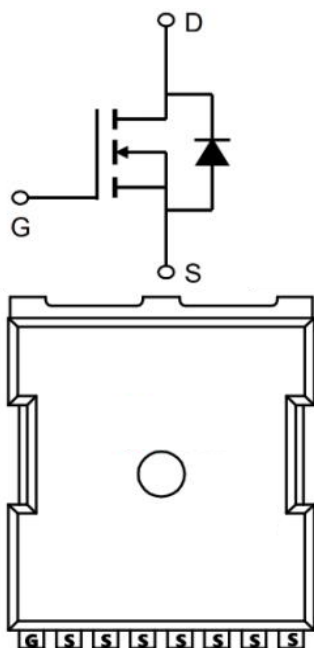


Description

The SX420N06TLG2 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

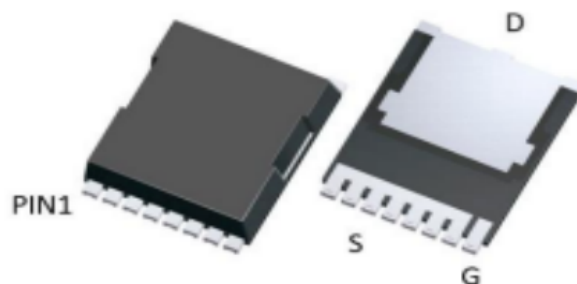
$V_{DS} = 60V$ $I_D = 420A$

$R_{DS(ON)} < 1.6m\Omega$ @ $V_{GS}=10V$

Application

Battery protection

UPS



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}	420	A
$I_D @ T_c = 100^\circ C$	Continuous Drain Current ^{1,6}	248	A
I_{DM}	Pulsed Drain Current ²	1400	A
E_{AS}	Single Pulse Avalanche Energy ³	885	mJ
I_{AS}	Avalanche Current	80	A
$P_D @ T_c = 25^\circ C$	Total Power Dissipation ⁴	375	W
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ C$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	45	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction-Case ¹	1.0	$^\circ C/W$

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	68	-	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	3.0	4.0	V
RDS(on)	Drain-Source On-Resistance ⁴	V _{GS} = 10V, I _D = 20A	-	1.3	1.6	mΩ
gfs	Forward Transconductance ⁴	V _{DS} = 5V, I _D = 20A	-	80	-	S
Ciss	Input Capacitance	V _{DS} = 30V, V _{GS} = 0V, f = 1MHz	-	7192	-	pF
Coss	Output Capacitance		-	1647	-	
Crss	Reverse Transfer Capacitance		-	44	-	
RG	Gate Resistance	f = 1MHz	-	0.9	-	Ω
Qg	Total Gate Charge	V _{GS} = 10V, V _{DS} = 30V, I _D = 50A	-	115	-	nC
Qgs	Gate-Source Charge		-	28	-	
Qgd	Gate-Drain Charge		-	16	-	
td(on)	Turn-on Delay Time	V _{GS} = 10V, V _{DD} = 30V, R _G = 2.2Ω, I _D = 17A	-	0.6	-	ns
t _r	Rise Time		-	21.8	-	
td(off)	Turn-off Delay Time		-	67.6	-	
t _f	Fall Time		-	6.6	-	
t _{rr}	Body Diode Reverse Recovery Time	I _F = 1A, dI/dt = 100A/μs	-	98	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	310	-	nC
VSD	Diode Forward Voltage ⁴	I _S = 20A, V _{GS} = 0V	-	0.77	1.2	V
IS	Continuous Source Current T _C = 25°C		-	-	234	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 .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} = 80A
- 5、The data is theoretically the same as ID and IDM , in real applications , should be limited by total power dissipation.

Typical Characteristics

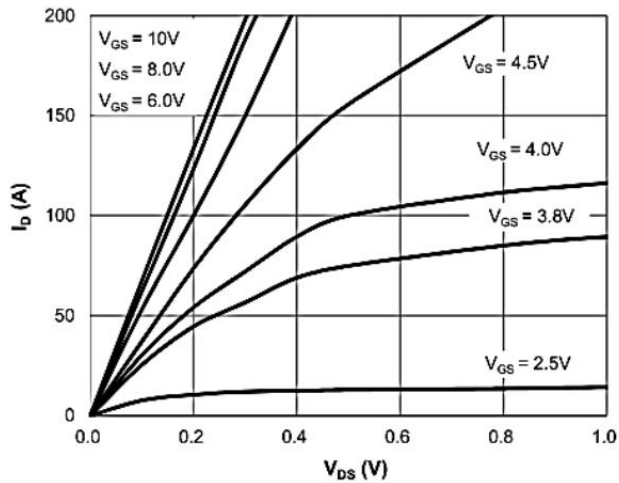


Figure 1: Saturation Characteristics

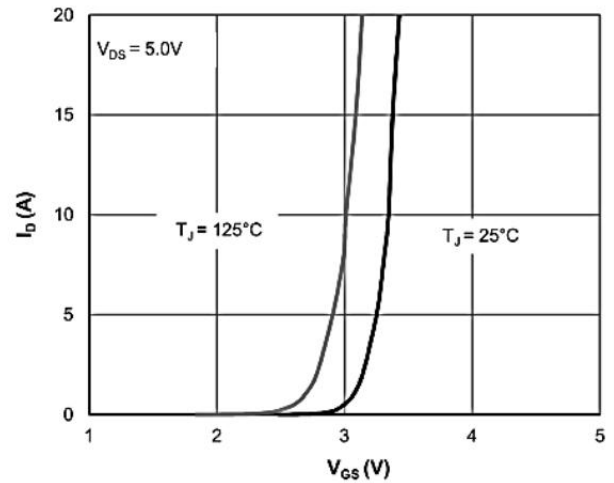


Figure 2: Transfer Characteristics

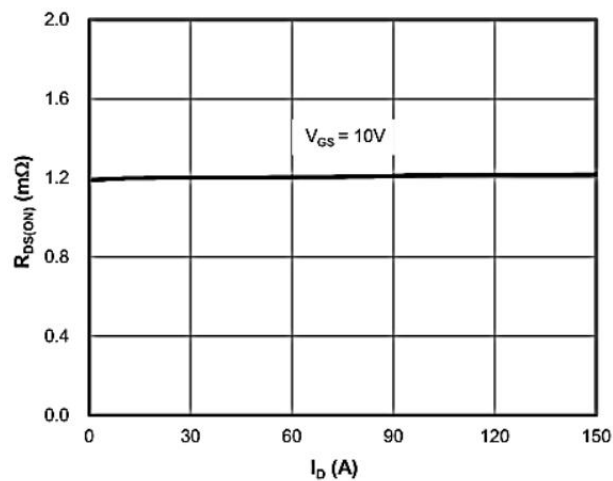


Figure 3: $R_{DS(ON)}$ vs. Drain Current

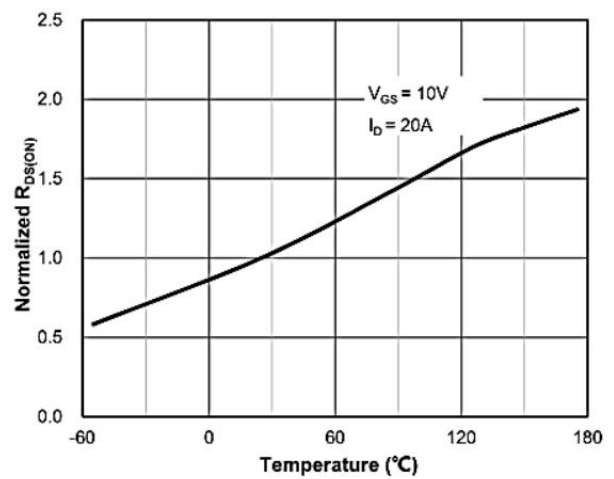


Figure 4: $R_{DS(ON)}$ vs. Junction Temperature

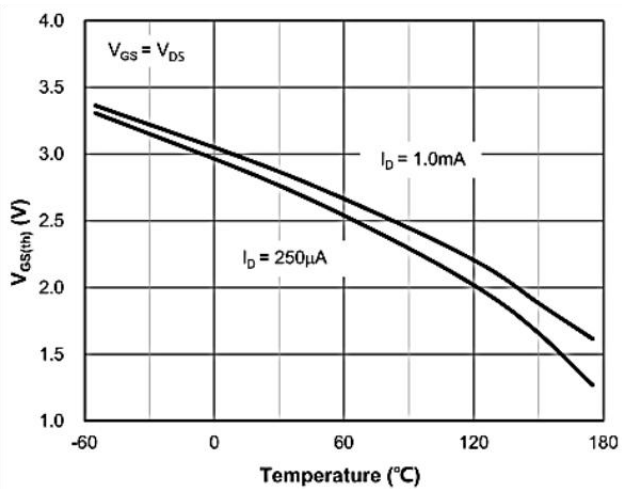


Figure 5: $V_{GS(th)}$ vs. Junction Temperature

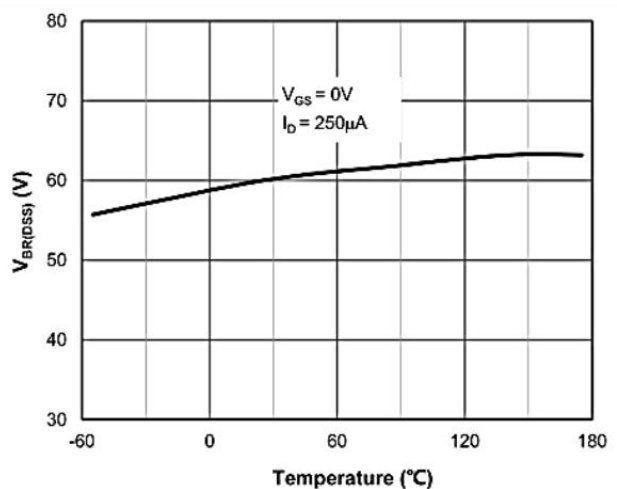


Figure 6: $V_{BR(DSS)}$ vs. Junction Temperature

Typical Characteristics

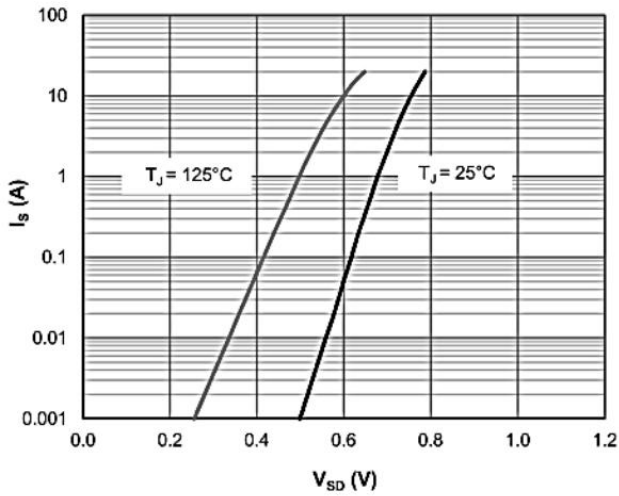


Figure 7: Body-Diode Characteristics

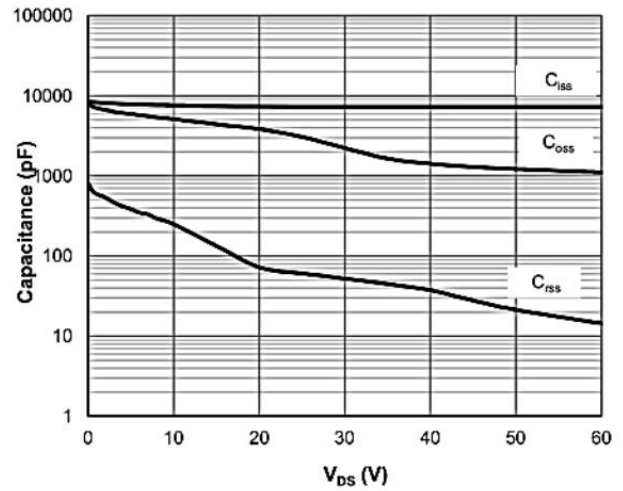


Figure 8: Capacitance Characteristics

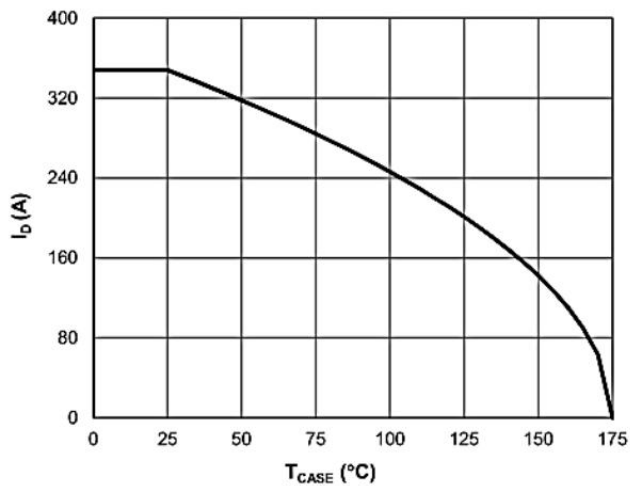


Figure 9: Current De-rating

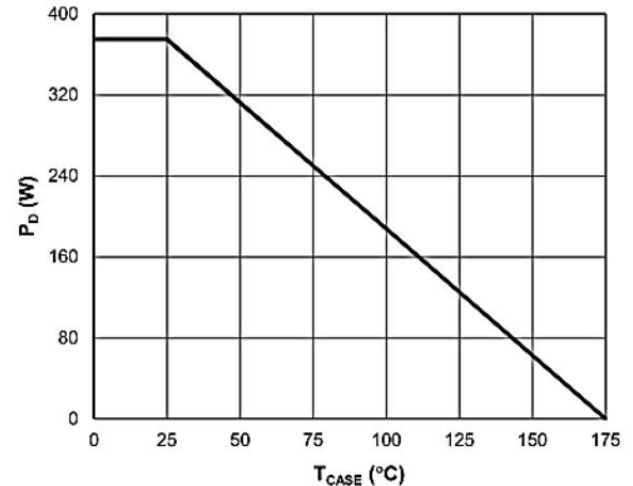


Figure 10: Power De-rating

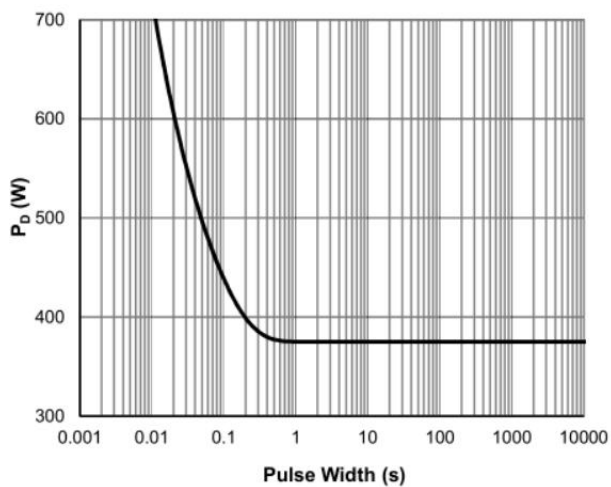


Figure 11: Single Pulse Power Rating, Junction-to-Case

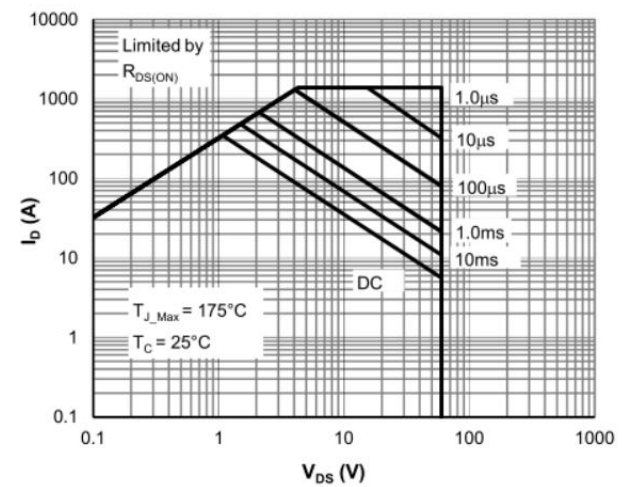
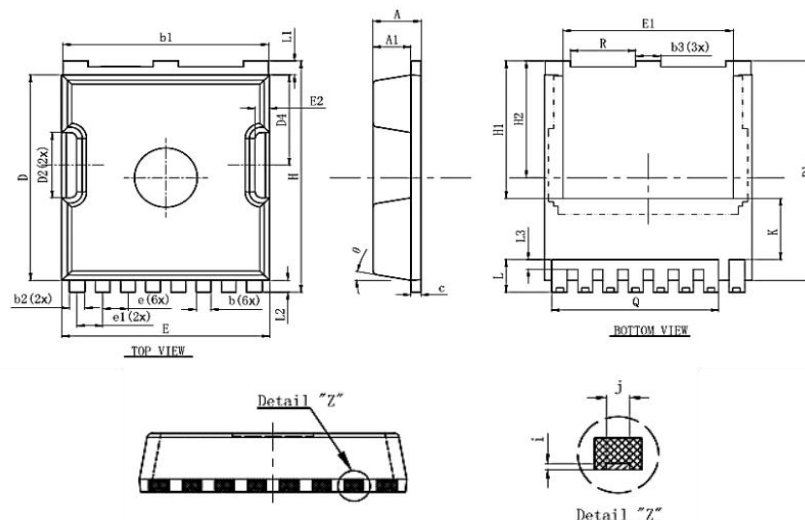


Figure 12: Maximum Safe Operating Area

Package Mechanical Data-TOLLA-8-XZ Single



Symbol	Dimensions In Millimeters		
	Min.	Nom	Max.
A	2.2	2.3	2.4
A1	1.7	1.8	1.9
b	0.6	0.7	0.8
b1	9.7	9.8	9.9
b2	0.65	0.75	0.85
b3	1.1	1.2	1.3
C	0.4	0.5	0.6
D	10.3	10.4	10.5
D1	11.0	11.1	11.2
D2	3.2	3.3	3.4
D4	4.47	4.57	4.67
E	9.8	9.9	10.0
E1	8.0	8.1	8.2
E2	0.5	0.6	0.7
e	1.200 (BSC)		
e1	1.225 (BSC)		
H	11.6	11.7	11.8
H1	6.95BSC		
H2	5.9BSC		
i	0.1REF		
j	0.350REF		
K	3.100REF		
L	1.55	1.65	1.75
L1	0.6	0.7	0.8
L2	0.5	0.6	0.7
L3	0.4	0.5	0.6
Q	7.95REF		
R	3.0	3.1	3.2
θ	10°REG		

Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	TOLLA-8L		2000