

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	5.9mΩ@10V	90A
	7.6mΩ@4.5V	

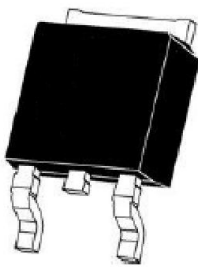
Feature

- Fast switching
- Low gate charge and $R_{DS(ON)}$
- Advanced Split Gate Trench technology

Application

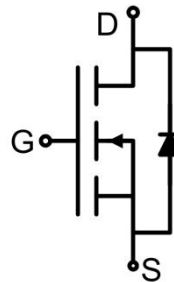
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package



TO-252AB

Circuit diagram



Marking



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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current ($T_C=25^\circ\text{C}$)	I_D	90	A
Continuous Drain Current ($T_C=100^\circ\text{C}$)	$I_D(100^\circ\text{C})$	60	A
Pulsed Drain Current Tested	I_{DM}	360	A
Single Pulse Avalanche Energy ¹⁾	E_{AS}	256	mJ
Power Dissipation($T_C=25^\circ\text{C}$)	P_D	78	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	1.6	$^\circ\text{C}/\text{W}$
Operating Junction Temperature	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 ~ +150	$^\circ\text{C}$

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

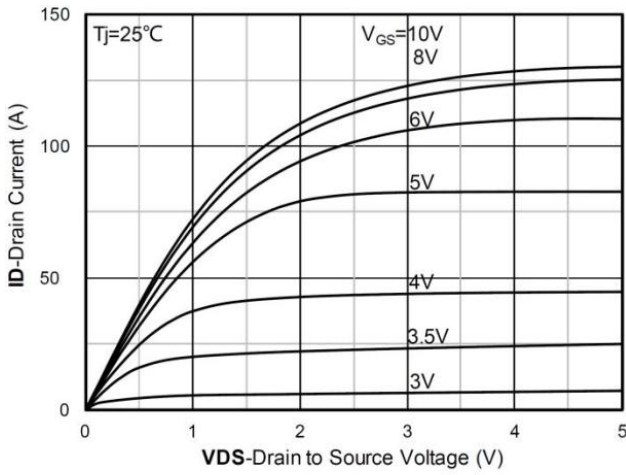
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0\text{V}, I_D = 250\mu\text{A}$	60			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 48\text{V}, V_{GS} = 0\text{V}$			1	μA
Gate-body leakage current	I_{GSS}	$V_{DS} = 0\text{V}, V_{GS} = \pm 20\text{V}$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1.3	1.7	2.3	V
Drain-source on-resistance	$R_{DS(on)}$	$V_{GS} = 10\text{V}, I_D = 20\text{A}$		4.9	5.9	m Ω
		$V_{GS} = 4.5\text{V}, I_D = 10\text{A}$		5.8	7.6	
Dynamic characteristics²⁾						
Input Capacitance	C_{iss}	$V_{DS} = 30\text{V}, V_{GS} = 0\text{V}, f = 1\text{MHz}$		2174		pF
Output Capacitance	C_{oss}			632		
Reverse Transfer Capacitance	C_{rss}			19		
Total Gate Charge	Q_g	$V_{DS} = 30\text{V}, V_{GS} = 10\text{V}, I_D = 20\text{A}$		31		nC
Gate-Source Charge	Q_{gs}			6.5		
Gate-Drain Charge	Q_{gd}			10		
Turn-on delay time	$t_{d(on)}$	$V_{DS} = 30\text{V}, V_{GS} = 10\text{V}, I_D = 20\text{A}$ $R_G = 4.7\Omega$		9		nS
Turn-on rise time	t_r			35		
Turn-off delay time	$t_{d(off)}$			32		
Turn-off fall time	t_f			58		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				90	A
Diode Forward voltage	V_{SD}	$V_{GS} = 0\text{V}, I_S = 1\text{A}, T_J = 25^\circ\text{C}$			1.2	V
Reverse recover time	T_{rr}	$I_S = 20\text{A}, di/dt = -100\text{A}/\mu\text{s}$		27		nS
Reverse recovery charge	Q_{rr}	$T_J = 25^\circ\text{C}$		39		nC

Notes:

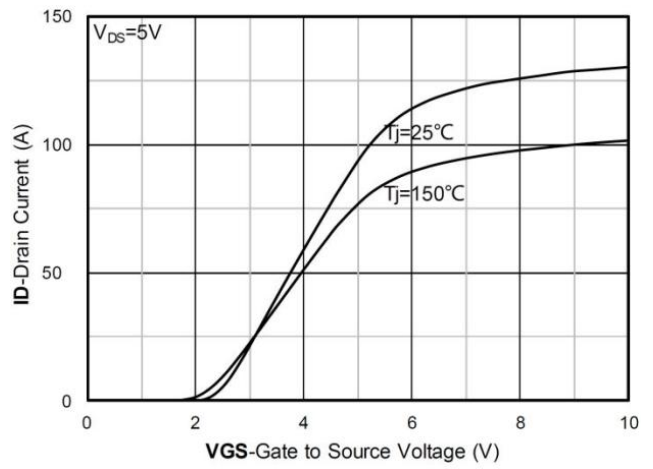
1) The test condition is $V_{DD}=30\text{V}, V_{GS}=10\text{V}, L=0.5\text{mH}, R_G=25\Omega$.

2) Guaranteed by design, not subject to production testing.

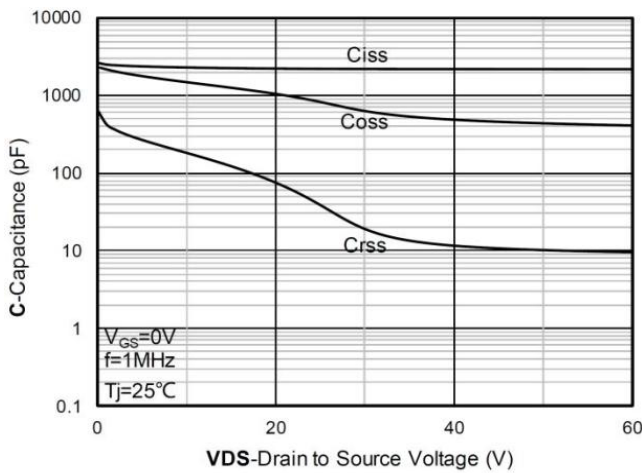
Typical Characteristics



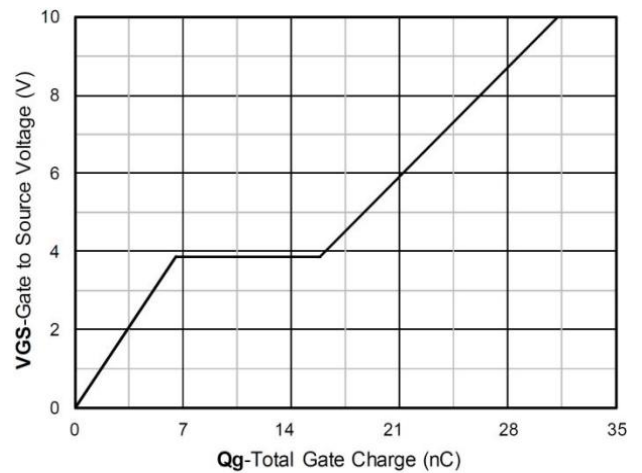
Output Characteristics



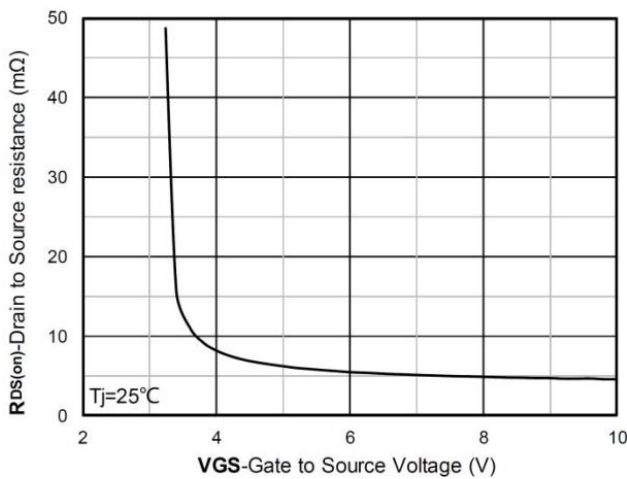
Transfer Characteristics



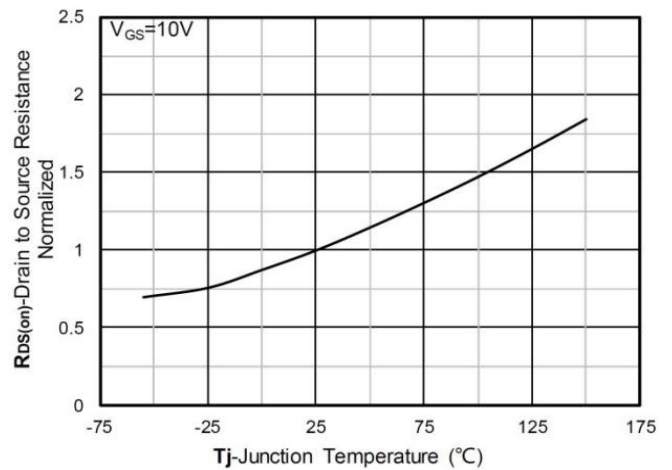
Capacitance Characteristics



Gate Charge

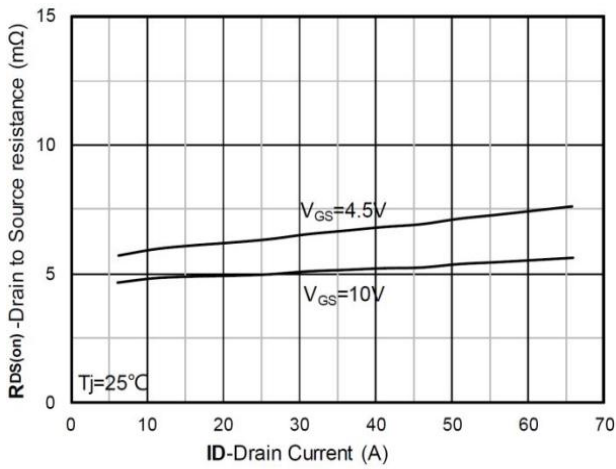


On-Resistance vs. Gate to Source Voltage

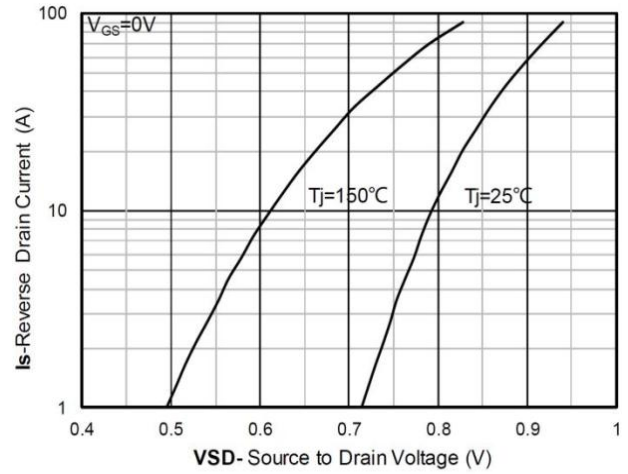


Normalized On-Resistance

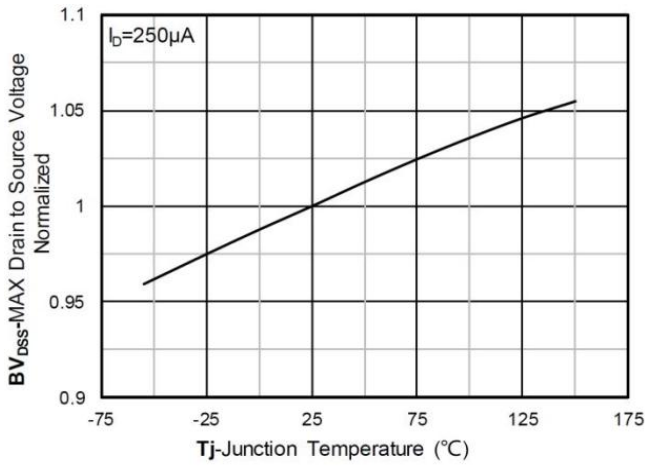
Typical Characteristics



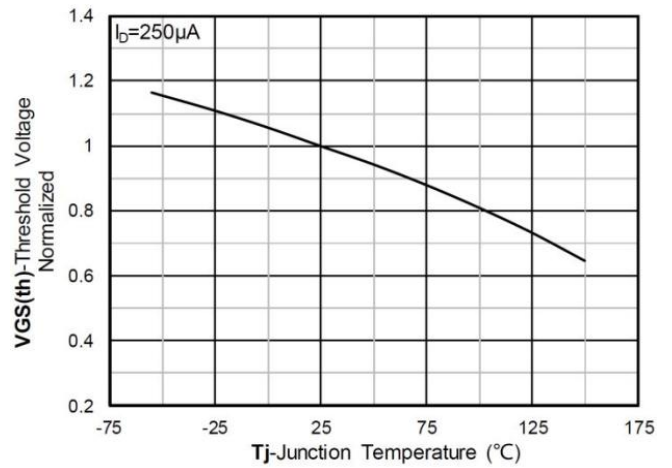
RDS(on) vs. Drain Current



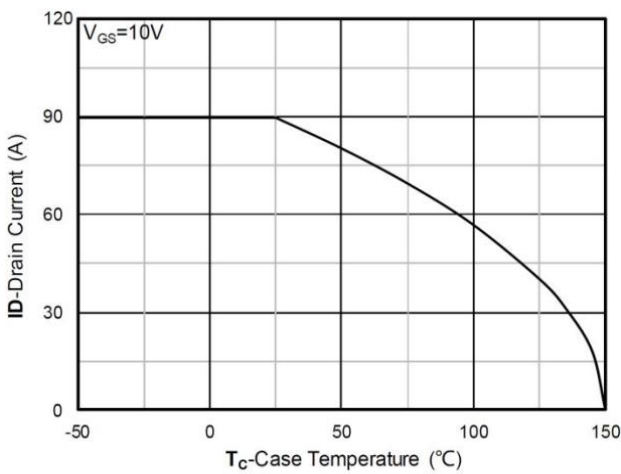
Forward characteristics of reverse diode



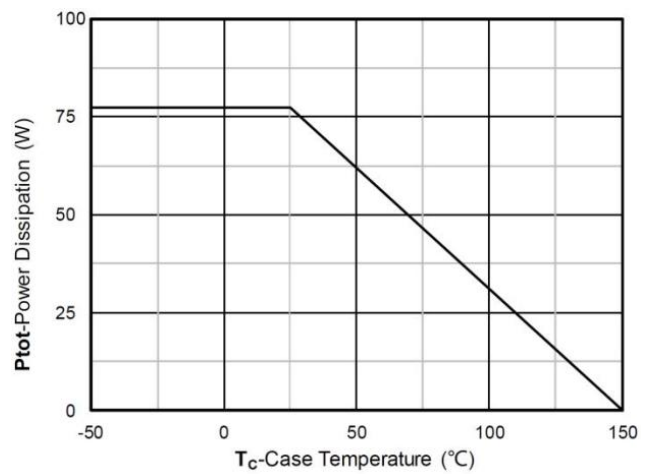
Normalized breakdown voltage



Normalized Threshold voltage

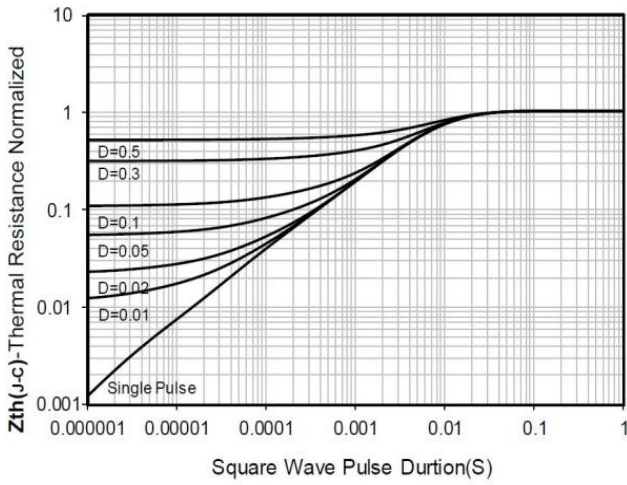


Current dissipation

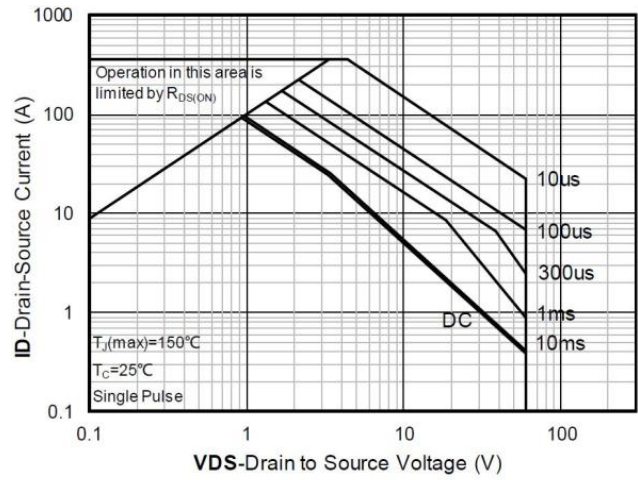


Power dissipation

Typical Characteristics

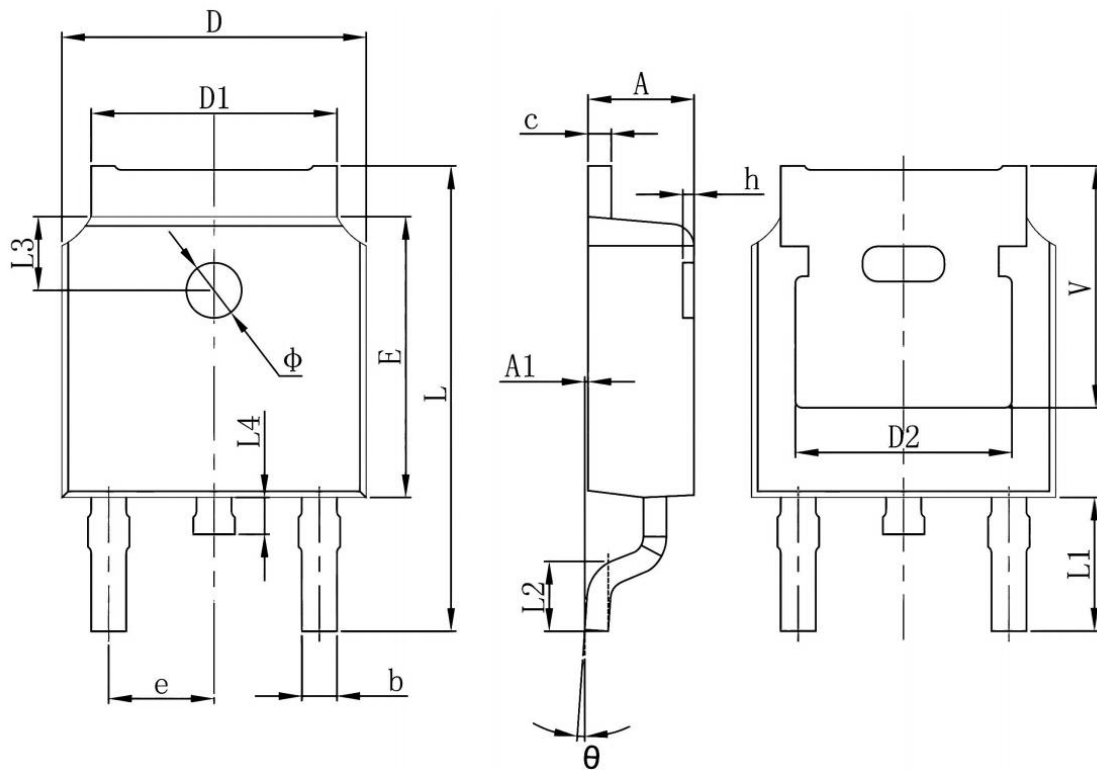


Normalized Maximum Transient Thermal Impedance



Safe Operation Area

TO-252AB 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 REF.		0.190 REF.	
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 REF.		0.114 REF.	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF.		0.063 REF.	
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 REF.		0.211 REF.	