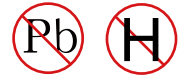




YEA SHIN TECHNOLOGY CO., LTD

YS2603ZBB

P-Channel Enhancement MOSFET



VDS= -20V, ID= -60A

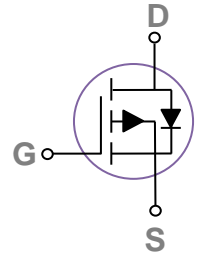
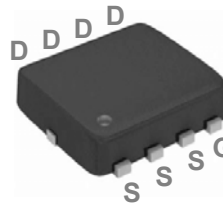
Features

- -20V,-60A, $R_{DS(ON)} = 8m\Omega @ V_{GS} = -4.5V$
- Improved dv/dt capability
- Fast switching
- Green Device Available
- Suit for -1.8V Gate Drive Applications

Applications

- Notebook
- Load Switch
- Networking
- Hand-Held Instruments

PPAK3x3 Pin Configuration



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

Symbol	Parameter	Rating	Units
V _{DS}	Drain-Source Voltage	-20	V
V _{GS}	Gate-Source Voltage	±12	V
I _D	Drain Current – Continuous ($T_c=25^\circ\text{C}$)	-60	A
	Drain Current – Continuous ($T_c=100^\circ\text{C}$)	-38	A
I _{DM}	Drain Current – Pulsed ¹	-240	A
P _D	Power Dissipation ($T_c=25^\circ\text{C}$)	62.5	W
	Power Dissipation – Derate above 25°C	0.5	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 _{θJA}	Thermal Resistance Junction to ambient	---	62	$^\circ\text{C}/\text{W}$
R _{θJC}	Thermal Resistance Junction to Case	---	2	$^\circ\text{C}/\text{W}$

DEVICE CHARACTERISTICS

YS2603ZBB

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	$V_{GS}=0V, I_D=-250\mu A$	-20	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25°C , $I_D=-1mA$	---	-0.01	---	$V/^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=-20V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	-1	μA
		$V_{DS}=-16V, V_{GS}=0V, T_J=125^\circ\text{C}$	---	---	-10	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 12V, V_{DS}=0V$	---	---	± 100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-source On-Resistance	$V_{GS}=-4.5V, I_D=-8A$	---	6	8	$m\Omega$
		$V_{GS}=-2.5V, I_D=-5A$	---	8	11	$m\Omega$
		$V_{GS}=-1.8V, I_D=-3A$	---	11	16	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=-250\mu A$	-0.3	-0.6	-1	V
g_{fs}	Forward Transconductance	$V_{DS}=-10V, I_D=-5A$	---	20	---	S

Dynamic and Switching Characteristics

Q_g	Total Gate Charge ^{2,3}	$V_{DS}=-10V, V_{GS}=-4.5V, I_D=-5A$	---	44.4	80	nC
Q_{gs}	Gate-Source Charge ^{2,3}		---	7.2	14	
Q_{gd}	Gate-Drain Charge ^{2,3}		---	10.2	20	
$T_{d(on)}$	Turn-On Delay Time ^{2,3}	$V_{DD}=-10V, V_{GS}=-4.5V, R_G=25\Omega, I_D=-1A$	---	13.2	26	ns
T_r	Rise Time ^{2,3}		---	68	120	
$T_{d(off)}$	Turn-Off Delay Time ^{2,3}		---	160	320	
T_f	Fall Time ^{2,3}		---	154	300	
C_{iss}	Input Capacitance	$V_{DS}=-15V, V_{GS}=0V, f=1MHz$	---	4060	8000	pF
C_{oss}	Output Capacitance		---	520	1000	
C_{rss}	Reverse Transfer Capacitance		---	400	800	

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	---	---	-60	A
I_{SM}	Pulsed Source Current		---	---	-120	A
V_{SD}	Diode Forward Voltage	$V_{GS}=0V, I_S=-1A, T_J=25^\circ\text{C}$	---	---	-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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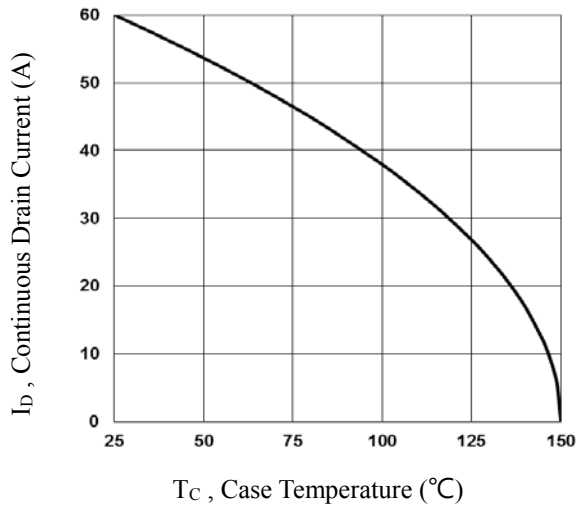


Fig.1 Continuous Drain Current vs. T_C

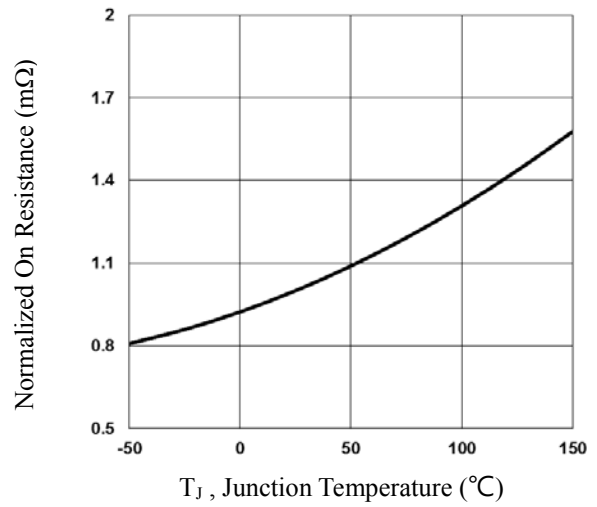


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

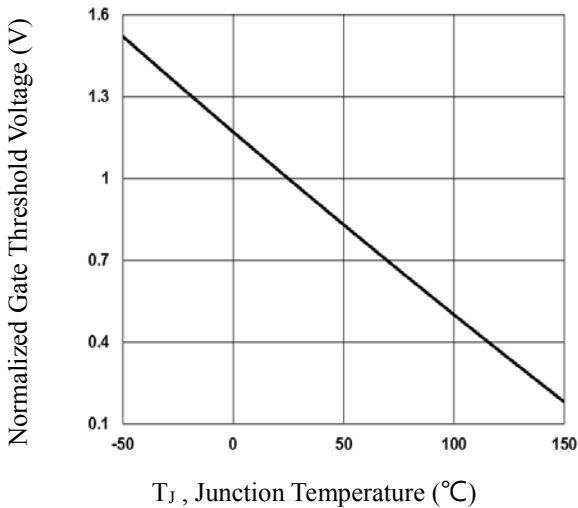


Fig.3 Normalized V_{th} vs. T_J

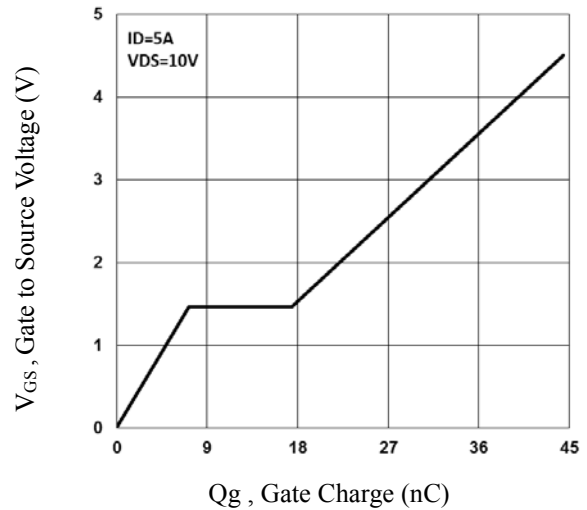


Fig.4 Gate Charge Waveform

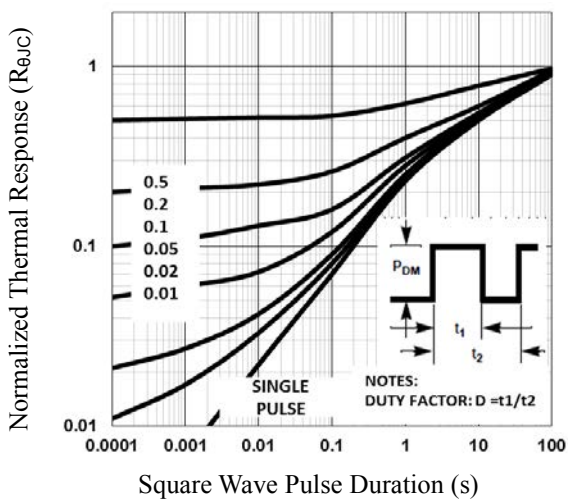


Fig.5 Normalized Transient Impedance

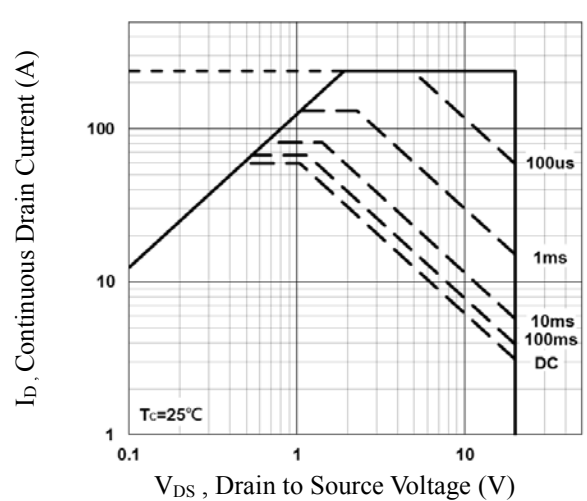


Fig.6 Maximum Safe Operation Area

DEVICE CHARACTERISTICS

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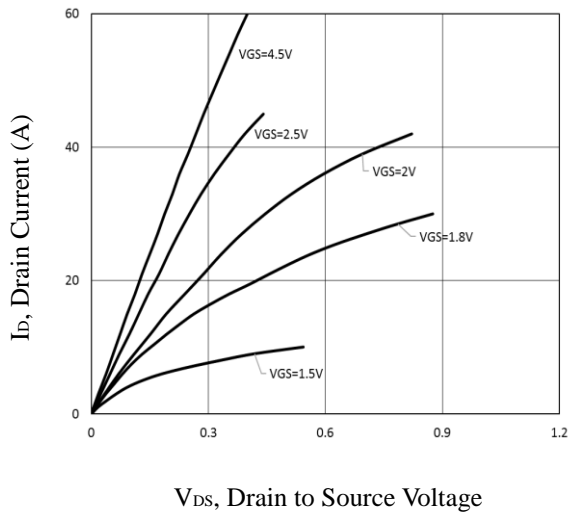


Fig.7 Typical Output Characteristics

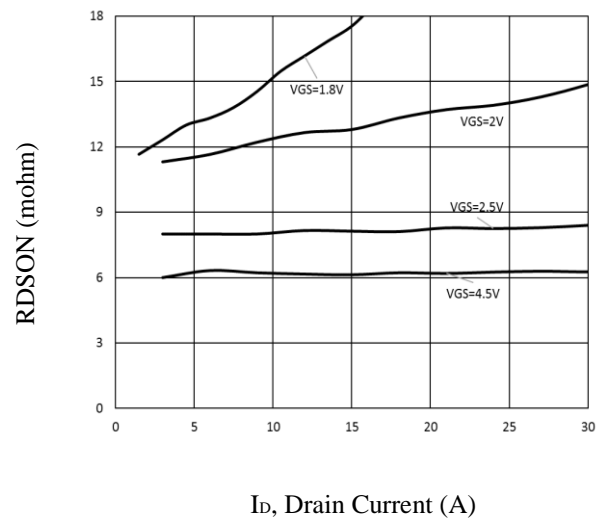


Fig.8 $R_{DS(on)}$ vs. Drain Current

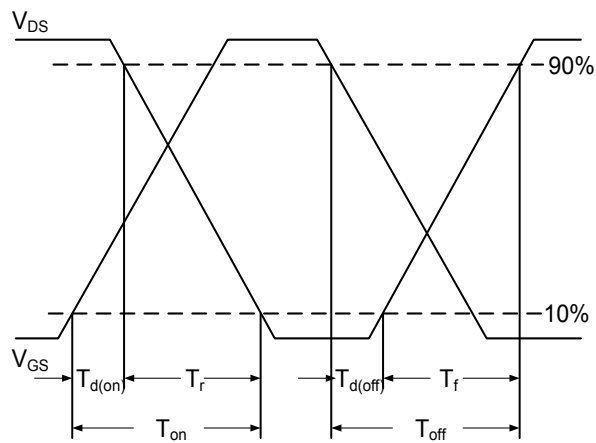


Fig.9 Switching Time Waveform

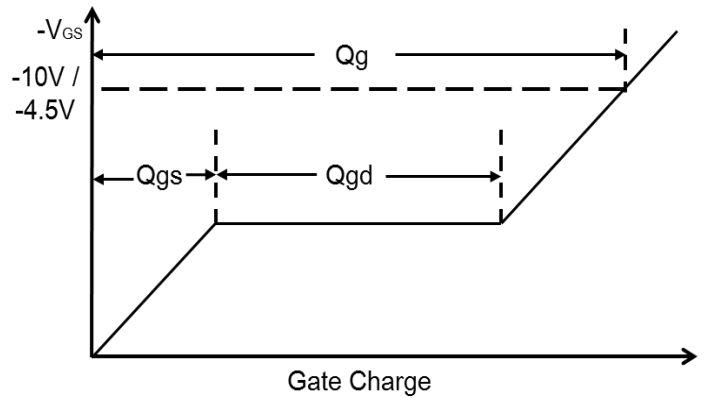
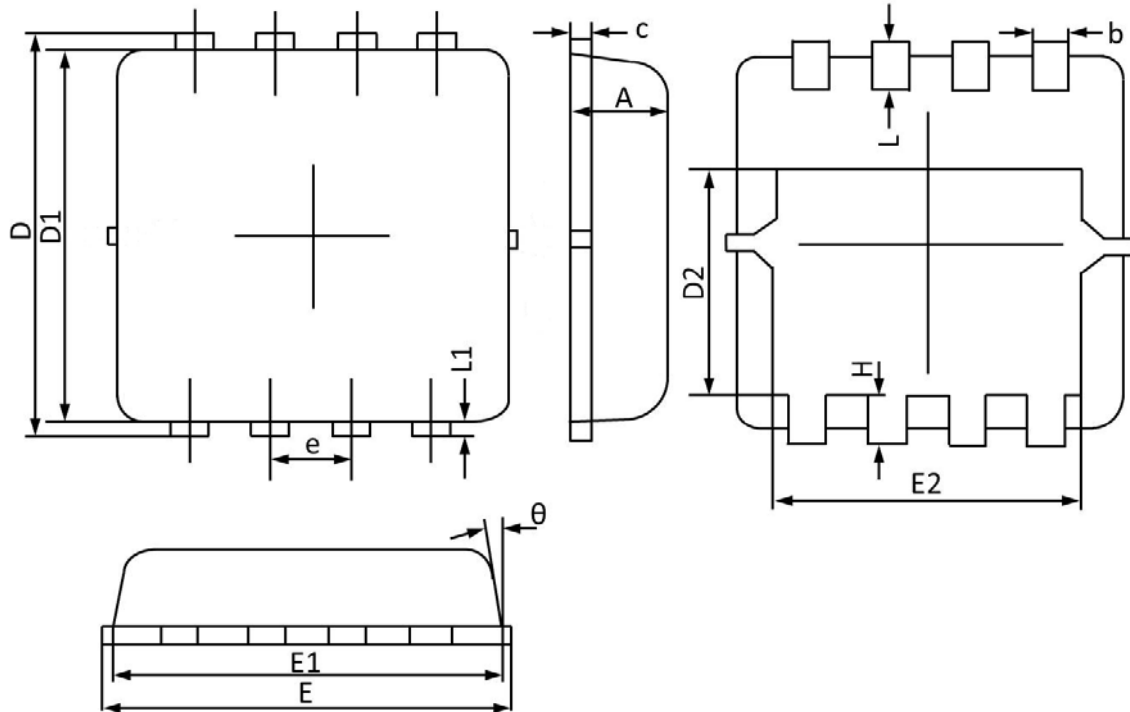


Fig.10 Gate Charge Waveform

PACKAGE OUTLINE & DIMENSIONS

YS2603ZBB

PPAK3x3 PACKAGE INFORMATION



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.700	0.900	0.028	0.035
b	0.240	0.350	0.009	0.014
c	0.100	0.250	0.004	0.010
D	3.050	3.450	0.120	0.136
D1	2.900	3.200	0.114	0.126
D2	1.350	1.850	0.053	0.073
E	3.000	3.400	0.118	0.134
E1	2.900	3.250	0.114	0.128
E2	2.350	2.600	0.093	0.102
e	0.650 BSC		0.026 BSC	
H	0.300	0.500	0.012	0.020
L	0.300	0.500	0.012	0.020
L1	0.070	0.200	0.003	0.008
θ	0°	12°	0°	12°