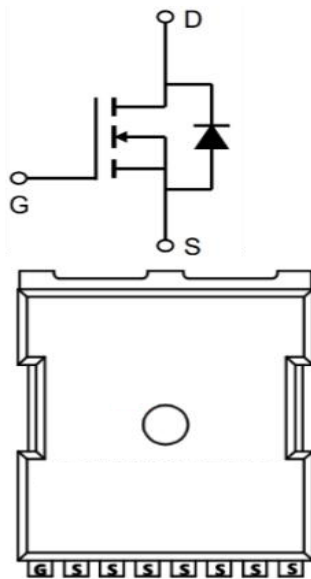


Description

The SX300N04TLG5 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

$V_{DS} = 40V$ $I_D = 300A$

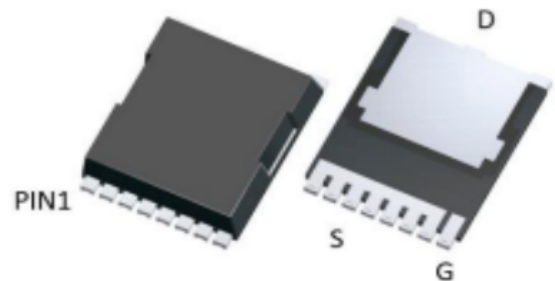
$R_{DS(ON)} < 1.3m\Omega$ @ $V_{GS}=10V$

Application

BMS

BLDC

UPS



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

Symbol	Parameter	Max.	Units
V_{DSS}	Drain-Source Voltage	40	V
V_{GSS}	Gate-Source Voltage	± 20	V
$I_{D@TC=25^\circ C}$	Continuous Drain Current, $V_{GS} @ 10V$	300	A
$I_{D@TC=100^\circ C}$	Continuous Drain Current, $V_{GS} @ 10V$	239	A
I_{DM}	Pulsed Drain Current	1200	A
E_{AS}	Single Pulsed Avalanche Energy	1512	mJ
I_{AS}	Avalanche Current	70	A
$P_{D@TC=25^\circ C}$	Power Dissipation	333.3	W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹	42	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance, Junction to Case	0.45	$^\circ C/W$
T_J	Operating Junction Temperature Range	-55 to 175	$^\circ C$
T_{STG}	Storage Temperature Range	-55 to 175	$^\circ C$

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

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V(BR)DSS	Drain-Source Breakdown Voltage	VGS=0V, ID=250μA	40	47	-	V
IGSS	Gate-Body Leakage Current	VDS=0V, VGS=±20V	-	-	±100	nA
IDSS	Zero Gate Voltage Drain Current T _J =25°C	VDS=40V, VGS=0V	-	-	1	μA
	Zero Gate Voltage Drain Current T _J =100°C		-	-	100	
VGS(th)	Gate-Threshold Voltage	VDS=VGS, ID=250μA	1.2	1.7	2.5	V
RDS(on)	Drain-Source on-Resistance ⁴	VGS=10V, ID=20A	-	0.95	1.3	mΩ
		VGS=4.5V, ID=10A	-	1.25	1.75	
gfs	Forward Transconductance ⁴	VDS=10V, ID=20A	-	105	-	S
Ciss	Input Capacitance	VDS=20V, VGS=0V, f =1MHz	-	6650	-	pF
Coss	Output Capacitance		-	1495	-	
Crss	Reverse Transfer Capacitance		-	103	-	
RG	Gate Resistance	f =1MHz	-	2.2	-	Ω
Qg	Total Gate Charge	VGS = 10V, VDS = 20V, ID= 20A	-	118	-	nC
Qgs	Gate-Source Charge		-	19	-	
Qgd	Gate-Drain Charge		-	22.2	-	
td(on)	Turn-on Delay Time	VGS =10V, VDD= 20V, RG = 3Ω, ID= 20A	-	13.8	-	ns
tr	Rise Time		-	14	-	
td(off)	Turn-off Delay Time		-	91	-	
tf	Fall Time		-	43	-	
trr	Body Diode Reverse Recovery Time	IF = 20A, dI/dt = 100A/μs	-	66	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	39.6	-	nC
VSD	Diode Forward Voltage ⁴	IS = 20A, VGS = 0V	-	-	1.2	V
IS	Continuous Source Current	TC=25°C	-	-	- 378	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=32V,VGS=10V,L=0.1mH,IAS =70A
- 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

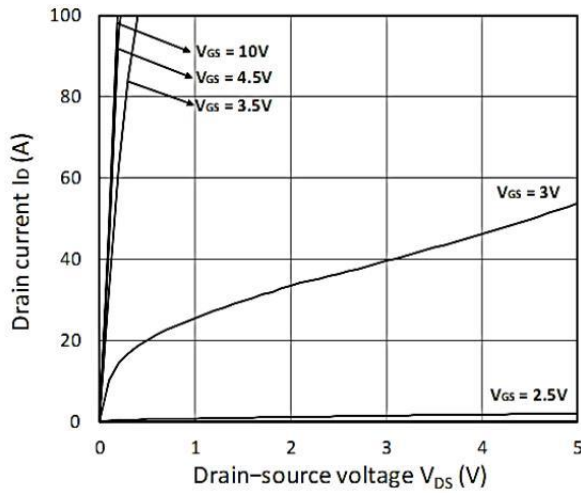


Figure 1. Output Characteristics

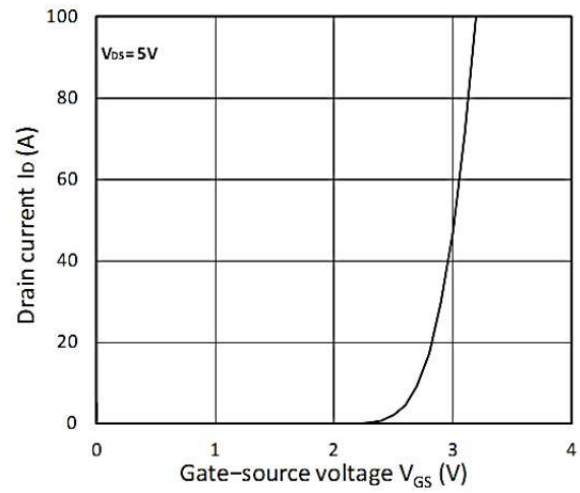


Figure 2. Transfer Characteristics

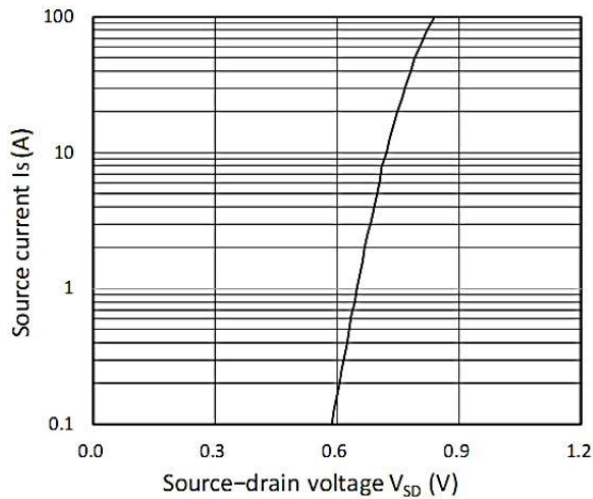


Figure 3. Forward Characteristics of Reverse

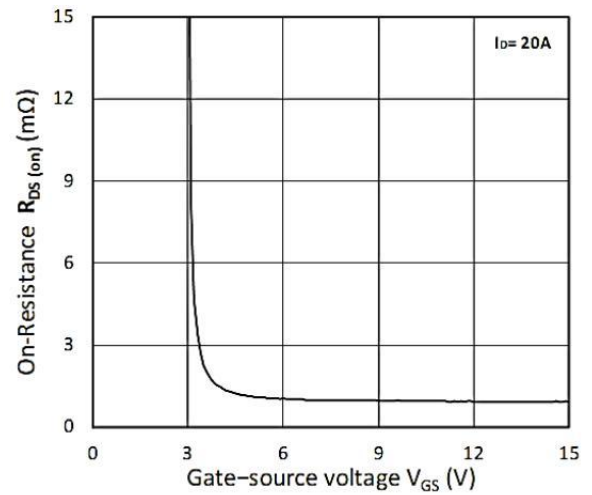


Figure 4. R_DS(ON) vs. V_GS

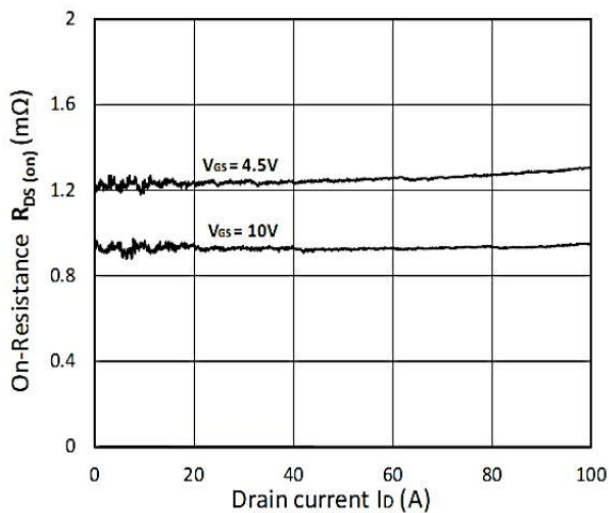


Figure 5. R_DS(ON) vs. I_D

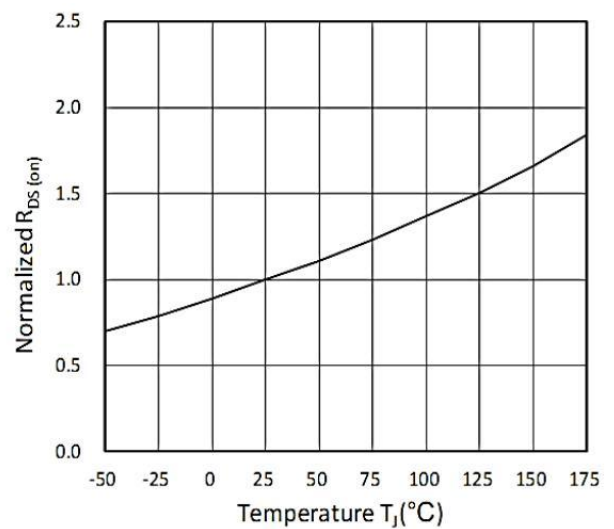


Figure 6. Normalized R_DS(on) vs. Temperature

Typical Characteristics

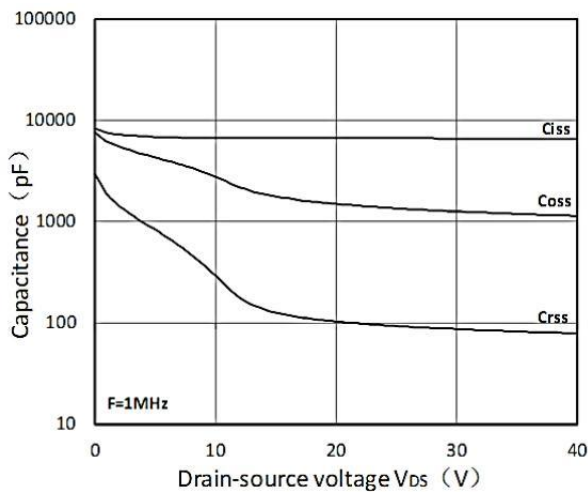


Figure 7. Capacitance Characteristics

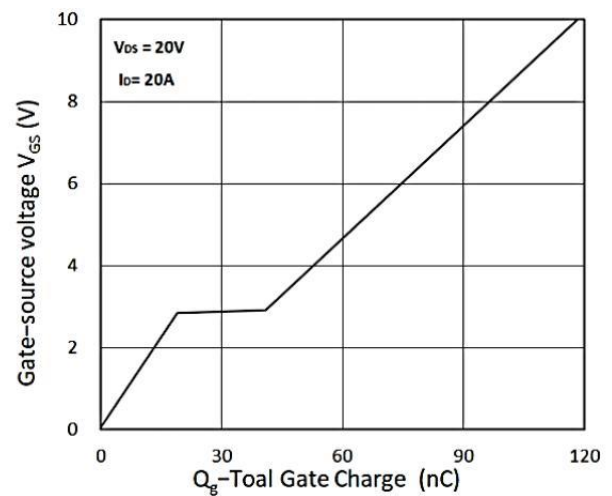


Figure 8. Gate Charge Characteristics

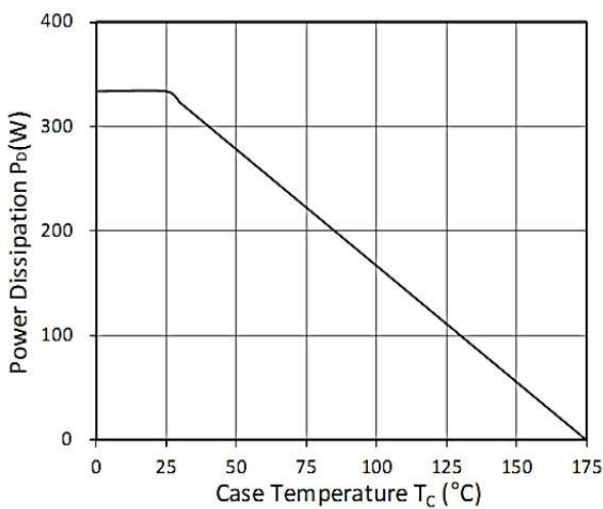


Figure 9. Power Dissipation

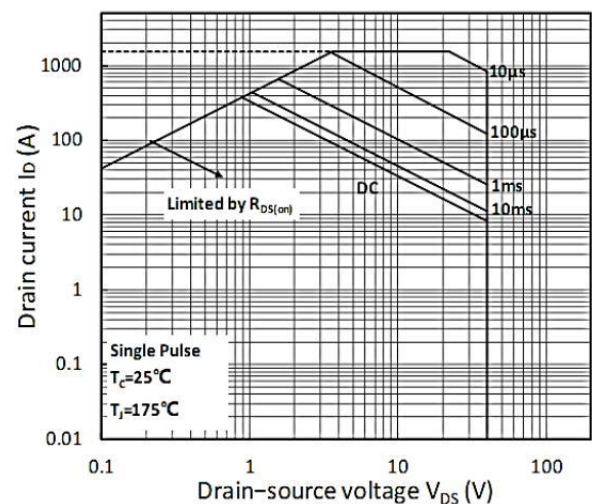


Figure 10. Safe Operating Area

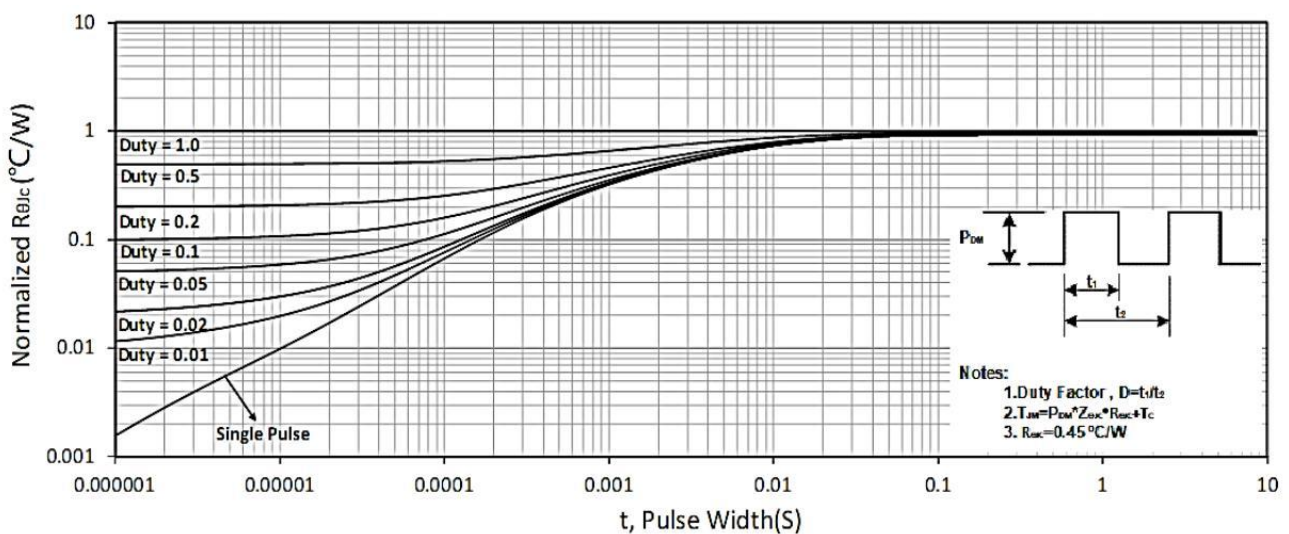
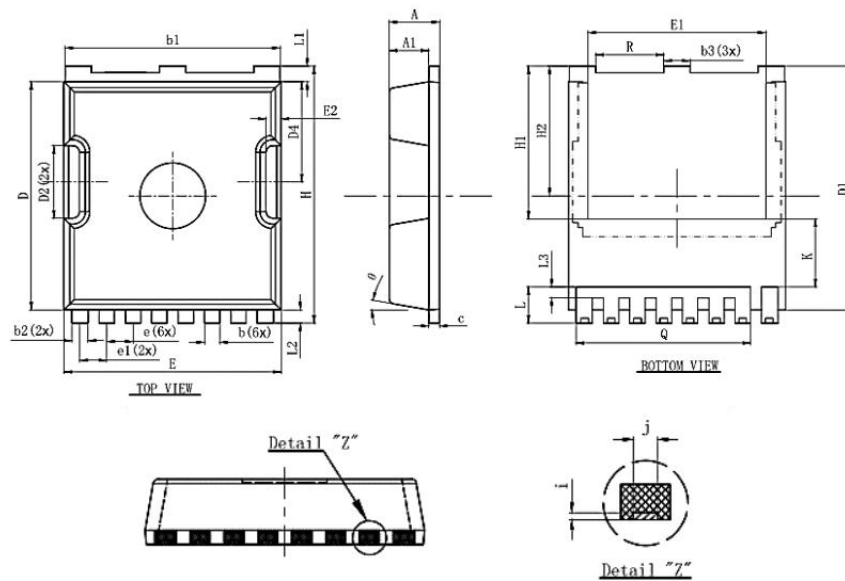


Figure 11 Normalized Maximum Transient Thermal Impedance

Package Mechanical Data-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