

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	16mΩ@10V	30A
	22mΩ@4.5V	

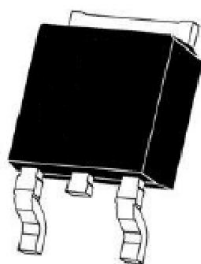
Feature

- Fast Switching
- Low Gate Charge and Rdson
- Advanced Split Gate Trench Technology

Application

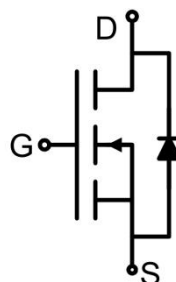
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

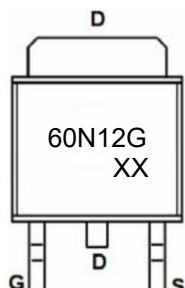


TO-252AB

Circuit diagram



Marking



Absolute maximum ratings (Ta=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 ($T_C=25^\circ\text{C}$)	I_D	30	A
Continuous Drain Current ($T_C=100^\circ\text{C}$)	$I_D(100^\circ\text{C})$	20	A
Pulsed Drain Current	I_{DM}	120	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	55	W
Thermal Resistance Junction-to-Case	$R_{\theta JC}$	2.27	$^\circ\text{C}/\text{W}$
Single pulse avalanche energy ¹⁾	E_{AS}	100	mJ
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$

Electrical characteristics (Ta=25°C unless otherwise noted)

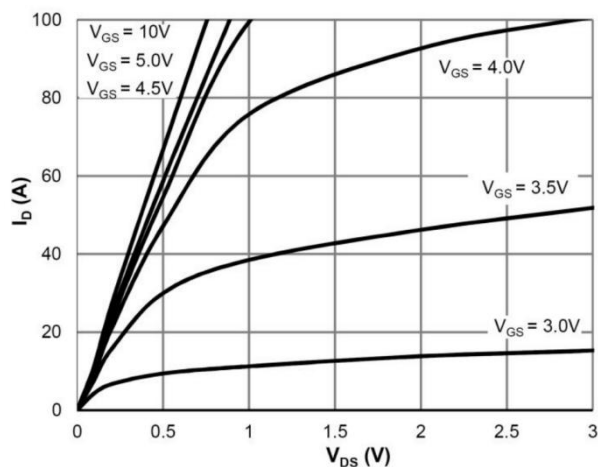
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250mA	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =48V,V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{GS} =±20V, V _{DS} =0V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.6	2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		12	16	mΩ
		V _{GS} =4.5V, I _D =10A		15	22	
Dynamic characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} =30V,V _{GS} =0V,f =1MHz		1002		pF
Output Capacitance	C _{oss}			382		
Reverse Transfer Capacitance	C _{rss}			10.3		
Total Gate Charge	Q _g	V _{DS} =30V,V _{GS} =10V, I _D =20A		24		nC
Gate-Source Charge	Q _{gs}			5		
Gate-Drain Charge	Q _{gd}			4		
Turn-on delay time	t _{d(on)}	V _{DD} =30V,V _{GS} =10V, I _D =20A, R _G =4.7Ω		5		nS
Turn-on rise time	t _r			3.1		
Turn-off delay time	t _{d(off)}			15		
Turn-off fall time	t _f			3.1		
Source-Drain Diode characteristics						
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =1A,T _J =25℃			1.2	V
Diode Forward Current	I _S				30	A
Reverse recovery time	t _{rr}	I _S =20A,di/dt=100 A/μs, T _J =25℃		19		nS
Reverse recovery charge	Q _{rr}			12		nC

Notes:

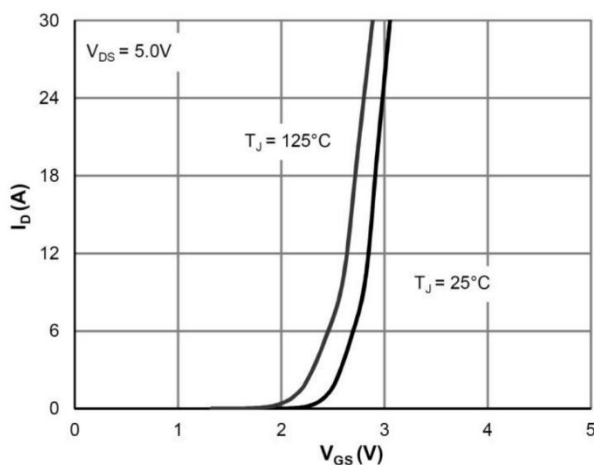
1) The test condition is $V_{DD}=30V, V_{GS}=10V, R_G=25\Omega, L=0.5\text{mH}$.

2) Guaranteed by design, not subject to production.

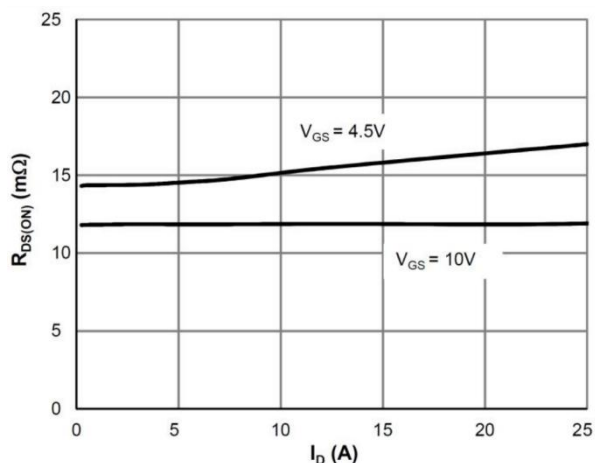
Typical Characteristics



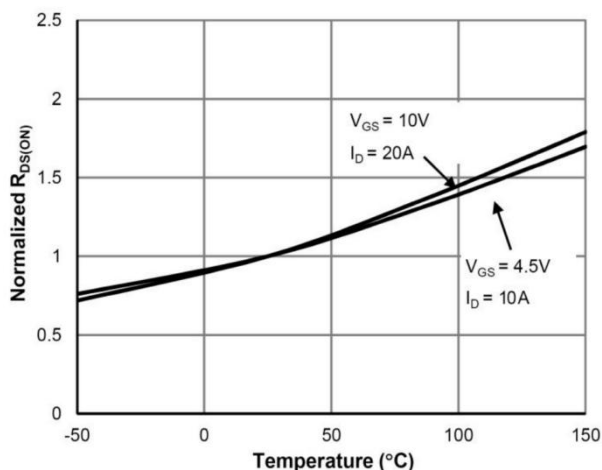
Saturation Characteristics



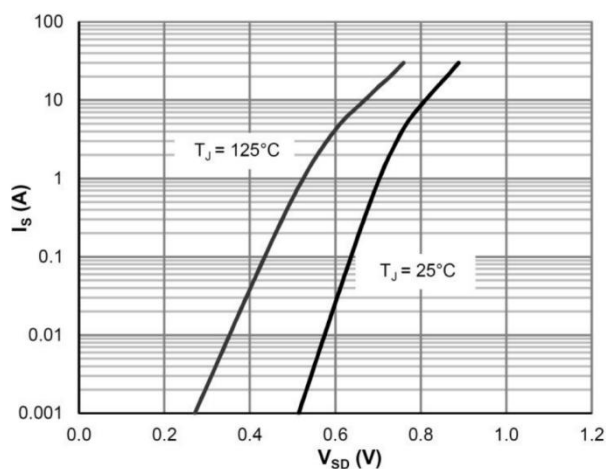
Transfer Characteristics



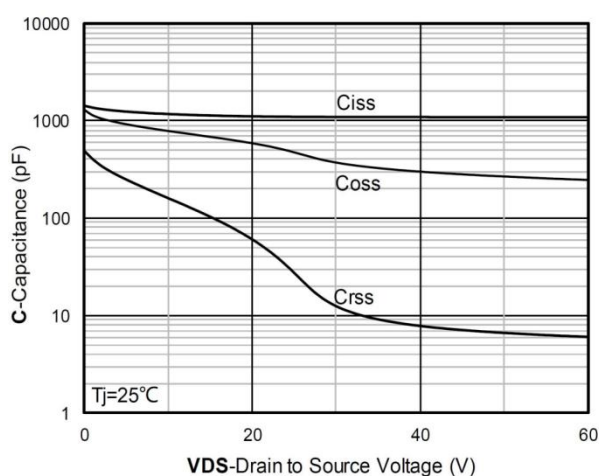
$R_{DS(ON)}$ vs. Drain Current



$R_{DS(ON)}$ vs. Junction Temperature

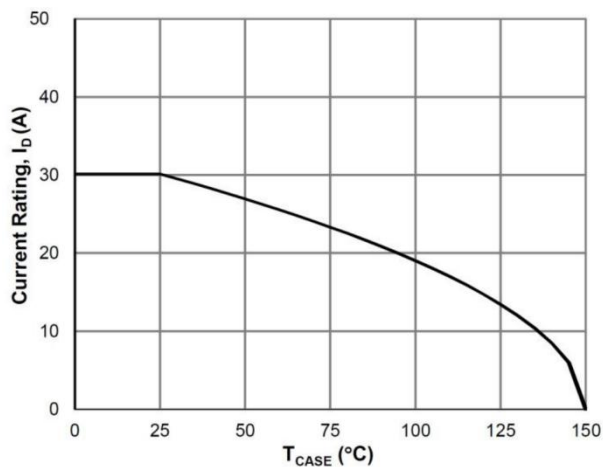


Body-Diode Characteristics

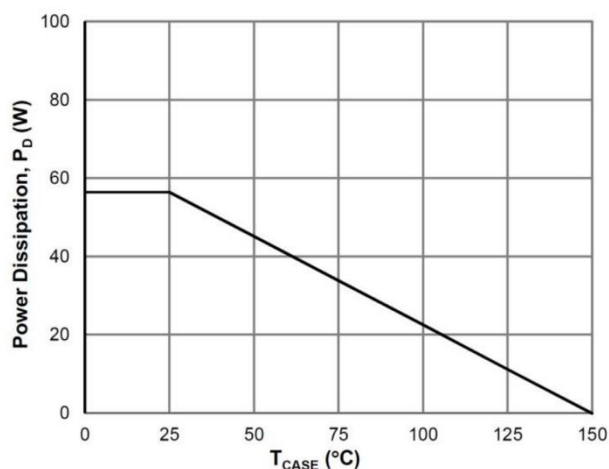


Capacitance Characteristics

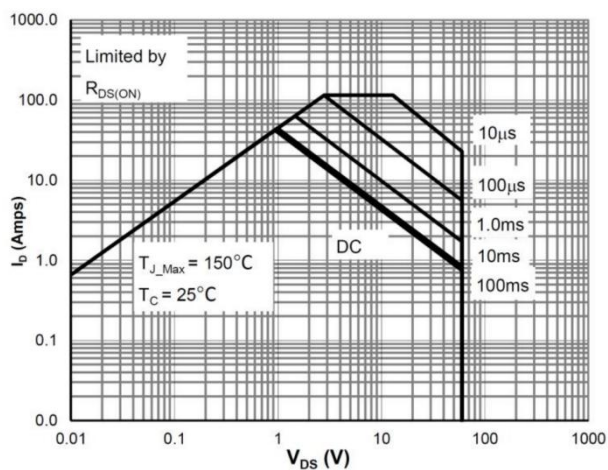
Typical Characteristics



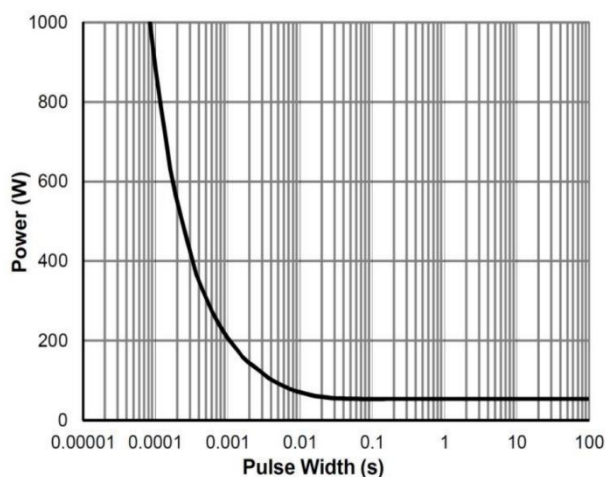
Current De-rating



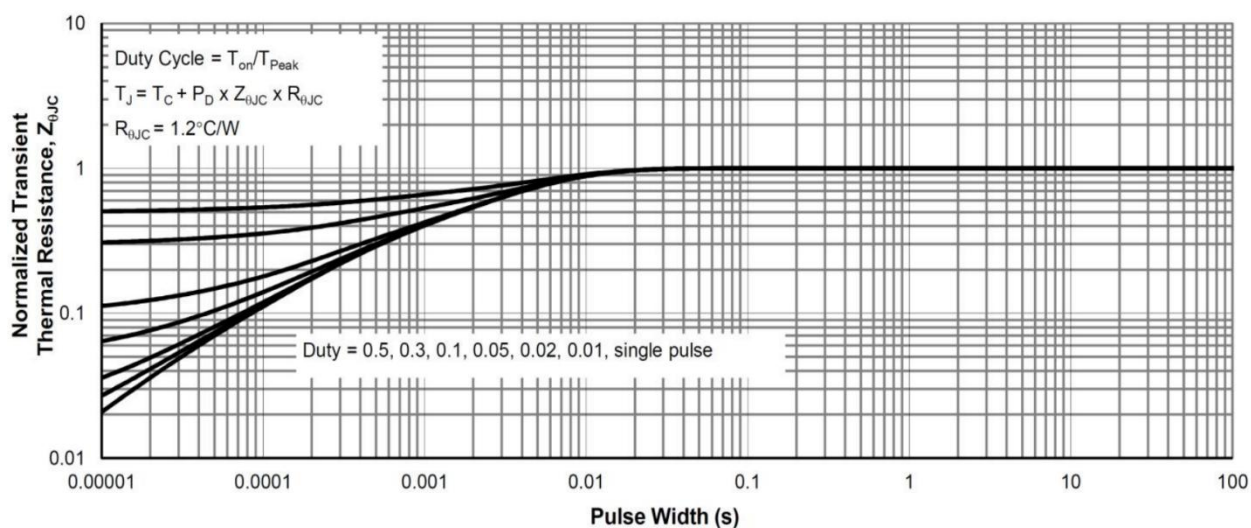
Power De-rating



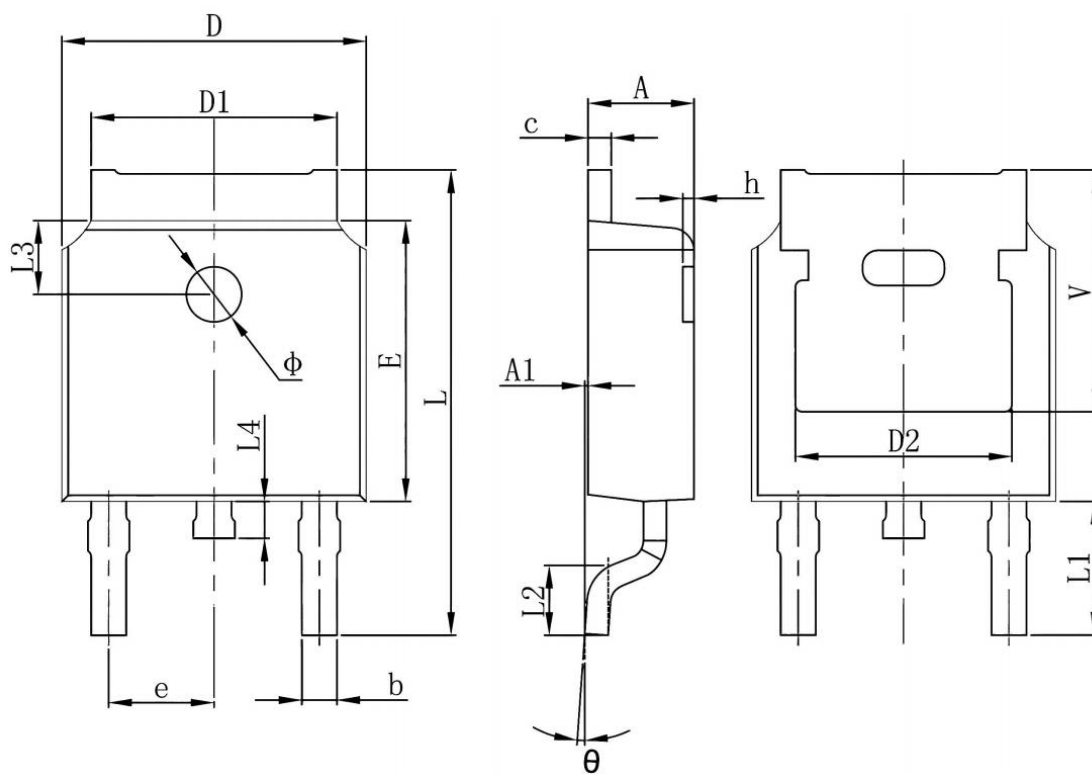
Maximum Safe Operating Area



Single Pulse Power Rating, Junction-to-Case



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.	