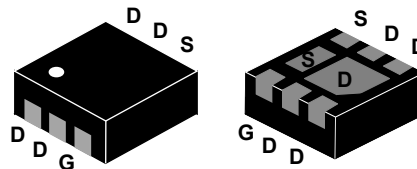
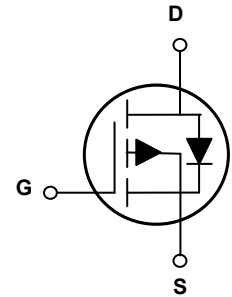


Main Product Characteristics

$V_{(BR)DSS}$	-20V
$R_{DS(ON)}$	28mΩ
I_D	-8.5A



DFN2x2-6L 2EP



Schematic Diagram

Features and Benefits

- Advanced MOSFET process technology
- Ideal for high efficiency switched mode power supplies
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



Description

The SSFB2309L 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 supplies and a wide variety of other applications.

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

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 10	V
Drain Current-Continuous ($T_C=25^\circ\text{C}$)	I_D	-8.5	A
Drain Current-Continuous ($T_C=100^\circ\text{C}$)		-5.4	
Drain Current-Pulsed ¹	I_{DM}	-34	A
Power Dissipation ($T_C=25^\circ\text{C}$)	P_D	3.3	W
Power Dissipation-Derate above 25°C		0.026	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	38	°C/W
Operating Junction Temperature Range	T_J	-55 To +150	°C
Storage Temperature Range	T_{STG}	-55 To +150	°C

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =-250μA	-20	-	-	V
BV _{DSS} Temperature Coefficient	ΔBV _{DSS} /ΔT _J	Reference to 25°C, I _D =-1mA	-	-0.02	-	V/°C
Drain-Source Leakage Current	I _{DSS}	V _{DS} =-20V, V _{GS} =0V, T _J =25°C	-	-	-1	μA
		V _{DS} =-16V, V _{GS} =0V, T _J =125°C	-	-	-10	μA
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±10V, V _{DS} =0V	-	-	±100	nA
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =-4.5V, I _D =-4A	-	22	28	mΩ
		V _{GS} =-2.5V, I _D =-3A	-	27	37	
		V _{GS} =-1.8V, I _D =-2A	-	33	45	
Gate Threshold Voltage	V _{GS(th)}	V _{GS} =V _{DS} , I _D =-250μA	-0.3	-0.6	-1	V
V _{GS(th)} Temperature Coefficient	ΔV _{GS(th)}		-	2	-	mV/°C
Forward Transconductance	g _{fs}	V _{DS} =-10V, I _S =-3A	-	8.4	-	S
Dynamic and Switching Characteristics						
Total Gate Charge ^{2,3}	Q _g	V _{DS} =-10V, I _D =-4A, V _{GS} =-4.5V	-	16.1	25	nC
Gate-Source Charge ^{2,3}	Q _{gs}		-	1.8	3	
Gate-Drain Charge ^{2,3}	Q _{gd}		-	3.8	7	
Turn-On Delay Time ^{2,3}	t _{d(on)}	V _{DD} =-10V, R _G =25Ω, V _{GS} =-4.5V, I _D =-1A	-	8.2	16	nS
Rise Time ^{2,3}	t _r		-	30	57	
Turn-Off Delay Time ^{2,3}	t _{d(off)}		-	71.1	135	
Fall Time ^{2,3}	t _f		-	19.8	38	
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, F=1MHz	-	1440	2100	pF
Output Capacitance	C _{oss}		-	155	230	
Reverse Transfer Capacitance	C _{rss}		-	115	170	
Drain-Source Diode Characteristics and Maximum Ratings						
Continuous Source Current	I _S	V _G =V _D =0V,	-	-	-8.5	A
Pulsed Source Current	I _{SM}	Force Current	-	-	-17	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. Pulsed tested: pulse width ≤ 300μs, duty cycle ≤ 2%.
3. Essentially independent of operating temperature.

Typical Electrical and Thermal Characteristics

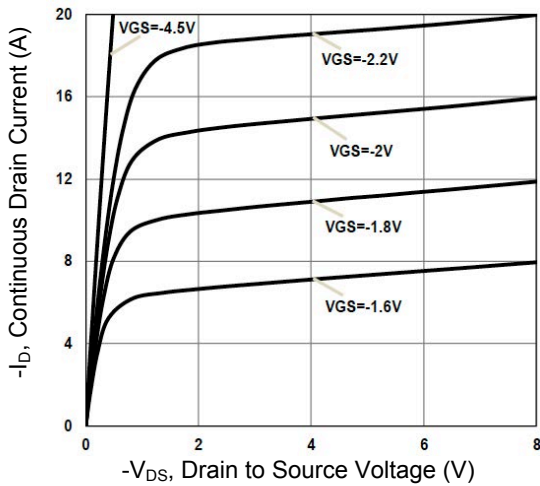


Figure 1. Typical Output Characteristics

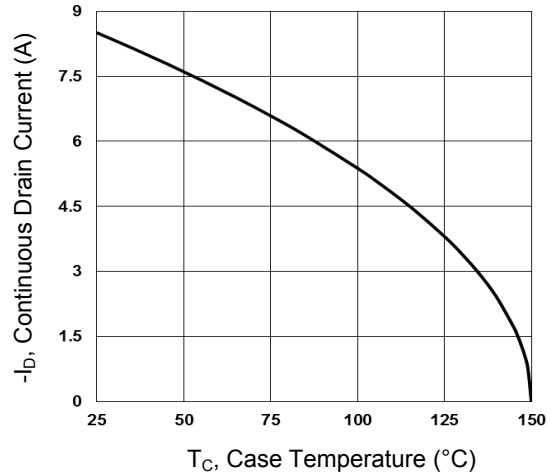


Figure 2. Continuous Drain Current vs. T_c

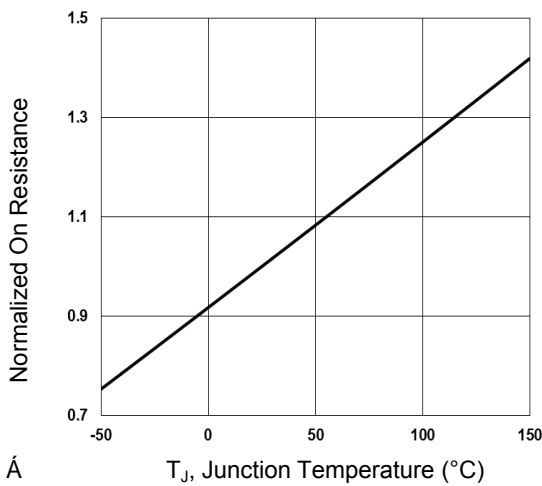


Figure 3. Normalized $R_{DS(ON)}$ vs. T_j

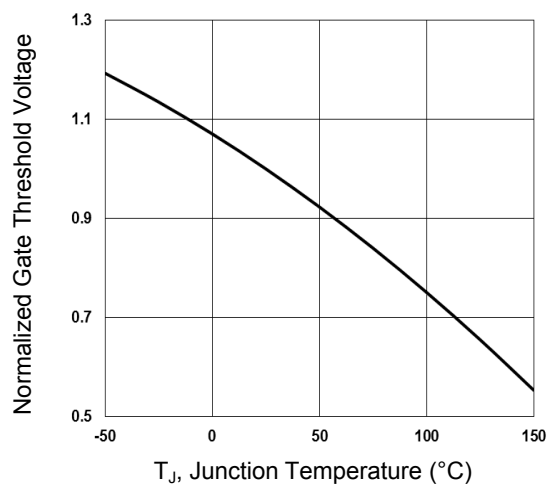


Figure 4. Normalized V_{th} vs. T_j

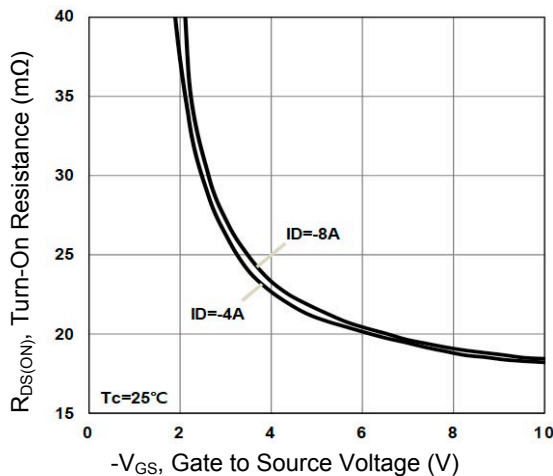


Figure 5. Turn-On Resistance vs. V_{GS}

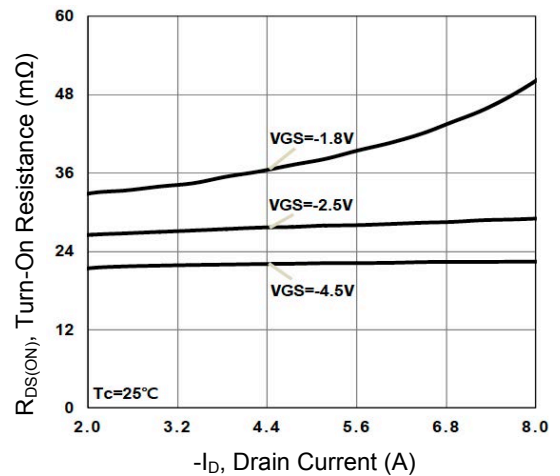


Figure 6. Turn-On Resistance vs. I_D

Typical Electrical and Thermal Characteristics

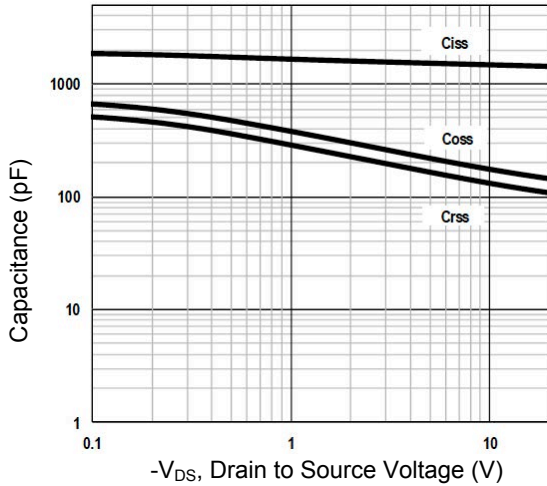


Figure 7. Capacitance Characteristics

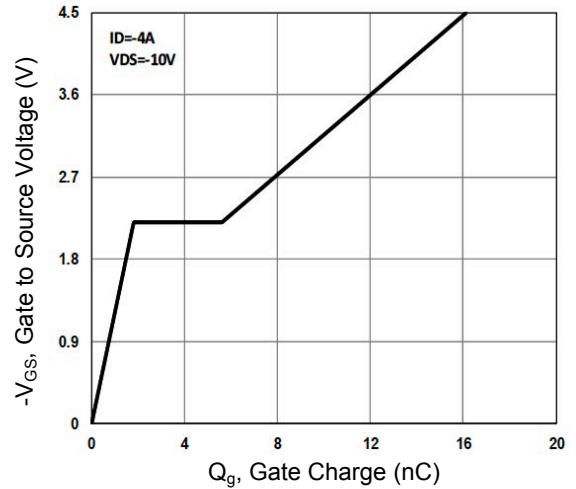


Figure 8. Gate Charge Waveform

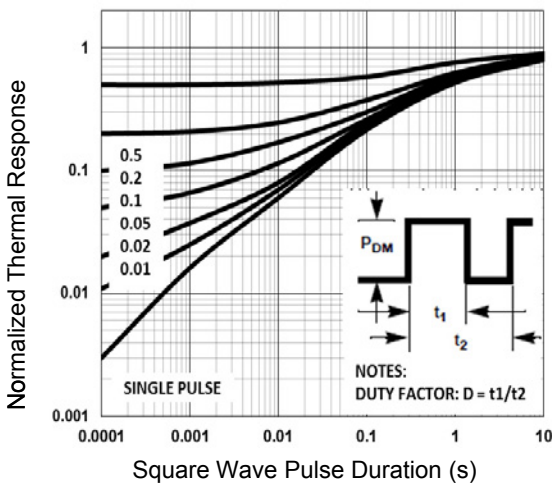


Figure 9. Normalized Transient Impedance

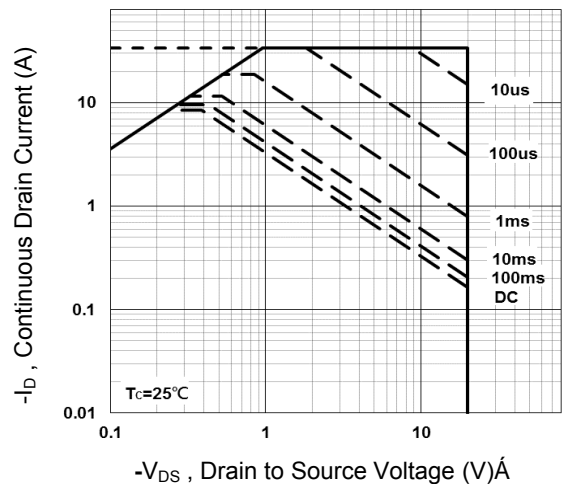


Figure 10. Maximum Safe Operation Area

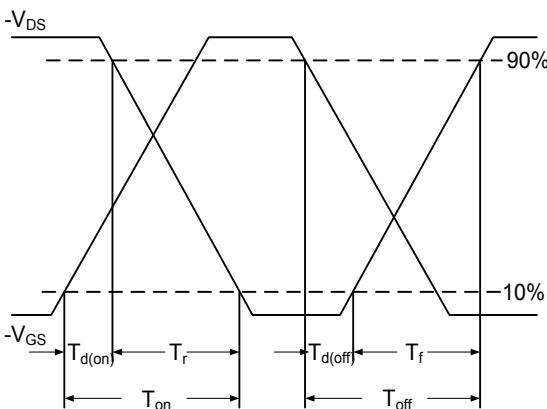


Figure 11. Switching Time Waveform

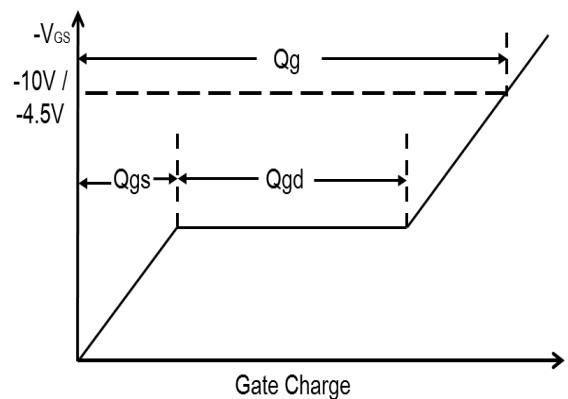
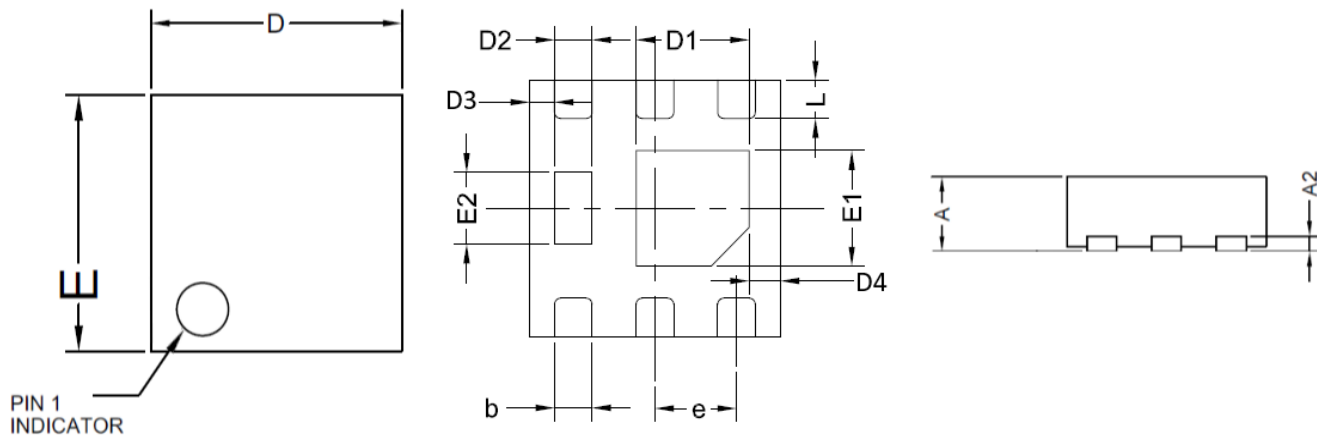


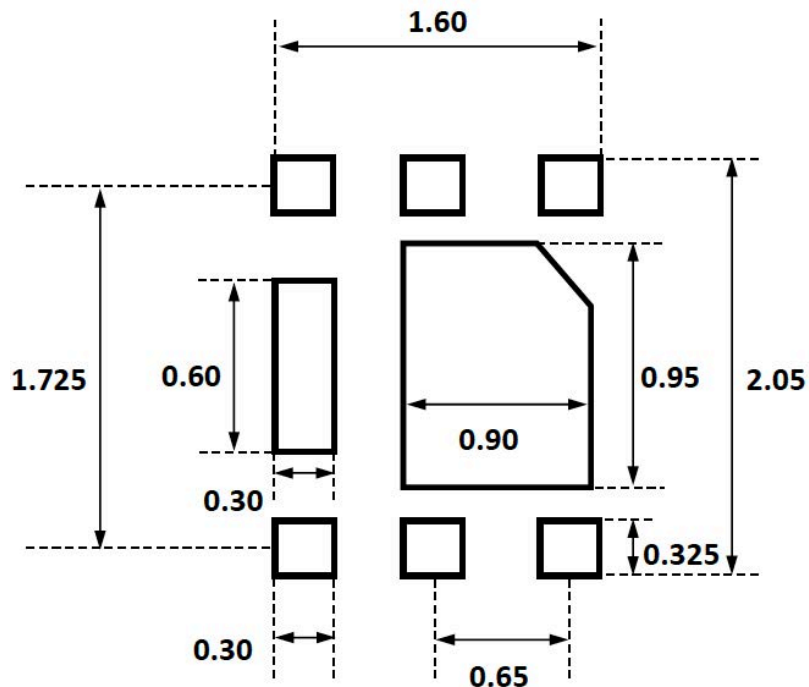
Figure 12. Gate Charge Waveform

Package Outline Dimensions (DFN2x2-6L 2EP)



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	0.500	0.800	0.019	0.031
A2	0.145	0.250	0.006	0.010
b	0.250	0.350	0.010	0.014
D	1.900	2.100	0.075	0.083
D	0.800	1.000	0.031	0.040
D	0.250	0.350	0.010	0.014
2 D	0.200 BSC		0.008 BSC	
3 D	0.200 BSC		0.008 BSC	
4 E	1.900	2.100	0.075	0.083
E1	0.800	1.050	0.031	0.041
E2	0.460	0.660	0.018	0.026
e	0.650 BSC		0.026 BSC	
L	0.250	0.350	0.010	0.014

Recommended Pad Layout



Unit: mm