®

GL30N03LA4

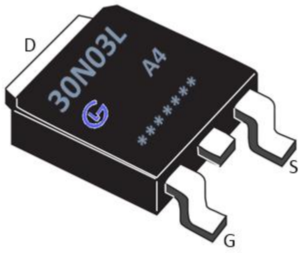
GL Silicon N-Channel Power MOSFET

General Description:

The GL30N03LA4 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 TO-252, which accords with the RoHS standard.

V_{DSS}	30	V
I_D	30	A
P_D	40	W
$R_{DS(ON)type}$	12	mΩ

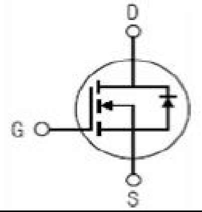
TO-252



Features:

- $R_{DS(ON)}$ <15mΩ @ V_{GS}=10V (Typ:12mΩ)
- High density cell design for ultra low R_{dson}
- Fully characterized avalanche voltage and current
- Excellent package for good heat dissipation

Inner Equivalent Principium Chart



Applications:

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

Absolute (Tc= 25℃ unless otherwise specified):

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	30	V
I_D	Continuous Drain Current	30	A
I_{DM}	Pulsed Drain Current[a1]	80	A
V_{GS}	Gate-to-Source Voltage	±20	V
P_D	Power Dissipation	40	W
E_{AS}	Single pulse avalanche energy[a5]	72	mJ
T_J, T_{stg}	Operating Junction and Storage Temperature Range	175, –55 to 175	℃

Electrical Characteristics (Tc= 25℃ 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	30	--	--	V
I_{DSS}	Drain to Source Leakage Current	V_{DS}=30V, V_{GS}= 0V,T_a = 25℃	--	--	1.0	µA
$I_{GSS(F)}$	Gate to Source Forward Leakage	V_{GS}=+20V	--	--	0.1	µA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	V_{GS}=-20V	--	--	-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}=10V,I_D=20A	--	12	15	mΩ
$R_{DS(ON)}$	Drain-to-Source On-Resistance	V_{GS}=4.5V,I_D=15A	--	13	25	mΩ
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250µA	0.6	1.0	1.5	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=20A	26	--	--	S
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=15V f=1.0MHz	--	938	--	pF
C_{oss}	Output Capacitance		--	142	--	
C_{rss}	Reverse Transfer Capacitance		--	99	--	

Resistive Switching Characteristics[a4]

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	R_L=0.75Ω,V_{DD}=15V V_{GS}=10V,R_G=3.0Ω	--	5	--	ns
tr	Rise Time		--	12	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	19	--	
t_f	Fall Time		--	6	--	
Q_g	Total Gate Charge	I_D=20A,V_{DD}=15V V_{GS}=10V	--	17.5	--	nC
Q_{gs}	Gate to Source Charge		--	3.0	--	
Q_{gd}	Gate to Drain ("Miller")Charge		--	4.1	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current [a2](Body Diode)		--	--	30	A
V_{SD}	Diode Forward Voltage[a3]	I_S=20A,V_{GS}=0V	--	--	1.2	V

Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case[a2]	3.123	℃/W

[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

[a5]: EAS condition: Tj=25℃,VDD=30V,VG=10V,L=0.5mH,Rg=25Ω

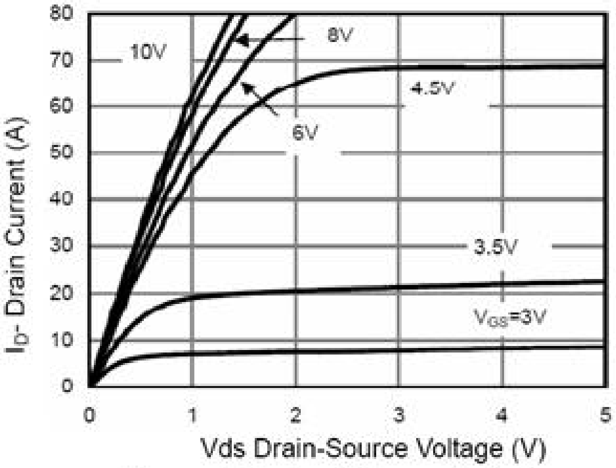


Figure 1 Output Characteristics

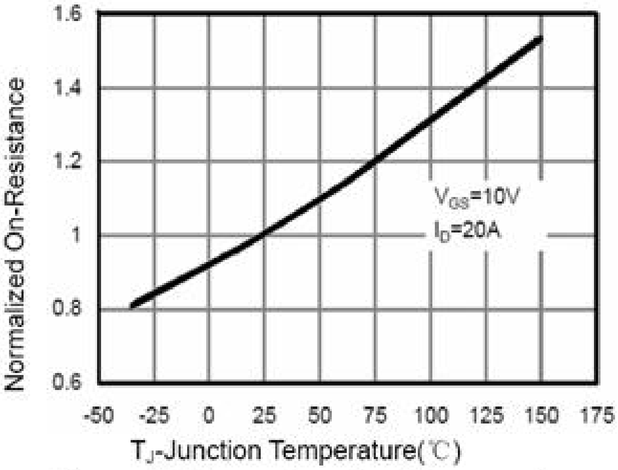


Figure 4 Rdson-Junction Temperature

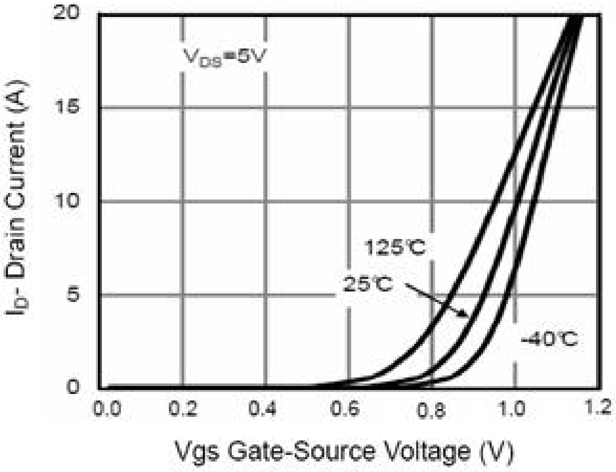


Figure 2 Transfer Characteristics

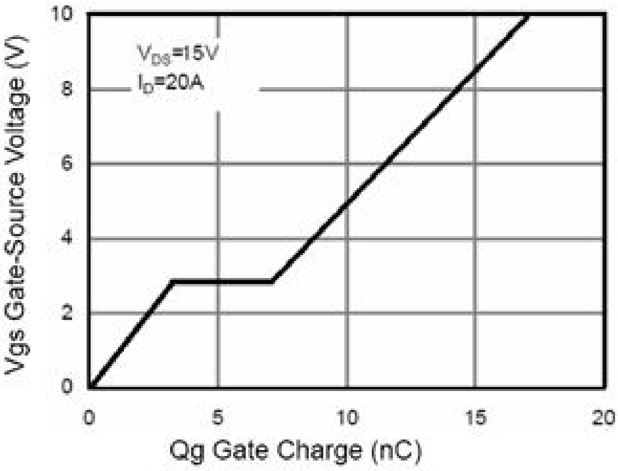
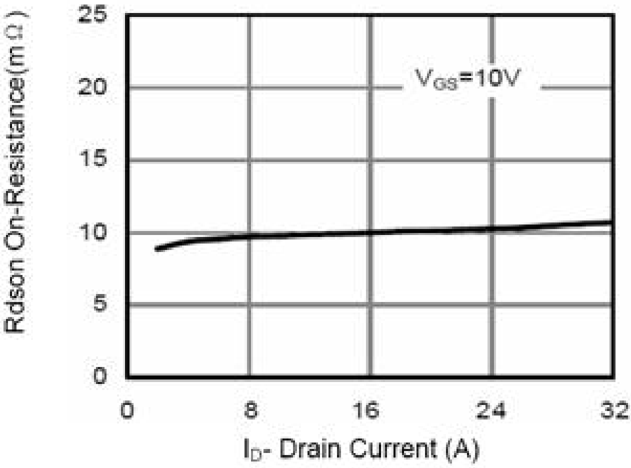
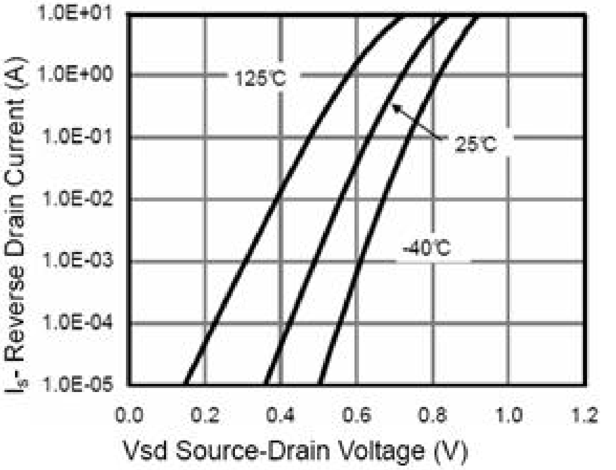


Figure 5 Gate Charge





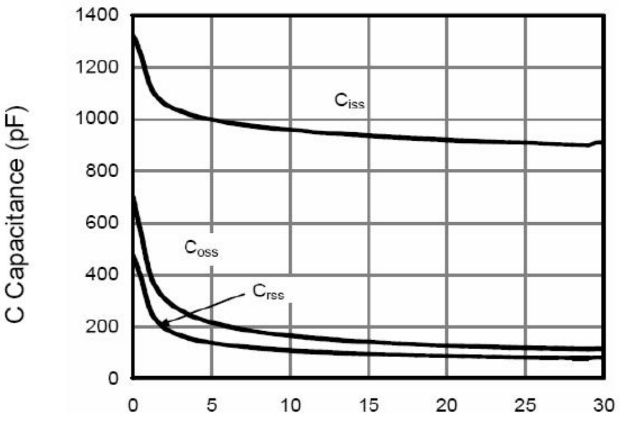


Figure 7 Capacitance vs Vds

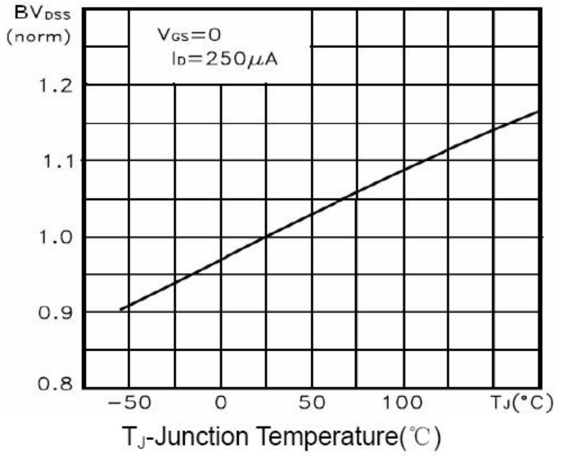


Figure 9 BV_{DSS} vs Junction Temperature

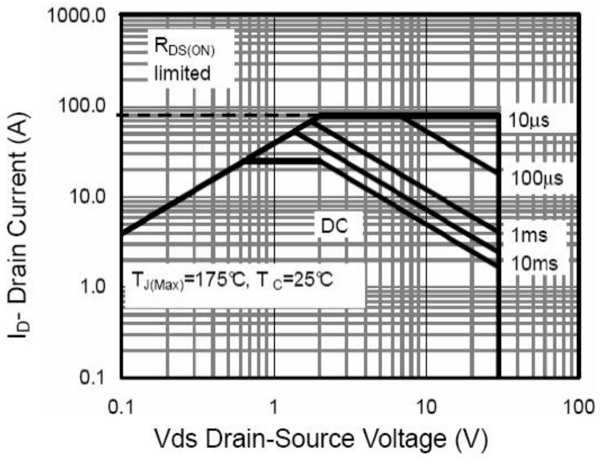


Figure 8 Safe Operation Area

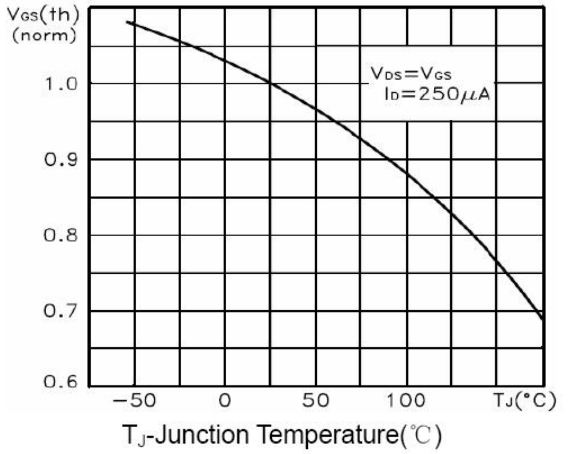


Figure 10 $V_{GS(th)}$ vs Junction Temperature