

Description

The SX240N06T 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

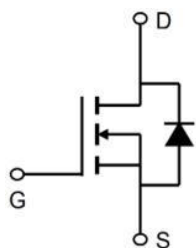
$V_{DS} = 60V$ $I_D = 240A$

$R_{DS(ON)} < 3.2m\Omega$ @ $V_{GS}=10V$

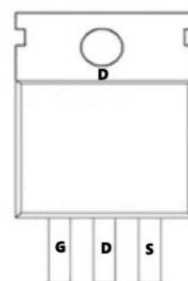
Application

Battery protection

UPS



TO-263-3L



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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_c=25^\circ C$	Continuous Drain Current ^{1,6}	240	A
$I_D @ T_c=100^\circ C$	Continuous Drain Current ^{1,6}	166	A
I_{DM}	Pulsed Drain Current ²	820	A
E_{AS}	Single Pulse Avalanche Energy ³	560	mJ
I_{AS}	Avalanche Current	55	A
$P_D @ T_c=25^\circ C$	Total Power Dissipation ⁴	168	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 ¹	0.89	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	1.5	$^\circ C/W$

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

Symbol	Parameter	Test Conditions	Min	Type	Max	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 250μA	60	-	-	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} = 60V, V _{GS} = 0V	-	-	1	μA
IDSS T _J =100°C	Zero Gate Voltage Drain Current		-	-	100	
VGS(th)	Gate-Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	2.0	2.8	4.0	V
RDS(on)	Drain-Source On-Resistance ⁴	V _{GS} = 10V, I _D = 20A	-	2.4	3.2	mΩ
gfs	Forward Transconductance ⁴	V _{DS} = 5V, I _D = 20A	-	78	-	S
Ciss	Input Capacitance	V _{DS} = 30V, V _{GS} = 0V, f = 1MHz	-	5245	-	pF
Coss	Output Capacitance		-	1090	-	
Crss	Reverse Transfer Capacitance		-	25	-	
RG	Gate Resistance	f = 1MHz	-	2.2	-	Ω
Qg	Total Gate Charge	V _{GS} = 10V, V _{DS} = 30V, I _D = 20A	-	72.5	-	nC
Qgs	Gate-Source Charge		-	19.5	-	
Qgd	Gate-Drain Charge		-	14	-	
td(on)	Turn-on Delay Time	V _{GS} = 10V, V _{DD} = 30V, R _G = 3Ω, I _D = 20A	-	26.5	-	ns
t _r	Rise Time		-	15	-	
td(off)	Turn-off Delay Time		-	73	-	
t _f	Fall Time		-	18	-	
trr	Body Diode Reverse Recovery Time	I _F = 20A, dI/dt = 100A/μs	-	25	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	90	-	nC
VSD	Diode Forward Voltage ⁴	I _S = 20A, V _{GS} = 0V	-	-	1.2	V
IS	Continuous Source Current T _C =25°C	-	-	-	125	A

Note :

- 1、The data tested by surface mounted on a 1 inch 2 FR-4 board with 20Z copper.
- 2、The data tested by pulsed , pulse width .The EAS data shows Max. rating .
- 3、The power dissipation is limited by 175°C junction temperature
- 4、EAS condition: T_J=25°C, V_{DD}=48V, V_G=10V, R_G=25Ω, L=0.1mH, I_{AS}= 55A
- 5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

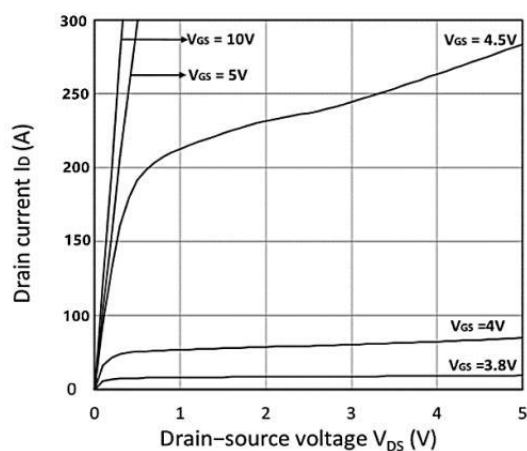


Figure 1. Output Characteristics

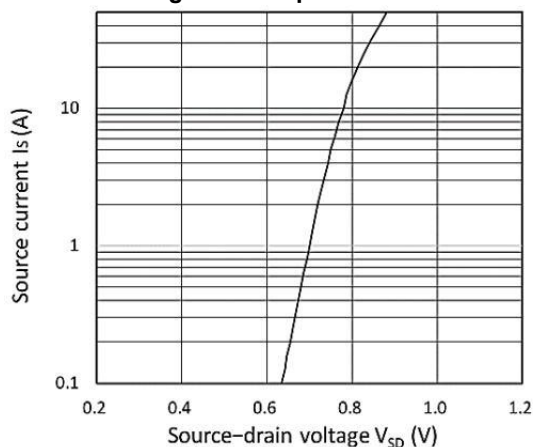


Figure 3. Forward Characteristics of Reverse

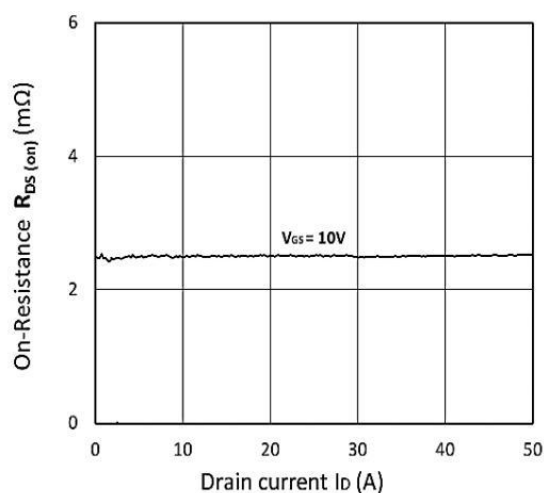


Figure 5. $R_{DS(on)}$ vs. I_D

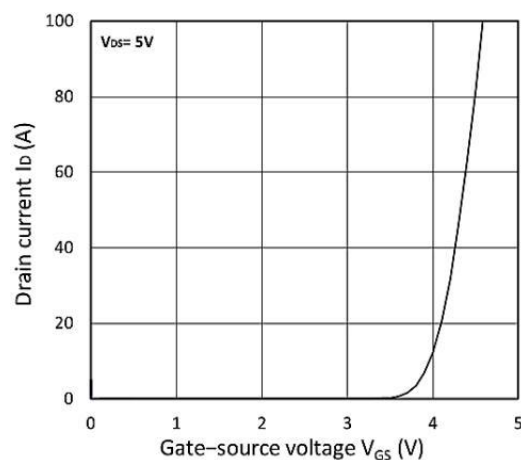


Figure 2. Transfer Characteristics

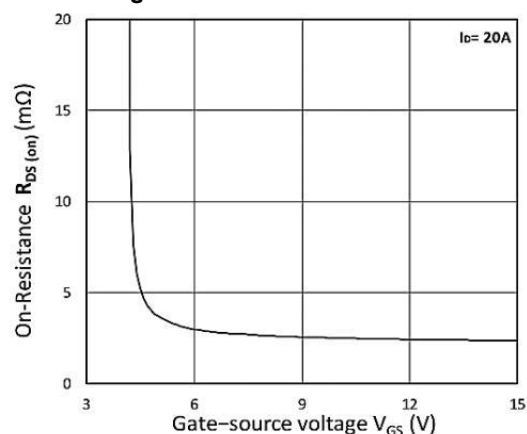


Figure 4. $R_{DS(on)}$ vs. V_{GS}

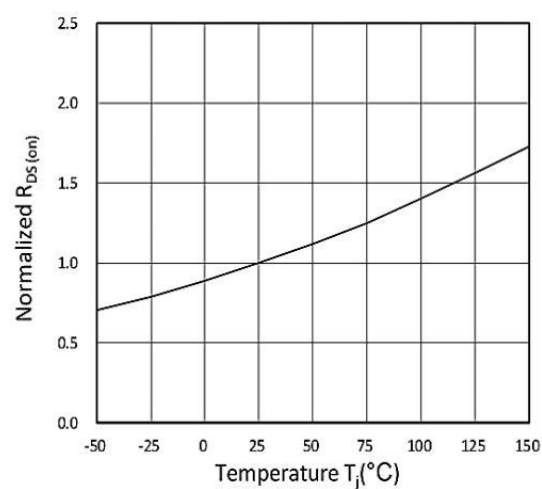


Figure 6. Normalized $R_{DS(on)}$ vs. Temperature

Typical Characteristics

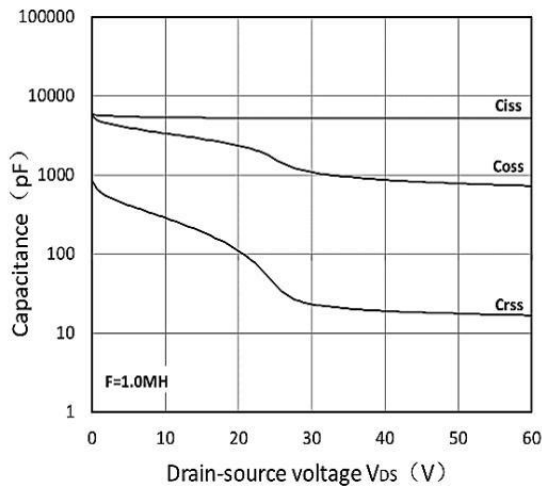


Figure 7. Capacitance Characteristics

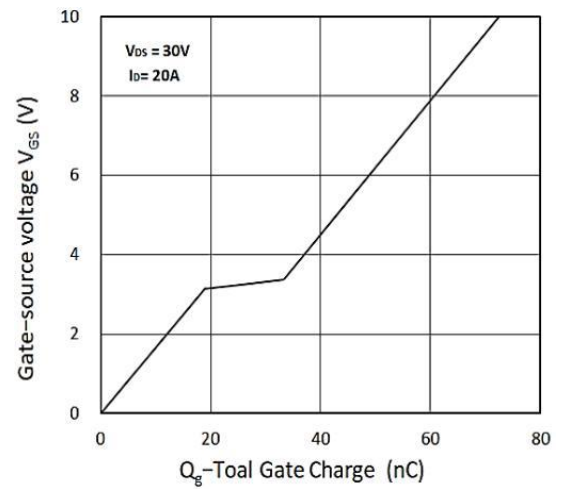


Figure 8. Gate Charge Characteristics

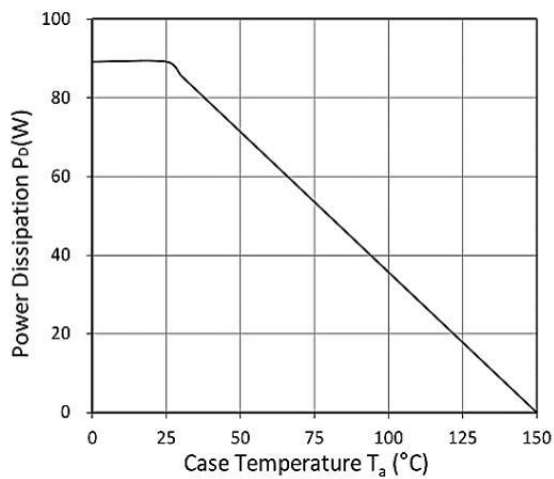


Figure 9. Power Dissipation

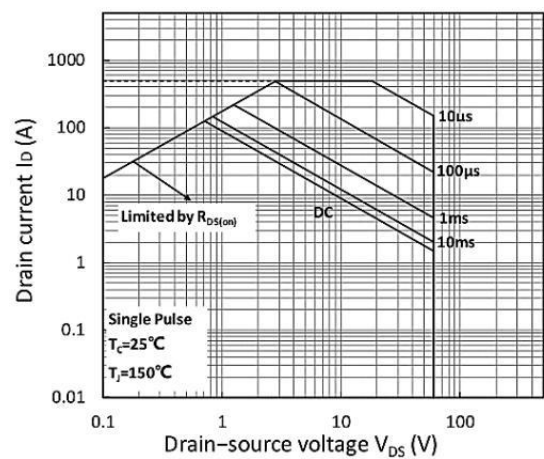


Figure 10. Safe Operating Area

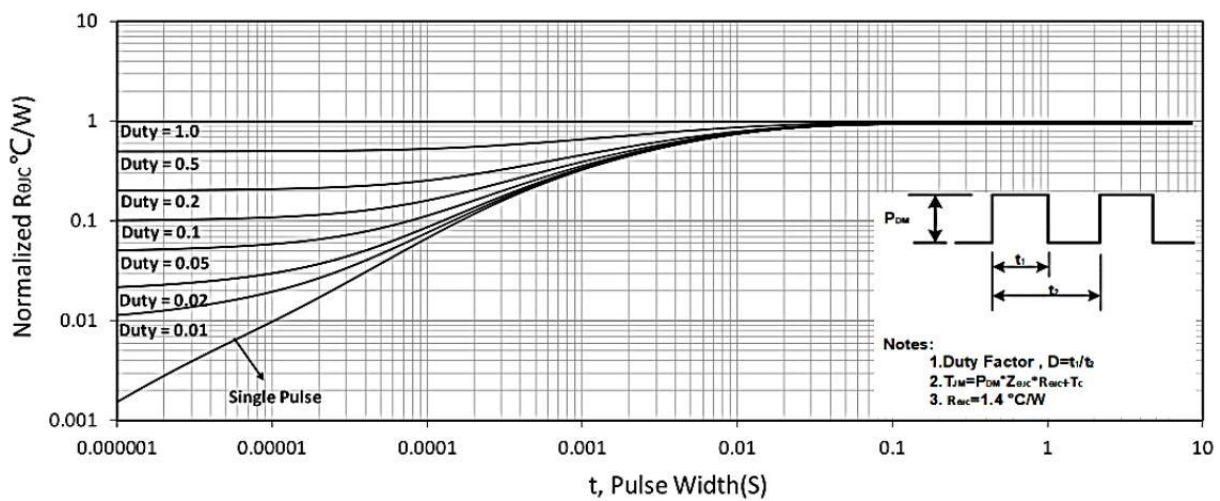
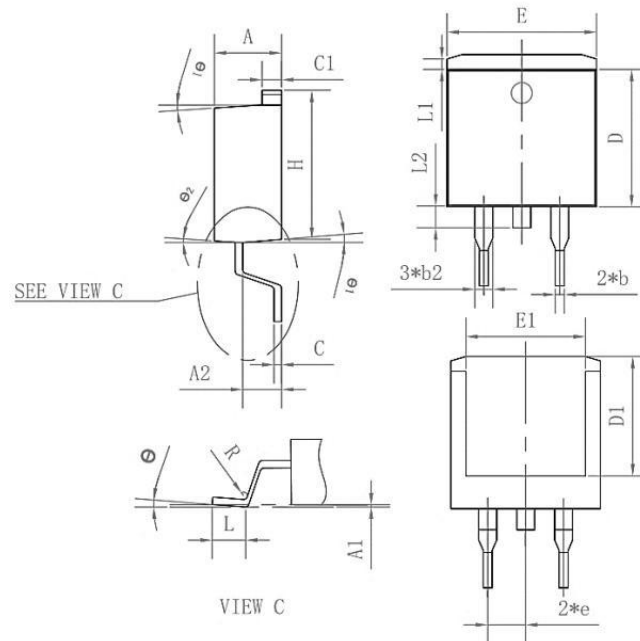


Figure 11. Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-TO-263-3L-SLK



Symbol	Common		
	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