YEA SHIN TECHNOLOGY CO., LTD

YSE3907ZBB

P-Channel Enhancement MOSFET

VDS= -30V, ID= -30A

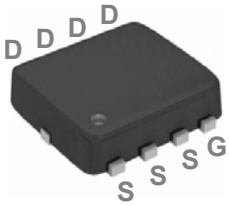
Features

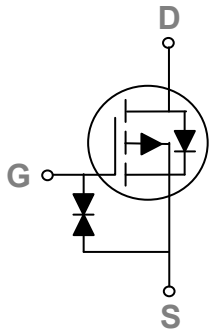
- *-30V,-30A, RDS(ON) =20mΩ@VGS = -10V*
- *Fast switching*
- *Green Device Available*
- *Suit for -4.5V Gate Drive Applications*
- *ESD Protection Embedded*

Applications

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

PPAK3x3 Pin Configuration





Absolute Maximum Ratings **Tc=25℃ unless otherwise noted**

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	-30	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Drain Current – Continuous (Tc=25℃)	-30	A
	Drain Current – Continuous (Tc=100℃)	-19	A
I_{DM}	Drain Current – Pulsed[1]	-120	A
P_D	Power Dissipation (Tc=25℃)	27	W
	Power Dissipation – Derate above 25℃	0.22	W/℃
T_{STG}	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃

Thermal Characteristics

Symbol	Parameter	Typ.	Max.	Unit
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	62	℃/W
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	4.6	℃/W

DEVICE CHARACTERISTICS

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Electrical Characteristics **(T_J=25 ℃, unless otherwise noted)**

Off Characteristics

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=-250uA	-30	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃, I_D=-1mA	---	-0.03	---	V/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=-27V, V_{GS}=0V, T_J=25℃	---	---	-1	uA
		V_{DS}=-24V, V_{GS}=0V, T_J=125℃	---	---	-10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0V	---	---	±10	uA

On Characteristics

$R_{DS(ON)}$	Static Drain-source On-Resistance	V_{GS}=-10V, I_D=-8A	---	16	20	mΩ
		V_{GS}=-4.5V, I_D=-6A	---	26	35	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS}, I_D=-250uA	-1.2	-1.6	-2.5	V
$\triangle V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	4	---	mV/℃
gfs	Forward Transconductance	V_{DS}=-10V, I_D=-8A	---	6.8	---	S

Dynamic and Switching Characteristics

Q_g	Total Gate Charge[2,3]	V_{DS}=-15V, V_{GS}=-4.5V, I_D=-5A	---	11	17	nC
Q_{gs}	Gate-Source Charge[2,3]		---	3.4	6	
Q_{gd}	Gate-Drain Charge[2,3]		---	4.2	8	
$T_{d(on)}$	Turn-On Delay Time[2,3]	V_{DD}=-15V, V_{GS}=-10V, R_G=6Ω, I_D=-1A	---	5.8	11	ns
T_r	Rise Time[2,3]		---	18.8	36	
$T_{d(off)}$	Turn-On Delay Time[2,3]		---	46.9	90	
T_f	Fall Time[2,3]		---	12.3	23	
C_{iss}	Input Capacitance	V_{DS}=-15V, V_{GS}=0V, f=1MHz	---	1250	2500	pF
C_{oss}	Output Capacitance		---	160	320	
C_{rss}	Reverse Transfer Capacitance		---	90	180	

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	---	---	-30	A
I_{SM}	Pulsed Source Current		---	---	-60	A
V_{SD}	Diode Forward Voltage	V_{GS}=0V, I_S=-1A, T_J=25℃	---	---	-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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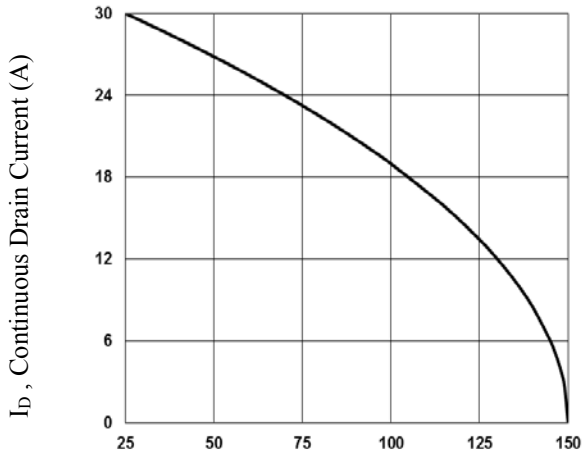

Fig.1 Continuous Drain Current vs. T_C

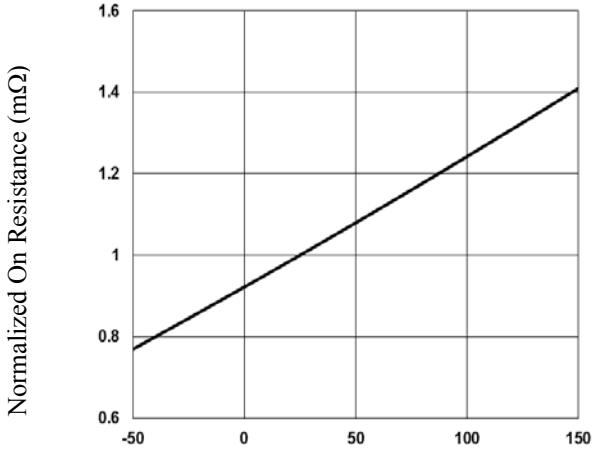

Fig.2 Normalized RDSON vs. T_J

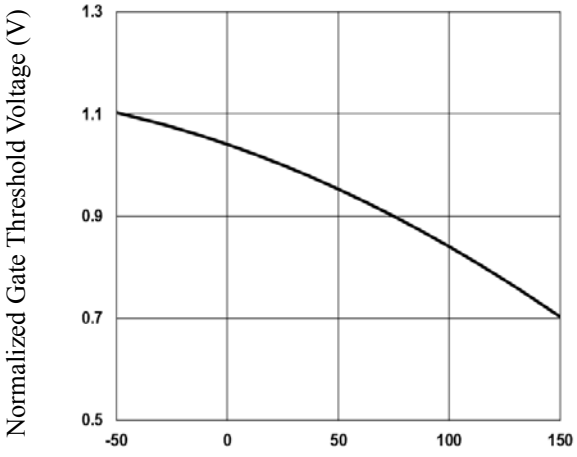

Fig.3 Normalized V_{th} vs. T_J

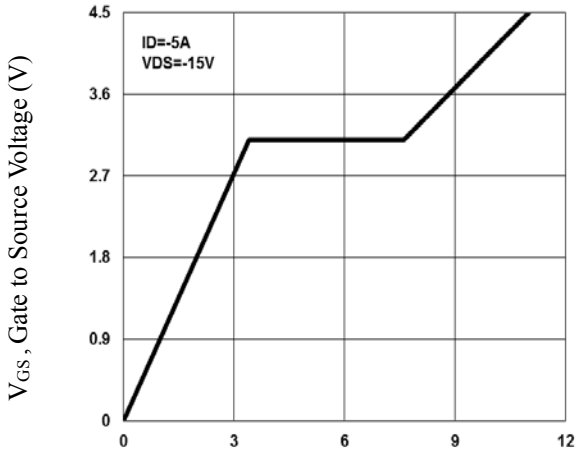

Fig.4 Gate Charge Waveform

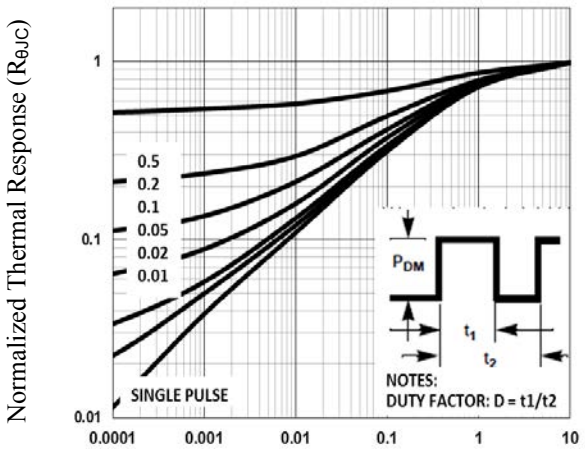

Fig.5 Normalized Transient Impedance

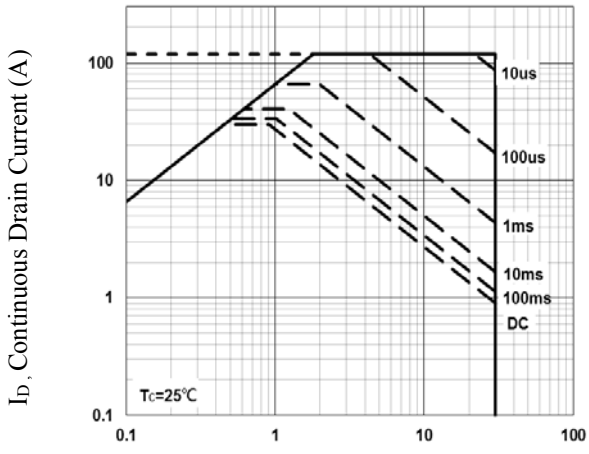

Fig.6 Maximum Safe Operation Area

DEVICE CHARACTERISTICS

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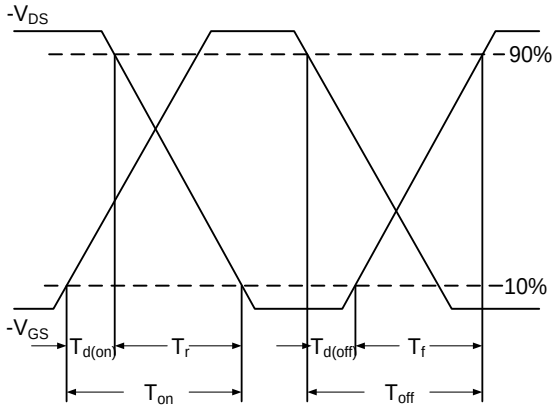


Fig.7 Switching Time Waveform

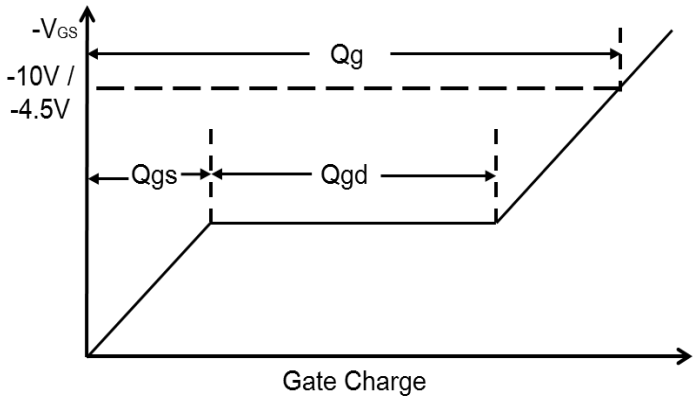
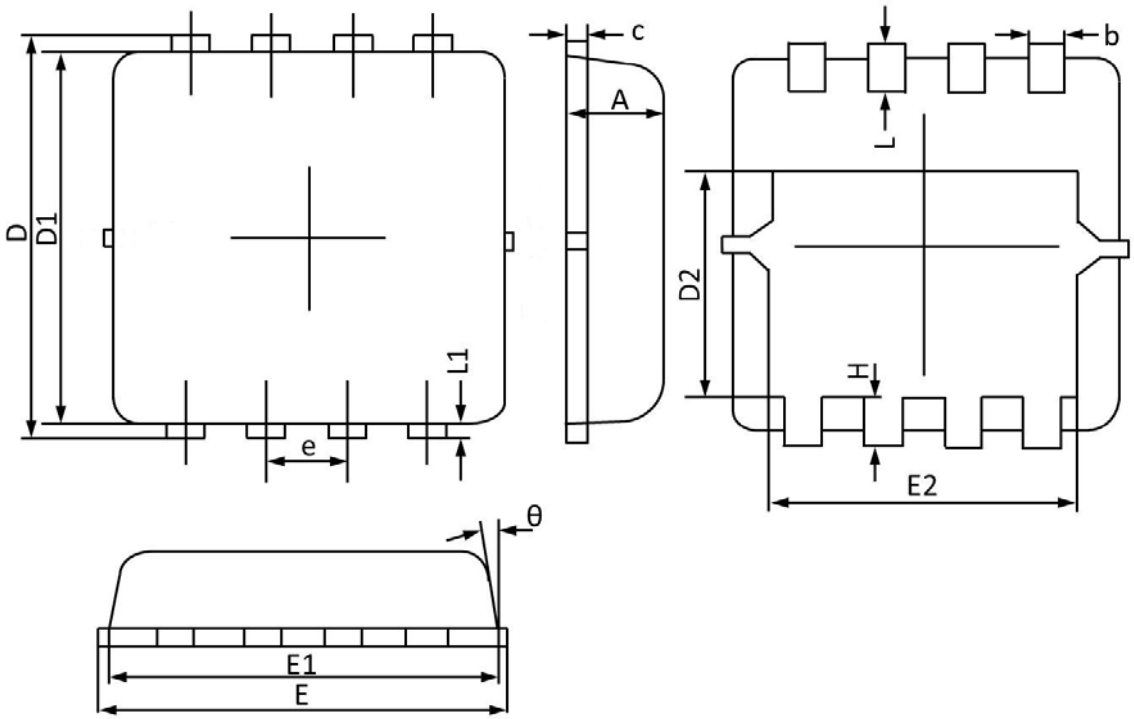


Fig.8 Gate Charge Waveform

PACKAGE OUTLINE & DIMENSIONS

YSE3907ZBB

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°