

Description

The SX80N10T 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

$V_{DS} = 100V$ $I_D = 80A$

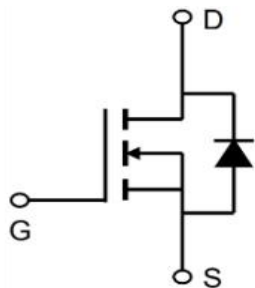
$R_{DS(ON)} < 12m\Omega @ V_{GS}=10V$

Application

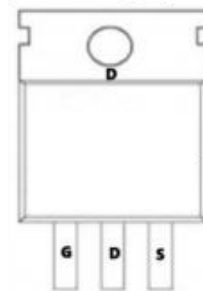
Isolated DC

Motor control

Synchronous-rectification



TO-263-3L



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

Symbol	Parameter	Value	Unit
VDS	Drain source voltage	100	V
VGS	Gate source voltage	± 20	V
ID	Continuous drain current, $T_C=25^\circ C$	80	A
IDM	Pulsed drain current, $T_C=25^\circ C$	210	A
PD	Power dissipation, $T_C=25^\circ C$	107	W
EAS	Single pulsed avalanche energy ⁴⁾	183.8	mJ
Tstg, Tj	Operation and storage temperature	-55 to 150	$^\circ C$
R θ JC	Thermal resistance, junction-case	1.17	$^\circ C/W$
R θ JA	Thermal resistance, junction-ambient ⁴⁾	62	$^\circ C/W$

Electrical Characteristics (T_c=25°C unless otherwise noted)

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
BVDSS	Drain-source breakdown voltage	V _{GS} =0 V, I _D =250 μA	100	111		V
VGS(th)	Gate threshold voltage	V _{DS} =V _{GS} , I _D =250 μA	2.0	3.0	4.0	V
RDS(ON)	Drain-source on-state resistance	V _{GS} =10 V, I _D =20 A		8	12.0	mΩ
RDS(ON)	Drain-source on-state resistance	V _{GS} =4.5 V, I _D =12 A		12	14.0	mΩ
IGSS	Gate-source leakage current	V _{GS} =±20 V			±100	nA
IDSS	Drain-source leakage current	V _{DS} =100 V, V _{GS} =0 V			1	uA
R _G	Gate resistance	f= 1 MHz, Open drain		5.5		Ω
C _{iss}	Input capacitance	V _{GS} =0 V, V _{DS} =50 V, f=100 kHz		1998.1		pF
C _{oss}	Output capacitance			321.7		pF
C _{rss}	Reverse transfer capacitance			7.1		pF
td(on)	Turn-on delay time		V _{GS} =10 V,		22.1	
t _r	Rise time	V _{DS} =50 V,		5.2		ns
td(off)	Turn-off delay time	R _G =2 Ω,		44		ns
t _f	Fall time	I _D =25 A		8.4		ns
Q _g	Total gate charge			28.9		nC
Q _{gs}	Gate-source charge	I _D =25 A, V _{DS} =50 V, V _{GS} =10 V		6		nC
Q _{gd}	Gate-drain charge			6.8		nC
V _{plateau}	Gate plateau voltage			3.7		V
I _s	Diode forward current	V _{GS} <V _{th}			60	A
ISP	Pulsed source current				180	
VSD	Diode forward voltage	I _s =20 A, V _{GS} =0 V			1.3	V
t _{rr}	Reverse recovery time	I _s =25 A, di/dt=100 A/μs		102.9		ns
Q _{rr}	Reverse recovery charge			379		nC
I _{rrm}	Peak reverse recovery current			6.4		A

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=30V,VGS=10V, L=0.3mH, starting Tj=25°C
- 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

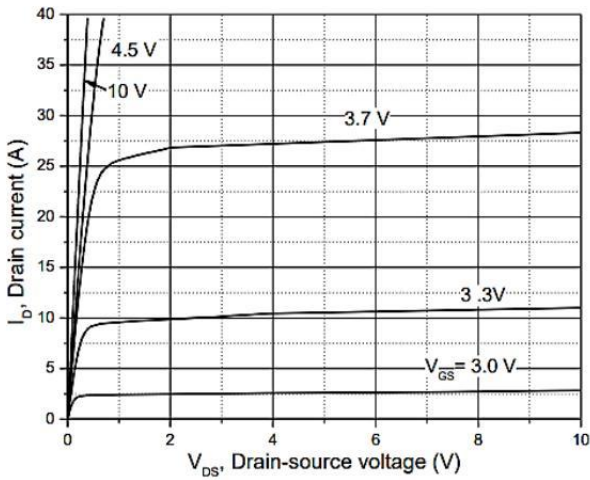


Figure 1. Typ. output characteristics

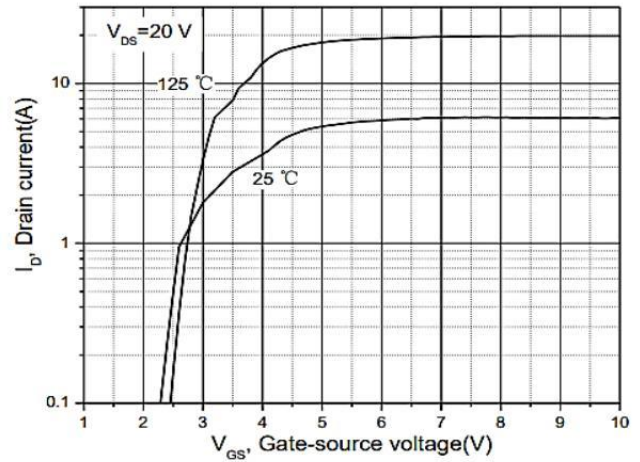


Figure 2. Typ. transfer characteristics

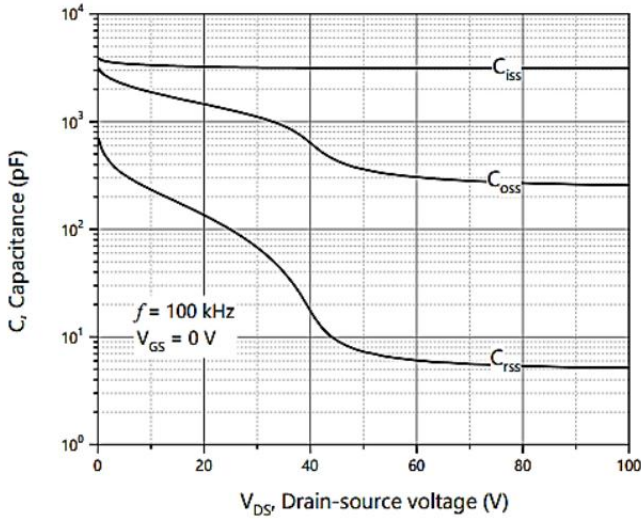


Figure 3. Typ. capacitances

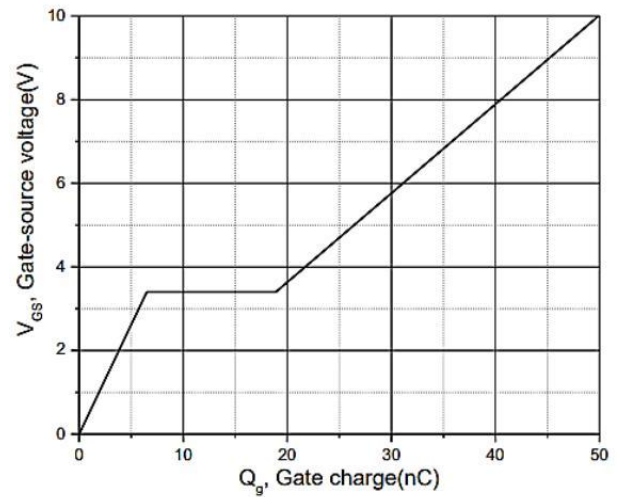


Figure 4. Typ. gate charge

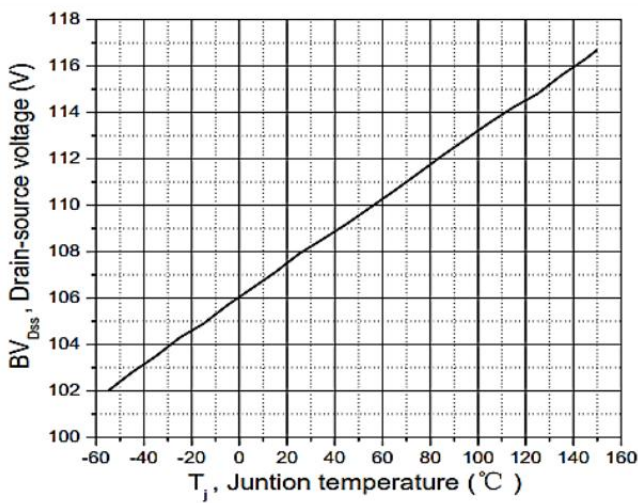


Figure 5. Drain-source breakdown voltage

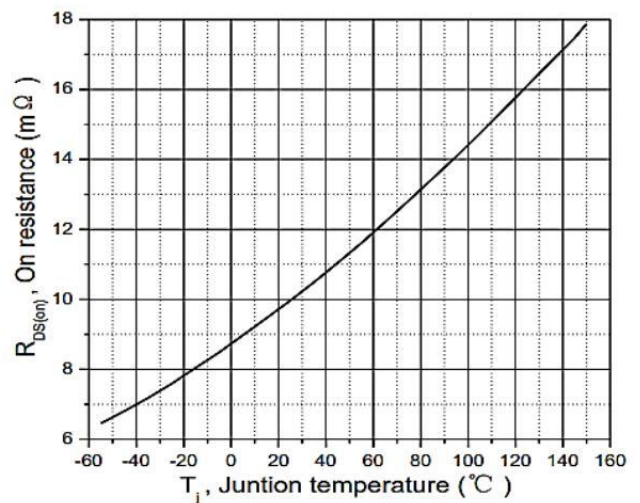


Figure 6. Drain-source on-state resistance

Typical Characteristics

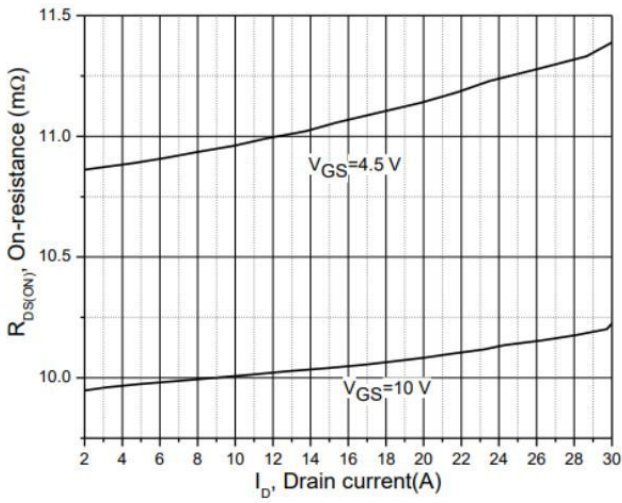


Figure 7. Drain-source on-state resistance

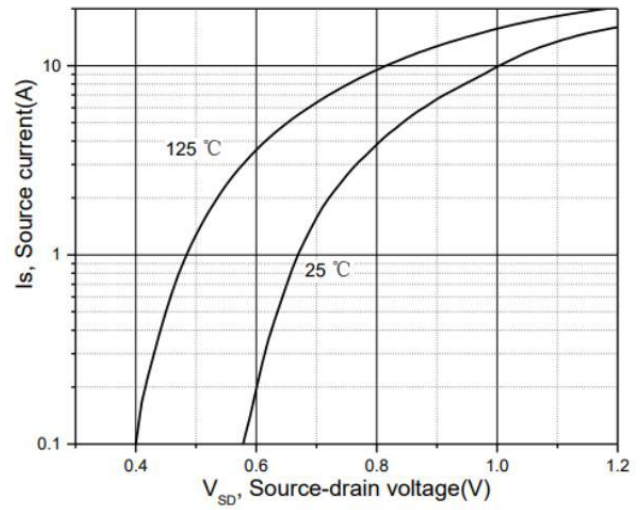


Figure 8. Forward characteristic of body diode

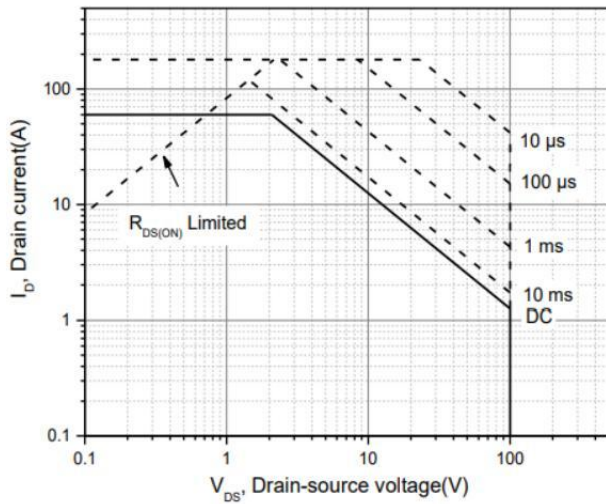
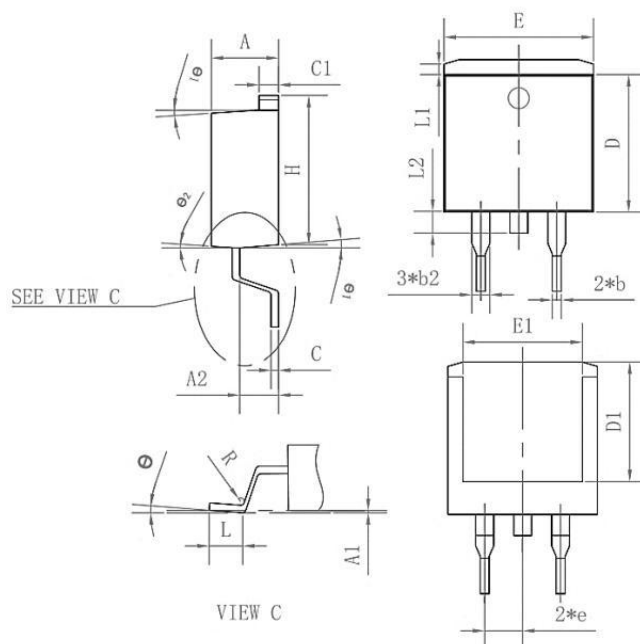


Figure 9. Safe operation area T_C=25 °C

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