

MSKSEMI

SEMICONDUCTOR



ESD



TVS



TSS



MOV

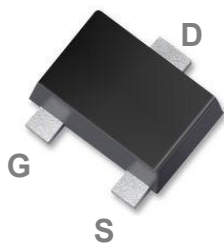


GDT

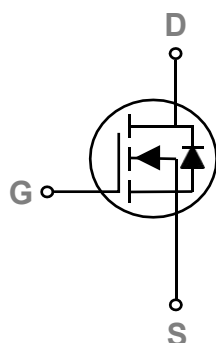


PLED

Product data sheet



SOT-723



Features

- 60V, 200mA, $R_{DS(ON)} = 1.7\Omega @ V_{GS} = 10V$
- Fast switching
- Green Device Available

Applications

- Notebook
- Smartphone
- Battery Protection
- Hand-held Instruments

BVDSS	$R_{DS(ON)}$	I_D
60V	1.7Ω	200mA

Absolute Maximum Ratings $T_c=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current – Continuous ($T_A=25^\circ\text{C}$)	200	mA
	Drain Current – Continuous ($T_A=70^\circ\text{C}$)	160	mA
I_{DM}	Drain Current – Pulsed ¹	800	mA
P_D	Power Dissipation ($T_A=25^\circ\text{C}$)	156	mW
	Power Dissipation – Derate above 25°C	1.25	mW/ $^\circ\text{C}$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ\text{C}$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	800	$^\circ\text{C}/\text{W}$

Electrical Characteristics (T_J=25 °C, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250uA	60	---	---	V
I _{DSS}	Drain-Source Leakage Current	V _{DS} =60V , V _{GS} =0V , T _J =25°C	---	---	10	nA
		V _{DS} =48V , V _{GS} =0V , T _J =125°C	---	---	100	nA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V , V _{DS} =0V	---	---	±100	nA

On Characteristics

R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V , I _D =0.15A	---	1.6	3	Ω
		V _{GS} =4.5V , I _D =0.1A	---	1.7	4	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.0	2	3.0	V
g _{fs}	Forward Transconductance	V _{DS} =10V , I _D =0.1A	---	0.3	---	S

Dynamic and switching Characteristics

Q _g	Total Gate Charge ^{2, 3}	V _{DS} =30V , V _{GS} =10V , I _D =0.1A	---	2		nC
Q _{gs}	Gate-Source Charge ^{2, 3}		---	0.9		
Q _{gd}	Gate-Drain Charge ^{2, 3}		---	0.4		
T _{d(on)}	Turn-On Delay Time ^{2, 3}	V _{DD} =30V , V _{GS} =10V , R _G =6Ω I _D =0.1A	---	3		ns
T _r	Rise Time ^{2, 3}		---	5		
T _{d(off)}	Turn-Off Delay Time ^{2, 3}		---	14		
T _f	Fall Time ^{2, 3}		---	9		
C _{iss}	Input Capacitance	V _{DS} =30V , V _{GS} =0V , F=1MHz	---	25		pF
C _{oss}	Output Capacitance		---	15		
C _{rss}	Reverse Transfer Capacitance		---	6.8		

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I _S	Continuous Source Current	V _G =V _D =0V , Force Current	---	---	200	mA
I _{SM}	Pulsed Source Current		---	---	400	mA
V _{SD}	Diode Forward Voltage	V _{GS} =0V , I _S =0.1A , T _J =25°C	---	---	1	V
T _{rr}	Reverse Recovery Time	V _R =50V , I _S =0.1A ,		18		ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs , T _J =25°C		6		nC

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width ≤ 300us , duty cycle ≤ 2%.
3. Essentially independent of operating temperature.

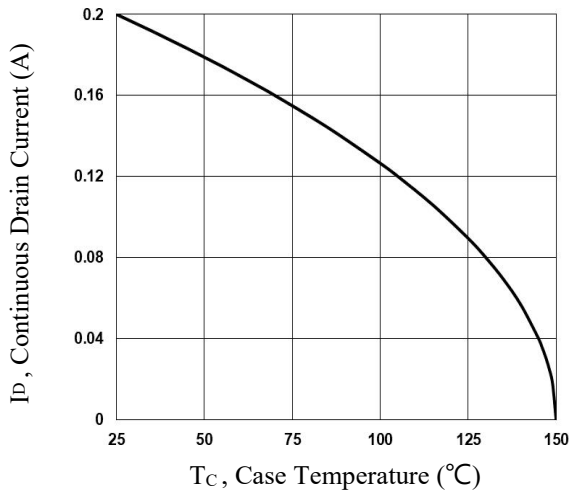


Fig.1 Continuous Drain Current vs. T_c

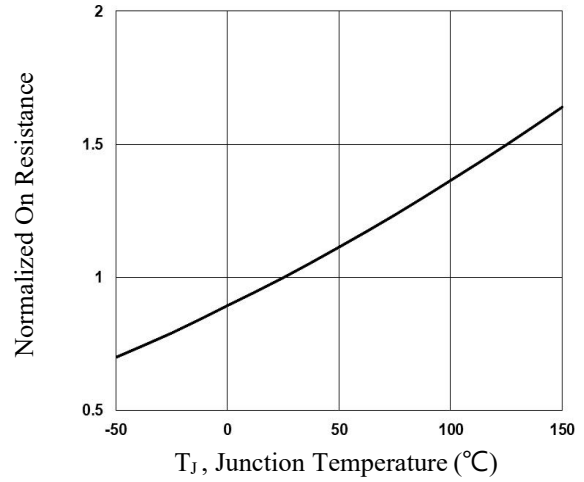


Fig.2 Normalized $R_{DS(on)}$ vs. T_j

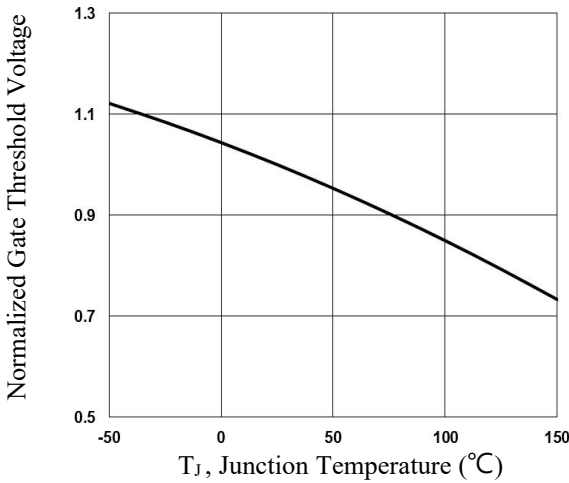


Fig.3 Normalized V_{th} vs. T_j

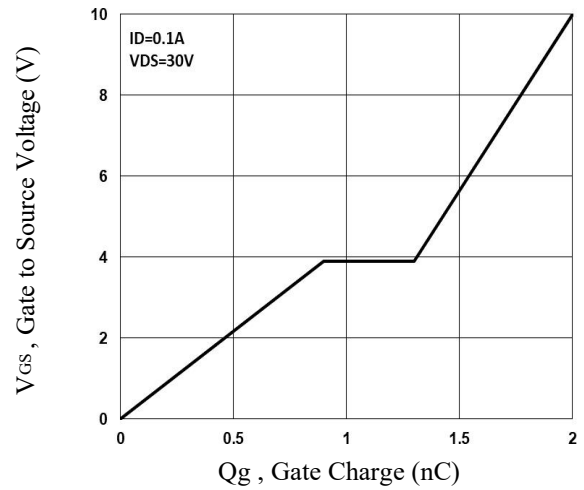


Fig.4 Gate Charge Waveform

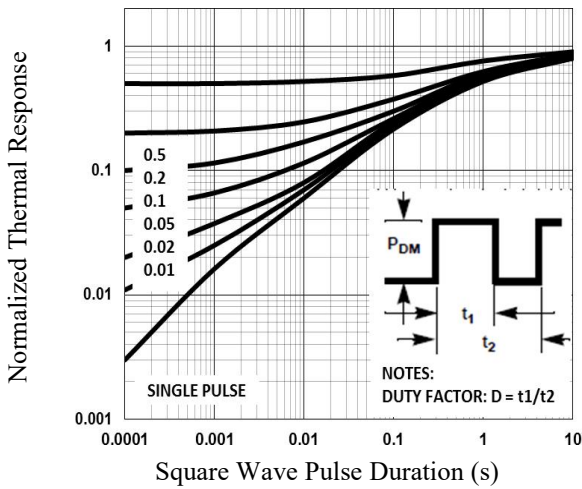


Fig.5 Normalized Transient Response

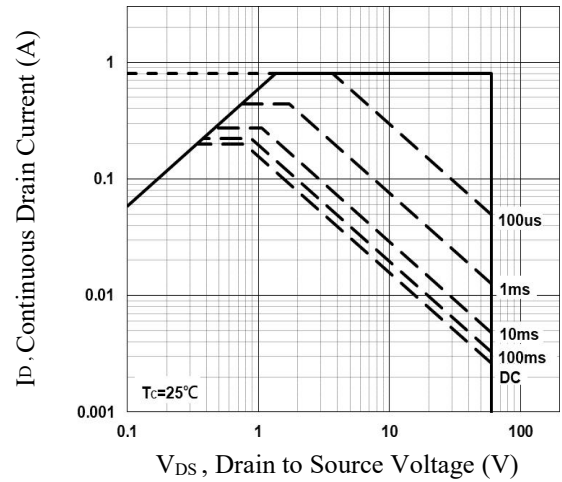


Fig.6 Maximum Safe Operation Area

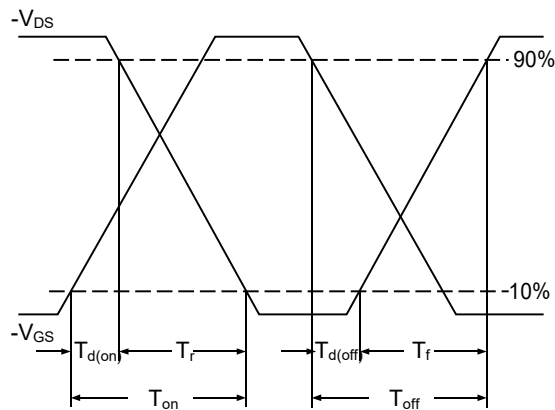


Fig.7 Switching Time Waveform

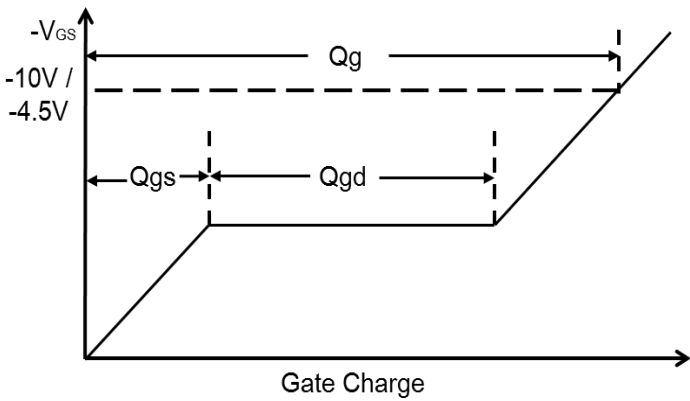
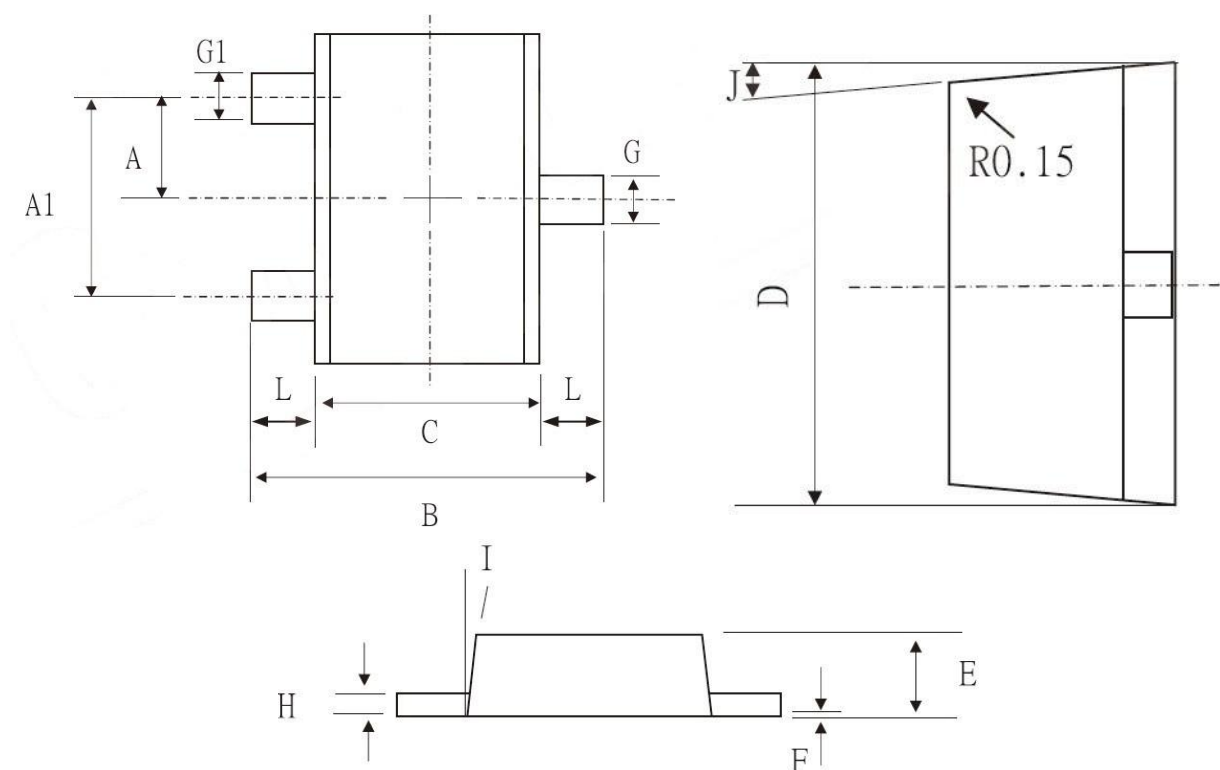


Fig.8 Gate Charge Waveform

SOT-723 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	0.4BSC		0.016BSC	
A1	0.8BSC		0.031BSC	
B	1.250	1.150	0.049	0.045
C	0.850	0.750	0.033	0.030
D	1.250	1.150	0.049	0.045
E	0.390	0.370	0.015	0.015
F	0.050	0.000	0.002	0.000
G	0.270	0.220	0.011	0.009
G1	0.220	0.170	0.009	0.007
H	0.110	0.009	0.004	0.000
I	13°	9°	13°	9°
L	0.250	0.150	0.010	0.006
J	11°	7°	11°	7°

REEL SPECIFICATION

P/N	PKG	QTY
2N7002KM	SOT-723	8000

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