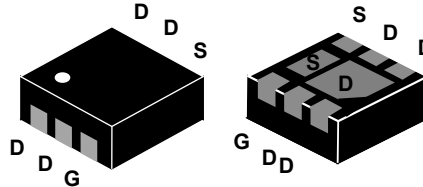
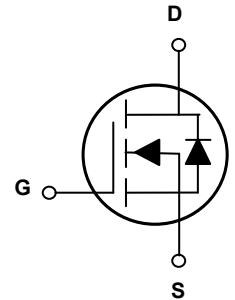


Main Product Characteristics

$V_{(BR)DSS}$	30V
$R_{DS(ON)}$	13mΩ
I_D	10A



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 SSFB3910L 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	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current – Continuous ($T_A=25^{\circ}\text{C}$)	I_D	10	A
Drain Current – Continuous ($T_A=70^{\circ}\text{C}$)		8	A
Drain Current – Pulsed ¹	I_{DM}	40	A
Single Pulse Avalanche Energy ²	E_{AS}	13	mJ
Single Pulse Avalanched Current ²	I_{AS}	16	A
Power Dissipation ($T_C=25^{\circ}\text{C}$)	P_D	2.01	W
Power Dissipation – Derate above 25°C		0.016	W/ $^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^{\circ}\text{C}$
Operating 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	$^{\circ}\text{C/W}$

Electrical Characteristics ($T_J=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	$V_{GS}=0V$, $I_D=250\mu A$	30	---	---	V
BV_{DSS} Temperature Coefficient	$\Delta BV_{DSS} / \Delta T_J$	Reference to 25°C , $I_D=1\text{mA}$	---	0.04	---	$V/^{\circ}\text{C}$
Drain-Source Leakage Current	I_{DSS}	$V_{DS}=30V$, $V_{GS}=0V$, $T_J=25^{\circ}\text{C}$	---	---	1	μA
		$V_{DS}=30V$, $V_{GS}=0V$, $T_J=125^{\circ}\text{C}$	---	---	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V$, $V_{DS}=0V$	---	---	± 100	nA
On Characteristics						
Static Drain-Source On-Resistance ³	$R_{DS(ON)}$	$V_{GS}=10V$, $I_D=6A$	---	10.2	13	$m\Omega$
		$V_{GS}=4.5V$, $I_D=4A$	---	13.3	18	$m\Omega$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}$, $I_D=250\mu A$	1.2	1.8	2.5	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		---	-4	---	$mV/^{\circ}\text{C}$
Forward Transconductance	g_{fs}	$V_{DS}=10V$, $I_D=3A$	---	6	---	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{3, 4}	Q_g	$V_{DS}=15V$, $V_{GS}=4.5V$, $I_D=5A$	---	7.4	12	nC
Gate-Source Charge ^{3, 4}	Q_{gs}		---	2.3	5	
Gate-Drain Charge ^{3, 4}	Q_{gd}		---	3	6	
Turn-On Delay Time ^{3, 4}	$T_{d(on)}$	$V_{DD}=15V$, $V_{GS}=10V$, $R_G=6\Omega$, $I_D=1A$	---	3.8	7	nS
Rise Time ^{3, 4}	T_r		---	10	19	
Turn-Off Delay Time ^{3, 4}	$T_{d(off)}$		---	22	42	
Fall Time ^{3, 4}	T_f		---	6.6	13	
Input Capacitance	C_{iss}	$V_{DS}=25V$, $V_{GS}=0V$, $F=1\text{MHz}$	---	620	900	pF
Output Capacitance	C_{oss}		---	85	125	
Reverse Transfer Capacitance	C_{rss}		---	60	90	
Gate Resistance	R_g	$V_{GS}=0V$, $V_{DS}=0V$, $F=1\text{MHz}$	---	2.8	5.6	Ω
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I_S	$V_G=V_D=0V$, Force Current	---	---	10	A
Pulsed Source Current ³	I_{SM}		---	---	20	A
Diode Forward Voltage ³	V_{SD}	$V_{GS}=0V$, $I_S=1A$, $T_J=25^{\circ}\text{C}$	---	---	1	V

Notes:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. $V_{DD}=25V$, $V_{GS}=10V$, $L=0.1\text{mH}$, $I_{AS}=16A$, $R_G=25\Omega$, Starting $T_J=25^{\circ}\text{C}$.
3. The data tested by pulsed, pulse width $\leq 300\mu\text{S}$, duty cycle $\leq 2\%$.
4. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristic Curves

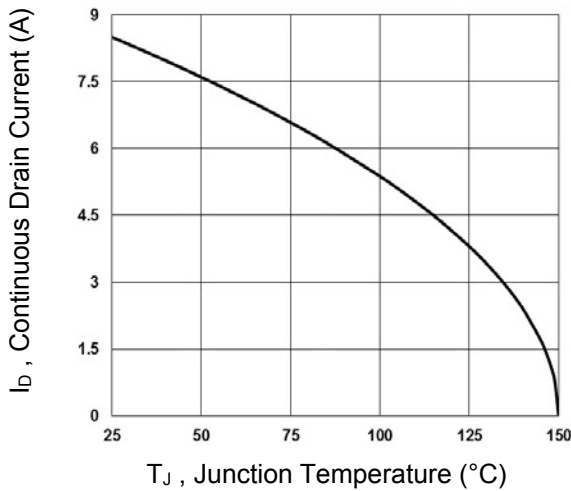


Fig.1 Continuous Drain Current vs. T_c

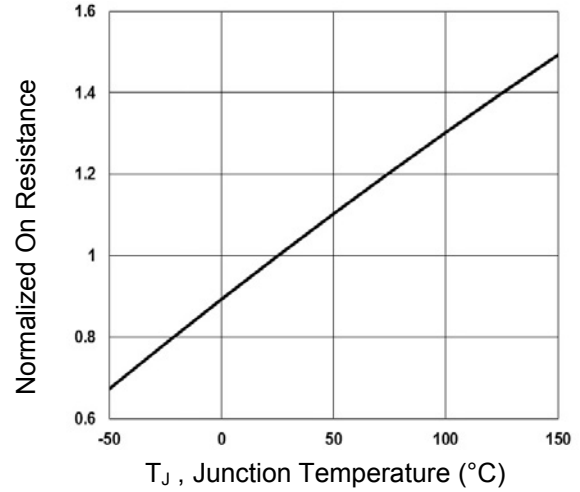


Fig.2 Normalized $R_{DS(ON)}$ vs. T_J

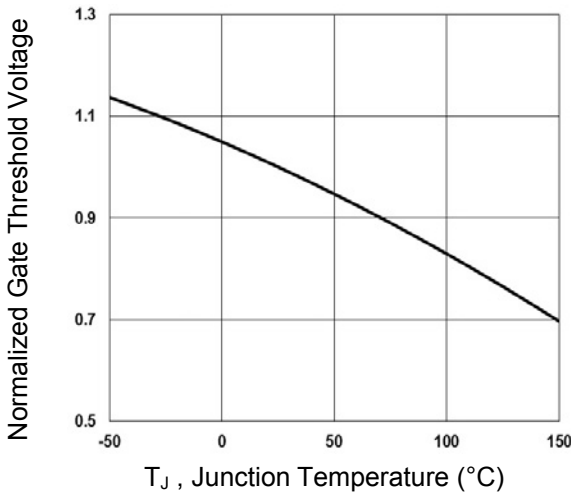


Fig.3 Normalized V_{th} vs. T_J

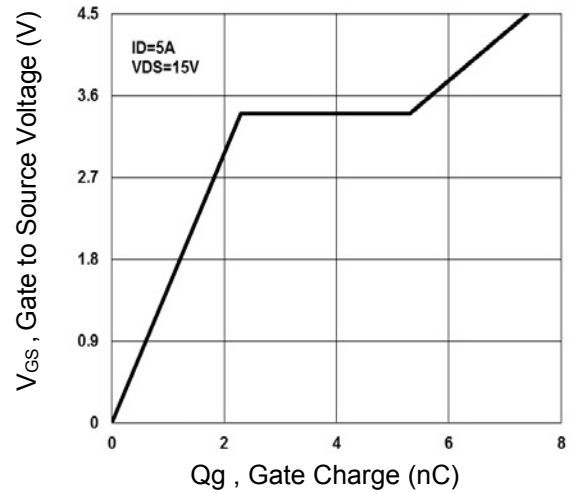


Fig.4 Gate Charge Waveform

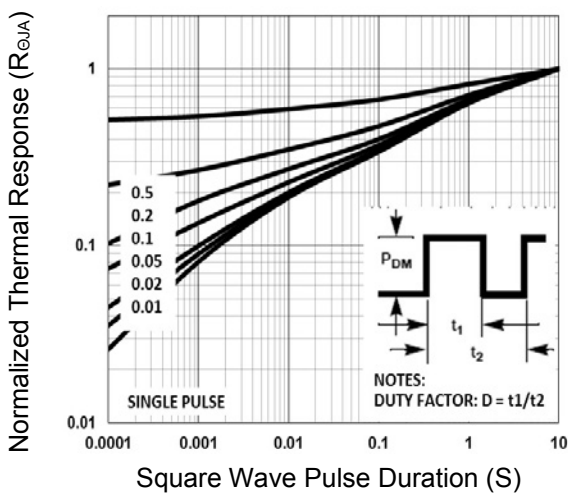


Fig.5 Normalized Transient Response

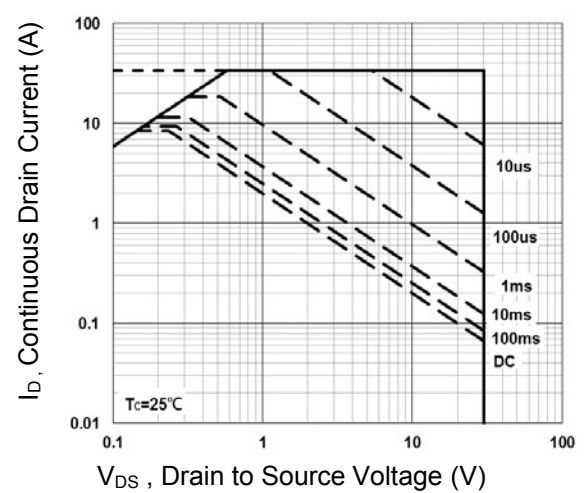


Fig.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

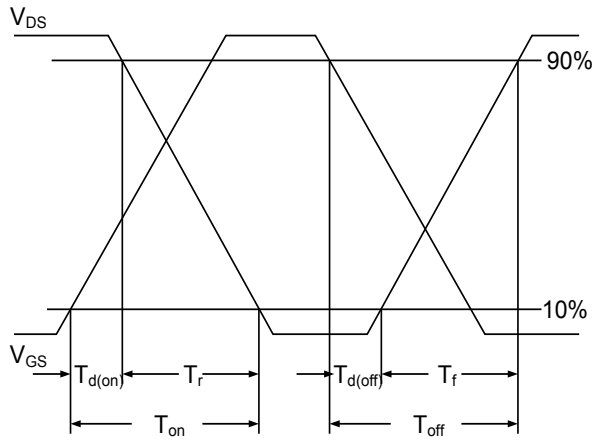


Fig.7 Switching Time Waveform

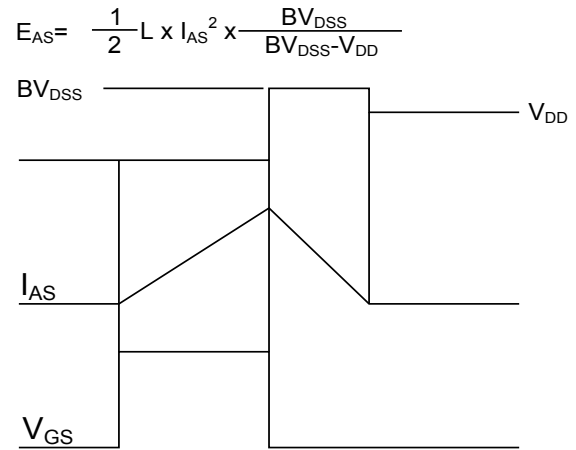
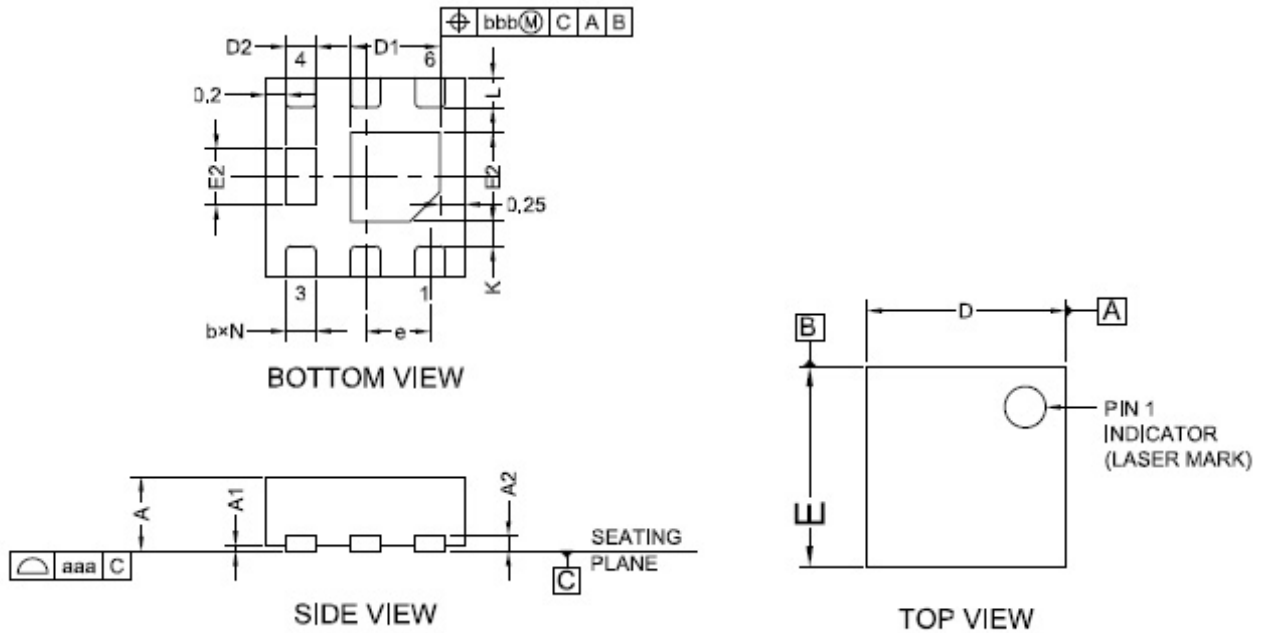


Fig.8 E_{AS} Waveform

Package Outline Dimensions (DFN2x2-6L)



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		