

Product Summary

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	I_D
200V	76mΩ@10V	35A

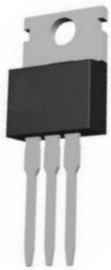
Feature

- Advanced trench technology
- Low Gate Charge to Minimize Switching Loss
- Fast Recovery Body Diode
- Suffix "-Q1" for AEC-Q101

Application

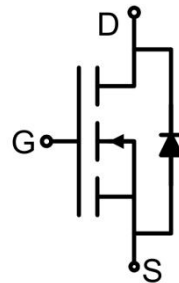
- Power switching application

Package

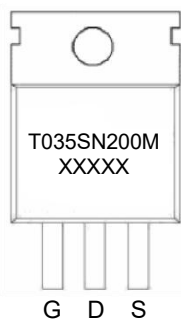


TO-220AB

Circuit diagram



Marking



Absolute maximum ratings($T_C=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	200	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	35	A
Continuous Drain Current ($T_C=100^\circ\text{C}$)	$I_D(100^\circ\text{C})$	22	A
Pulsed Drain Current	I_{DM}	140	A
Single Pulse Avalanche Energy ¹⁾	E_{AS}	270	mJ
Power Dissipation	P_D	156	W
Thermal Resistance Junction to Case	$R_{\theta JC}$	0.8	$^\circ\text{C/W}$
Operating Junction Temperature	T_J	-55 ~ +150	$^\circ\text{C}$
Storage Temperature	T_{STG}	-55 ~ +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	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu\text{A}$	200			V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 160V, V_{GS} = 0V$			1	μA
Gate-body leakage current	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
Gate threshold voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	3		4.5	V
Drain-source on-resistance ²⁾	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$			76	m Ω
Dynamic characteristics³⁾						
Input Capacitance	C_{iss}	$V_{DS} = 25V, V_{GS} = 0V, f = 1\text{MHz}$		2444		pF
Output Capacitance	C_{oss}			129		
Reverse Transfer Capacitance	C_{rss}			24		
Total Gate Charge	Q_g	$V_{DS} = 100V, V_{GS} = 10V, I_D = 20A$		53		nC
Gate-Source Charge	Q_{gs}			11		
Gate-Drain Charge	Q_{gd}			16.5		
Turn-on delay time	$t_{d(on)}$	$V_{DS} = 100V, V_{GS} = 10V, I_D = 30A$ $R_G = 2.5\Omega$		30		nS
Turn-on rise time	t_r			20		
Turn-off delay time	$t_{d(off)}$			21		
Turn-off fall time	t_f			31		
Source-Drain Diode characteristics						
Diode Continuous Current	I_S				35	A
Diode Forward voltage ²⁾	V_{SD}	$V_{GS} = 0V, I_S = 30A$			1.3	V
Reverse recover time	T_{rr}	$V_{GS} = 0V, I_F = 30A$ $di/dt = -100A/\mu\text{s}$		50		nS
Reverse recovery charge	Q_{rr}			80		nC

Notes:

- 1) The EAS data shows Max. rating. The test condition is $V_{DD} = 50V, V_{GS} = 10V, L = 0.5\text{mH}$.
- 2) The data tested by pulsed, pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
- 3) Guaranteed by design, not subject to production.

Typical Characteristics

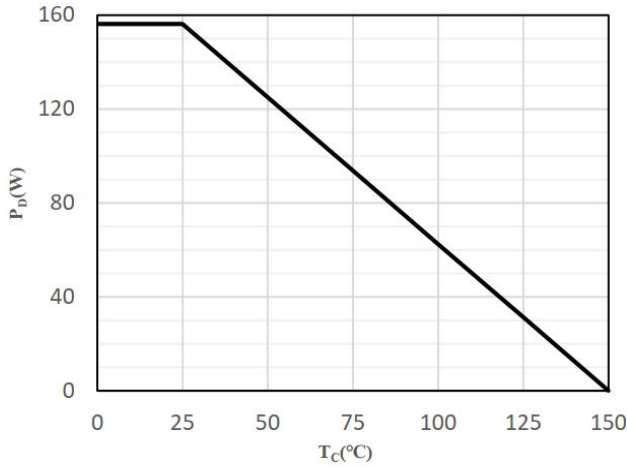


Fig 1 Power Dissipation

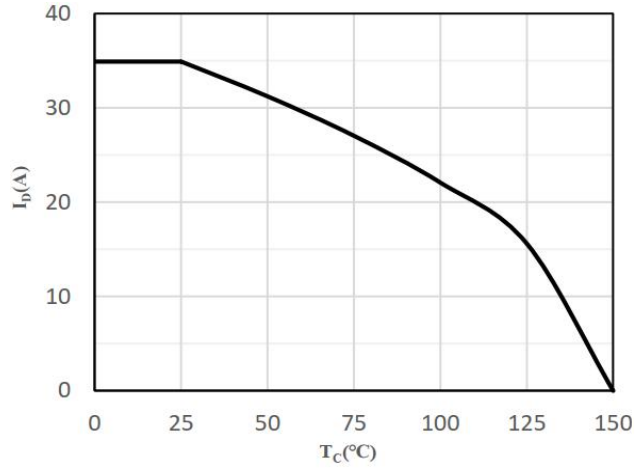


Fig 2 Drain Current

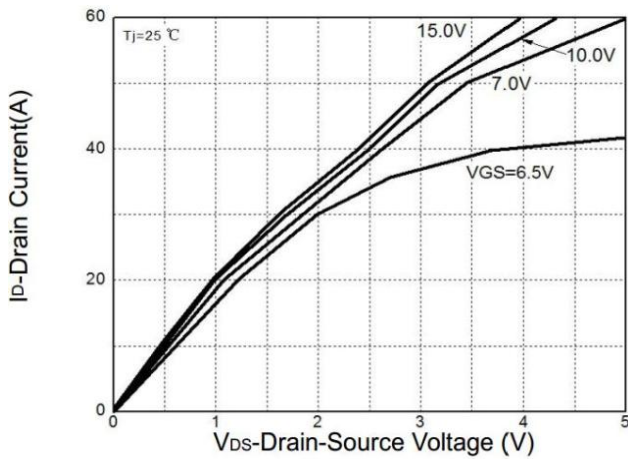


Fig 3 Typical Output Characteristics

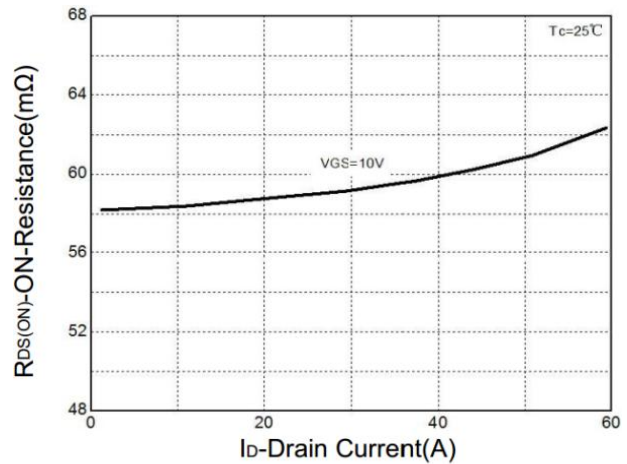


Fig 4 On-Resistance vs. Drain Current and Gate Voltage

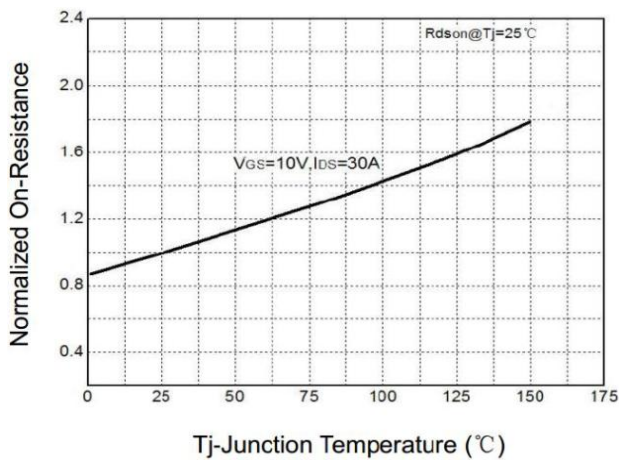


Fig 5 Normalized On-Resistance vs. Junction Temperature

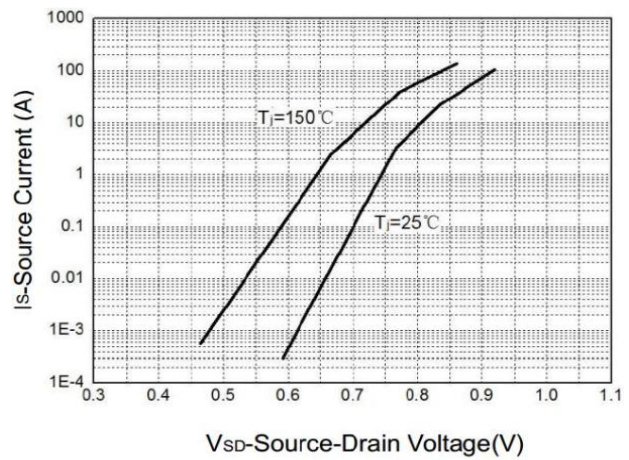


Fig 6 Body-Diode Characteristics

Typical Characteristics

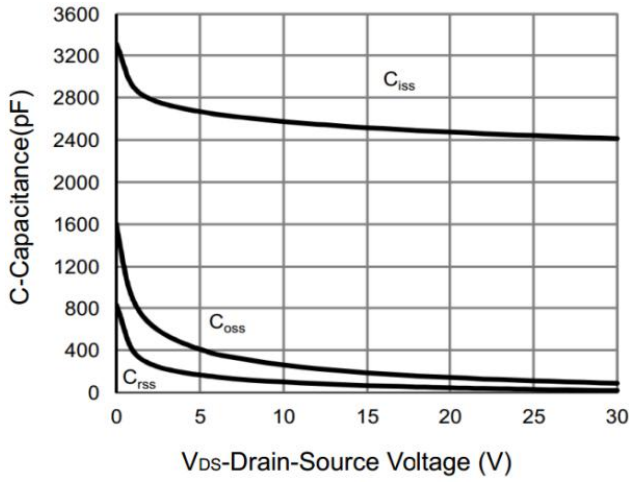


Fig 7 Capacitance Characteristics

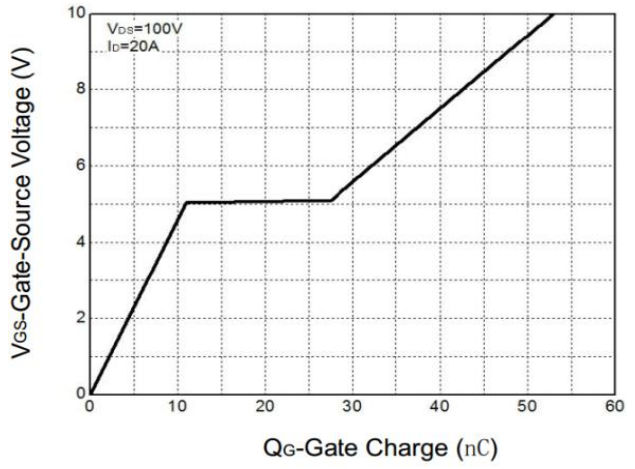
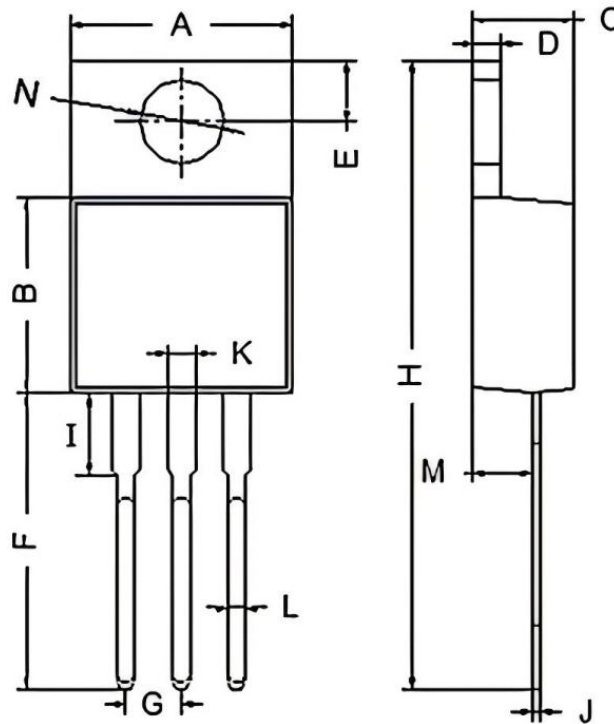


Fig 8 Gate-Charge Characteristics

TO-220AB Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	9.800	10.300	0.386	0.406
B	8.700	9.100	0.343	0.358
C	4.370	4.770	0.172	0.188
D	1.070	1.470	0.042	0.058
E	2.640	2.840	0.104	0.112
F	13.140	13.740	0.517	0.541
G	2.440	2.640	0.096	0.104
H	28.030	28.830	1.104	1.135
I	3.500	4.000	0.138	0.157
J	0.280	0.480	0.011	0.019
K	1.220	1.320	0.048	0.052
L	0.710	0.910	0.028	0.036
M	2.400	2.600	0.094	0.102
N	3.760	3.960	0.148	0.156