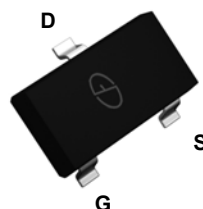
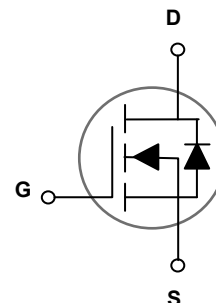


### Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	350m $\Omega$
$I_D$	1.4A



SOT-23



Schematic Diagram

### Features and Benefits

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



### Description

The SSF0954S 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	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	V
Drain Current – Continuous (T <sub>A</sub> =25°C)	$I_D$	1.4	A
Drain Current – Continuous (T <sub>A</sub> =70°C)		1.12	A
Drain Current – Pulsed <sup>1</sup>	$I_{DM}$	5.6	A
Power Dissipation (T <sub>A</sub> =25°C)	$P_D$	1.56	W
Power Dissipation – Derate above 25°C	$P_D$	0.012	W/°C
Storage Temperature Range	T <sub>STG</sub>	-50 to +150	°C
Operating Junction Temperature Range	T <sub>J</sub>	-50 to +150	°C

### Thermal Characteristics

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

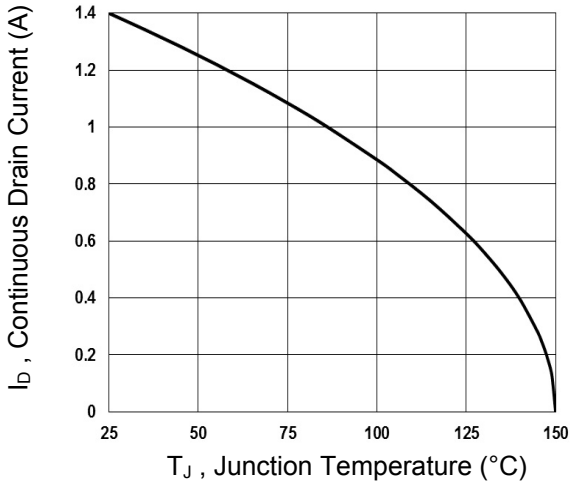
### Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise specified)

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> =250μA	100	---	---	V
BV <sub>DSS</sub> Temperature Coefficient	ΔBV <sub>DSS</sub> /ΔT <sub>J</sub>	Reference to 25°C, I <sub>D</sub> =1mA	---	0.09	---	V/°C
Drain-Source Leakage Current	I <sub>DSS</sub>	V <sub>DS</sub> =100V, V <sub>GS</sub> =0V, T <sub>J</sub> =25°C	---	---	1	μA
		V <sub>DS</sub> =80V, V <sub>GS</sub> =0V, T <sub>J</sub> =125°C	---	---	10	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	---	---	±100	nA
<b>On Characteristics</b>						
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =1A	---	280	350	mΩ
		V <sub>GS</sub> =4.5V, I <sub>D</sub> =0.5A	---	290	360	
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> =V <sub>DS</sub> , I <sub>D</sub> =250μA	1.2	1.8	2.5	V
V <sub>GS(th)</sub> Temperature Coefficient	ΔV <sub>GS(th)</sub>		---	-5	---	mV/°C
Forward Transconductance	g <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>S</sub> =2A	---	2.3	---	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2, 3</sup>	Q <sub>g</sub>	V <sub>DS</sub> =50V, V <sub>GS</sub> =10V, I <sub>D</sub> =1A	---	9	18	nC
Gate-Source Charge <sup>2, 3</sup>	Q <sub>gs</sub>		---	2.3	4.6	
Gate-Drain Charge <sup>2, 3</sup>	Q <sub>gd</sub>		---	1.1	2.5	
Turn-On Delay Time <sup>2, 3</sup>	T <sub>d(on)</sub>	V <sub>DD</sub> =50V, V <sub>GS</sub> =10V, R <sub>G</sub> =3.3Ω, I <sub>D</sub> =1A	---	5.2	10	nS
Rise Time <sup>2, 3</sup>	T <sub>r</sub>		---	6.8	12	
Turn-Off Delay Time <sup>2, 3</sup>	T <sub>d(off)</sub>		---	14.5	28	
Fall Time <sup>2, 3</sup>	T <sub>f</sub>		---	2.1	5	
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =25V, V <sub>GS</sub> =0V, F=1MHz	---	492	800	pF
Output Capacitance	C <sub>oss</sub>		---	27	50	
Reverse Transfer Capacitance	C <sub>rss</sub>		---	15	25	
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =0V, F=1MHz	---	2.8	5.6	Ω
<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	---	---	1.4	A
Pulsed Source Current	I <sub>SM</sub>		---	---	2.8	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

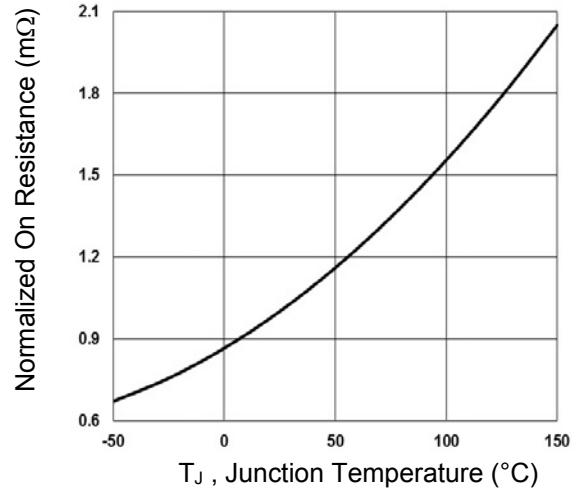
**Notes:**

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width ≤ 300μs, duty cycle ≤ 2%.
3. Essentially independent of operating temperature.

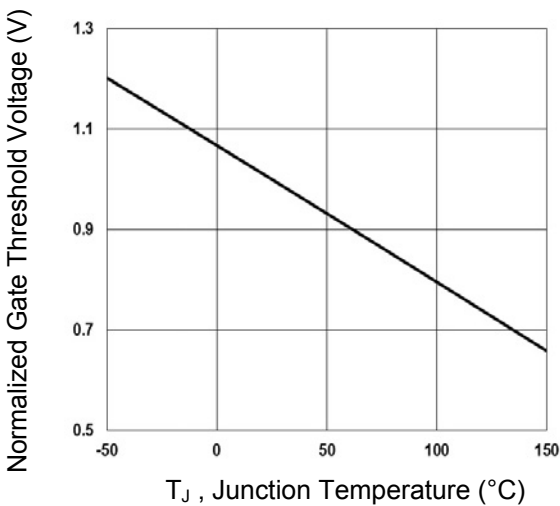
## Typical Electrical and Thermal Characteristic Curves



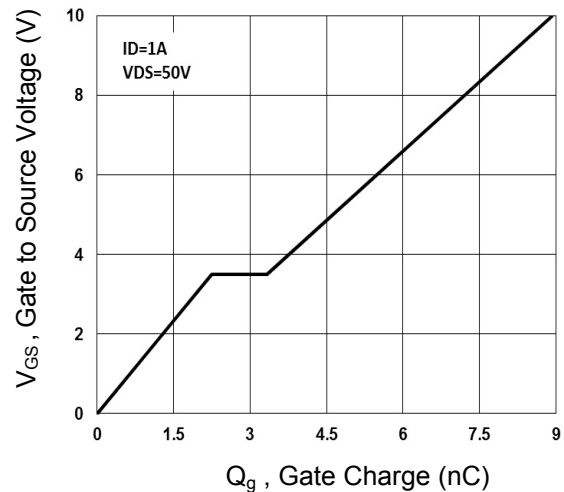
**Fig.1 Continuous Drain Current vs.  $T_J$**



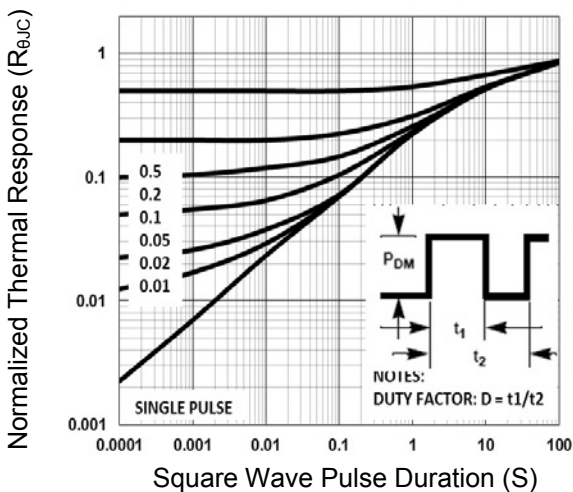
**Fig.2 Normalized  $R_{DS(ON)}$  vs.  $T_J$**



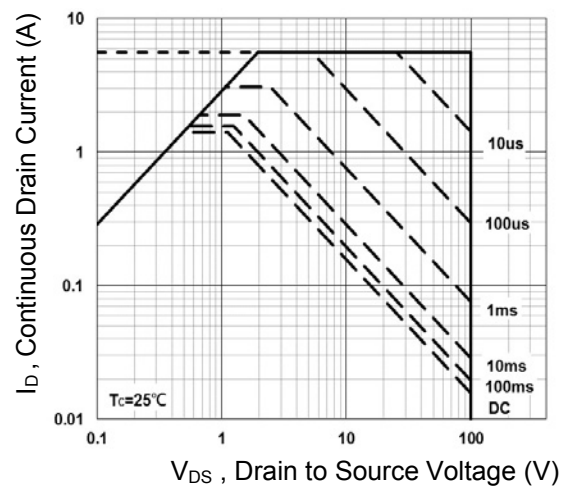
**Fig.3 Normalized  $V_{th}$  vs.  $T_J$**



**Fig.4 Gate Charge Waveform**

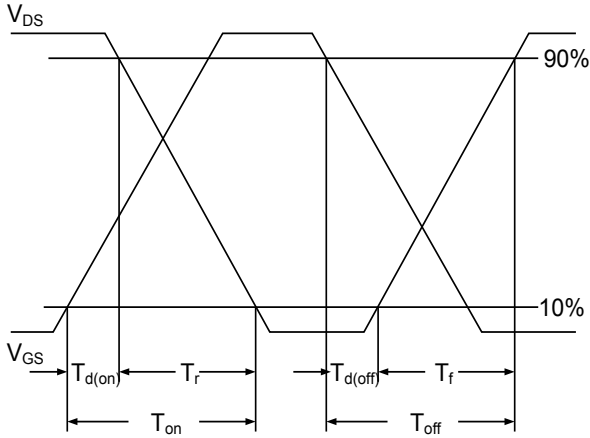


**Fig.5 Normalized Transient Impedance**

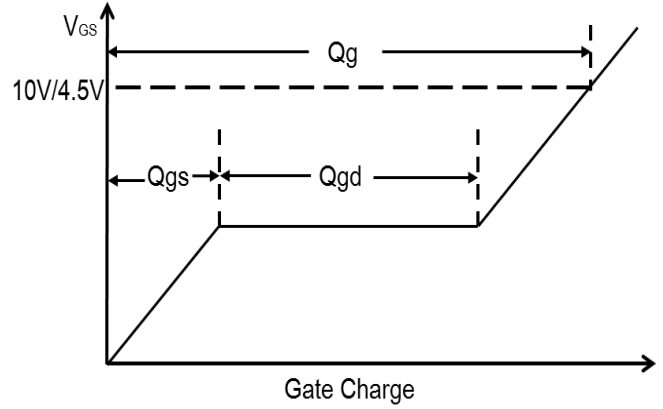


**Fig.6 Maximum Safe Operation Area**

**Typical Electrical and Thermal Characteristic Curves**



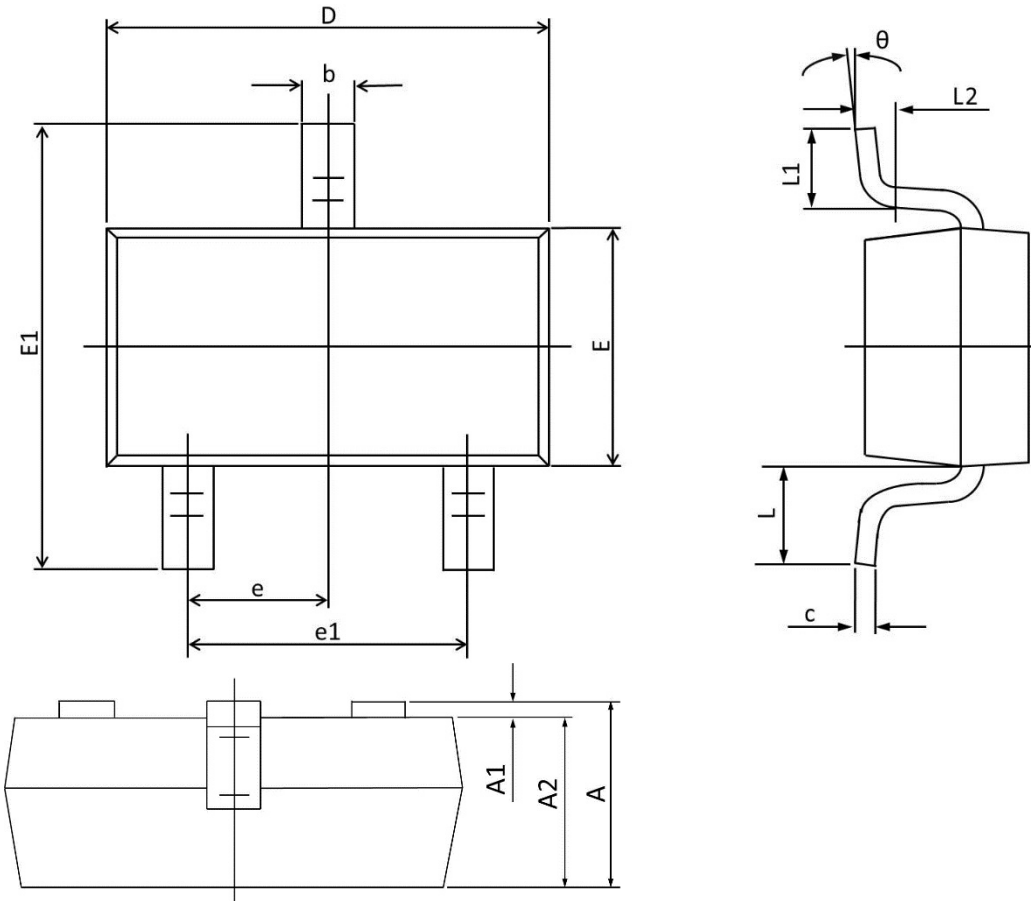
**Fig.7 Switching Time Waveform**



**Fig.8 Gate Charge Waveform**

**Package Outline Dimensions**

**SOT-23**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.000	0.035	0.039
A1	0.000	0.100	0.000	0.004
b	0.300	0.500	0.012	0.020
c	0.090	0.110	0.003	0.004
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	1°	7°	1°	7°