



GL2301K

GL Silicon P-Channel Power MOSFET

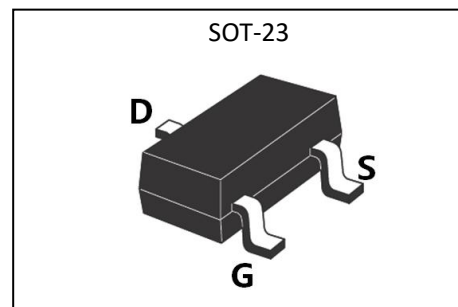
General Description

The GL2301K uses advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications. The package form is SOT-23, which accords with the RoHS standard.

V_{DSS}	-20	V
I_D	-2.8	A
P_D	0.35	W
$R_{DS(ON)MAX}$	112	m Ω

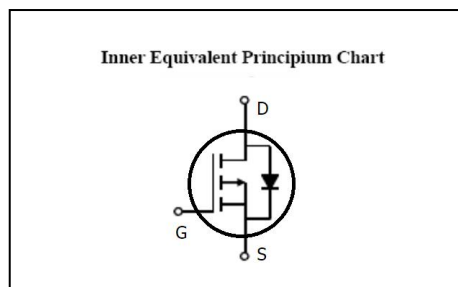
Features

- $R_{DS(ON)} < 112m\Omega$ @ $V_{GS} = -4.5V$
- High density cell design for ultra low R_{dson}
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation



Applications

- Power switching application
- Hard switched and high frequency circuits
- Uninterruptible power supply



Absolute (Tc= 25°C unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	-20	V
I_D	Continuous Drain Current	-2.8	A
I_{DM}	Pulsed Drain Current	-10	A
V_{GS}	Gate-to-Source Voltage	± 8	V
P_D	Power Dissipation	0.35	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	150, -55 to 150	°C

Symbol	Parameter	Typ.	Units
$R_{\theta JA}$	Junction-to-Ambient ^{a2}	357	°C/W



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

OFF Characteristics

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V _{DSS}	Drain to Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	-20	--	--	V
I _{DSS}	Drain to Source Leakage Current	V _{DS} =-20V, V _{GS} = 0V, T _a =25°C	--	--	1.0	μA
I _{GSS(F)}	Gate to Source Forward Leakage	V _{GS} = +8V	--	--	0.1	μA
I _{GSS(R)}	Gate to Source Reverse Leakage	V _{GS} = -8V	--	--	-0.1	μA

ON Characteristics^{a3}

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
R _{DS(ON)}	Drain-to-Source On-Resistance	V _{GS} =-4.5V, I _D =-2.8A	--	90	112	mΩ
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	-0.4	--	-1	V

Pulse width tp≤380μs, δ≤2%

Dynamic Characteristics^{a4}

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g _{fs}	Forward Transconductance	V _{DS} =-5V, I _D =-2.8A	--	6.5	--	S
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V f=1.0MHz	--	405	--	pF
C _{oss}	Output Capacitance		--	75	--	
C _{rss}	Reverse Transfer Capacitance		--	55	--	

Resistive Switching Characteristics^{a4}

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-10V, R _L =10Ω V _{GS} =-4.5V, R _G =1Ω	--	11	--	ns
t _r	Rise Time		--	35	--	
t _{d(OFF)}	Turn-Off Delay Time		--	30	--	
t _f	Fall Time		--	10	--	

Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V _{SD}	Diode Forward Voltage ^{a3}	I _S =-0.7A, V _{GS} =0V	--	--	-1.2	V

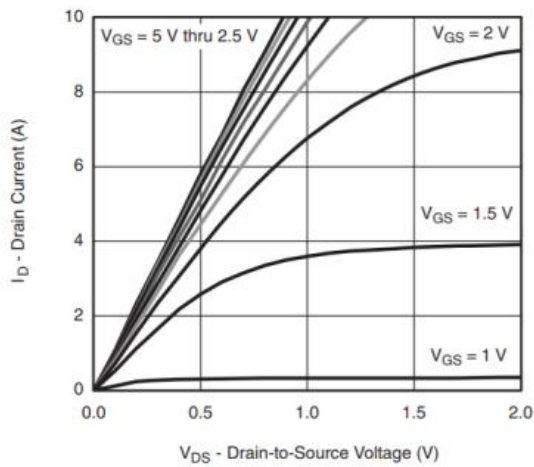
^{a1}: Repetitive Rating: Pulse width limited by maximum junction temperature.

^{a2}: Surface Mounted on FR4 Board, t≤10sec.

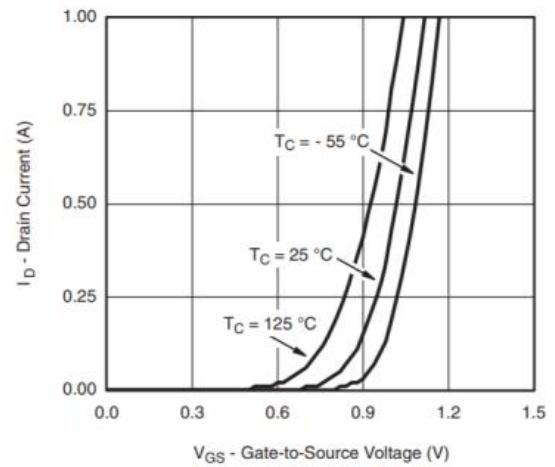
^{a3}: Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

^{a4}: Guaranteed by design, not subject to production

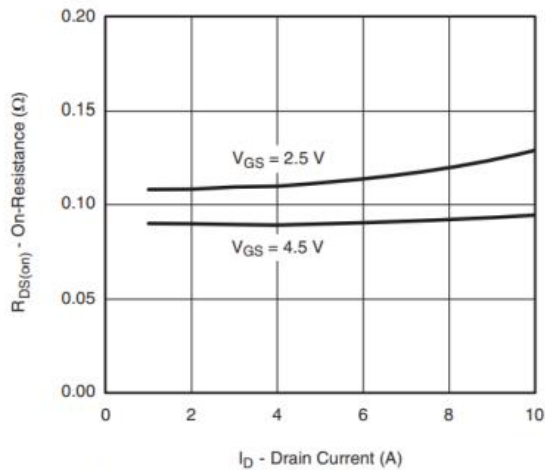
Characteristics Curve



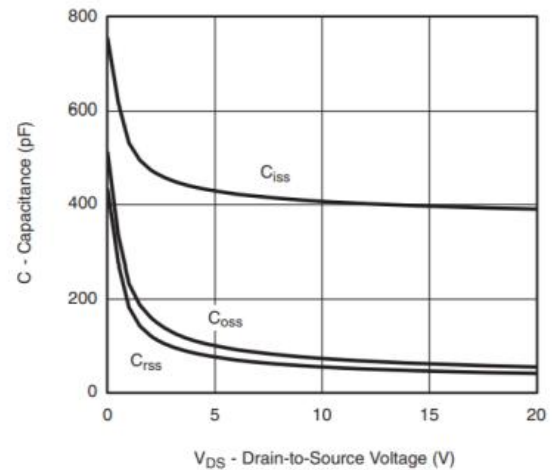
Output Characteristics



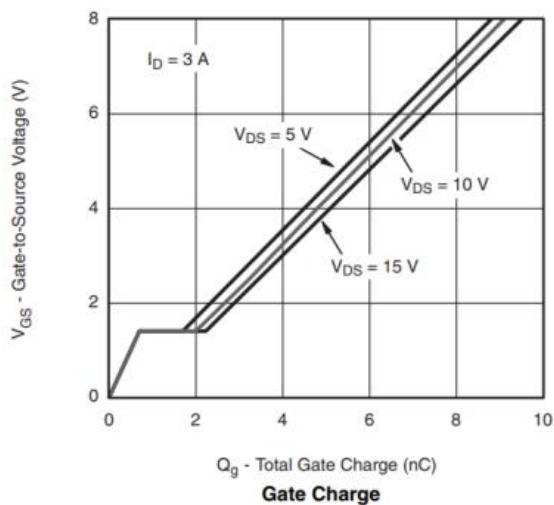
Transfer Characteristics



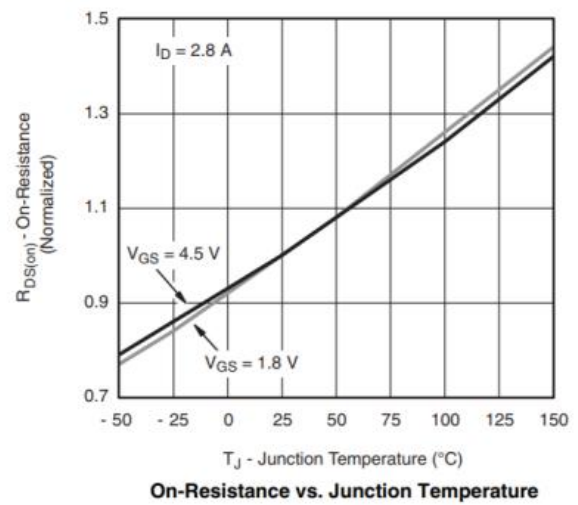
On-Resistance vs. Drain Current and Gate Voltage



Capacitance



Gate Charge



On-Resistance vs. Junction Temperature