

General Description

The GL90P06A8 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-220, which accords with the RoHS standard.

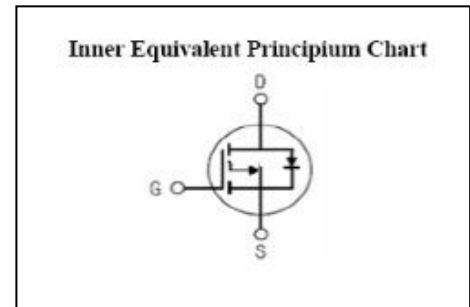
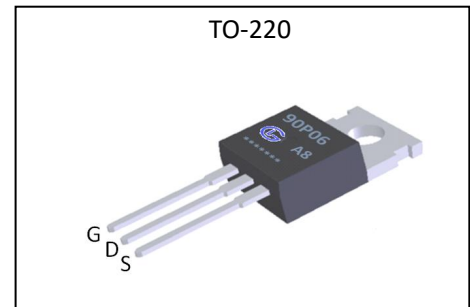
V_{DSS}	-60	V
I_D	-90	A
P_D	200	W
$R_{DS(ON)}$ TYPE	8.5	mΩ

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°C unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	-60	V
I_D	Continuous Drain Current	-90	A
	Continuous Drain Current $T_C = 100^\circ\text{C}$	-63	A
I_{DM}^{a1}	Pulsed Drain Current	-360	A
V_{GS}	Gate-to-Source Voltage	± 20	V
dv/dt^{a3}	Peak Diode Recovery dv/dt	5.0	V/ns
P_D	Power Dissipation	200	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	175, -55 to 175	$^\circ\text{C}$
T_L	Maximum Temperature for Soldering	300	$^\circ\text{C}$

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

Thermal Characteristics

Symbol	Parameter	Typ.	Units
$R_{\theta JC}$	Junction-to-Case	0.75	$^\circ\text{C/W}$
$R_{\theta JA}$	Junction-to-Ambient	62.5	$^\circ\text{C/W}$



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GL Silicon P-Channel Power MOSFET

Electrical Characteristics (Tc= 25°C unless otherwise specified)

OFF Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
V_{DSS}	Drain to Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-60	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Bvdss Temperature Coefficient	$I_D=-250\mu A$, Reference 25°C	--	0.06	--	V/°C
I_{DSS}	Drain to Source Leakage Current	$V_{DS}=-60V, V_{GS}=0V, T_a=25^\circ C$	--	--	-1	μA
		$V_{DS}=-48V, V_{GS}=0V, T_a=125^\circ C$	--	--	-250	
$I_{GSS(F)}$	Gate to Source Forward Leakage	$V_{GS}=+20V$	--	--	100	nA
$I_{GSS(R)}$	Gate to Source Reverse Leakage	$V_{GS}=-20V$	--	--	-100	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$R_{DS(ON)1}$	Drain-to-Source On-Resistance	$V_{GS}=-10V, I_D=-45A$	--	8.5	10	mΩ
$R_{DS(ON)2}$	Drain-to-Source On-Resistance	$V_{GS}=-4.5V, I_D=-20A$	--	9.5	12	mΩ
$V_{GS(TH)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-3.0	--	-1.0	V
Pulse width $t_p \leq 380\mu s, \delta \leq 2\%$						

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
g_{fs}	Forward Transconductance	$V_{DS}=-5V, I_D=-45A$	--	18	--	S
C_{iss}	Input Capacitance	$V_{GS}=0V, V_{DS}=-25V$ $f=1.0MHz$	--	5800	--	pF
C_{oss}	Output Capacitance		--	380	--	
C_{rss}	Reverse Transfer Capacitance		--	274	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$R_L=1.5\Omega, V_{DD}=-30V$ $V_{GS}=-10V, R_G=3\Omega$	--	19	--	ns
t_r	Rise Time		--	22	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	57	--	
t_f	Fall Time		--	38	--	
Q_g	Total Gate Charge	$I_D=-20.0A, V_{DD}=-30V$ $V_{GS}=-10V$	--	65	--	nC
Q_{gs}	Gate to Source Charge		--	11	--	
Q_{gd}	Gate to Drain ("Miller") Charge		--	17	--	



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Source-Drain Diode Characteristics

Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)		--	--	-90	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	-360	A
V_{SD}	Diode Forward Voltage	$I_S = -90A, V_{GS} = 0V$	--	--	1.5	V
t_{rr}	Reverse Recovery Time	$I_S = -90A, T_j = 25^\circ C$	--	55	--	ns
Q_{rr}	Reverse Recovery Charge	$di_F/dt = 100A/us, V_{GS} = 0V$	--	90	--	nC

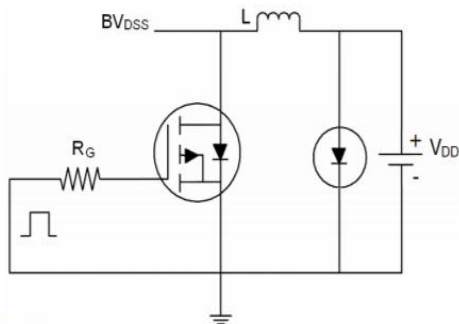
Pulse width $t_p \leq 380\mu s, \delta \leq 2\%$

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

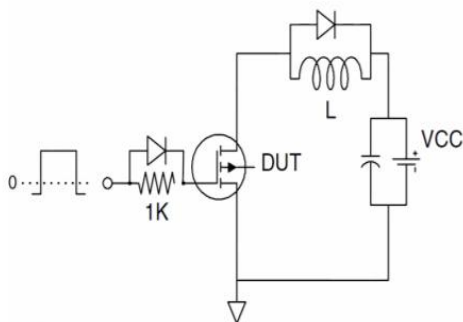
^{a3}: $I_{SD} = -90A, di/dt \leq 100A/us, V_{DD} \leq BV_{DS}$, Start $T_j = 25^\circ C$

Test Circuits

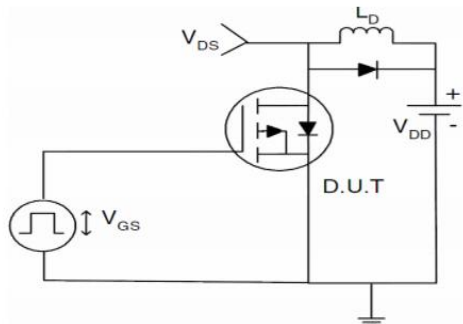
1) E_{AS} Test Circuit



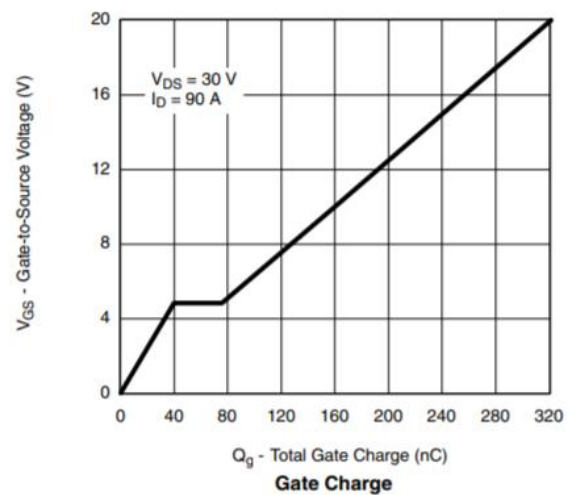
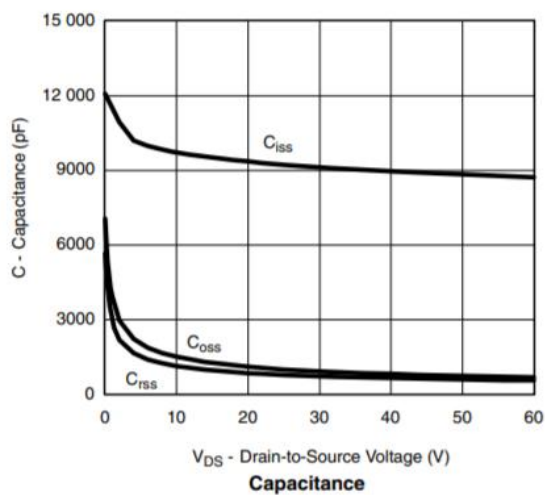
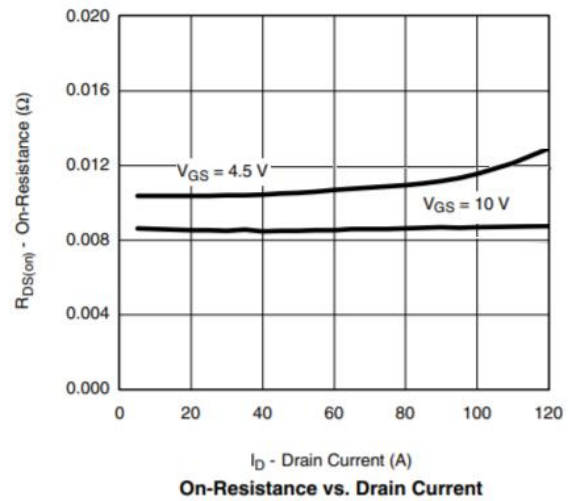
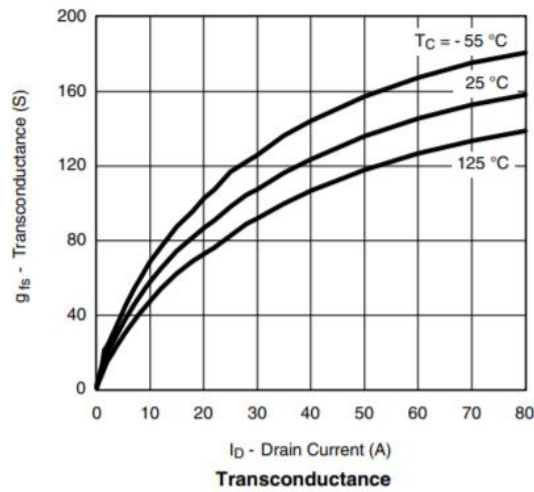
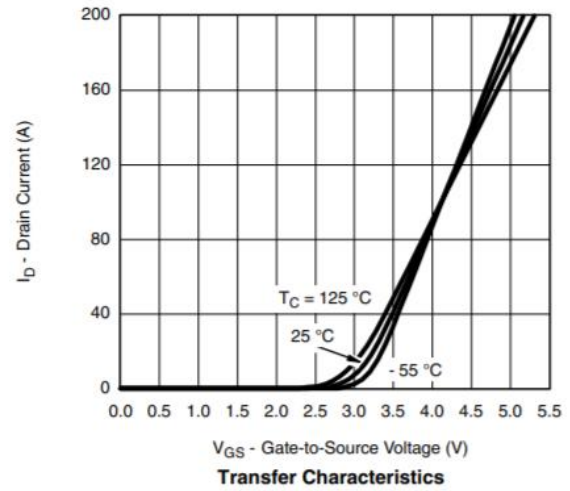
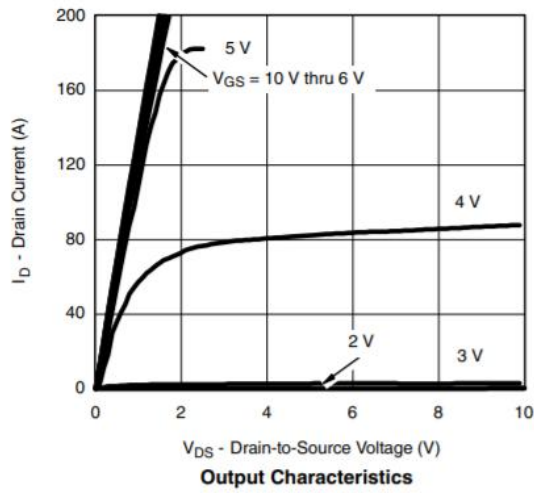
2) Gate Charge Test Circuit



3) Switch Time Test Circuit



Characteristics Curves





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