

GL Silicon N Channel Power MOSFET

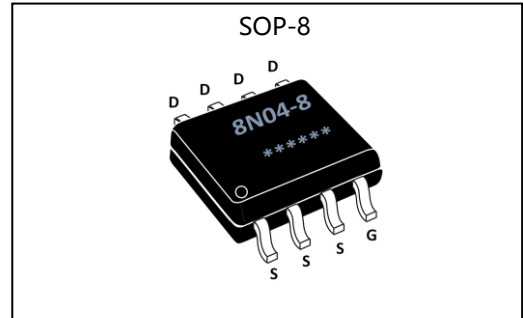
General Description:

The GL8N04-8 uses advanced trench 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 SOP-8, which accords with the RoHS standard.

V_{DSS}	40	V
I_D	8	A
P_D	2	W
$R_{DS(ON)type}$	18	m Ω

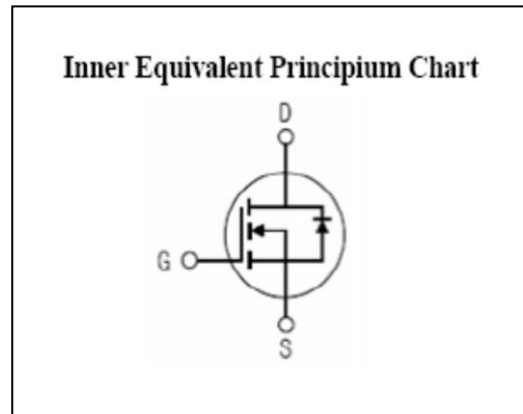
Features:

- $R_{DS(ON)} < 22m\Omega @ V_{GS}=10V$ (Typ18m Ω)
- 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°C unless otherwise specified):

Symbol	Parameter	N-Channel	Units
V_{DSS}	Drain-to-Source Voltage	40	V
I_D	Continuous Drain Current	8	A
I_{DM}	Pulsed Drain Current	40	A
V_{GS}	Gate-to-Source Voltage	± 20	V
P_D	Power Dissipation	2	W
T_J, T_{stg}	Operating Junction and Storage Temperature Range	-55 to 150	$^{\circ}C$

**GL Silicon N 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 =250μA	40	--	--	V
I _{DSS}	Drain to Source Leakage Current	V _{DS} =40V, V _{GS} =0V, T _a =25°C	--	--	1.0	μA
I _{GSS(F)}	Gate to Source Forward Leakage	V _{GS} = +10V	--	--	0.1	μA
I _{GSS(R)}	Gate to Source Reverse Leakage	V _{GS} = -10V	--	--	-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 =8A	--	17	22	mΩ
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.5	2.5	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} =15V, I _D =8A	3	--	--	S
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =20V f=1.0MHz	--	415	--	pF
C _{oss}	Output Capacitance		--	115	--	
C _{rss}	Reverse Transfer Capacitance		--	11	--	

Resistive Switching Characteristics^{a4}						
Symbol	Parameter	Test Conditions	Rating			Units
			Min.	Typ.	Max.	
t _{d(ON)}	Turn-on Delay Time	V _{DD} =15V, R _L =2.5Ω V _{GS} =10V, R _G =3Ω	--	4.5	--	ns
t _r	Rise Time		--	3.0	--	
t _{d(OFF)}	Turn-Off Delay Time		--	14.5	--	
t _f	Fall Time		--	3.0	--	
Q _g	Total Gate Charge	V _{DD} =20V, I _D =8A V _{GS} =10V	--	12	--	nC
Q _{gs}	Gate to Source Charge		--	3.2	--	
Q _{gd}	Gate to Drain ("Miller")Charge		--	3.1	--	



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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)		--	--	8	A
V_{SD}	Diode Forward Voltage ^{a3}	$I_S=8A, V_{GS}=0V$	--	--	1.5	V

Symbol	Parameter	Typ.	Units
$R_{\theta JA}$	Junction-to-Ambient	62.5	°C/W

^{a1}: Repetitive Rating: Pulse width limited by maximum junction temperature.

^{a2}: Surface Mounted on FR4 Board, $t \leq 10\text{sec}$.

^{a3}: Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

^{a4}: Guaranteed by design, not subject to production

^{a5}: EAS condition: $T_j=25^\circ\text{C}, V_{DD}=15V, V_{GS}=10V, L=1.0\text{mH}, R_g=25\Omega$

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Characteristics Curve:

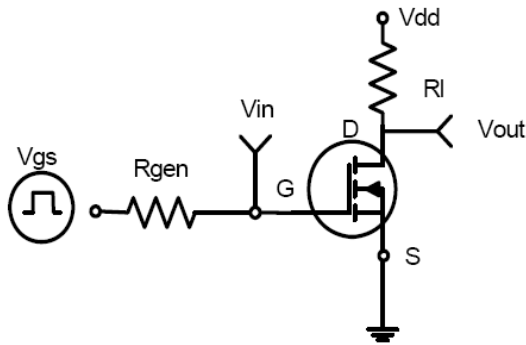


Figure 1: Switching Test Circuit

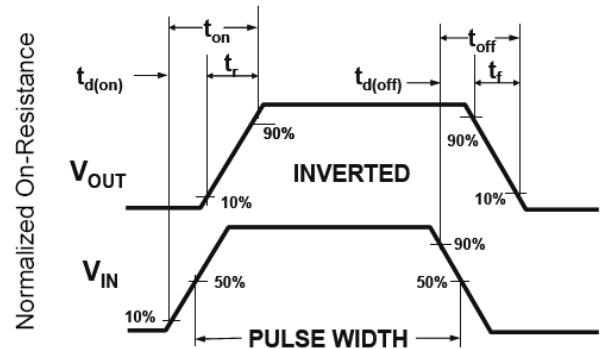


Figure 2: Switching Waveforms

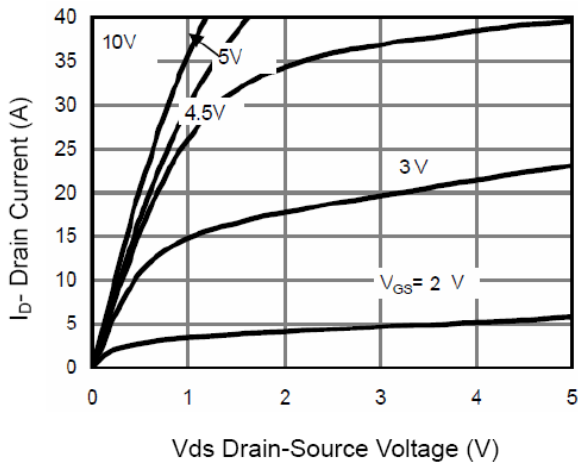


Figure 3 Output Characteristics

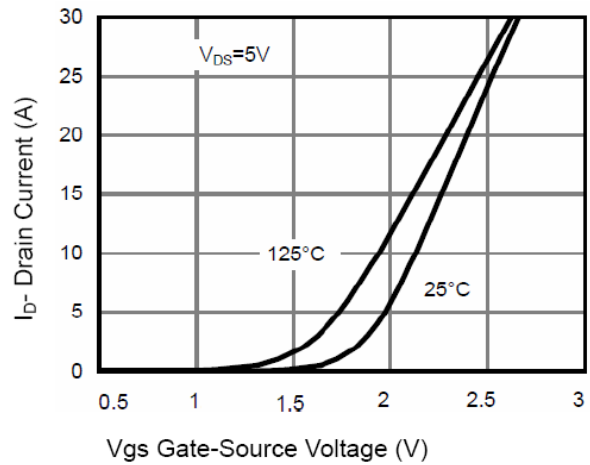


Figure 4 Transfer Characteristics

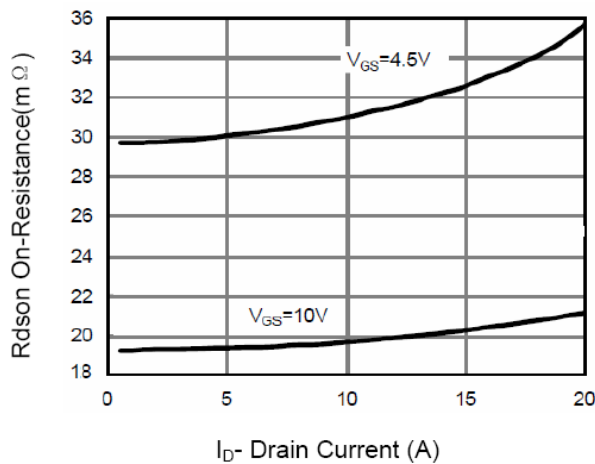


Figure 5 Drain-Source On-Resistance

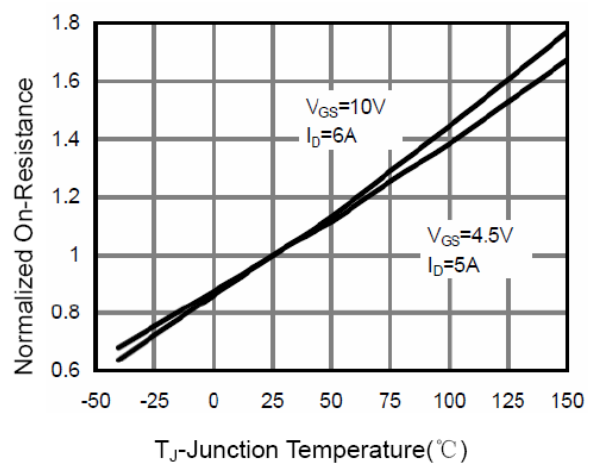


Figure 6 Drain-Source On-Resistance



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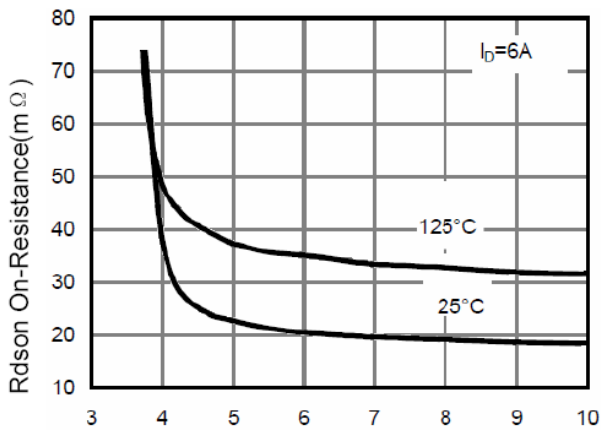


Figure 7 Rdson vs Vgs

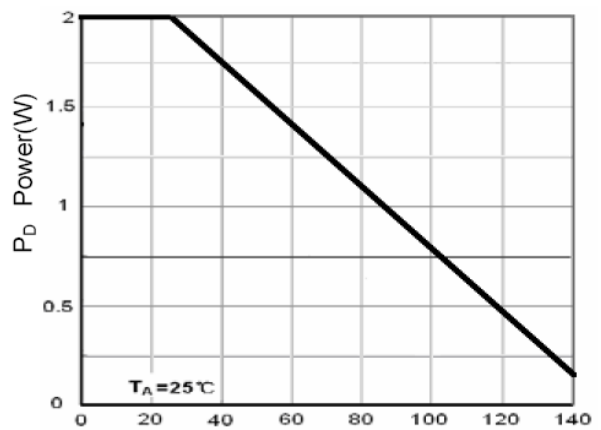


Figure 8 Power Dissipation

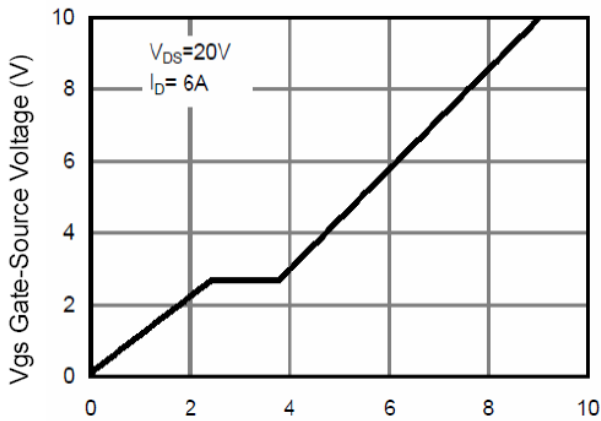


Figure 9 Gate Charge

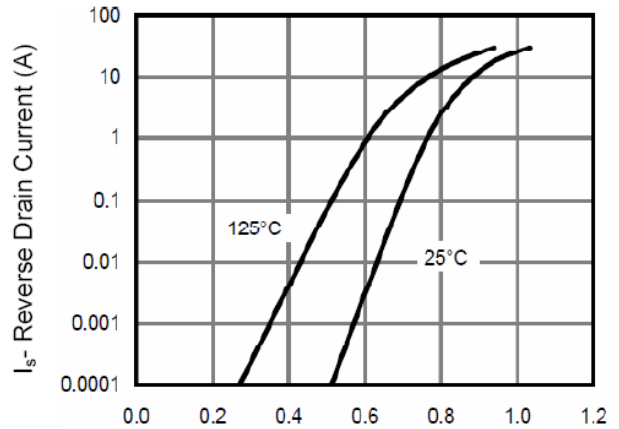


Figure 10 Source- Drain Diode Forward

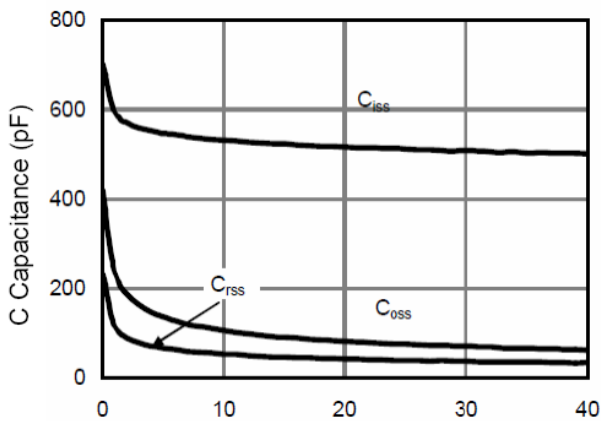


Figure 11 Capacitance vs Vds

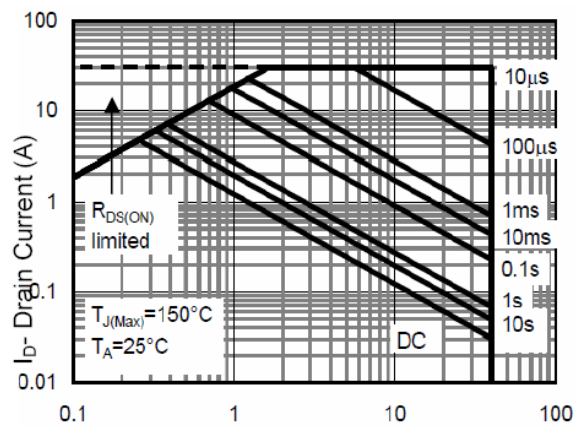


Figure 12 Safe Operation Area

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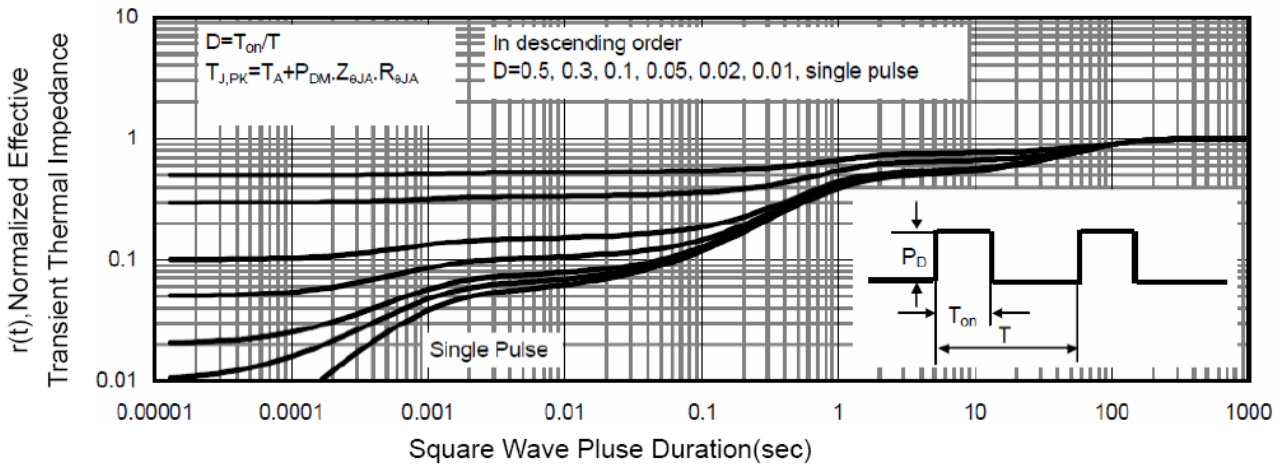


Figure 13 Normalized Maximum Transient Thermal Impedance

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