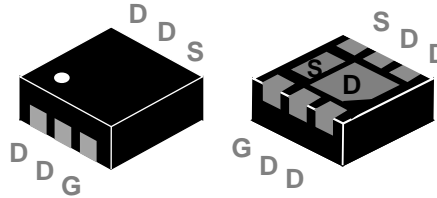
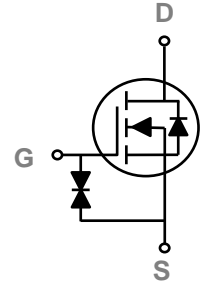


Main Product Characteristics

$V_{(BR)DSS}$	20V
$R_{DS(on)}$	13m Ω
I_D	9.9A



DFN2x2-6L



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for battery operated systems, load switching, power converters and other general purpose applications
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The SSFB2310L utilizes the latest techniques to achieve high cell density and low on-resistance. These features make this device extremely efficient and reliable for use in high efficiency switch mode power supply and a wide variety of other applications.

Absolute Maximum Ratings ($T_C=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Rating	Units
Drain-Source Voltage	V_{DS}	20	V
Gate-Source Voltage	V_{GS}	± 10	V
Drain Current – Continuous ($T_A=25^{\circ}\text{C}$)	I_D	9.9	A
Drain Current – Continuous ($T_A=70^{\circ}\text{C}$)		7.9	A
Drain Current – Pulsed ¹	I_{DM}	39.6	A
Power Dissipation ($T_A=25^{\circ}\text{C}$)	P_D	2.01	W
Power Dissipation – Derate above 25 $^{\circ}\text{C}$		0.016	W/ $^{\circ}\text{C}$
Storage Temperature Range Operating	T_{STG}	-55 to +150	$^{\circ}\text{C}$
Junction Temperature Range	T_J	-55 to +150	$^{\circ}\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	---	62	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics (T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250uA	20	---	---	V
Drain-Source Leakage Current	I _{DSS}	V _{DS} =20V, V _{GS} =0V, T _J =25°C	---	0.02	1	uA
		V _{DS} =16V, V _{GS} =0V, T _J =125°C	---	---	10	uA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±10V, V _{DS} =0V	---	---	±10	nA
On Characteristics						
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =4.5V, I _D =5A	---	10	13	mΩ
		V _{GS} =2.5V, I _D =3A	---	11.5	15.5	mΩ
		V _{GS} =1.8V, I _D =2A	---	15	21	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	0.3	0.6	1	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}	V _{GS} =V _{DS} , I _D =250uA	---	2	---	mV/°C
Forward Transconductance	g _{fs}	V _{DS} =10V, I _S =5A	---	12	---	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q _g	V _{DS} =10V, V _{GS} =4.5V, I _D =5A	---	16.9	26	nC
Gate-Source Charge ^{2,3}	Q _{gs}		---	1.1	3	
Gate-Drain Charge ^{2,3}	Q _{gd}		---	4	7	
Turn-On Delay Time ^{2,3}	T _{d(on)}	V _{DD} =10V, V _{GS} =4.5V, R _G =25Ω, I _D =1A	---	6.8	13	ns
Rise Time ^{2,3}	T _r		---	20	38	
Turn-Off Delay Time ^{2,3}	T _{d(off)}		---	41.8	79	
Fall Time ^{2,3}	T _f		---	13.2	25	
Input Capacitance	C _{iss}	V _{DS} =10V, V _{GS} =0V, F=1MHz	---	1020	1480	pF
Output Capacitance	C _{oss}		---	160	240	
Reverse Transfer Capacitance	C _{rss}		---	110	160	
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, F=1MHz	---	2	4	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	---	---	9.9	A
Pulsed Source Current	I _{SM}		---	---	19.8	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1A, T _J =25°C	---	---	1	V

Notes:

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.

Typical Electrical and Thermal Characteristic Curves

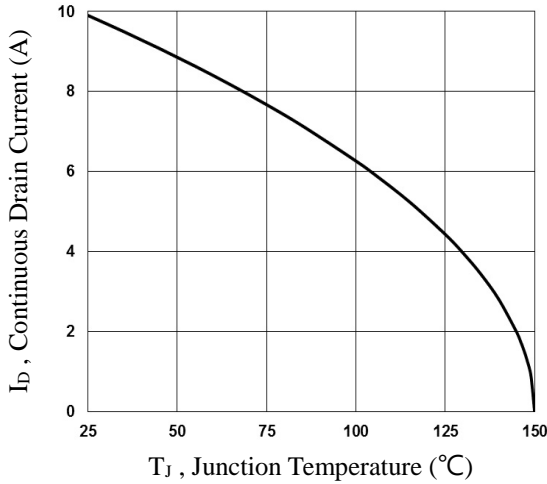


Fig.1 Continuous Drain Current vs. T_c

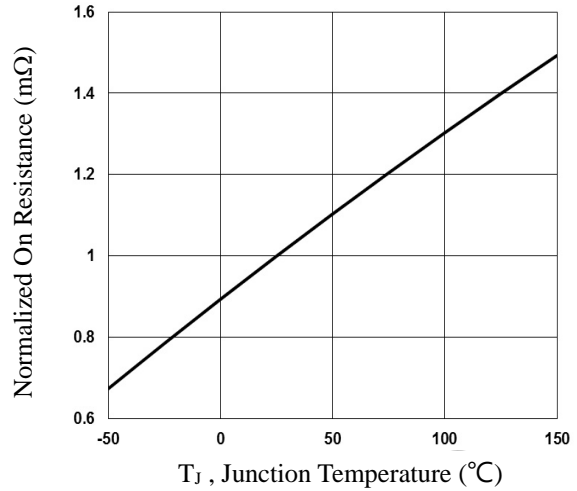


Fig.2 Normalized $R_{DS(on)}$ vs. T_J

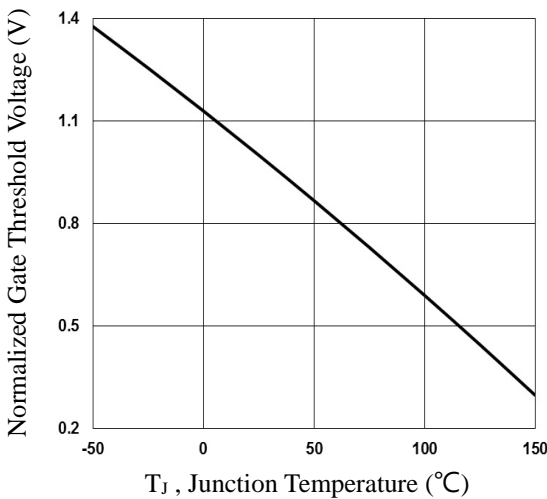


Fig.3 Normalized V_{th} vs. T_J

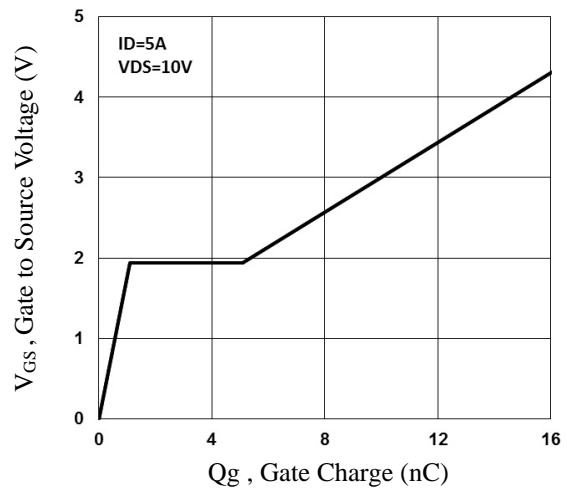


Fig.4 Gate Charge Waveform

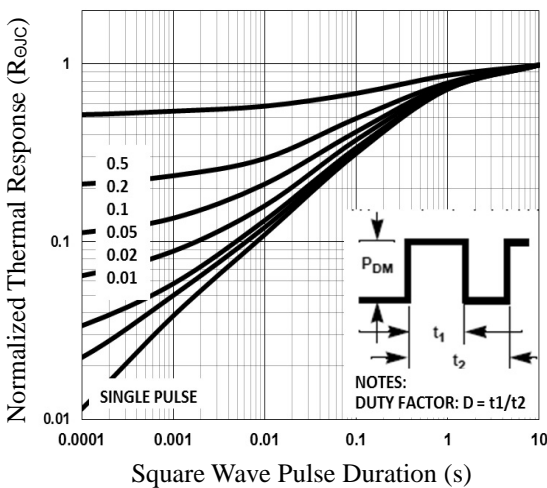


Fig.5 Normalized Transient Response

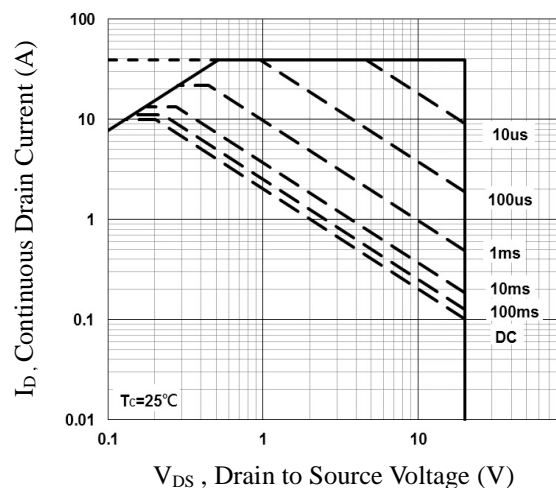


Fig.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

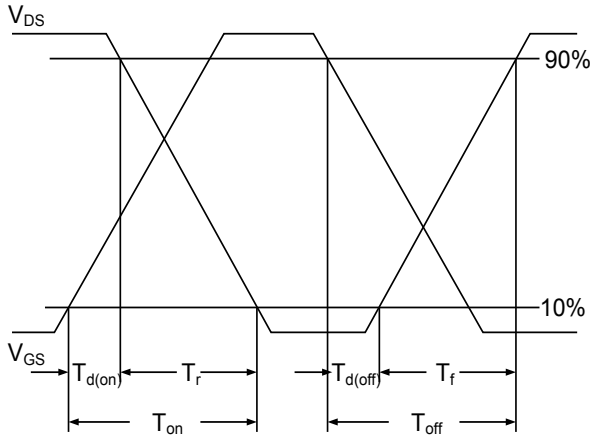


Fig.7 Switching Time Waveform

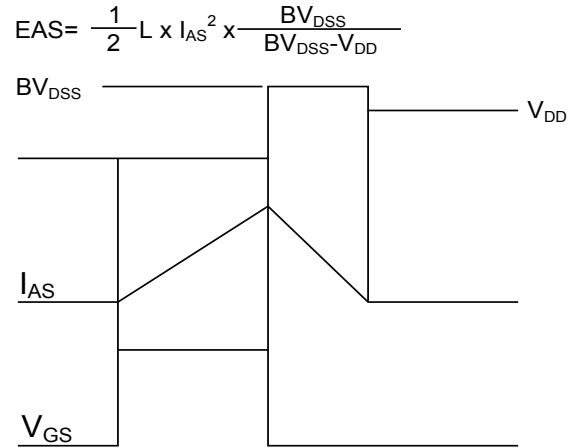
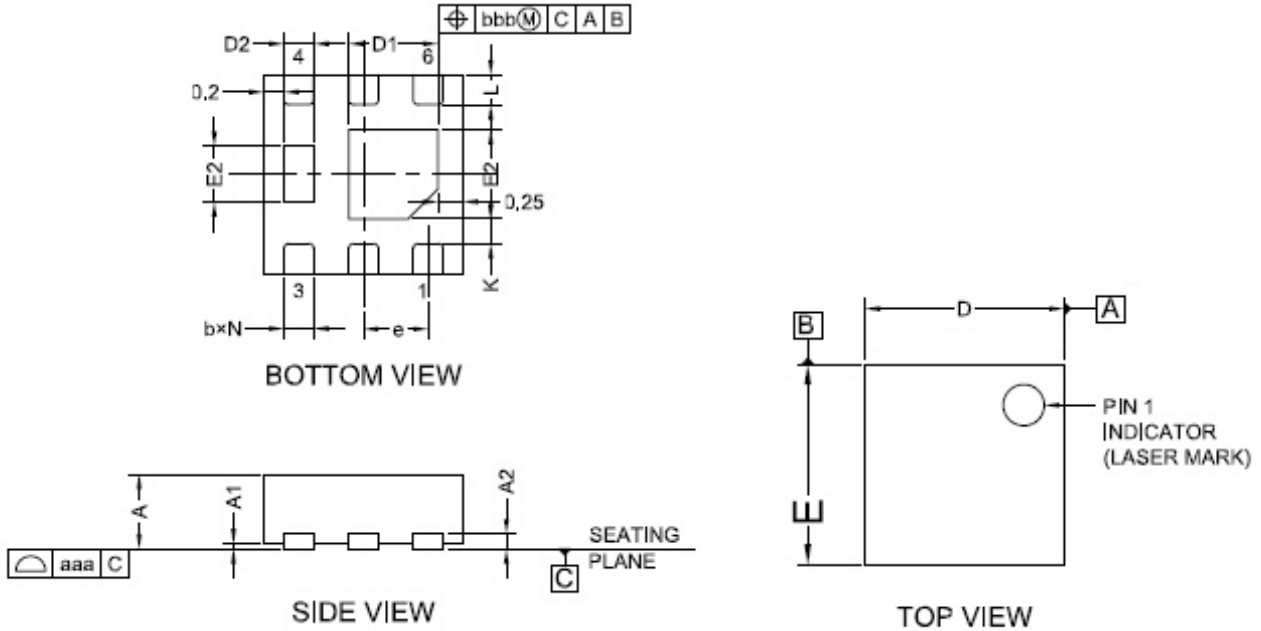


Fig.8 EAS Waveform

Package Outline Dimensions

DFN2x2-6L 2EP



Symbol	Dimensions In Millimeters		
	Min	Typ	Max
A	0.50	0.55	0.60
A1	0.00	0.02	0.05
A2	0.152REF		
b	0.25	0.30	0.35
D	1.95	2.00	2.05
D1	0.80	0.90	1.00
D2	0.25	0.30	0.35
E	1.95	2.00	2.05
E1	0.80	0.90	1.00
E2	0.46	0.56	0.66
e	0.65BSC		
L	0.25	0.30	0.35
J	0.40BSC		
K	0.20MIN		
N	6.00		
aaa	0.08		
bbb	0.10		