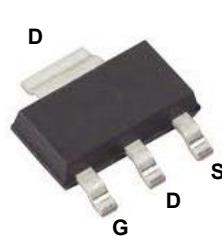
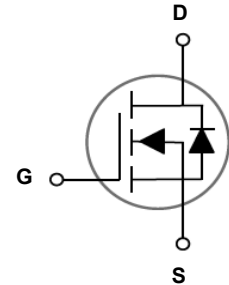


Main Product Characteristics

$V_{(BR)DSS}$	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°C unless otherwise specified)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current – Continuous (T _C =25°C)	I_D	4	A
Drain Current – Continuous (T _C =100°C)		2.6	A
Drain Current – Pulsed ¹	I_{DM}	16	A
Power Dissipation (T _C =25°C)	P_D	5.2	W
Power Dissipation – Derate above 25°C		0.042	W/°C
Storage Temperature Range	T_{STG}	-50 to +150	°C
Operating Junction Temperature Range	T_J	-50 to +150	°C

Thermal Characteristics

Parameter	Symbol	Typ.	Max.	Unit
Thermal Resistance Junction to Ambient	$R_{θJA}$	---	70	°C/W
Thermal Resistance Junction to Case	$R_{θJC}$	---	24	°C/W

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
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 $25^\circ\text{C}, I_D=1\text{mA}$	---	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	μA
		$V_{DS}=80V, V_{GS}=0V, T_J=125^\circ\text{C}$	---	---	10	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=20V, V_{DS}=0V$	---	---	± 100	nA
Dynamic Characteristics						
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	$m\Omega$
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
Switching Characteristics						
Total Gate Charge ^{2, 3}	Q_g	$V_{DS}=50V, V_{GS}=10V, I_D=2A$	---	20	40	nC
Gate-Source Charge ^{2, 3}	Q_{gs}		---	3.2	6	
Gate-Drain Charge ^{2, 3}	Q_{gd}		---	3.6	7	
Turn-On Delay Time ^{2, 3}	$T_{d(on)}$	$V_{DD}=50V, V_{GS}=10V, R_G=3.3\Omega, I_D=1A$	---	18	36	nS
Rise Time ^{2, 3}	T_r		---	4	8	
Turn-Off Delay Time ^{2, 3}	$T_{d(off)}$		---	40	80	
Fall Time ^{2, 3}	T_f		---	3	6	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, F=1\text{MHz}$	---	1400	2800	pF
Output Capacitance	C_{oss}		---	60	120	
Reverse Transfer Capacitance	C_{rss}		---	35	70	
Gate Resistance	R_g	$V_{GS}=0V, V_{DS}=0V, F=1\text{MHz}$	---	2	4	Ω
Thermal Characteristics						
Continuous Source Current	I_S	$V_{GS}=V_{DS}=0V, \text{Force Current}$	---	---	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. 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

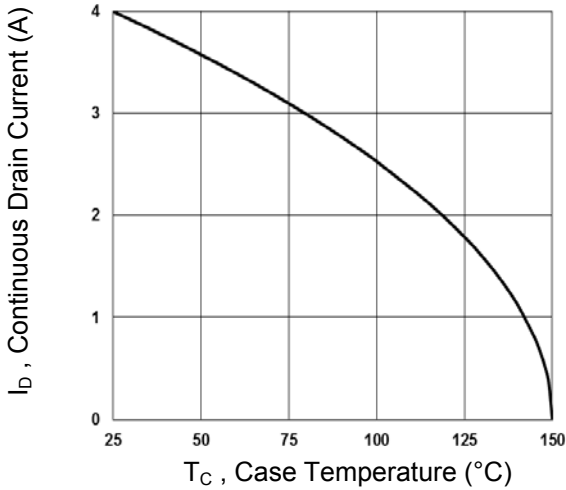


Fig.1 Continuous Drain Current vs. T_c

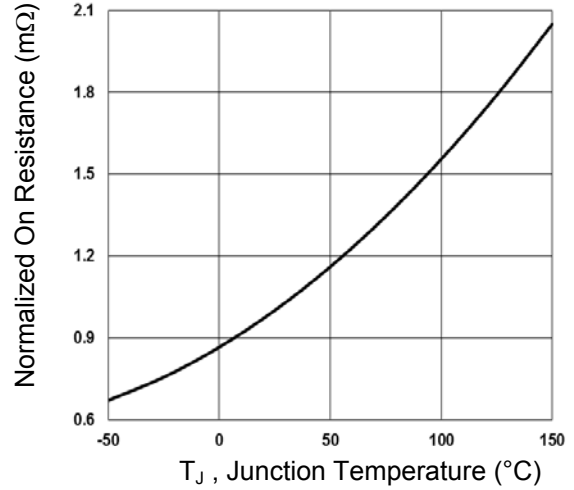


Fig.2 Normalized $R_{DS(ON)}$ vs. T_j

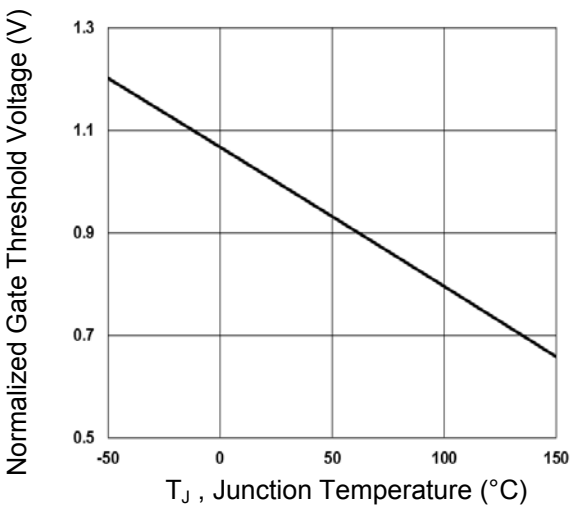


Fig.3 Normalized V_{th} vs. T_j

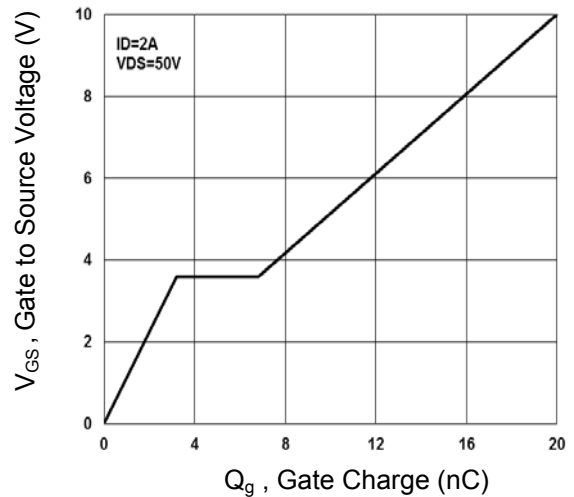


Fig.4 Gate Charge Waveform

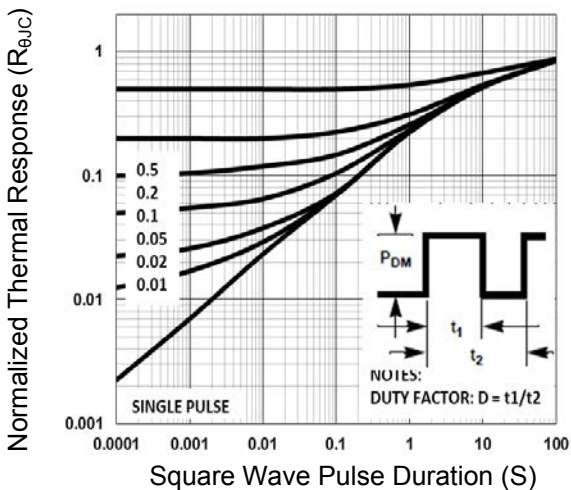


Fig.5 Normalized Transient Impedance

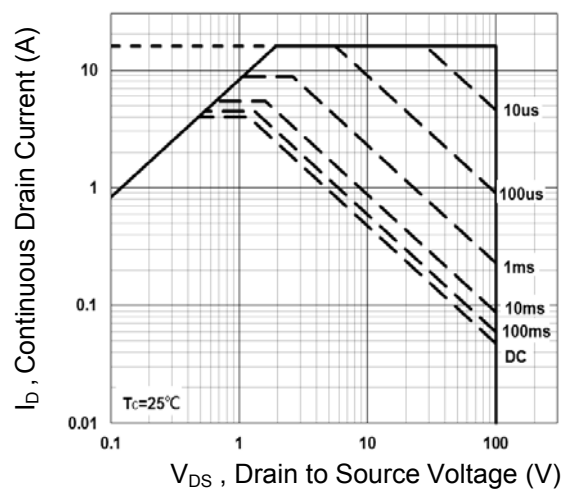


Fig.6 Maximum Safe Operation Area

Typical Electrical and Thermal Characteristic Curves

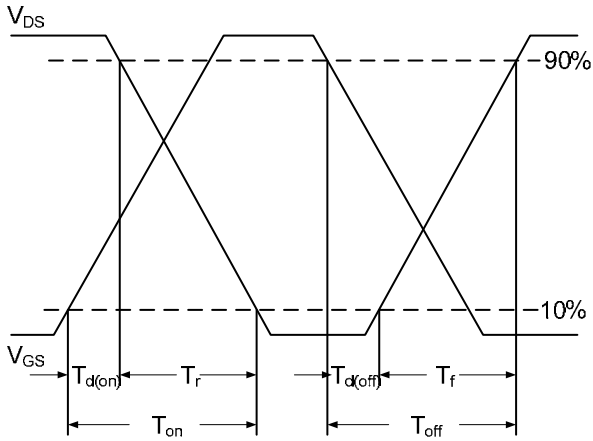


Fig.7 Switching Time Waveform

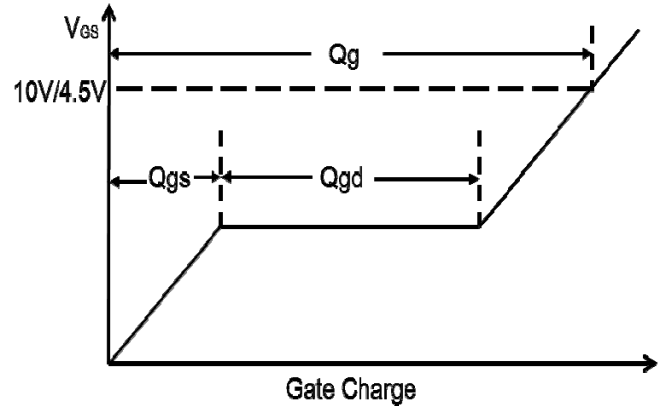
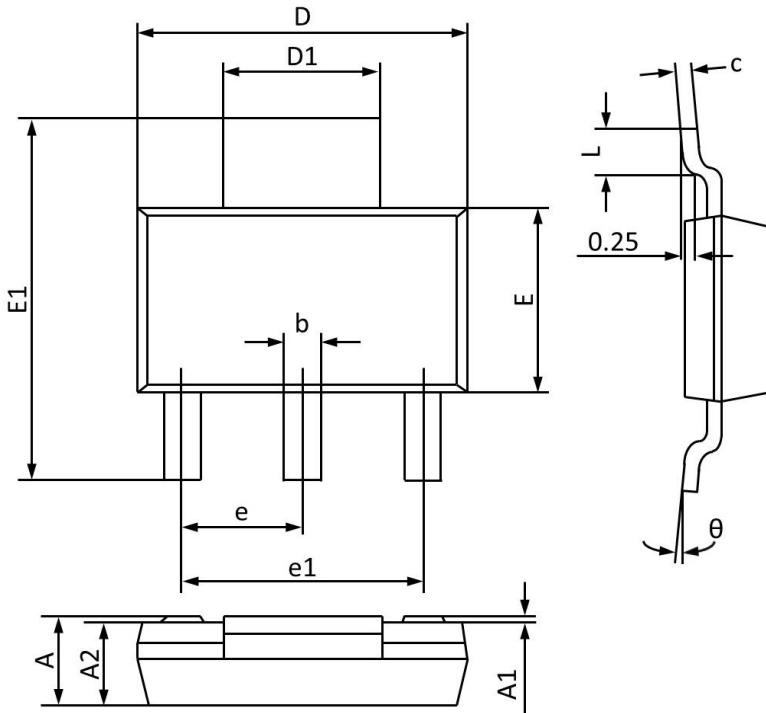


Fig.8 Gate Charge Waveform

Package Outline Dimensions

SOT-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°

Order Information

Device	Package	Marking Code	Carrier	Quantity	HSF Status
SSFL0956	SOT-223	DL0956	Tape & Reel	3000/Reel	RoHS Compliant