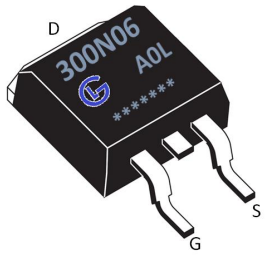
GL300N06A0L

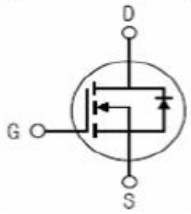
GL Silicon N-Channel Power MOSFET

V_{DSS}	60	V
I_D	313	A
P_D	333	W
$R_{DS(ON)type}$	1.5	mΩ

TO-263



Inner Equivalent Principium Chart



General Description：

The GL300N06A0L uses advanced trench technology and design to provide excellent RDS(ON) with low gate charge. It can be used in a wide variety of applications. The package form is TO-263 which accords with the RoHS standard.

Features：

- **Fast Switching**
- **Low Gate Charge and Rdson**
- **Low Reverse transfer capacitances**
- **100% Single Pulse avalanche energy Test**

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	60	V
I_D	Continuous Drain Current (Si limited)	313	A
	Continuous Drain Current T_C = 100 °C (Si limited)	221	A
	Continuous Drain Current T_C = 25 °C (Package limited)	120	A
I_{DM}	Pulsed Drain Current	1252	A
V_{GS}	Gate-to-Source Voltage	±20	V
E_{AS} a2	Single Pulse Avalanche Energy	1800	mJ
dv/dt a3	Peak Diode Recovery dv/dt	5.0	V/ns
P_D	Power Dissipation	333	W
T_J， T_{stg}	Operating Junction and Storage Temperature Range	175，–55 to 175	℃
T_L	MaximumTemperature for Soldering	300	℃

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	60	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Bvdss Temperature Coefficient	ID=250uA,Reference25℃	--	0.1	--	V/℃
I_{DSS}	Drain to Source Leakage Current	V_{DS} = 60V, V_{GS}= 0V, T_a = 25℃	--	--	1	μA
		V_{DS} =48V, V_{GS}= 0V, T_a = 125℃	--	--	250	
$I_{GSS(F)}$	Gate to Source Forward Leakage	V_{GS} =+20V	--	--	1	μA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	V_{GS} =-20V	--	--	-1	μA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	V_{GS}=10V,I_D=100A	--	1.5	2.3	mΩ
$R_{DS(ON)}$	Drain-to-Source On-Resistance	V_{GS}=4.5V,I_D=50A	--	2.5	3.5	mΩ
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS} = V_{GS}, I_D = 250μA	1.0	--	2.5	V
Pulse width tp≤380μs, δ ≤2%						

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g_{fs}	Forward Transconductance	V_{DS}=5V, I_D =50A	180	--	--	S
C_{iss}	Input Capacitance	V_{GS} = 0V V_{DS} = 30V f = 1.0MHz	--	5600	--	pF
C_{oss}	Output Capacitance		--	2200	--	
C_{rss}	Reverse Transfer Capacitance		--	880	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	I_D =100A V_{DD} = 30V V_{GS} = 10V R_G = 2.5Ω	--	74	--	ns
tr	Rise Time		--	62	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	112	--	
t_f	Fall Time		--	42	--	
Q_g	Total Gate Charge	I_D =100A V_{DD} =30V V_{GS} = 10V	--	206	--	nC
Q_{gs}	Gate to Source Charge		--	88	--	
Q_{gd}	Gate to Drain (“Miller”)Charge		--	33	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)		--	--	313	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	1252	A
V_{SD}	Diode Forward Voltage	I_S=100A,V_{GS}=0V	--	--	1.5	V
trr	Reverse Recovery Time	I_S=100A,T_j = 25° C	--	110	--	ns
Qrr	Reverse Recovery Charge	dI_F/dt=100A/us, V_{GS}=0V	--	200	--	nC
Pulse width tp≤380μs, δ ≤2%						

Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case	0.45	℃/W

[a1]: Repetitive rating; pulse width limited by maximum junction temperature

[a2]: EAS condition : Tj=25℃ ,VDD= 30V,VG=10V,L=0.5mH,Rg=25Ω

[a3]: I_{SD} =100A,di/dt ≤100A/us,V_{DD}≤BV_{DS}, Start T_J=25℃

Test Circuit and Waveform

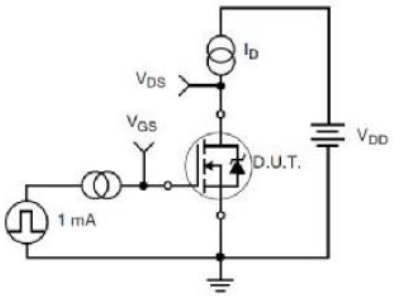


Figure 17. Gate Charge Test Circuit

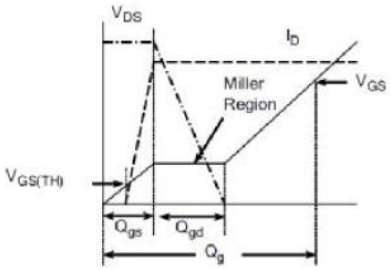


Figure 18. Gate Charge Waveform

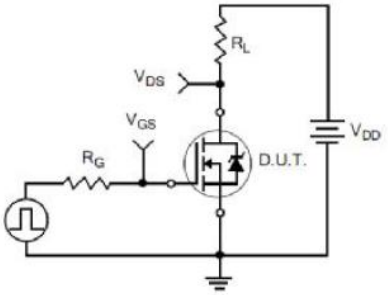


Figure 19. Resistive Switching Test Circuit

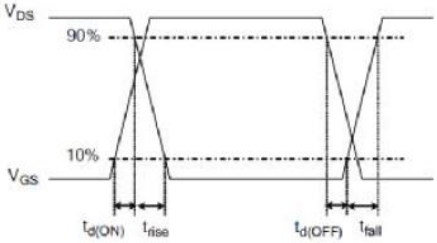


Figure 20. Resistive Switching Waveforms

Figure 1. On-Region Characteristics

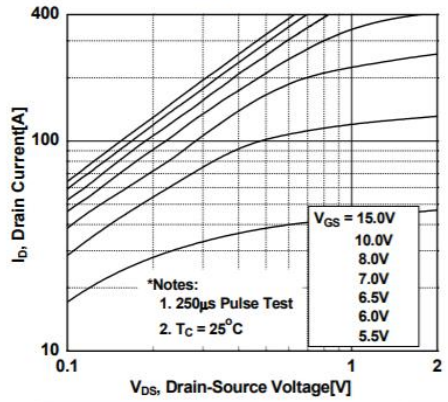


Figure 2. Transfer Characteristics

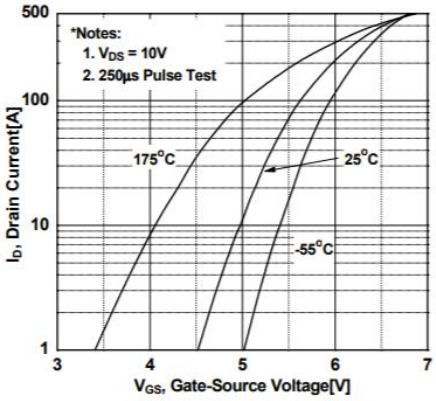


Figure 3. On-Resistance Variation vs. Drain Current and Gate Voltage

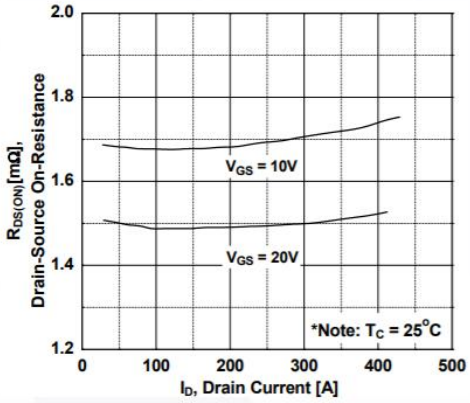


Figure 4. Body Diode Forward Voltage Variation vs. Source Current and Temperature

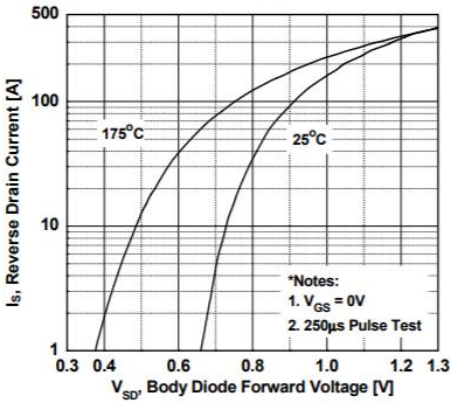


Figure 5. Capacitance Characteristics

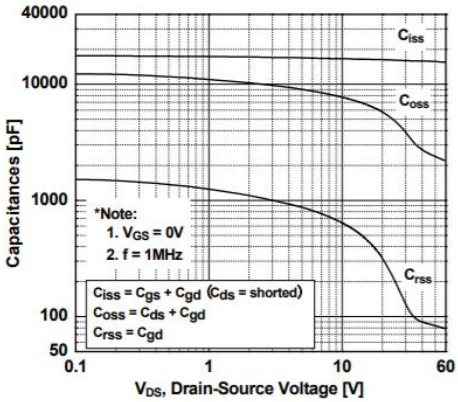


Figure 6. Gate Charge Characteristics

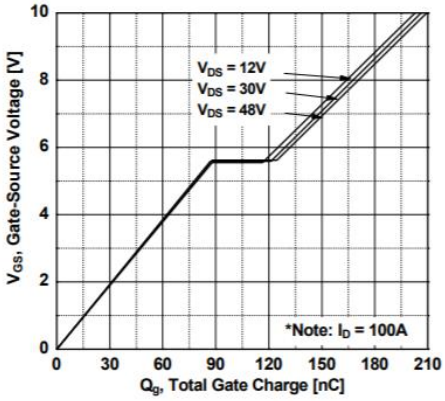


Figure 7. Breakdown Voltage Variation vs. Temperature

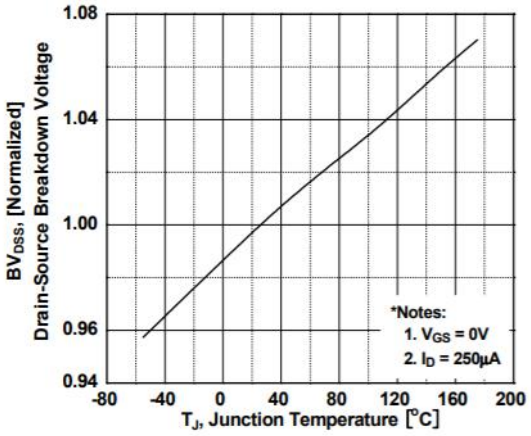


Figure 8. On-Resistance Varition vs. Temperature

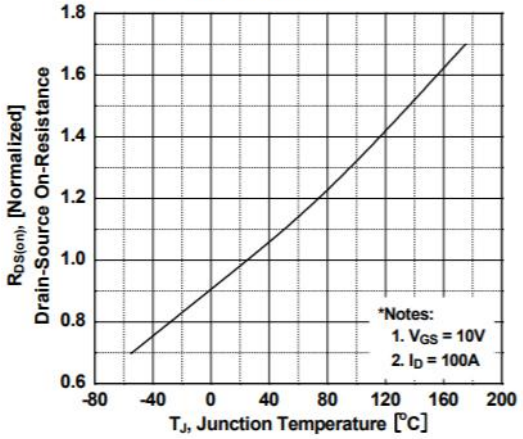


Figure 9. Maximum Safe Operating Area

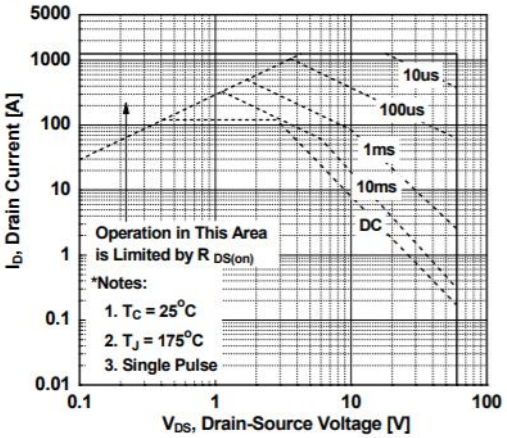


Figure 10. Maximum Drain Current vs. Case Temperature

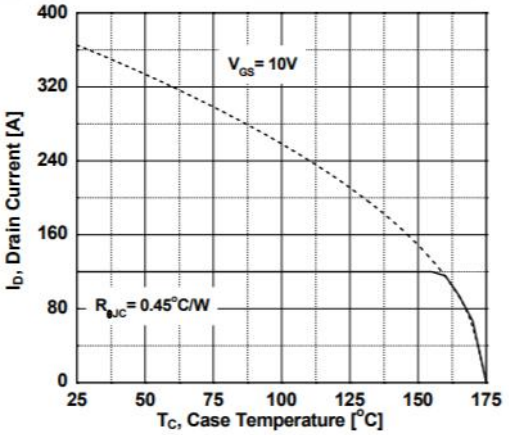


Figure 11. Unclamped Inductive Switching Capability

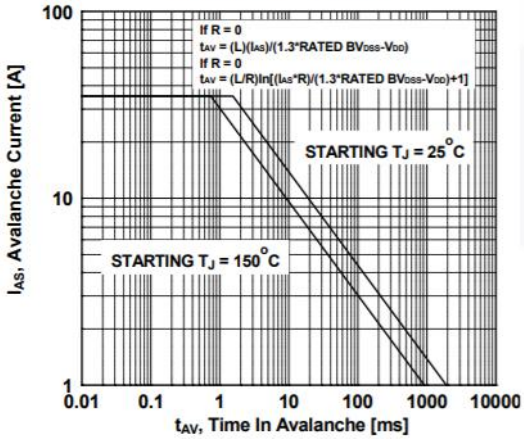


Figure 12. Eoss vs. Drain to Source Voltage

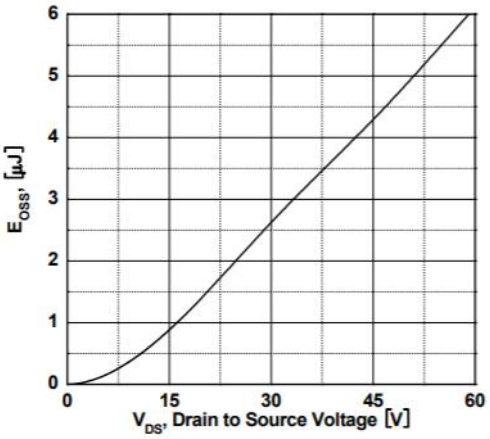


Figure 13. Transient Thermal Response Curve