

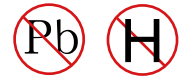


YEA SHIN TECHNOLOGY CO., LTD

YS0906L

N-Channel Enhancement MOSFET

VDS= 100V, ID= 6.5A



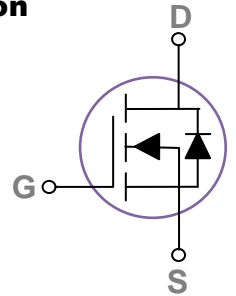
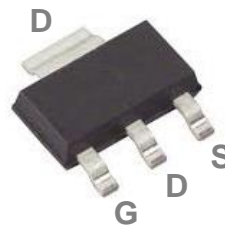
Features

- 100V, 6.5A, $R_{DS(ON)} = 95m\Omega @ V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available

Applications

- Networking
- Load Switch
- LED applications

SOT-223 Pin Configuration



Absolute Maximum Rating $T_c=25^\circ\text{C}$ 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 ($T_c=25^\circ\text{C}$)	6.5	A
	Drain Current – Continuous ($T_c=100^\circ\text{C}$)	4.1	A
I_{DM}	Drain Current – Pulsed ¹	26	A
P_D	Power Dissipation ($T_c=25^\circ\text{C}$)	9	W
	Power Dissipation – Derate above 25°C	0.072	W/ $^\circ\text{C}$
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	---	62	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	14	$^\circ\text{C}/\text{W}$

DEVICE CHARACTERISTICS

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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 =250μA	100	---	---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =1mA	---	0.05	---	V/°C
I _{DSS}	Drain-Source Leakage Current	V _{DS} =100V, V _{GS} =0V, T _J =25°C	---	---	1	μA
		V _{DS} =80V, V _{GS} =0V, T _J =125°C	---	---	10	μA
I _{GSS}	Gate-Source Leakage Current	V _{GS} =±20V, V _{DS} =0V	---	---	±100	nA

On Characteristics

R _{DS(ON)}	Static Drain-source On-Resistance ²	V _{GS} =10V, I _D =5A	---	80	95	mΩ
		V _{GS} =4.5V, I _D =3A	---	85	110	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250μA	1.2	1.6	2.5	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	-5	---	mV/°C
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =3A	---	8.7	---	S

Dynamic and Switching Characteristics

Q _g	Total Gate Charge ^{2,3}	V _{DS} =48V, V _{GS} =10V, I _D =5A	---	22	44	nC
Q _{gs}	Gate-Source Charge ^{2,3}		---	3.9	8	
Q _{gd}	Gate-Drain Charge ^{2,3}		---	5.2	10	
T _{d(on)}	Turn-On Delay Time ^{2,3}	V _{DD} =30V, V _{GS} =10V, R _G =3.3 Ω, I _D =1A	---	2.9	6	ns
T _r	Rise Time ^{2,3}		---	9.5	18	
T _{d(off)}	Turn-Off Delay Time ^{2,3}		---	18.4	35	
T _f	Fall Time ^{2,3}		---	5.3	10	
C _{iss}	Input Capacitance	V _{DS} =50V, V _{GS} =0V, f=1MHz	---	1480	2150	pF
C _{oss}	Output Capacitance		---	480	700	
C _{rss}	Reverse Transfer Capacitance		---	35	55	
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	---	---	6.5	A
I _{SM}	Pulsed Source Current ²		---	---	26	A
V _{SD}	Diode Forward Voltage ²	V _{GS} =0V, I _S =1A, T _J =25°C	---	---	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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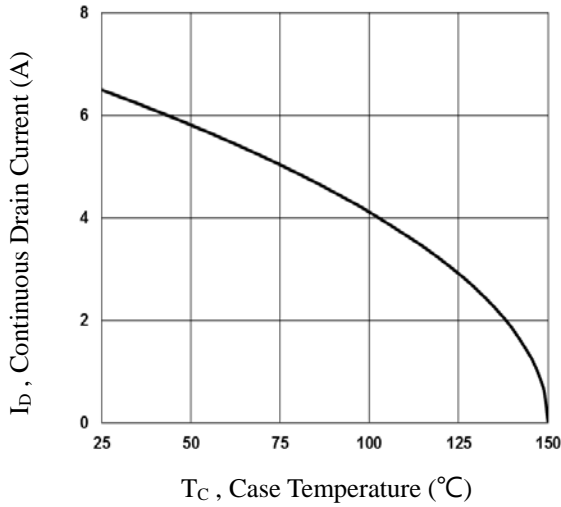


Fig.1 Continuous Drain Current vs. T_C

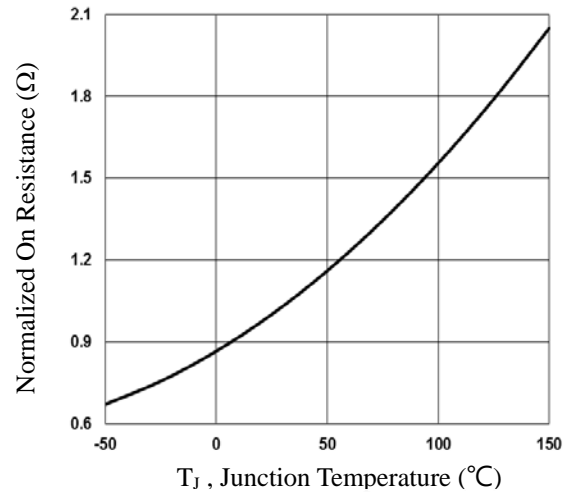


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

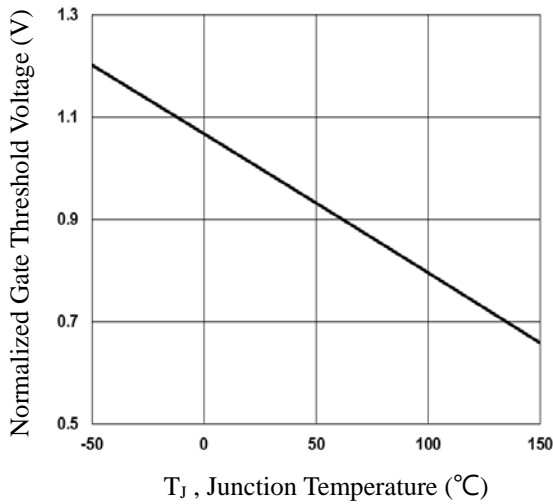


Fig.3 Normalized V_{th} vs. T_J

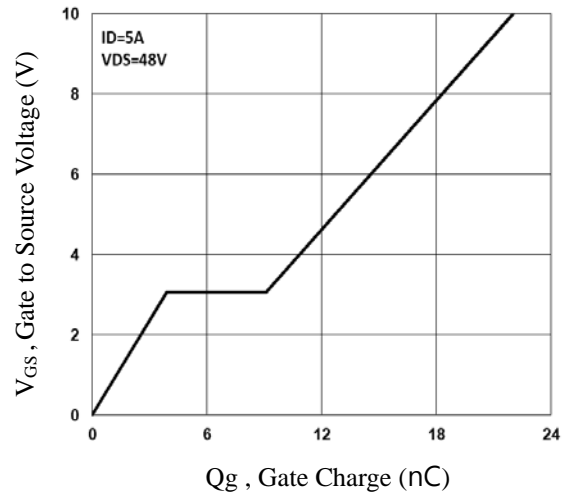


Fig.4 Gate Charge Waveform

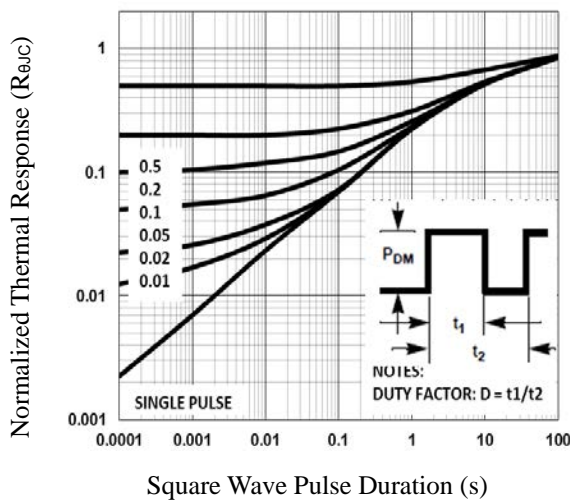


Fig.5 Normalized Transient Impedance

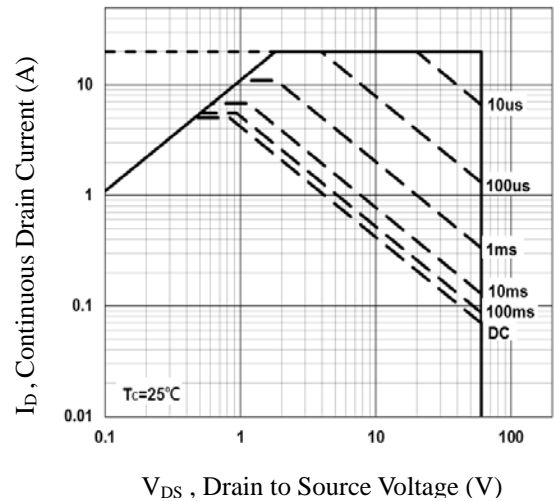


Fig.6 Maximum Safe Operation Area

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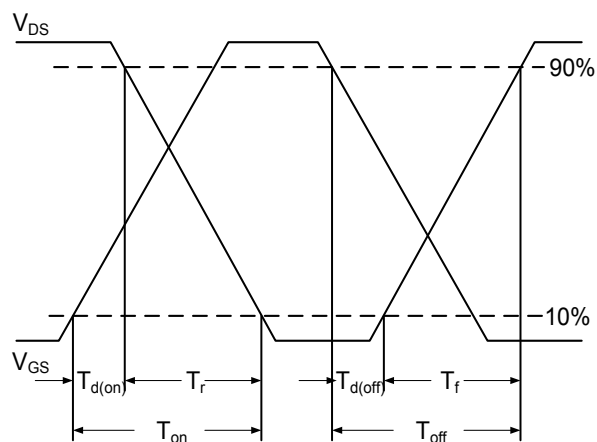


Fig.7 Switching Time Waveform

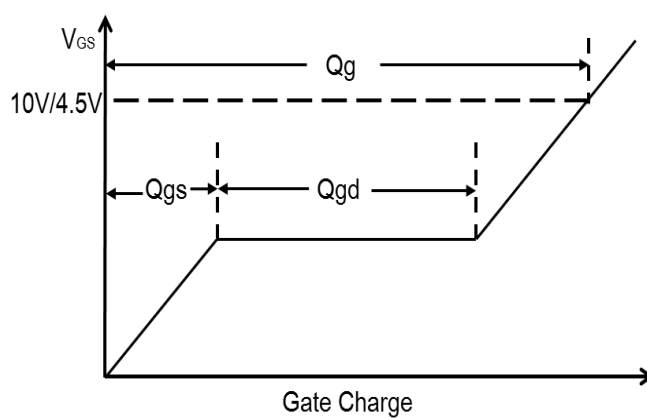
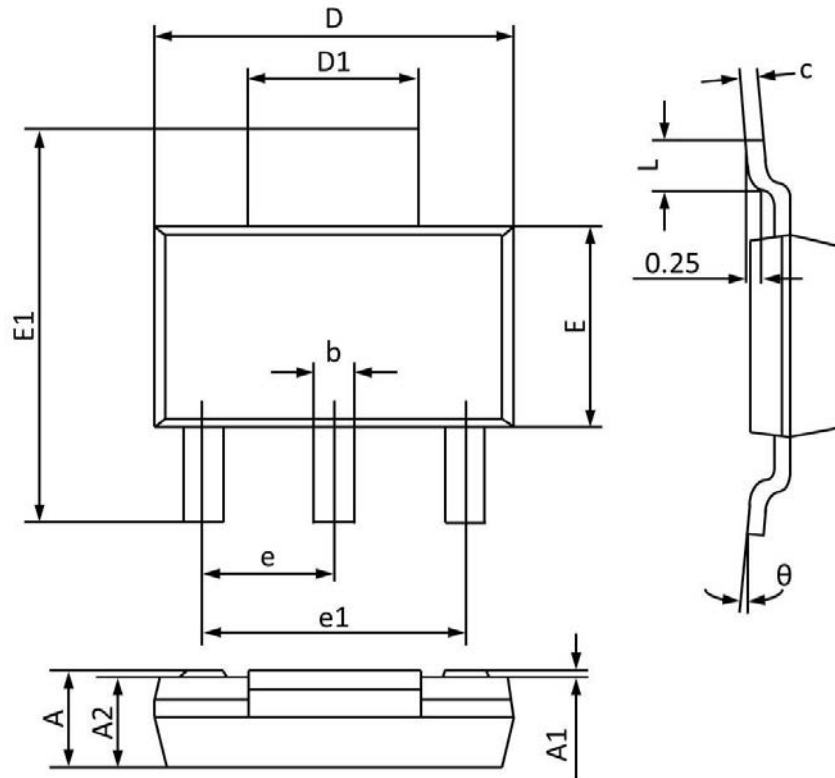


Fig.8 Gate Charge Waveform

PACKAGE OUTLINE & DIMENSIONS

YS0906L

SOT-223 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300 (BSC)		0.091 (BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°