

Description

The SX80N06D 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

$V_{DS} = 65V$ $I_D = 80A$

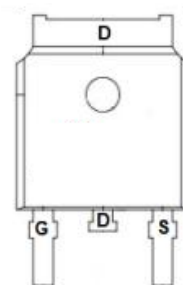
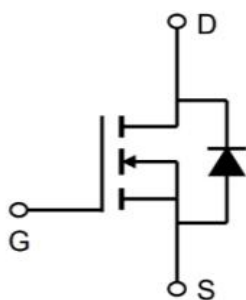
$R_{DS(ON)} < 8.5m\Omega$ @ $V_{GS}=10V$

Application

Battery protection

Load switch

Uninterruptible power supply



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

Symbol	Parameter	Value	Unit
V_{DS}	Drain source voltage	65	V
V_{GS}	Gate source voltage	± 20	V
$I_{D@TA=25^\circ C}$	Continuous drain current	80	A
$I_{D@TA=70^\circ C}$	Continuous drain current	44	A
I_{DM}	Pulsed drain current	280	A
$PD@TA=25^\circ C$	Power dissipation	73.5	W
EAS	Single pulsed avalanche energy	57.5	mJ
TSTG	Storage Temperature Range	-55 to 150	$^\circ C$
T_j	Operation and storage temperature	-55 to 150	$^\circ C$
$R_{\theta JC}$	Thermal resistance, junction-case	1.7	$^\circ C/W$
$R_{\theta JA}$	Thermal resistance, junction-ambient ⁵⁾	62.5	$^\circ C/W$

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	65	72	-	V
IGSS	Gate-body Leakage Current	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
IDSS T _J =25°C	Zero Gate Voltage Drain Current	V _{DS} =65V, V _{GS} =0V			1	μA
IDSS T _J =100°C					100	
VGS(th)	Gate-Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.2	1.7	2.5	V
RDS(on)	Drain-Source On-Resistance ⁴	V _{GS} =10V, I _D =20A	-	6.5	8.5	mΩ
RDS(on)	Drain-Source On-Resistance ⁴	V _{GS} =4.5V, I _D =10A	-	8.5	12	mΩ
gfs	Forward Transconductance ⁴	V _{DS} = 10V, I _D = 10A	-	80	-	S
Ciss	Input Capacitance	V _{DS} =30V, V _{GS} =0V, f=1MHz	-	1156	-	pF
Coss	Output Capacitance		-	348	-	
Crss	Reverse Transfer Capacitance		-	19.8	-	
R _g	Gate Resistance	f=1MHz	-	1.5	-	Ω
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =30V, I _D =20A	-	20.6	-	nC
Q _{gs}	Gate-Source Charge		-	3.7	-	
Q _{gd}	Gate-Drain Charge		-	4.3	-	
td(on)	Turn-On Delay Time	V _{GS} =10V, V _{DD} =30V, R _G = 3Ω, I _D =20A	-	6.9	-	ns
t _r	Rise Time		-	8.1	-	
td(off)	Turn-Off Delay Time		-	18.6	-	
t _f	Fall Time		-	5.3	-	
t _{rr}	Body Diode Reverse Recovery Time	I _F =20A, dI/dt=100A/μs	-	34	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	17	-	nC
VSD	Diode Forward Voltage ⁴	I _S =20A, V _{GS} = 0V	-	-	1.2	V
IS	Continuous Source Current	T _A =25°C	-	-	80	A

Note

- 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 VDD=48V,VGS=10V,L=0.1mH,IAS=29A
- 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

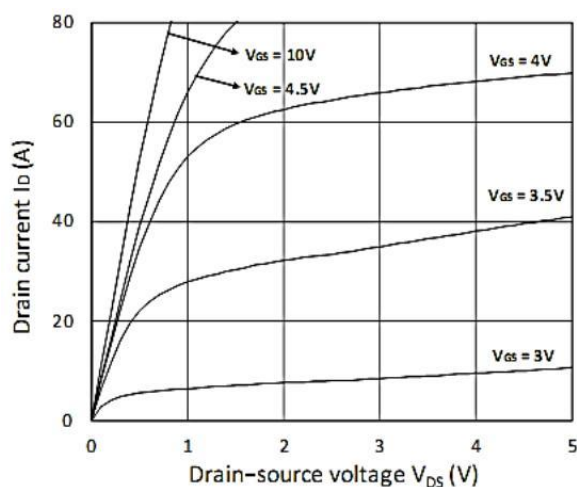


Figure 1. Output Characteristics

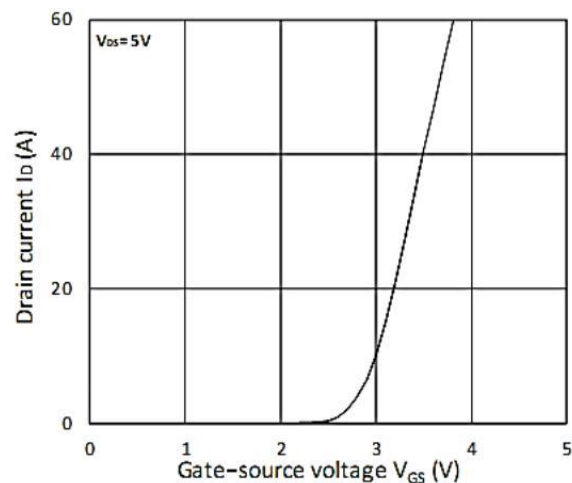


Figure 2. Transfer Characteristics

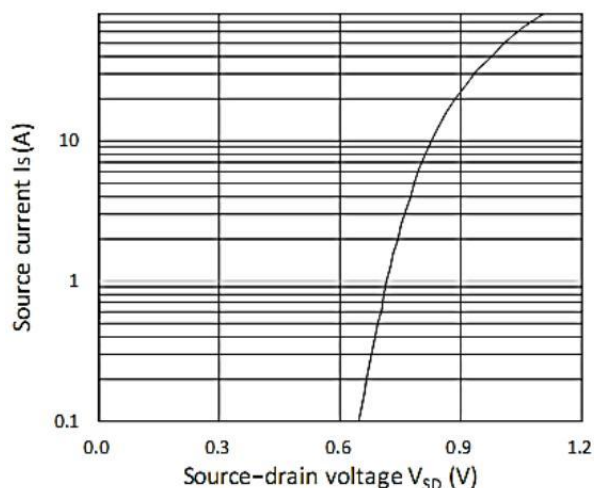


Figure 3. Forward Characteristics of Reverse

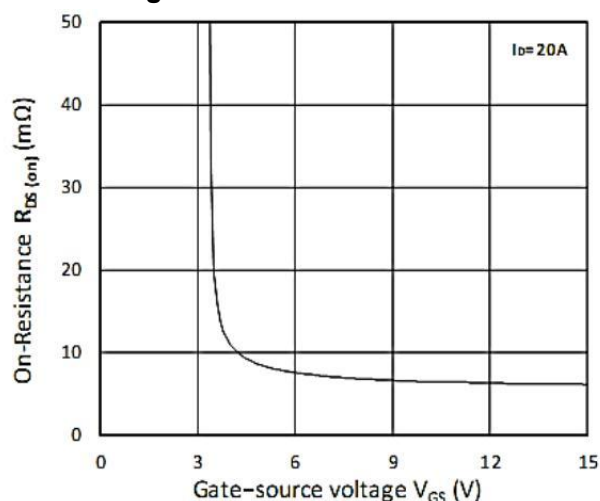


Figure 4. R_DS(ON) vs. V_GS

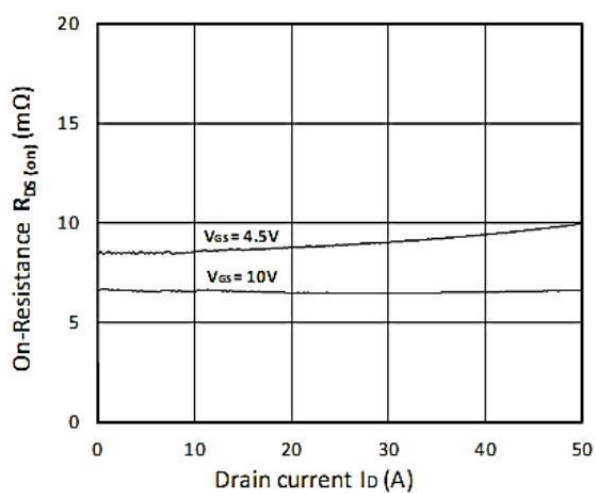


Figure 5. R_DS(ON) vs. I_D

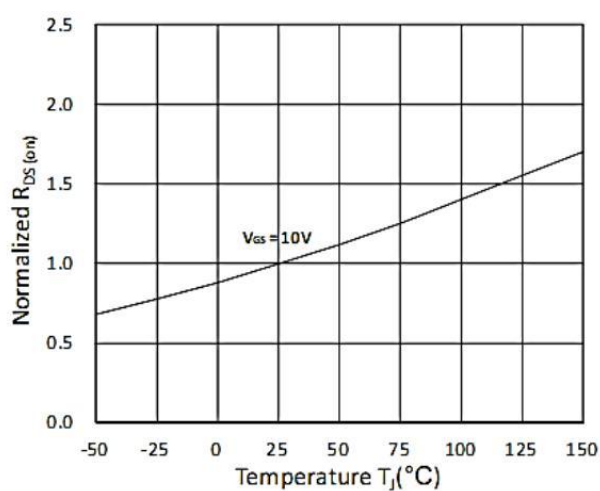


Figure 6. Normalized R_DS(on) vs. Temperature

Typical Characteristics

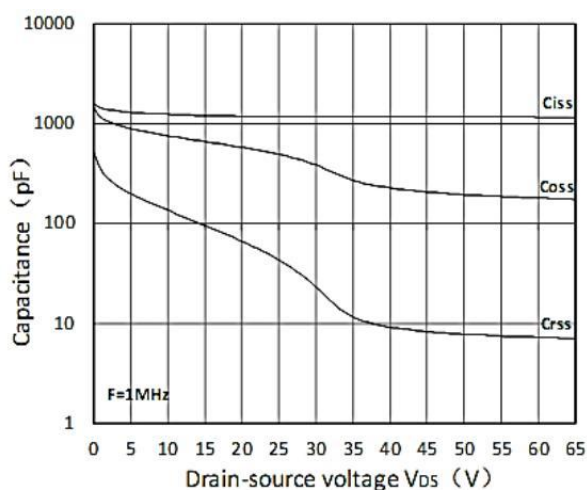


Figure 7. Capacitance Characteristics

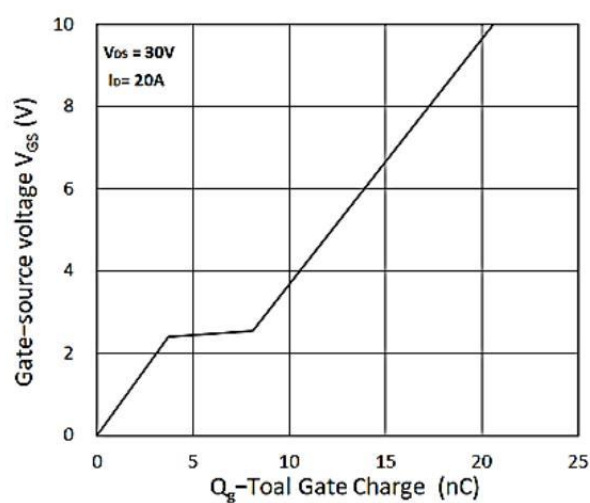


Figure 8. Gate Charge Characteristics

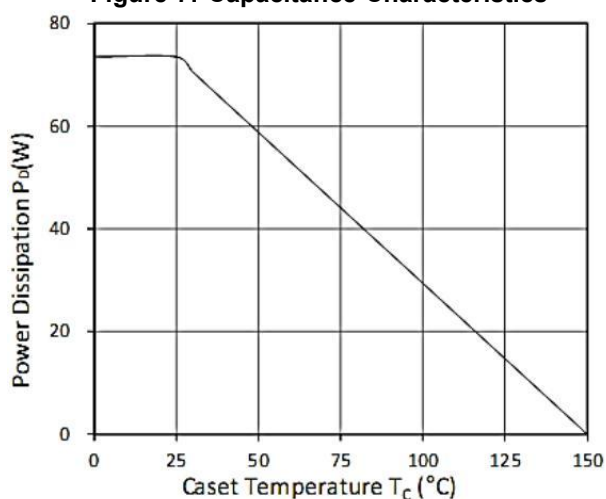


Figure 9. Power Dissipation

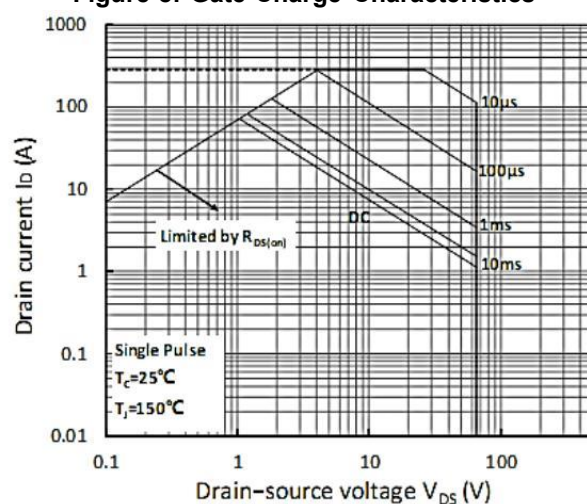


Figure 10. Safe Operating Area

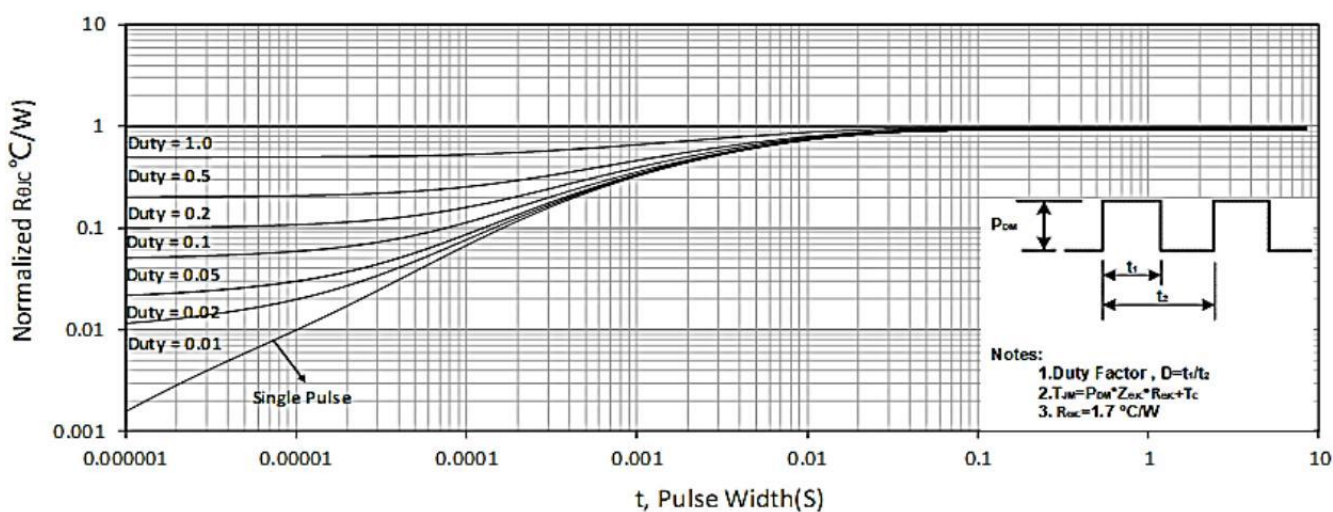
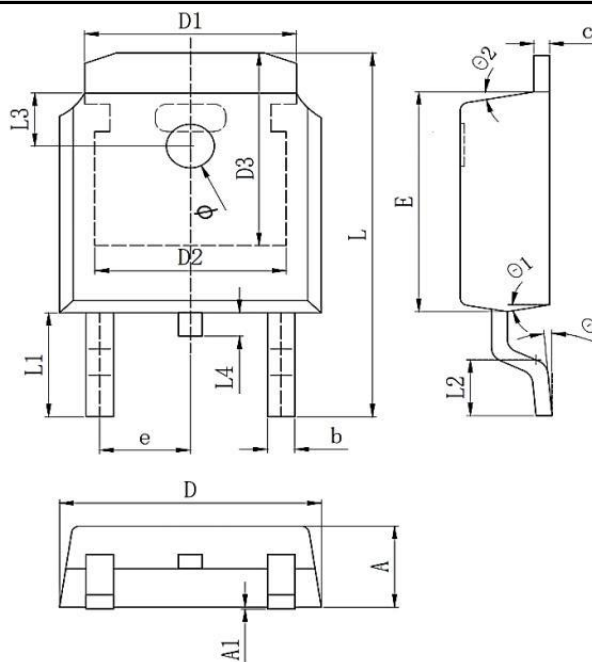


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-TO-252-3L



Symbol	Dim in mm		
	Min	Typ	Max
A	2.1	2.3	2.5
A1	0	0.064	0.128
b	0.64	0.75	0.86
c	0.45	0.52	0.6
D	6.4	6.6	6.8
D1	5.33REF		
D2	4.83REF		
D3	5.25REF		
E	5.9	6.1	6.3
e	2.286TYP		
L	9.8	10.1	10.4
L1	2.888REF		
L2	1.4	1.5	1.7
L3	1.65REF		
L4	0.6	0.8	1
ϕ	1.1	1.2	1.3
θ	0°		10°
θ_1	5°		10°
θ_2	5°		10°

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	TO-252-3L		2500