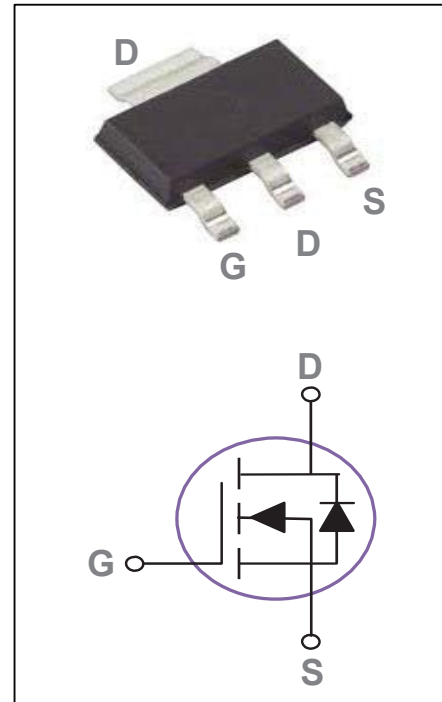


SOT-223 Pin Configuration

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	---	$\text{V}/^{\circ}\text{C}$
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	$\text{m}\Omega$
		$V_{GS}=4.5V, I_D=1A$	---	170	195	$\text{m}\Omega$
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	---	$\text{mV}/^{\circ}\text{C}$
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}	$T_{d(on)}$	$V_{DD}=30V, V_{GS}=10V, R_G=3.3\Omega$ $I_D=1A$	---	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	Ω

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 $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

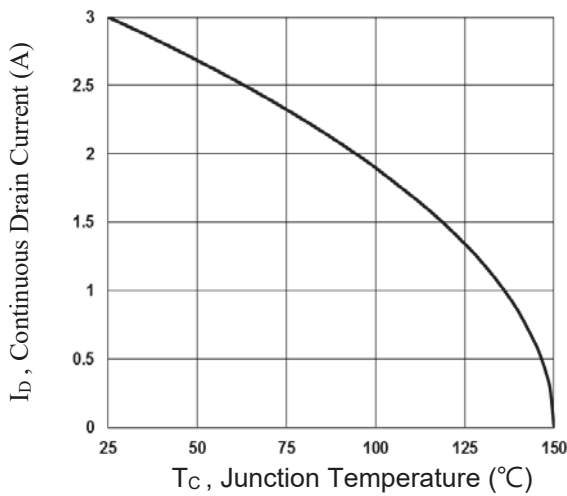


Fig.1 Continuous Drain Current vs. T_c

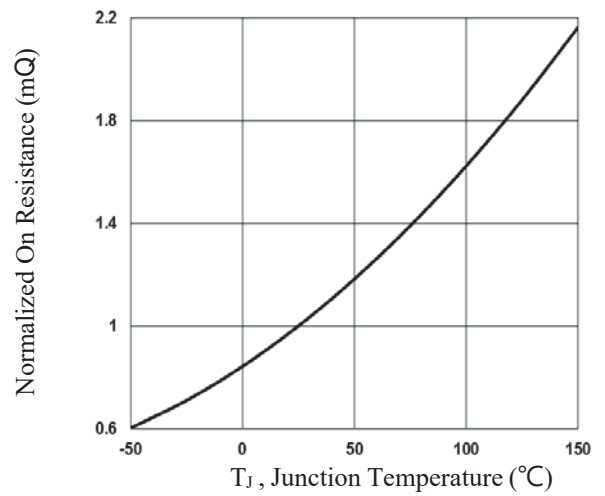


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

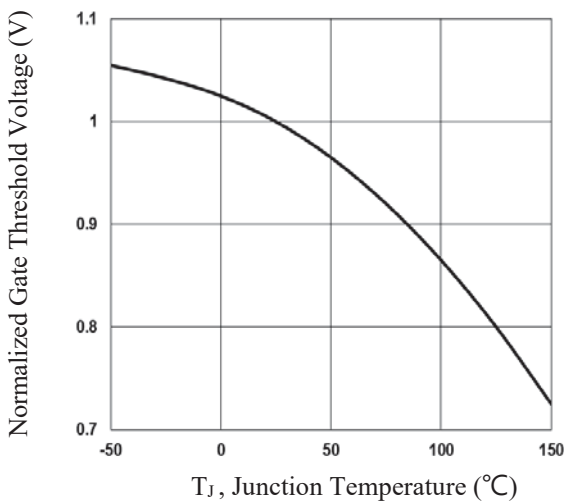


Fig.3 Normalized V_{th} vs. T_j

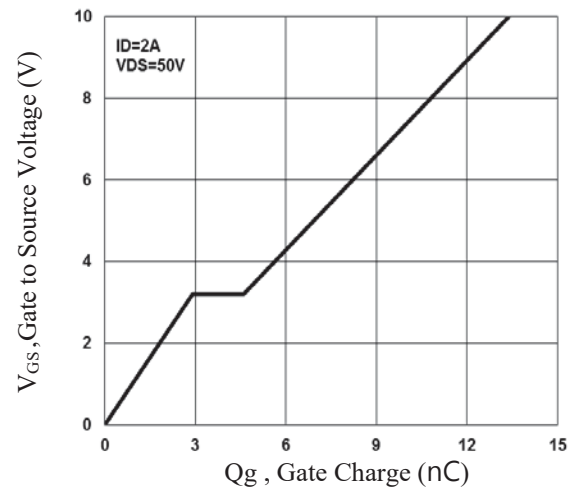


Fig.4 Gate Charge Waveform

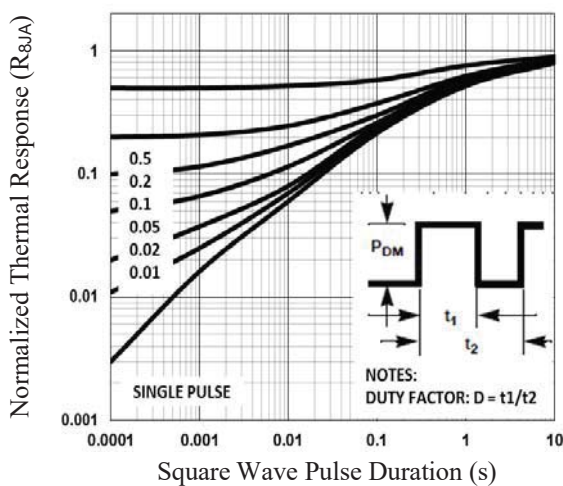


Fig.5 Normalized Transient Impedance

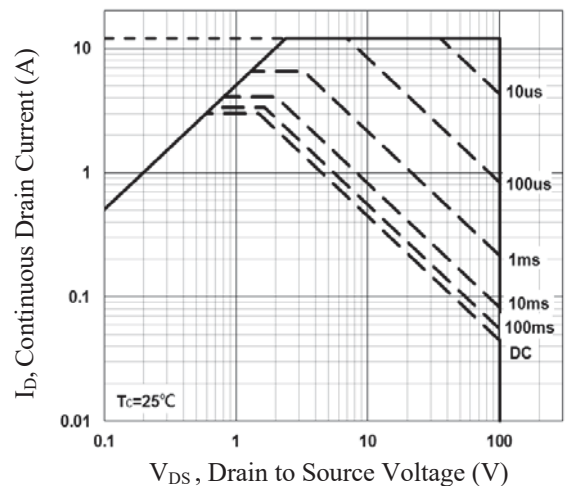


Fig.6 Maximum Safe Operation Area

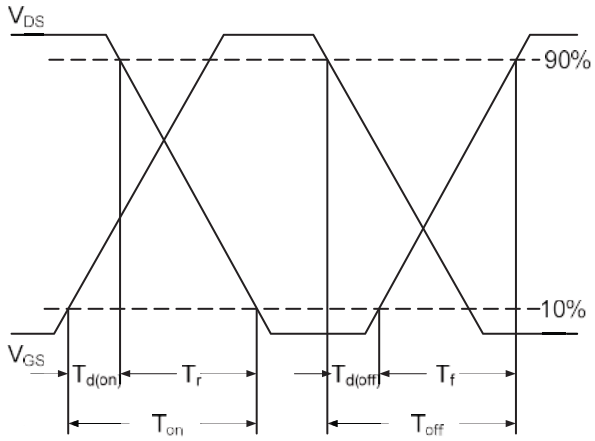


Fig.7 Switching Time Waveform

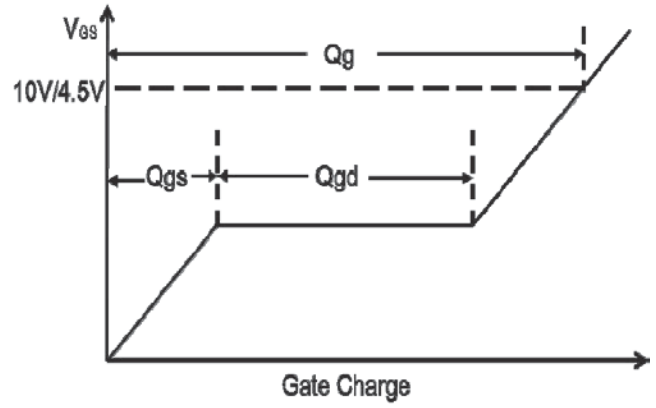
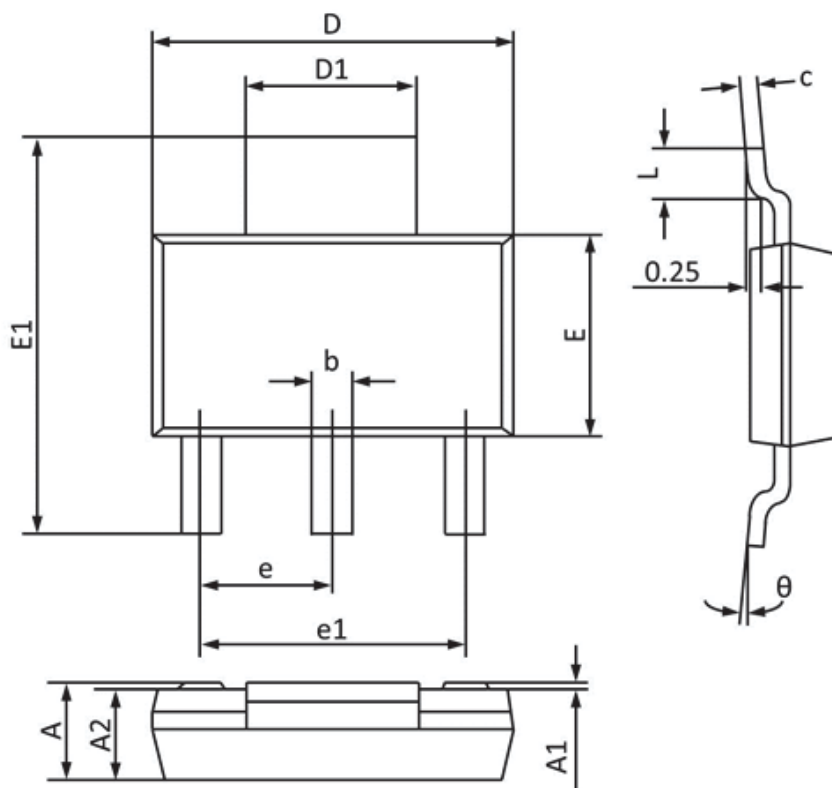


Fig.8 Gate Charge Waveform

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°