

Description

The SX120N08T 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

$V_{DS} = 85V$ $I_D = 120A$

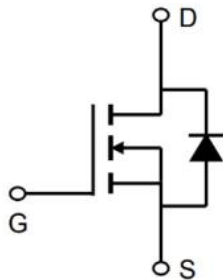
$R_{DS(ON)} < 5.2m\Omega$ $V_{GS} = 10V$

Application

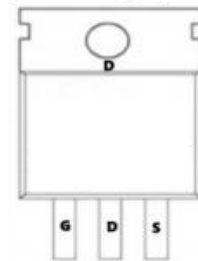
Battery protection

Load switch

Uninterruptible power supply



TO-263-3L



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, $V_{GS} @ 10V$	120	A
$I_D @ T_c = 100^\circ C$	Continuous Drain Current, $V_{GS} @ 10V$	100	A
IDM	Pulsed Drain Current	480	A
EAS	Single Pulse Avalanche Energy	560	mJ
IAS	Avalanche Current	53	A
$P_D @ T_c = 25^\circ C$	Total Power Dissipation ⁴	220	W
TSTG	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	58	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case	0.70	$^\circ C/W$

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	85	95	-	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} = 80V, V _{GS} = 0V	-	-	1	μA
IDSS	Zero Gate Voltage Drain Current T _J =100°C	V _{DS} = 80V, V _{GS} = 0V	-	-	100	
VGS(th)	Gate-Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2	3	4	V
RDS(on)	Drain-Source on-Resistance ²	V _{GS} = 10V, I _D = 20A	-	4.2	5.2	mΩ
gfs	Forward Transconductance ²	V _{DS} = 5V, I _D = 20A	-	55	-	S
Ciss	Input Capacitance	V _{DS} = 40V, V _{GS} = 0V, f = 1MHz	-	4645	-	pF
Coss	Output Capacitance		-	673	-	
Crss	Reverse Transfer Capacitance		-	41	-	
R _g	Gate Resistance	V _{DS} =0V, V _{GS} =0V, f=1MHz	-	1.8	-	Ω
Q _g	Total Gate Charge	V _{GS} = 10V, V _{DS} = 40V, I _D = 50A	-	61.3	-	nC
Q _{gs}	Gate-Source Charge		-	21	-	
Q _{gd}	Gate-Drain Charge		-	11	-	
td(on)	Turn-on Delay Time	V _{GS} = 10V, V _{DS} = 40V, R _G = 3Ω, I _D = 50A	-	16.5	-	ns
t _r	Rise Time		-	51.8	-	
td(off)	Turn-off Delay Time		-	37.1	-	
t _f	Fall Time		-	8.2	-	
VSD	Diode Forward Voltage ²	I _S = 50A, V _{GS} = 0V	-	-	1.2	V
IS	Continuous Source Current ^{1,5}	V _G = V _D = 0V, Force Current	-	-	125	A
trr	Reverse Recovery Time ²	I _F =20A, di/dt = 100A/μS	-	69	-	ns
Q _{rr}	Reverse Recovery Charge ²		-	141	-	nC

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 .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

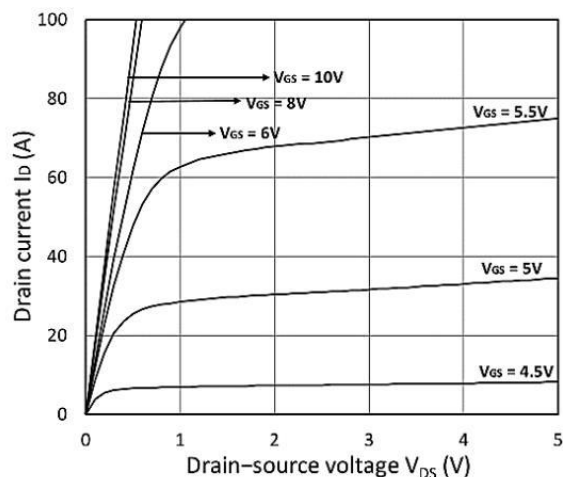


Figure 1. Output Characteristics

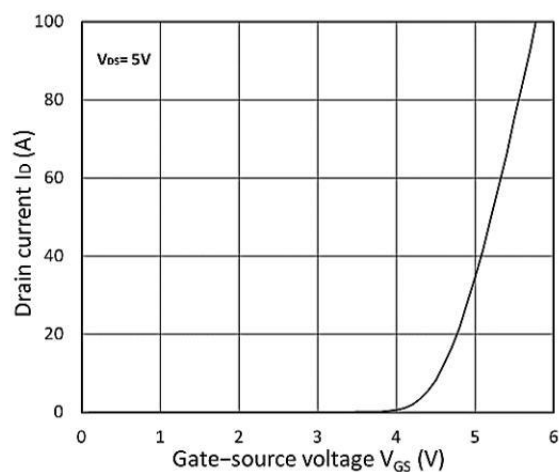


Figure 2. Transfer Characteristics

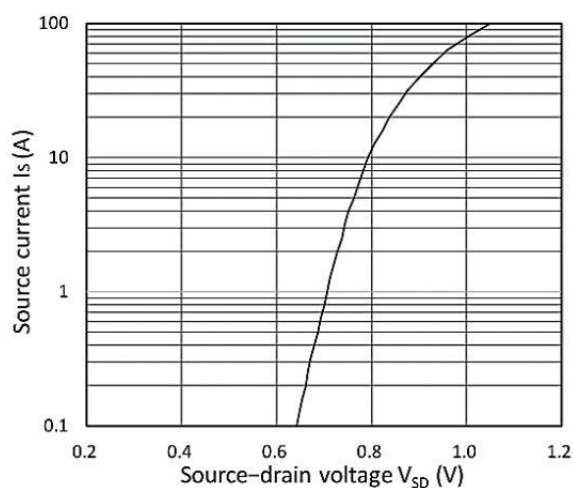


Figure 3. Forward Characteristics of Reverse

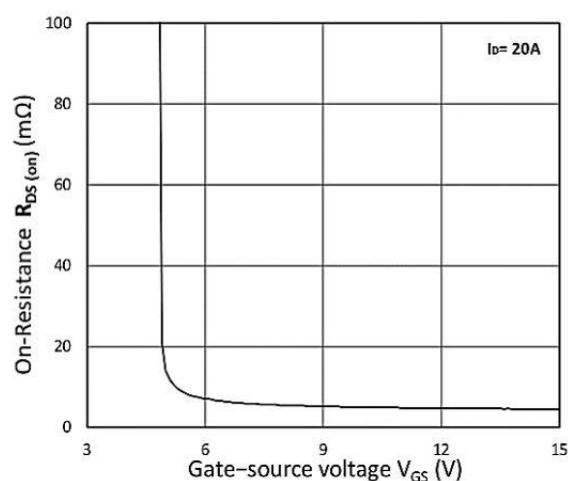


Figure 4. R_DS(ON) vs. V_GS

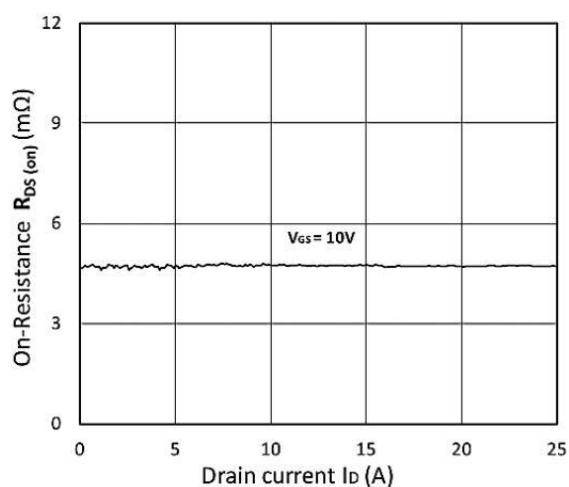


Figure 5. R_DS(ON) vs. I_D

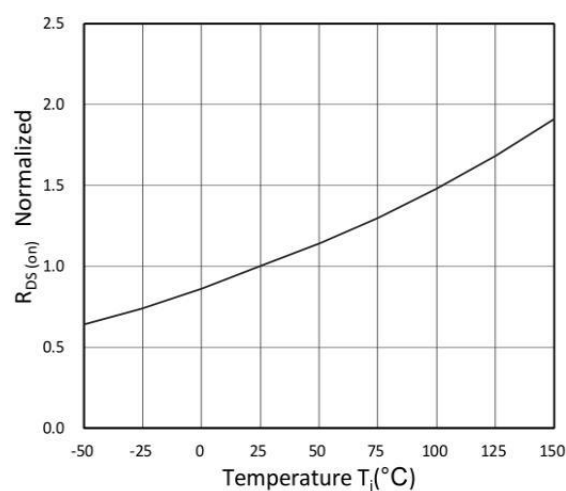


Figure 6. Normalized R_DS(on) vs. Temperature

Typical Characteristics

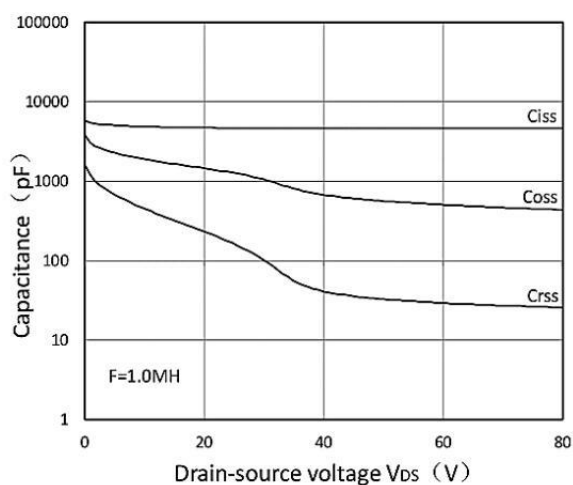


Figure 7. Capacitance Characteristics

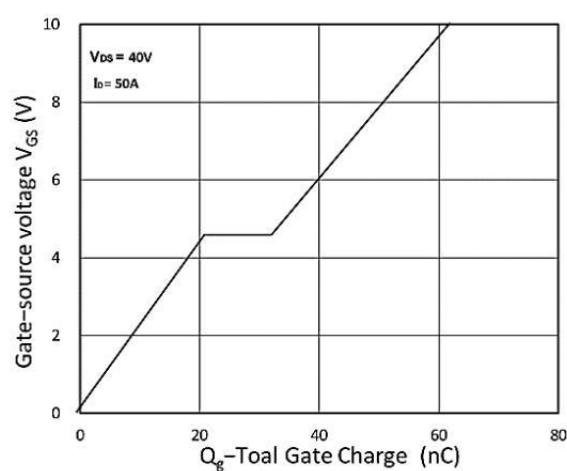


Figure 8. Gate Charge Characteristics

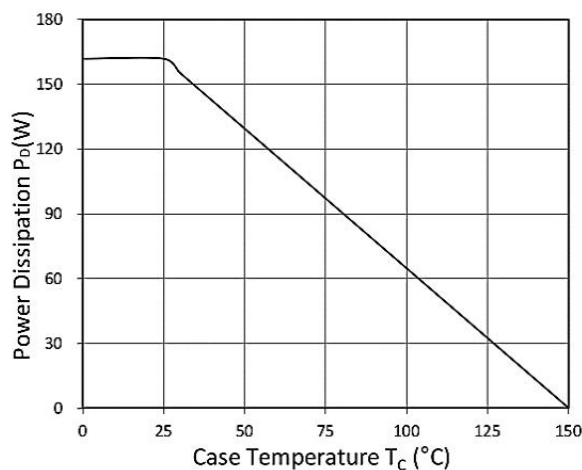


Figure 9. Power Dissipation

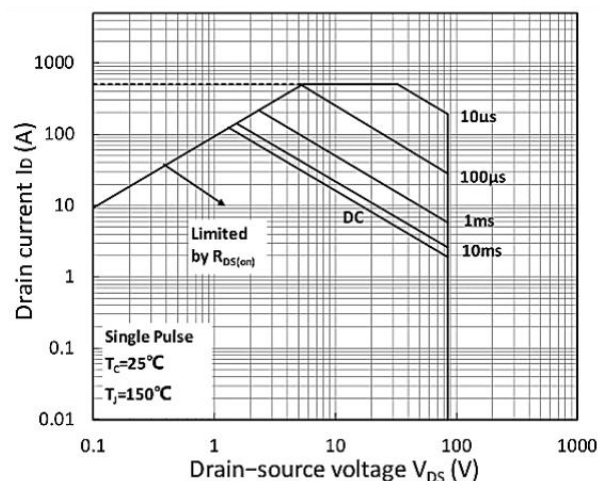


Figure 10. Safe Operating Area

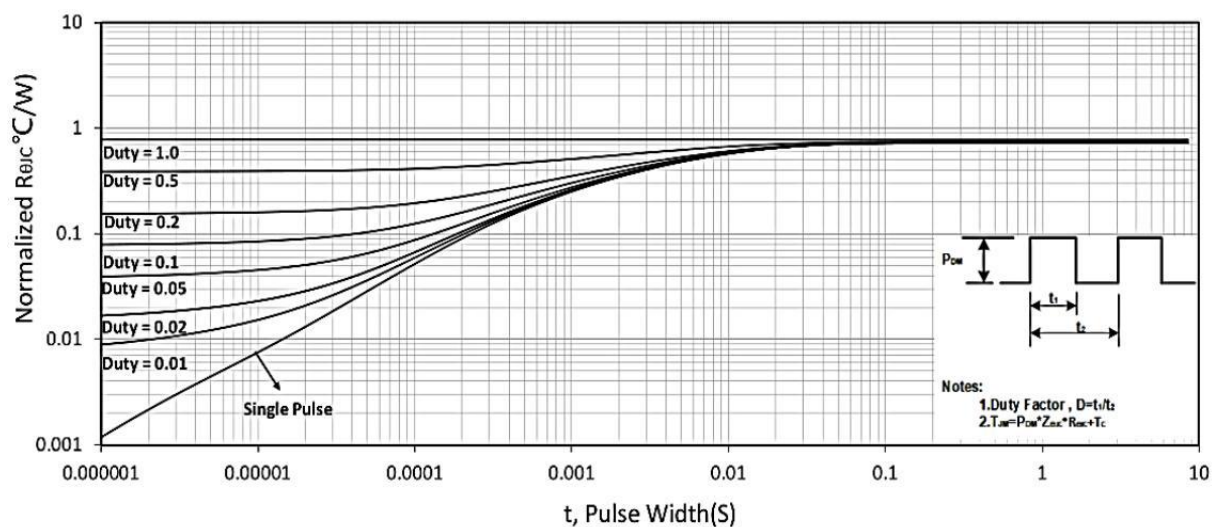
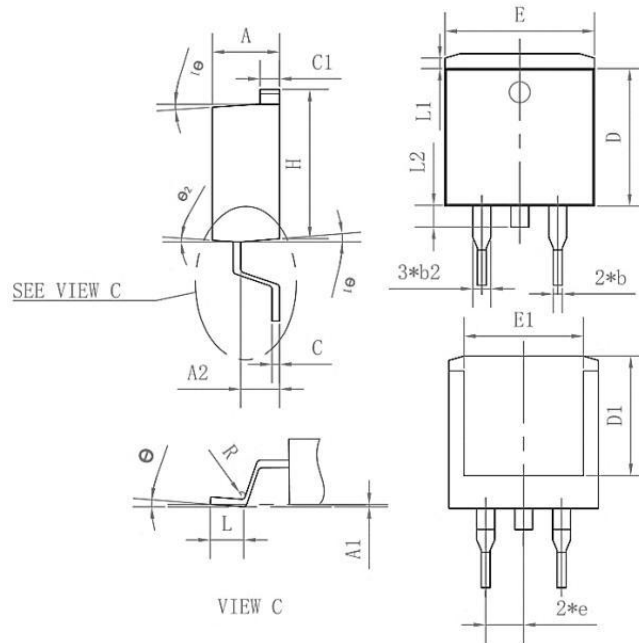


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-TO-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