-30V P-Channel Enhancement Mode MOSFET

Description

The SX150P03T 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 =-150A

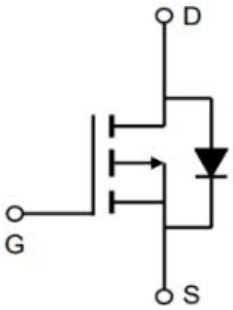
$R_{DS(ON)}$ <5.5mΩ @ V_{GS}=-10V

Application

Lithium battery protection

Wireless impact

Mobile phone fast charging



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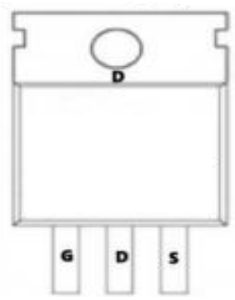


Absolute Maximum Ratings (TC=25℃unless otherwise noted)

Symbol	Parameter	Max.	Units
VDSS	Drain-Source Voltage	-30	V
VGSS	Gate-Source Voltage	±20	V
ID@TC=25℃	Continuous Drain Current TC = 25℃	-150	A
ID@TC=100℃	Continuous Drain Current TC = 100℃	-85	A
IDM	Pulsed Drain Current note1	-460	A
EAS	Single Pulsed Avalanche Energy note2	225	mJ
PD	Power Dissipation TC = 25℃	62.5	W
RθJC	Thermal Resistance, Junction to Case	1.46	℃/W
TJ, TSTG	Operating and Storage Temperature Range	-55 to +175	℃

Electrical Characteristics (T_J=25℃, unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
V(BR)DSS	Drain-Source Breakdown Voltage	VGS=0V, ID= -250μA	-30	-33	-	V
IDSS	Zero Gate Voltage Drain Current	VDS= -30V, VGS=0V,	-	-	-1	μA
IGSS	Gate to Body Leakage Current	VDS=0V, VGS= ±20V	-	-	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS, ID= -250μA	-1.0	-1.6	-2.5	V
RDS(on)	Static Drain-Source on-Resistance	VGS= -10V, ID= -30A	-	3.8	5.5	mΩ
		VGS= -4.5V, ID= -20A	-	5.8	8.2	
Ciss	Input Capacitance	VDS= -15V, VGS=0V, f=1.0MHz	-	9400	-	pF
Coss	Output Capacitance		-	1000	-	pF
Crss	Reverse Transfer Capacitance		-	767	-	pF
Qg	Total Gate Charge	VDS= -15V, ID= -30A, VGS= -10V	-	42	-	nC
Qgs	Gate-Source Charge		-	8.4	-	nC
Qgd	Gate-Drain("Miller") Charge		-	11.2	-	nC
td(on)	Turn-on Delay Time	VDD= -15V, ID= -30A, VGS= -10V, RGEN=2.5Ω	-	15	-	ns
tr	Turn-on Rise Time		-	16	-	ns
td(off)	Turn-off Delay Time		-	69	-	ns
tf	Turn-off Fall Time		-	27	-	ns
IS	Maximum Continuous Drain to Source DiodeForward Current		-	-	-90	A
ISM	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-360	A
VSD	Drain to Source Diode Forward Voltage	VGS=0V, IS= -30 A		-0.8	-1.2	V

Notes:

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 TJ =25℃, V DD = -15V, VG = -10V, RG =25Ω, L=0.5mH, IAS=-30A

4、The power dissipation is limited by 150℃ 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

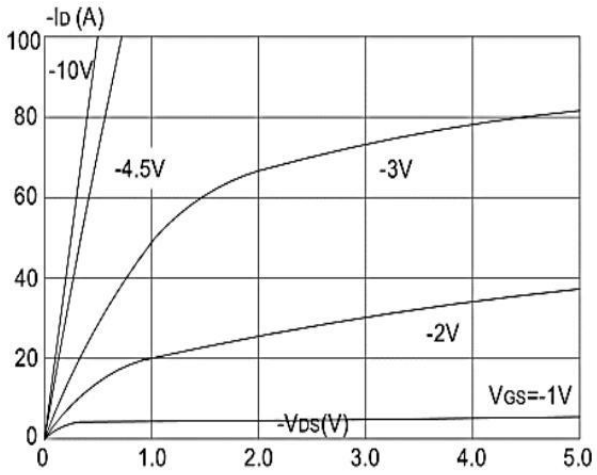


Figure1: Output Characteristics

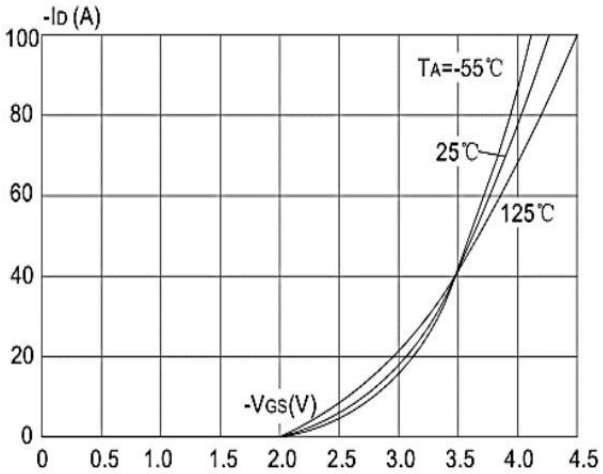


Figure 2: Typical Transfer Characteristics

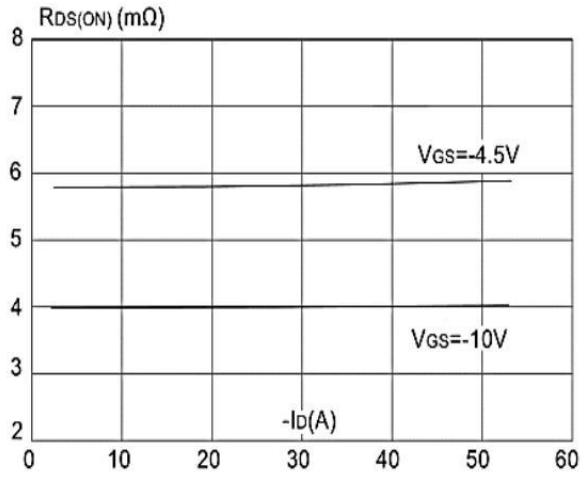


Figure 3:On-resistance vs. Drain Current

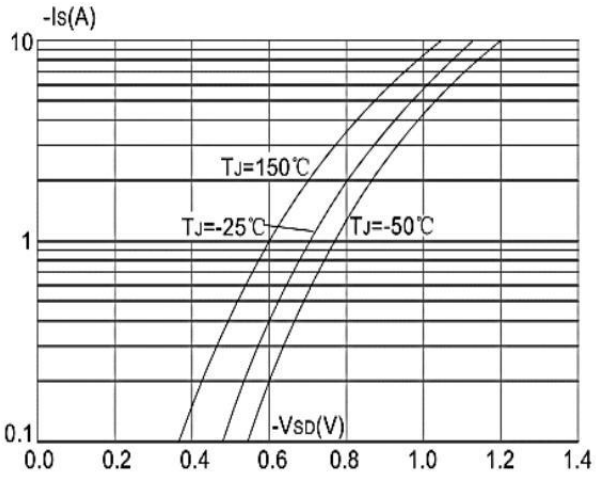


Figure 4: Body Diode Characteristics

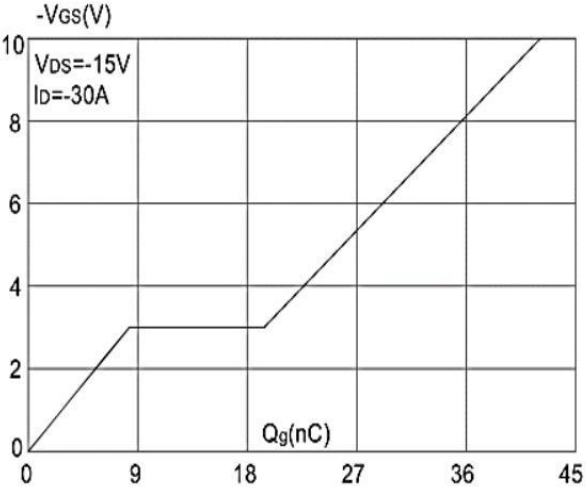


Figure 5: Gate Charge Characteristics

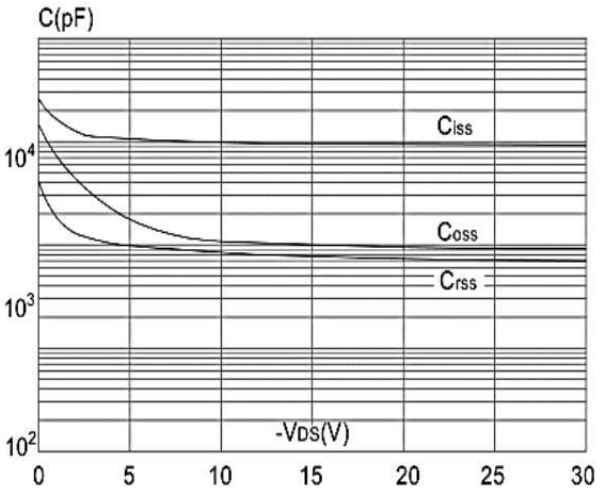


Figure 6: Capacitance Characteristics

Typical Characteristics

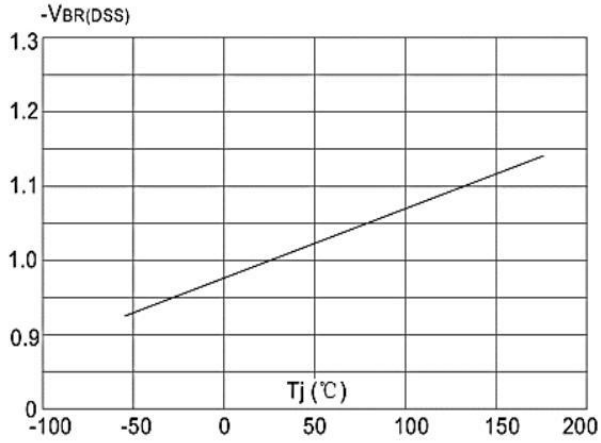


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

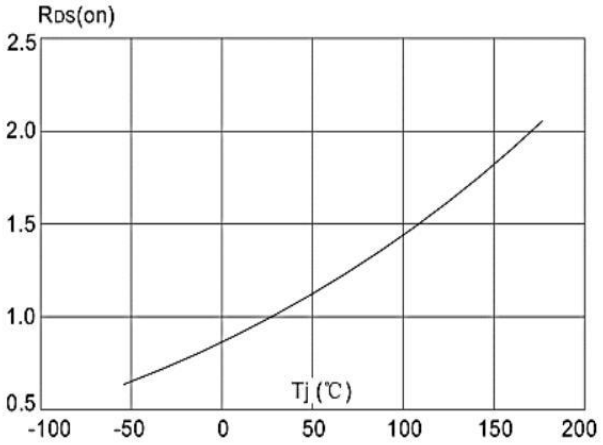


Figure 8: Normalized on Resistance vs. Junction Temperature

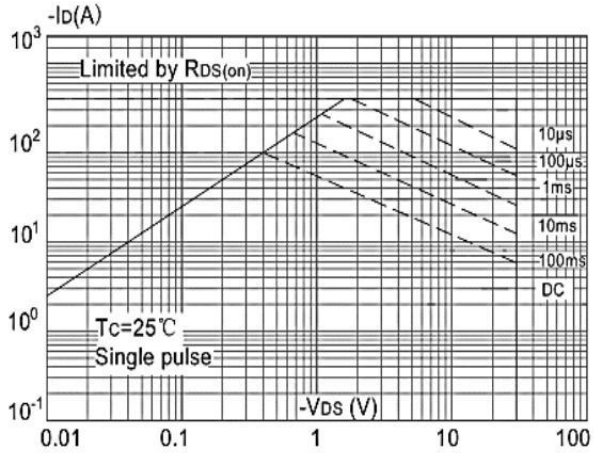


Figure 9: Maximum Safe Operating Area

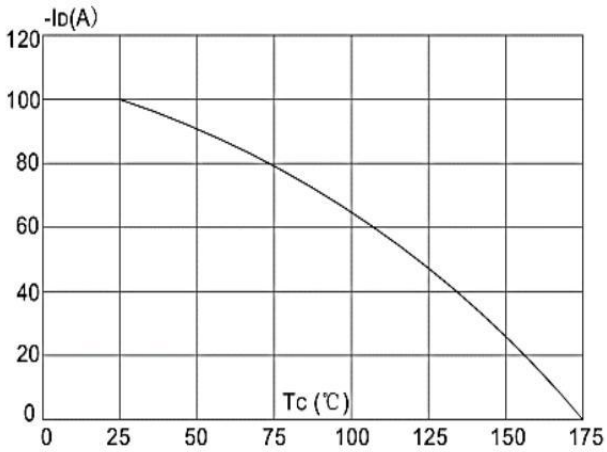


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

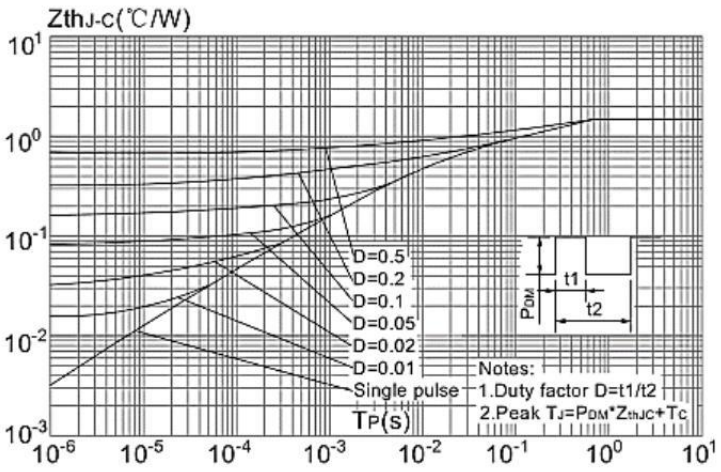
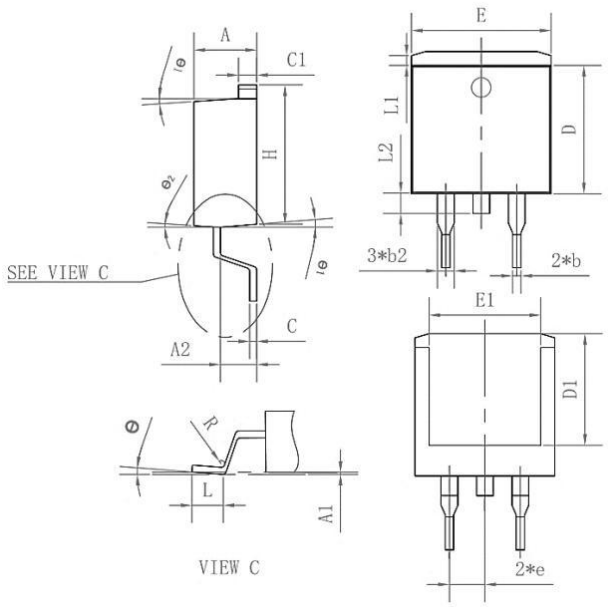


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

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