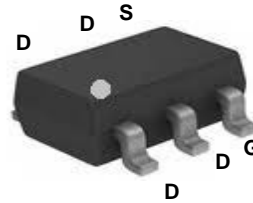
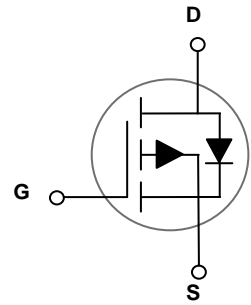


### Main Product Characteristics

$V_{(BR)DSS}$	-20V
$R_{DS(ON)}$	26m $\Omega$
$I_D$	-6.5A



SOT-23-6L



Schematic Diagram

### Features and Benefits

- Advanced MOSFET process technology
- Ideal for notebook, load switch and networking
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



### Description

The SSF2307 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<sub>C</sub>=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V <sub>DS</sub>	-20	V
Gate-Source Voltage	V <sub>GS</sub>	±10	V
Drain Current – Continuous (T <sub>C</sub> =25°C)	I <sub>D</sub>	-6.5	A
Drain Current – Continuous (T <sub>C</sub> =100°C)		-4.1	A
Drain Current – Pulsed <sup>1</sup>	I <sub>DM</sub>	-26	A
Power Dissipation (T <sub>C</sub> =25°C)	P <sub>D</sub>	1.56	W
Power Dissipation – Derate above 25°C	P <sub>D</sub>	0.012	W/°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-55 to +150	°C

### Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to Ambient	R <sub>θJA</sub>	---	80	°C/W

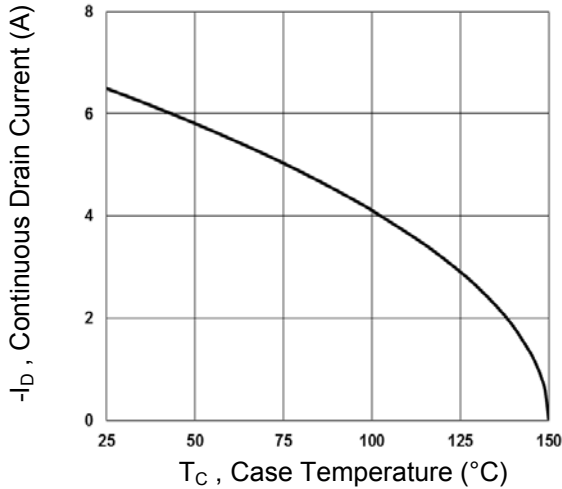
### Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V , I <sub>D</sub> =-250uA	-20	---	---	V
BV <sub>DSS</sub> Temperature Coefficient	ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	Reference to 25°C , I <sub>D</sub> =-1mA	---	-0.01	---	V/°C
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V , V <sub>GS</sub> =0V , T <sub>J</sub> =25°C	---	---	-1	uA
		V <sub>DS</sub> =-16V , V <sub>GS</sub> =0V , T <sub>J</sub> =125°C	---	---	-10	uA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±10V , V <sub>DS</sub> =0V	---	---	±100	uA
<b>On Characteristics</b>						
Static Drain-Source On-Resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =-4.5V , I <sub>D</sub> =-5A	---	21	26	mΩ
		V <sub>GS</sub> =-2.5V , I <sub>D</sub> =-4A	---	26	32	
		V <sub>GS</sub> =-1.8V , I <sub>D</sub> =-3A	---	32	40	
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =-250uA	-0.3	-0.6	-1.0	V
V <sub>GS(th)</sub> Temperature Coefficient	ΔV <sub>GS(th)</sub>		---	3	---	mV/°C
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =-10V , I <sub>S</sub> =-5A	---	15	---	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2, 3</sup>	Q <sub>g</sub>	V <sub>DS</sub> =-10V , V <sub>GS</sub> =-4.5V , I <sub>D</sub> =-5A	---	19.5	29	nC
Gate-Source Charge <sup>2, 3</sup>	Q <sub>gs</sub>		---	2	4	
Gate-Drain Charge <sup>2, 3</sup>	Q <sub>gd</sub>		---	3.6	7	
Turn-On Delay Time <sup>2, 3</sup>	T <sub>d(on)</sub>	V <sub>DD</sub> =-10V , V <sub>GS</sub> =-4.5V , R <sub>G</sub> =25Ω I <sub>D</sub> =-1A	---	10.4	20	nS
Rise Time <sup>2, 3</sup>	T <sub>r</sub>		---	37.5	71	
Turn-Off Delay Time <sup>2, 3</sup>	T <sub>d(off)</sub>		---	89.1	129	
Fall Time <sup>2, 3</sup>	T <sub>f</sub>		---	24.6	47	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-15V , V <sub>GS</sub> =0V , F=1MHz	---	1670	2430	pF
Output Capacitance	C <sub>oss</sub>		---	220	320	
Reverse Transfer Capacitance	C <sub>rss</sub>		---	120	180	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	I <sub>S</sub>	V <sub>G</sub> =V <sub>D</sub> =0V , Force Current	---	---	-6.5	A
Pulsed Source Current	I <sub>SM</sub>		---	---	-26	A
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> =0V , I <sub>S</sub> =-1A , T <sub>J</sub> =25°C	---	---	-1	V

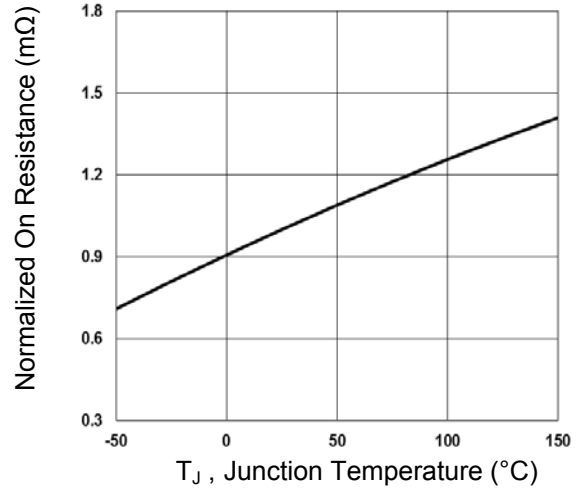
**Notes:**

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.

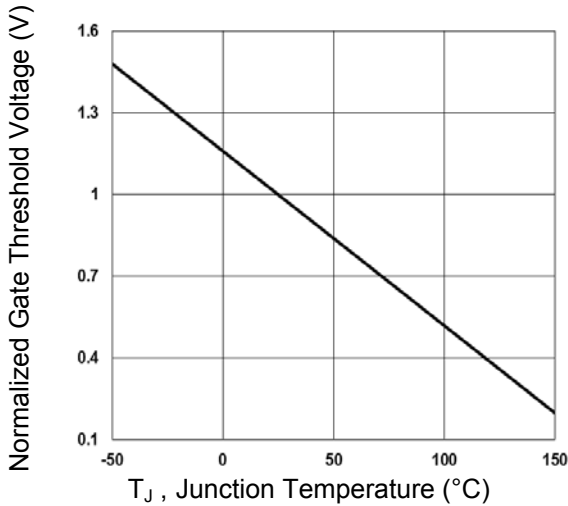
## Typical Electrical and Thermal Characteristic Curves



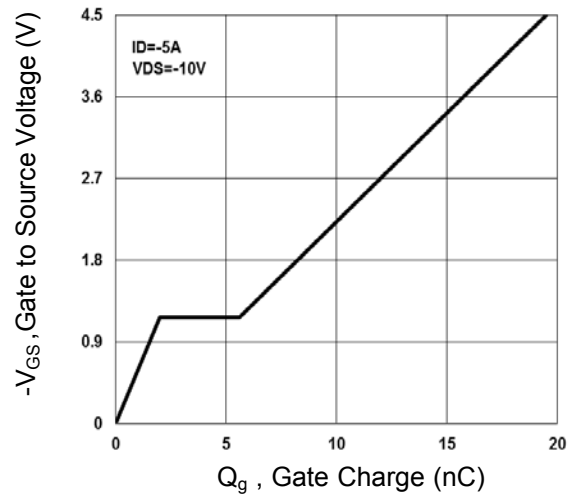
**Fig.1 Continuous Drain Current vs.  $T_c$**



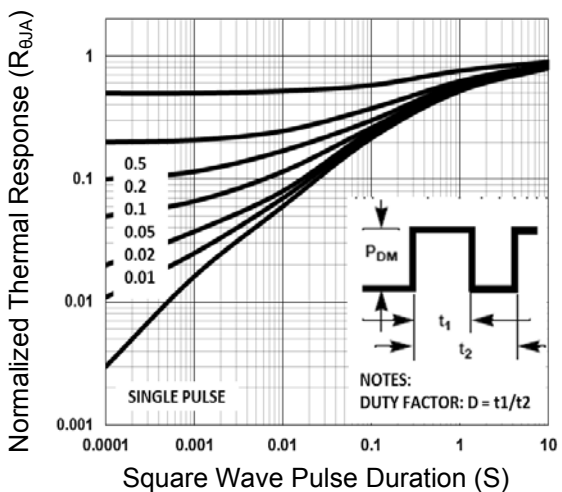
**Fig.2 Normalized  $R_{DS(ON)}$  vs.  $T_j$**



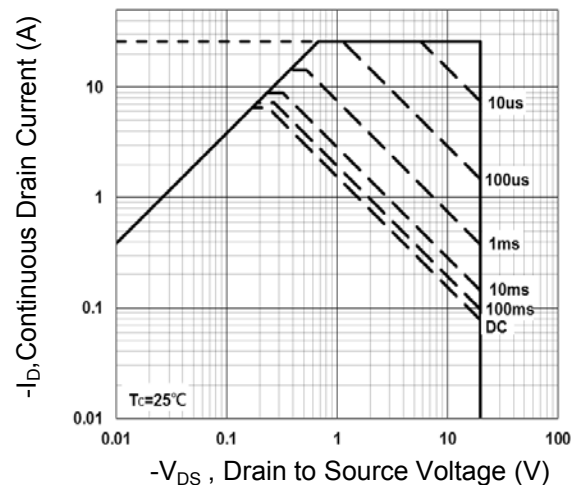
**Fig.3 Normalized  $V_{th}$  vs.  $T_j$**



**Fig.4 Gate Charge Waveform**

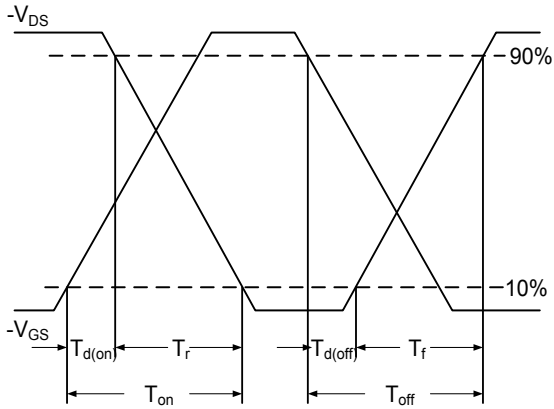


**Fig.5 Normalized Transient Impedance**

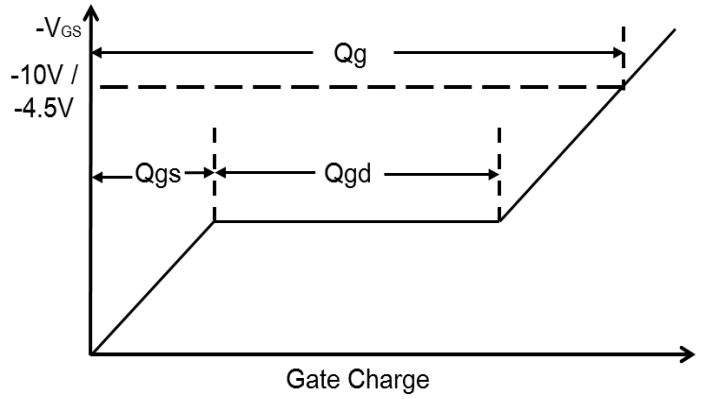


**Fig.6 Maximum Safe Operation Area**

**Typical Electrical and Thermal Characteristic Curves**



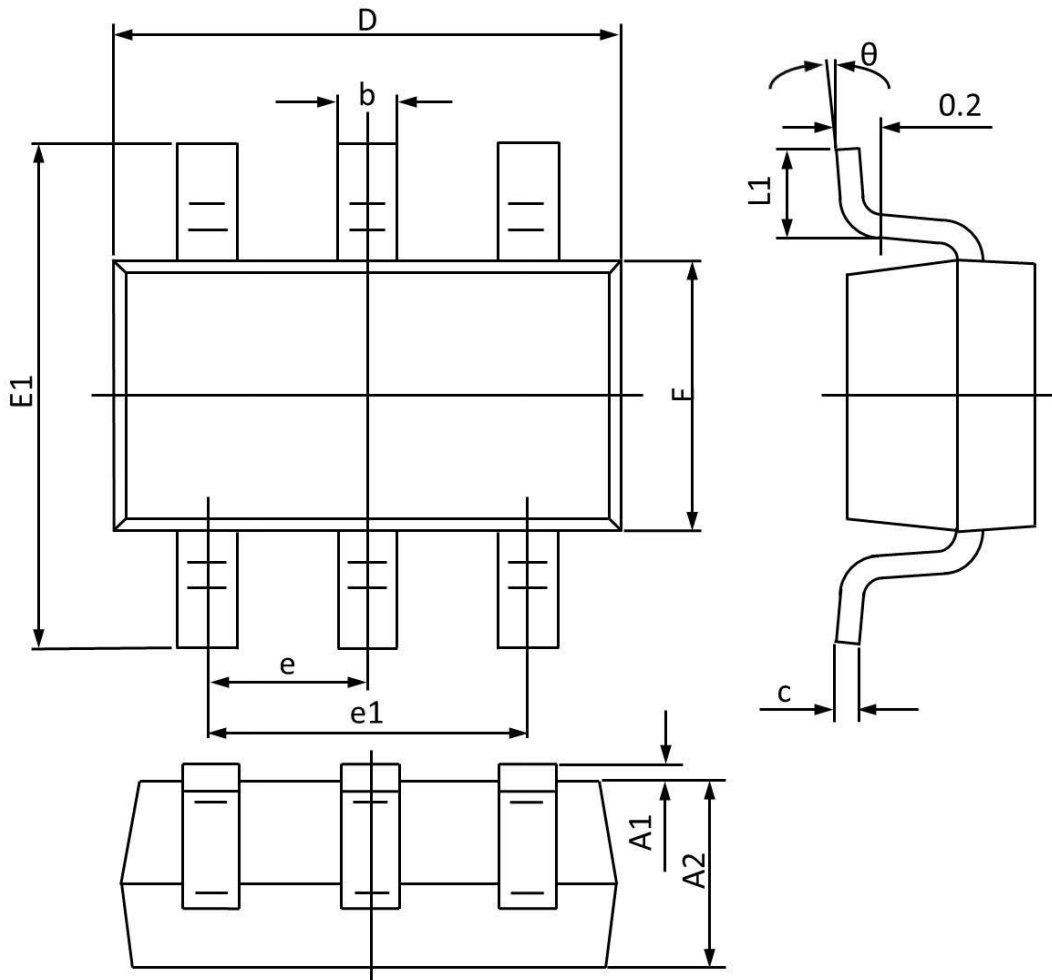
**Fig.7 Switching Time Waveform**



**Fig.8 Gate Charge Waveform**

## Package Outline Dimensions

## SOT-23-6L



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A1	0.000	0.100	0.000	0.004
A2	1.000	1.200	0.040	0.047
b	0.300	0.500	0.012	0.019
c	0.047	0.207	0.002	0.008
D	2.800	3.000	0.110	0.118
E1	2.600	3.000	0.103	0.118
e	0.950 TYP		0.037 TYP	
e1	1.900 TYP		0.075 TYP	
L1	0.250	0.550	0.010	0.021
θ	0°	8°	0°	8°