YEA SHIN TECHNOLOGY CO., LTD

YS0910S

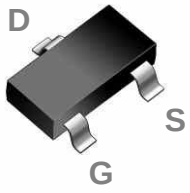
N-Channel Enhancement MOSFET

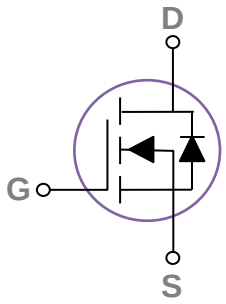
VDS= 100V, ID= 2.0A

Features

- *100V,2A, RDS(ON) =200mΩ@VGS = 10V*
- *Improved dv/dt capability*
- *Fast switching*

SOT-23 Pin Configuration





Applications

- *Notebook*
- *Load Switch*
- *LED applications*

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current – Continuous (Tc=25℃)	2.0	A
	Drain Current – Continuous (Tc=100℃)	1.3	A
I_{DM}	Drain Current – Pulsed[1]	8.0	A
P_D	Power Dissipation (Tc=25℃)	1.56	W
	Power Dissipation – Derate above 25℃	0.012	W/℃
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	---	80	℃/W

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Electrical Characteristics **(T_J=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	100	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃, I_D=1mA	---	0.10	---	V/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=100V, V_{GS}=0V, T_J=25℃	---	---	1	uA
		V_{DS}=80V, V_{GS}=0V, T_J=85℃	---	---	10	uA
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}=10 V, I_D=2A	---	161	200	mΩ
		V_{GS}=4.5V, I_D=1A	---	169	210	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=250uA	1.2	1.8	2.5	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-4	---	mV/℃
gfs	Forward Transconductance	V_{DS}=10V, I_D=1A	---	5	---	S

Dynamic and Switching Characteristics

Q_g	Total Gate Charge[2,3]	V_{DS}=50V, V_{GS}=10V, I_D=2A	---	13.4	21	nC
Q_{gs}	Gate-Source Charge[2,3]		---	2.9	6	
Q_{gd}	Gate-Drain Charge[2,3]		---	1.7	4	
$T_{d(on)}$	Turn-On Delay Time[2,3]	V_{DD}=30V, V_{GS}=10V, R_G=3.3Ω, I_D=1A	---	1.6	3	ns
T_r	Rise Time[2,3]		---	6.6	13	
$T_{d(off)}$	Turn-On Delay Time[2,3]		---	11.5	22	
T_f	Fall Time[2,3]		---	3.6	7	
C_{iss}	Input Capacitance	V_{DS}=50V, V_{GS}=0V, f=1MHz	---	820	1190	pF
C_{oss}	Output Capacitance		---	35	55	
C_{rss}	Reverse Transfer Capacitance		---	20	30	
R_G	Gate Resistance	V_{GS}=0V, V_{DS}=0V, f=1MHz	---	1.3	2.6	Ω

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	---	---	2	A
I_{SM}	Pulsed Source Current		---	---	8	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_S=1A, 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.

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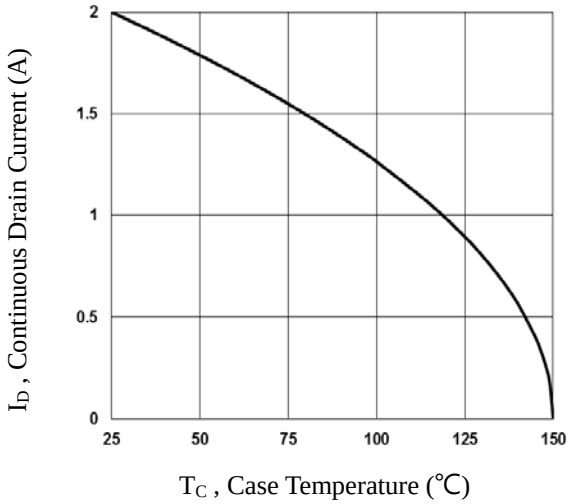

Fig.1 Continuous Drain Current vs. T_C

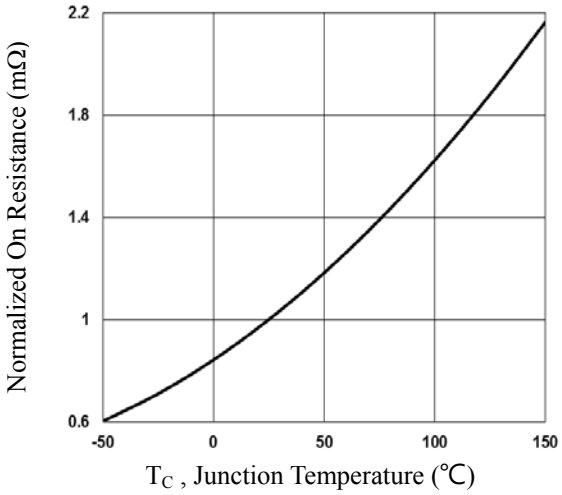

Fig.2 Normalized RDSON vs. T_J

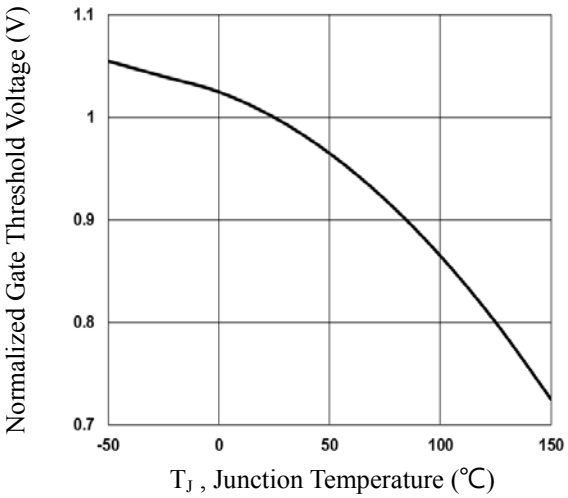

Fig.3 Normalized V_{th} vs. T_J

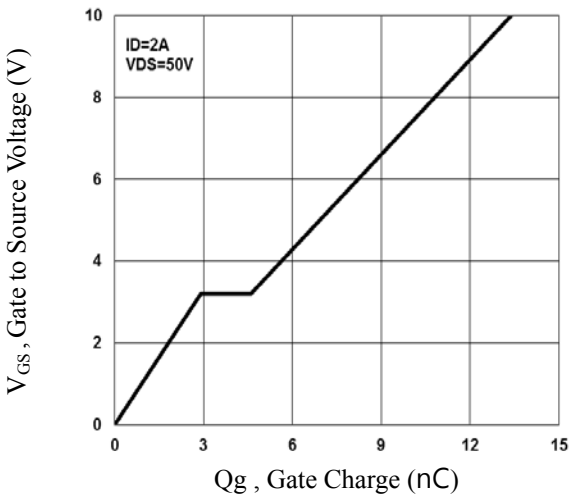

Fig.4 Gate Charge Waveform

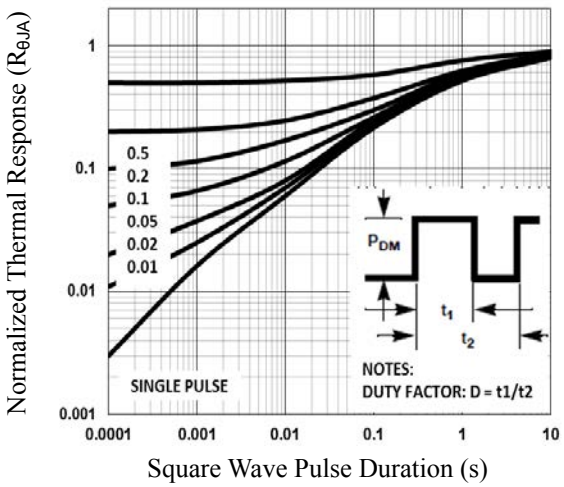

Fig.5 Normalized Transient Impedance

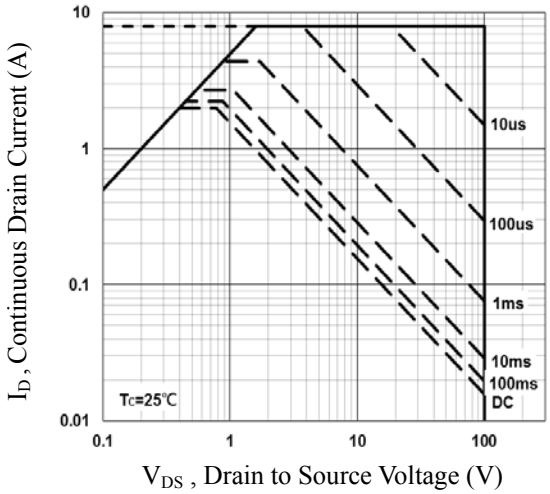

Fig.6 Maximum Safe Operation Area

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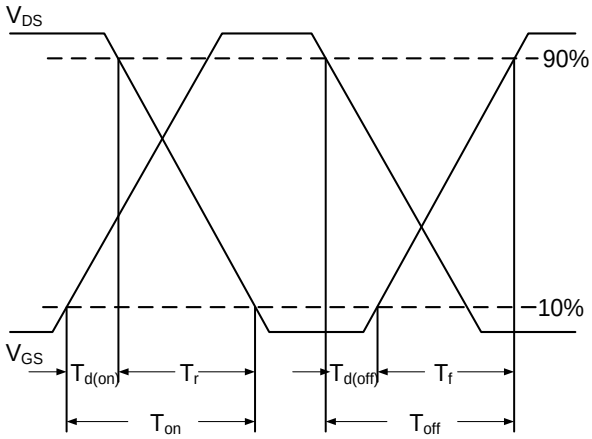

Fig.7 Switching Time Waveform

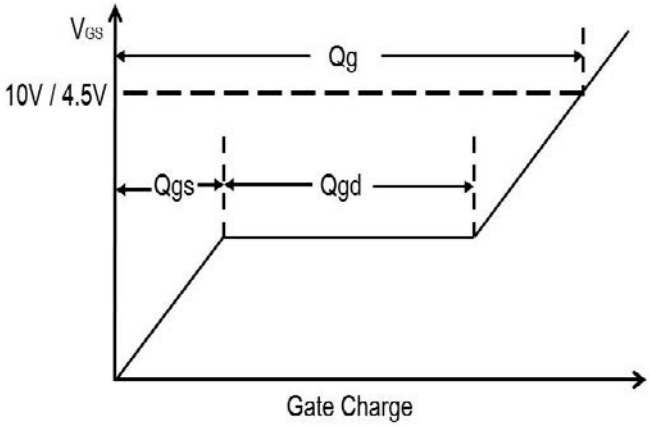

Fig.8 Gate Charge Waveform

PACKAGE OUTLINE & DIMENSIONS

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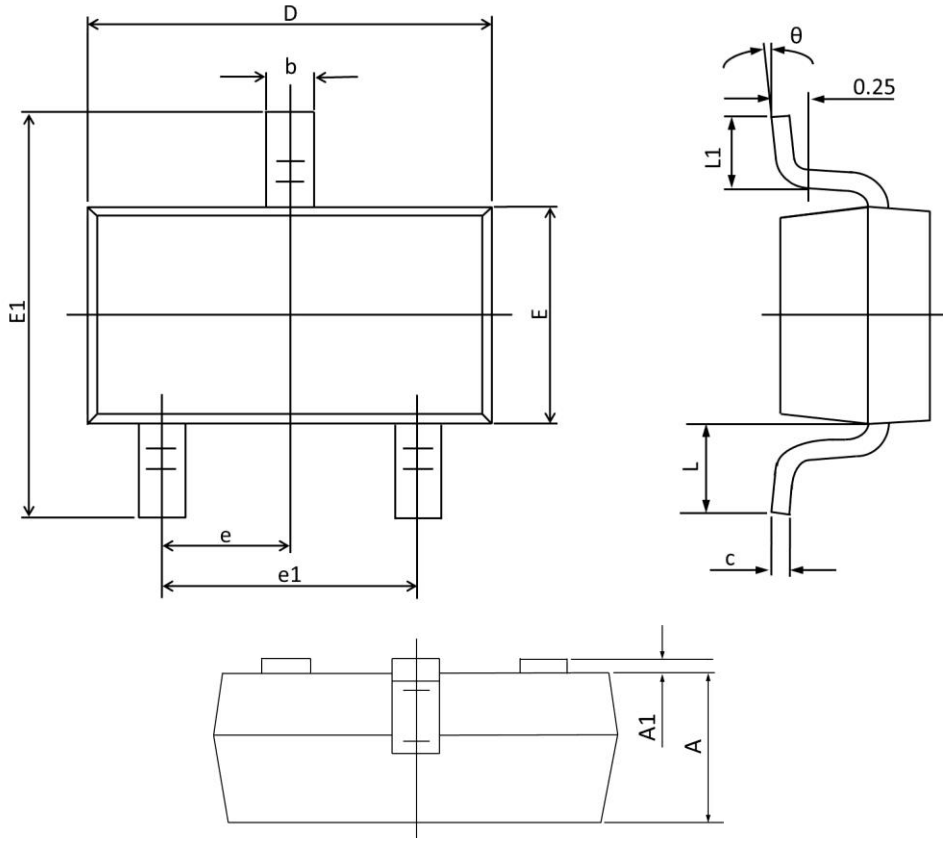

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.000	0.035	0.039
A1	0.000	0.100	0.000	0.004
b	0.300	0.500	0.012	0.020
c	0.090	0.110	0.003	0.004
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	1°	7°	1°	7°