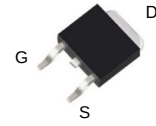


Description

The TX100P03D 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.

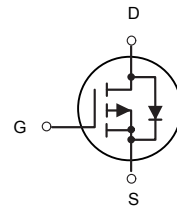


TO252-2L

General Features

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

$R_{DS(ON)} < 4.5m\Omega$ @ $V_{GS} = -10V$



P-Channel MOSFET

Application

Lithium battery protection
Wireless impact
Mobile phone fast charging

Absolute Maximum Ratings (TC=25°C unless otherwise noted)

Symbol	Parameter	Max.	Units
VDSS	Drain-Source Voltage	-30	V
VGSS	Gate-Source Voltage	±20	V
ID	Continuous Drain Current $T_C = 25^\circ C$	-100	A
ID	Continuous Drain Current $T_C = 100^\circ C$	-59	A
IDM	Pulsed Drain Current ^{note1}	-360	A
EAS	Single Pulsed Avalanche Energy ^{note2}	210	mJ
PD	Power Dissipation $T_C = 25^\circ C$	109	W
RθJC	Thermal Resistance, Junction to Case	1.4	°C/W
TJ, TSTG	Operating and Storage Temperature Range	-55 to +175	°C

Electrical Characteristics ($T_J=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30	-33	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V,$	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$	-	-	± 100	nA
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1.0	-1.6	-2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance	$V_{GS}=-10V, I_D=-30A$	-	3.5	4.5	m Ω
		$V_{GS}=-4.5V, I_D=-20A$	-	4.8	6.2	
C_{iss}	Input Capacitance	$V_{DS}=-15V, V_{GS}=0V,$ $f=1.0MHz$	-	6800	-	pF
C_{oss}	Output Capacitance		-	769	-	pF
C_{rss}	Reverse Transfer Capacitance		-	726	-	pF
Q_g	Total Gate Charge	$V_{DS}=-15V, I_D=-30A,$ $V_{GS}=-10V$	-	30	-	nC
Q_{gs}	Gate-Source Charge		-	6	-	nC
Q_{gd}	Gate-Drain("Miller") Charge		-	8	-	nC
$t_{d(on)}$	Turn-on Delay Time	$V_{DD}=-15V, I_D=-30A,$ $V_{GS}=-10V, R_{GEN}=2.5\Omega$	-	11	-	ns
t_r	Turn-on Rise Time		-	13	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	52	-	ns
t_f	Turn-off Fall Time		-	21	-	ns
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-90	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-360	A
V_{SD}	Drain to Source Diode Forward Voltage	$V_{GS}=0V, I_S=-30A$		-0.8	-1.2	V

Notes:

- 1、Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature
- 2、EAS condition: $T_J=25^{\circ}\text{C}$, $V_{DD}=-15V$, $V_G=-10V$, $R_G=25\Omega$, $L=0.5mH$, $I_{AS}=-29A$
- 3、Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Typical Characteristics

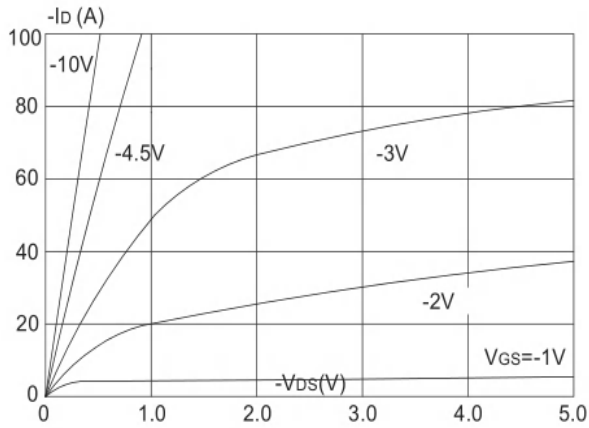


Figure1: Output Characteristics

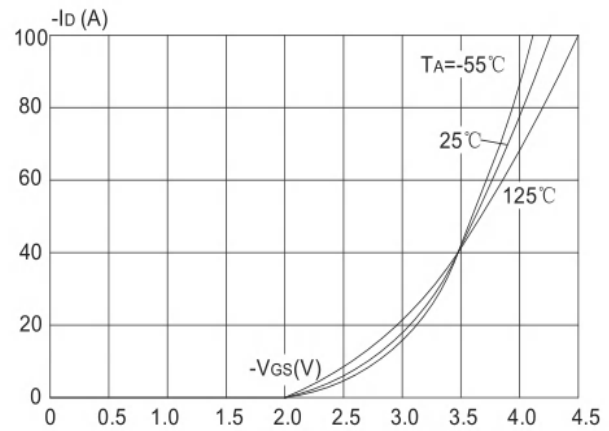


Figure 2: Typical Transfer Characteristics

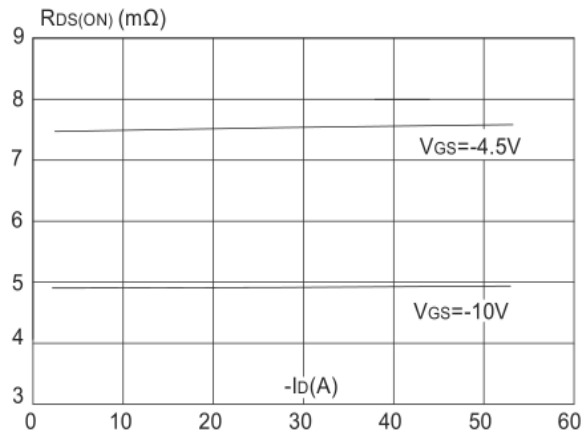


Figure 3: On-resistance vs. Drain Current

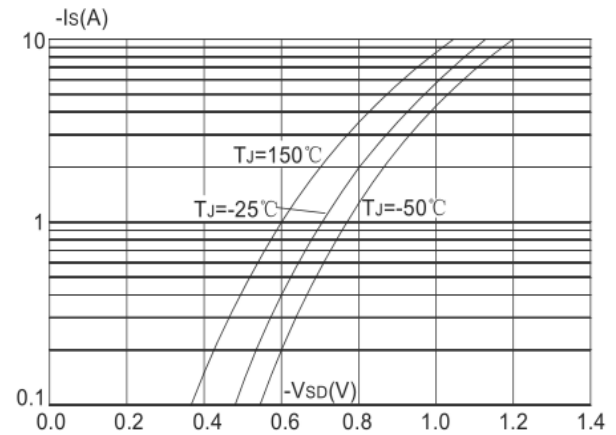


Figure 4: Body Diode Characteristics

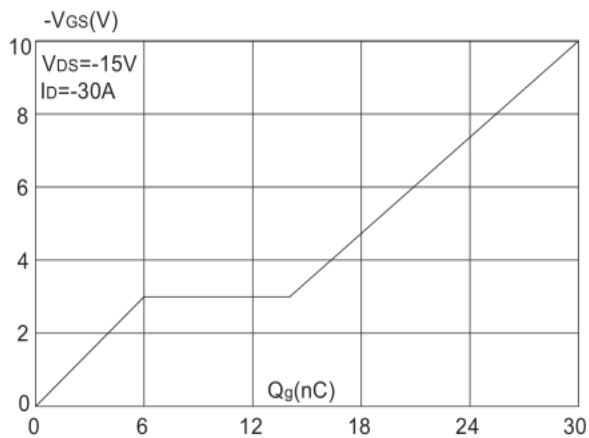


Figure 5: Gate Charge Characteristics

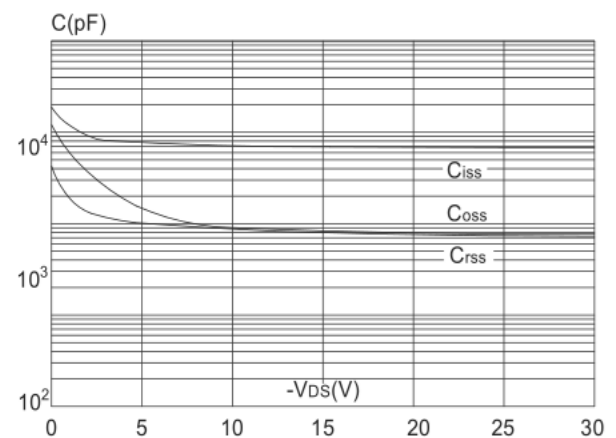


Figure 6: Capacitance Characteristics

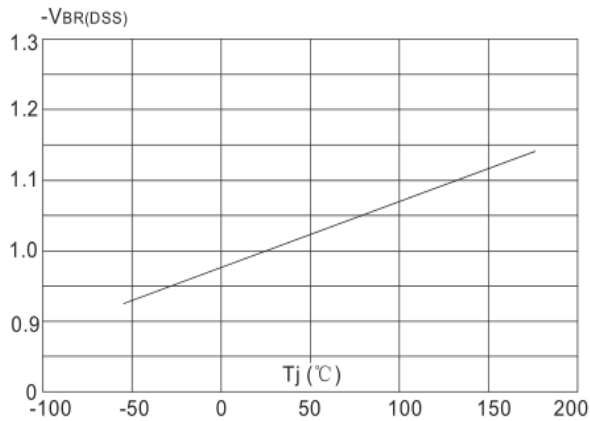


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

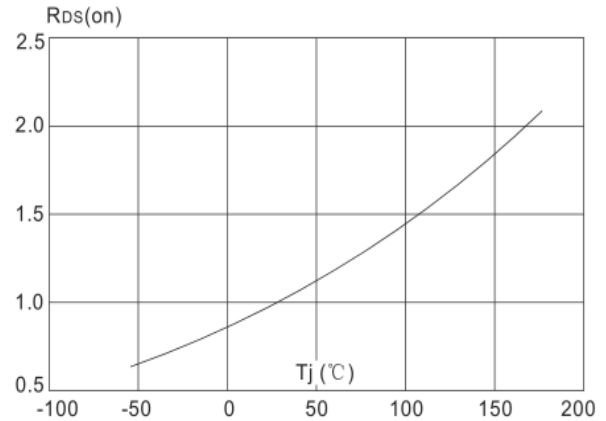


Figure 8: Normalized on Resistance vs. Junction Temperature

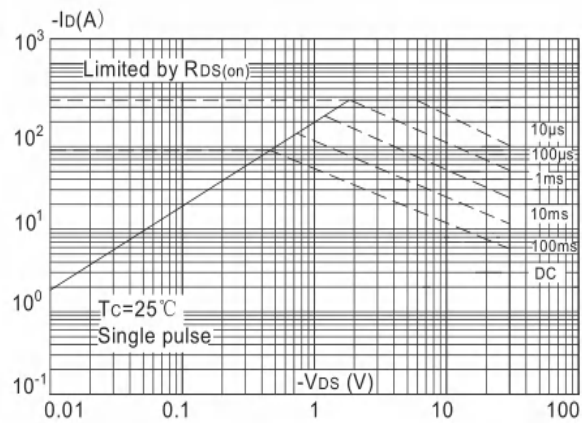


Figure 9: Maximum Safe Operating Area

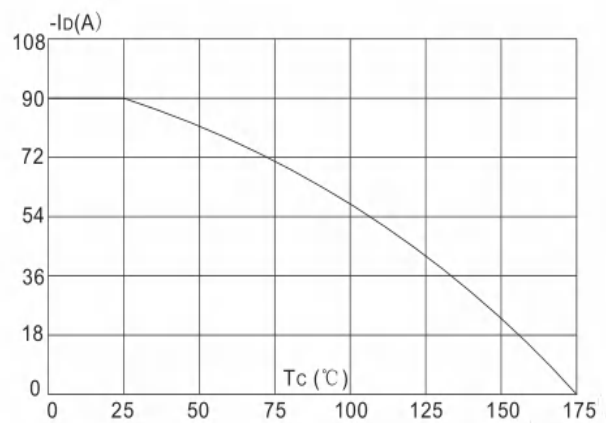


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

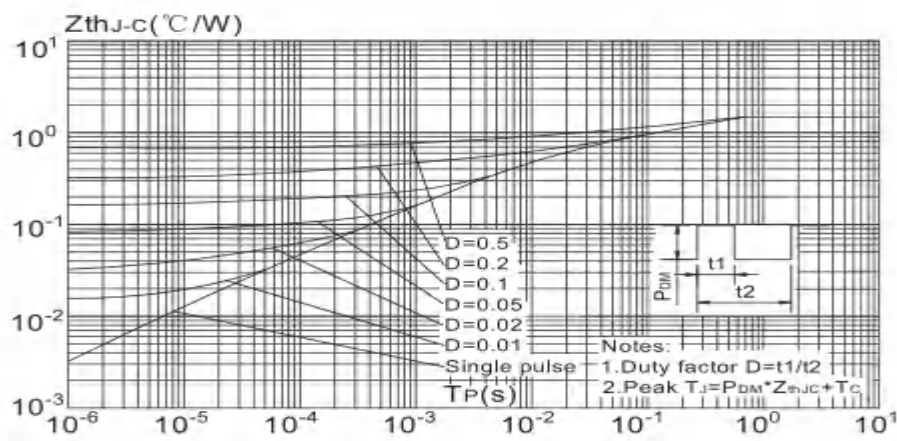
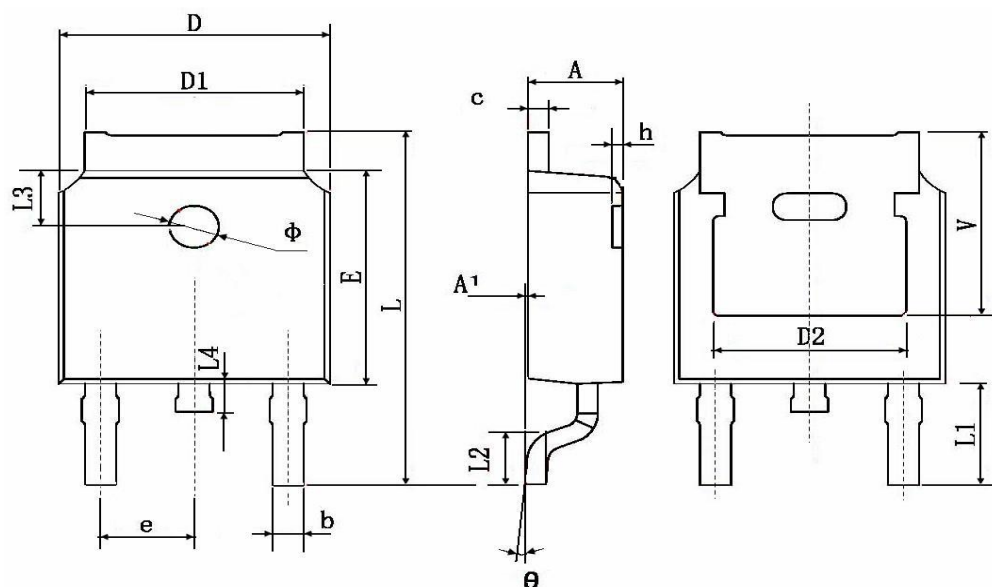


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case

TO252-2L Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.660	0.860	0.026	0.034
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 TYP.		0.190 TYP.	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.800	10.400	0.386	0.409
L1	2.900 TYP.		0.114 TYP.	
L2	1.400	1.700	0.055	0.067
L3	1.600 TYP.		0.063 TYP.	
L4	0.600	1.000	0.024	0.039
Φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 TYP.		0.211 TYP.	

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