GL30N15A8

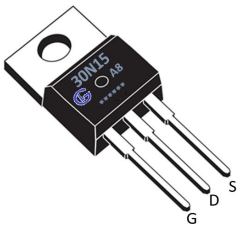
GL Silicon N-Channel Power MOSFET

General Description

GL30N15A8 the silicon N-channel Enhanced VDMOSFETS is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor can be used in various power switching circuit for system miniaturization and higher efficiency. The package form is TO-220, which accords with the RoHS standard.

V_{DSS}	150	V
I_D	30	A
P_D (T_C=25℃)	96	W
$R_{DS(ON)max}$	70	mΩ

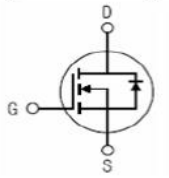
TO-220



Features

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

Inner Equivalent Principium Chart



Applications

- LED Lighting
- Charger
- Standby Power

Absolute (Tc= 25℃ unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	150	V
I_D	Continuous Drain Current	30	A
	Continuous Drain Current T_C = 100 °C	18	A
I_{DM} [a1]	Pulsed Drain Current	120	A
V_{GS}	Gate-to-Source Voltage	±30	V
E_{AS} [a2]	Single Pulse Avalanche Energy	500	mJ
dv/dt [a3]	Peak Diode Recovery dv/dt	5.0	V/ns
P_D	Power Dissipation	96	W
	Derating Factor above 25°C	0.77	W/℃
T_J, T_{stg}	Operating Junction and Storage Temperature Range	150, −55 to 150	℃
T_L	Maximum Temperature for Soldering	300	℃

Caution Stresses greater than those in the "Absolute Maximum Ratings" may cause permanent damage to the device

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	150	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Bvdss Temperature Coefficient	I_D=250uA,Reference25℃	--	0.21	--	V/℃
I_{DSS}	Drain to Source Leakage Current	V_{DS}=150V,V_{GS}=0V,T_a=25℃	--	--	1	μA
		V_{DS}=120V,V_{GS}=0V,T_a=125℃	--	--	100	
$I_{GSS(F)}$	Gate to Source Forward Leakage	V_{GS}=+30V	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	V_{GS}=-30V	--	--	-100	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)}$	Drain-to-Source On-Resistance	V_{GS}=10V,I_D=15A	--	55	70	mΩ
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	3	--	5	V
Pulse width tp≤300μs,δ≤2%						

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g_{fs}	Forward Transconductance	V_{DS}=10V,I_D=6A	--	9	--	S
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=25V f=1.0MHz	--	1600	--	pF
C_{oss}	Output Capacitance		--	190	--	
C_{rss}	Reverse Transfer Capacitance		--	40	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	I_D=30A,V_{DD}=75V V_{GS}=10V R_G=10Ω	--	25	--	ns
t_r	Rise Time		--	41	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	46	--	
t_f	Fall Time		--	13	--	
Q_g	Total Gate Charge	I_D=30A,V_{DD}=75V V_{GS}=10V	--	26	--	nC
Q_{gs}	Gate to Source Charge		--	9	--	
Q_{gd}	Gate to Drain (“Miller”)Charge		--	9.5	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)		--	--	30	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	120	A
V_{SD}	Diode Forward Voltage	I_S=30A,V_{GS}=0V	--	--	1.5	V
t_{rr}	Reverse Recovery Time	I_S=30A,T_j=25°C dI_F/dt=100A/us,V_{GS}=0V	--	185	--	ns
Q_{rr}	Reverse Recovery Charge		--	900	--	uC
I_{RRM}	Reverse Recovery Current		--	11	--	A
Pulse width tp≤300μs,δ≤2%						

Thermal Characteristics

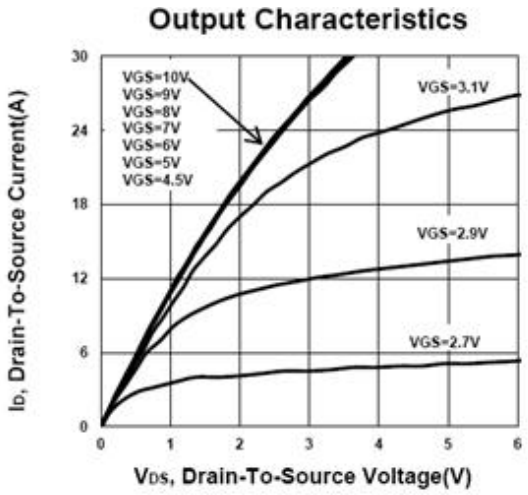
Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case	1.30	℃/W
$R_{\theta JA}$	Junction-to-Ambient	62.5	℃/W

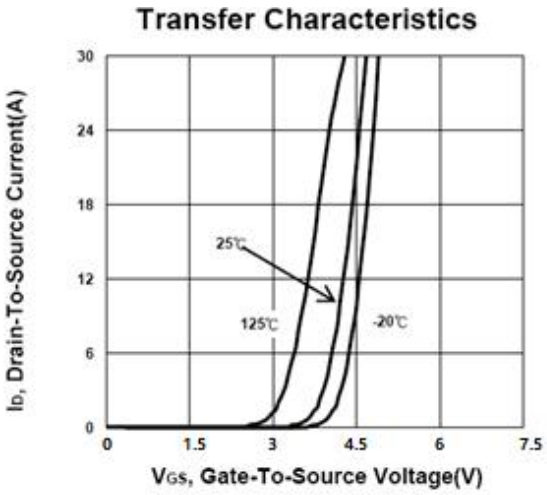
[a1]: Repetitive rating; pulse width limited by maximum junction temperature

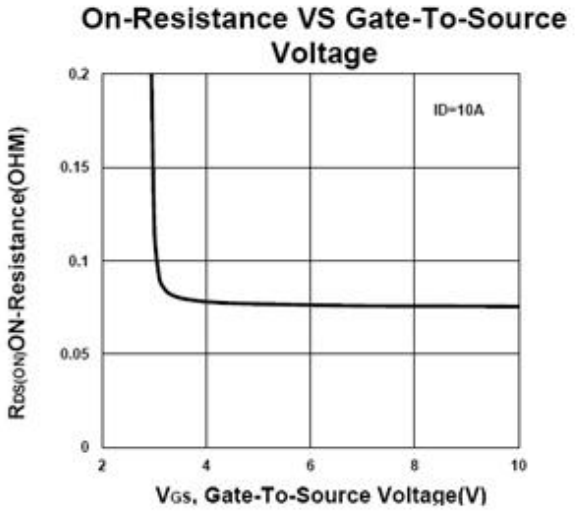
[a2]: L=10.0mH, I_D=13A, Start T_J=25℃

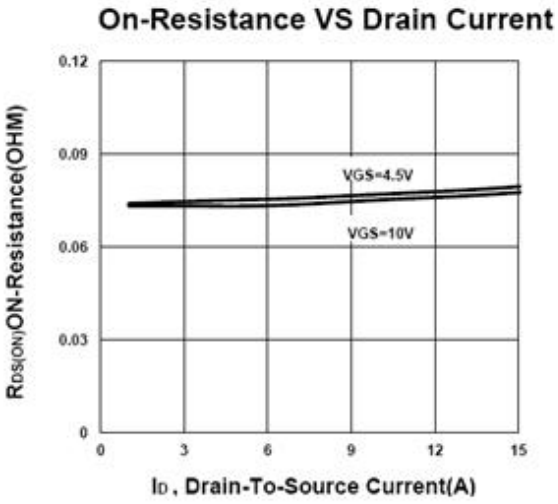
[a3]: I_{SD} =209A,di/dt ≤100A/us,V_{DD}≤$BV_{DS,}$ Start T_J=25℃

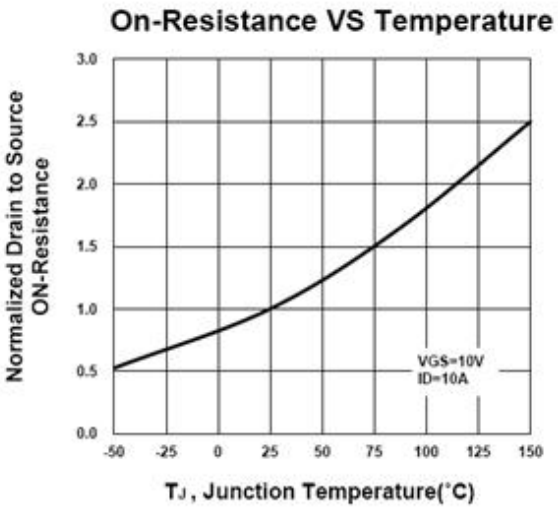
Characteristics Curves

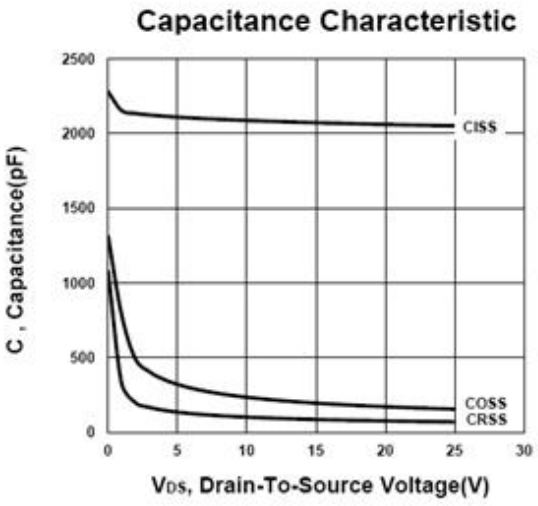




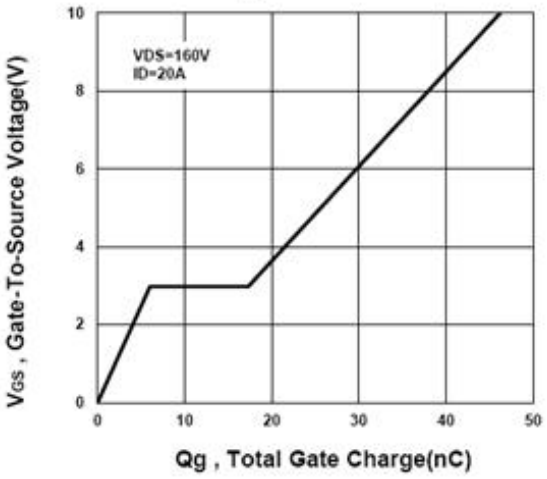




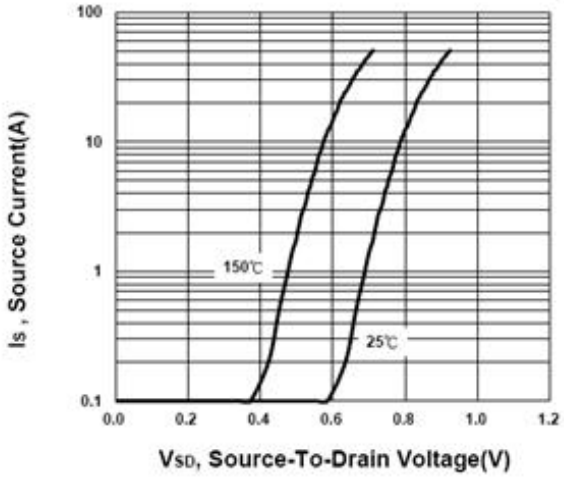




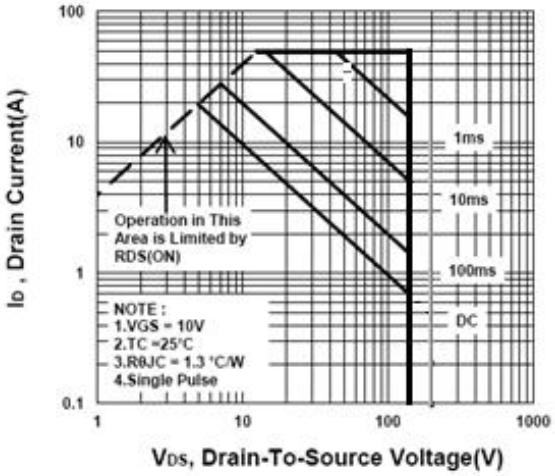
Gate charge Characteristics



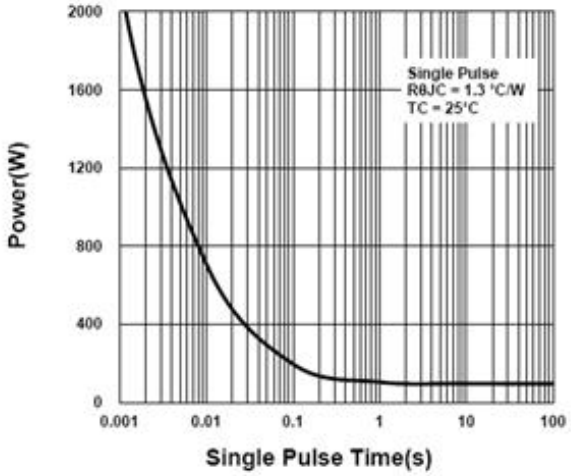
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve