

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
250V	550mΩ@10V	5A

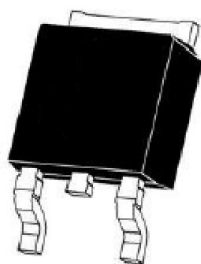
Feature

- Fast Switching
- Improved dv/dt capability

Application

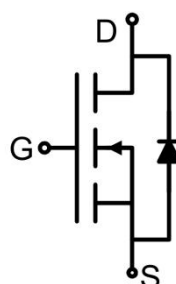
- Load switch
- PWM application
- Power management

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}	250	V
Gate-Source Voltage	V_{GS}	± 30	V
Continuous Drain Current ($T_C=25^{\circ}\text{C}$)	I_D	5	A
Continuous Drain Current ($T_C=100^{\circ}\text{C}$)	$I_D(100^{\circ}\text{C})$	3	A
Pulsed Drain Current ¹⁾	I_{DM}	20	A
Single Pulse Avalanche Energy ²⁾	E_{AS}	101	mJ
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	31.25	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	4	$^{\circ}\text{C}/\text{W}$
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	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	250			V
Zero gate voltage drain current	I_{DSS}	$V_{DS}=250V, V_{GS}=0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 30V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_D=250\mu A$	2.5	3	3.5	V
Drain-source on-resistance ³⁾	$R_{DS(on)}$	$V_{GS}=10V, I_D=2.5A$		460	550	m Ω
Dynamic characteristics ⁴⁾						
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, f=1MHz$		465		pF
Output Capacitance	C_{oss}			68		
Reverse Transfer Capacitance	C_{rss}			9.5		
Total Gate Charge	Q_g	$V_{DS}=200V, V_{GS}=10V, I_D=5A$		10		nC
Gate-Source Charge	Q_{gs}			3		
Gate-Drain Charge	Q_{gd}			5.2		
Turn-on delay time	$t_{d(on)}$	$V_{DS}=150V, V_{GS}=10V, I_D=5A$ $R_G=25\Omega$		6		nS
Turn-on rise time	t_r			25		
Turn-off delay time	$t_{d(off)}$			22		
Turn-off fall time	t_f			24		
Source-Drain Diode characteristics						
Diode Forward Current	I_S				5	A
Diode Forward voltage	V_{SD}	$V_{GS}=0V, I_S=2.5A$			1.2	V
Reverse recover time	T_{rr}	$I_S=5A, di/dt=100A/us$		423		nS
Reverse recovery charge	Q_{rr}			4.3		nC

Notes:

- 1) Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
- 2) E_{AS} condition: Starting $T_J=25^{\circ}\text{C}$, $V_{DD}=100\text{V}$, $V_G=10\text{V}$, $R_G=25\Omega$, $L=10\text{mH}$, $I_{AS}=4.5\text{A}$.
- 3) Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.
- 4) Guaranteed by design, not subject to production testing.

Typical Characteristics

Figure 1: Output Characteristics

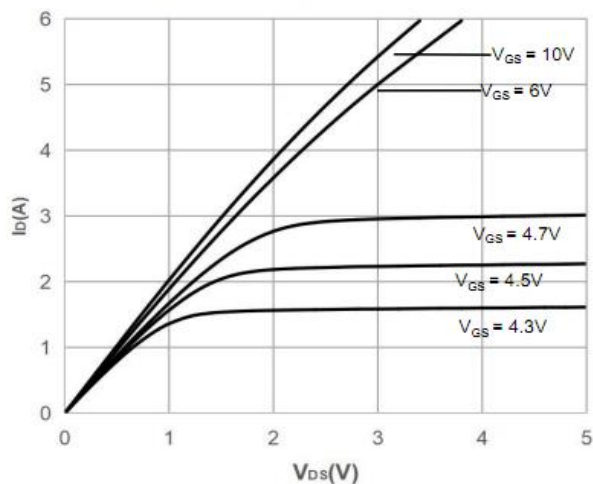


Figure 2: Typical Transfer Characteristics

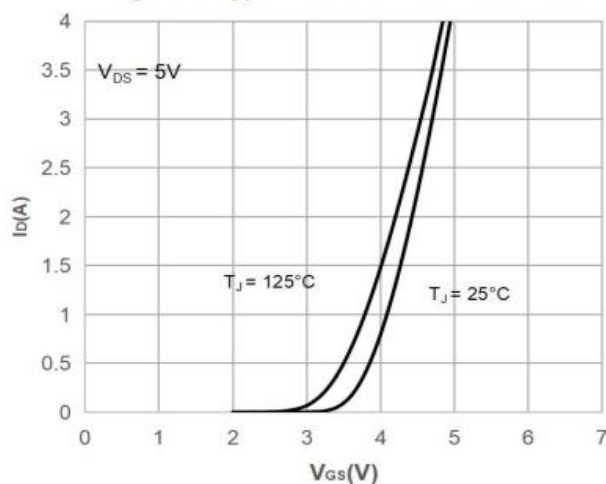


Figure 3: On-resistance vs. Drain Current

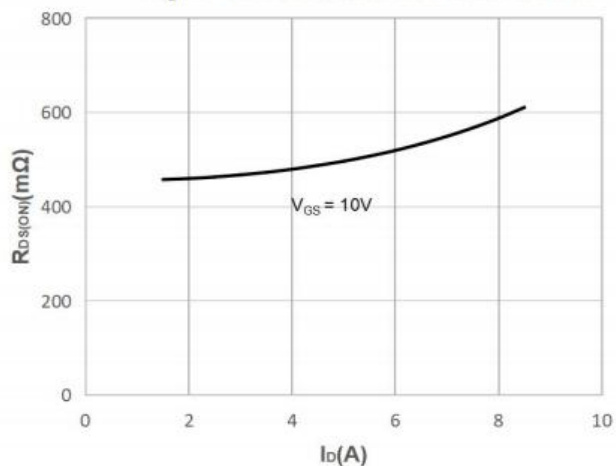


Figure 4: Body Diode Characteristics

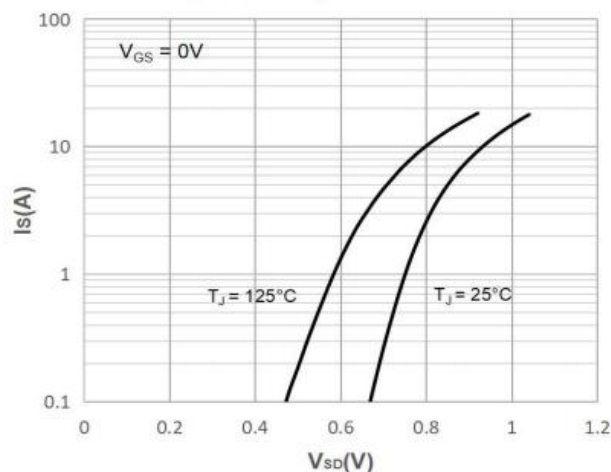


Figure 5: Gate Charge Characteristics

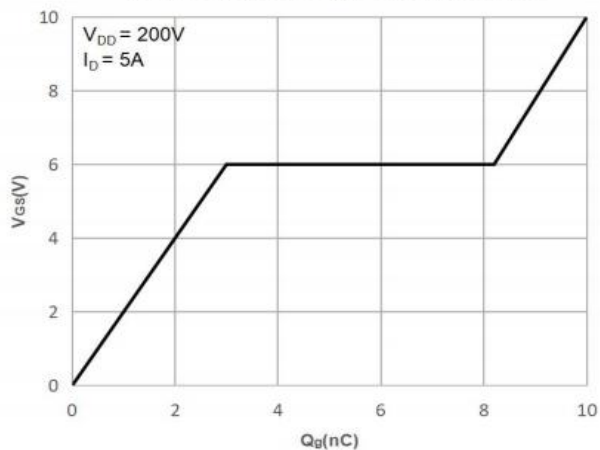
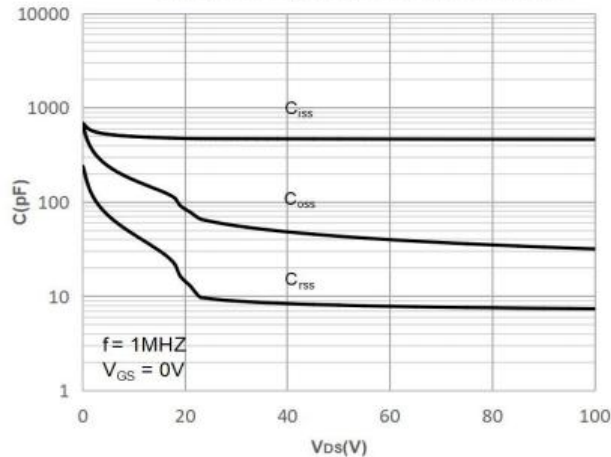


Figure 6: Capacitance Characteristics



Typical Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

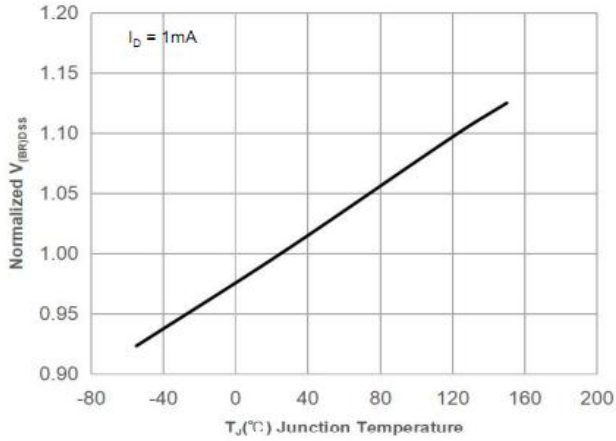


Figure 8: Normalized on Resistance vs. Junction Temperature

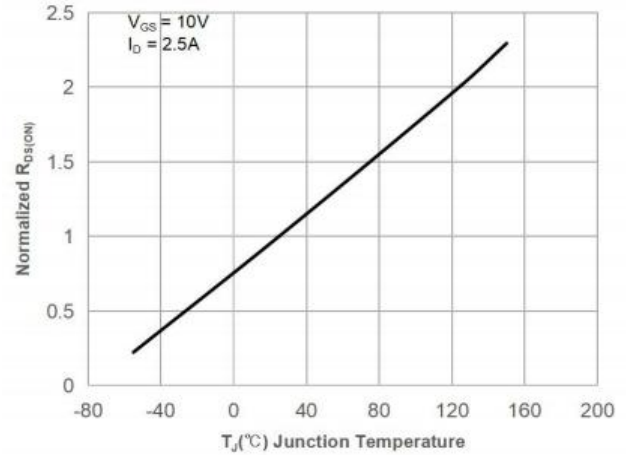


Figure 9: Maximum Safe Operating Area

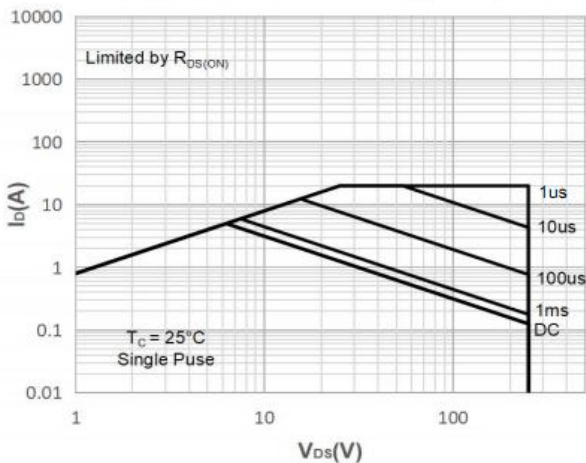


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

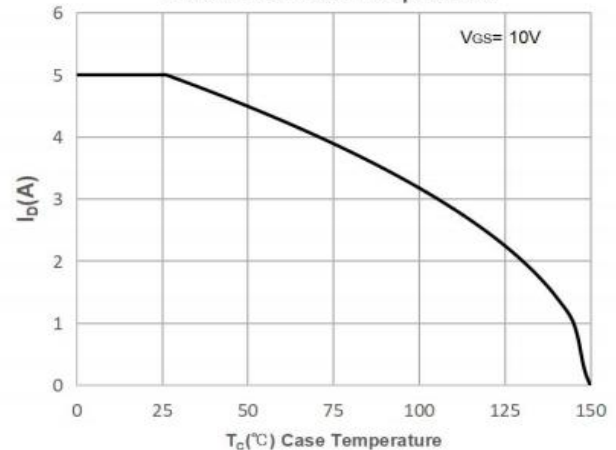


Figure 11: Normalized Maximum Transient Thermal Impedance

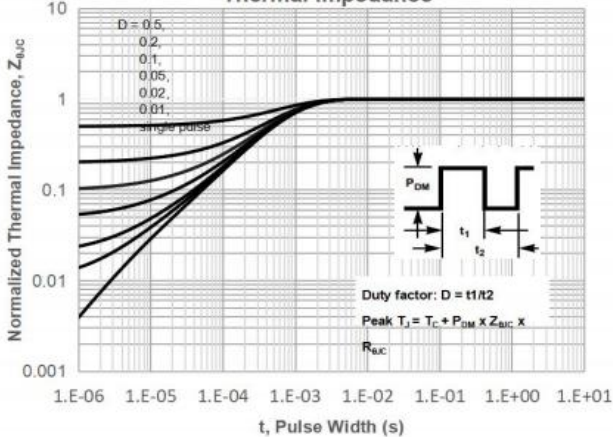
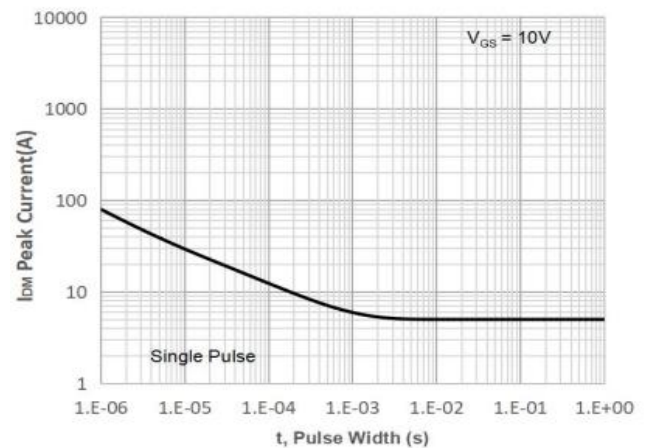
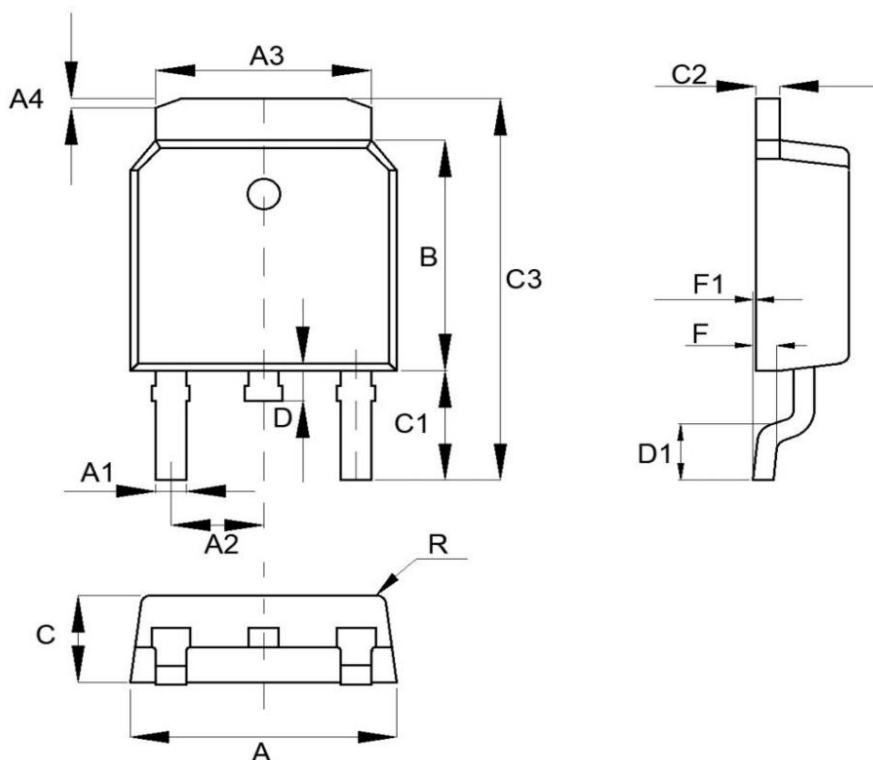


Figure 12: Peak Current Capacity



TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	6.550	6.650	0.258	0.262
A1	0.640	0.740	0.025	0.029
A2	2.286 TYP.		0.090 TYP.	
A3	5.234	5.434	0.206	0.214
A4	0.070	0.470	0.003	0.019
B	6.050	6.150	0.238	0.242
C	2.250	2.350	0.089	0.093
C1	2.650	2.950	0.104	0.116
C2	0.504	0.510	0.020	0.020
C3	9.750	10.000	0.384	0.394
D	0.700	0.900	0.028	0.035
D1	1.400	1.600	0.055	0.063
F	0.508 REF.		0.020 REF.	
F1	0.000	0.100	0.000	0.004
R	0.250 REF.		0.010 REF.	