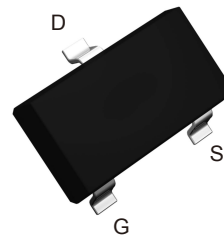
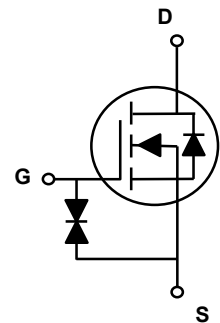


Main Product Characteristics

$V_{(BR)DSS}$	100V
$R_{DS(ON)}$	6.0Ω (Max.)
I_D	200mA



SOT-23



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 GSF123KL 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 supplies and a wide variety of other applications.

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	V
Drain Current-Continuous ($T_A=25^\circ\text{C}$)	I_D	200	mA
Drain Current-Continuous ($T_A=70^\circ\text{C}$)		160	
Drain Current-Pulsed ($T_A=25^\circ\text{C}$) ¹	I_{DM}	800	mA
Power Dissipation ($T_A=25^\circ\text{C}$)	P_D	0.32	W
Power Dissipation ($T_A=70^\circ\text{C}$)		0.2	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	400	$^\circ\text{C/W}$
Operating Junction Temperature Range	T_J	-55 To +150	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 To +150	$^\circ\text{C}$

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
On / Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	100	-	-	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=100V, V_{GS}=0V, T_A=25^\circ\text{C}$	-	-	1	μA
		$V_{DS}=80V, V_{GS}=0V, T_A=125^\circ\text{C}$	-	-	100	μA
Gate-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 10	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	1.0	1.5	2.0	V
Drain-Source On-State Resistance ²	$R_{DS(ON)}$	$V_{GS}=10V, I_D=0.1A$	-	4.5	6.0	Ω
		$V_{GS}=4.5V, I_D=0.06A$	-	5.0	7.4	Ω
Dynamic and Switching Characteristics						
Total Gate Charge	Q_g	$V_{DS}=50V, V_{GS}=10V, I_D=0.2A$	-	0.60	-	nC
Gate-Source Charge	Q_{gs}		-	0.14	-	
Gate-Drain Charge	Q_{gd}		-	0.15	-	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD}=50V, V_{GS}=10V, R_G=6\Omega, I_D=0.2A$	-	3.5	-	nS
Rise Time	t_r		-	5.0	-	
Turn-Off Delay Time	$t_{d(off)}$		-	11	-	
Fall Time	t_f		-	15	-	
Input Capacitance	C_{iss}	$V_{DS}=25V, V_{GS}=0V, F=1\text{MHz}$	-	26	-	pF
Output Capacitance	C_{oss}		-	4	-	
Reverse Transfer Capacitance	C_{rss}		-	2.3	-	
Drain-Source Ratings and Characteristics						
Source Drain Current (Body Diode)	I_{SD}	$T_A=25^\circ\text{C}$	-	-	0.2	A
Diode Forward Voltage ²	V_{SD}	$V_{GS}=0V, I_{SD}=0.1A, T_J=25^\circ\text{C}$	-	0.85	1.2	V

Notes:

1. Repetitive rating: Pulsed width limited by maximum junction temperature.
2. Pulse test: pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

Typical Electrical and Thermal Characteristic Curves

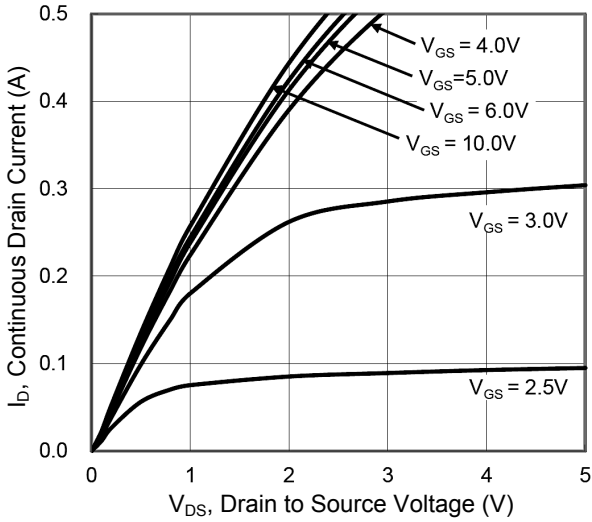


Figure 1. Typical Output Characteristics

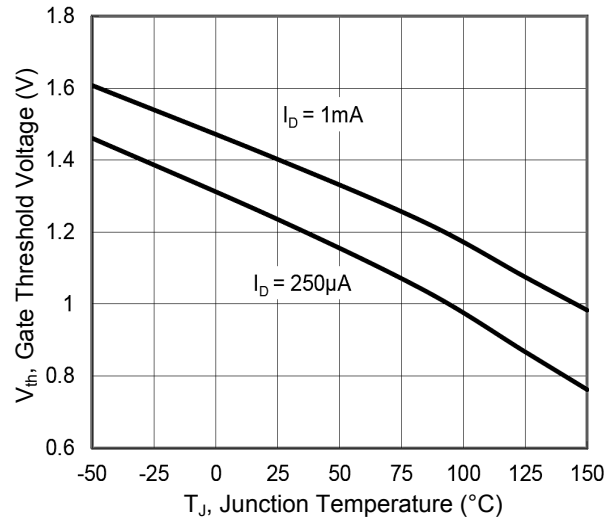


Figure 2. V_{th} vs. T_J

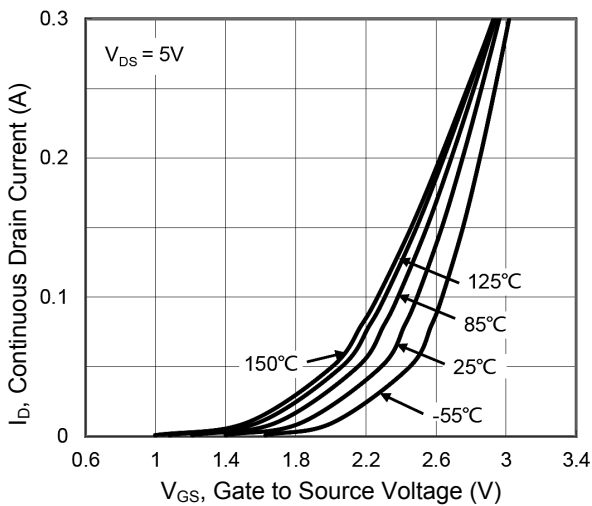


Figure 3. Typical Transfer Characteristics

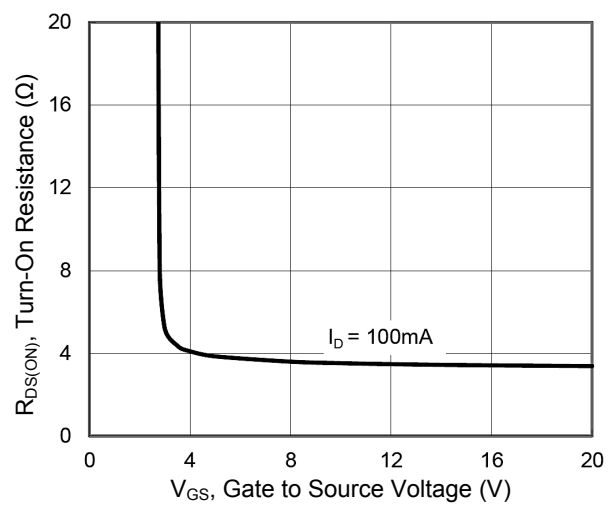


Figure 4. Turn-On Resistance vs. V_{GS}

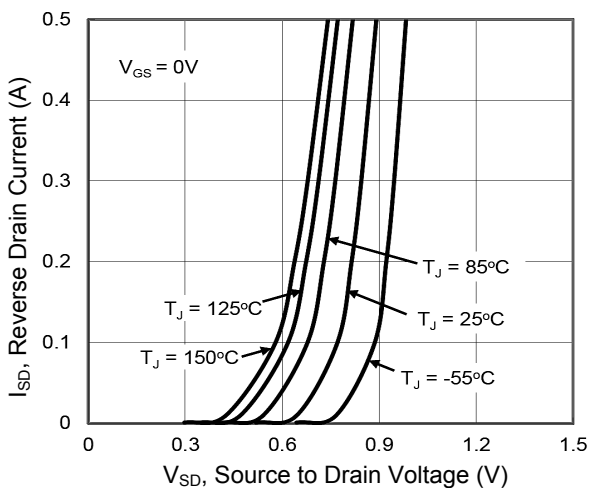


Figure 5. Body Diode Characteristics

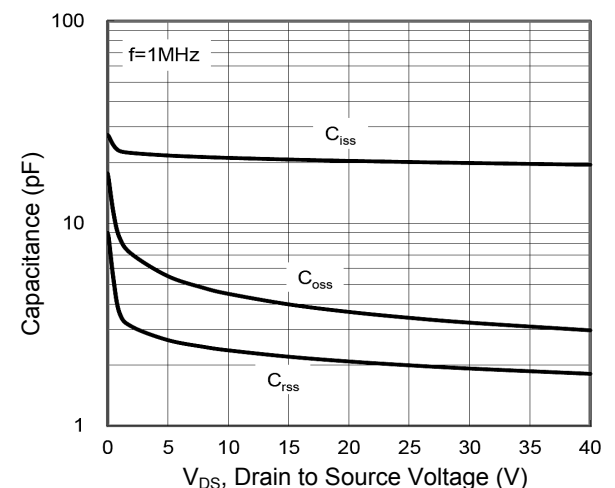
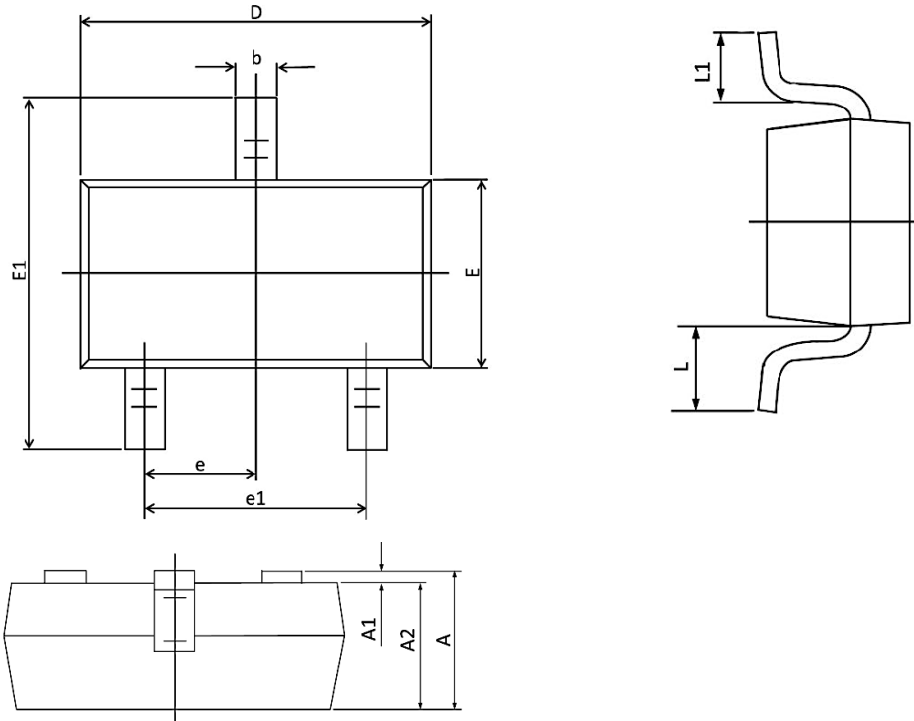


Figure 6. Capacitance Characteristics

Package Outline Dimensions (SOT-23)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.200	0.035	0.047
A1	0.000	0.100	0.000	0.004
A2	0.900	1.150	0.035	0.045
b	0.300	0.500	0.012	0.020
D	2.800	3.040	0.110	0.120
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

Order Information

Device	Package	Marking	Packaging	SPQ
GSF123KL	SOT-23	123K	Tape & Reel	3,000 Pcs / Reel