



YEA SHIN TECHNOLOGY CO., LTD

YS2218Q

Dual N-Channel Enhancement MOSFET



VDS= 20V, ID= 3.6A

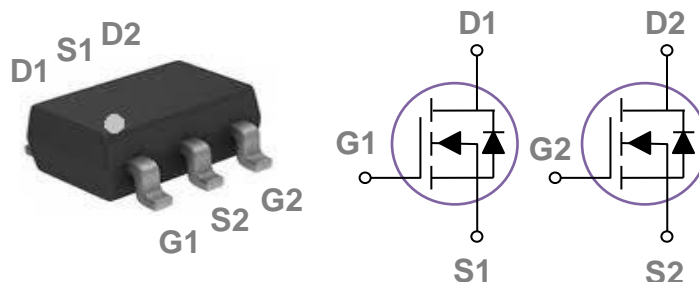
Features

- 20V, 3.6A, $R_{DS(ON)} = 60m\Omega @ V_{GS} = 4.5V$
- Improved dv/dt capability
- Fast switching
- Green Device Available
- Suit for 1.8V Gate Drive Applications

Applications

- Notebook
- Load Switch
- Hand-Held Instruments

SOT-26 Dual Pin Configuration



Absolute Maximum Rating $T_c=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	20	V
V_{GS}	Gate-Source Voltage	± 10	V
I_D	Drain Current – Continuous ($T_A=25^\circ\text{C}$)	3.6	A
	Drain Current – Continuous ($T_A=70^\circ\text{C}$)	2.9	A
I_{DM}	Drain Current – Pulsed ¹	14.4	A
P_D	Power Dissipation ($T_A=25^\circ\text{C}$)	1.25	W
	Power Dissipation – Derate above 25°C	0.01	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	---	100	$^\circ\text{C}/\text{W}$

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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 =250uA	20	---	---	V
ΔBV _{DSS} /ΔT _J	BV _{DSS} Temperature Coefficient	Reference to 25°C, I _D =1mA	---	0.02	---	V/°C
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} =±10V, V _{DS} =0V	---	---	±100	nA

On Characteristics

R _{DS(ON)}	Static Drain-source On-Resistance ²	V _{GS} =4.5V, I _D =3A	---	50	60	mΩ
		V _{GS} =2.5V, I _D =2A	---	60	80	mΩ
		V _{GS} =1.8V, I _D =1A	---	85	110	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} =V _{DS} , I _D =250uA	0.3	0.5	1	V
ΔV _{GS(th)}	V _{GS(th)} Temperature Coefficient		---	2	---	mV/°C
g _{fs}	Forward Transconductance	V _{DS} =10V, I _S =2A	---	4.4	---	S

Dynamic and Switching Characteristics

Q _g	Total Gate Charge ^{2,3}	V _{DS} =10V, V _{GS} =4.5V, I _D =1A	---	3.6	7.2	nC
Q _{gs}	Gate-Source Charge ^{2,3}		---	0.38	0.76	
Q _{gd}	Gate-Drain Charge ^{2,3}		---	0.6	1.2	
T _{d(on)}	Turn-On Delay Time ^{2,3}	V _{DD} =10V, V _{GS} =4.5V, R _G =25 Ω, I _D =1A	---	1.8	5	ns
T _r	Rise Time ^{2,3}		---	5.6	12	
T _{d(off)}	Turn-Off Delay Time ^{2,3}		---	11.3	24	
T _f	Fall Time ^{2,3}		---	3.2	7	
C _{iss}	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	---	180	360	pF
C _{oss}	Output Capacitance		---	32	64	
C _{rss}	Reverse Transfer Capacitance		---	26	52	

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	---	---	3.6	A
I _{SM}	Pulsed Source Current		---	---	7.2	A
V _{SD}	Diode Forward Voltage	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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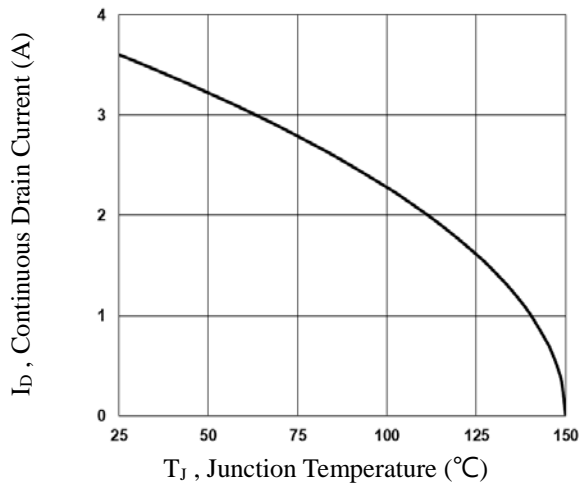


Fig.1 Continuous Drain Current vs. T_J

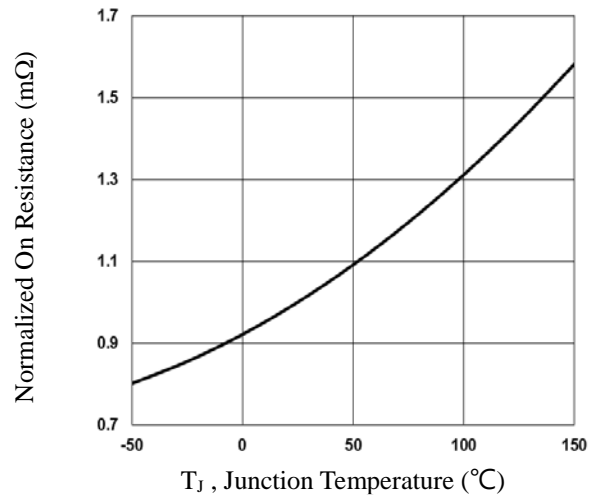


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

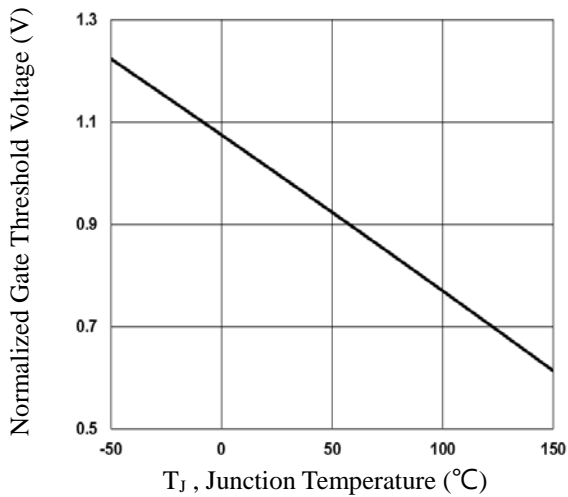


Fig.3 Normalized V_{th} vs. T_J

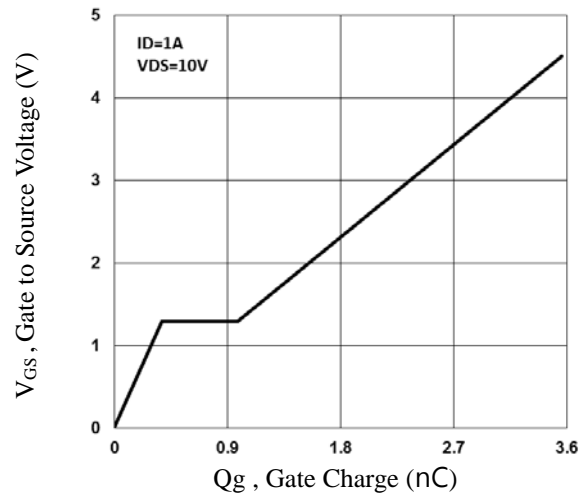


Fig.4 Gate Charge Waveform

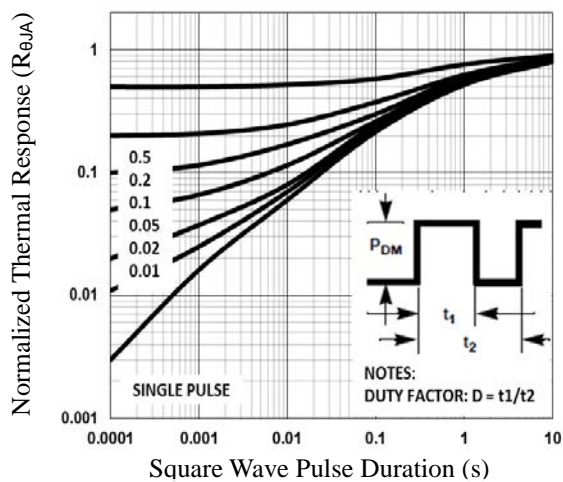


Fig.5 Normalized Transient Impedance

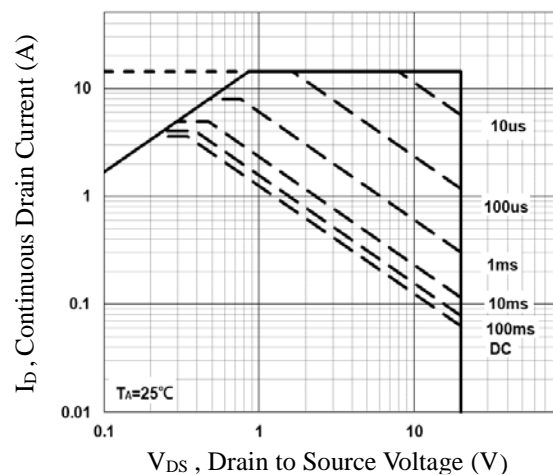


Fig.6 Maximum Safe Operation Area

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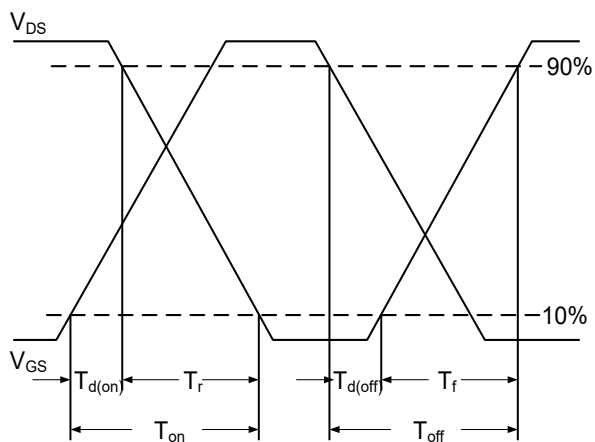


Fig.7 Switching Time Waveform

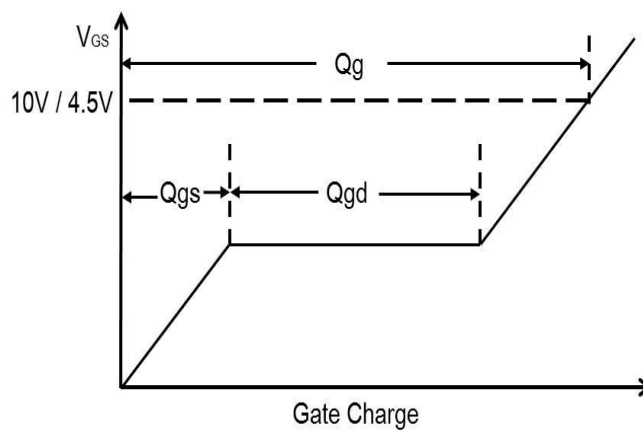
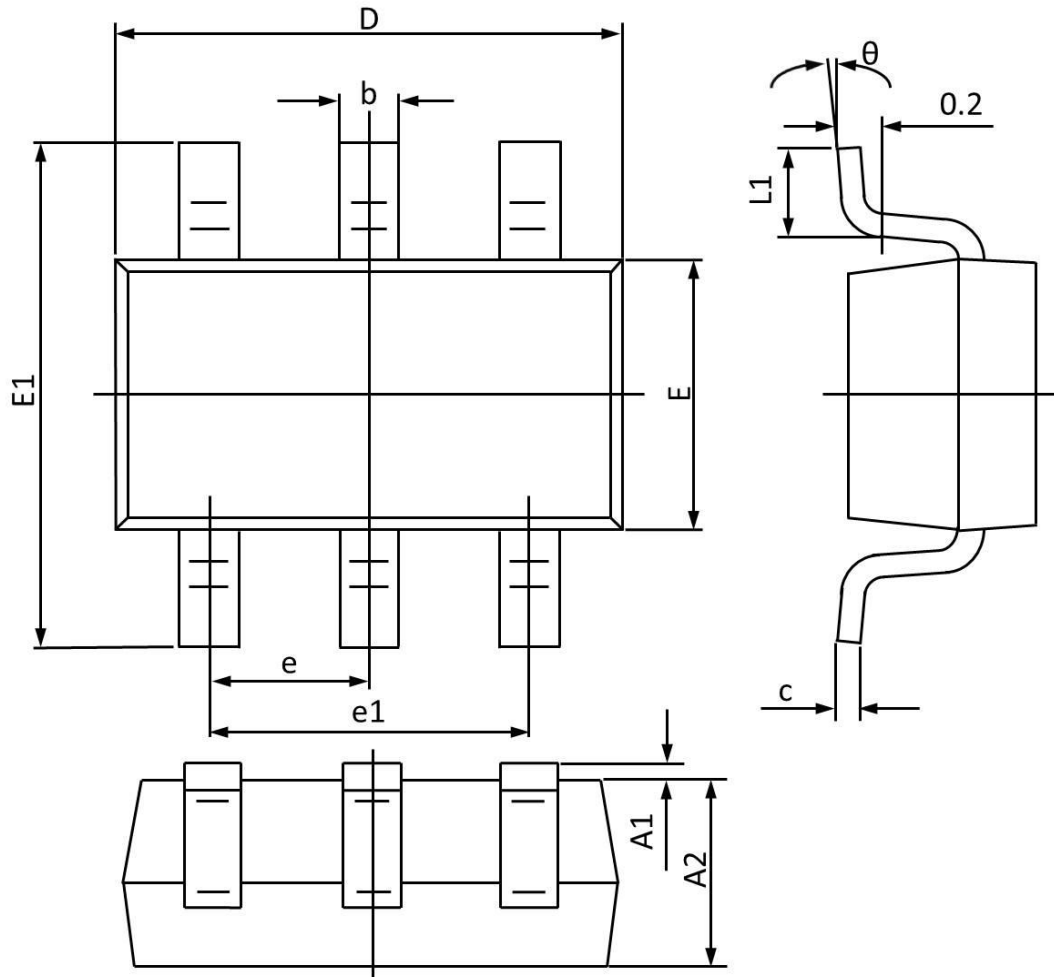


Fig.8 Gate Charge Waveform

PACKAGE OUTLINE & DIMENSIONS

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SOT-26 Dual PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A1	0.000	0.100	0.000	0.004
A2	1.000	1.200	0.040	0.047
b	0.300	0.500	0.012	0.019
c	0.047	0.207	0.002	0.008
D	2.800	3.000	0.110	0.118
E	1.500	1.800	0.059	0.070
E1	2.600	3.000	0.103	0.118
e	0.950 TYP		0.037 TYP	
e1	1.900 TYP		0.075 TYP	
L1	0.250	0.550	0.010	0.021
θ	0°	8°	0°	8°