

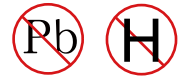


YEA SHIN TECHNOLOGY CO., LTD

YS0854VBB

Dual N-Channel Enhancement MOSFET

VDS= 100V, ID= 5.1A



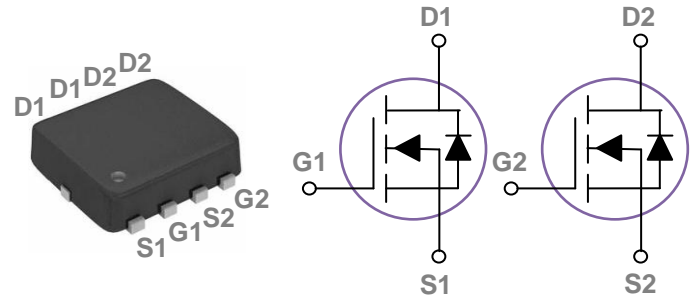
Features

- 100V, 5.1A, $R_{DS(ON)} = 3\ \text{m}\Omega$ @ $V_{GS} = 10V$
- Improved dv/dt capability
- Fast switching
- Green Device Available

Applications

- Networking
- Load switch
- LED applications

PPAK3x3 Dual Pin Configuration



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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current – Continuous ($T_A=25^\circ\text{C}$)	1.6	A
	Drain Current – Continuous ($T_A=70^\circ\text{C}$)	1.28	A
	Drain Current – Continuous ($T_c=25^\circ\text{C}$)	5.1	A
	Drain Current – Continuous ($T_c=100^\circ\text{C}$)	3.2	A
I_{DM}	Drain Current – Pulsed ¹	20.4	A
P_D	Power Dissipation ($T_c=25^\circ\text{C}$)	20.1	W
	Power Dissipation – Derate above 25°C	0.16	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
$R_{\theta JA}$	Thermal Resistance Junction to ambient	---	62	$^\circ\text{C}/\text{W}$
$R_{\theta JC}$	Thermal Resistance Junction to Case	---	6.2	$^\circ\text{C}/\text{W}$

DEVICE CHARACTERISTICS

YS0854VBB

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	$V_{GS}=0V, I_D=250\mu A$	100	---	---	V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25°C , $I_D=1mA$	---	0.09	---	$V/^\circ\text{C}$
I_{DSS}	Drain-Source Leakage Current	$V_{DS}=100V, V_{GS}=0V, T_J=25^\circ\text{C}$	---	---	1	μA
		$V_{DS}=80V, V_{GS}=0V, T_J=85^\circ\text{C}$	---	---	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	$V_{GS}=10V, I_D=3A$	---	290	350	$m\Omega$
		$V_{GS}=4.5V, I_D=2A$	---	300	360	$m\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.8	2.5	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient		---	-5	---	$mV/^\circ\text{C}$
g_{fs}	Forward Transconductance	$V_{DS}=10V, I_D=1A$	---	2.3	---	S

Dynamic and Switching Characteristics

Q_g	Total Gate Charge ^{2,3}	$V_{DS}=50V, V_{GS}=10V, I_D=1A$	---	9	18	nC
Q_{gs}	Gate-Source Charge ^{2,3}		---	2.3	4.6	
Q_{gd}	Gate-Drain Charge ^{2,3}		---	1.1	2.5	
$T_{d(on)}$	Turn-On Delay Time ^{2,3}	$V_{DD}=50V, V_{GS}=10V, R_G=3.3\Omega, I_D=1A$	---	5.2	10	ns
T_r	Rise Time ^{2,3}		---	6.8	12	
$T_{d(off)}$	Turn-Off Delay Time ^{2,3}		---	14.5	28	
T_f	Fall Time ^{2,3}		---	2.1	5	
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	---	492	800	pF
C_{oss}	Output Capacitance		---	27	50	
C_{rss}	Reverse Transfer Capacitance		---	15	25	
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	---	---	5.1	A
I_{SM}	Pulsed Source Current		---	---	10.2	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

YS0854VBB

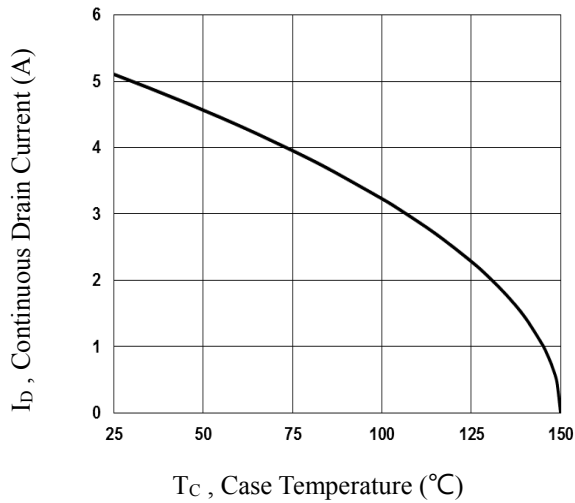


Fig.1 Continuous Drain Current vs. T_C

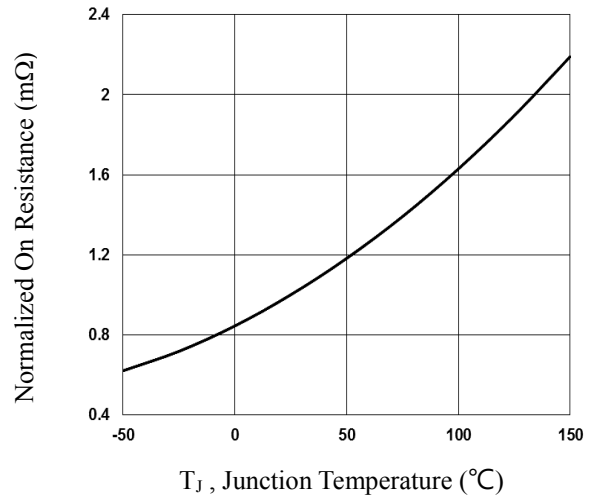


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

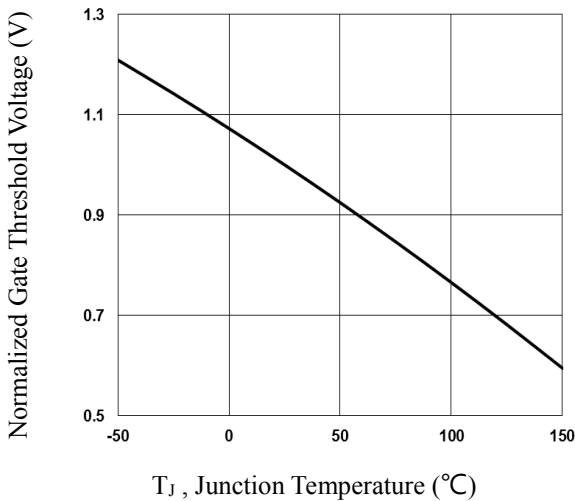


Fig.3 Normalized V_{th} vs. T_J

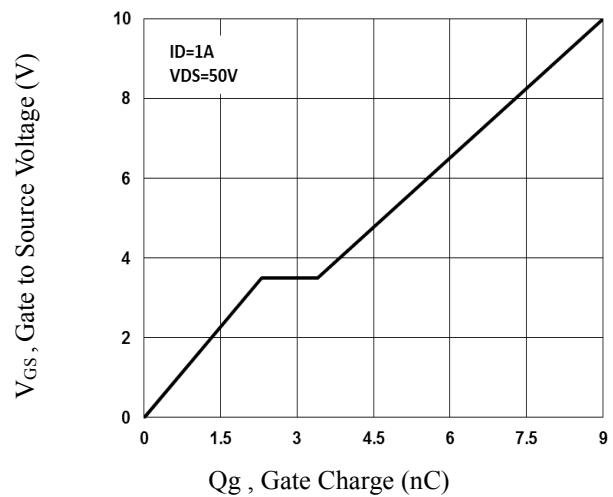


Fig.4 Gate Charge Waveform

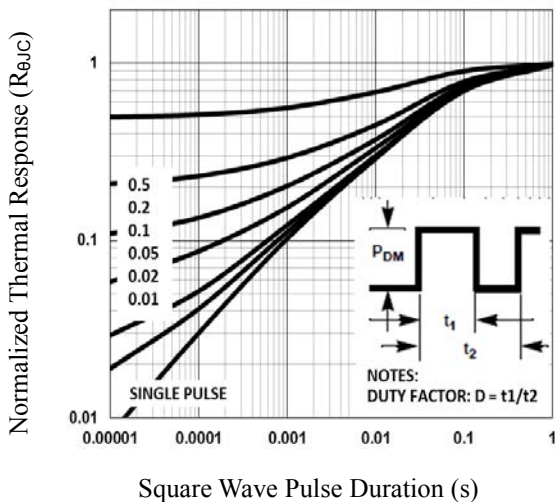


Fig.5 Normalized Transient Impedance

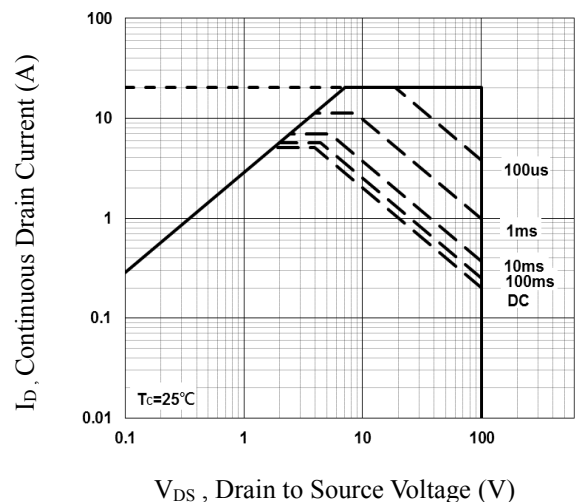


Fig.6 Maximum Safe Operation Area

DEVICE CHARACTERISTICS

YS0854VBB

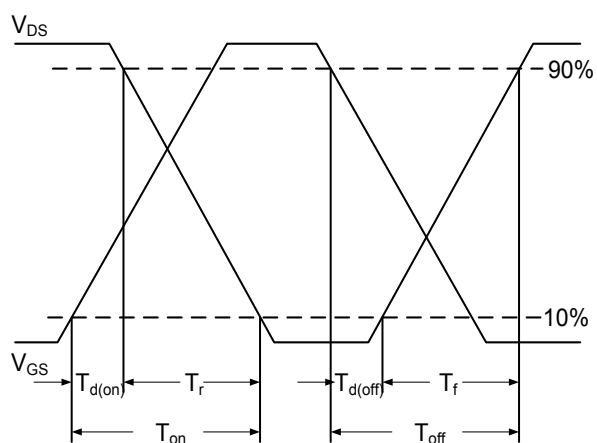


Fig.7 Switching Time Waveform

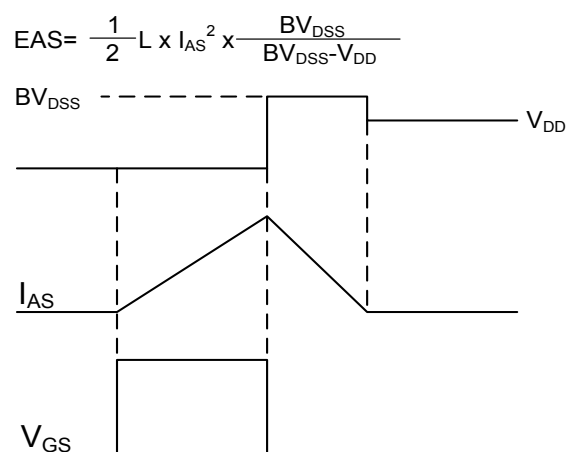


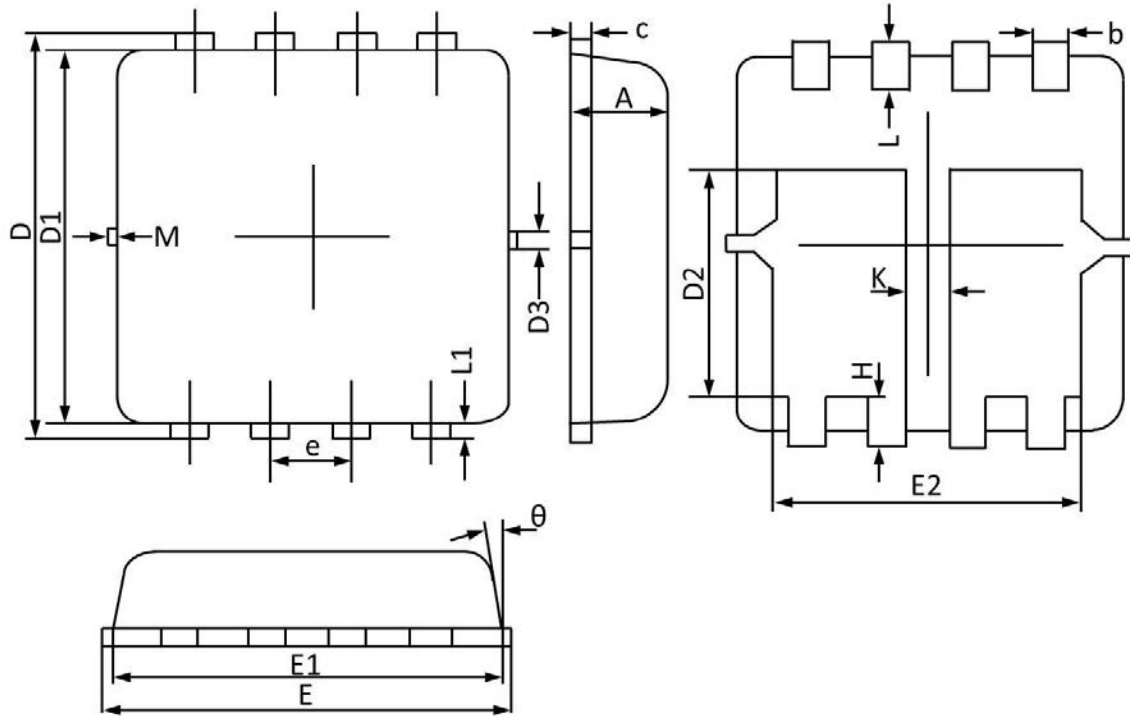
Fig.8 EAS Waveform

$$EAS = \frac{1}{2} L \times I_{AS}^2 \times \frac{BV_{DSS}}{BV_{DSS} - V_{DD}}$$

PACKAGE OUTLINE & DIMENSIONS

YS0854VBB

PPAK3x3 Dual 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	
K	0.300 REF		0.012 REF	
θ	0°	12°	0°	12°
M	0.150 REF		0.006 REF	