



YEA SHIN TECHNOLOGY CO., LTD

YS3810HBB

Dual N-Channel Enhancement MOSFET



VDS= 30V, ID= 19.5A

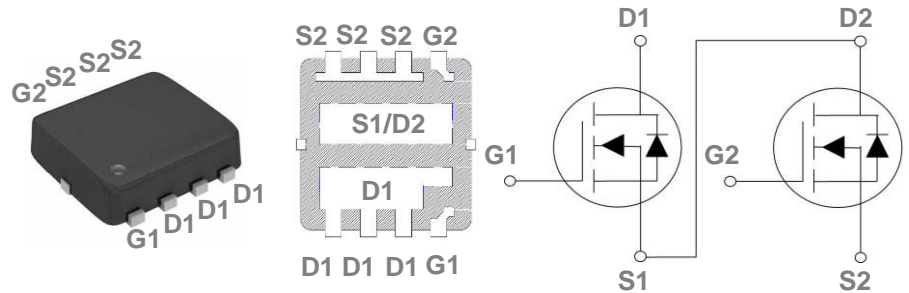
Features

- Improved dv/dt capability
- Fast switching
- 100% EAS Guaranteed
- Halogen free

PPAK3x3 Asymmetric Dual Pin Configuration

Applications

- MB / VGA / Vcore
- POL Applications
- SMPS 2nd SR



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

Symbol	Parameter	Q1 / Q2	Units
V _{DS}	Drain-Source Voltage	30	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Drain Current – Continuous ($T_A=25^\circ\text{C}$)	10.8	A
	Drain Current – Continuous ($T_A=70^\circ\text{C}$)	6.8	A
	Drain Current – Continuous ($T_c=25^\circ\text{C}$)	19.5	A
	Drain Current – Continuous ($T_c=100^\circ\text{C}$)	12.3	A
I _{DM}	Drain Current – Pulsed ¹	78	A
EAS	Single Pulse Avalanche Energy ²	13	mJ
IAS	Single Pulse Avalanche Current ²	16	A
P _D	Power Dissipation ($T_c=25^\circ\text{C}$)	27	W
	Power Dissipation – Derate above 25 $^\circ\text{C}$	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 $T_J=25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Typ.	Max.	Unit
R _{θJA}	Q1/Q2 Thermal Resistance Junction to ambient	---	62	$^\circ\text{C}/\text{W}$
R _{θJC}	Q1/Q2 Thermal Resistance Junction to Case	---	4.6	$^\circ\text{C}/\text{W}$

DEVICE CHARACTERISTICS

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

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\mu A$	30	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to $25\text{ }^\circ\text{C}$, $I_D=1mA$	---	0.04	---	$V/^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=30V, V_{GS}=0V, T_J=25\text{ }^\circ\text{C}$	---	---	1	μA
		$V_{DS}=24V, V_{GS}=0V, T_J=125\text{ }^\circ\text{C}$	---	---	10	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	---	---	± 100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-source On-Resistance ³	$V_{GS}=10V, I_D=10A$	---	8.5	10.5	$m\Omega$
		$V_{GS}=4.5V, I_D=5A$	---	11	14	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.6	2.5	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-4	---	$mV/^\circ\text{C}$
g_{fs}	Forward Transconductance	$V_{DS}=5V, I_D=5A$	---	12	---	S

Dynamic and Switching Characteristics

Q_g	Total Gate Charge ^{3,4}	$V_{DS}=15V, V_{GS}=10V, I_D=5A$	---	15.6	21	nC
Q_{gs}	Gate-Source Charge ^{3,4}		---	2.3	5	
Q_{gd}	Gate-Drain Charge ^{3,4}		---	3	6	
$T_{d(on)}$	Turn-On Delay Time ^{3,4}	$V_{DD}=15V, V_{GS}=10V, R_G=6\ \Omega, I_D=1A$	---	3.8	7	ns
T_r	Rise Time ^{3,4}		---	10	19	
$T_{d(off)}$	Turn-Off Delay Time ^{3,4}		---	22	42	
T_f	Fall Time ^{3,4}		---	6.6	13	
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	---	620	900	pF
C_{oss}	Output Capacitance		---	85	125	
C_{rss}	Reverse Transfer Capacitance		---	60	90	
R_g	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, f=1MHz$	---	2.8	5.6	Ω

Drain-Source Diode Characteristics and Maximum Ratings

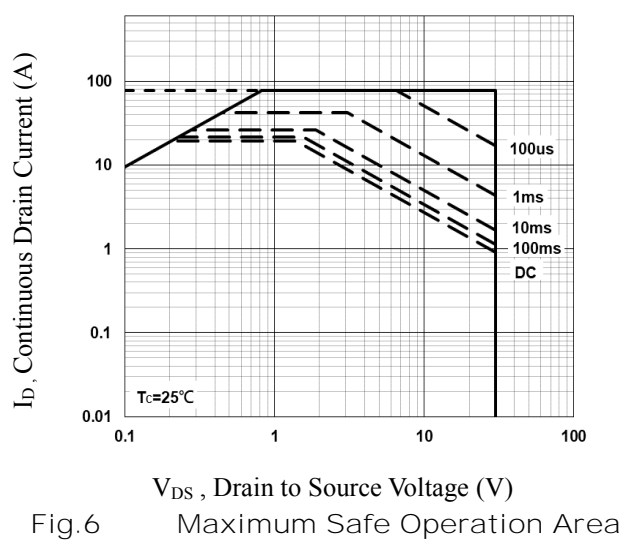
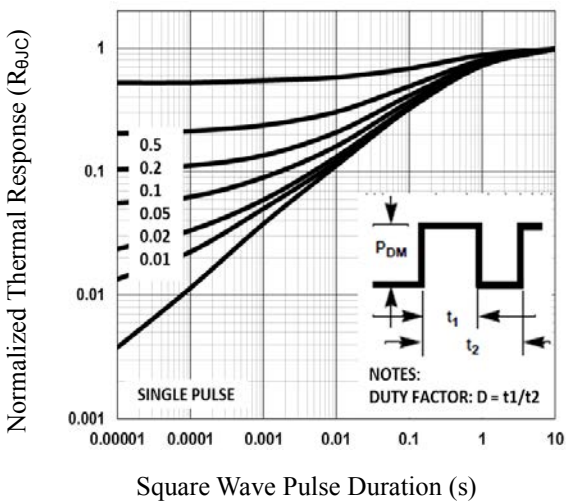
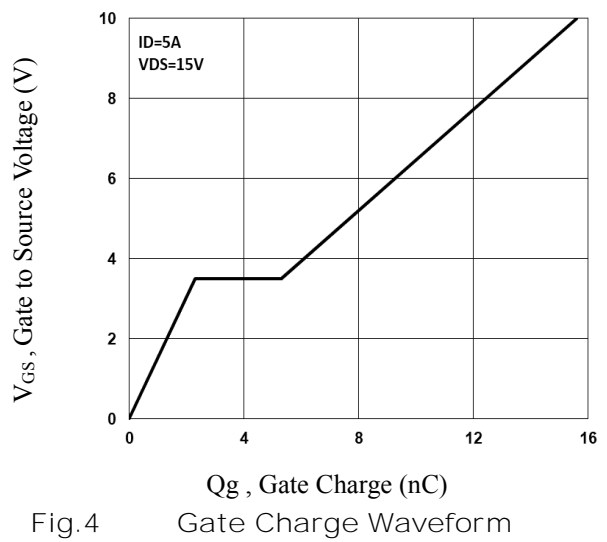
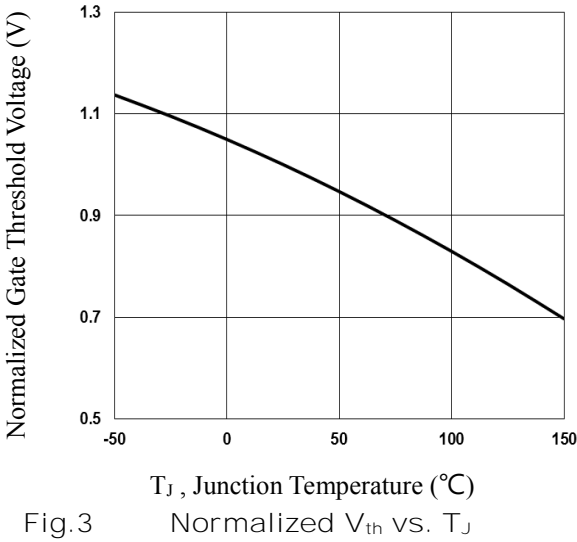
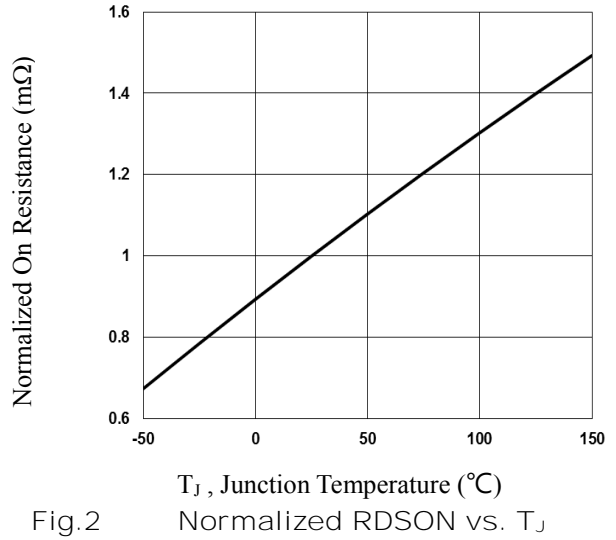
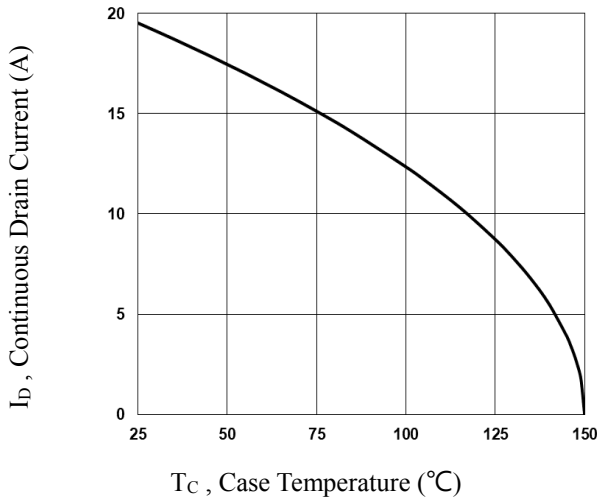
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V$, Force Current	---	---	19.5	A
I_{SM}	Pulsed Source Current ³		---	---	39	A
V_{SD}	Diode Forward Voltage ³	$V_{GS}=0V, I_S=1A, T_J=25\text{ }^\circ\text{C}$	---	---	1	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25V, V_{GS}=10V, L=0.1mH, Q1:I_{AS}=16A, Q2:I_{AS}=42A, R_G=25\Omega$, Starting $T_J=25\text{ }^\circ\text{C}$.
3. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

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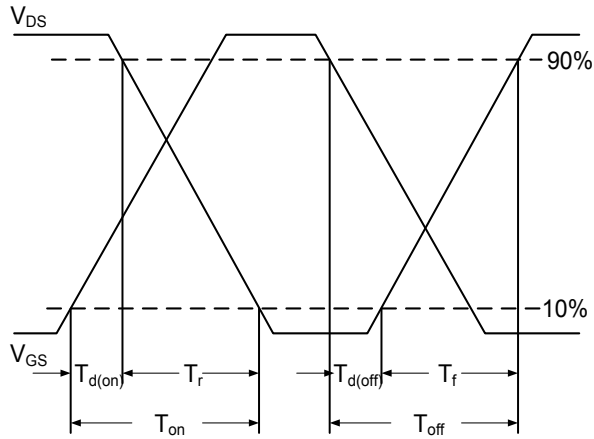


Fig.7 Switching Time Waveform

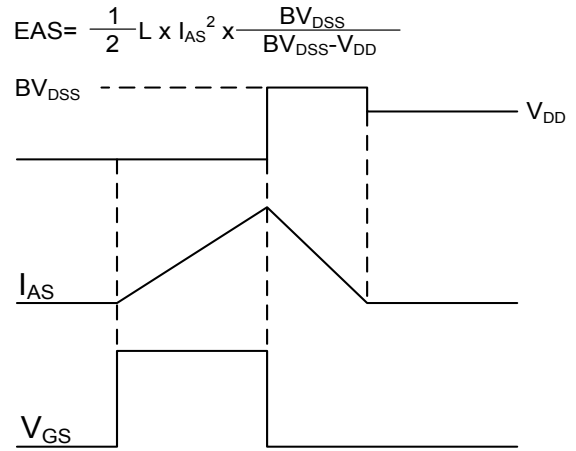
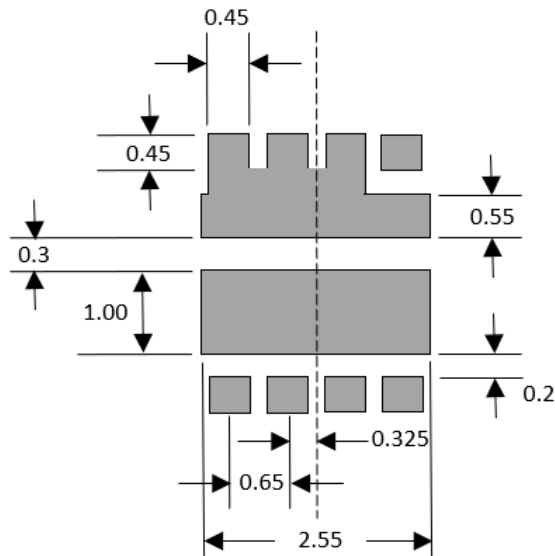


Fig.8 EAS Waveform

RECOMMEND FOOTPRINT Information



PACKAGE OUTLINE & DIMENSIONS

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PPAK3x3 Asymmetric Dual Package Information

