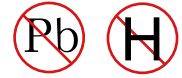




YEA SHIN TECHNOLOGY CO., LTD

YS4904ZBB

N-Channel Enhancement MOSFET

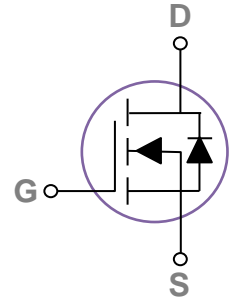
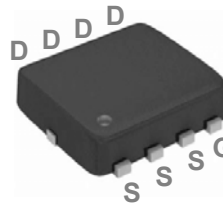


VDS= 40V, ID= 70A

Features

- 40V, 70A, $R_{DS(ON)}=5.5m\Omega@V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available

PPAK3x3 Pin Configuration



Applications

- Notebook
- Load Switch
- LED applications
- Hand-Held Device

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	40	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current – Continuous ($T_c=25^\circ C$)	70	A
	Drain Current – Continuous ($T_c=100^\circ C$)	44.3	A
I_{DM}	Drain Current – Pulsed ¹	280	A
P_D	Power Dissipation ($T_c=25^\circ C$)	52	W
	Power Dissipation – Derate above $25^\circ C$	0.42	W/ $^\circ C$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	62	$^\circ C/W$
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	2.4	$^\circ C/W$

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	$V_{GS}=0V, I_D=250\mu A$	40	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25°C , $I_D=1\text{mA}$	---	0.03	---	$V/^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=40V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	μA
		$V_{DS}=32V, V_{GS}=0V, T_J=85^\circ\text{C}$	---	---	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 ²	$V_{GS}=10V, I_D=20A$	---	4.2	5.5	$m\Omega$
		$V_{GS}=4.5V, I_D=10A$	---	5.3	7	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1.0	1.6	2.5	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-5	---	$mV/^\circ\text{C}$
g_{fs}	Forward Transconductance	$V_{DS}=10V, I_D=10A$	---	16	---	S

Dynamic and Switching Characteristics

Q_g	Total Gate Charge ^{2,3}	$V_{DS}=32V, V_{GS}=4.5V, I_D=10A$	---	25	50	nC
Q_{gs}	Gate-Source Charge ^{2,3}		---	6.4	13	
Q_{gd}	Gate-Drain Charge ^{2,3}		---	12.1	24	
$T_{d(on)}$	Turn-On Delay Time ^{2,3}	$V_{DD}=20V, V_{GS}=10V, R_G=3.3\Omega, I_D=1A$	---	14.2	28	ns
T_r	Rise Time ^{2,3}		---	18.3	36	
$T_{d(off)}$	Turn-Off Delay Time ^{2,3}		---	38.8	76	
T_f	Fall Time ^{2,3}		---	13.9	28	
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	2410	3600	pF
C_{oss}	Output Capacitance		---	233	400	
C_{rss}	Reverse Transfer Capacitance		---	152	230	
R_g	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, f=1\text{MHz}$	---	1.6	3.2	Ω

Drain-Source Diode Characteristics and Maximum Ratings

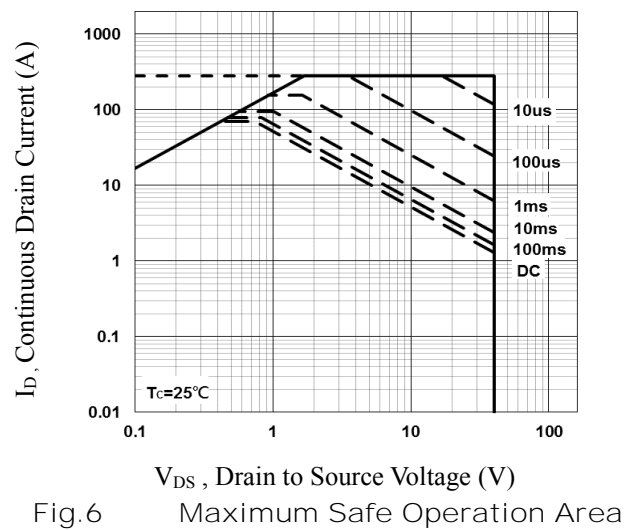
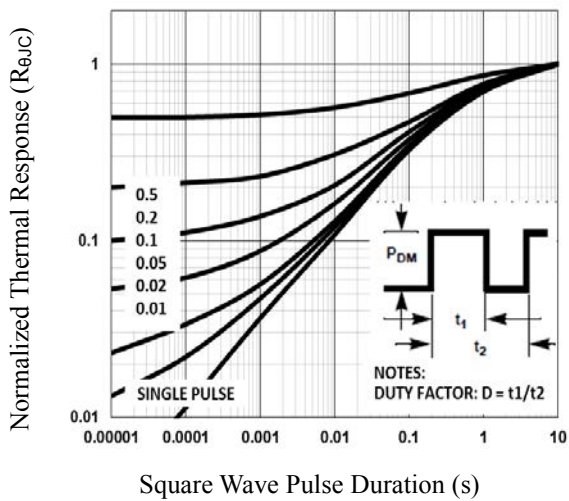
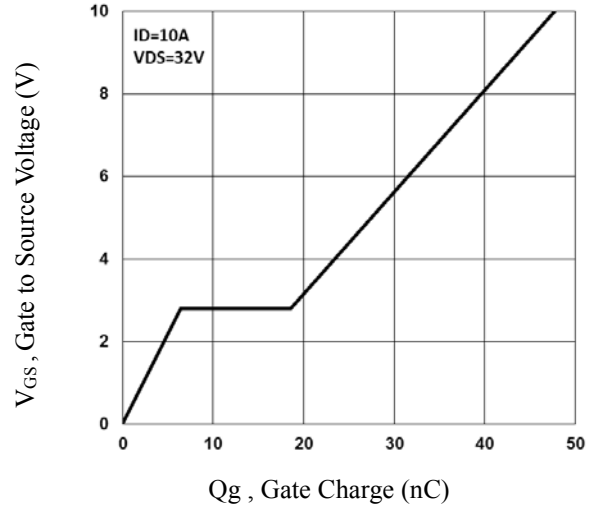
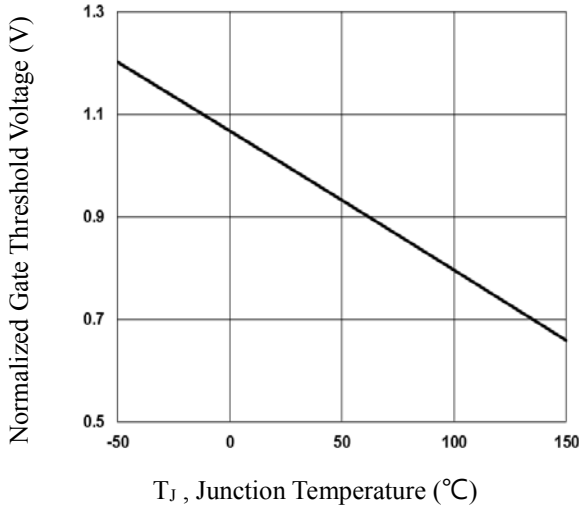
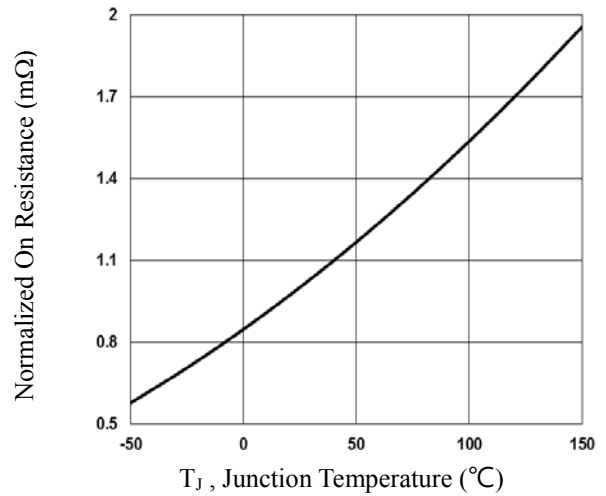
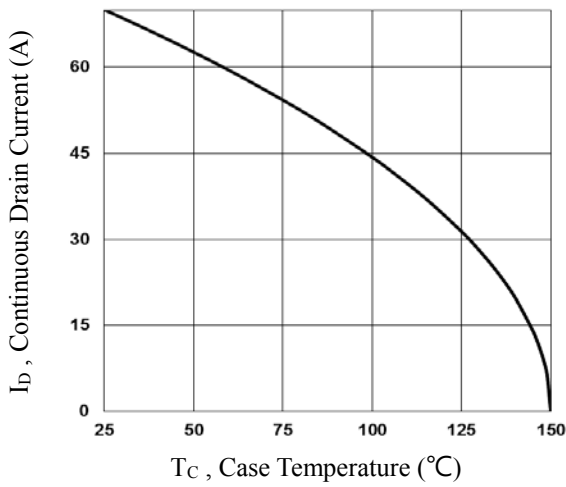
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V, \text{Force Current}$	---	---	70	A
I_{SM}	Pulsed Source Current ²		---	---	140	A
V_{SD}	Diode Forward Voltage ²	$V_{GS}=0V, I_S=1A, T_J=25^\circ\text{C}$	---	---	1	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Essentially independent of operating temperature.

DEVICE CHARACTERISTICS

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DEVICE CHARACTERISTICS

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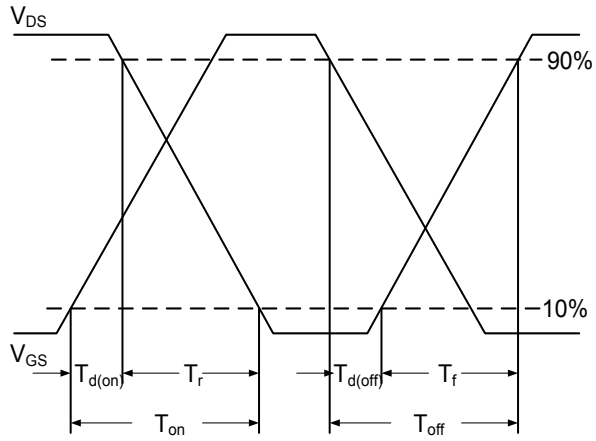


Fig.7 Switching Time Waveform

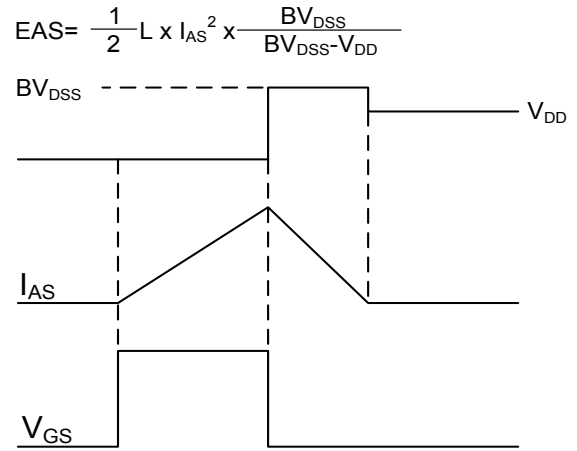
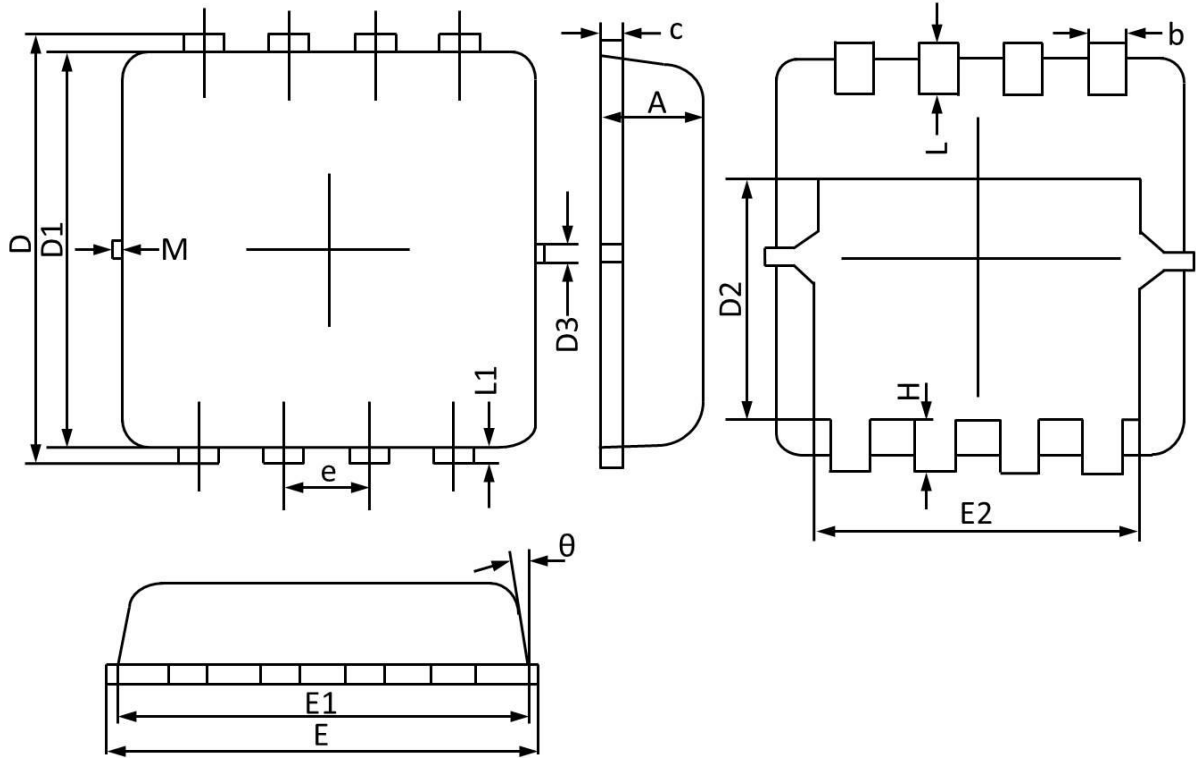


Fig.8 EAS Waveform

PACKAGE OUTLINE & DIMENSIONS

YS4904ZBB

PPAK3x3 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.800	0.028	0.031
b	0.250	0.350	0.010	0.013
c	0.100	0.250	0.004	0.009
D	3.250	3.450	0.128	0.135
D1	3.000	3.200	0.119	0.125
D2	1.780	1.980	0.070	0.077
D3	0.130 REF		0.005 REF	
E	3.200	3.400	0.126	0.133
E1	3.000	3.200	0.119	0.125
E2	2.390	2.590	0.094	0.102
e	0.650 BSC		0.026 BSC	
H	0.300	0.500	0.011	0.019
L	0.300	0.500	0.011	0.019
L1	0.130 REF		0.005 REF	
θ	0°	12°	0°	12°
M	0.150 REF		0.006 REF	