

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
100V	108mΩ@10V	15A
	125mΩ@4.5V	

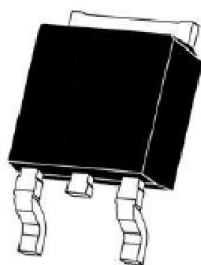
Feature

- Advanced Trench Technology
- Excellent $R_{DS(on)}$
- Low Gate Charge

Application

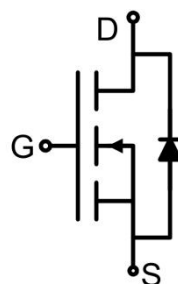
- Load Switch
- PWM Application
- Power Management

Package

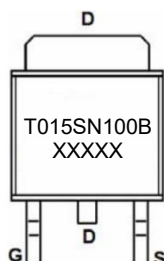


TO-252AB

Circuit diagram



Marking



Absolute maximum ratings ($T_J=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_C=25^{\circ}\text{C}$)	I_D	15	A
Continuous Drain Current ($T_C=100^{\circ}\text{C}$)	$I_{D(100^{\circ}\text{C})}$	9	A
Pulsed Drain Current Tested ¹⁾	I_{DM}	60	A
Single Pulse Avalanche Energy ²⁾	E_{AS}	12	mJ
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	44	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	3	$^{\circ}\text{C/W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

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

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	100			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =100V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2.5	V
Drain-source on-resistance ³⁾	R _{DS(on)}	V _{GS} =10V, I _D =5A		86	108	mΩ
		V _{GS} =4.5V, I _D =3A		96	125	
Dynamic characteristics ⁴⁾						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz		847		pF
Output Capacitance	C _{oss}			40		
Reverse Transfer Capacitance	C _{rss}			12		
Total Gate Charge	Q _g	V _{DS} =50V, V _{GS} =10V, I _D =2A		20		nC
Gate-Source Charge	Q _{gs}			2.8		
Gate-Drain Charge	Q _{gd}			4		
Turn-on delay time	t _{d(on)}	V _{DS} =50V, V _{GS} =10V, I _D =3A R _G =1.8Ω		6		nS
Turn-on rise time	t _r			7		
Turn-off delay time	t _{d(off)}			21		
Turn-off fall time	t _f			3		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				15	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =10A			1.2	V
Reverse recover time	T _{rr}	I _F =10A, di/dt =100A/us		22		nS
Reverse recovery charge	Q _{rr}			29		nC

Notes:

- 1) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
- 2) EAS condition: Starting $T_J=25^{\circ}\text{C}$, $V_{DD}=50V$, $V_G=10V$, $R_G=25\Omega$, $L=0.5\text{mH}$, $I_{AS}=7A$.
- 3) Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 0.5\%$.
- 4) Guaranteed by design, not subject to production.

Typical Characteristics

Figure 1: Output Characteristics

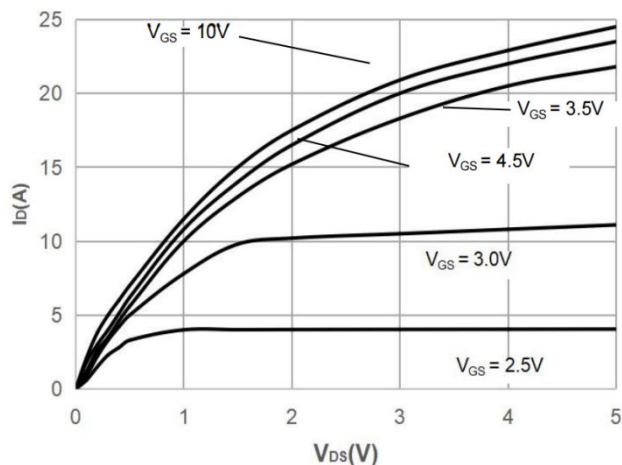


Figure 2: Typical Transfer Characteristics

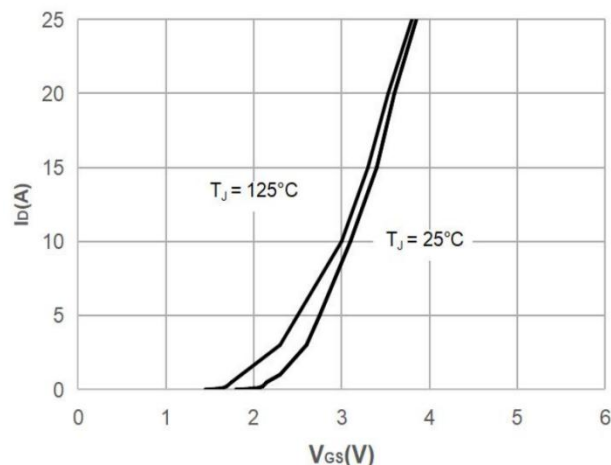


Figure 3: On-resistance vs. Drain Current

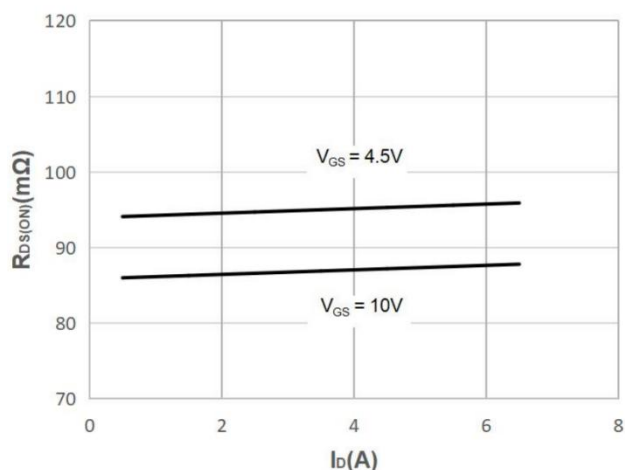


Figure 4: Body Diode Characteristics

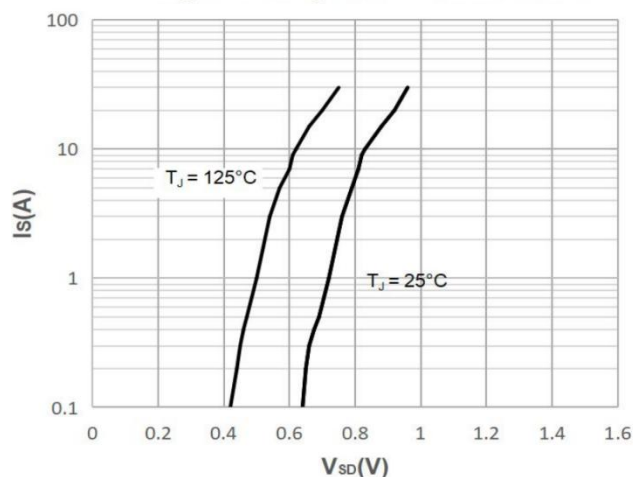


Figure 5: Gate Charge Characteristics

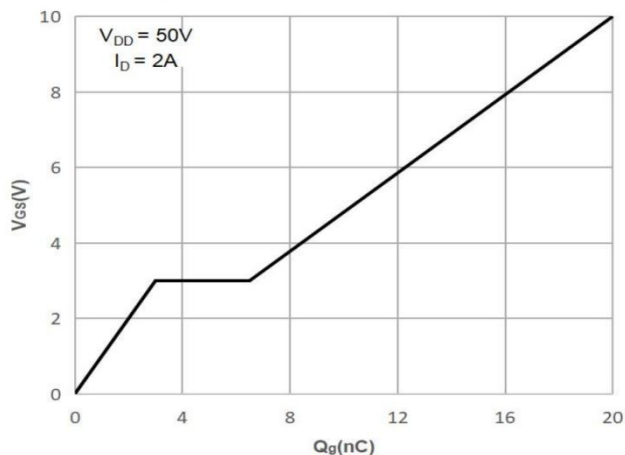
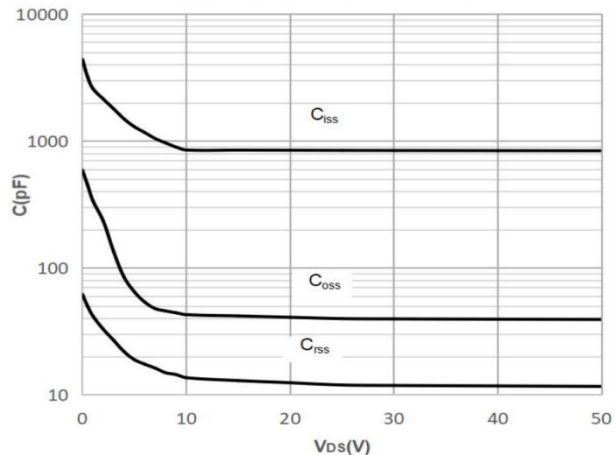


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

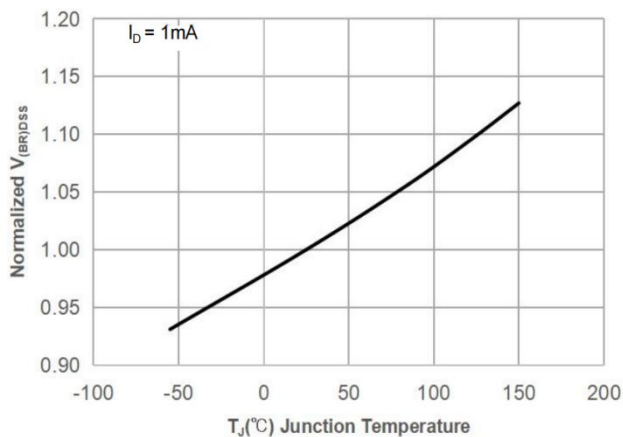


Figure 8: Normalized on Resistance vs. Junction Temperature

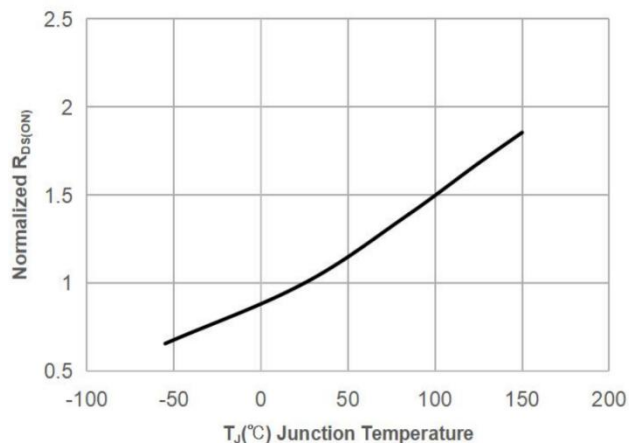


Figure 9: Maximum Safe Operating Area

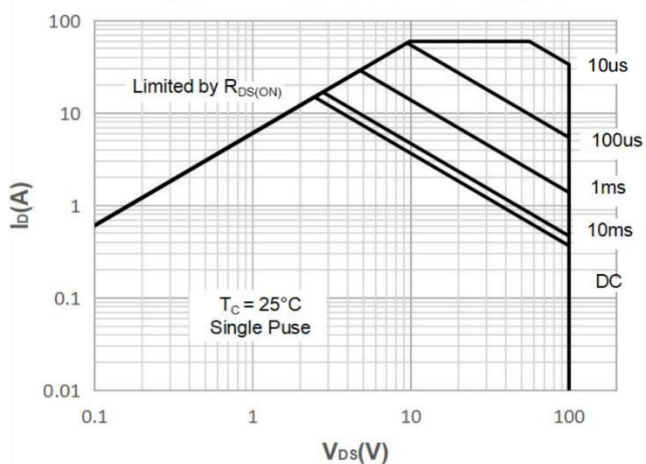


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

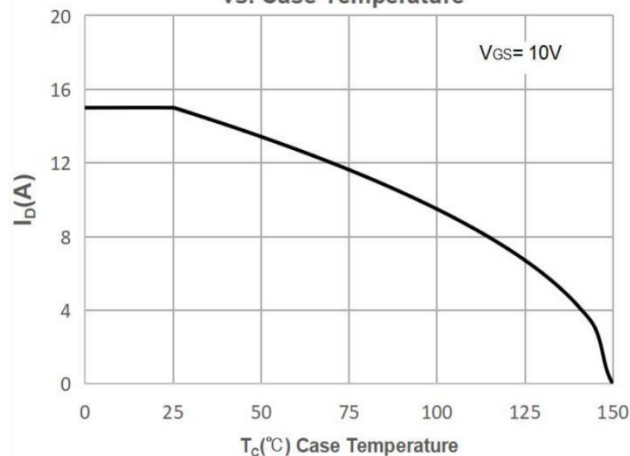


Figure 11: Normalized Maximum Transient Thermal Impedance

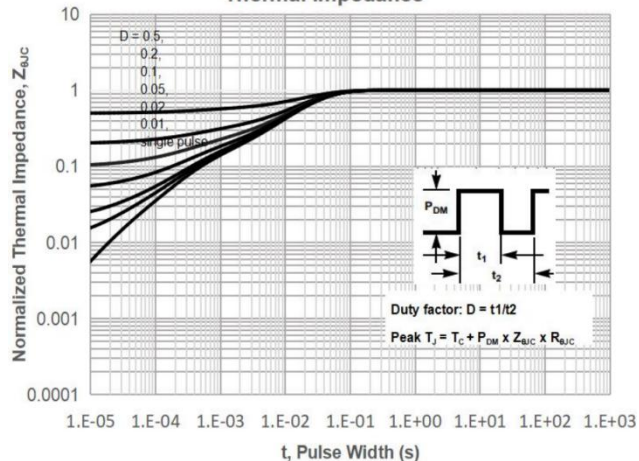
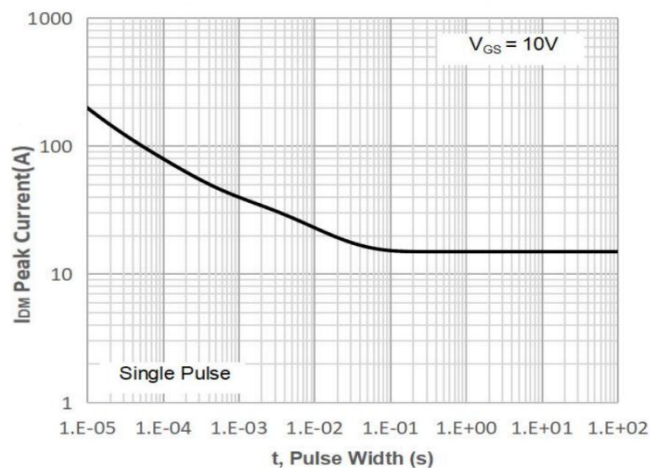
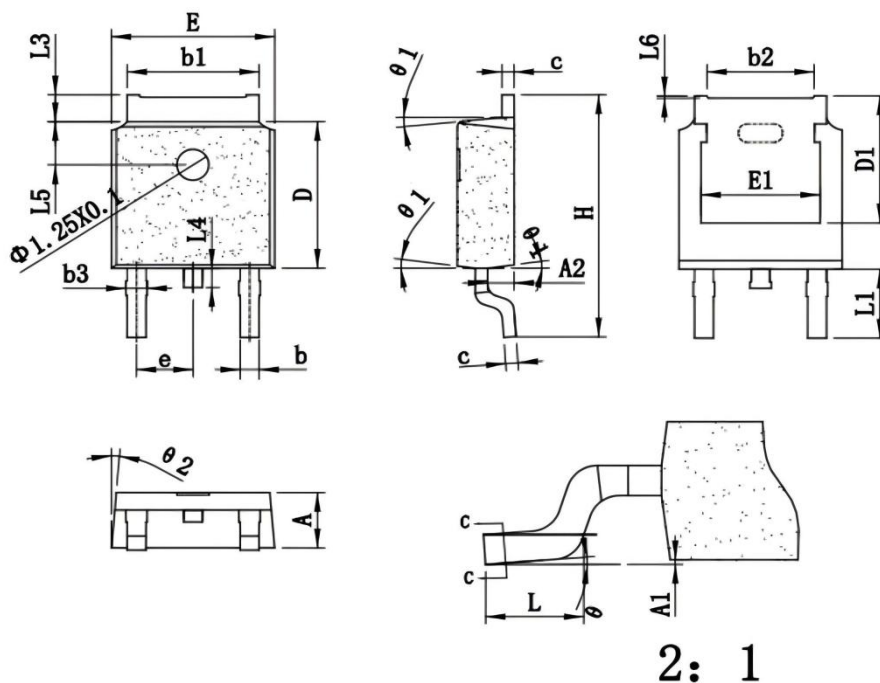


Figure 12: Peak Current Capacity



TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.380	0.087	0.094
A1	0.000	0.150	0.000	0.006
A2	0.900	1.100	0.035	0.043
b	0.720	0.850	0.028	0.033
b1	5.230	5.460	0.206	0.215
b2	4.050	4.350	0.159	0.171
b3	0.780	0.900	0.031	0.035
c	0.470	0.550	0.019	0.022
D	6.000	6.200	0.236	0.244
D2	5.400 REF.		0.213 REF.	
E	6.500	6.700	0.256	0.264
E1	4.700	4.920	0.185	0.194
e	2.286 BSC.		0.090 BSC.	
H	9.900	10.200	0.390	0.402
L	1.400	1.700	0.055	0.067
L1	2.900 REF.		0.114 REF.	
L3	0.900	1.200	0.035	0.047
L4	0.750	0.950	0.030	0.037
L5	1.700	1.900	0.067	0.075
φ	0.000	0.120	0.000	0.005
θ	0°	5°	0°	5°
θ1	5°	9°	5°	9°
θ2	5°	9°	5°	9°