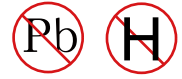




YEA SHIN TECHNOLOGY CO., LTD

YS4903ZBB

P-Channel Enhancement MOSFET

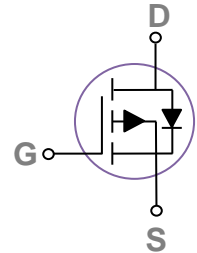
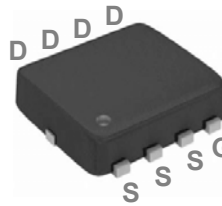


VDS= -40V, ID= -38A

Features

- -30V,-38A, RDS(ON) =14mΩ@VGS = -10V
- Fast switching
- Green Device Available
- Suit for -4.5V Gate Drive Applications

PPAK3x3 Pin Configuration



Applications

- MB / VGA / Vcore
- POL Applications
- Load Switch
- LED Application

Absolute Maximum Rating Tc=25°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°C)	-38	A
	Drain Current – Continuous (T _c =100°C)	-24	A
I _{DM}	Drain Current – Pulsed ¹	168	A
EAS	Single Pulse Avalanche Energy ²	61	mJ
IAS	Single Pulse Avalanche Current ²	35	A
P _D	Power Dissipation (T _c =25°C)	52	W
	Power Dissipation – Derate above 25°C	0.42	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	---	62	°C/W
R _{θJC}	Thermal Resistance Junction to Case	---	2.4	°C/W

DEVICE CHARACTERISTICS

YS4903ZBB

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
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-40V, V_{GS}=0V, T_J=25^\circ C$	---	---	-1	μA
		$V_{DS}=-32V, V_{GS}=0V, T_J=125^\circ C$	---	---	-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	$V_{GS}=-10V, I_D=-15A$	---	11.3	14	$m\Omega$
		$V_{GS}=-4.5V, I_D=-8A$	---	15.6	21	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	-1.0	-1.6	-2.5	V
gfs	Forward Transconductance	$V_{DS}=-10V, I_D=-4A$	---	11	---	S

Dynamic and Switching Characteristics

Q_g	Total Gate Charge ^{3,4}	$V_{DS}=-32V, V_{GS}=-4.5V, I_D=-10A$	---	22.2	40	nC
Q_{gs}	Gate-Source Charge ^{3,4}		---	8.2	16	
Q_{gd}	Gate-Drain Charge ^{3,4}		---	8.8	16	
$T_{d(on)}$	Turn-On Delay Time ^{3,4}	$V_{DD}=-20V, V_{GS}=-10V, R_G=6\Omega, I_D=-1A$	---	23	40	ns
T_r	Rise Time ^{3,4}		---	10	20	
$T_{d(off)}$	Turn-Off Delay Time ^{3,4}		---	135	250	
T_f	Fall Time ^{3,4}		---	46	90	
C_{iss}	Input Capacitance	$V_{DS}=-25V, V_{GS}=0V, f=1MHz$	---	2757	4000	pF
C_{oss}	Output Capacitance		---	240	360	
C_{rss}	Reverse Transfer Capacitance		---	137	200	

Drain-Source Diode Characteristics and Maximum Ratings

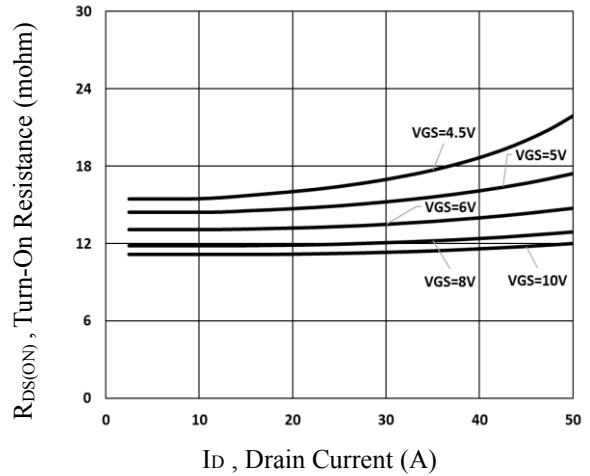
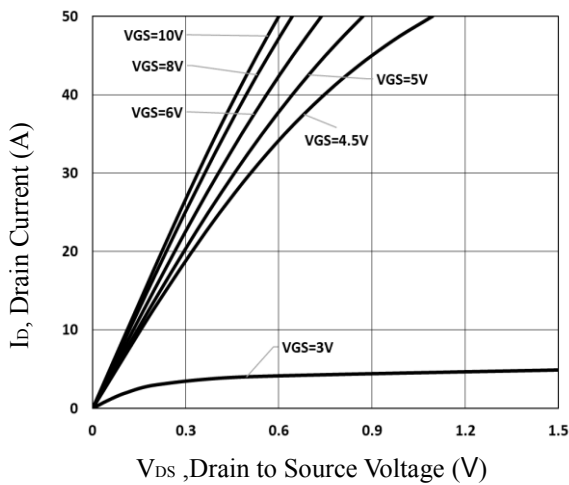
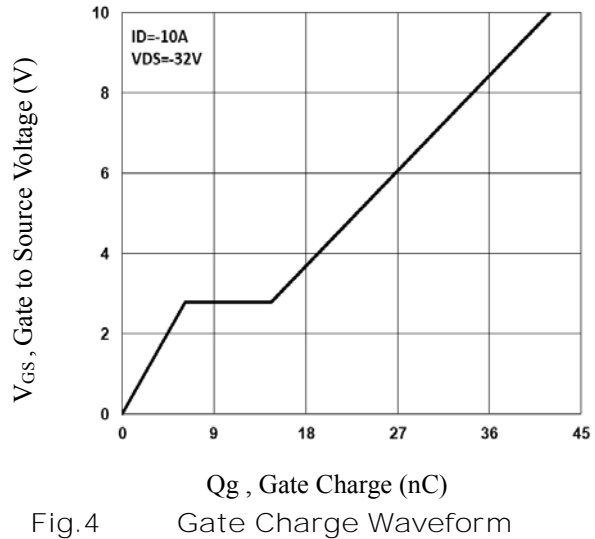
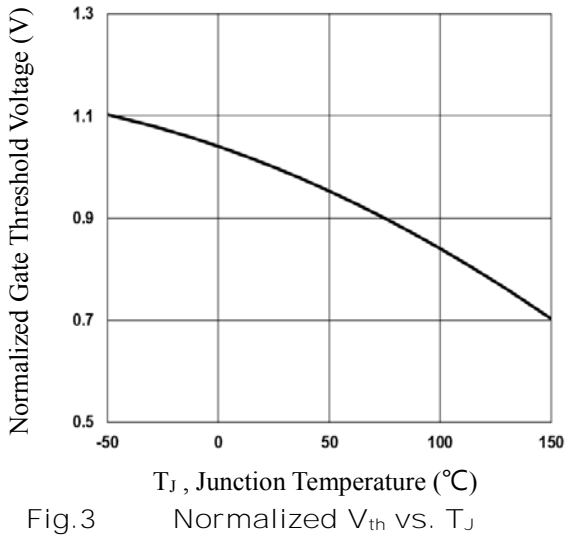
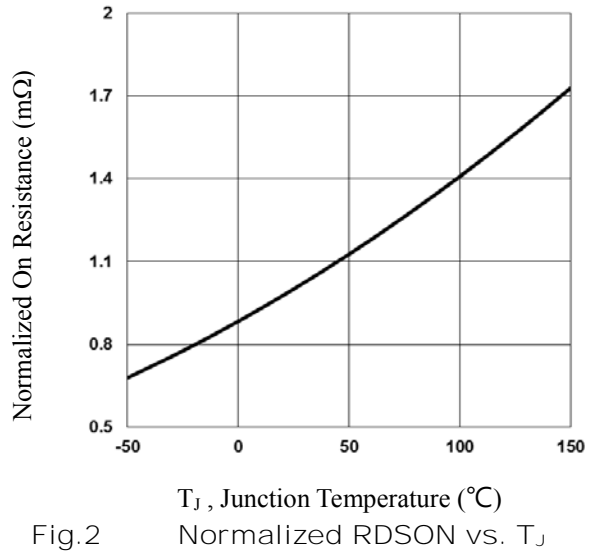
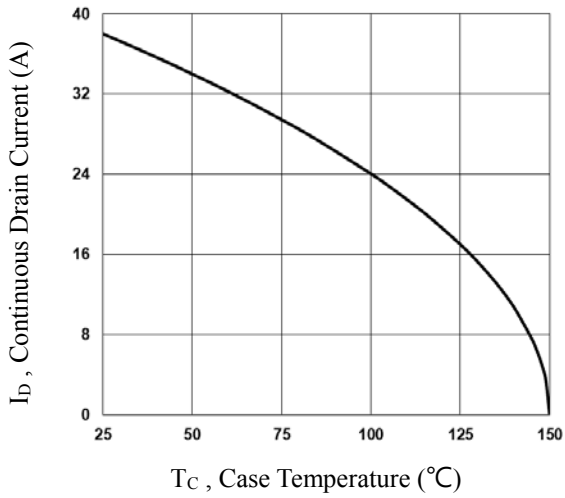
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_S	Continuous Source Current	$V_G=V_D=0V, \text{Force Current}$	---	---	-38	A
I_{SM}	Pulsed Source Current		---	---	-76	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_S=-1A, T_J=25^\circ C$	---	---	-1	V

Note :

1. Repetitive Rating : Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=51A, R_G=25\Omega$, Starting $T_J=25^\circ C$.
3. The data tested by pulsed , pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

DEVICE CHARACTERISTICS

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DEVICE CHARACTERISTICS

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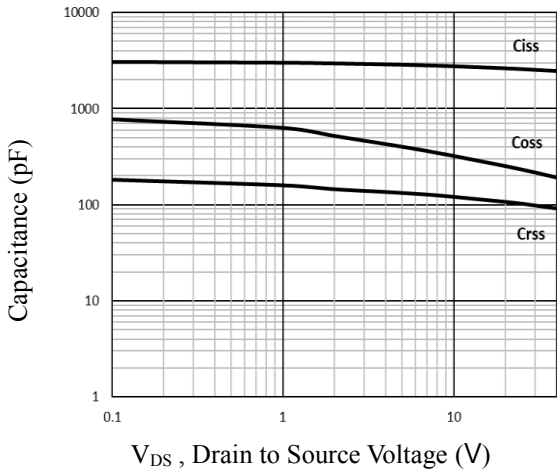


Fig. 7 Capacitance Characteristics

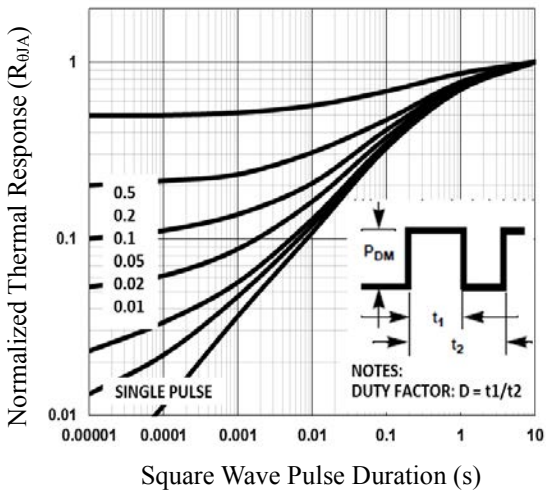


Fig. 8 Normalized Transient Impedance

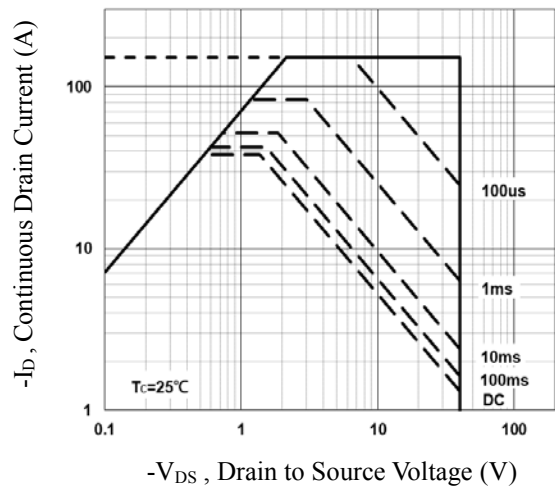


Fig. 9 Maximum Safe Operation Area

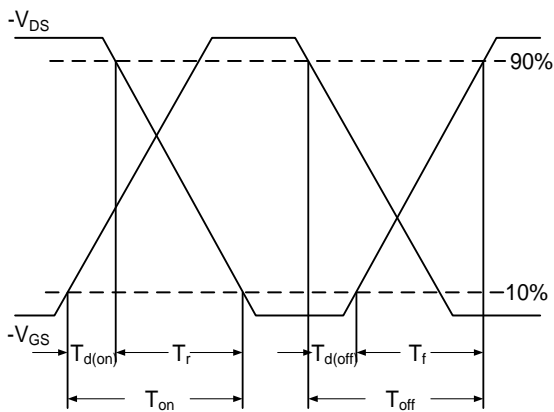


Fig. 10 Switching Time Waveform

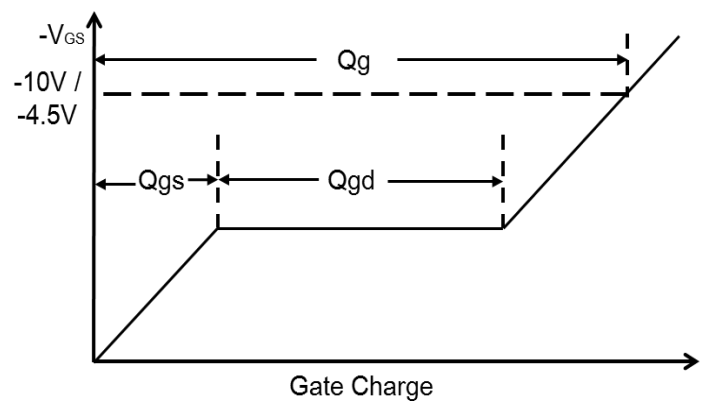
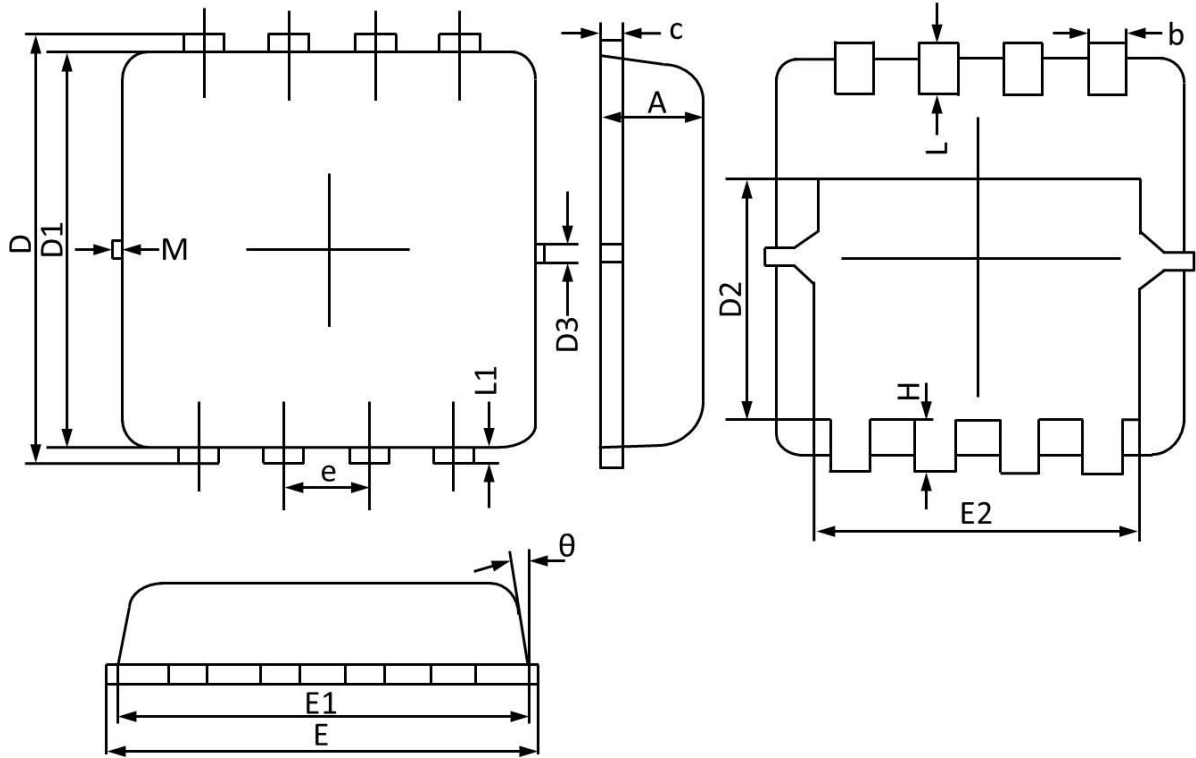


Fig. 11 Gate Charge Waveform

PACKAGE OUTLINE & DIMENSIONS

YS4903ZBB

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	