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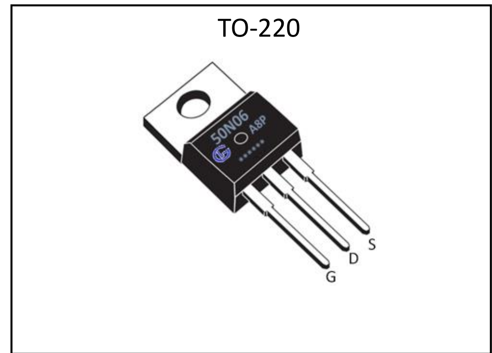
GL50N06A8P

GL Silicon N-Channel Power MOSFET

General Description :

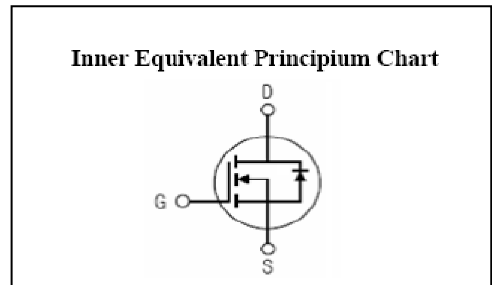
The GL50N06A8P uses advanced pannr technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications. The package form is TO-220, which accords with the RoHS standard.

V_{DSS}	60	V
I_D	50	A
P_D	104	W
$R_{DS(ON)MAX}$	22	mΩ



Features :

- $R_{DS(ON)}$ <22mΩ @ V_{GS}=10V (Typ15mΩ)
- 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℃ unless otherwise specified) :

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	60	V
I_D	Continuous Drain Current	50	A
I_{DM}	Pulsed Drain Current	200	A
V_{GS}	Gate-to-Source Voltage	±30	V
P_D	Power Dissipation	104	W
E_{AS}	Single pulse avalanche energy[a5]	500	mJ
T_J , T_{stg}	Operating Junction and Storage Temperature Range	150 , −55 to 150	℃

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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
I_{DSS}	Drain to Source Leakage Current	V_{DS}=60V,V_{GS}=0V,T_a=25℃	--	--	1.0	μA
$I_{GSS(F)}$	Gate to Source Forward Leakage	V_{GS}=+30V	--	--	0.1	μA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	V_{GS}=-30V	--	--	-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=25A	--	15	22	mΩ
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	2.0	3.0	40	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}=30V,I_D=25A	30	--	--	S
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=25V f=1.0MHz	--	920	--	pF
C_{oss}	Output Capacitance		--	420	--	
C_{rss}	Reverse Transfer Capacitance		--	80	--	

Resistive Switching Characteristics[a4]						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	V_{DD}=30V,I_D=50A,R_L=50Ω V_{GS}=10V,R_G=3Ω	--	40	--	ns
t_r	Rise Time		--	100	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	90	--	
t_f	Fall Time		--	75	--	
Q_g	Total Gate Charge	V_{DD}=30V,I_D=50A V_{GS}=10V	--	35	--	nC
Q_{gs}	Gate to Source Charge		--	7.0	--	
Q_{gd}	Gate to Drain ("Miller")Charge		--	16	--	

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Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current [a2](Body Diode)		--	--	50	A
V_{SD}	Diode Forward Voltage[a3]	I_S=50A,V_{GS}=0V	--	--	1.5	V

Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case[a2]	1.2	℃/W

[a1] : Repetitive Rating: Pulse width limited by maximum junction temperature.

[a2] : Surface Mounted on FR4 Board, t≤10sec.

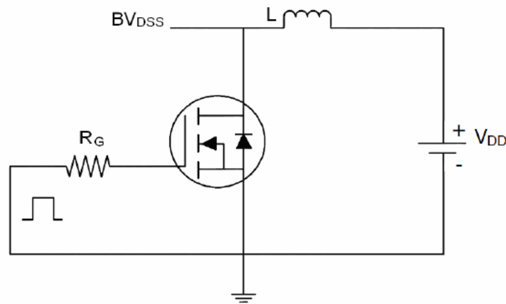
[a3] : Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%.

[a4] : Guaranteed by design, not subject to production

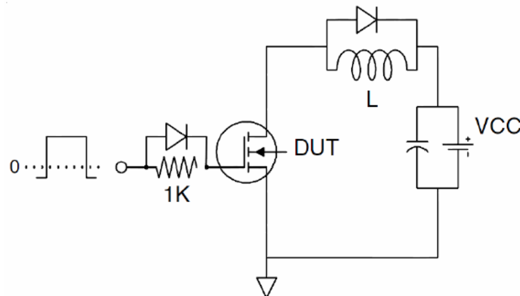
[a5] : EAS condition : Tj=25℃,V_{DD}=30V,V_G=10V,L=0.5mH,Rg=25Ω

Test circurt

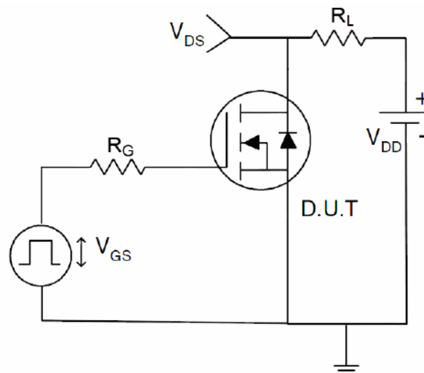
1) EAS test Circuit



2) Gate charge test Circuit



3) Switch Time Test Circuit



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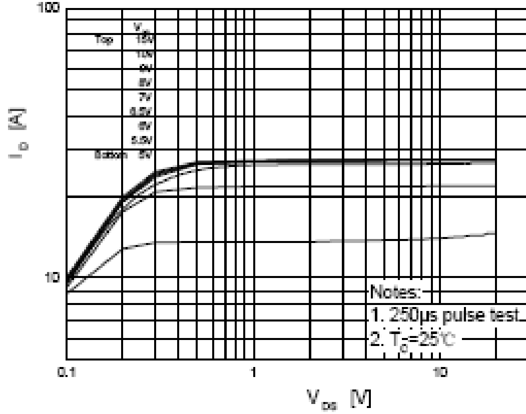
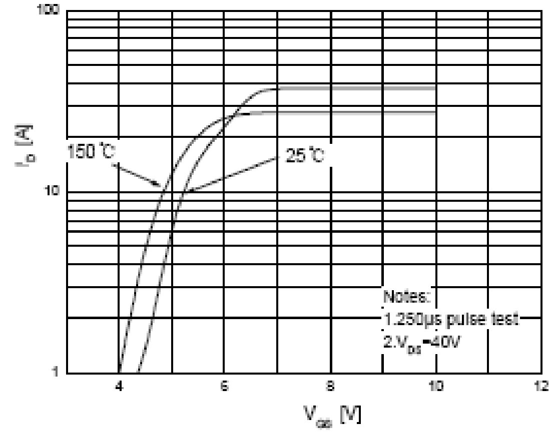
Characteristics Curve :

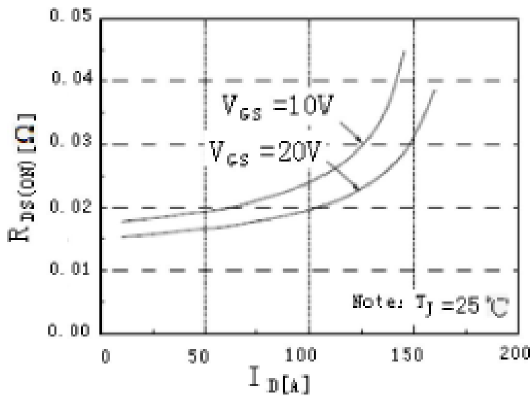
On-Region Characteristics



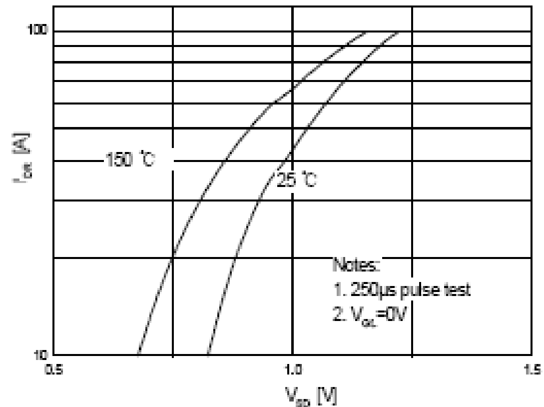
Transfer Characteristics



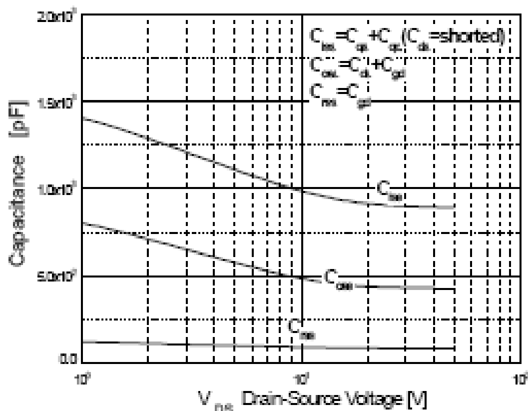
On-Resistance Variation vs. Drain Current and Gate Voltage



Body Diode Forward Voltage Variation vs. Source Current and Temperature



Capacitance Characteristics



Gate Charge Characteristics