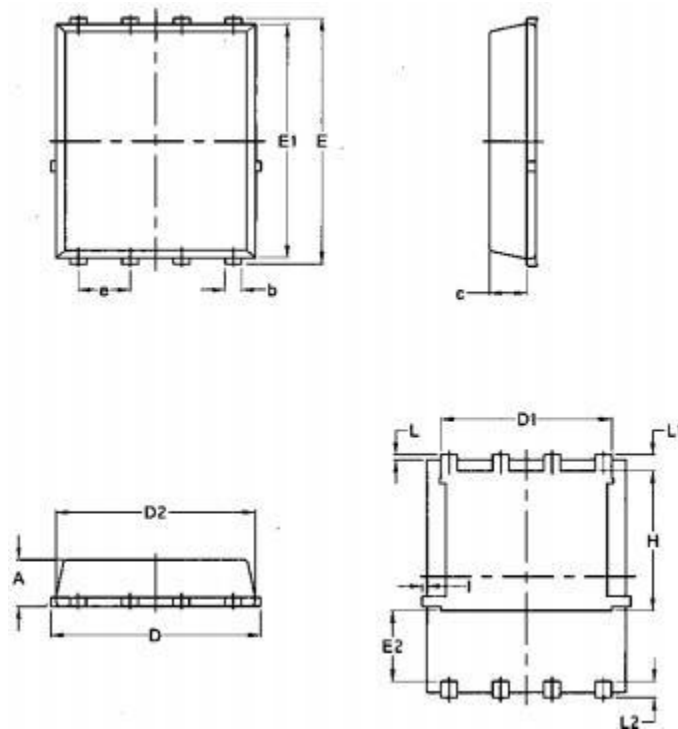


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Cas

Package Mechanical Data-PDFN5*6-8L-JQ Single



Symbol	Common			
	mm		Inch	
	Mim	Max	Min	Max
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.0970	0.0324	0.082
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.95	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	/	0.0630	/
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	/	0.18	/	0.0070

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	PDFN5*6-8L		5000