



YEA SHIN TECHNOLOGY CO., LTD

YS01N60L

N-Channel Enhancement MOSFET

V_{DS}= 600V, ID= 1A



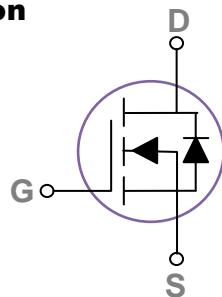
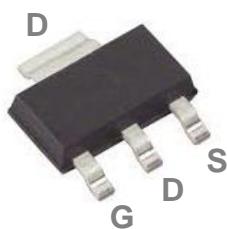
Features

- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Green Device Available

Applications

- High efficient switched mode power supplies
- TV Power
- Adapter/charger
- LED Lighting

SOT-223 Pin Configuration



Absolute Maximum Rating T_c=25°C unless otherwise noted

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	600	V
V _{GS}	Gate-Source Voltage	±30	V
I _D	Drain Current – Continuous (T _c =25°C)	1	A
	Drain Current – Continuous (T _c =100°C)	0.6	A
I _{DM}	Drain Current – Pulsed ¹	4	A
EAS	Single Pulse Avalanche Energy ²	2	mJ
IAS	Single Pulse Avalanche Current ²	1.9	A
P _D	Power Dissipation (T _c =25°C)	5.2	W
	Power Dissipation – Derate above 25°C	0.042	W/°C
T _{STG}	Storage Temperature Range	-55 to 150	°C
T _J	Operating Junction Temperature Range	-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Thermal Resistance Junction to ambient	---	70	°C/W
R _{θJC}	Thermal Resistance Junction to Case	---	24	°C/W

DEVICE CHARACTERISTICS

YS01N60L

Electrical Characteristics ($T_J=25^\circ\text{C}$, unless otherwise noted)

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{\text{GS}}=0\text{V}$, $I_{\text{D}}=250\mu\text{A}$	600	---	---	V
$\Delta \text{BV}_{\text{DSS}}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25°C , $I_{\text{D}}=1\text{mA}$	---	0.6	---	$^\circ\text{C}$
I_{DS}	Drain-Source Leakage Current	$V_{\text{DS}}=600\text{V}$, $V_{\text{GS}}=0\text{V}$, $T_J=25^\circ\text{C}$	---	---	1	μA
		$V_{\text{DS}}=480\text{V}$, $V_{\text{GS}}=0\text{V}$, $T_J=125^\circ\text{C}$	---	---	10	μA
I_{GSS}	Gate-Source Leakage Current	$V_{\text{GS}}=\pm 30\text{V}$, $V_{\text{DS}}=0\text{V}$	---	---	± 100	nA

On Characteristics

$R_{\text{DS(ON)}}$	Static Drain-source On-Resistance ³	$V_{\text{GS}}=10\text{V}$, $I_{\text{D}}=0.5\text{A}$	---	8.5	10.5	Ω
$V_{\text{GS(th)}}$	Gate Threshold Voltage	$V_{\text{GS}}=V_{\text{DS}}$, $I_{\text{D}}=250\mu\text{A}$	3	4	5	V
$\Delta V_{\text{GS(th)}}$	$V_{\text{GS(th)}}$ Temperature Coefficient		---	-7	---	$\text{mV}/^\circ\text{C}$
g_{fs}	Forward Transconductance	$V_{\text{DS}}=10\text{V}$, $I_{\text{D}}=0.5\text{A}$	---	1.1	---	S

Dynamic and Switching Characteristics

Q_g	Total Gate Charge ^{3,4}	$V_{\text{DS}}=480\text{V}$, $V_{\text{GS}}=10\text{V}$, $I_{\text{D}}=1\text{A}$	---	5.9	11	nC
Q_{gs}	Gate-Source Charge ^{3,4}		---	1.9	3.8	
Q_{gd}	Gate-Drain Charge ^{3,4}		---	2	4	
$T_{\text{d(on)}}$	Turn-On Delay Time ^{3,4}	$V_{\text{DD}}=300\text{V}$, $V_{\text{GS}}=10\text{V}$, $R_{\text{G}}=25\Omega$, $I_{\text{D}}=1\text{A}$	---	5	10	ns
T_r	Rise Time ^{3,4}		---	17	30	
$T_{\text{d(off)}}$	Turn-On Delay Time ^{3,4}		---	10	18	
T_f	Fall Time ^{3,4}		---	23	35	
C_{iss}	Input Capacitance	$V_{\text{DS}}=25\text{V}$, $V_{\text{GS}}=0\text{V}$, $f=1\text{MHz}$	---	185	290	pF
C_{oss}	Output Capacitance		---	20	40	
C_{rss}	Reverse Transfer Capacitance		---	6	12	
R_g	Gate Resistance	$V_{\text{GS}}=0\text{V}$, $V_{\text{DS}}=0\text{V}$, $f=1\text{MHz}$	---	1.5	3	Ω

Drain-Source Diode Characteristics and Maximum Ratings

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_s	Continuous Source Current	$V_G=V_D=0\text{V}$, Force Current	---	---	1	A
I_{SM}	Pulsed Source Current ³		---	---	2	A
V_{SD}	Diode Forward Voltage ³	$V_{\text{GS}}=0\text{V}$, $I_s=0.3\text{A}$, $T_J=25^\circ\text{C}$	---	---	1	V

Note :

- Repetitive Rating : Pulsed width limited by maximum junction temperature.
- $V_{\text{DD}}=50\text{V}$, $V_{\text{GS}}=10\text{V}$, $L=1\text{mH}$, $I_{\text{AS}}=1.9\text{A}$, $R_{\text{G}}=25\Omega$, Starting $T_J=25^\circ\text{C}$.
- The data tested by pulsed , pulse width $\leq 300\text{us}$, duty cycle $\leq 2\%$.
- Essentially independent of operating temperature.

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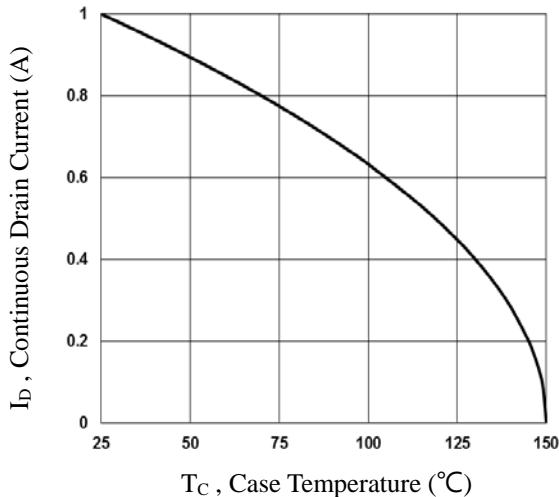


Fig.1 Continuous Drain Current vs. T_c

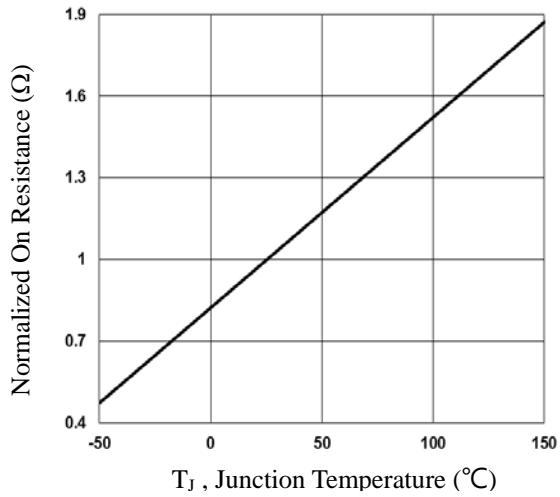


Fig.2 Normalized RD_{SON} vs. T_j

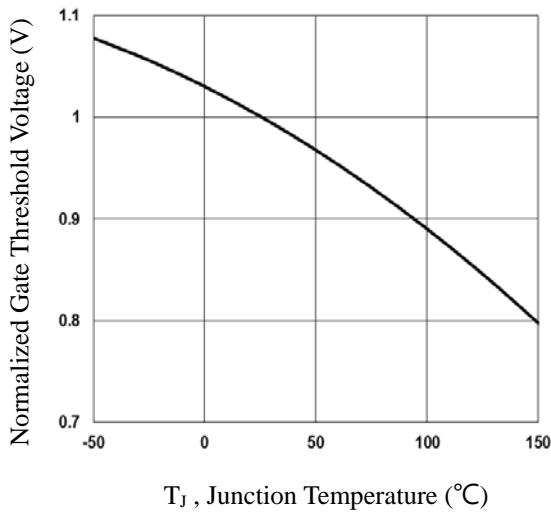


Fig.3 Normalized V_{th} vs. T_j

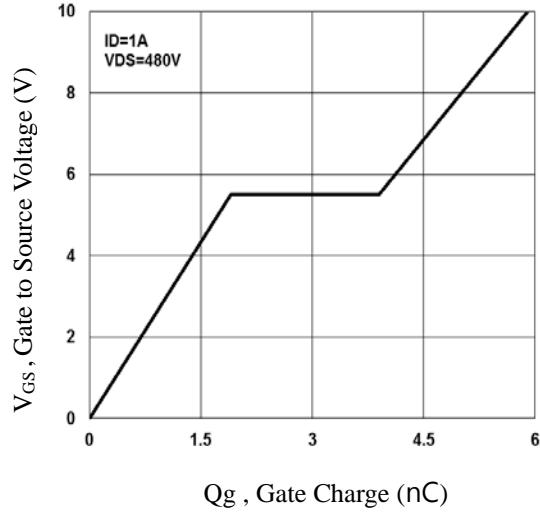


Fig.4 Gate Charge Waveform

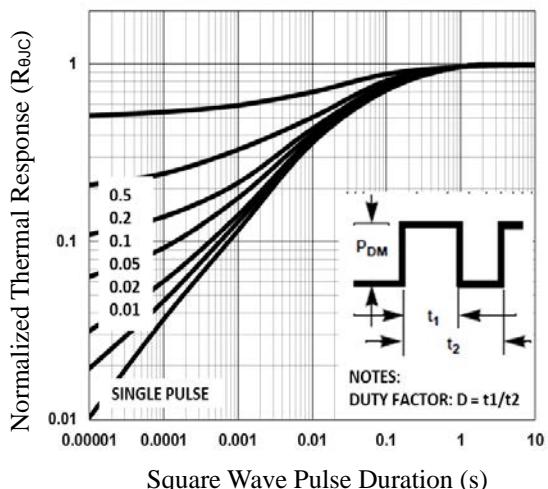


Fig.5 Normalized Transient Impedance

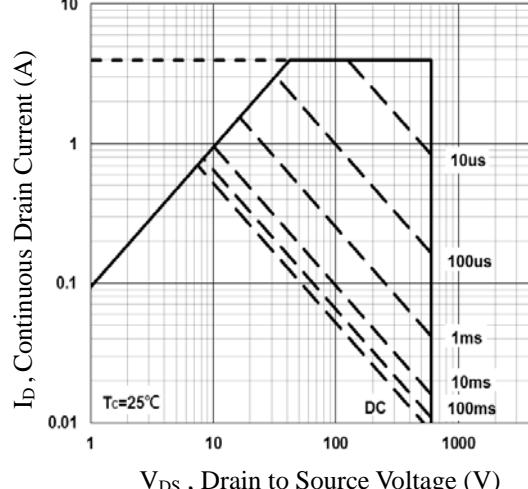


Fig.6 Maximum Safe Operation Area

DEVICE CHARACTERISTICS

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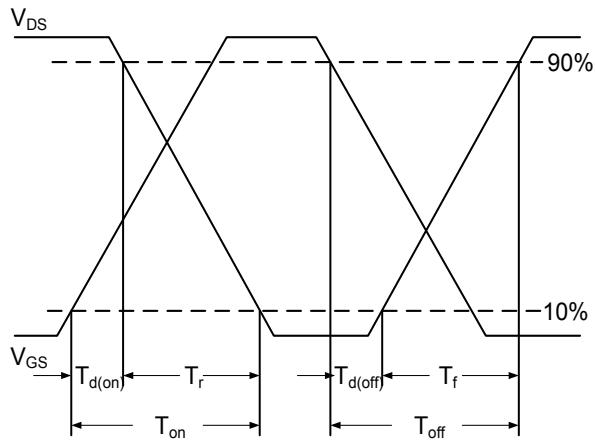


Fig.7 Switching Time Waveform

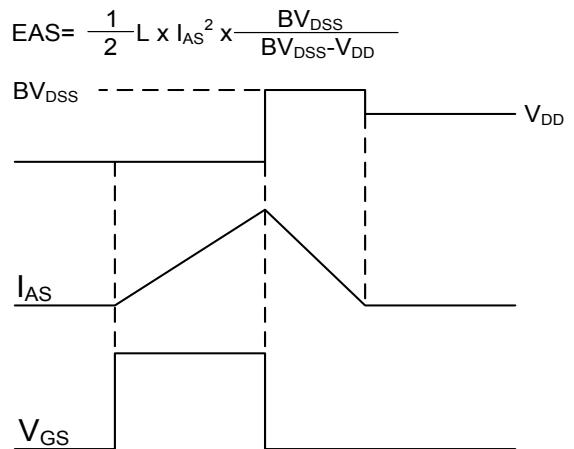
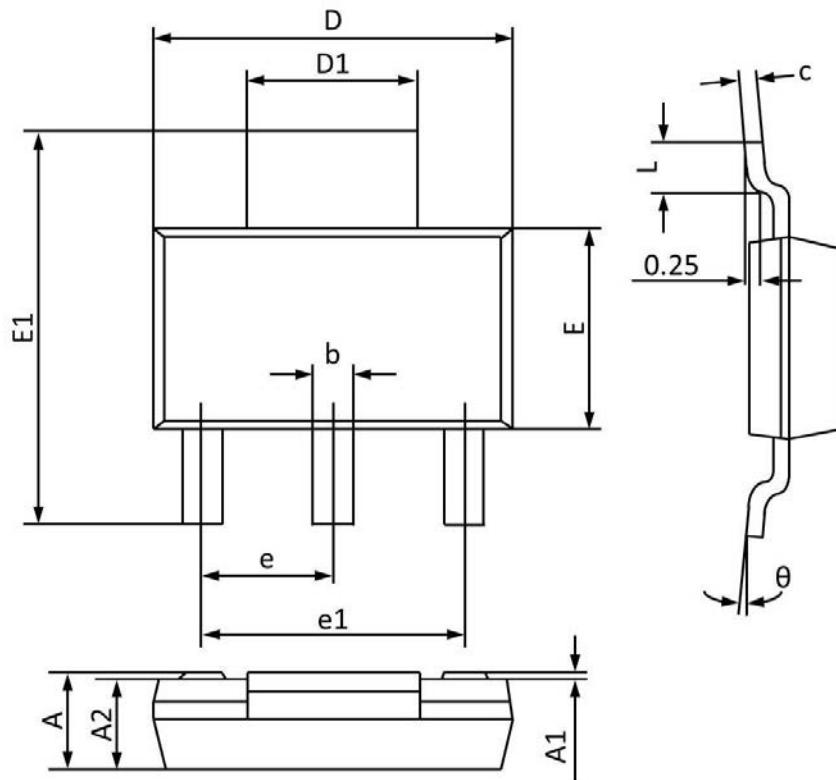


Fig.8 EAS Waveform

PACKAGE OUTLINE & DIMENSIONS

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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°