YEA SHIN TECHNOLOGY CO., LTD

YSE2319XUC

P-Channel Enhancement MOSFET

VDS= -20V, ID= -400mA

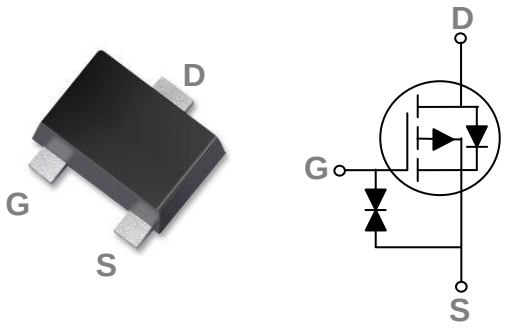
Features

- *-20V,-400mA, RDS(ON) =600mΩ@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-723 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℃)	-400	mA
	Drain Current – Continuous (T_C=100℃)	-250	mA
I_{DM}	Drain Current – Pulsed[1]	-1.6	A
P_D	Power Dissipation (T_C=25℃)	450	mW
	Power Dissipation – Derate above 25℃	3.6	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	---	280	℃/W

DEVICE CHARACTERISTICS

YSE2319XUC

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	-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}=±8V, V_{DS}=0V	---	---	±20	uA

On Characteristics

$R_{DS(ON)}$	Static Drain-source On-Resistance	V_{GS}=-4.5V, I_D=-0.3A	---	500	600	mΩ
		V_{GS}=-2.5V, I_D=-0.2A	---	700	900	mΩ
		V_{GS}=-1.8V, I_D=-0.1A	---	1100	1400	mΩ
		V_{GS}=-1.5V, I_D=-0.1A	---	1700	2300	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=-250uA	-0.3	-0.7	-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=-0.2A	---	1	2	nC
Q_{gs}	Gate-Source Charge[2,3]		---	0.28	0.5	
Q_{gd}	Gate-Drain Charge[2,3]		---	0.18	0.4	
$T_{d(on)}$	Turn-On Delay Time[2,3]	V_{DD}=-10V, V_{GS}=-4.5V, R_G=10Ω, I_D=-0.2A	---	8	16	ns
T_r	Rise Time[2,3]		---	5.2	10	
$T_{d(off)}$	Turn-On Delay Time[2,3]		---	30	60	
T_f	Fall Time[2,3]		---	18	36	
C_{iss}	Input Capacitance	V_{DS}=-10V, V_{GS}=0V, f=1MHz	---	40	78	pF
C_{oss}	Output Capacitance		---	15	30	
C_{rss}	Reverse Transfer Capacitance		---	6.5	13	

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	---	---	-0.4	A
I_{SM}	Pulsed Source Current		---	---	-0.8	A
V_{SD}	Diode Forward Voltage	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

YSE2319XUC

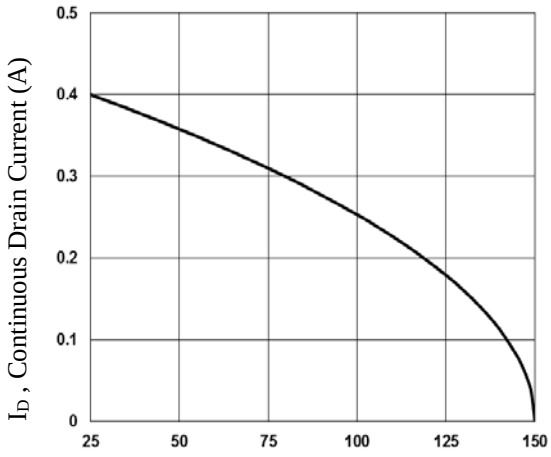


Fig.1 Continuous Drain Current vs. T_C

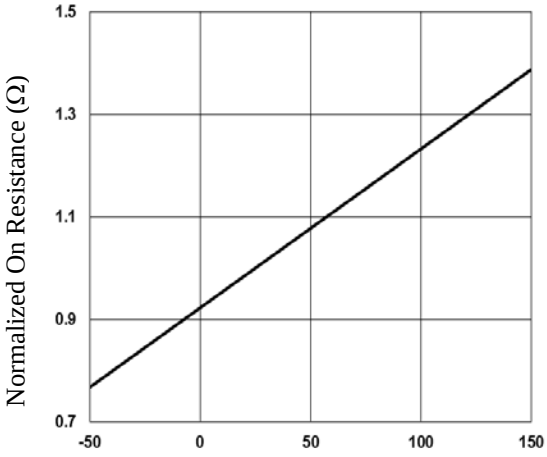


Fig.2 Normalized RDSON vs. T_J

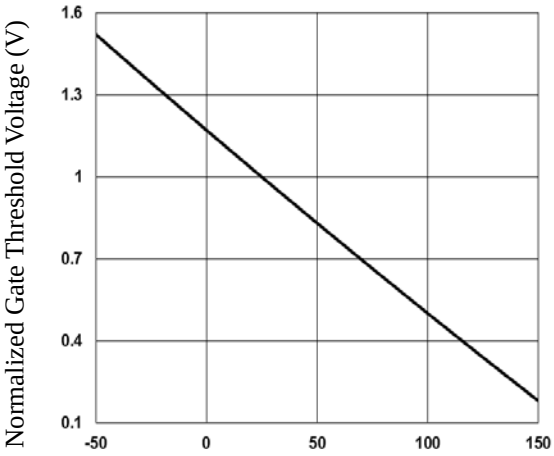


Fig.3 Normalized V_{th} vs. T_J

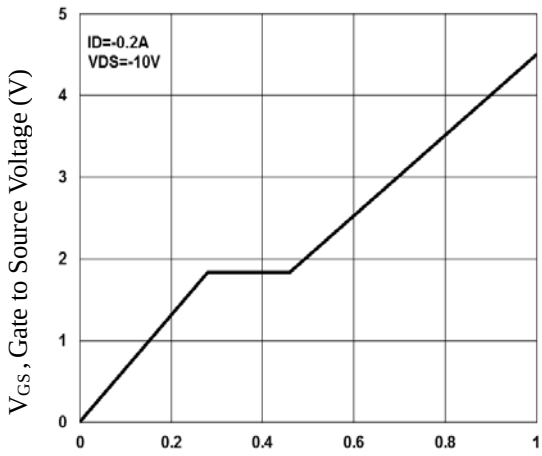


Fig.4 Gate Charge Waveform

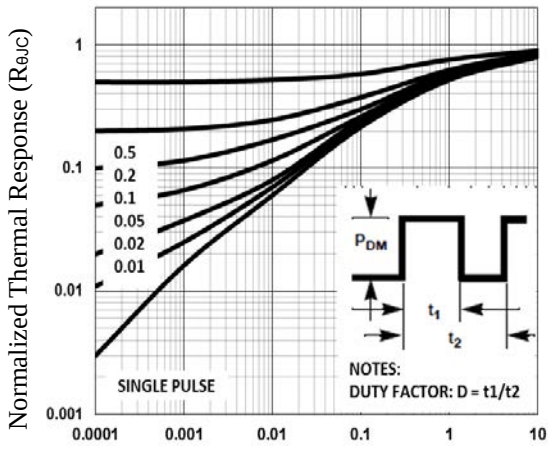


Fig.5 Normalized Transient Impedance

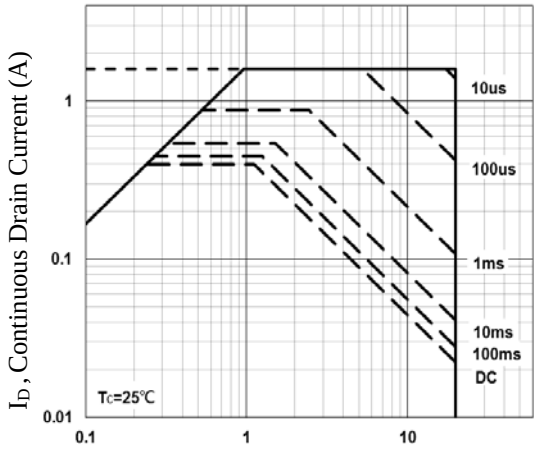


Fig.6 Maximum Safe Operation Area

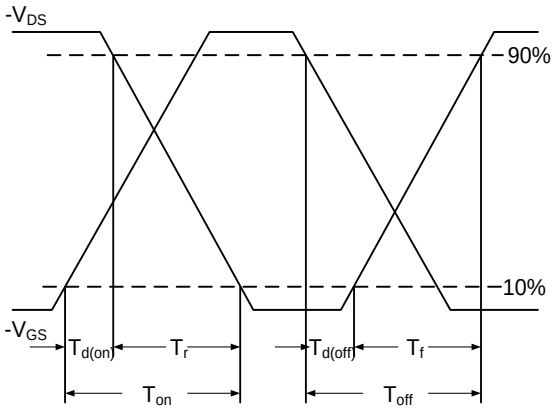


Fig.7 Switching Time Waveform

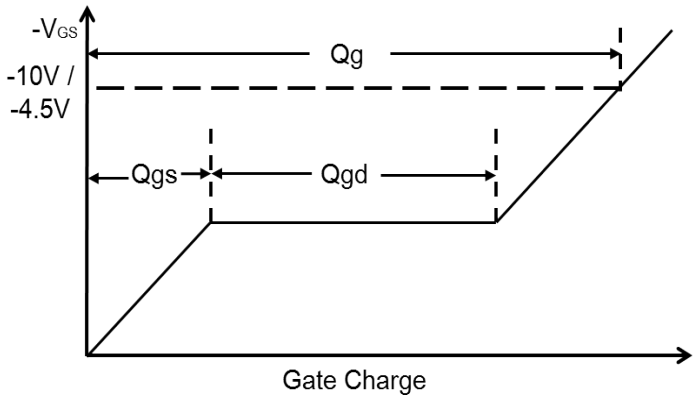
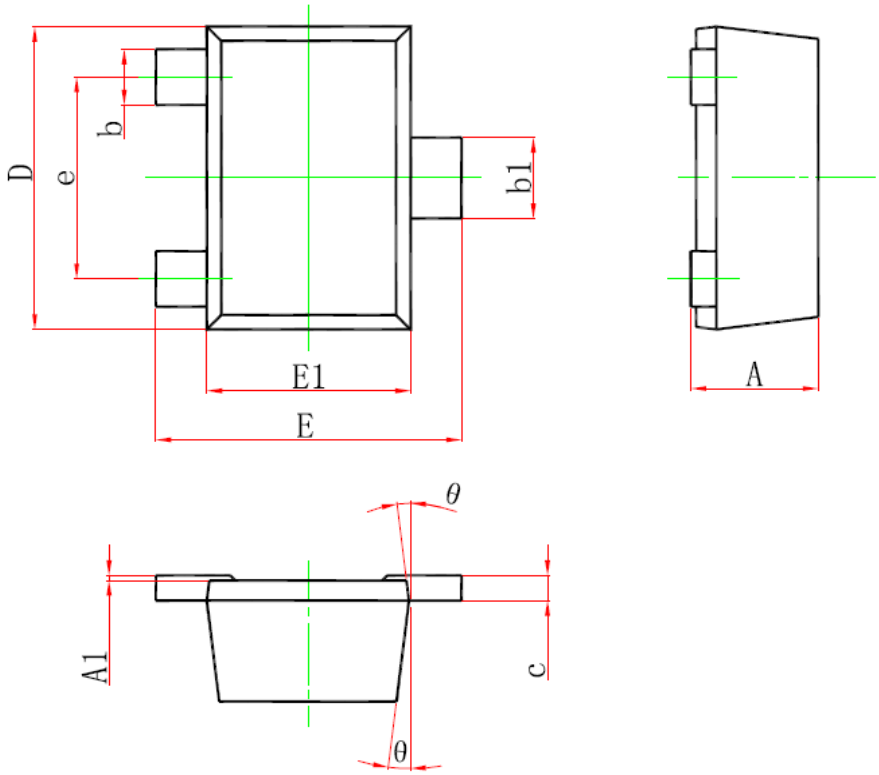


Fig.8 Gate Charge Waveform

PACKAGE OUTLINE & DIMENSIONS

YSE2319XUC

SOT-723 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		
	Min.	Typ.	Max.
A	0.370	---	0.500
A1	0.000	---	0.500
b	0.170	---	0.270
b1	0.220	---	0.370
c	0.009	---	0.150
D	1.150	---	1.250
E	1.150	---	1.250
E1	0.750	---	0.850
e	---	0.800	---
θ	5	---	11