

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	10mΩ@10V	68A
	13mΩ@4.5V	

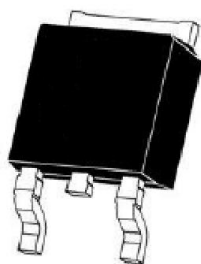
Feature

- Fast Switching
- Low gate charge and $R_{DS(ON)}$
- Advanced split gate trench technology

Application

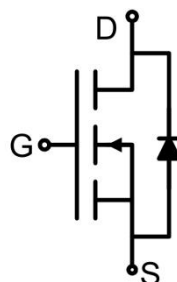
- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply

Package

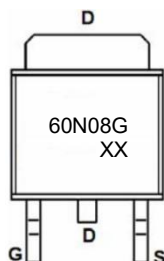


TO-252AB

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	68	A
Continuous Drain Current ($T_C=100^{\circ}\text{C}$)	$I_D(100^{\circ}\text{C})$	45	A
Pulsed Drain Current Tested	I_{DM}	272	A
Single Pulse Avalanche Energy ¹⁾	E_{AS}	182	mJ
Power Dissipation($T_C=25^{\circ}\text{C}$)	P_D	68	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	1.84	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

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

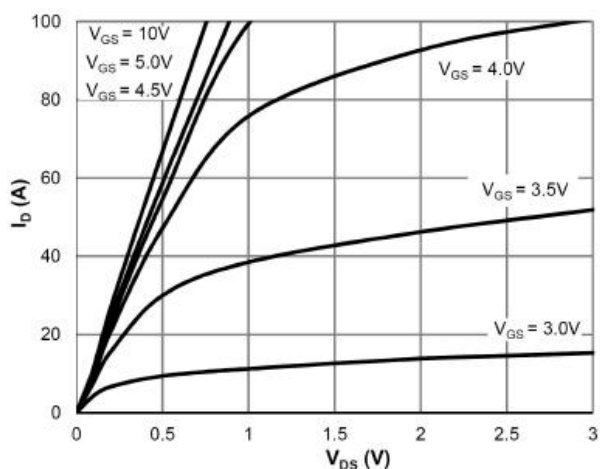
Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	60			V
Zero gate voltage drain current	I _{DSS}	V _{DS} =48V, V _{GS} =0V			1	μA
Gate-body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Gate threshold voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2.5	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =20A		7.5	10	mΩ
		V _{GS} =4.5V, I _D =10A		10	13	
Dynamic characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f =1MHz		1350		pF
Output Capacitance	C _{oss}			310		
Reverse Transfer Capacitance	C _{rss}			25		
Total Gate Charge	Q _g	V _{DS} =30V, V _{GS} =10V, I _D =20A		27.9		nC
Gate-Source Charge	Q _{gs}			7.8		
Gate-Drain Charge	Q _{gd}			6.2		
Turn-on delay time	t _{d(on)}	V _{DS} =30V, V _{GS} =10V, I _D =20A R _G =4.7Ω		14		nS
Turn-on rise time	t _r			26		
Turn-off delay time	t _{d(off)}			33.8		
Turn-off fall time	t _f			26.4		
Source-Drain Diode characteristics						
Diode Forward Current	I _S				68	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =1A, T _J =25℃			1.2	V
Reverse recover time	T _{rr}	I _S =30A, di/dt =100A/us		36		nS
Reverse recovery charge	Q _{rr}	T _J =25℃		23		nC

Notes:

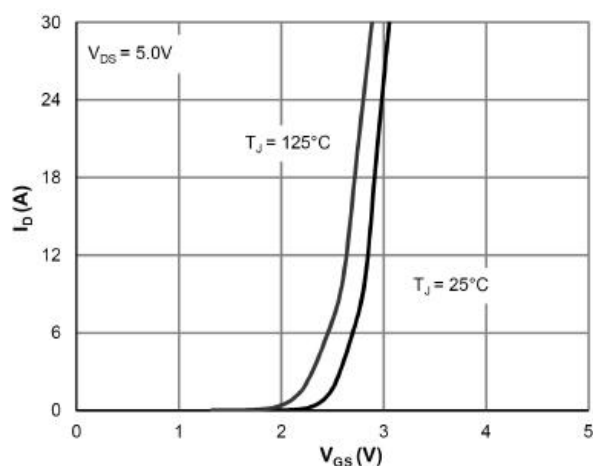
1) The test condition is $V_{DD}=30\text{V}, V_{GS}=10\text{V}, L=0.5\text{mH}, R_G=25\Omega$.

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

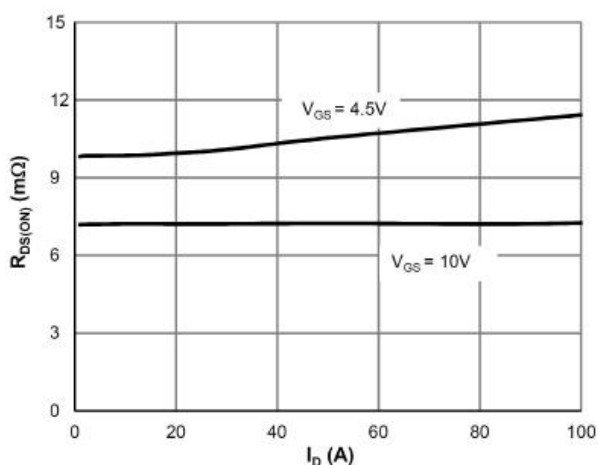
Typical Characteristics



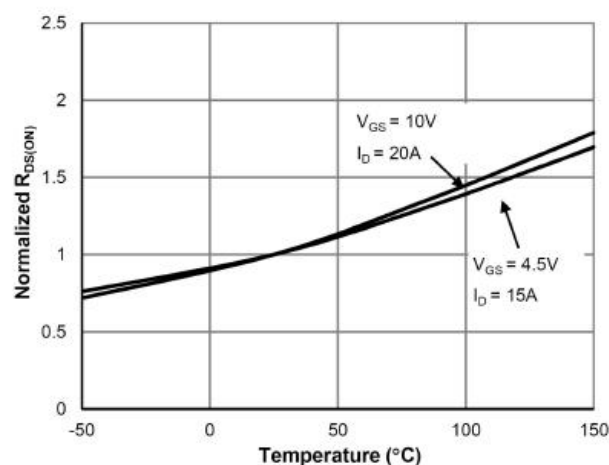
Saturation Characteristics



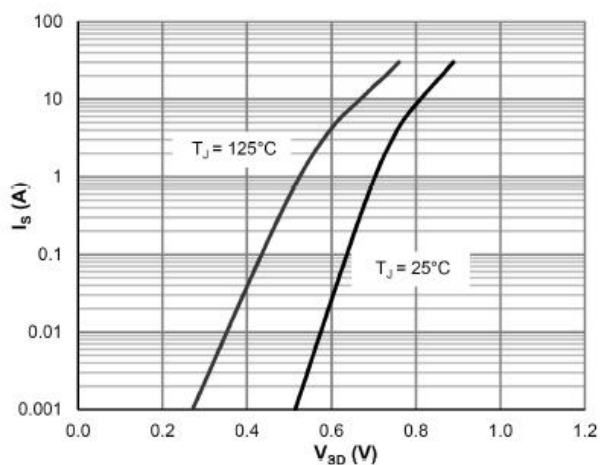
Transfer Characteristics



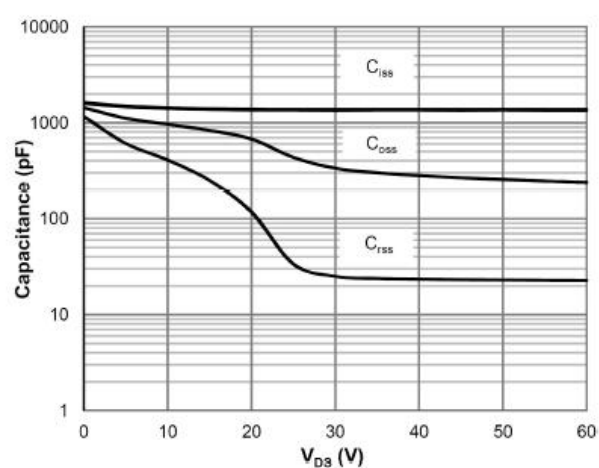
$R_{DS(ON)}$ vs. Drain Current



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

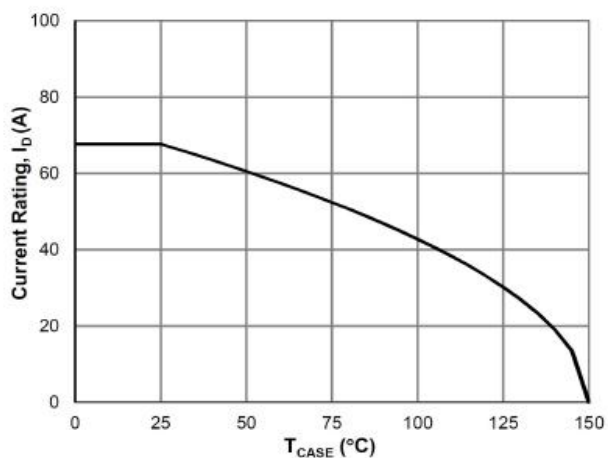


Body-Diode Characteristics

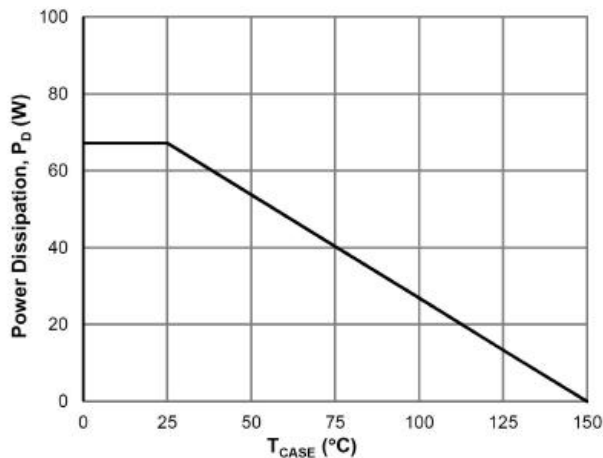


Capacitance Characteristics

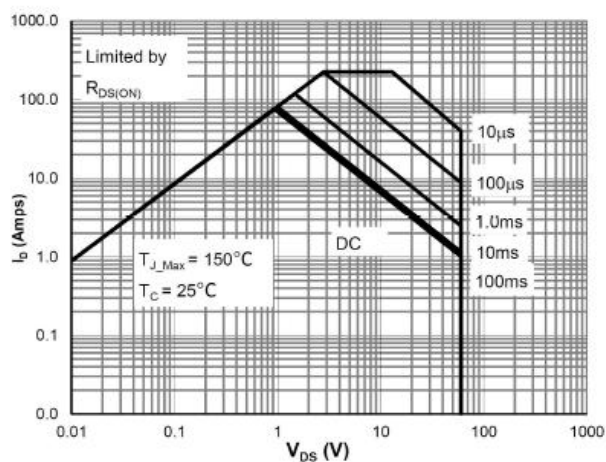
Typical Characteristics



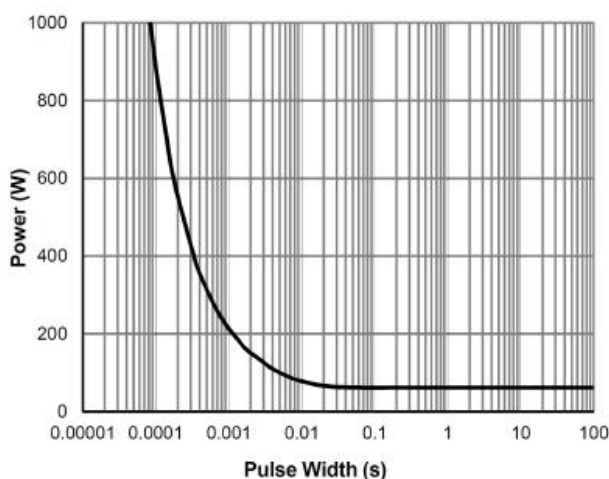
Current De-rating



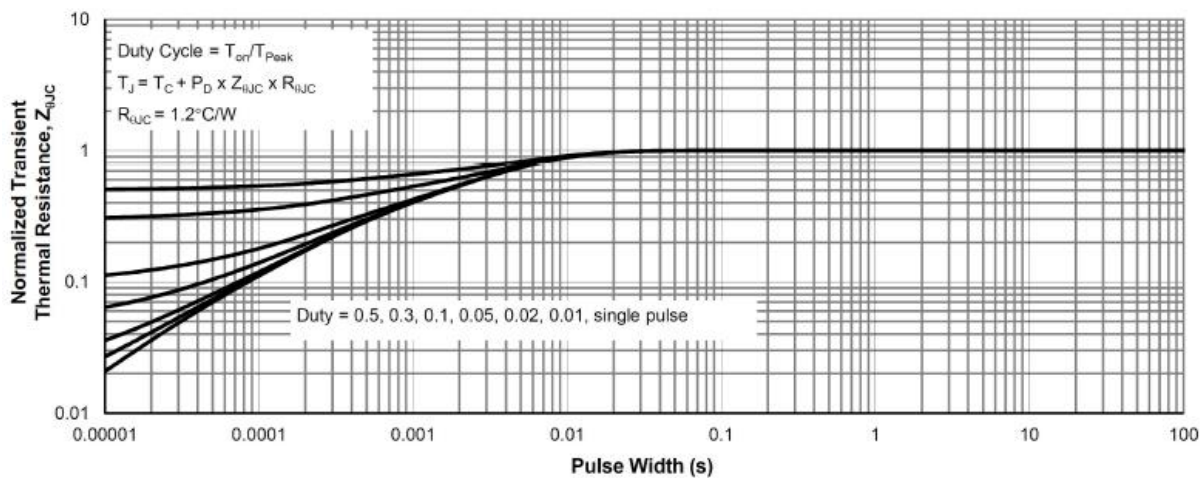
Power De-rating



Maximum Safe Operating Area

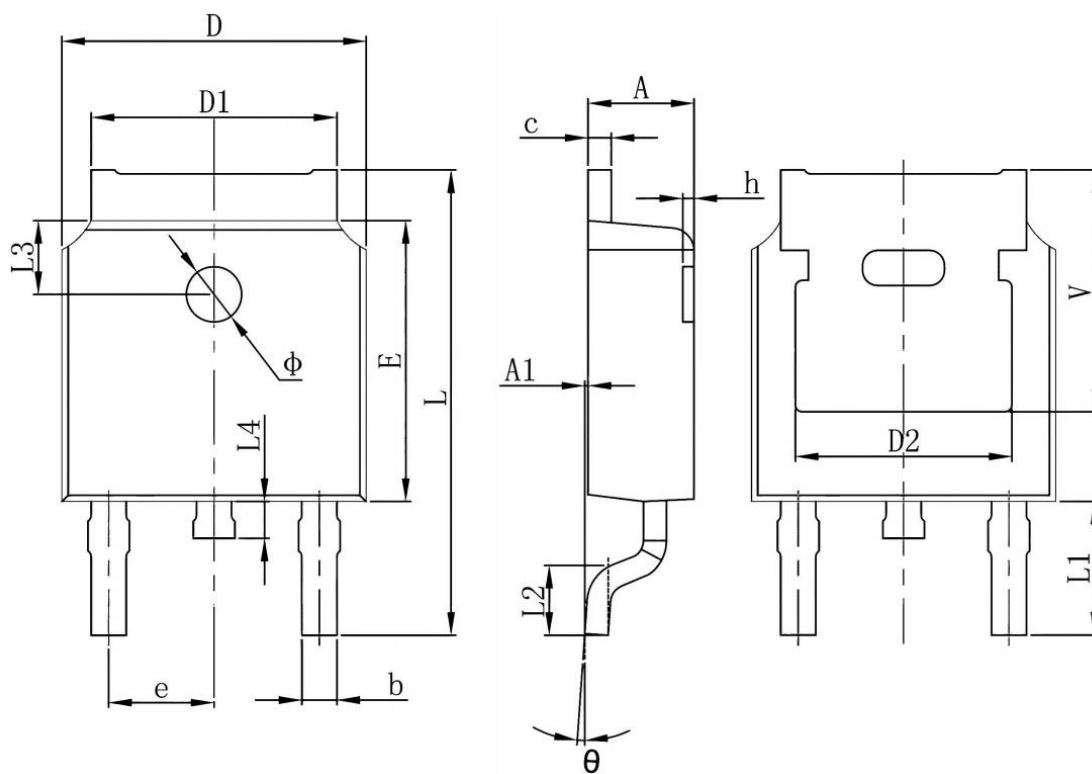


Single Pulse Power Rating, Junction-to-Case



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	0.087	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
phi	1.100	1.300	0.043	0.051
theta	0°	8°	0°	8°
h	0.000	0.300	0.000	0.012
V	5.350 REF.		0.211 REF.	