

Description

The SX100N03T uses advanced trench 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

$V_{DS} = 30V$ $I_D = 100A$

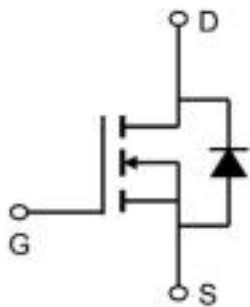
$R_{DS(ON)} < 5.5m\Omega$ @ $V_{GS}=10V$

Application

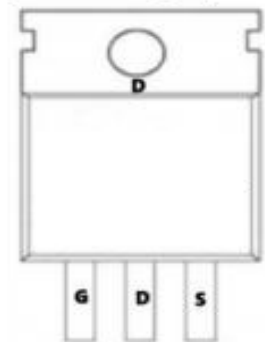
Battery protection

Load switch

Uninterruptible power supply



TO-263-3L



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

Symbol	Parameter	Max.	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_c=25^\circ C$	Continuous Drain Current, V_{GS} @ 10V	100	A
$I_D @ T_c=100^\circ C$	Continuous Drain Current, V_{GS} @ 10V	46	A
IDM	Pulsed Drain Current ^{note1}	300	A
EAS	Single Pulsed Avalanche Energy ^{note2}	56	mJ
$P_D @ T_c=25^\circ C$	Total Power Dissipation ⁴	68	W
$R_{\theta JA}$	Thermal Resistance Junction-ambient (Steady State) ¹	62	$^\circ C/W$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient ¹ ($t \leq 10s$)	25	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance, Junction to Case	2.2	$^\circ C/W$
TJ, TSTG	Operating and Storage Temperature Range	-55 to +175	$^\circ C$

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

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	30	32	-	V
ΔBVDSS/ΔT _J	BVDSS Temperature Coefficient	Reference to 25°C, I _D =1mA	---	0.028	---	V/°C
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.2	1.6	2.5	V
R _{DS(on)}	Static Drain-Source on-Resistance note3	V _{GS} =10V, I _D =30A	-	4.5	5.5	mΩ
R _{DS(on)}	Static Drain-Source on-Resistance note3	V _{GS} =4.5V, I _D =20A	-	8.0	9.5	mΩ
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V,	-	-	1.0	μA
I _{GSS}	Gate to Body Leakage Current	V _{DS} =0V, V _{GS} =±20V	-	-	±100	nA
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1.0MHz	-	1614	-	pF
C _{oss}	Output Capacitance		-	245	-	pF
C _{rss}	Reverse Transfer Capacitance		-	215	-	pF
Q _g	Total Gate Charge	V _{DS} =15V, I _D =30A, V _{GS} =10V	-	33.7	-	nC
Q _{gs}	Gate-Source Charge		-	8.5	-	nC
Q _{gd}	Gate-Drain("Miller") Charge		-	7.5	-	nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =15V, I _D =30A, R _{GEN} =3Ω, V _{GS} =10V	-	7.5	-	ns
t _r	Turn-on Rise Time		-	14.5	-	ns
t _{d(off)}	Turn-off Delay Time		-	35.2	-	ns
t _f	Turn-off Fall Time		-	9.6	-	ns
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	70	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	280	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} =0V, I _S =30A	-	-	1.2	V

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 VDD=24VGS=10V,L=0.1mH,IAS=15A
- 4、The power dissipation is limited by 175°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

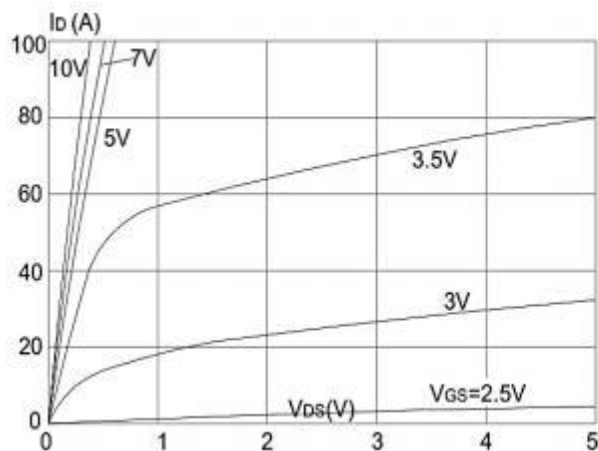


Figure1: Output Characteristics

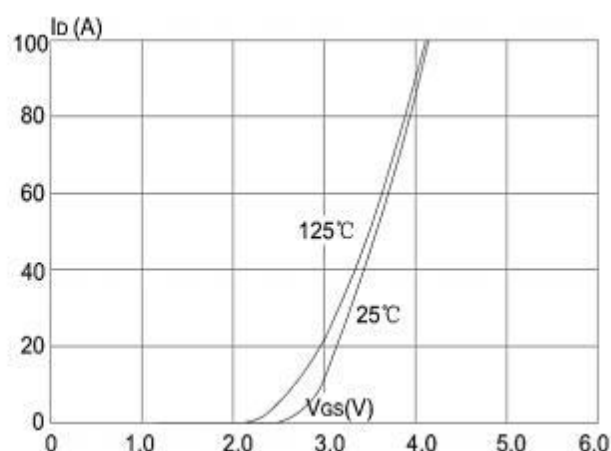


Figure 2: Typical Transfer Characteristics

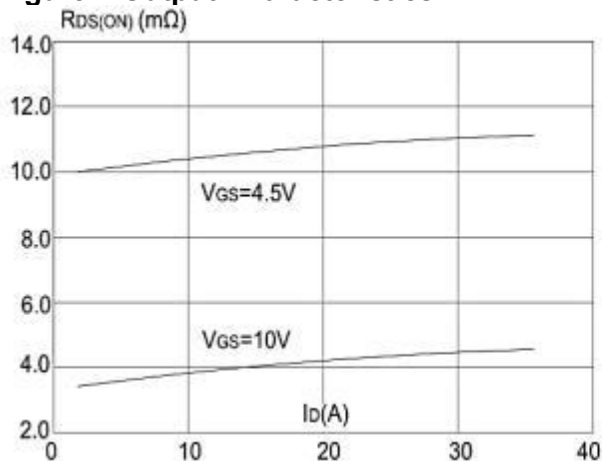


Figure 3: On-resistance vs. Drain Current

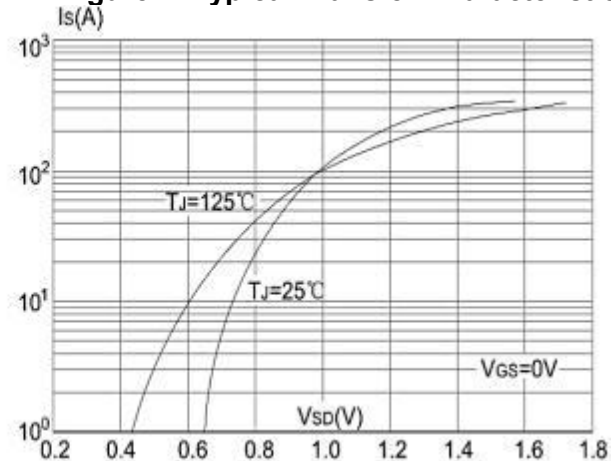


Figure 4: Body Diode Characteristics

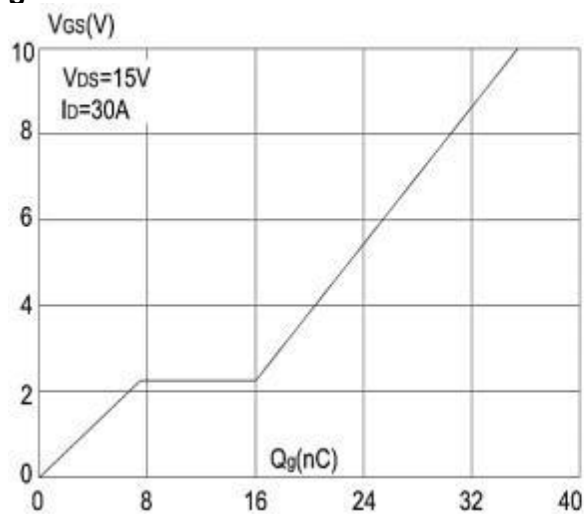


Figure 5: Gate Charge Characteristics

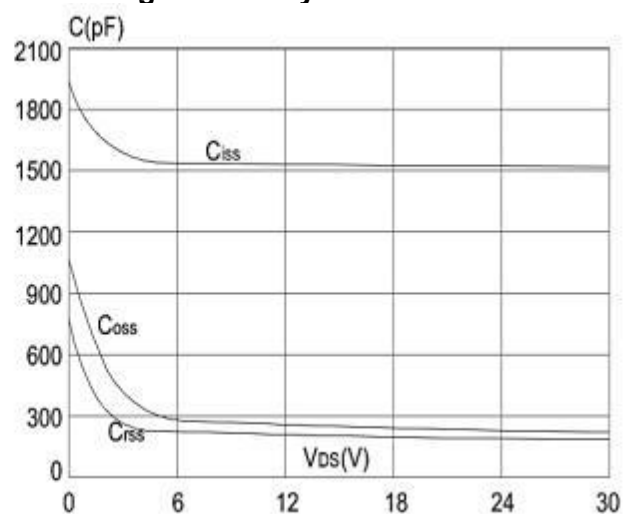


Figure 6: Capacitance Characteristics

Typical Characteristics

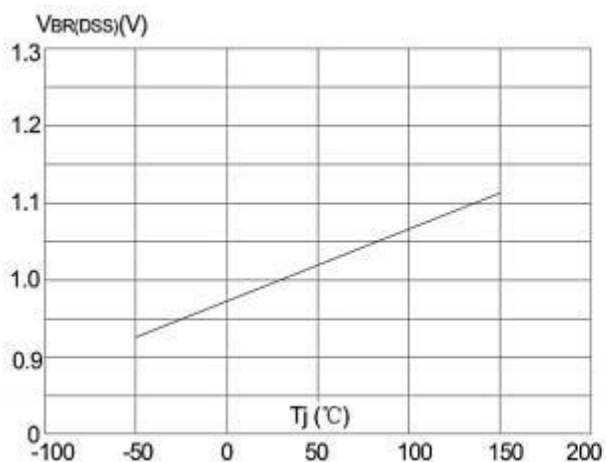


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

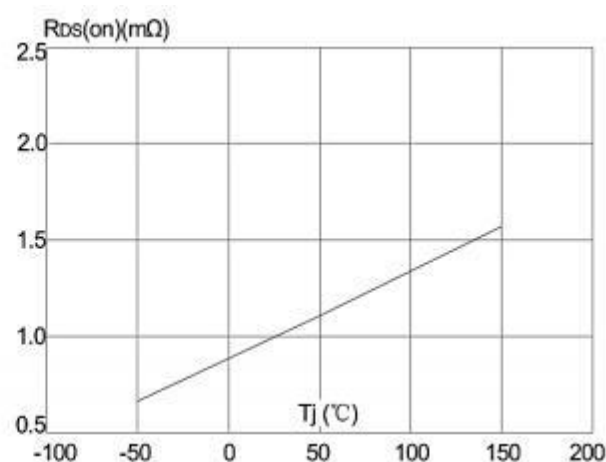


Figure 8: Normalized on Resistance vs. Junction Temperature

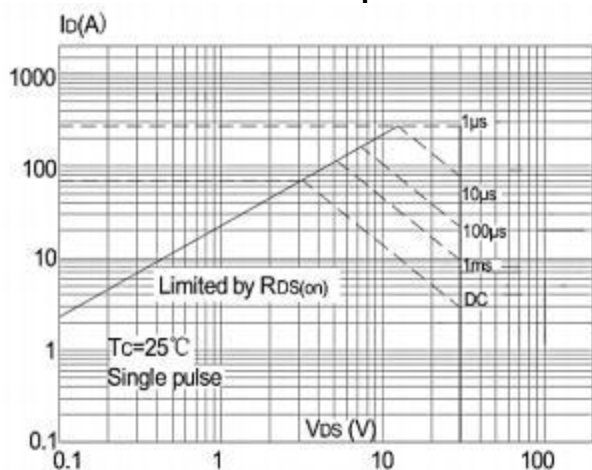


Figure 9: Maximum Safe Operating Area vs. Case Temperature

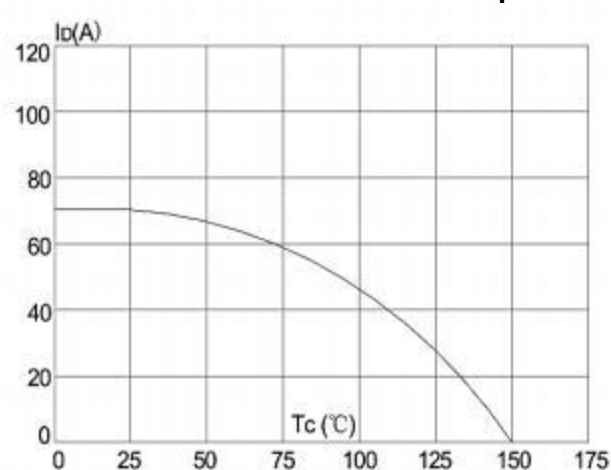


Figure 10: Maximum Continuous Drain Current

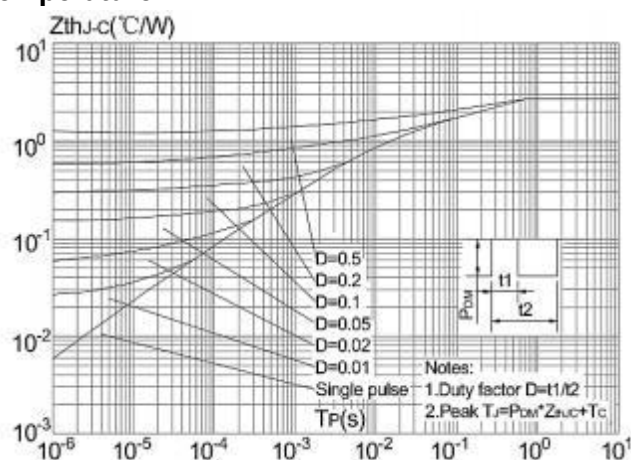
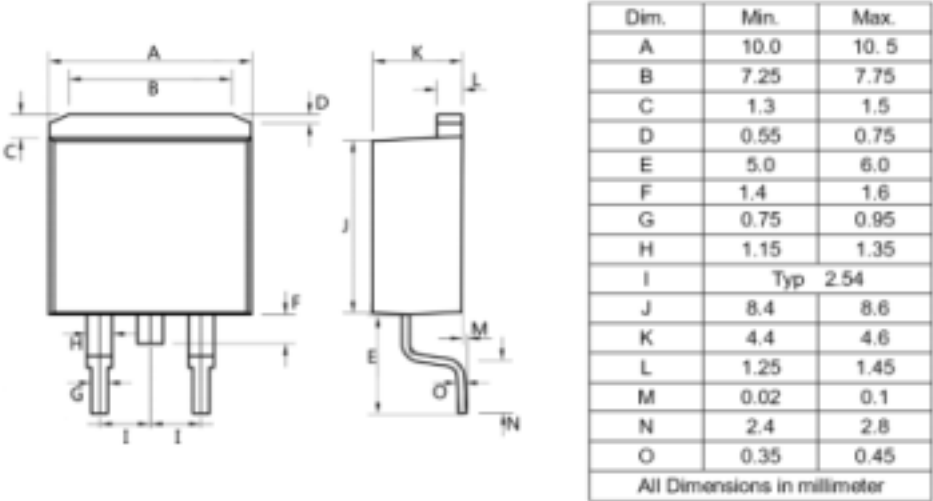


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

Package Mechanical Data- TO-263-3L



Package Marking and Ordering Information

Product ID	Pack	Marking	Qty(PCS)
TAPING	TO-263-3L		800