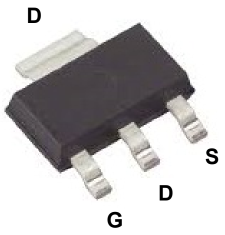
SSFL0954

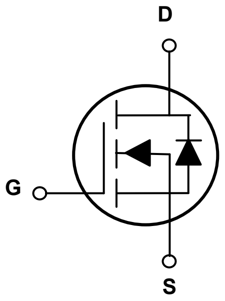
100V N-Channel MOSFET

Main Product Characteristics

BV_{DSS}	100V
$R_{DS(ON)}$	310mΩ (Max.)
I_D	1.7A



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 SSFL0954 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	Units
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	V
Drain Current-Continuous (T_C=25°C)	I_D	1.7	A
Drain Current-Continuous (T_C=100°C)		1.08	A
Drain Current-Pulsed[1]	I_{DM}	6.8	A
Power Dissipation (T_C=25°C)	P_D	1.76	W
Power Dissipation-Derate Above 25°C		0.014	W/°C
Max. Thermal Resistance Junction to Ambient	$R_{\theta JA}$	70	°C/W
Max. Thermal Resistance Junction to Case	$R_{\theta JC}$	30	°C/W
Storage Temperature Range	T_{STG}	-50 to +150	°C
Operating Junction Temperature Range	T_J	-50 to +150	°C

Electrical Characteristics (T_J=25°C unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=250μA	100	-	-	V
BV_{DSS} Temperature Coefficient	$\triangle BV_{DSS}/\triangle T_J$	Reference to 25°C, I_D=1mA	-	0.09	-	V/°C
Drain-Source Leakage Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V, T_J=25°C	-	-	1	μA
		V_{DS}=80V, V_{GS}=0V, T_J=125°C	-	-	10	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=1A	-	260	310	mΩ
		V_{GS}=4.5V, I_D=0.5A	-	270	320	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250μA	1.2	1.8	2.5	V
$V_{GS(th)}$ Temperature Coefficient	$\triangle V_{GS(th)}$		-	-5	-	mV/°C
Forward Transconductance	gfs	V_{DS}=10V, I_D=2A	-	2.3	-	S
Dynamic and Switching Characteristics						
Total Gate Charge[2,3]	Q_g	V_{DS}=50V, V_{GS}=10V, I_D=1A	-	9	18	nC
Gate-Source Charge[2,3]	Q_{gs}		-	2.3	4.6	
Gate-Drain Charge[2,3]	Q_{gd}		-	1.1	2.5	
Turn-On Delay Time[2,3]	$t_{d(on)}$	V_{DD}=50V, V_{GS}=10V, R_G=3.3Ω, I_D=1A	-	5.2	10	nS
Rise Time[2,3]	t_r		-	6.8	12	
Turn-Off Delay Time[2,3]	$t_{d(off)}$		-	14.5	28	
Fall Time[2,3]	t_f		-	2.1	5	
Input Capacitance	C_{iss}	V_{DS}=25V, V_{GS}=0V, F=1MHz	-	492	800	pF
Output Capacitance	C_{oss}		-	27	50	
Reverse Transfer Capacitance	C_{rss}		-	15	25	
Gate Resistance	R_g	V_{GS}=0V, V_{DS}=0V, F=1MHz	-	2.8	5.6	Ω
Drain-Source Ratings and Characteristics						
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°C	-	-	1	V
Reverse Recovery Time[2]	t_{rr}	V_R=50V, I_S=2A, di/dt=100A/μs, T_J=25°C	-	30	-	nS
Reverse Recovery Charge[2]	Q_{rr}		-	20	-	nC

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

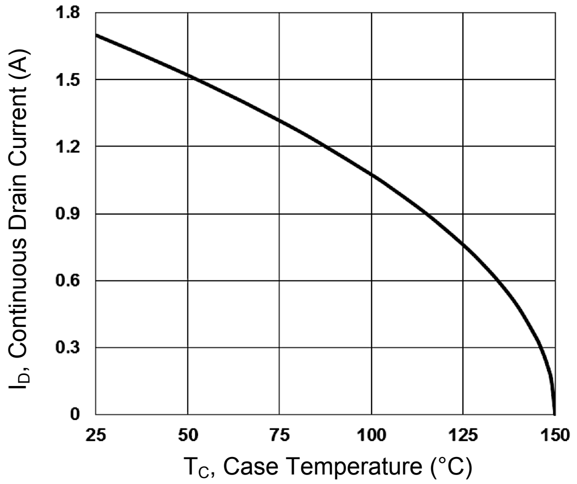


Figure 1. Continuous Drain Current vs. T_C

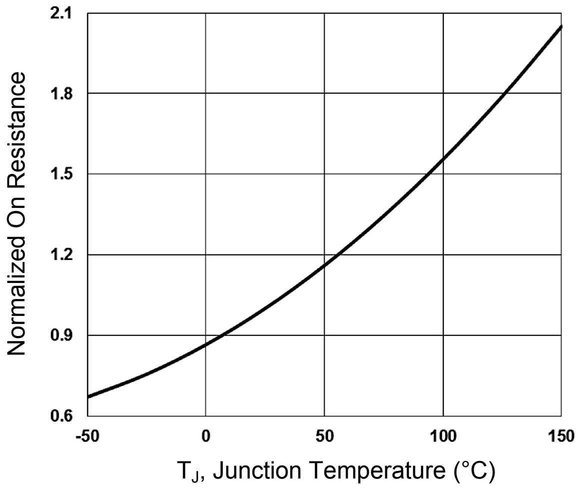


Figure 2. Normalized $R_{DS(ON)}$ vs. T_J

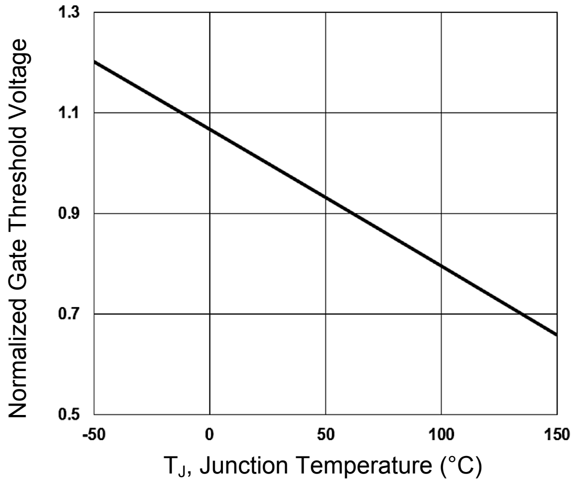


Figure 3. Normalized V_{th} vs. T_J

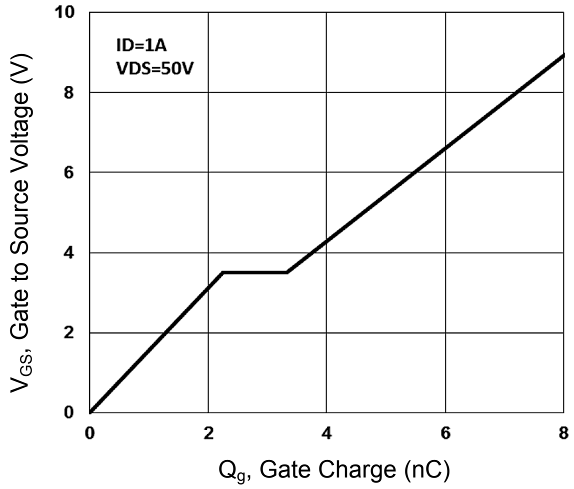


Figure 4. Gate Charge Waveform

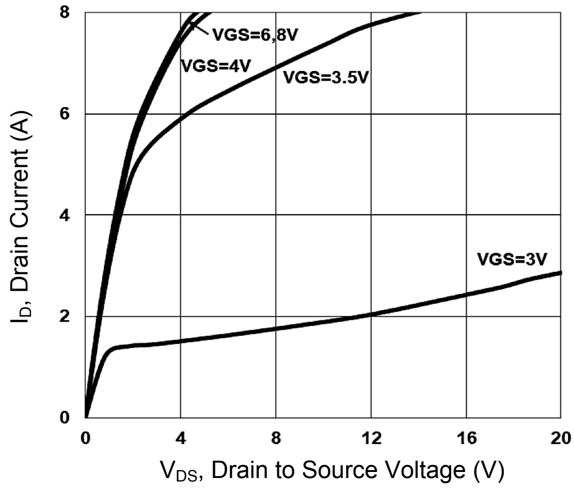


Figure 5. Typical Output Characteristics

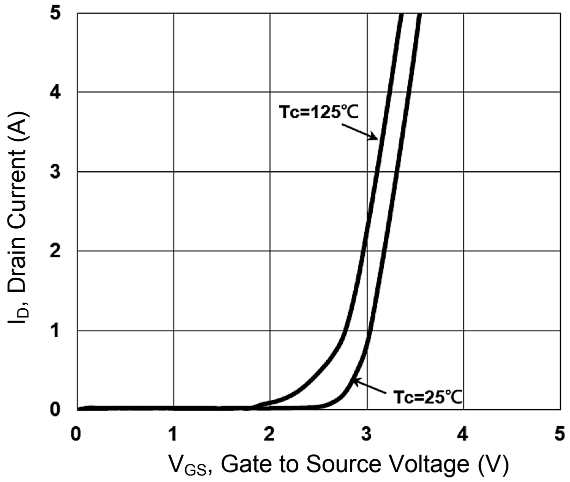


Figure 6. Transfer Characteristics

Typical Electrical and Thermal Characteristic Curves

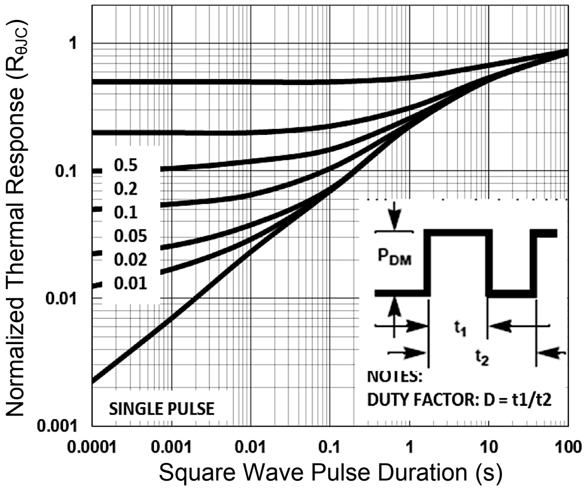


Figure 7. Normalized Transient Impedance

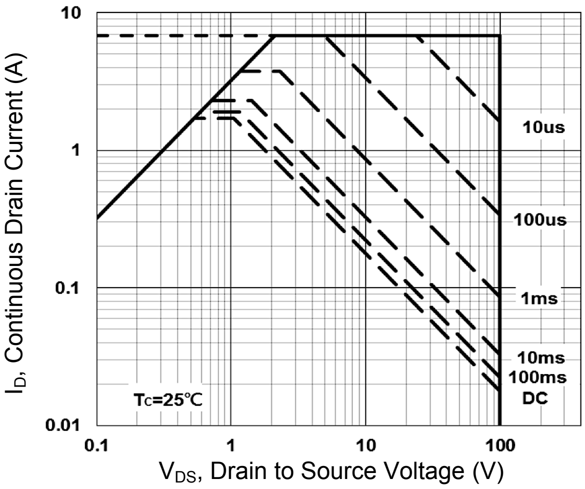
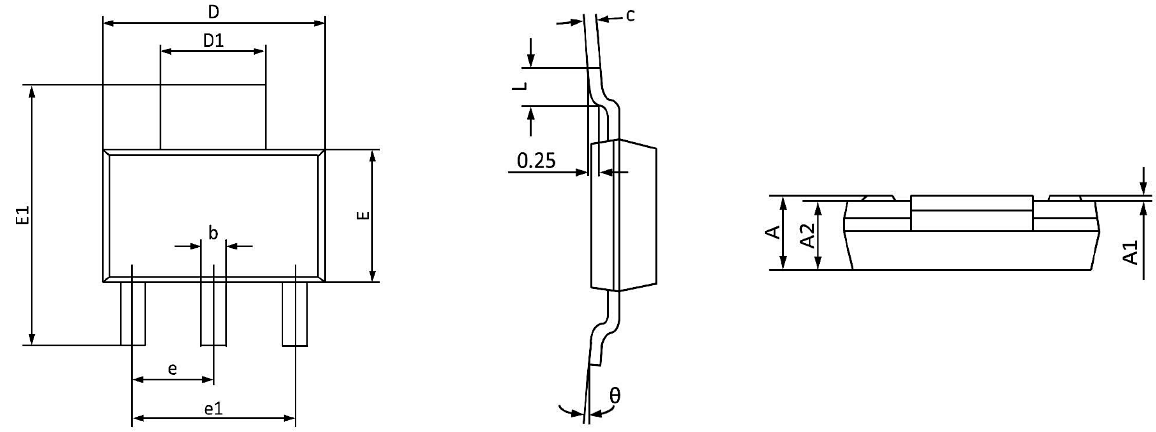


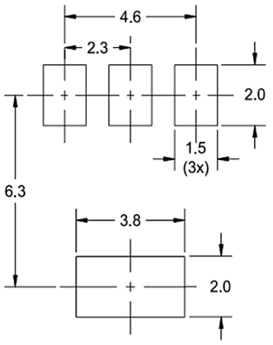
Figure 8. Maximum Safe Operation Area

Package Outline Dimensions (SOT-223)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.500	1.800	0.060	0.071
A1	0.000	0.120	0.000	0.005
A2	1.450	1.750	0.057	0.069
b	0.600	0.820	0.024	0.032
c	0.200	0.350	0.008	0.014
D	6.200	6.700	0.244	0.264
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.700	7.300	0.264	0.287
e	2.300 BSC		0.091 BSC	
e1	4.400	4.700	0.173	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°

Recommended Pad Layout



Unit: mm

Order Information

Device	Package	Marking	Carrier	Quantity
SSFL0954	SOT-223	DL0954	Tape & Reel	3,000 Pcs / Reel

For more information, please contact us at: inquiry@goodarksemi.com