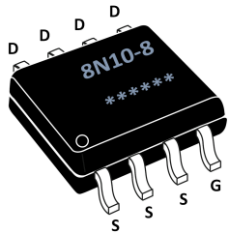
GL Silicon N-Channel Power MOSFET

General Description

The GL8N10-8 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 SOP-8, which accords with the RoHS standard.

V_{DSS}	100	V
I_D	8	A
P_D	3.1	W
$R_{DS(ON)TYPE}$	16	mΩ

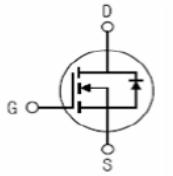
SOP-8



Features

- Fast Switching
- Low Gate Charge and R_{dson}
- Low Reverse transfer capacitances
- 100% Single Pulse avalanche energy Test

Inner Equivalent Principium Chart



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	100	V
I_D	Continuous Drain Current	8	A
	Continuous Drain Current T_C=100 °C	6	A
I_{DM}	Pulsed Drain Current	32	A
V_{GS}	Gate-to-Source Voltage	±20	V
E_{AS} [a2]	Single Pulse Avalanche Energy	15	mJ
E_{AR} [a1]	Avalanche Energy ,Repetitive	3	mJ
I_{AR} [a1]	Avalanche Current	5.5	A
dv/dt [a3]	Peak Diode Recovery dv/dt	5.0	V/ns
P_D	Power Dissipation	3.1	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	175, −55 to 175	℃
T_L	Maximum Temperature for Soldering	300	℃

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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	100	--	--	V
$\Delta BV_{DSS}/\Delta T_J$	Bvdss Temperature Coefficient	I_D=250uA,Reference25℃	--	0.1	--	V/℃
I_{DSS}	Drain to Source Leakage Current	V_{DS}=100V,V_{GS}= 0V,T_a=25℃	--	--	1	μA
		V_{DS}=80V,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=8A	--	16	25	mΩ
$V_{GS(TH)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1.0	1.8	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 =8A	10	--	--	S
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=50V f=1.0MHz	--	1100	--	pF
C_{oss}	Output Capacitance		--	10	--	
C_{rss}	Reverse Transfer Capacitance		--	85	--	

Resistive Switching Characteristics						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	I_D=8A,V_{DD}=50V V_{GS}=10V,R_G=3.0Ω	--	8	--	ns
t_r	Rise Time		--	4	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	20	--	
t_f	Fall Time		--	3	--	
Q_g	Total Gate Charge	I_D=8A,V_{DD}=50V V_{GS}=10V	--	21	--	nC
Q_{gs}	Gate to Source Charge		--	3	--	
Q_{gd}	Gate to Drain (“Miller”)Charge		--	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)		--	--	8	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	32	A
V_{SD}	Diode Forward Voltage	I_S=8A,V_{GS}=0V	--	--	1.5	V
t_{rr}	Reverse Recovery Time	I_S=8A,T_j = 25°C	--	28	--	ns
Q_{rr}	Reverse Recovery Charge	dI_F/dt=100A/us, V_{GS}=0V	--	40	--	nC
Pulse width tp≤380μs,δ≤2%						

Thermal Characteristics

Symbol	Parameter	Typ.	Units
$R_{\theta JA}$	Junction-to-Ambient	40	℃/W

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

a2: EAS condition : Tj=25℃ ,V_{DD}=30V,VG=10V,L=0.5mH,Rg=25Ω

a3: I_{SD} =8A,di/dt ≤100A/us,V_{DD}≤BV_{DS}, Start T_J=25℃

Test Circuits

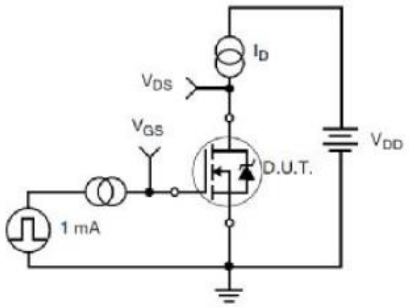


Figure 17. Gate Charge Test Circuit

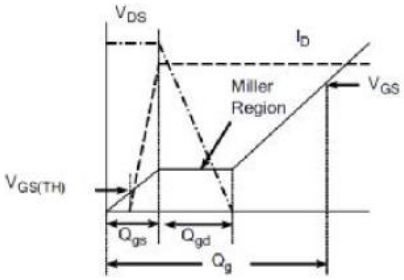


Figure 18. Gate Charge Waveform

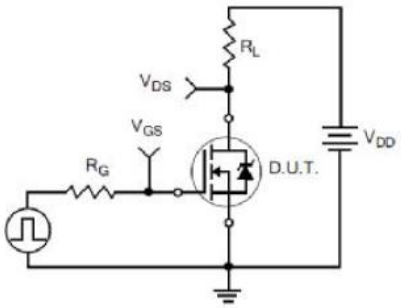


Figure 19. Resistive Switching Test Circuit

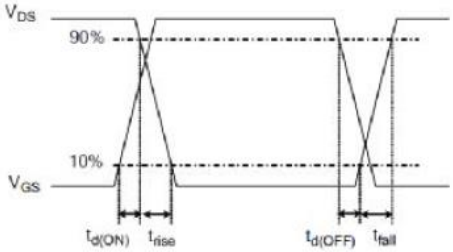


Figure 20. Resistive Switching Waveforms

Characteristics Curves

Figure 1. Output Characteristics

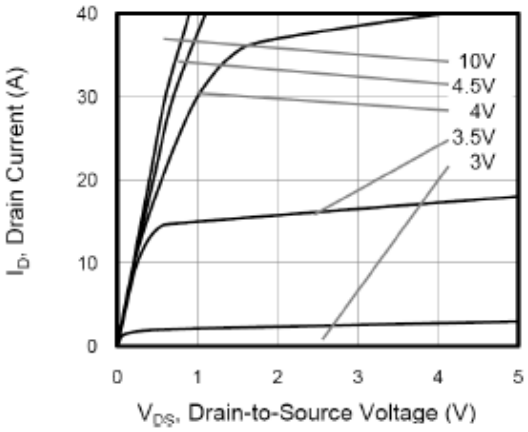


Figure 2. Transfer Characteristics

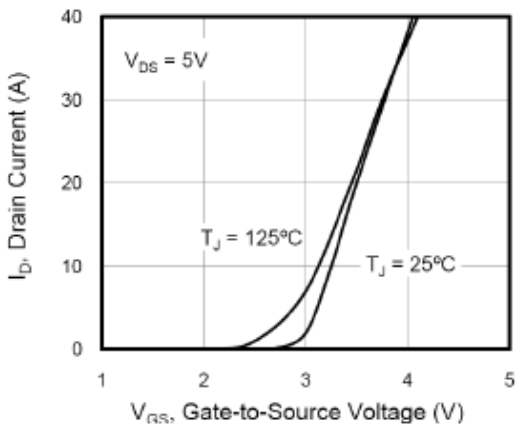


Figure 3. On-Resistance vs. Drain Current

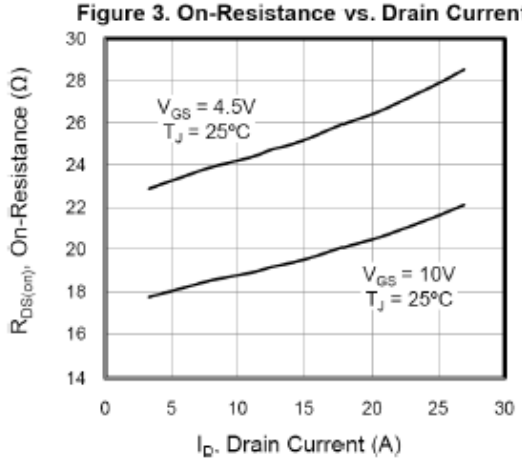


Figure 4. Capacitance

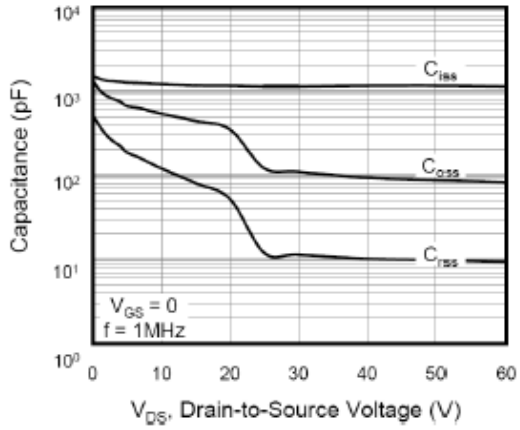


Figure 5. Gate Charge

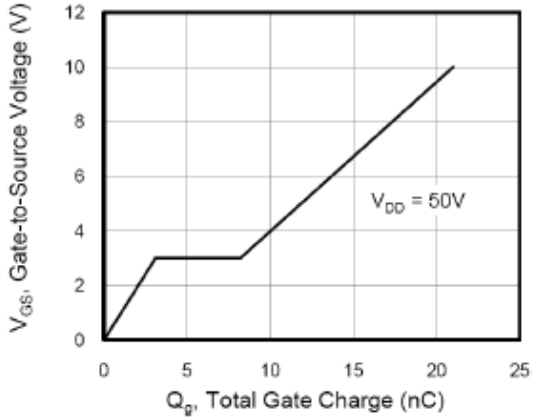


Figure 6. Body Diode Forward Voltage

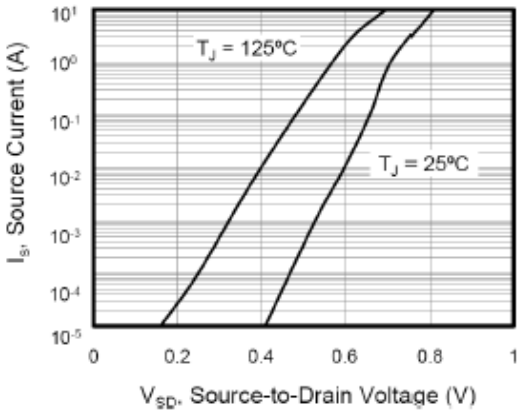


Figure 7. On-Resistance vs. Junction Temperature

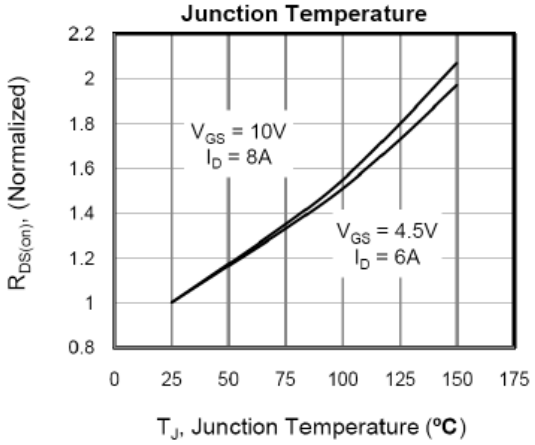


Figure 8. Threshold Voltage vs. Junction Temperature

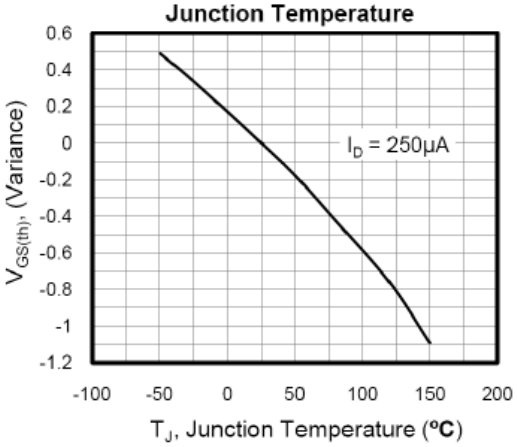
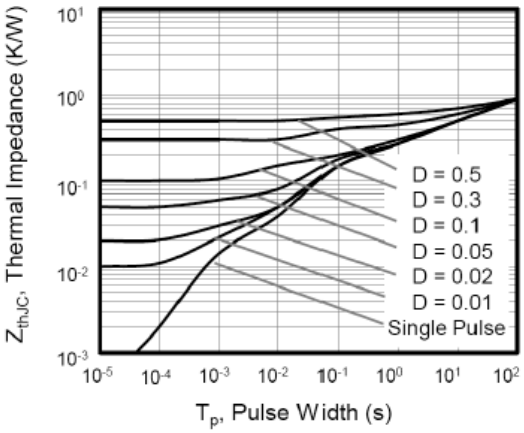


Figure 9. Transient Thermal Impedance



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