

General Description:

GL20N20A3L 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-251, which accords with the RoHS standard.

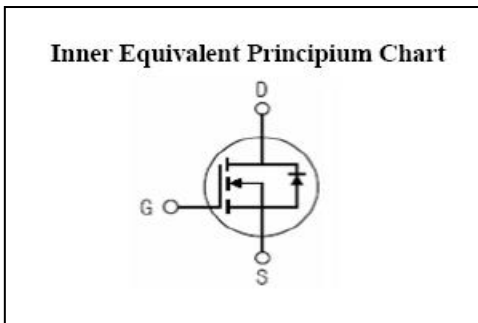
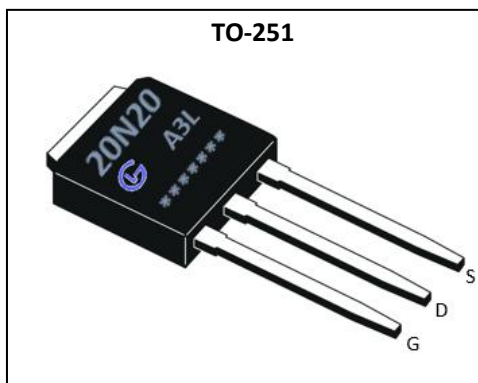
Features:

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

Applications:

- LED Lighting
- Charger
- Standby Power

V_{DSS}	200	V
I_D	20	A
$P_D (T_C=25^{\circ}C)$	96	W
$R_{DS(ON)max}$	0.12	Ω



Absolute ($T_C = 25^{\circ}C$ unless otherwise specified):

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	200	V
I_D	Continuous Drain Current	20	A
	Continuous Drain Current $T_C = 100^{\circ}C$	12.7	A
I_{DM}^{a1}	Pulsed Drain Current	80	A
V_{GS}	Gate-to-Source Voltage	± 20	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 $25^{\circ}C$	0.77	W/ $^{\circ}C$
T_J, T_{stg}	Operating Junction and Storage Temperature Range	150, -55 to 150	$^{\circ}C$
T_L	Maximum Temperature for Soldering	300	$^{\circ}C$



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GL Silicon N-Channel Power MOSFET

Electrical Characteristics (T_c= 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	200	--	--	V
ΔBV _{DSS} /ΔT _J	Bvdss Temperature Coefficient	ID=250uA, Reference 25°C	--	0.21	--	V/°C
I _{DSS}	Drain to Source Leakage Current	V _{DS} =200V, V _{GS} =0V, T _a =25°C	--	--	1	μA
		V _{DS} =160V, V _{GS} =0V, T _a =125°C	--	--	100	
I _{GSS(F)}	Gate to Source Forward Leakage	V _{GS} = +20V	--	--	100	μA
I _{GSS(R)}	Gate to Source Reverse Leakage	V _{GS} = -20V	--	--	-100	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 =10A	--	--	0.12	Ω
R _{DS(ON)}	Drain-to-Source On-Resistance	V _{GS} =5V, I _D =8A	--	--	0.125	Ω
R _{DS(ON)}	Drain-to-Source On-Resistance	V _{GS} =3V, I _D =6A	--	--	0.135	Ω
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.5	--	1.5	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 =10A	--	50	--	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		--	60	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
t _{d(ON)}	Turn-on Delay Time	I _D =20A, V _{DD} =100V R _G =10Ω	--	24	--	ns
t _r	Rise Time		--	42	--	
t _{d(OFF)}	Turn-Off Delay Time		--	45	--	
t _f	Fall Time		--	15	--	
Q _g	Total Gate Charge	I _D =20A, V _{DD} =100V V _{GS} =5V	--	26	--	nC
Q _{gs}	Gate to Source Charge		--	9	--	
Q _{gd}	Gate to Drain ("Miller") Charge		--	9.5	--	



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Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I _S	Continuous Source Current (Body Diode)		--	--	20	A
I _{SM}	Maximum Pulsed Current (Body Diode)		--	--	80	A
V _{SD}	Diode Forward Voltage	I _S =20A,V _{GS} =0V	--	--	1.5	V
trr	Reverse Recovery Time	I _S =20A,T _J =25°C dI _F /dt=100A/us, V _{GS} =0V	--	245	--	ns
Qrr	Reverse Recovery Charge		--	1200	--	uC
IRRM	Reverse Recovery Current		--	12.8	--	A
Pulse width tp≤300μs,δ≤2%						

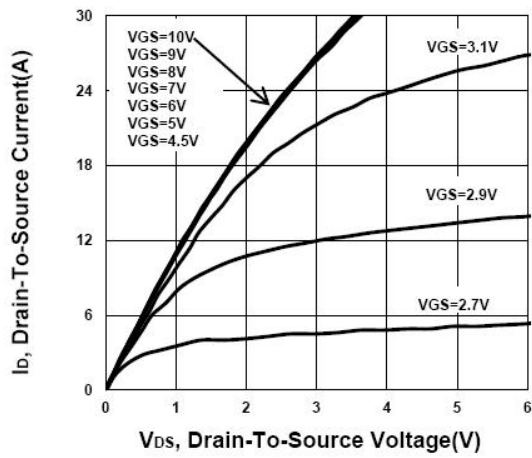
Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case	1.30	$^\circ C/W$
$R_{\theta JA}$	Junction-to-Ambient	83.3	$^\circ C/W$

^{a1}: Repetitive rating; pulse width limited by maximum junction temperature

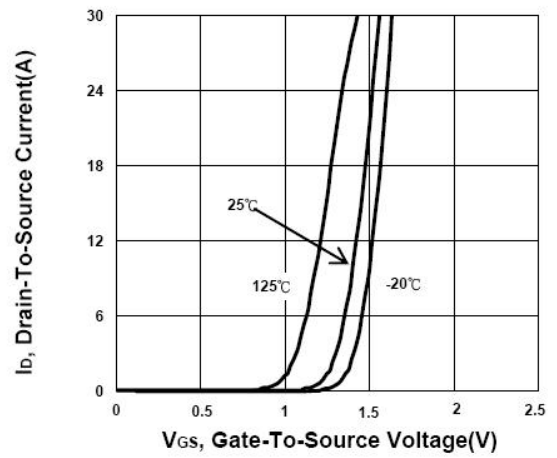
^{a2}: $L = 10.0mH, I_D = 13A, \text{Start } T_J = 25^\circ C$

^{a3}: $I_{SD} = 209A, di/dt \leq 100A/\mu s, V_{DD} \leq BV_{DS}, \text{Start } T_J = 25^\circ C$

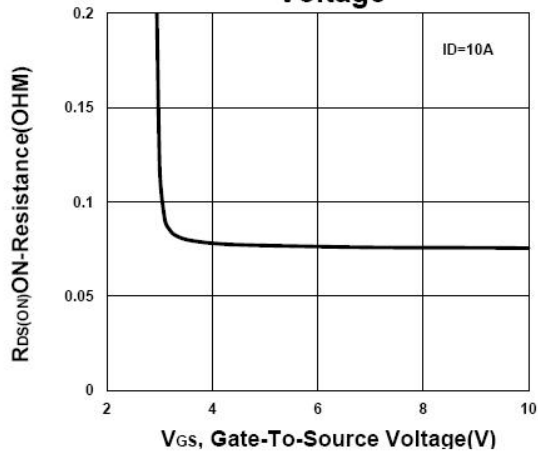
Output Characteristics



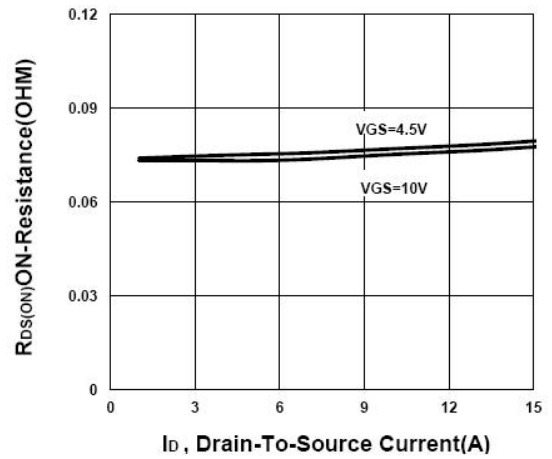
Transfer Characteristics



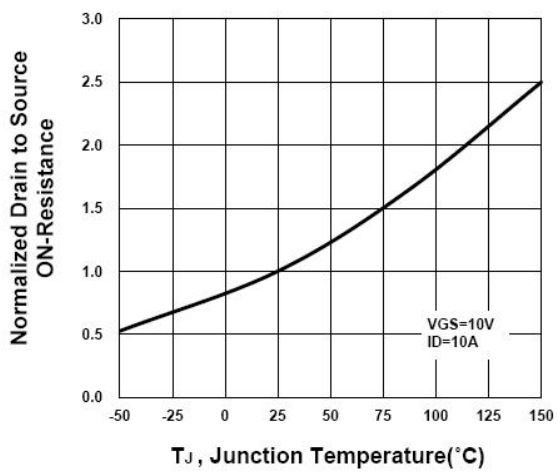
On-Resistance VS Gate-To-Source Voltage



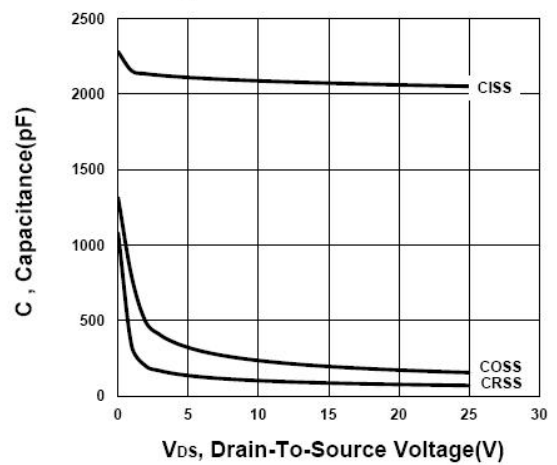
On-Resistance VS Drain Current



On-Resistance VS Temperature



Capacitance Characteristic

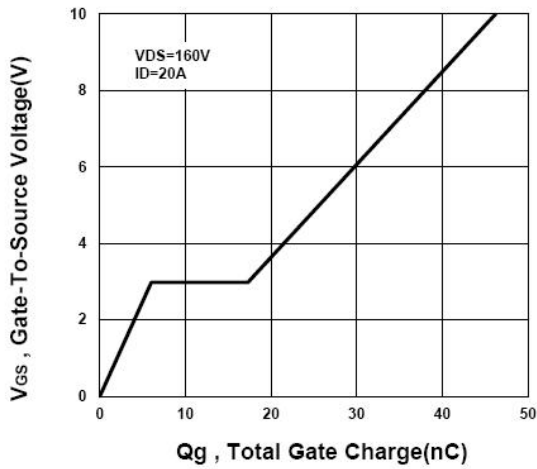




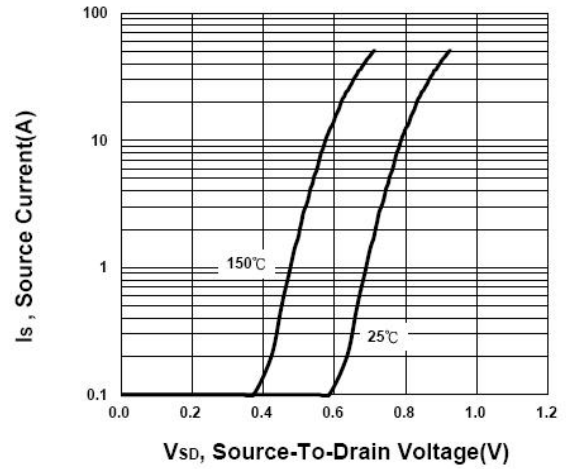
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GL Silicon N-Channel Power MOSFET

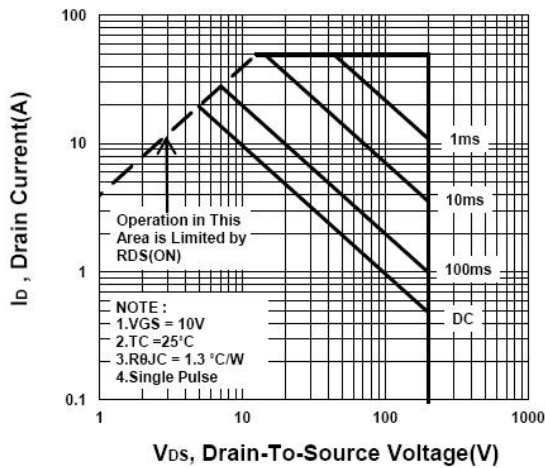
Gate charge Characteristics



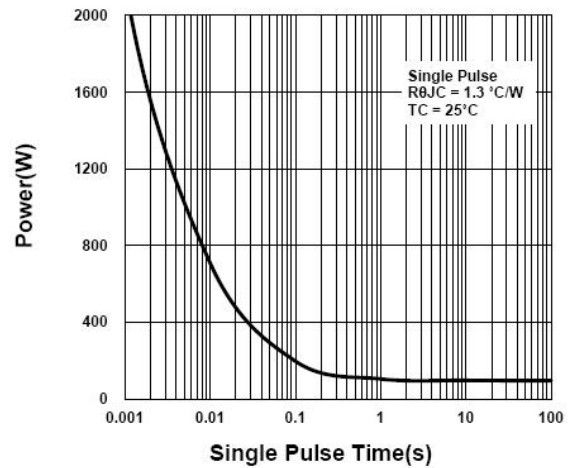
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

