YEA SHIN TECHNOLOGY CO. , LTD

YSE2320ZW

N-CHANNEL ENHANCEMENT MOSFET
VDS=20V, ID=800mA

Pb H

DESCRIPTION

These N-Channel enhancement mode power field effect transistors are using trench DMOS technology. This advanced technology has been especially tailored to minimize on-state resistance, provide superior switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.
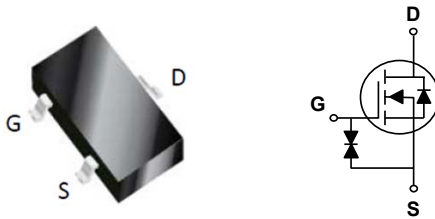
FEATURES

· 20V, 800mA, $R_{DS(ON)} \leqq 300m\Omega @V_{GS}$=4.5V
· Improved dv/dt Capability
· Fast Switching
· Green Device Available
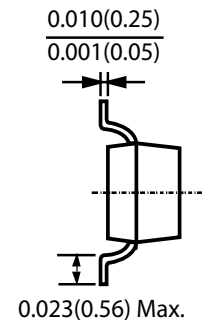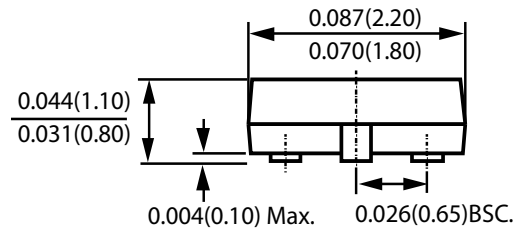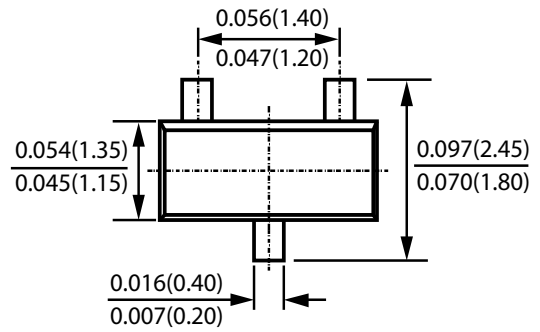· Suit for 1.5V Gate Drive Applications
· Marking：k

APPLICATIONS

· Notebook
· Load Switch
· Battery Protection
· Hand-Held Instruments

SOT-323 PIN CONFIGURATION

SOT-323   nit:inch(mm)

0.056(1.40)
0.047(1.20)
0.054(1.35)
0.045(1.15)
0.097(2.45)
0.070(1.80)
0.016(0.40)
0.007(0.20)

0.087(2.20)
0.070(1.80)
0.044(1.10)
0.031(0.80)
0.004(0.10) Max.
0.026(0.65)BSC.

0.010(0.25)
0.001(0.05)
0.023(0.56) Max.

Maximum Ratings @ T_C=25°C unless otherwise noted

Parameter		Symbol	Rating	Units
Drain-Source Voltage		V_{DSS}	20	V
Gate-Source Voltage		V_{GSS}	±8	V
Drain Current - Continuous	T_C=25°C	I_D	800	mA
	T_C=100°C		510	mA
Drain Current - Pulsed (NOTE 1)		I_{DM}	3.2	A
Power Dissipation (T_C=25°C)		P_D	275	mW
Thermal Resistance Junction to Ambient		$R_{\theta JA}$	450	^{o}C/W
Operating Junction and Storage Temperature Range		T_J , T_{STG}	-50 to +150	^{o}C

DEVICE CHARACTERISTICS

YSE2320ZW

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	20	---	---	V
I$_{DSS}$	Drain-Source Leakage Current	V$_{DS}$=20V , V$_{GS}$=0V , T$_J$=25°C	---	---	1	uA
		V$_{DS}$=16V , V$_{GS}$=0V , T$_J$=125°C	---	---	10	uA
I$_{GSS}$	Gate-Source Leakage Current	V$_{GS}$=±6V , V$_{DS}$=0V	---	---	±20	uA

On Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
R$_{DS(ON)}$	Static Drain-Source On-Resistance (NOTE 3)	V$_{GS}$=4.5V , I$_D$=0.5A	---	200	300	mΩ
		V$_{GS}$=2.5V , I$_D$=0.4A	---	235	400	
		V$_{GS}$=1.8V , I$_D$=0.2A	---	295	550	
		V$_{GS}$=1.5V , I$_D$=0.1A	---	365	800	
		V$_{GS}$=1.2V , I$_D$=0.1A	---	600	1500	
V$_{GS(th)}$	Gate Threshold Voltage	V$_{GS}$=V$_{DS}$, I$_D$=250uA	0.3	0.6	1.0	V

Dynamic and switching Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Q$_g$	Total Gate Charge	V$_{DS}$=10V , V$_{GS}$=4.5V , I$_D$=0.5A (NOTE 2、3)	---	1	---	nC
Q$_{gs}$	Gate-Source Charge		---	0.26	---	
Q$_{gd}$	Gate-Drain Charge		---	0.2	---	
T$_{d(on)}$	Turn-On Delay Time	V$_{DD}$=10V , V$_{GS}$=4.5V , R$_G$=10Ω , I$_D$=0.5A (NOTE 2、3)	---	5	---	ns
T$_r$	Rise Time		---	3.5	---	
T$_{d(off)}$	Turn-Off Delay Time		---	14	---	
T$_f$	Fall Time		---	6	---	
C$_{iss}$	Input Capacitance	V$_{DS}$=10V , V$_{GS}$=0V , F=1MHz	---	38.2	---	pF
C$_{oss}$	Output Capacitance		---	14.4	---	
C$_{rss}$	Reverse Transfer Capacitance		---	6	---	

Drain-Source Diode Characteristics and 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		---	---	1.6	A
V$_{SD}$	Diode Forward Voltage	V$_{GS}$=0V , I$_S$=0.2A , T$_J$=25°C	---	---	1	V

NOTES：

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.
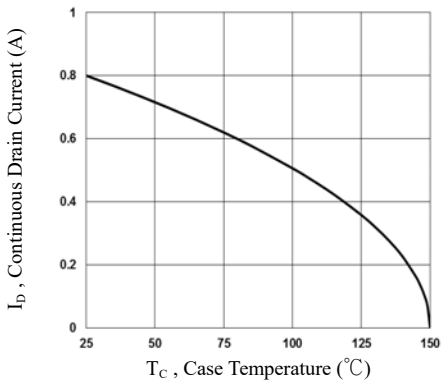
DEVICE CHARACTERISTICS

YSE2320ZW

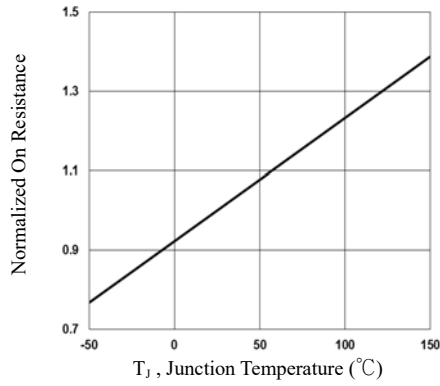Fig.1 Continuous Drain Current vs. T_C
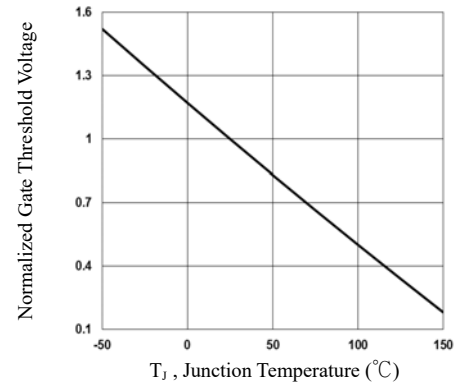

Fig.2 Normalized RDSON vs. T_J

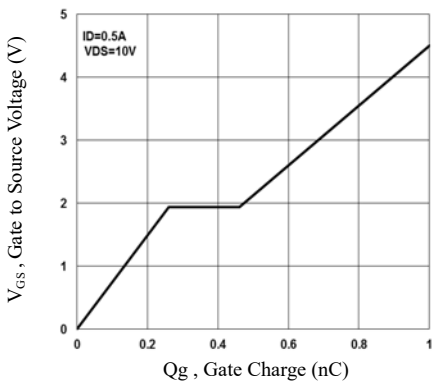Fig.3 Normalized V_{th} vs. T_J

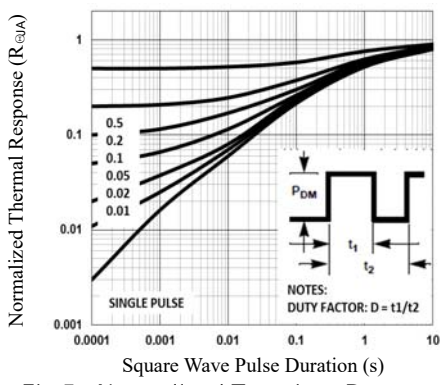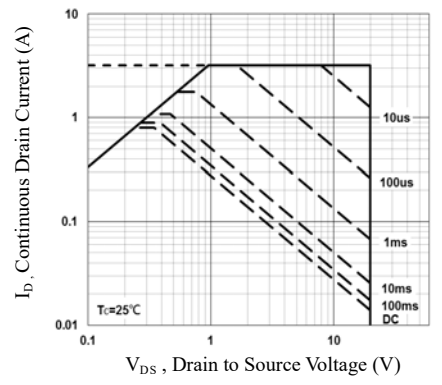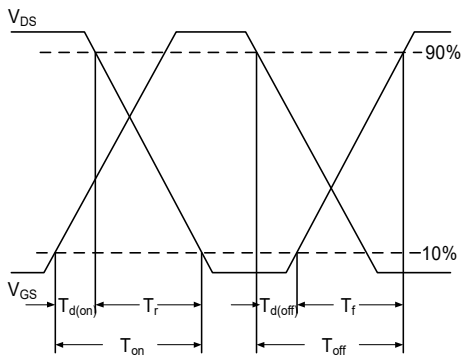Fig.4 Gate Charge Waveform

Fig.5 Normalized Transient Response

Fig.6 Maximum Safe Operation Area

Fig.7 Switching Time Waveform