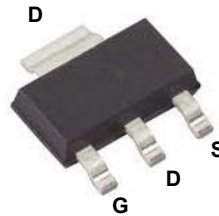
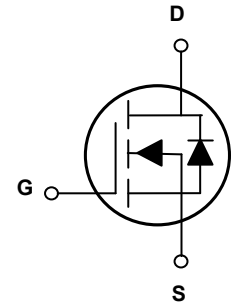


### Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	120mΩ
$I_D$	4A



SOT-223



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 SSFL0956 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 ( $T_C=25^{\circ}C$ unless otherwise specified)

Parameter	Symbol	Max.	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	±20	V
Drain Current-Continuous ( $T_C=25^{\circ}C$ )	$I_D$	4	A
Drain Current-Continuous ( $T_C=100^{\circ}C$ )		2.6	
Drain Current-Pulsed <sup>1</sup>	$I_{DM}$	16	A
Power Dissipation ( $T_C=25^{\circ}C$ )	$P_D$	5.2	W
Power Dissipation-De-rate above 25°C		0.042	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	70	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	24	°C/W
Operating Junction Temperature Range	$T_J$	-50 To +150	°C
Storage Temperature Range	$T_{STG}$	-50 To +150	°C

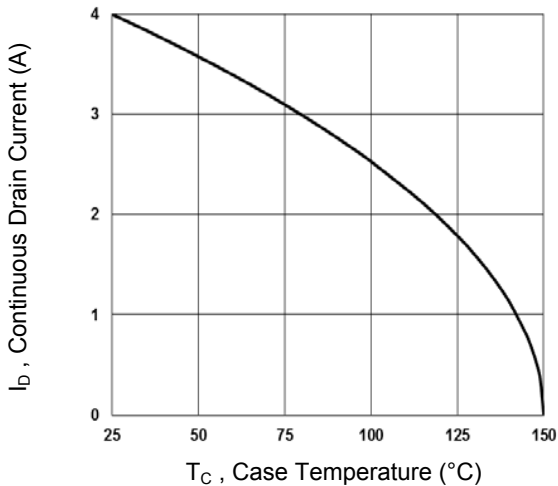
**Electrical Characteristics** ( $T_J=25^{\circ}\text{C}$  unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
<b>On/Off Characteristics</b>						
Drain-Source Breakdown Voltage	$BV_{DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
$BV_{DSS}$ Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to $25^{\circ}\text{C}$ , $I_D=1mA$	-	0.09	-	$V/^{\circ}\text{C}$
Drain-Source Leakage Current	$I_{DSS}$	$V_{DS}=100V, V_{GS}=0V,$ $T_J=25^{\circ}\text{C}$	-	-	1	$\mu A$
		$V_{DS}=80V, V_{GS}=0V,$ $T_J=125^{\circ}\text{C}$	-	-	10	$\mu A$
Gate-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	$\pm 100$	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}=10V, I_D=4A$	-	-	120	m $\Omega$
		$V_{GS}=4.5V, I_D=2A$	-	-	130	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.2	1.6	2.5	V
$V_{GS(th)}$ Temperature Coefficient	$\Delta V_{GS(th)}$		-	-5	-	mV/ $^{\circ}\text{C}$
Forward Transconductance	$g_{fs}$	$V_{DS}=10V, I_D=2A$	-	8.7	-	S
<b>Dynamic and Switching Characteristics</b>						
Total Gate Charge <sup>2,3</sup>	$Q_g$	$V_{DS}=50V, I_D=2A,$ $V_{GS}=10V$	-	20	40	nC
Gate-Source Charge <sup>2,3</sup>	$Q_{gs}$		-	3.2	6	
Gate-Drain Charge <sup>2,3</sup>	$Q_{gd}$		-	3.6	7	
Turn-On Delay Time <sup>2,3</sup>	$t_{d(on)}$	$V_{DD}=50V, R_G=3.3\Omega,$ $V_{GS}=10V, I_D=1A$	-	18	36	nS
Rise Time <sup>2,3</sup>	$t_r$		-	4	8	
Turn-Off Delay Time <sup>2,3</sup>	$t_{d(off)}$		-	40	80	
Fall Time <sup>2,3</sup>	$t_f$		-	3	6	
Input Capacitance	$C_{iss}$	$V_{DS}=25V, V_{GS}=0V,$ $F=1MHz$	-	1400	2800	pF
Output Capacitance	$C_{oss}$		-	60	120	
Reverse Transfer Capacitance	$C_{rss}$		-	35	70	
Gate Resistance	$R_g$	$V_{GS}=0V, V_{DS}=0V,$ $F=1MHz$	-	2	4	$\Omega$
<b>Drain-Source Diode Characteristics and Maximum Ratings</b>						
Continuous Source Current	$I_S$	$V_G=V_D=0V,$ Force Current	-	-	4	A
Pulsed Source Current	$I_{SM}$		-	-	8	A
Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=1A,$ $T_J=25^{\circ}\text{C}$	-	-	1	V

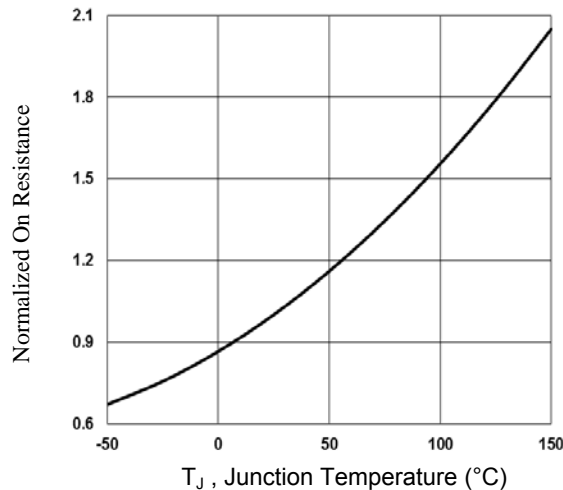
Note:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. Pulse test: pulse width  $\leq 300\mu s$ , duty cycle  $\leq 2\%$ .
3. Essentially independent of operating temperature.

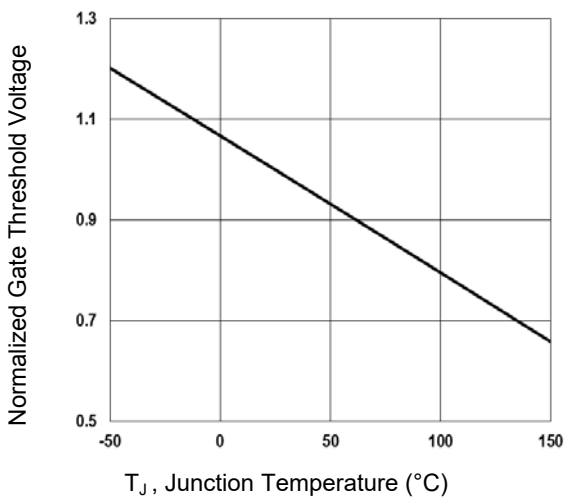
**Typical Electrical and Thermal Characteristic Curves**



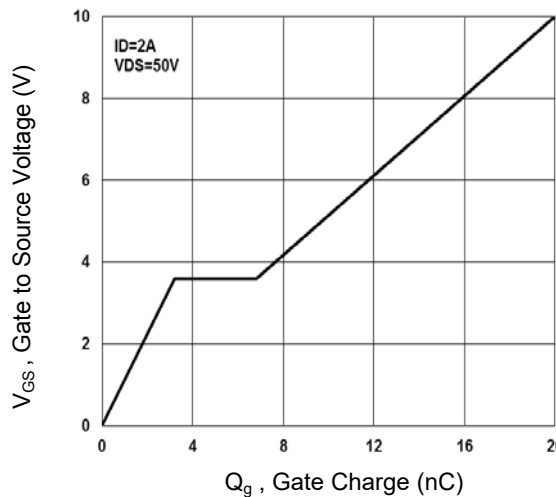
**Figure 1. Continuous Drain Current vs.  $T_c$**



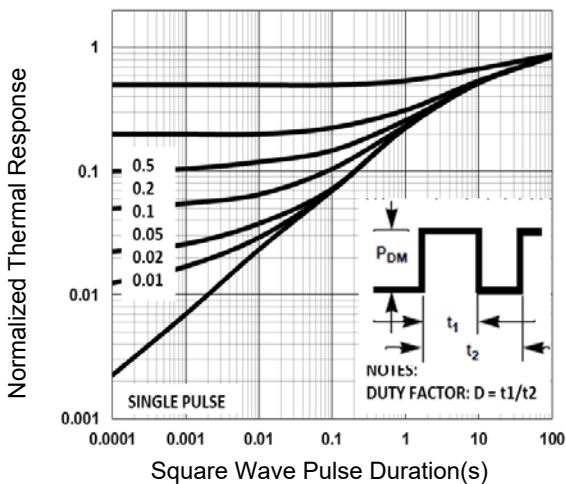
**Figure 2. Normalized  $R_{DS(ON)}$  vs.  $T_j$**



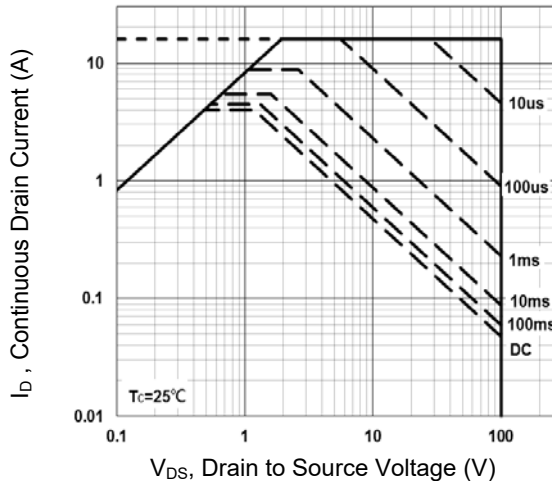
**Figure 3. Normalized  $V_{th}$  vs.  $T_j$**



**Figure 4. Gate Charge Waveform**

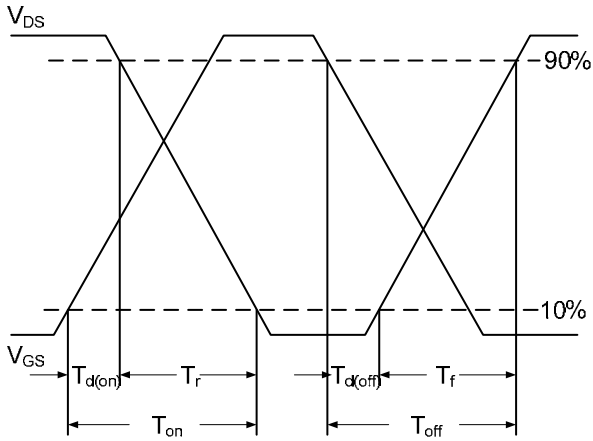


**Figure 5. Normalized Transient Impedance**

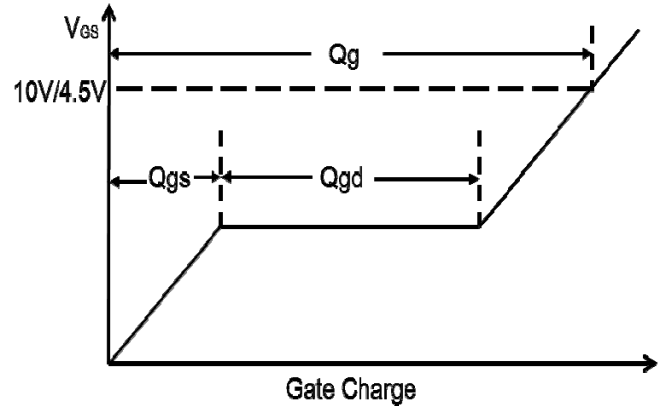


**Figure 6. Maximum Safe Operation Area**

**Typical Electrical and Thermal Characteristic Curves**



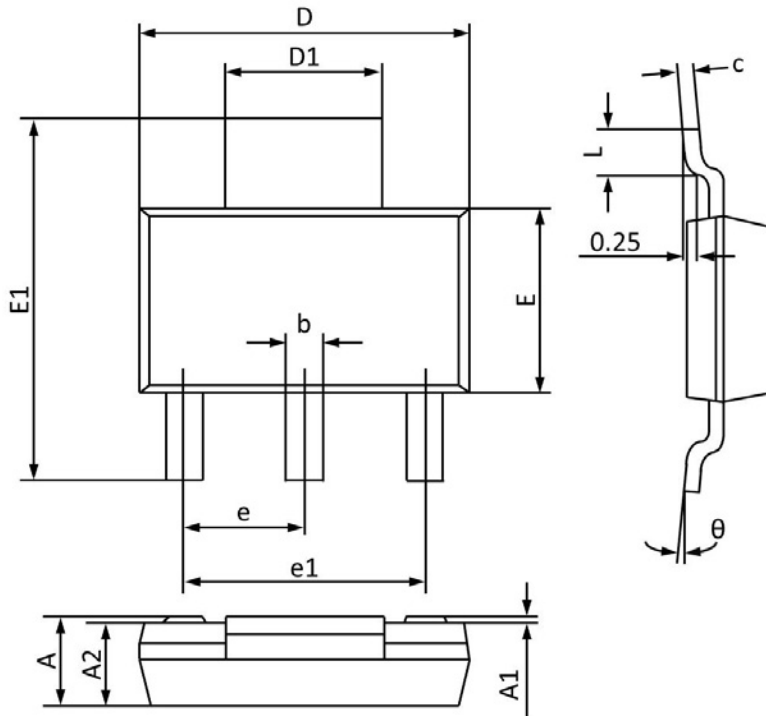
**Figure 7. Switching Time Waveform**



**Figure 8. EAS Waveform**

**Package Outline Dimensions**

**SOT-223**



Symbol	Dimensions in Millimeters		Dimensions in Inches	
	Min	Max	Min	Max
A	1.52	1.8	0.06	0.071
A1	0	0.1	0	0.004
A2	1.5	1.7	0.059	0.067
b	0.66	0.82	0.026	0.032
c	0.25	0.35	0.01	0.014
D	6.2	6.4	0.244	0.252
D1	2.9	3.1	0.114	0.122
E	3.3	3.7	0.13	0.146
E1	6.83	7.07	0.269	0.278
e	2.300 (BSC)		0.091 (BSC)	
e1	4.5	4.7	0.177	0.185
L	0.9	1.15	0.035	0.045
θ	0°	10°	0°	10°