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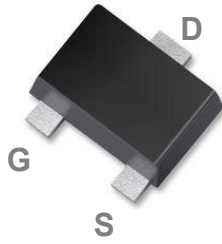
GDT



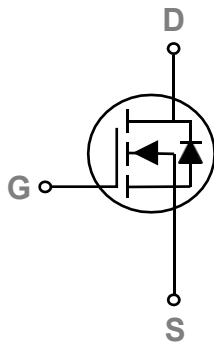
PLED

Product data sheet

www.msksemi.com



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	RDSON	ID
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 ($T_J=25\text{ }^\circ\text{C}$, unless otherwise noted)
Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	60	---	---	V
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=60V, V_{GS}=0V, T_J=25^\circ C$	---	---	10	nA
		$V_{DS}=48V, V_{GS}=0V, T_J=125^\circ C$	---	---	100	nA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 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	$V_{GS}=V_{DS}, I_D=250\mu A$	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}	$V_{DD}=30V, V_{GS}=10V, R_G=6\Omega, I_D=0.1A$	---	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	$V_G=V_D=0V, \text{ Force Current}$	---	---	200	mA
I_{SM}	Pulsed Source Current		---	---	400	mA
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_S=0.1A, T_J=25^\circ C$	---	---	1	V
T_{rr}	Reverse Recovery Time	$V_R=50V, I_S=0.1A,$		18		ns
Q_{rr}	Reverse Recovery Charge	$dI/dt=100A/\mu s, T_J=25^\circ C$		6		nC

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.

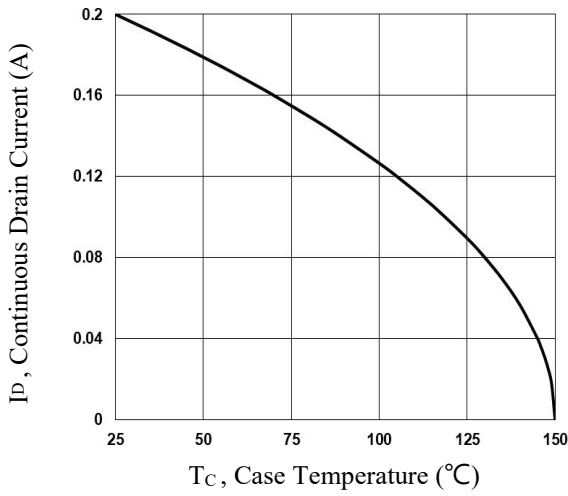


Fig.1 Continuous Drain Current vs. T_C

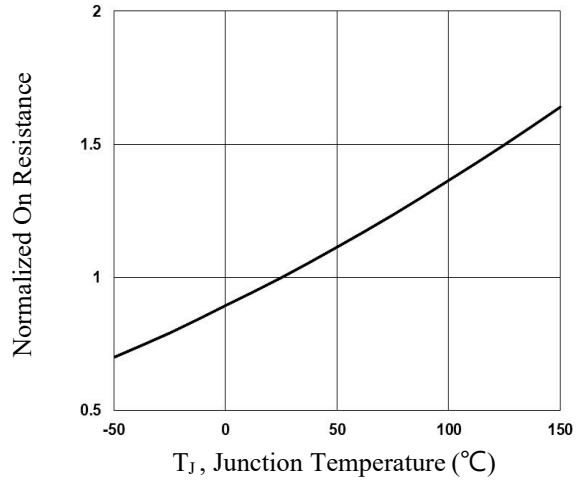


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

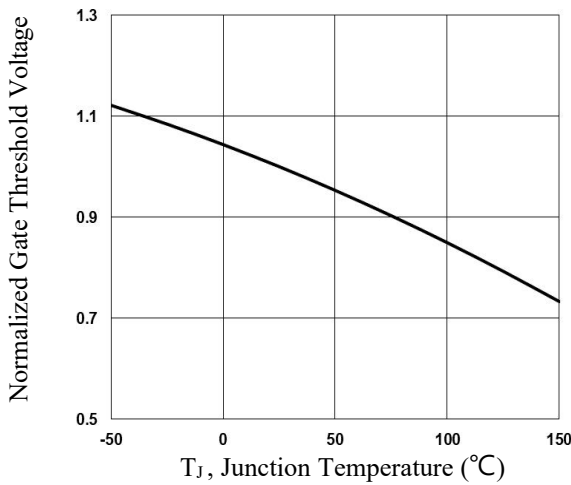


Fig.3 Normalized V_{th} vs. T_J

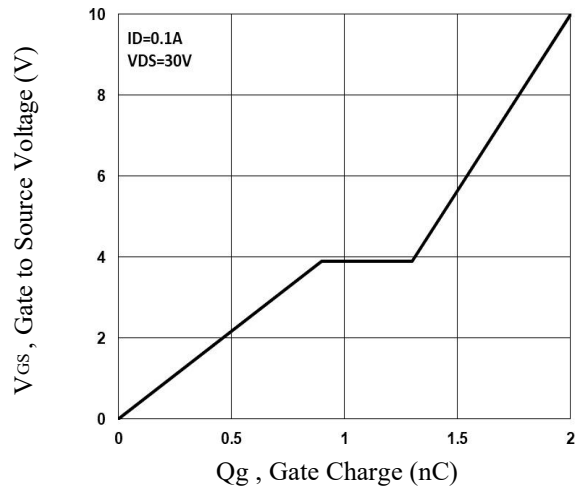


Fig.4 Gate Charge Waveform

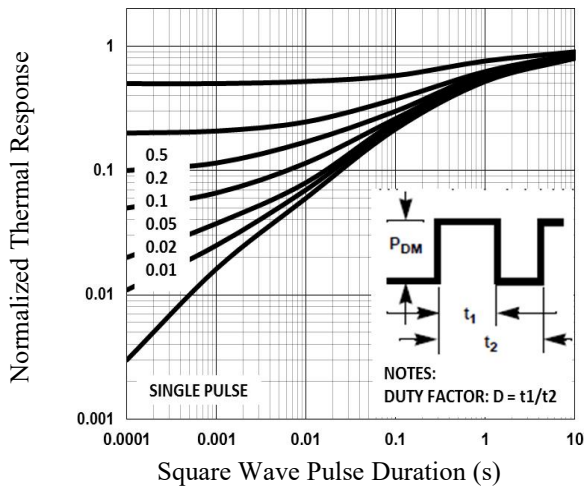


Fig.5 Normalized Transient Response

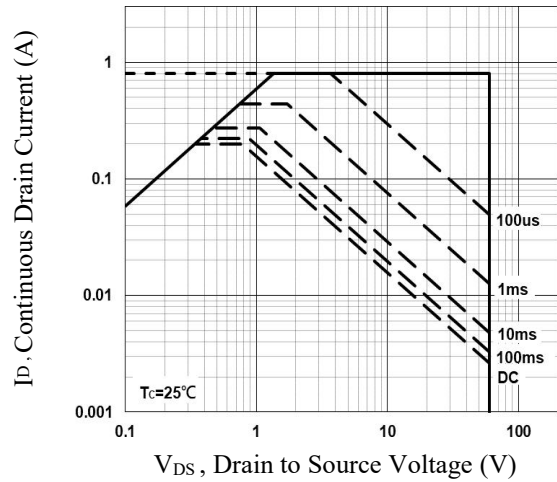


Fig.6 Maximum Safe Operation Area

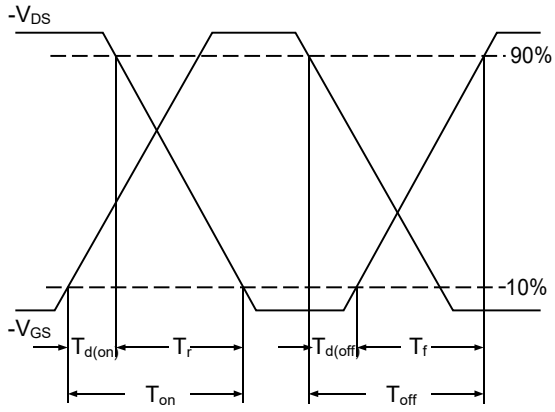


Fig.7 Switching Time Waveform

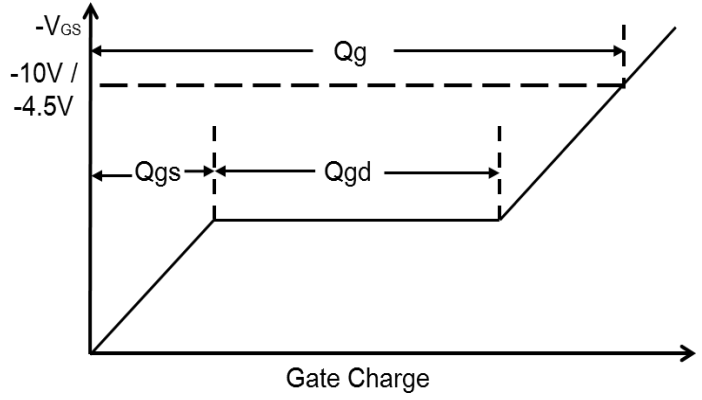
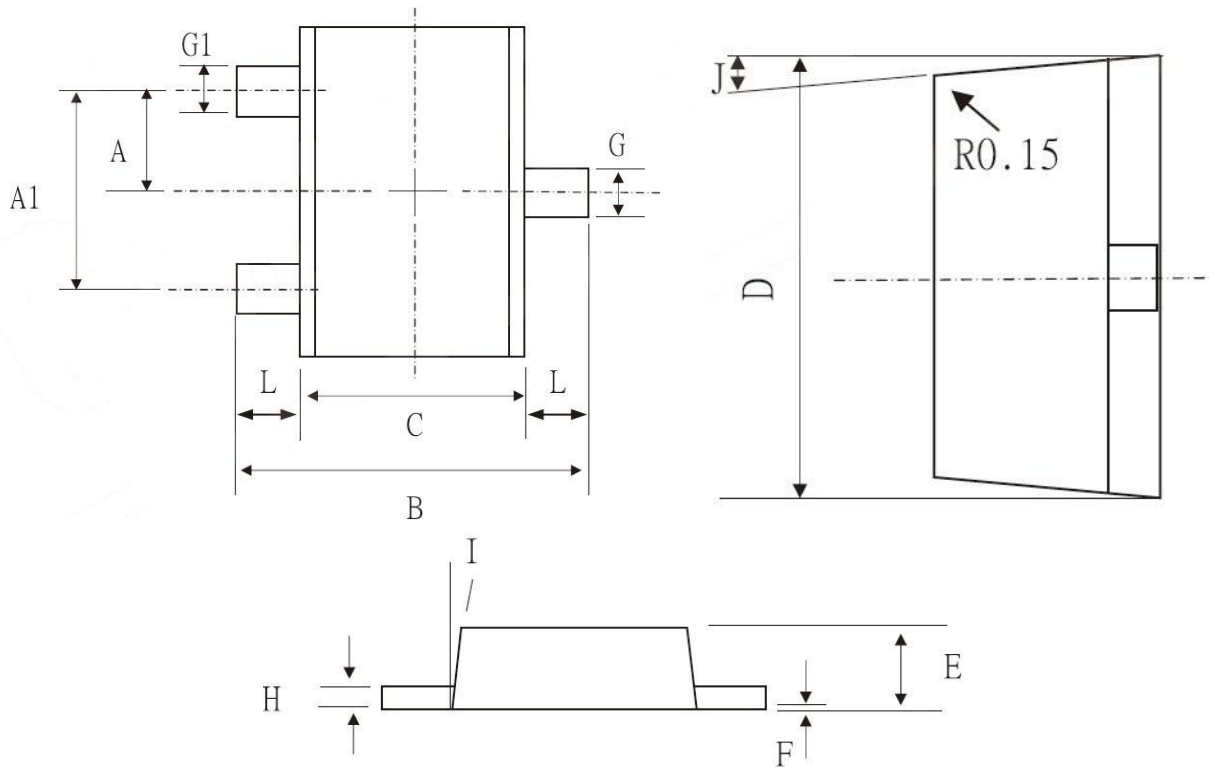


Fig.8 Gate Charge Waveform

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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