

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	8.5mΩ@10V	80A

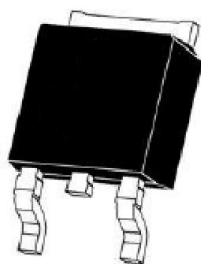
Feature

- High density cell design for ultra low Rdson
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

Application

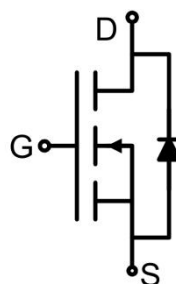
- Load Switching
- PWM

Package



TO-252AB

Circuit diagram



Marking



Absolute maximum ratings (Tc=25°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	I_D	80	A
Continuous Drain Current($T_C = 100^\circ\text{C}$)	$I_D (100^\circ\text{C})$	56.5	A
Pulsed Drain Current	I_{DM}	320	A
Power Dissipation	P_D	110	W
Thermal Resistance,Junction-to-Ambient	$R_{\theta JA}$	60	$^\circ\text{C/W}$
Thermal Resistance,Junction-to-Case	$R_{\theta JC}$	1.36	$^\circ\text{C/W}$
Single pulse avalanche energy	E_{AS}	390	mJ
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Electrical characteristics (Tc=25 °C, unless otherwise noted)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	60			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 60V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	2.0	2.8	4.0	V
Drain-source on-resistance ¹⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 20A$		7	8.5	m Ω
Dynamic characteristics ²⁾						
Input Capacitance	C_{iss}	$V_{DS} = 30V, V_{GS} = 0V, f = 1MHz$		4000		pF
Output Capacitance	C_{oss}			290		
Reverse Transfer Capacitance	C_{rss}			210		
Total Gate Charge	Q_g	$V_{DS} = 30V, V_{GS} = 10V, I_D = 20A$		90		nC
Gate-Source Charge	Q_{gs}			9		
Gate-Drain Charge	Q_{gd}			18		
Turn-on delay time	$t_{d(on)}$	$V_{DD} = 30V, V_{GS} = 10V, R_L = 1\Omega, R_{GEN} = 3\Omega$		8.5		nS
Turn-on rise time	t_r			7		
Turn-off delay time	$t_{d(off)}$			40		
Turn-off fall time	t_f			15		
Source-Drain Diode characteristics						
Diode Forward Current ¹⁾	I_S				80	A
Diode Forward voltage	V_{DS}	$V_{GS} = 0V, I_S = 20A$			1.2	V
Reverse Recovery Time	t_{rr}	$T_J = 25^{\circ}C, I_F = 20A$ $di/dt = 500A/\mu s$ ¹⁾		32		nS
Reverse Recovery Charge	Q_{rr}			45		nC

Notes:

1) Pulse Test: Pulse Width < 300 μs , Duty Cycle $\leq 2\%$.

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

Typical Characteristics

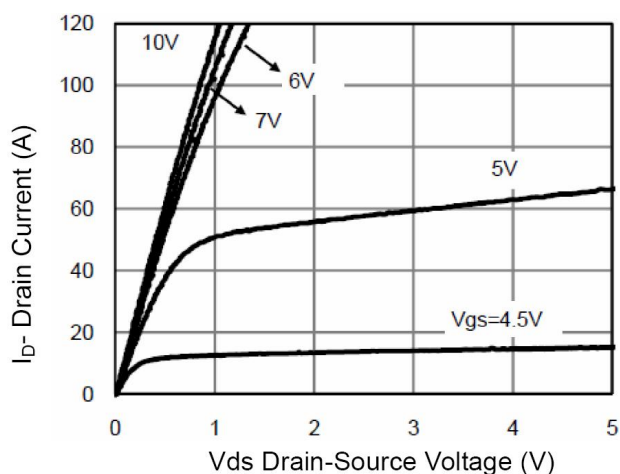


Figure 1 Output Characteristics

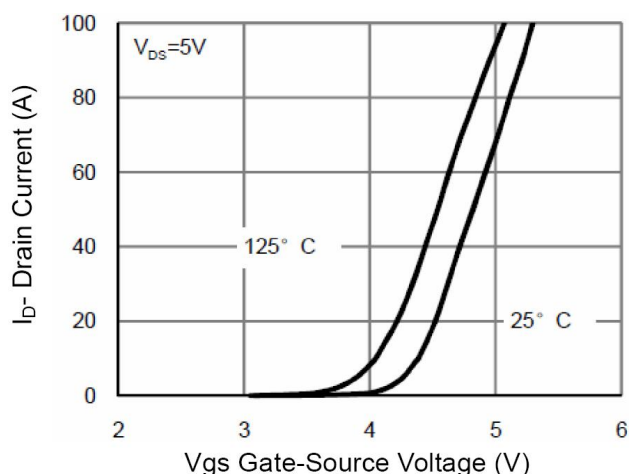


Figure 2 Transfer Characteristics

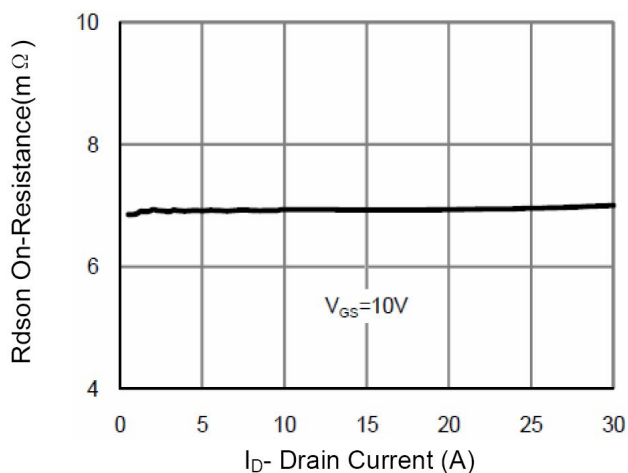


Figure 3 Rdson- Drain Current

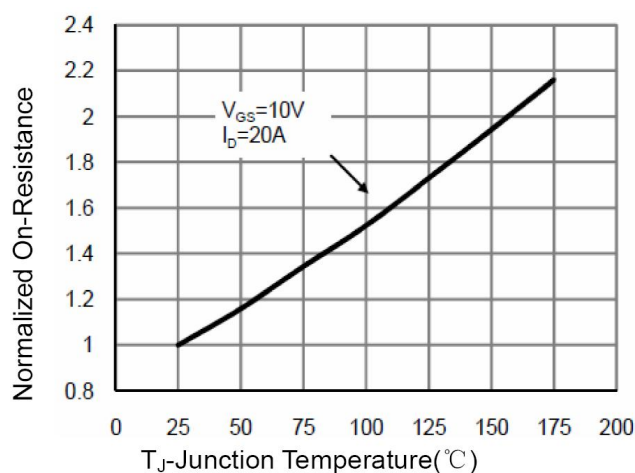


Figure 4 Rdson-Junction Temperature

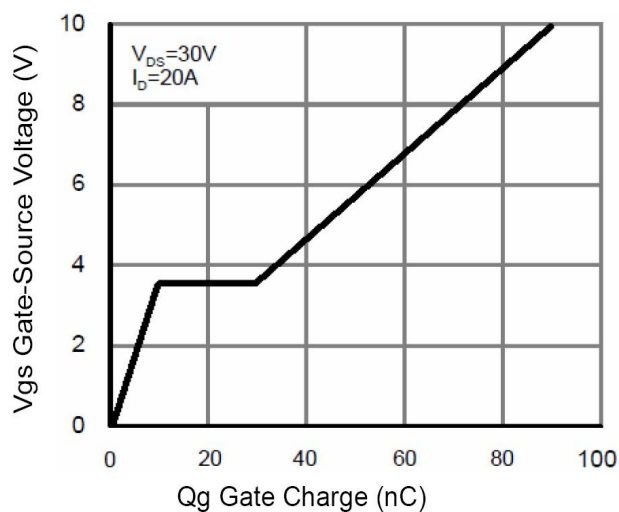


Figure 5 Gate Charge

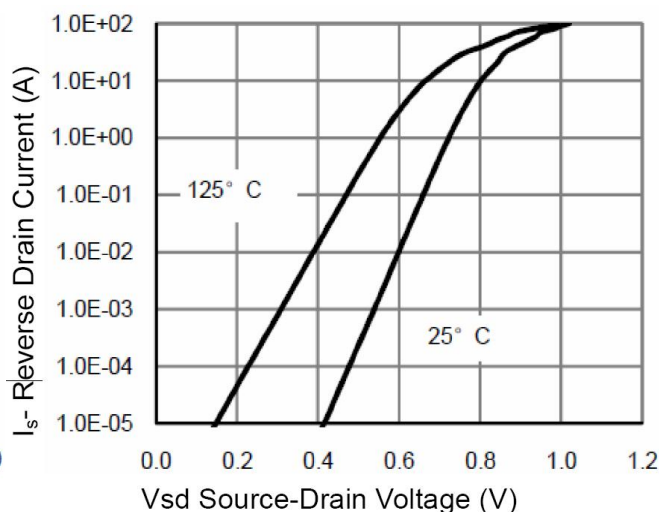


Figure 6 Source- Drain Diode Forward

Typical Characteristics

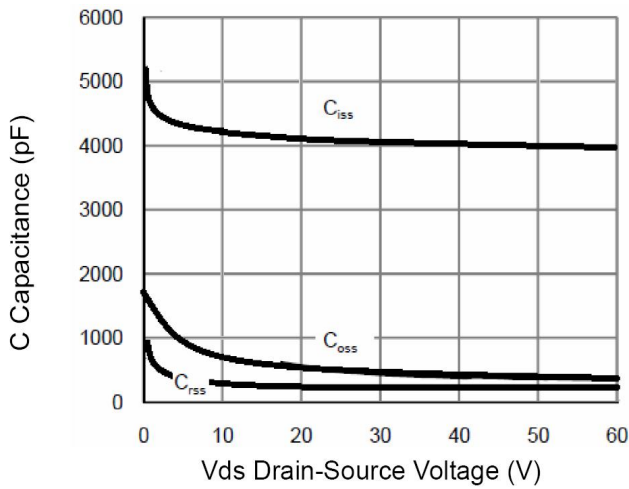


Figure 7 Capacitance vs Vds

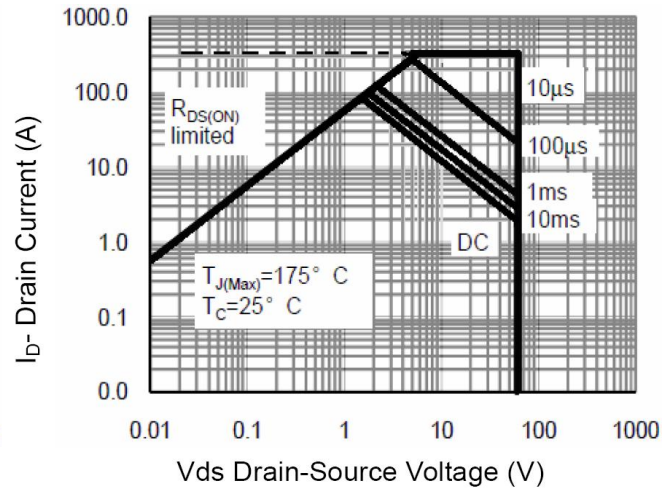


Figure 8 Safe Operation Area

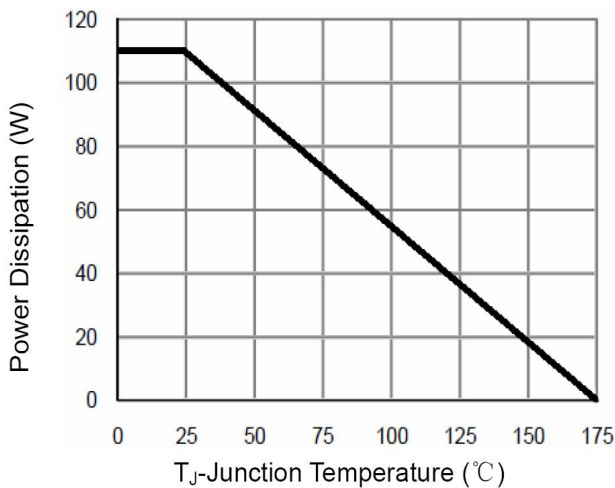


Figure 9 Power De-rating

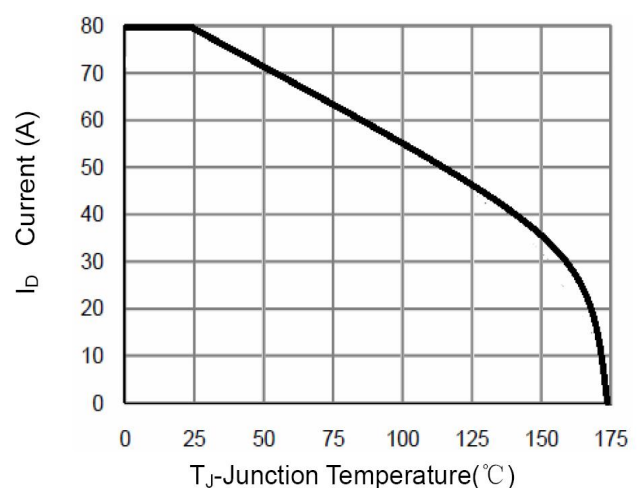


Figure 10 Id Current- Junction Temperature

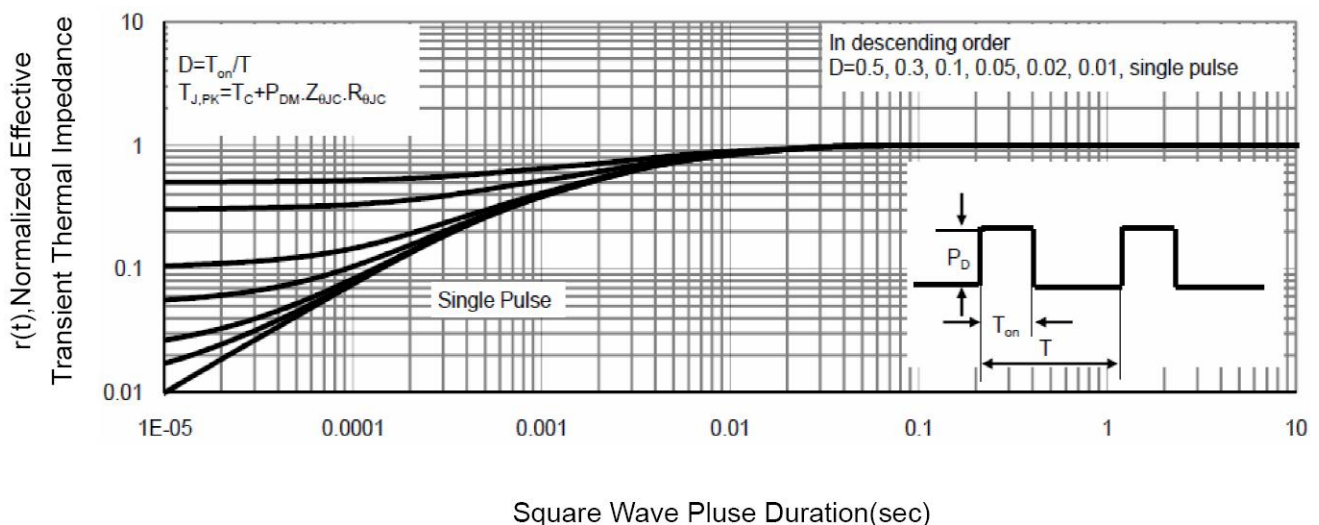
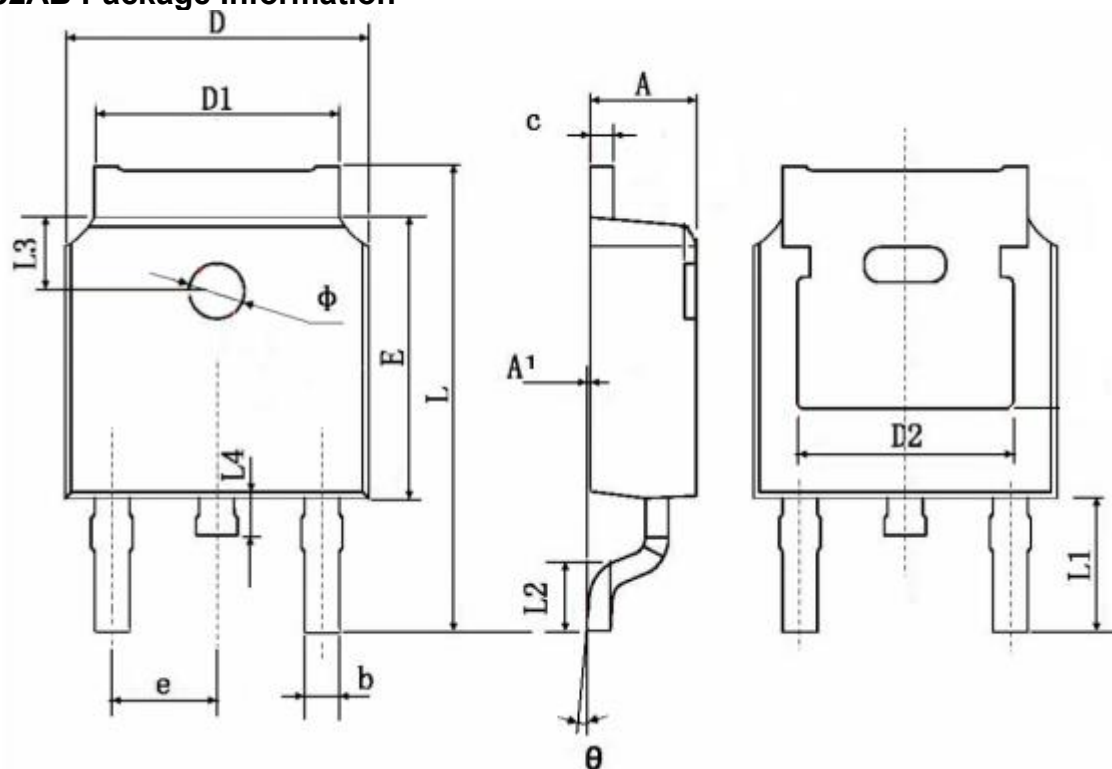


Figure 11 Normalized Maximum Transient Thermal Impedance

TO-252AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.086	0.094
A1	0.000	0.130	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	5.500	0.201	0.217
D2	4.830 REF		0.190 REF	
E	6.000	6.200	0.236	0.244
e	2.190	2.390	0.086	0.094
L	9.800	10.500	0.386	0.413
L1	2.900 BSC		0.114 BSC	
L2	1.400	1.800	0.055	0.070
L3	1.600 REF		0.063 REF	
L4	0.600	1.000	0.023	0.039
φ	1.100	1.300	0.043	0.051
θ	0°	8°	0°	8°