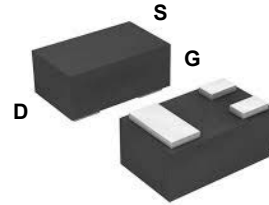
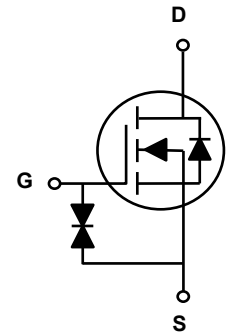


## Main Product Characteristics

$V_{(BR)DSS}$	20V
$R_{DS(ON)}$	350m $\Omega$
$I_D$	500mA



SOT-883



Schematic Diagram

## Features and Benefits

- Advanced MOSFET process technology
- Ideal for notebook, smartphone, hand-held devices and battery protection
- Low on-resistance with low gate charge
- Fast switching and reverse body recovery



## Description

The SSF8320 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	Rating	Unit
Drain-Source Voltage	V <sub>DS</sub>	20	V
Gate-Source Voltage	V <sub>GS</sub>	±8	V
Drain Current – Continuous (T <sub>C</sub> =25°C)	I <sub>D</sub>	500	mA
Drain Current – Continuous (T <sub>C</sub> =100°C)		320	mA
Drain Current – Pulsed <sup>1</sup>	I <sub>DM</sub>	1000	mA
Power Dissipation (T <sub>C</sub> =25°C)	P <sub>D</sub>	155	mW
Power Dissipation – Derate above 25°C		1.25	mW/°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>	---	800	°C/W

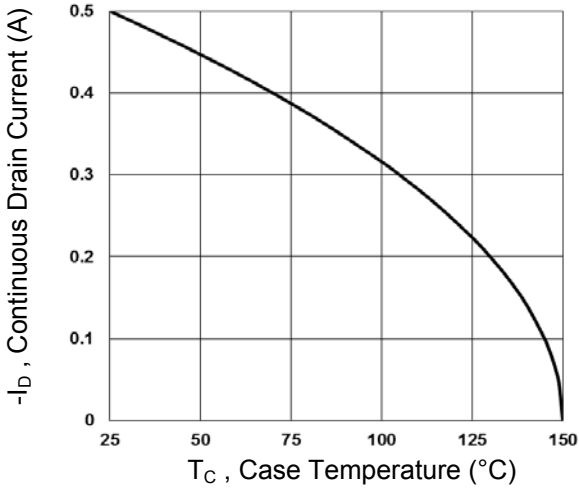
**Electrical Characteristics** ( $T_J=25^{\circ}\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	20	---	---	V
$BV_{DSS}$ Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to $25^{\circ}\text{C}$ , $I_D=1\text{mA}$	---	-0.01	---	$V/^{\circ}\text{C}$
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0V, T_J=25^{\circ}\text{C}$	---	---	1	$\mu A$
		$V_{DS}=16V, V_{GS}=0V, T_J=125^{\circ}\text{C}$	---	---	10	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 8V, V_{DS}=0V$	---	---	$\pm 20$	$\mu A$
<b>On Characteristics</b>						
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=4.5V, I_D=0.5A$	---	200	350	m $\Omega$
		$V_{GS}=2.5V, I_D=0.4A$	---	235	450	
		$V_{GS}=1.8V, I_D=0.2A$	---	295	600	
		$V_{GS}=1.5V, I_D=0.1A$	---	365	800	
		$V_{GS}=1.2V, I_D=0.1A$	---	600	1500	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	0.3	0.5	0.8	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		---	3	---	$\text{mV}/^{\circ}\text{C}$
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2, 3</sup>	$Q_g$	$V_{DS}=10V, V_{GS}=4.5V, I_D=0.5A$	---	1	2	nC
Gate-Source Charge <sup>2, 3</sup>	$Q_{gs}$		---	0.26	0.5	
Gate-Drain Charge <sup>2, 3</sup>	$Q_{gd}$		---	0.2	0.4	
Turn-On Delay Time <sup>2, 3</sup>	$T_{d(on)}$	$V_{DD}=10V, V_{GS}=4.5V, R_G=10\Omega, I_D=0.5A$	---	5	10	nS
Rise Time <sup>2, 3</sup>	$T_r$		---	3.5	7	
Turn-Off Delay Time <sup>2, 3</sup>	$T_{d(off)}$		---	14	28	
Fall Time <sup>2, 3</sup>	$T_f$		---	6	12	
Input Capacitance	$C_{iss}$	$V_{DS}=10V, V_{GS}=0V, F=1\text{MHz}$	---	38.2	75	pF
Output Capacitance	$C_{oss}$		---	14.4	28	
Reverse Transfer Capacitance	$C_{rss}$		---	6	12	
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	$I_S$	$V_{GS}=V_D=0V, \text{Force Current}$	---	---	500	$\text{mA}$
Pulsed Source Current	$I_{SM}$		---	---	1000	$\text{mA}$
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=0.2A, T_J=25^{\circ}\text{C}$	---	---	1	V

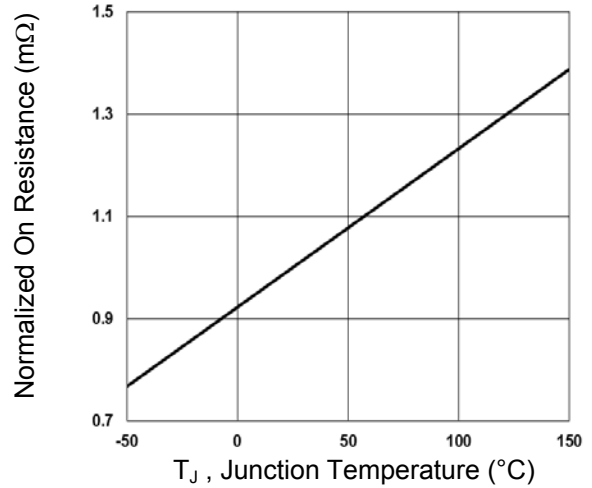
**Notes:**

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2\%$ .
3. Essentially independent of operating temperature.

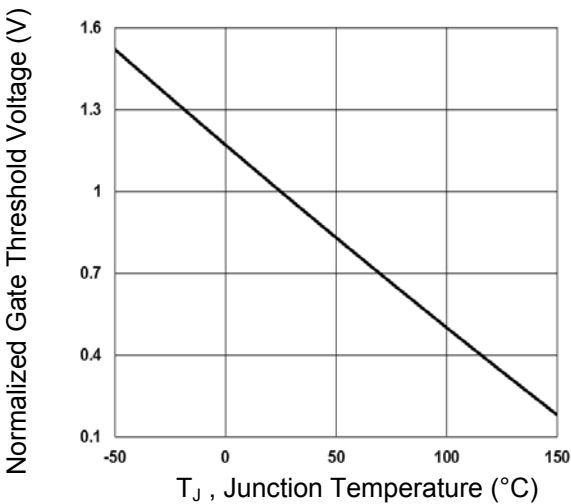
**Typical Electrical and Thermal Characteristic Curves**



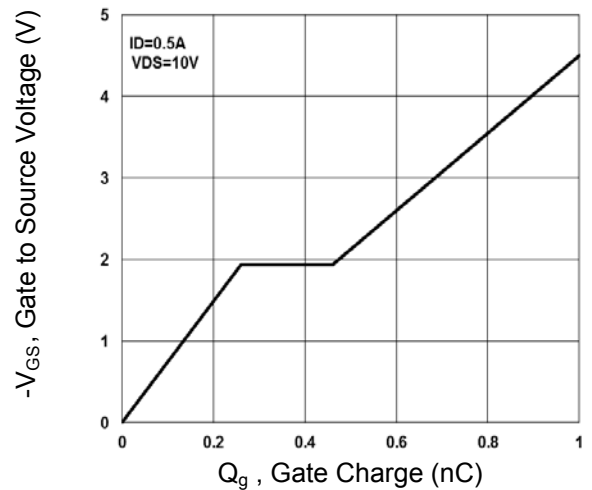
**Fig.1 Continuous Drain Current vs.  $T_c$**



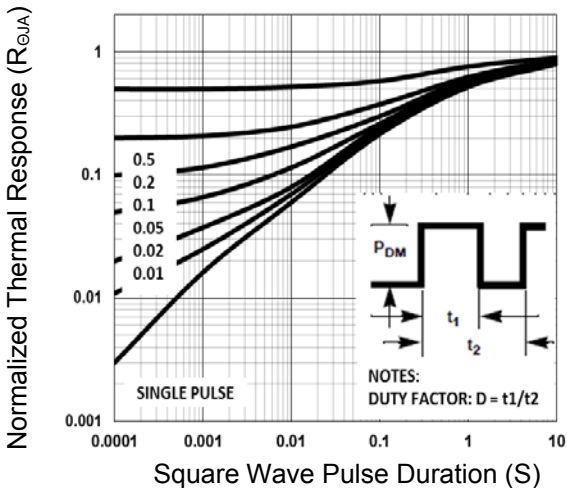
**Fig.2 Normalized  $R_{DS(ON)}$  vs.  $T_j$**



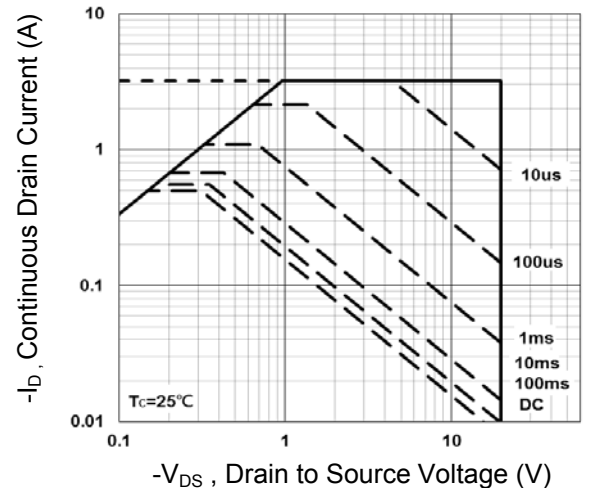
**Fig.3 Normalized  $V_{th}$  vs.  $T_j$**



**Fig.4 Gate Charge Waveform**

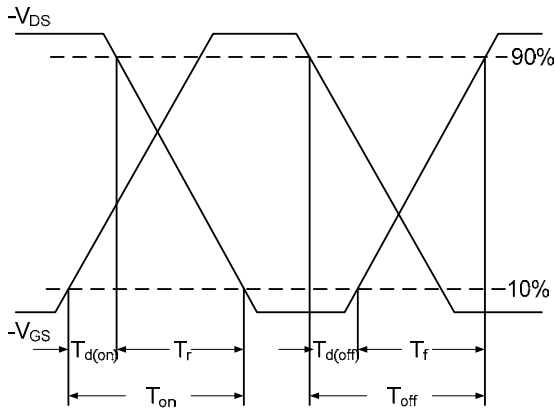


**Fig.5 Normalized Transient Response**

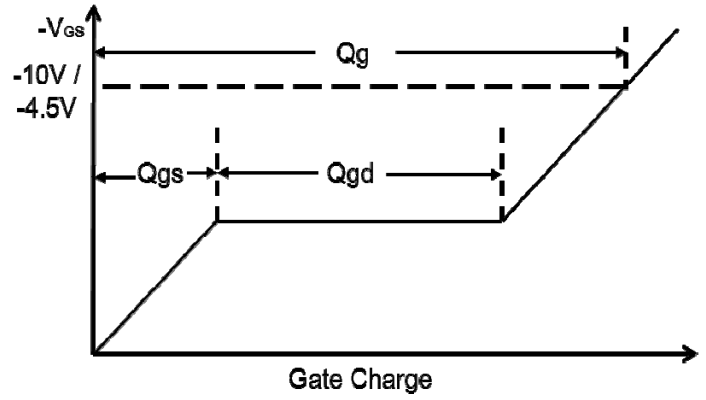


**Fig.6 Maximum Safe Operation Area**

**Typical Electrical and Thermal Characteristic Curves**



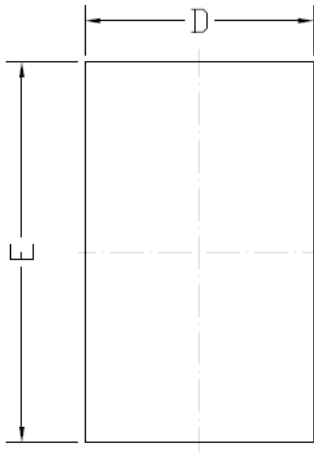
**Fig.7 Switching Time Waveform**



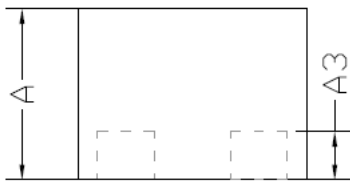
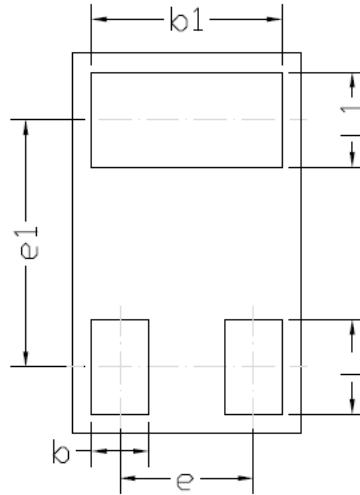
**Fig.8 Gate Charge Waveform**

**Package Outline Dimensions**

**SOT-883**



SIDE VIEW



SYMBOL	COMMON		
	DIMENSIONS MILLIMETER		
	MIN	NOM.	MAX
A	0.40	0.45	0.50
A3	0.127 BSC		
D	0.55	0.60	0.65
E	0.95	1.00	1.05
e	0.35 BSC		
e1	0.65 BSC		
b	0.13	0.15	0.18
b1	0.45	0.50	0.55
L	0.20	0.25	0.30
L1	0.20	0.25	0.30