

Description

The SX85N08NF 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

$V_{DS} = 85V$ $I_D = 85A$

$R_{DS(ON)} < 5.8m\Omega$ $V_{GS}=10V$

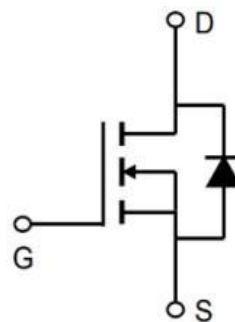
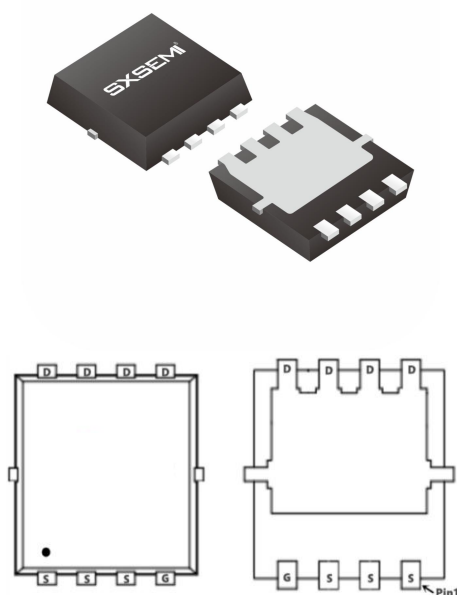
Application

Battery protection

Load switch

Uninterruptible power supply

PDFN5*6-8L



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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	85	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D@T_c=25^\circ C$	Continuous Drain Current, V_{GS} @ 10V	100	A
$I_D@T_c=100^\circ C$	Continuous Drain Current, V_{GS} @ 10V	86	A
I_{DM}	Pulsed Drain Current	544	A
E_{AS}	Single Pulse Avalanche Energy	434	mJ
$P_D@T_c=25^\circ C$	Total Power Dissipation ⁴	166	W
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	0.65	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case	62.5	$^\circ C/W$

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V(BR)DSS	Drain-source breakdown voltage	V _{GS} =0V, I _D =250uA	85	91		V
V _{GS} (th)	Gate threshold voltage	V _{DS} =V _{GS} , I _D =250uA T _J =25°C	2.0	3.0	4.0	V
IDSS	Zero gate voltage drain current	V _{DS} =80V, V _{GS} =0V T _J =25°C	-	-	1	μA
IDSS	Zero gate voltage drain current	V _{DS} =80V, V _{GS} =0V T _J =125°C	-	-	- 5	μA
IGSS	Gate-source leakage current	V _{GS} =20V, V _{DS} =0V	-	-	100	nA
RDS(on)	Drain-source on-state resistance	V _{GS} =10V, I _D =50A, T _J =25°C	-	4.8	5.8	mΩ
gfs	Transconductance	V _{DS} =5V, I _D =40A	-	106	-	S
Ciss	Input Capacitance	V _{GS} =0V, V _{DS} =40V, f=1MHz	-	3503	-	pF
Coss	Output Capacitance		-	1048	-	pF
Crss	Reverse Transfer Capacitance		-	23	-	pF
Q _G	Gate Total Charge	V _{GS} =10V, V _{DS} =40V, I _D =20A	-	82	-	nC
Q _{gs}	Gate-Source charge		-	15	-	nC
Q _{gd}	Gate-Drain charge		-	33	-	nC
td(on)	Turn-on delay time	T _J =25°C, V _{GS} =10V, V _{DS} =40V, R _L =3Ω	-	14.9	-	ns
t _r	Rise time		-	35	-	ns
td(off)	Turn-off delay time		-	50	-	ns
t _f	Fall time		-	37	-	ns
R _G	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz	-	2	-	Ω
VSD	Body Diode Forward Voltage	V _{GS} =0V, I _{SD} =10A	-	0.85	1.2	V
t _{rr}	Body Diode Reverse Recovery Time	I _F =20A, dI/dt=100A/μs	-	70	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	61	-	nC

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 .The EAS data shows Max. rating .
- 3、The test cond ≅ 300us duty cycle ≅ 2%, duty cycle ition is V_{DD}=64V_{GS}=10V, L=0.1mH, I_{AS}=53.8A
- 4、The power dissipation is limited by 175°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

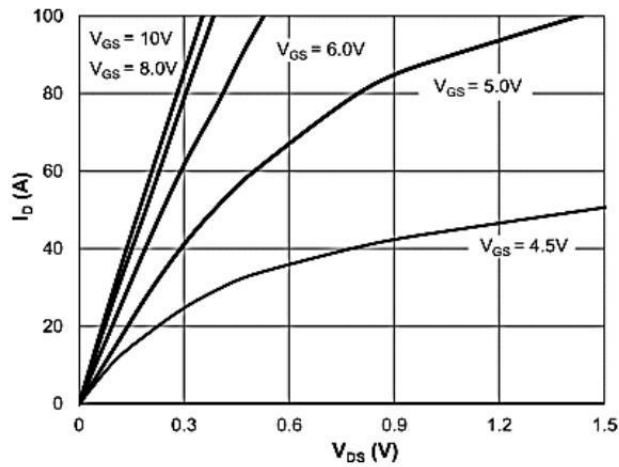


Figure 1: Saturation Characteristics

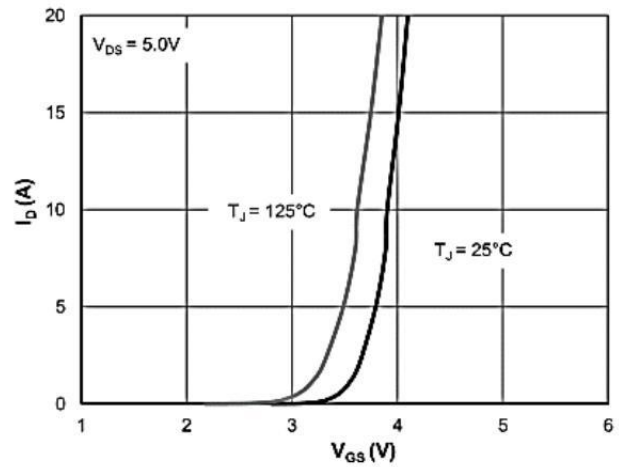


Figure 2: Transfer Characteristics

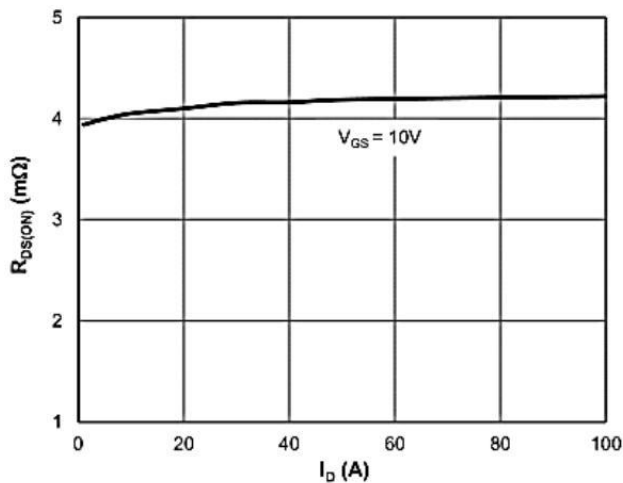


Figure 3: $R_{DS(ON)}$ vs. Drain Current

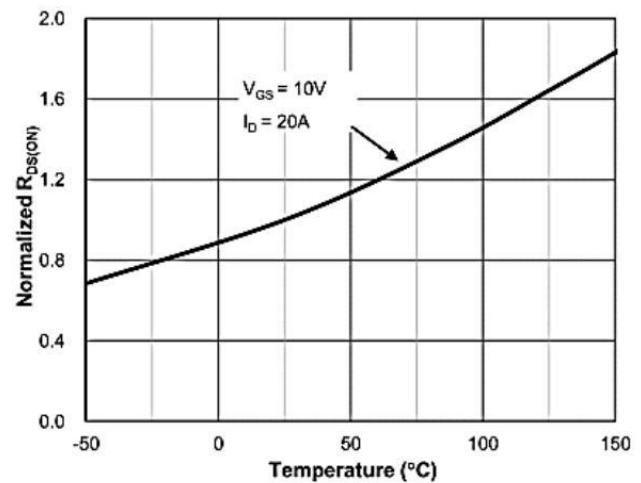


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

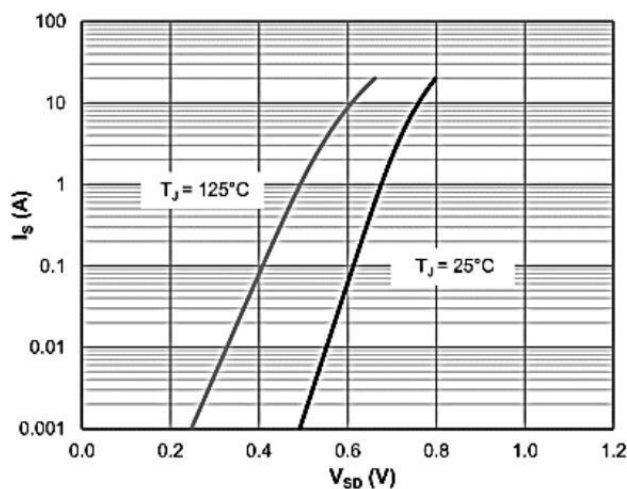


Figure 7: Body-Diode Characteristics

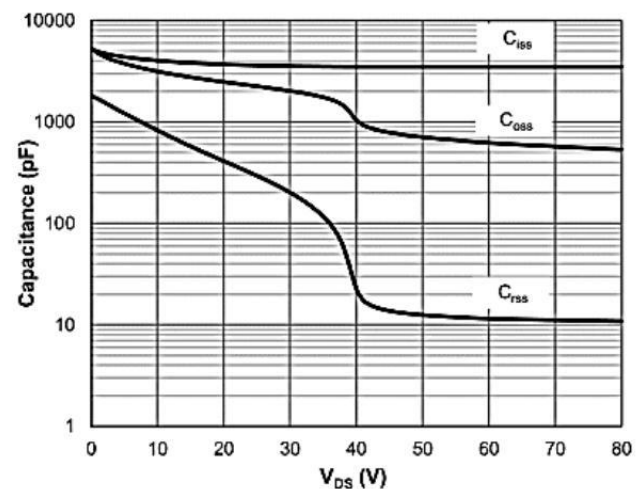


Figure 8: Capacitance Characteristics

Typical Characteristics

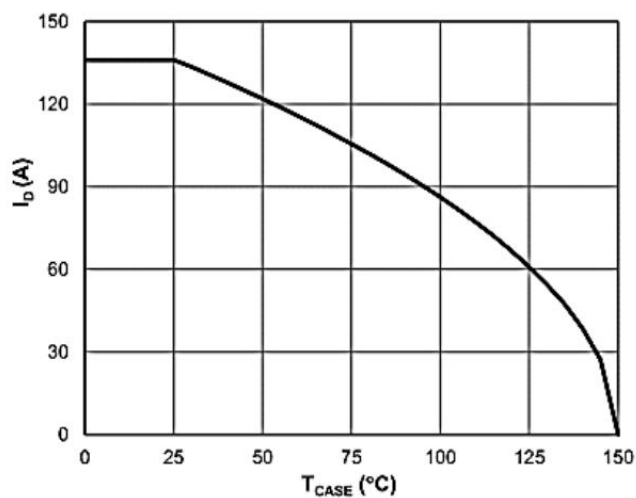


Figure 9: Current De-rating

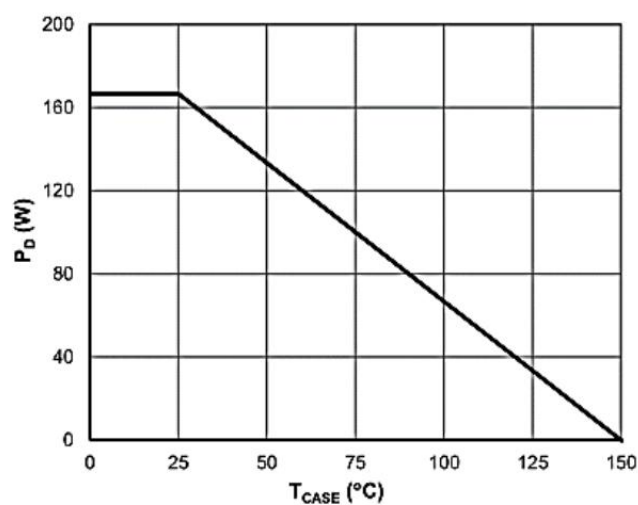


Figure 10: Power De-rating

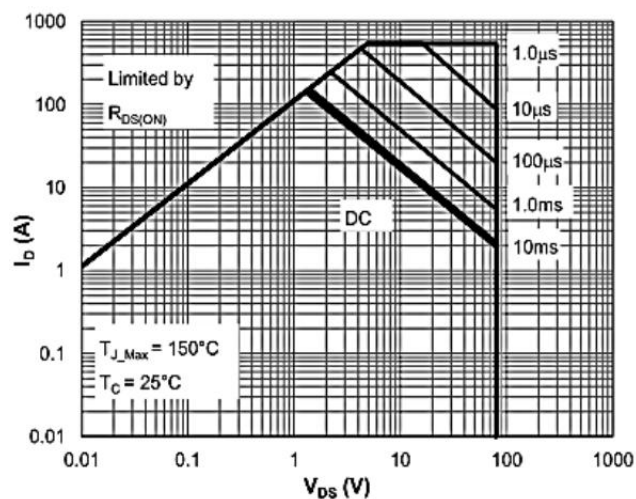


Figure 11: Maximum Safe Operating Area

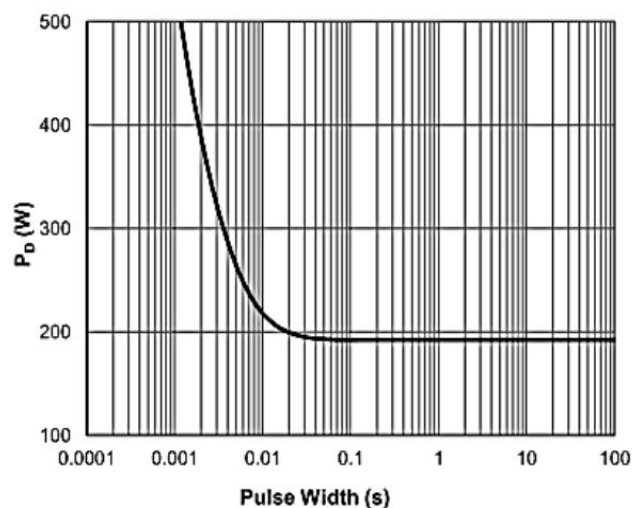


Figure 12: Single Pulse Power Rating, Junction-to-Case

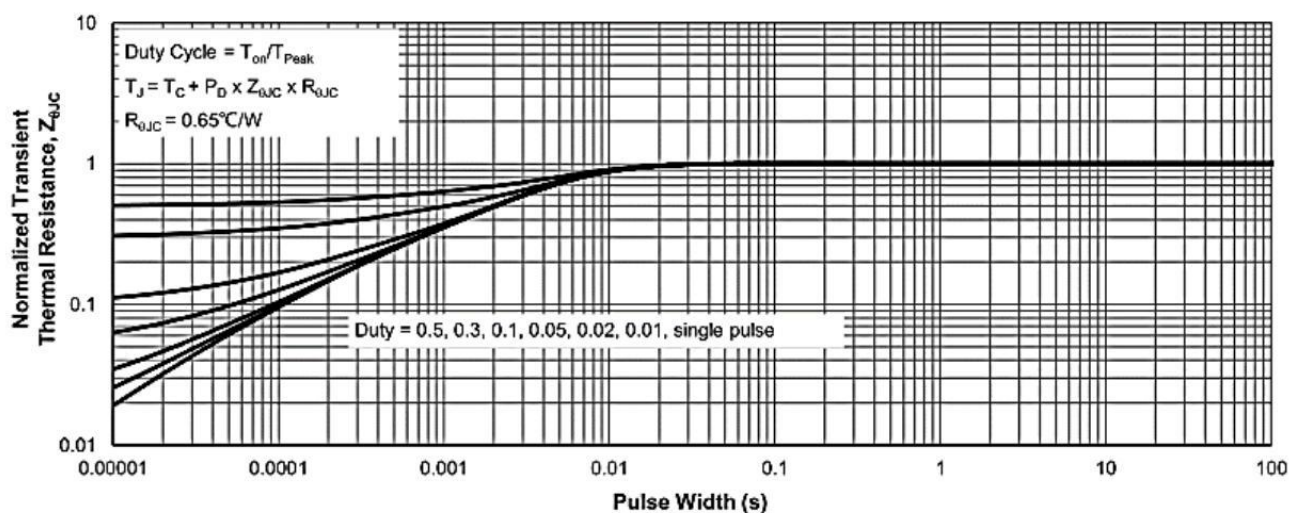
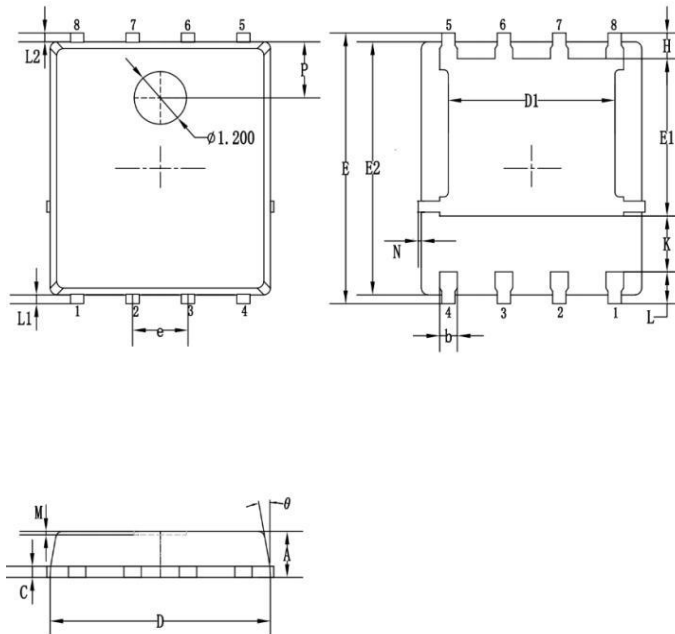


Figure 13: Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-PDFN5*6-8L Single



Symbol	Dim in mm		
	Min	Typ	Max
A	0.9	1.05	1.2
b	0.3	0.4	0.5
C	0.2	0.25	0.35
D	4.9	5.05	5.2
D1	3.72	3.82	4.12
E	5.9	6.1	6.3
E1	3.3	3.5	3.7
E2	5.6	5.75	5.9
e	1.27BSC		
H	0.48	0.58	0.7
K	1.14	1.27	1.4
L	0.54	0.74	0.84
L1/L2	0.1	0.2	0.3
θ	8°	10°	12°
M	0.08REF		
N	0		0.15
P	1.28REF		

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	PDFN5X6-8L		5000