

SOT223 Pin Configuration

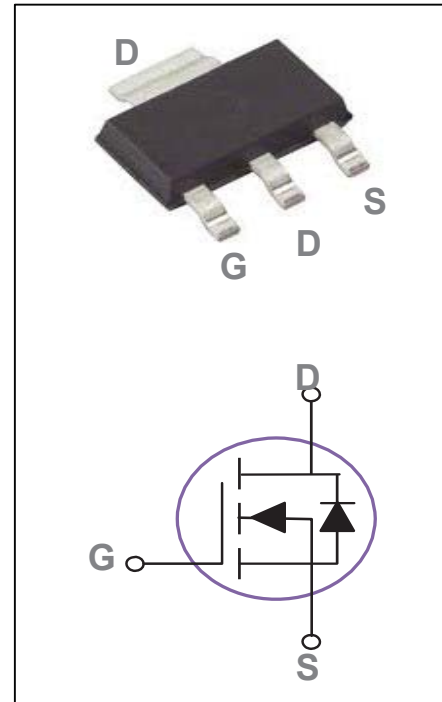
BVDSS	RDS(ON)	ID
100V	185mΩ	3A

Features

- 100V, 3A, $R_{DS(ON)} = 185m\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed

Applications

- Networking
- Load Switch
- LED applications



MAXIMUM RATINGS AND CHARACTERISTICS

@ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	+20	V
Drain Current – Continuous ($T_C=25C$)	I_D	3	A
Drain Current – Continuous ($T_C=100C$)		1.8	A
Drain Current – Pulsed ¹	I_{DM}	12	A
Power Dissipation ($T_C=25C$)	P_D	1.78	W
Power Dissipation – Derate above 25C		0.014	W/C
Storage Temperature Range	T_{STG}	-50 to 150	C
Operating Junction Temperature Range	T_J	-50 to 150	C

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to ambient	$R_{\theta JA}$	---	70	C/W
Thermal Resistance Junction to case	$R_{\theta JC}$		30	C/W

MOSFET ELECTRICAL CHARACTERISTICS $T_A=25^{\circ}\text{C}$ unless otherwise specified

Off Characteristics

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
BV_{DSS} Temperature Coefficient	$\beta BV_{DSS}/\beta T_J$	Reference to $25^{\circ}\text{C}, I_D=1\text{mA}$	---	0.10	---	V/C
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	---	---	1	μA
		$V_{DS}=80V, V_{GS}=0V, T_J=125^{\circ}\text{C}$	---	---	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=+20V, V_{DS}=0V$	---	---	+100	nA

On Characteristics

Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=2A$	---	160	185	mQ
		$V_{GS}=4.5V, I_D=1A$	---	170	195	mQ
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.8	2.5	V
$V_{GS(th)}$ Temperature Coefficient	$\beta V_{GS(th)}$		---	-4	---	mV/C
Forward Transconductance	g_{fs}	$V_{DS}=10V, I_D=1A$	---	5	---	S

Dynamic and switching Characteristics

Total Gate Charge ^{2,3}	Q_g	$V_{DS}=50V, V_{GS}=10V, I_D=2A$	---	13.4	21	nC
Gate-Source Charge ^{2,3}	Q_{gs}		---	2.9	6	
Gate-Drain Charge ^{2,3}	Q_{gd}		---	1.7	4	
Turn-On Delay Time ^{2,3}	$T_{d(on)}$	$V_{DD}=30V, V_{GS}=10V, R_G=3.3Q, I_D=1A$	---	1.6	3	ns
Rise Time ^{2,3}	T_r		---	6.6	13	
Turn-Off Delay Time ^{2,3}	$T_{d(off)}$		---	11.5	22	
Fall Time ^{2,3}	T_f		---	3.6	7	
Input Capacitance	C_{iss}	$V_{DS}=50V, V_{GS}=0V, F=1\text{MHz}$	---	820	1190	pF
Output Capacitance	C_{oss}		---	35	55	
Reverse Transfer Capacitance	C_{rss}		---	20	30	
Gate resistance	R_g	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	---	1.3	2.6	Q

Drain-Source Diode Characteristics and Maximum Ratings

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Continuous Source Current	I_S	$V_G=V_D=0V, \text{Force Current}$	---	---	3	A
Pulsed Source Current	I_{SM}		---	---	6	A
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_S=1A, T_J=25^{\circ}\text{C}$	---	---	1	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

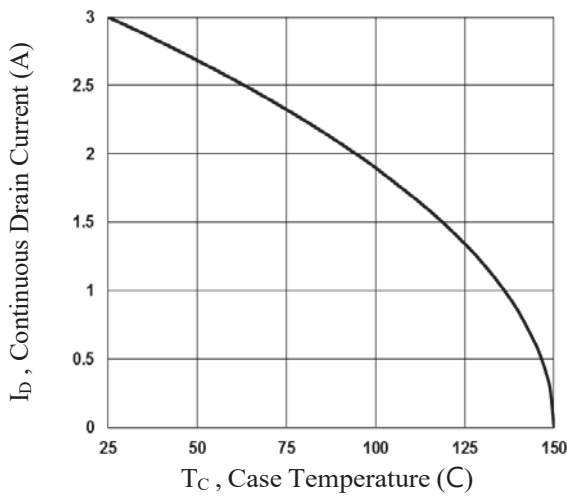


Fig. 1 Continuous Drain Current vs. T_c

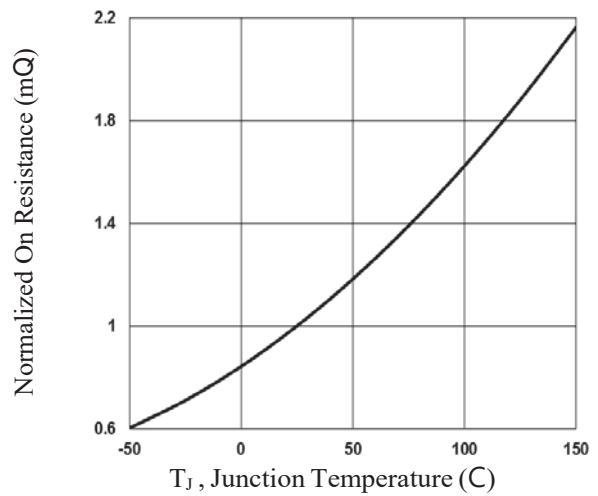


Fig. 2 Continuous Drain Current vs. T_c

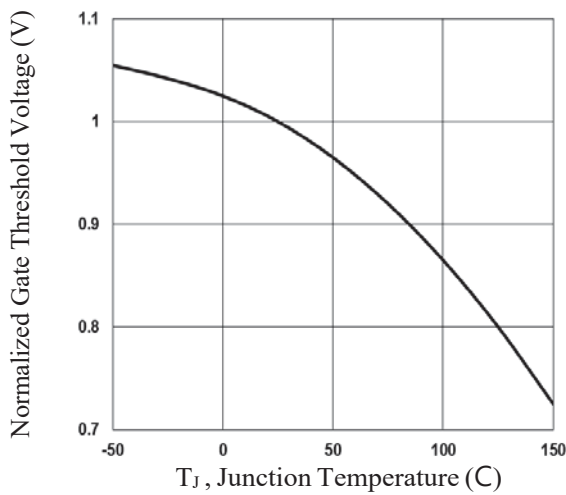


Fig. 3 Normalized V_{th} vs. T_j

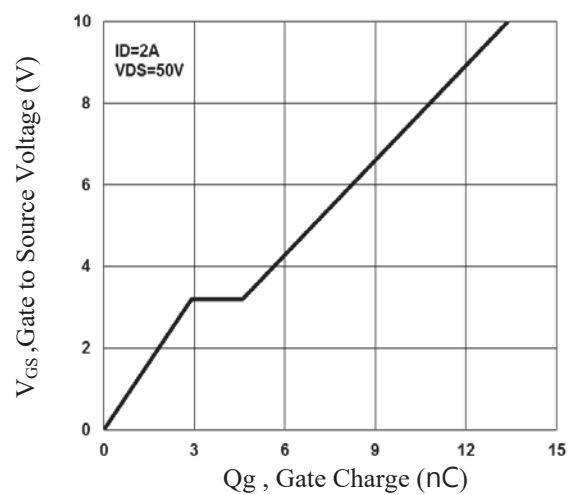


Fig. 4 Gate Charge Waveform

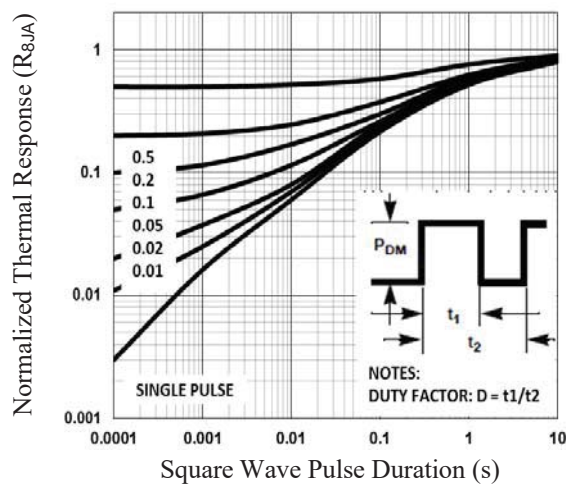


Fig. 5 Normalized Transient Impedance

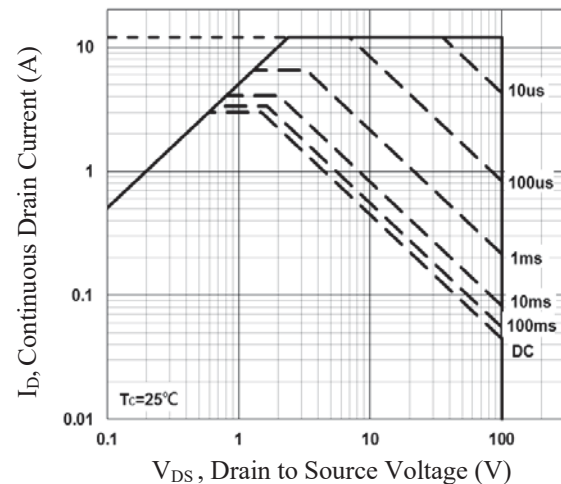


Fig. 6 Maximum Safe Operation Area

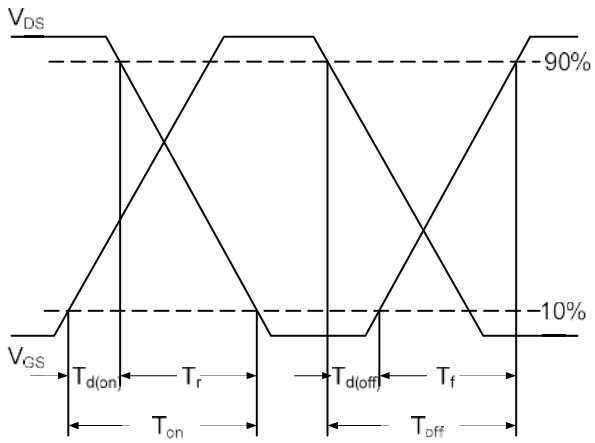


Fig.7 Switching Time Waveform

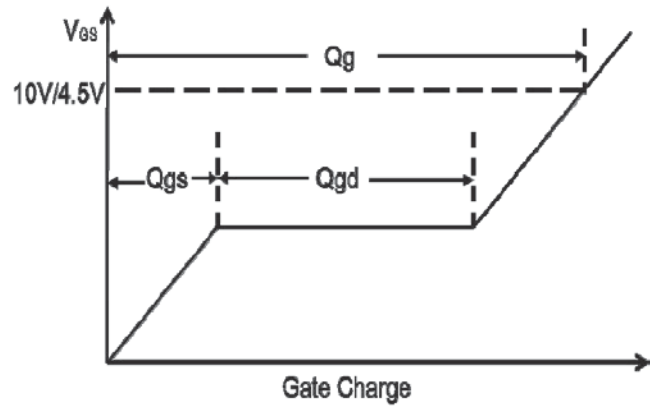
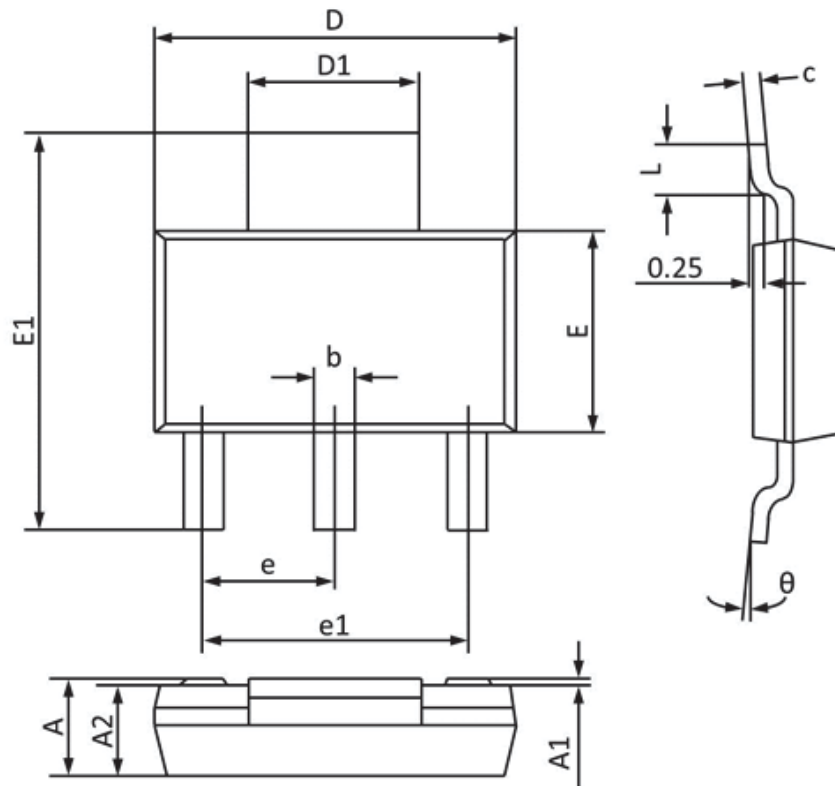


Fig.8 Gate Charge Waveform

SOT223 PACKAGE INFORMATION


Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300 (BSC)		0.091 (BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
Θ	0°	10°	0°	10°