60V N-Ch Power MOSFET

Feature

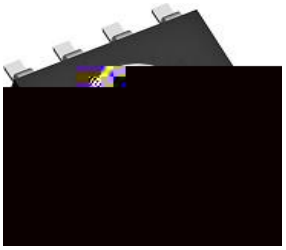
- High Speed Power Switching, Logic Level
- Enhanced Body diode dv/dt capability
- Enhanced Avalanche Ruggedness
- 100% UIS Tested, 100% Rg Tested
- Lead Free, Halogen Free

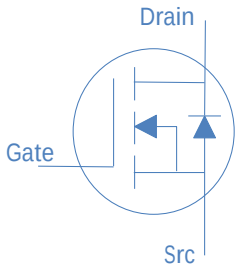
V_{DS}		60	V
$R_{DS(on),typ}$	V_{GS}=10V	8.8	m
$R_{DS(on),typ}$	V_{GS}=4.5V	12.4	m
I_D		12.8	A

Application

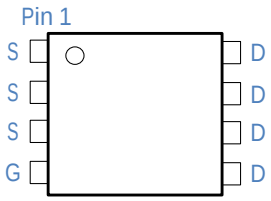
- Synchronous Rectification in SMPS
- Hard Switching and High Speed Circuit
- DC/DC in Telecoms and Inductrial

SOIC-8





Part Number	Package	Marking
HGS098N06SL	SOIC-8	GS098N06SL



Absolute Maximum Ratings at T_j , / " b

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current	I_D	T_C , /	12.8	A
		T_C	8.1	
Drain to Source Voltage	V_{DS}	-	60	V
Gate to Source Voltage	V_{GS}	-	20	V
Pulsed Drain Current	I_{DM}	-	40	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.4mH, T_C , /	20	mJ
Power Dissipation	P_D	T_C , /	3.4	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to150	

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Lead	R_{JL}	21	
b "	R_{JA}	37	
Thermal Resistance Junction-Ambient (steady state)		69	

Electrical Characteristics at T_j , / " b

Static Characteristics

Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250 A	60	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250 A	1.0	1.9	2.4	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=60V, T_j , /	-	-	1	A
		V_{GS}=0V, V_{DS}=60V, T_j	-	-	100	
Gate to Source Leakage Current	I_{GSS}	V_{GS} , $_{DS}$=0V	-	-	100	nA
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=12A	-	8.8	9.8	m
		V_{GS}=4.5V, I_D=10A	-	12.4	14	
Transconductance	g_{fs}	V_{DS}=5V, I_D=12A	-	25	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz	-	1.5	-	

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=30V, f=1MHz	-	1040	-	pF
Output Capacitance	C_{oss}		-	318	-	
Reverse Transfer Capacitance	C_{rss}		-	15	-	
Total Gate Charge	Q_g(10V)	V_{DD}=30V, I_D=10A, V_{GS}=10V	-	18.5	-	nC
Total Gate Charge	Q_g(4.5V)		-	9	-	
Gate to Source Charge	Q_{gs}		-	4.5	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	3.5	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=30V, I_D=10A, V_{GS}=10V, R_G=10 ,	-	6	-	ns
Rise time	t_r		-	3	-	
Turn off Delay Time	$t_{d(off)}$		-	25	-	
Fall Time	t_f		-	3	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_F=10A	-	0.9	1.2	V
Reverse Recovery Time	t_{rr}	V_R=30V, I_F=10A, dI_F/dt=300A/ s	-	25	-	ns
Reverse Recovery Charge	Q_{rr}		-	33	-	nC

Fig 1. Typical Output Characteristics	Figure 2. On-Resistance vs. Gate-Source Voltage

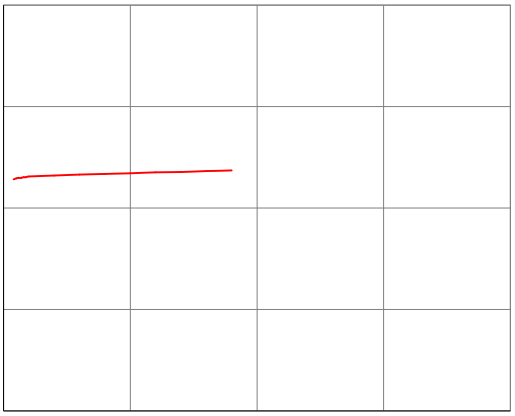
Figure 3. On-Resistance vs. Drain Current and Gate Voltage	Figure 4. Normalized On-Resistance vs. Junction Temperature
	

Figure 5. Typical Transfer Characteristics	Figure 6. Typical Source-Drain Diode Forward Voltage

Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage

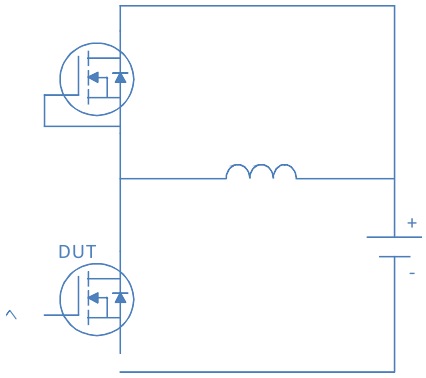
Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

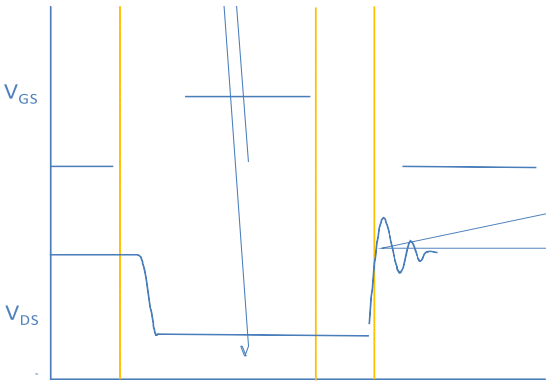
Figure 9. Maximum Safe Operating Area

Figure 10. Maximun Drain Current vs. Case Temperature

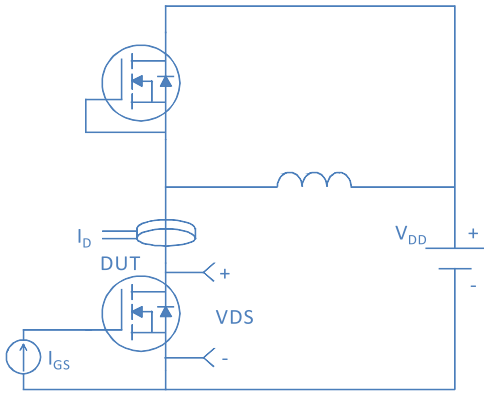
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient

Inductive switching Test



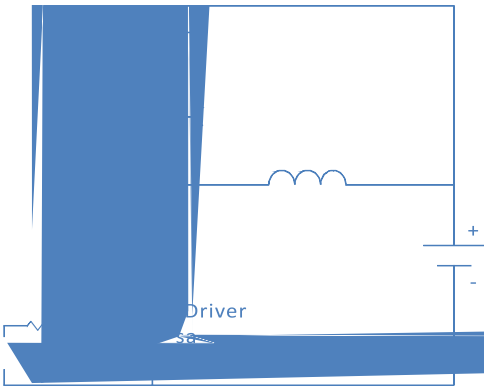


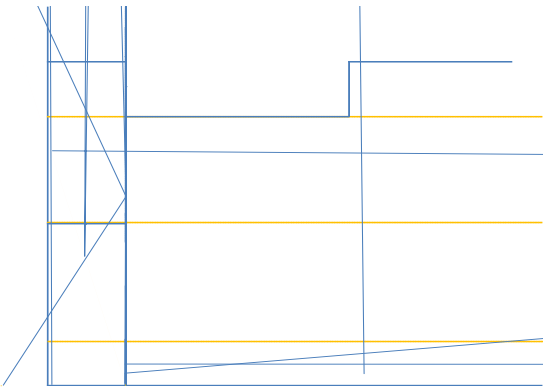
Gate Charge Test



Uclamped Inductive Switching (UIS) Test

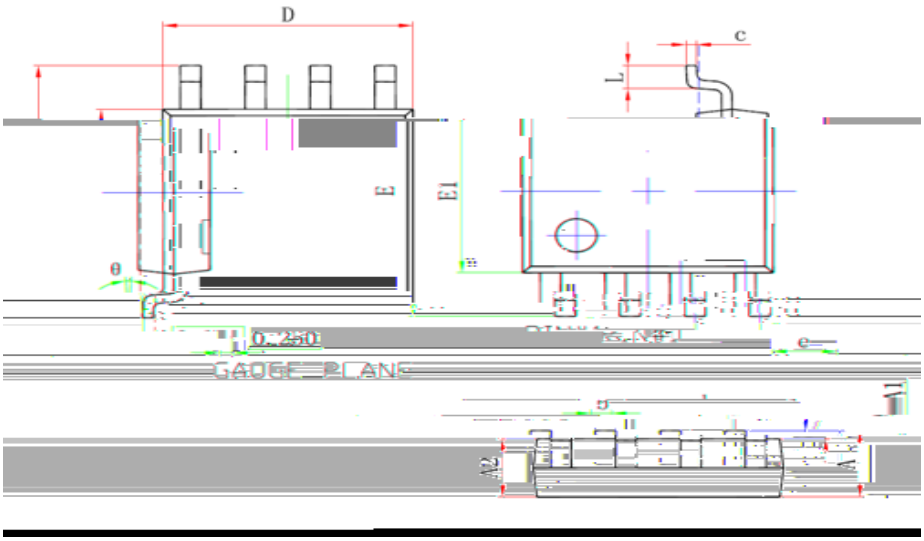
Diode Recovery Test





Package Outline

SOIC-8, 8 leads



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.250	1.650	0.049	0.065
b	0.310	0.510	0.012	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (SBC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.031
θ	0°	8°	0°	8°