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SEMICONDUCTOR



ESD



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TSS



MOV

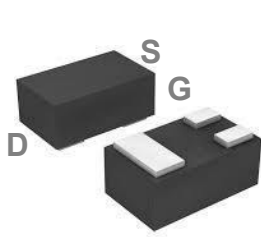


GDT

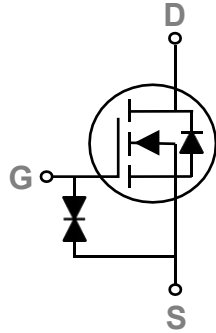


PLED

Product data sheet



SOT-883



Features

- 60V, 300mA, $R_{DS(ON)} = 1.7\Omega @ V_{GS} = 10V$
- Fast switching
- Green Device Available
- 2KV HBM ESD Capability

Applications

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

BVDSS	RDSON	ID
60V	1.7Ω	300mA

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 ($T_A=25^\circ\text{C}$)	300	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	---	---	1	uA
		V _{DS} =48V, V _{GS} =0V, T _J =125°C	---	---	10	uA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±10	uA

On Characteristics

R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =0.3A	---	1.7	3	Ω
		V _{GS} =4.5V, I _D =0.2A	---	2.2	4	
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	1.0	2	2.5	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	---	3.5	nC
Q _{gs}	Gate-Source Charge ^{2, 3}		---	1.4	
Q _{gd}	Gate-Drain Charge ^{2, 3}		---	0.2	
T _{d(on)}	Turn-On Delay Time ^{2, 3}	V _{DD} =30V, V _{GS} =10V, R _G =6Ω I _D =0.1A	---	3.5	ns
T _r	Rise Time ^{2, 3}		---	5	
T _{d(off)}	Turn-Off Delay Time ^{2, 3}		---	21	
T _f	Fall Time ^{2, 3}		---	21	
C _{iss}	Input Capacitance	V _{DS} =30V, V _{GS} =0V, F=1MHz	---	15	pF
C _{oss}	Output Capacitance		---	2	
C _{rss}	Reverse Transfer Capacitance		---	1	

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	---	---	300	mA
I _{SM}	Pulsed Source Current		---	---	400	mA
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =0.1A, T _J =25°C	---	---	1.3	V
T _{rr}	Reverse Recovery Time	V _R =50V, I _S =0.1A, dI/dt=100A/μs, T _J =25°C	---	21	---	ns
Q _{rr}	Reverse Recovery Charge		---	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.

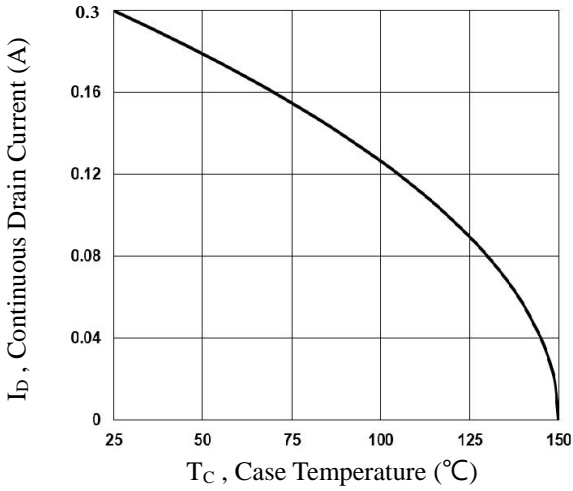


Fig.1 Continuous Drain Current vs. T_C

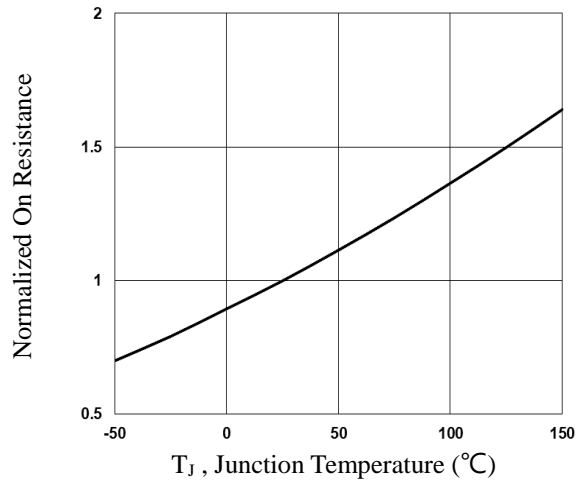


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

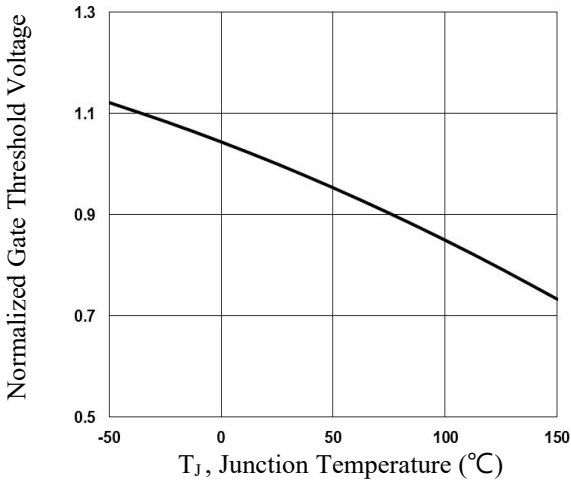


Fig.3 Normalized V_{th} vs. T_J

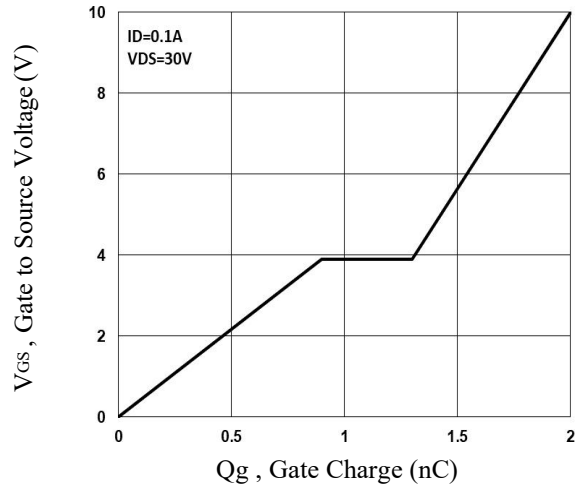


Fig.4 Gate Charge Waveform

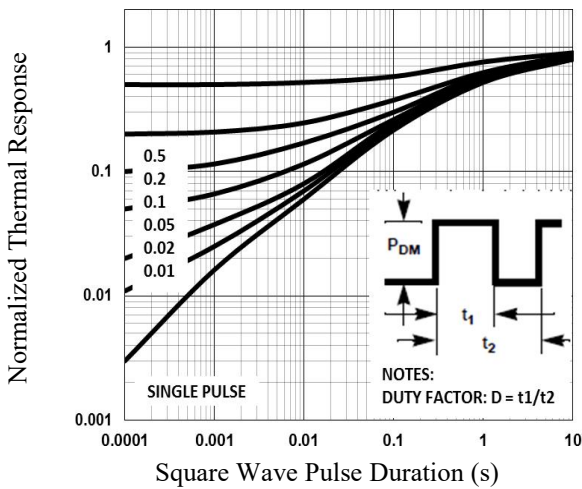


Fig.5 Normalized Transient Response

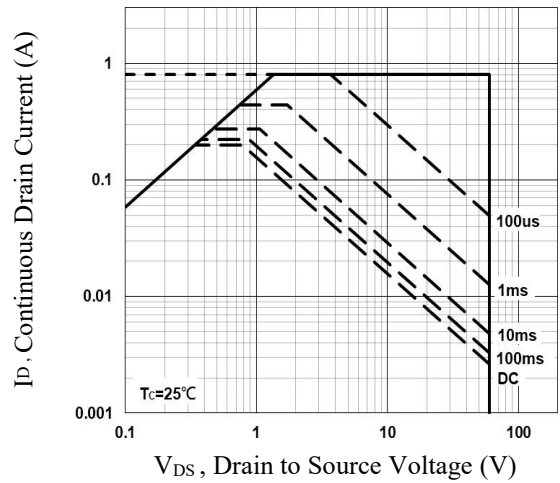


Fig.6 Maximum Safe Operation Area

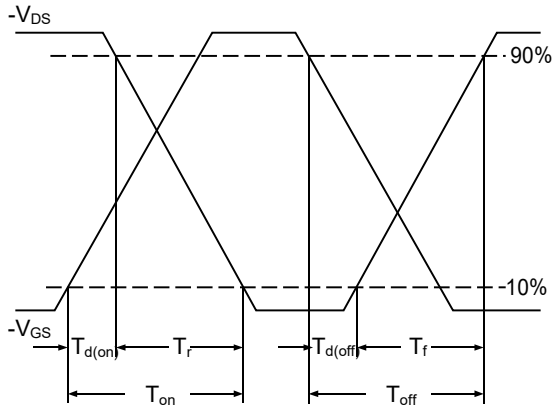


Fig.7 Switching Time Waveform

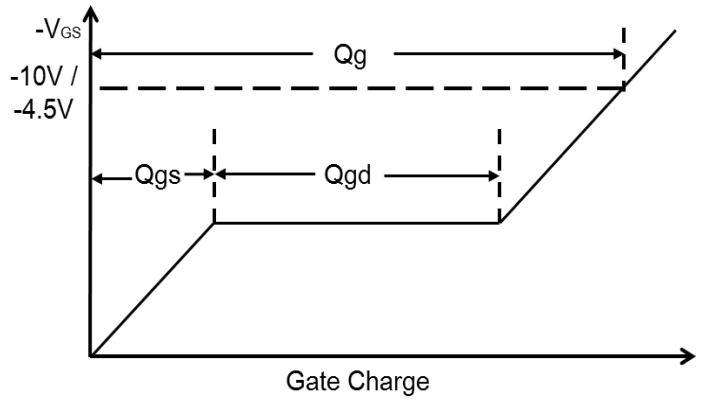
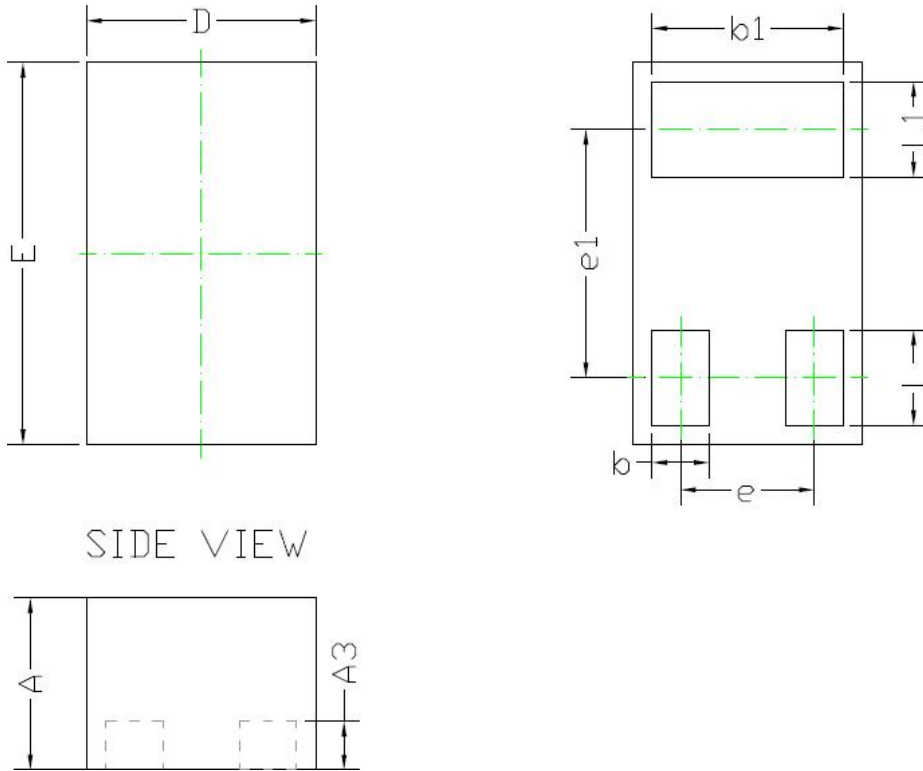


Fig.8 Gate Charge Waveform

PACKAGE INFORMATION



SIDE VIEW

SYMBOL	COMMON		
	DIMENSIONS MILLIMETER		
	MIN	NOM.	MAX
A	0.40	0.45	0.50
A3	0.127 BSC		
D	0.55	0.60	0.65
E	0.95	1.00	1.05
e	0.35 BSC		
e1	0.65 BSC		
b	0.13	0.15	0.18
b1	0.45	0.50	0.55
L	0.20	0.25	0.30
L1	0.20	0.25	0.30

REEL SPECIFICATION

P/N	PKG	QTY
2N7002KN3T5G	SOT-883	10000

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