YEA SHIN TECHNOLOGY CO., LTD

YSE2320YUB

N-Channel Enhancement MOSFET

VDS= 20V, ID= 800mA

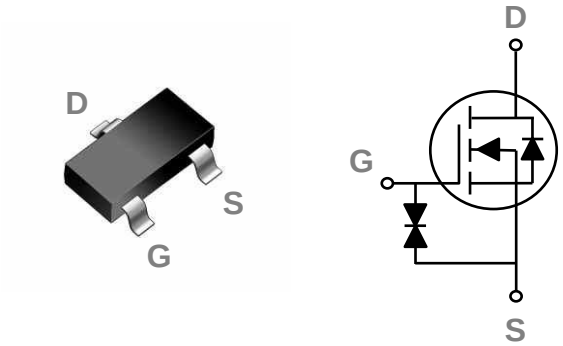
Features

- *20V,800mA, RDS(ON) =300mΩ@VGS = 4.5V*
- *Improved dv/dt capability*
- *Fast switching*
- *Green Device Available*
- *Suit for 1.5V Gate Drive Applications*

Applications

- *Notebook*
- *Load Switch*
- *Battery Protection*
- *Hand-held Instruments*

SOT-523 Pin Configuration



Absolute Maximum Rating T_C=25℃ **unless otherwise noted**

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	±8	V
I_D	Drain Current – Continuous (T_C=25℃)	800	mA
	Drain Current – Continuous (T_C=100℃)	510	mA
I_{DM}	Drain Current – Pulsed[1]	3.2	A
P_D	Power Dissipation (T_C=25℃)	312	mW
	Power Dissipation – Derate above 25℃	2.5	mW/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	400	℃/W

DEVICE CHARACTERISTICS

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Electrical Characteristics (Tj=25℃, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250uA	20	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃, I_D=1mA	---	-0.01	---	V/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=20V, V_{GS}=0V, T_J=25℃	---	---	1	uA
		V_{DS}=16V, V_{GS}=0V, T_J=125℃	---	---	10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±6V, V_{DS}=0V	---	---	±20	uA

On Characteristics

$R_{DS(ON)}$	Static Drain-source On-Resistance[2]	V_{GS}=4.5V, I_D=0.5A	---	200	300	mΩ
		V_{GS}=2.5V, I_D=0.4A	---	235	400	mΩ
		V_{GS}=1.8V, I_D=0.2A	---	295	550	mΩ
		V_{GS}=1.5V, I_D=0.1A	---	365	800	mΩ
		V_{GS}=1.2V, I_D=0.1A	---	600	1500	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250uA	0.3	0.6	1	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	3	---	mV/℃

Dynamic and Switching Characteristics

Q_g	Total Gate Charge[2,3]	V_{DS}=10V, V_{GS}=4.5V, I_D=0.5A	---	1	2	nC
Q_{gs}	Gate-Source Charge[2,3]		---	0.26	0.5	
Q_{gd}	Gate-Drain Charge[2,3]		---	0.2	0.4	
$T_{d(on)}$	Turn-On Delay Time[2,3]	V_{DD}=10V, V_{GS}=4.5V, R_G=10Ω, I_D=0.5A	---	5	10	ns
T_r	Rise Time[2,3]		---	3.5	7	
$T_{d(off)}$	Turn-On Delay Time[2,3]		---	14	28	
T_f	Fall Time[2,3]		---	6	12	
C_{iss}	Input Capacitance	V_{DS}=10V, V_{GS}=0V, f=1MHz	---	38.2	75	pF
C_{oss}	Output Capacitance		---	14.4	28	
C_{rss}	Reverse Transfer Capacitance		---	6	12	

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	---	---	0.8	A
I_{SM}	Pulsed Source Current[2]		---	---	1.6	A
V_{SD}	Diode Forward Voltage[2]	V_{GS}=0V, I_S=0.2A, T_J=25℃	---	---	1	V

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.

DEVICE CHARACTERISTICS

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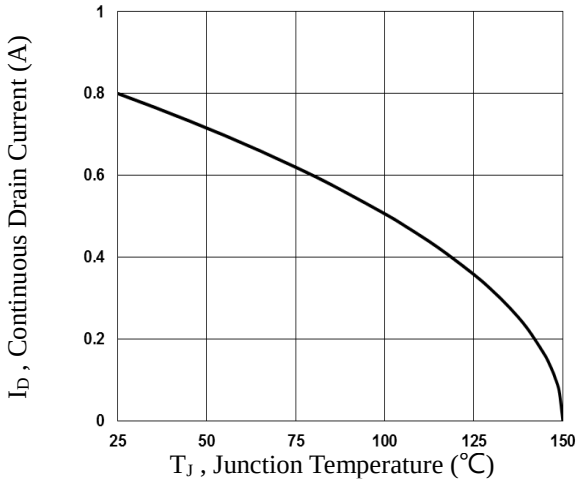

Fig.1 Continuous Drain Current vs. T_C

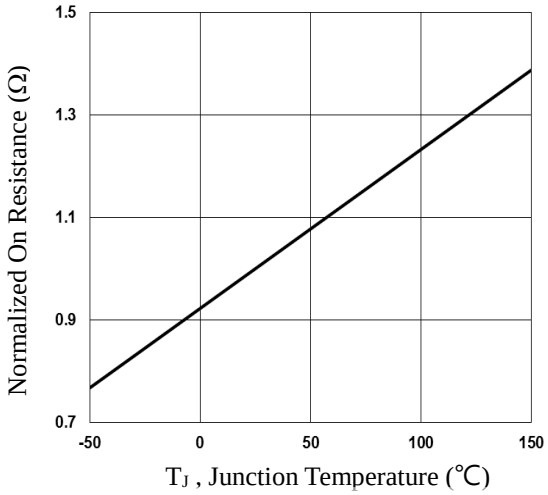

Fig.2 Normalized RDSON vs. T_J

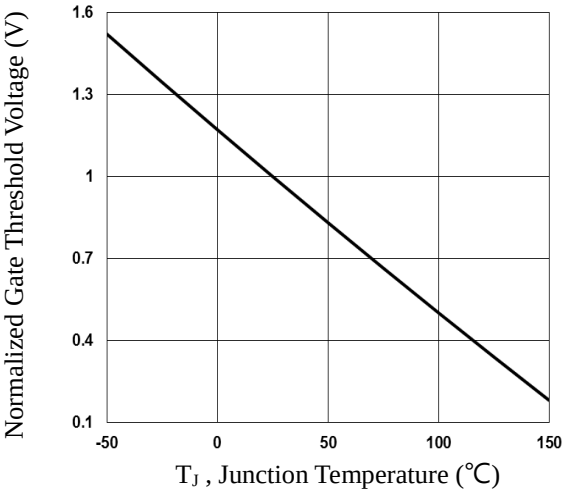

Fig.3 Normalized V_{th} vs. T_J

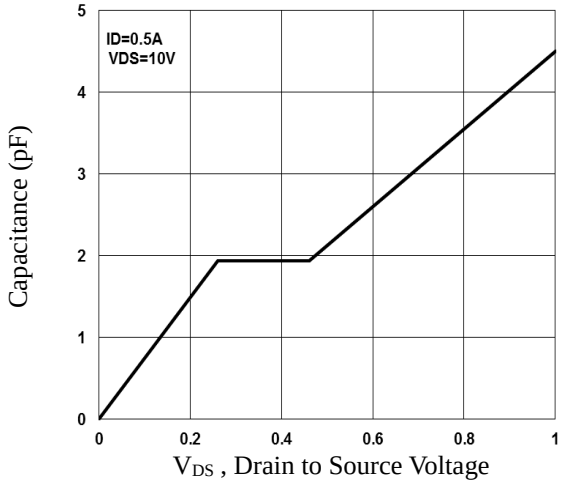

Fig.4 Gate Charge Waveform

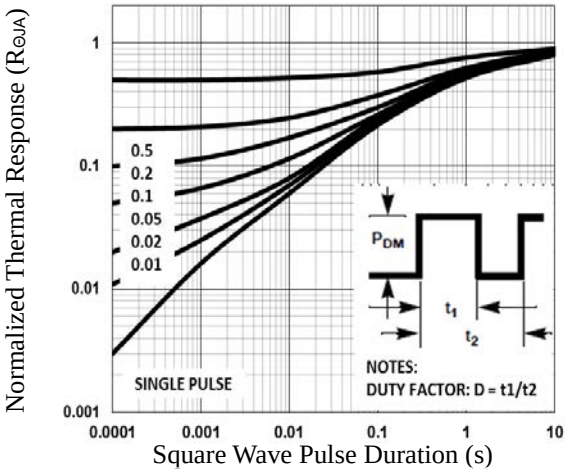

Fig.5 Normalized Transient Response

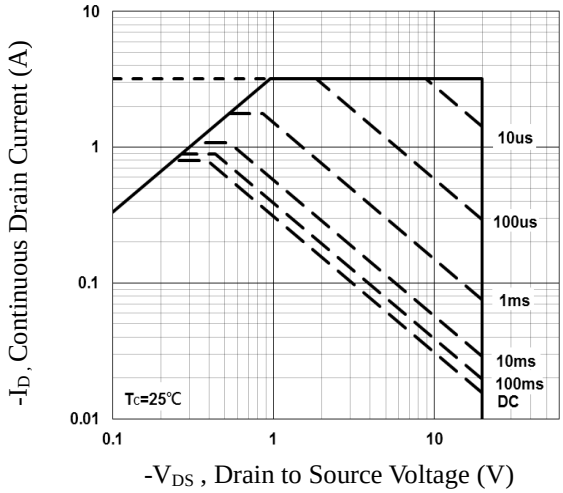

Fig.6 Maximum Safe Operation Area

DEVICE CHARACTERISTICS

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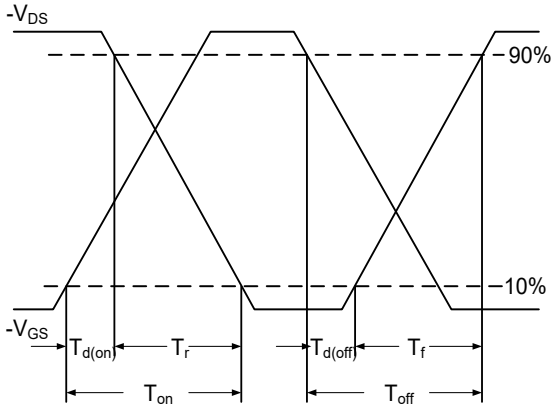

Fig.7 Switching Time Waveform

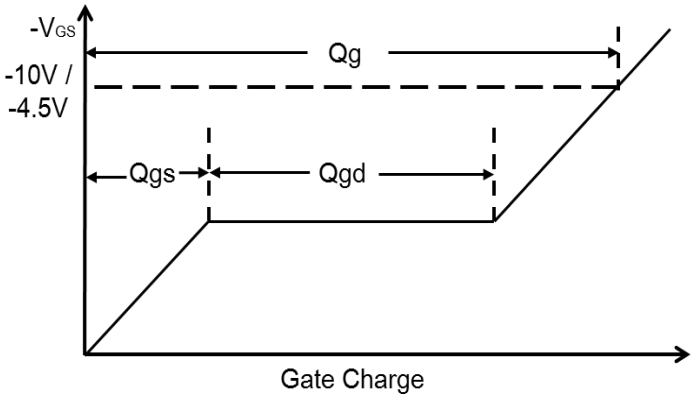

Fig.8 Gate Charge Waveform

PACKAGE OUTLINE & DIMENSIONS

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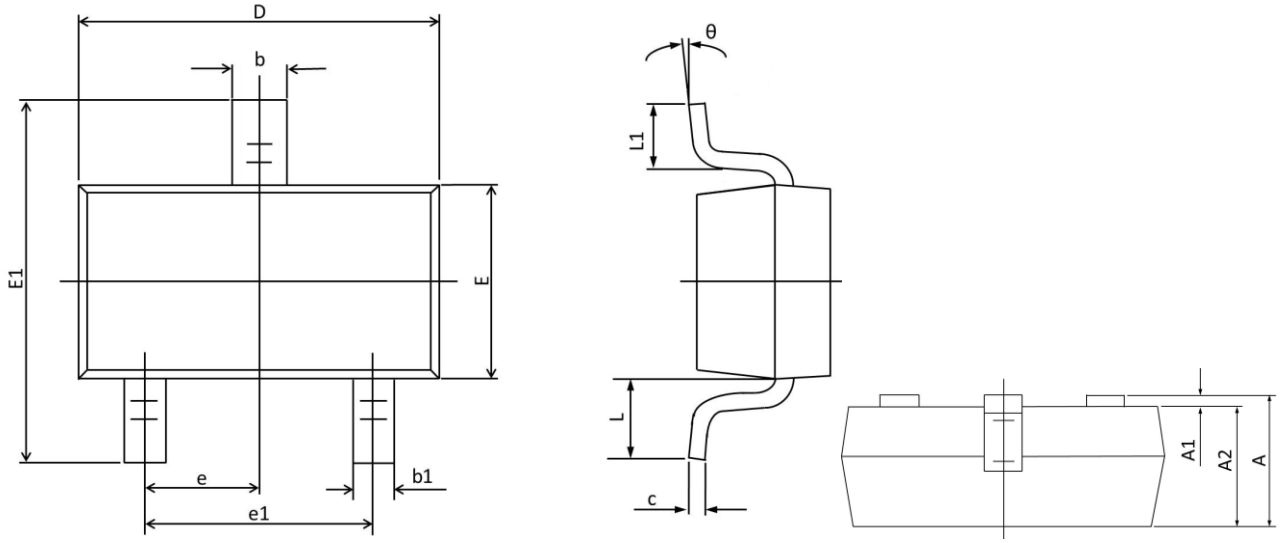
SOT-523 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	MAX	MIN	MAX	MIN
A	0.900	0.700	0.035	0.028
A1	0.100	0.000	0.004	0.000
A2	0.800	0.700	0.031	0.028
b	0.350	0.250	0.014	0.010
b1	0.250	0.150	0.010	0.006
c	0.200	0.100	0.008	0.004
D	1.750	1.500	0.069	0.059
E	0.900	0.700	0.035	0.028
E1	1.750	1.400	0.069	0.055
e	0.5TYP.		0.02TYP.	
e1	1.100	0.900	0.043	0.035
L	0.460	0.300	0.018	0.012
L1	0.460	0.260	0.018	0.010
θ	8°	0°	8°	0°