

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
60V	2.5mΩ@10V	200A

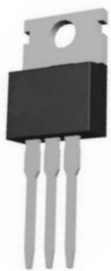
Feature

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

Application

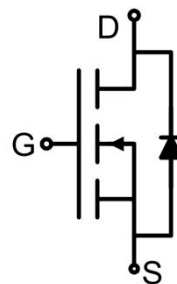
- Charger
- Battery management
- Power Switching application

Package



TO-220AB

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	200	A
Pulsed Drain Current	I_{DM}	800	A
Single Pulse Avalanche Energy ¹⁾	E_{AS}	1600	mJ
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	213	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	0.59	$^{\circ}\text{C}/\text{W}$
Operating Junction Temperature	T_J	$-55 \sim +150$	$^{\circ}\text{C}$
Storage Temperature	T_{STG}	$-55 \sim +150$	$^{\circ}\text{C}$

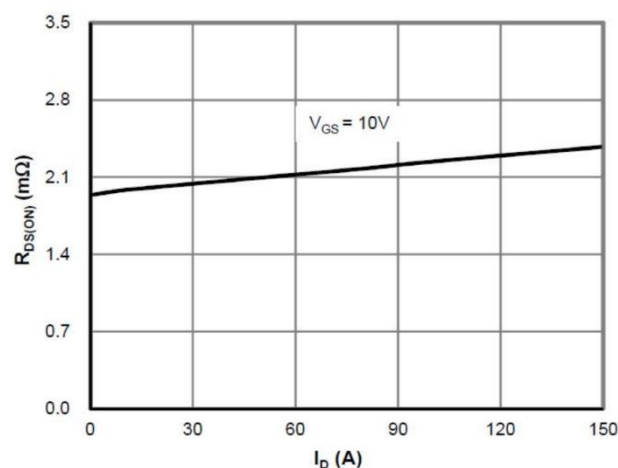
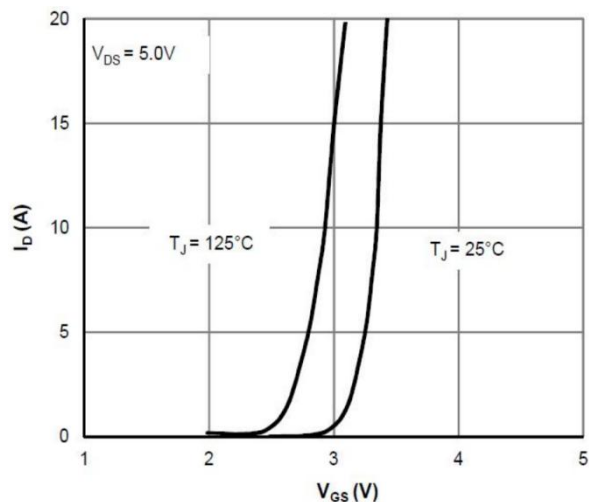
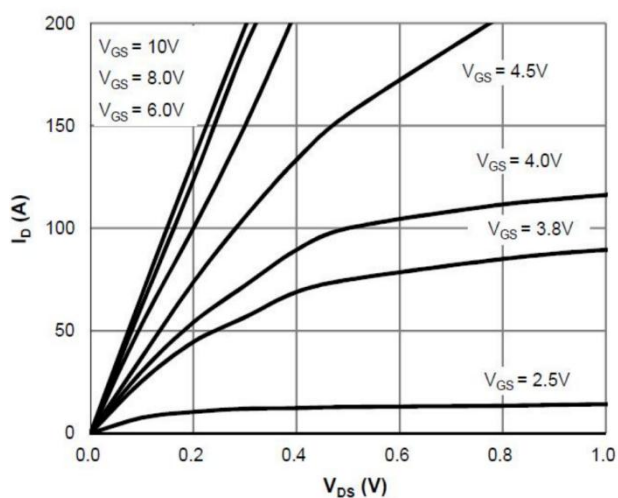
Electrical characteristics ($T_A=25^{\circ}\text{C}$, unless otherwise noted)

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	2	3	4	V
Drain-source on-resistance	R _{DS(on)}	V _{GS} =10V, I _D =30A		2	2.5	mΩ
Dynamic characteristics ²⁾						
Input Capacitance	C _{iss}	V _{DS} =25V, V _{GS} =0V, f =1MHz		7397		pF
Output Capacitance	C _{oss}			3885		
Reverse Transfer Capacitance	C _{rss}			32		
Total Gate Charge	Q _g	V _{DS} =48V, V _{GS} =10V, I _D =30A		105		nC
Gate-Source Charge	Q _{gs}			20		
Gate-Drain Charge	Q _{gd}			18		
Turn-on delay time	t _{d(on)}	V _{DS} =48V, V _{GS} =10V, I _D =30A R _G =2Ω		32.3		nS
Turn-on rise time	t _r			52.1		
Turn-off delay time	t _{d(off)}			91		
Turn-off fall time	t _f			27.8		
Source-Drain Diode characteristics						
Diode Continuous Current	I _S				200	A
Diode Forward voltage	V _{SD}	V _{GS} =0V, I _S =1A			1.2	V
Reverse recover time	T _{rr}	I _S =20A, di/dt =100A/us		76		nS
Reverse recovery charge	Q _{rr}	T _J = 25°C		106		nC

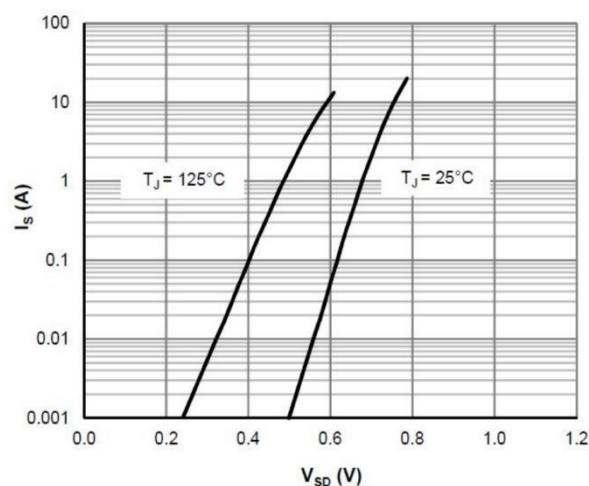
Notes:

- 1) The EAS 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.

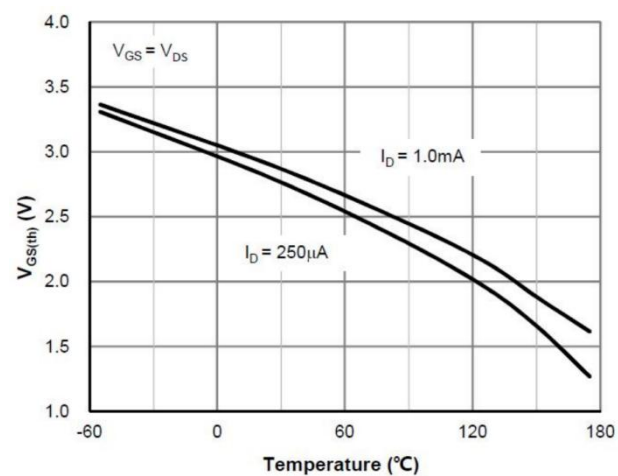
Typical Characteristics



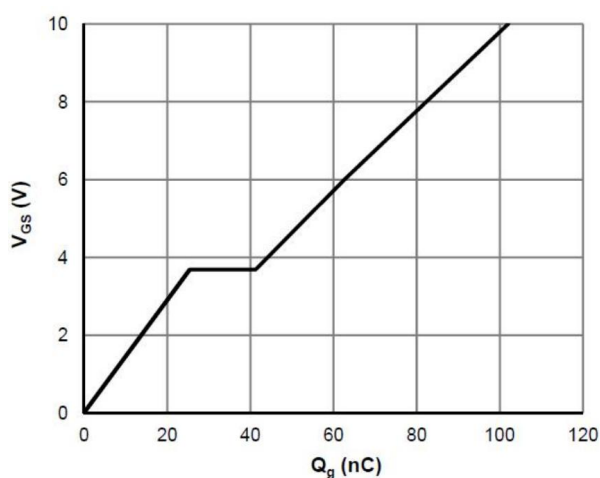
$R_{DS(ON)}$ vs. Drain Current



Body-Diode Characteristics

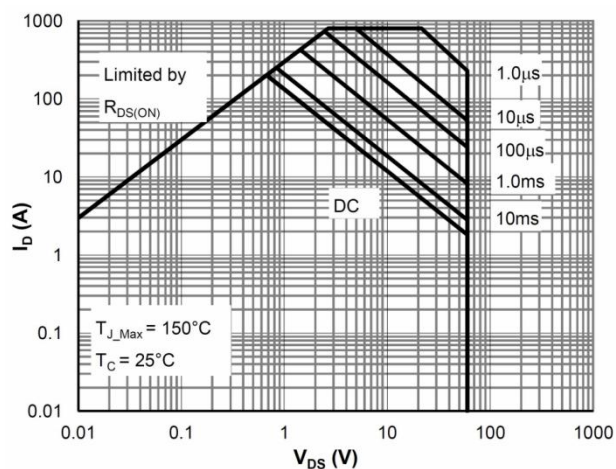


$V_{GS(th)}$ vs. Junction Temperature

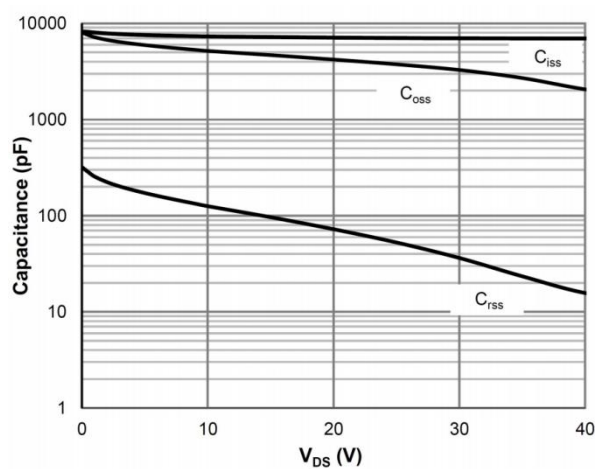


Gate Charge

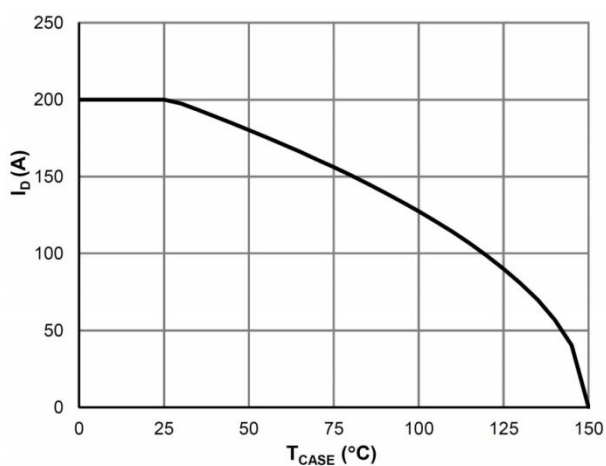
Typical Characteristics



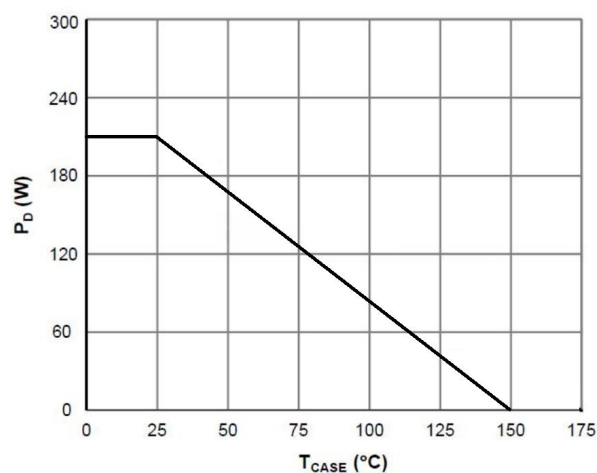
Maximum Safe Operating Area



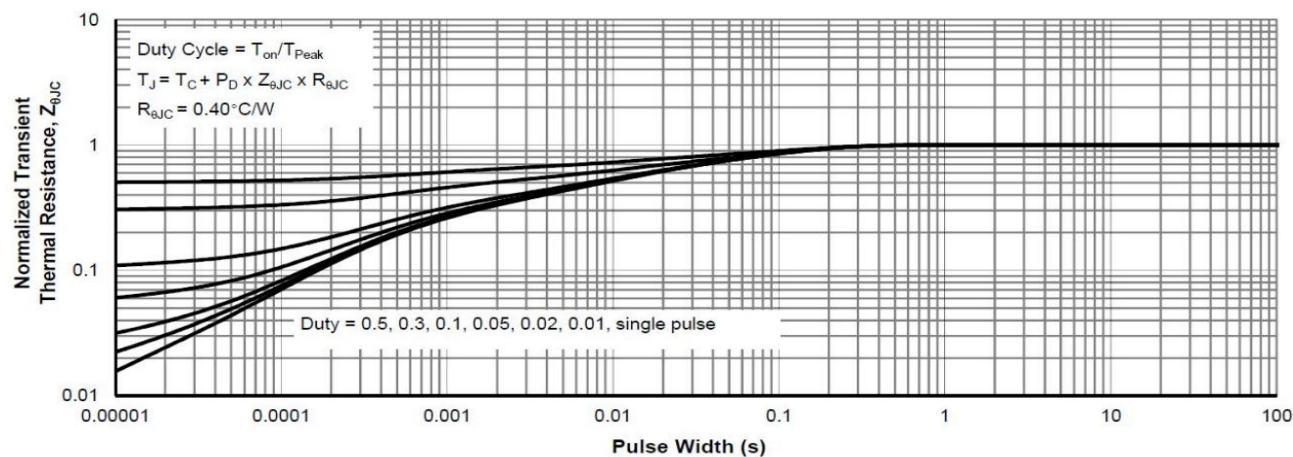
Capacitance Characteristics



Current De-rating

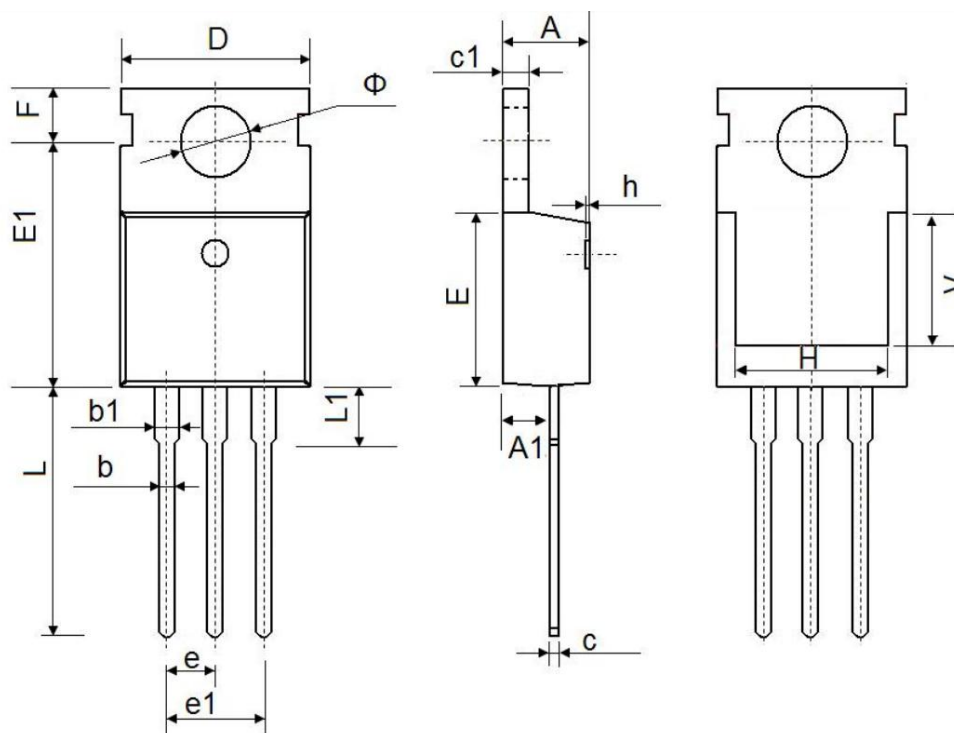


Power De-rating



Normalized Maximum Transient Thermal Impedance

TO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.400	4.600	0.173	0.181
A1	2.250	2.550	0.089	0.100
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.330	0.650	0.013	0.026
c1	1.200	1.400	0.047	0.055
D	9.910	10.250	0.390	0.404
E	8.950	9.750	0.352	0.384
E1	12.650	13.050	0.498	0.510
e	2.540 TYP.		0.100 TYP.	
e1	4.980	5.180	0.196	0.204
F	2.650	2.950	0.104	0.116
H	7.900	8.100	0.311	0.319
h	0.000	0.300	0.000	0.012
L	12.900	13.400	0.508	0.528
L1	2.850	3.250	0.112	0.128
V	6.900 REF.		0.276 REF.	
φ	3.400	3.800	0.134	0.150