SDW2065

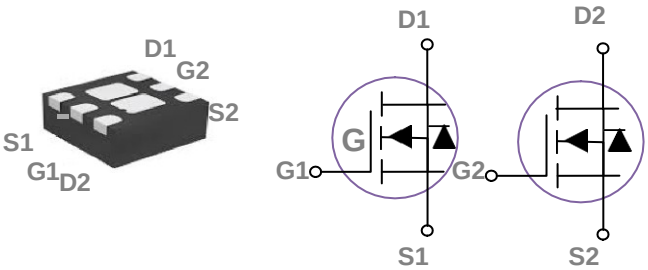
General Description

These dual N Channel enhancement mode power fieldeffect transistors are using trench DMOS technology.

This advanced technology has been especially tailoredto minimize on-state resistance, provide superior switching performance, and withstand high energypulse in the avalanche and commutation mode. Thesedevices are well suited for high efficiency fast switchingapplications.

BVDSS	RDSON	ID
20V	22mΩ	6.5A

DFN2X2 Dual 2EP Pin Configuration



Features

- *Fast switching*
- *Green Device Available*
- *Suit for 1.8V Gate Drive Applications*
- *Marking : WA*

Applications

- *Notebook*
- *Load Switch*
- *Networking*
- *Hand-held Instruments*

Absolute Maximum Ratings **Tc=25℃ 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˚C)	6.5	A
	Drain Current – Continuous (T_C=100˚C)	4.3	A
I_{DM}	Drain Current – Pulsed[1]	20.8	A
P_D	Power Dissipation (T_C=25˚C)	1.78	W
	Power Dissipation – Derate above 25˚C	0.02	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
$R_{\theta JA}$	Thermal Resistance Junction to Ambient		100	˚C/W

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	20			V
$\Delta BV_{DSS}/\Delta T_J$	BV_{DSS} Temperature Coefficient	Reference to 25℃ , I_D=1mA		0.02		V/℃
I_{DSS}	Drain-Source Leakage Current	V_{DS}=20V , V_{GS}=0V , T_J=25℃			1	uA
		V_{DS}=16V , V_{GS}=0V , T_J=125℃			10	uA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±10V , V_{DS}=0V			±100	nA

On Characteristics

$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=4.5V , I_D=3A		22	25	mΩ
		V_{GS}=2.5V , I_D=2A		26	30	mΩ
		V_{GS}=1.8V , I_D=1.5A		40	45	mΩ
$V_{GS(th)}$	Gate Threshold Voltage	V_{GS}=V_{DS} , I_D =250uA	0.3	0.6	1	V
$\Delta V_{GS(th)}$	$V_{GS(th)}$ Temperature Coefficient			-2		mV/℃
gfs	Forward Transconductance	V_{DS}=10V , I_D=2A		4.4		S

Dynamic and switching Characteristics

Q_g	Total Gate Charge[2 , 3]	V_{DS}=10V , V_{GS}=4.5V , I_D=3A		5.8	10	nC
Q_{gs}	Gate-Source Charge[2 , 3]			0.6	1.5	
Q_{gd}	Gate-Drain Charge[2 , 3]			1.5	3	
$T_{d(on)}$	Turn-On Delay Time[2 , 3]	V_{DD}=10V , V_{GS}=4.5V , R_G=25 I_D=1A	---	2.9	6	ns
T_r	Rise Time[2 , 3]			8.4	16	
$T_{d(off)}$	Turn-Off Delay Time[2 , 3]			19.2	38	
T_f	Fall Time[2 , 3]			5.6	12	
C_{iss}	Input Capacitance	V_{DS}=15V , V_{GS}=0V , F=1MHz		315	600	pF
C_{oss}	Output Capacitance		---	50	80	
C_{rss}	Reverse Transfer Capacitance			40	60	

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			3.8	A
I_{SM}	Pulsed Source Current				7.6	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.

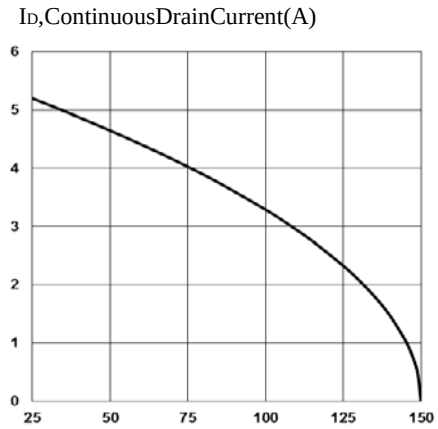


Fig.1 Continuous Drain Current vs. T_C

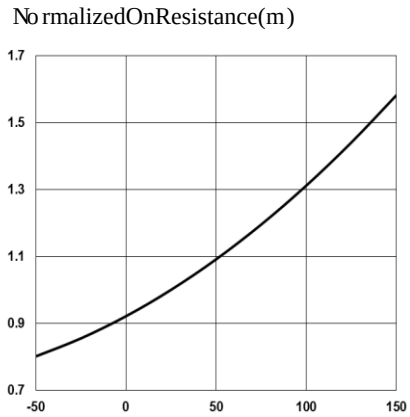


Fig.2 Normalized RDSON vs. T_J

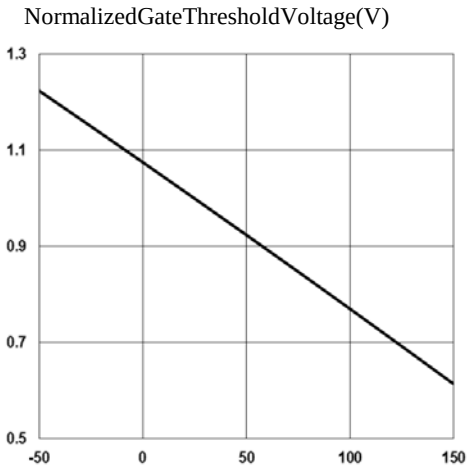


Fig.3 Normalized V_{th} vs. T_J

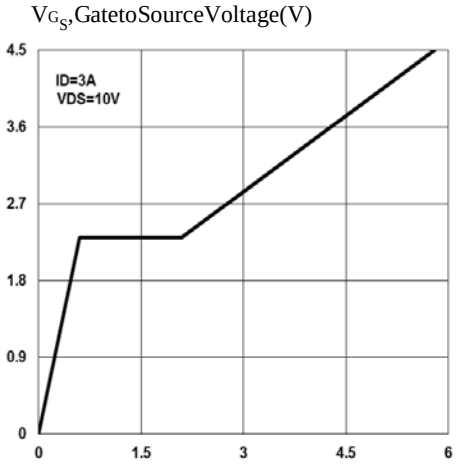


Fig.4 Gate Charge Waveform

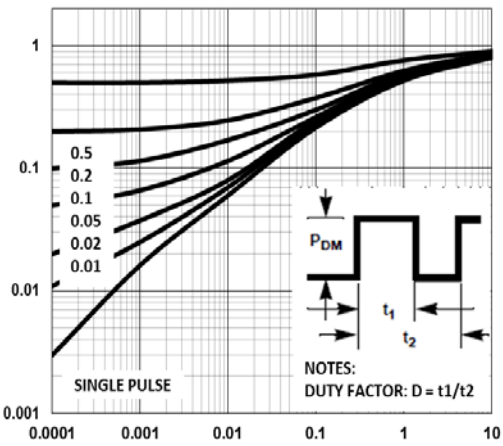


Fig.5 Normalized Transient Impedance

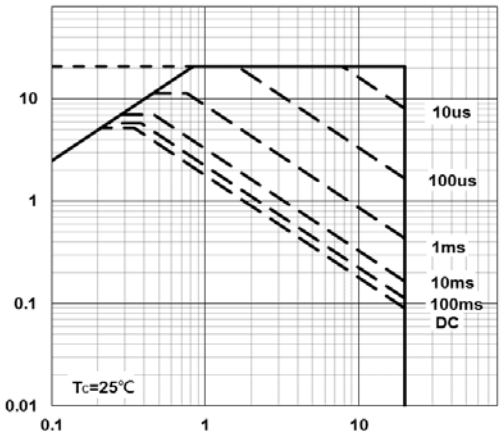


Fig.6 Maximum Safe Operation Area

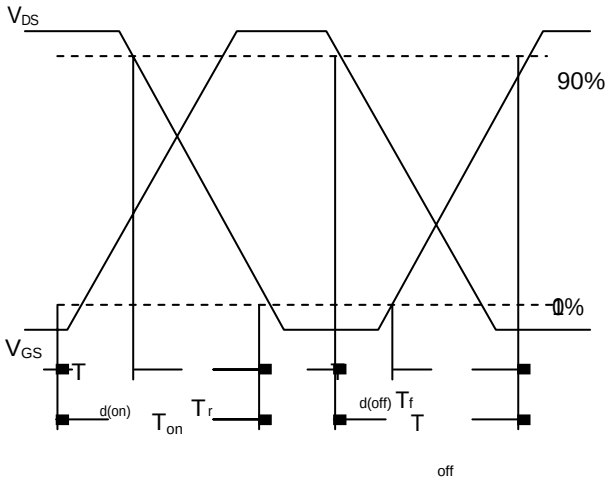


Fig.7 Switching Time Waveform

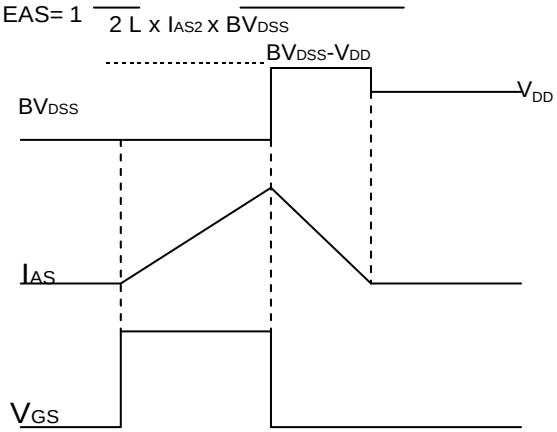
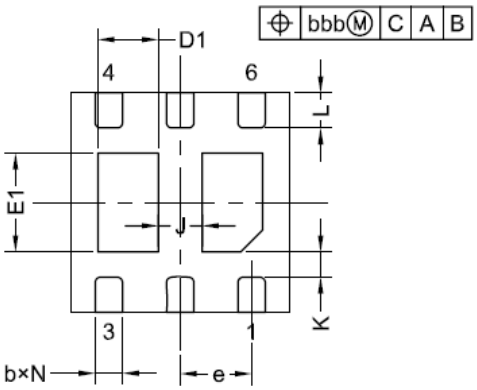
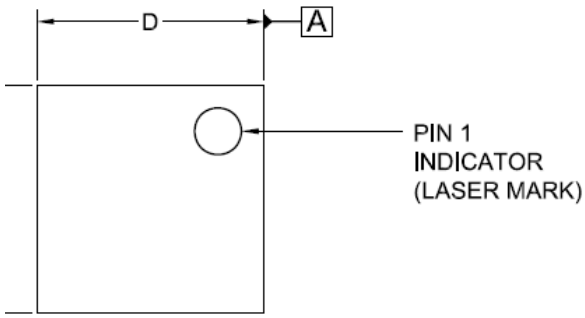


Fig.8 EAS Waveform

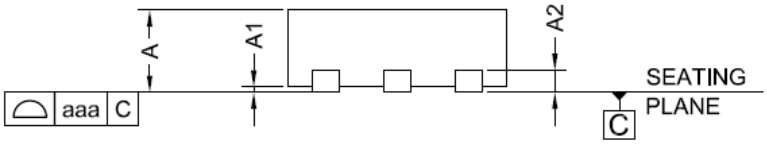
PPAK2X2 Dual 2EP PACKAGE INFORMATION



BOTTOM VIEW



TOP VIEW



SIDE VIEW

COMMON DIMENSIONS

(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	TYP	MAX
A	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2		0.203	
b	0.20	0.25	0.30
D	1.95	2.00	2.05
D1	0.50	0.55	0.60
E	1.95	2.00	2.05
E1	0.85	0.90	0.95
e		0.65BSC	
L	0.27	0.32	0.37
J		0.40BSC	
K		0.20MIN	
N		6	
aaa		0.08	
bbb		0.10	

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