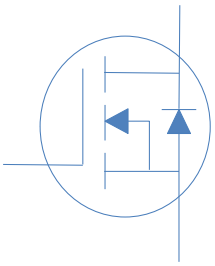
80V N-Ch Power MOSFET

V_{DS}	80	V
$R_{DS(on),typ}$	4.9	m
$I_{D\ (Sillicon\ Limited)}$	89	A



Part Number	Package	Marking
HGD059N08A	TO-252	GD059N08A
HGI059N08A	TO-251	GI059N08A

Absolute Maximum Ratings at T_j=25 less otherwise cified)

Parameter	Symbol	nditions	Value	Unit
Continuous Drain Current (Silicon Limited)		T_C	89	A
		C	63	
Drain to Source Voltage			80	V
Gate to Source Voltage	V_{GS}	-	±20	V
Pulsed Drain Current			280	A
Avalanche Energy, Single Pulse		5℃	45	mJ
Power Dissipation	P_D	T_C=2	94	W
Operating and Storage Tempe	T_J, T_{stg}	-	-55 to175	℃

Absolute Maximum Ratings

Parameter		Max	Unit
Thermal Resistance Junction-Amb		50	℃/W
Thermal Resistance Junction-C		1.6	℃/W

Electrical Characteristics at T_j=25℃ (unless otherwise specified)

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	80	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250 A	2.0	3.0	4.0	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=80V, T_j=25℃	-	-	1	A
		V_{GS}=0V, V_{DS}=80V, T_j=100℃	-	-	100	
Gate to Source Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V	-	-	±100	nA
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=20A	-	4.9	5.9	m
Transconductance	g_{fs}	V_{DS}=5V, I_D=20A	-	50	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz	-	1.1	-	

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=40V, f=1MHz	-	2449	-	pF
Output Capacitance	C_{oss}		-	502	-	
Reverse Transfer Capacitance	C_{rss}		-	19.0	-	
Total Gate Charge	Q_g(10V)	V_{DD}=40V, I_D=20A, V_{GS}=10V	-	42	-	nC
Gate to Source Charge	Q_{gs}		-	8	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	12	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=40V, I_D=20A, V_{GS}=10V, R_G=10 ,	-	11	-	ns
Rise time	t_r		-	7	-	
Turn off Delay Time	$t_{d(off)}$		-	34	-	
Fall Time	t_f		-	9	-	

Reverse Diode Characteristics

Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_F=20A	-	0.9	1.2	V
Reverse Recovery Time	t_{rr}	V_R=40V, I_F=20A, dI_F/dt=400A/ s	-	35	-	ns
Reverse Recovery Charge	Q_{rr}		-	122	-	nC

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

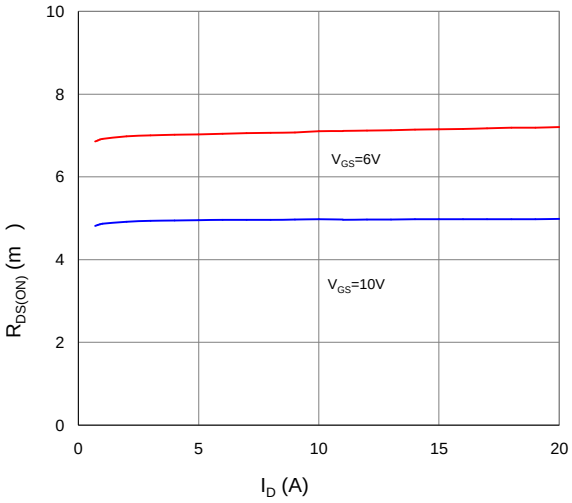
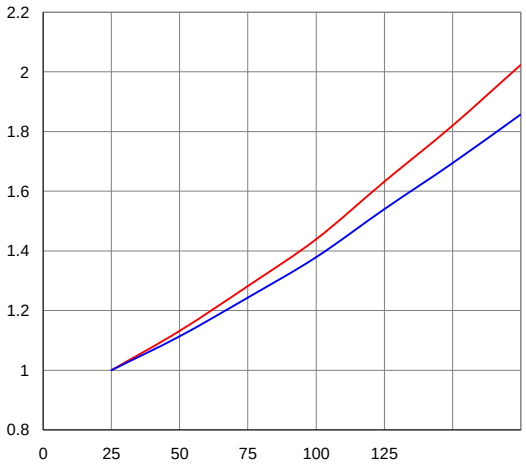
Figure 3. On-Resistance vs. Drain Current and Gate Voltage	Figure 4. Normalized On-Resistance vs. Junction Temperature
	

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

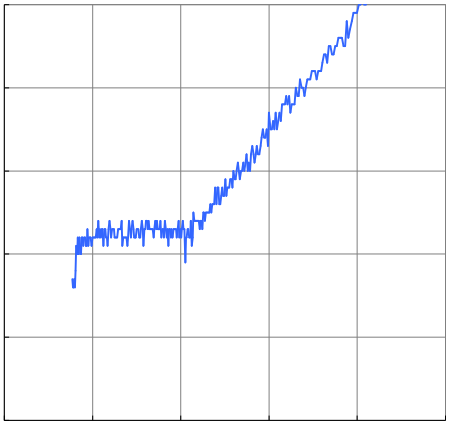
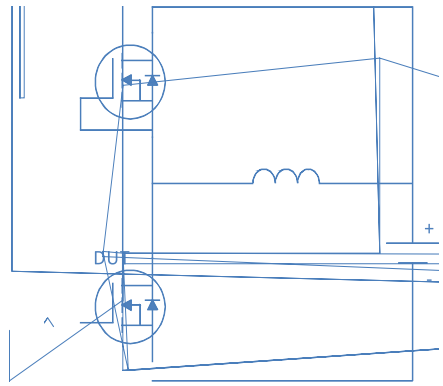
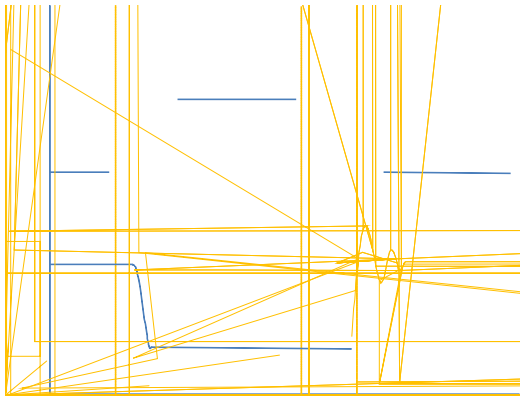
Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage	Figure 8. Typical Capacitance vs. Drain-to-Source Voltage
	

Figure 9. Maximum Safe Operating Area	Figure 10. Maximun Drain Current vs. Case Temperature

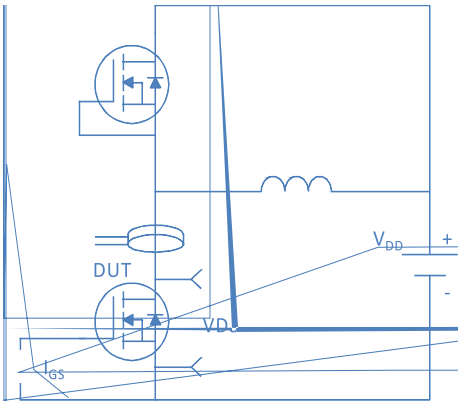
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Ambient

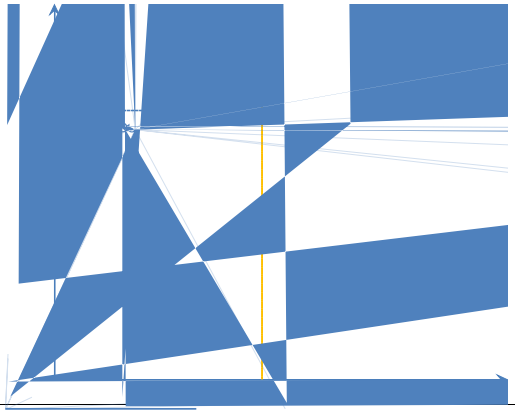
Inductive switching Test



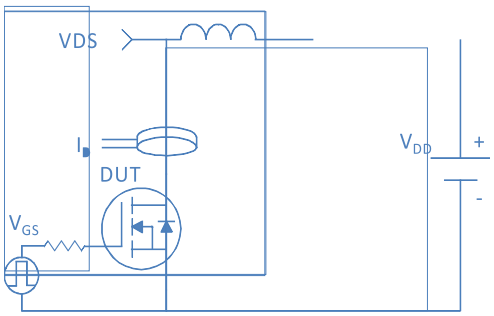


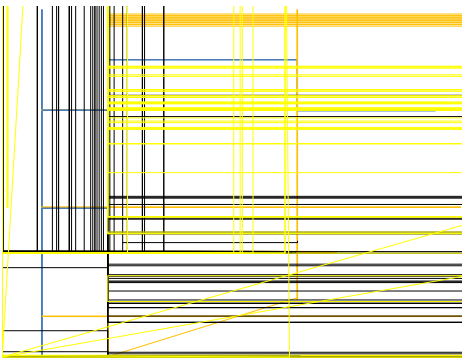
Gate Charge Test



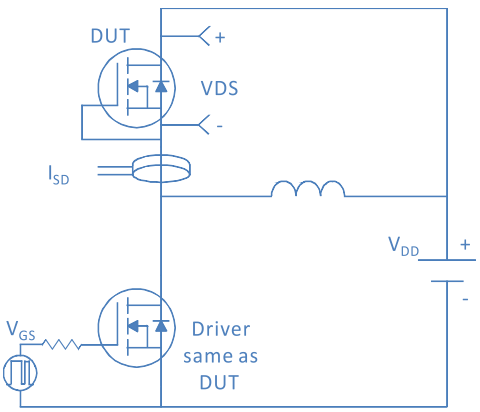


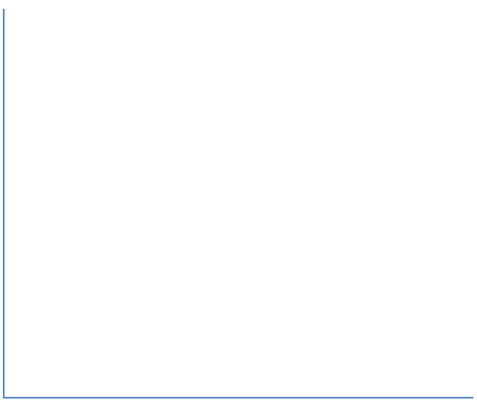
Uclamped Inductive Switching (UIS) Test





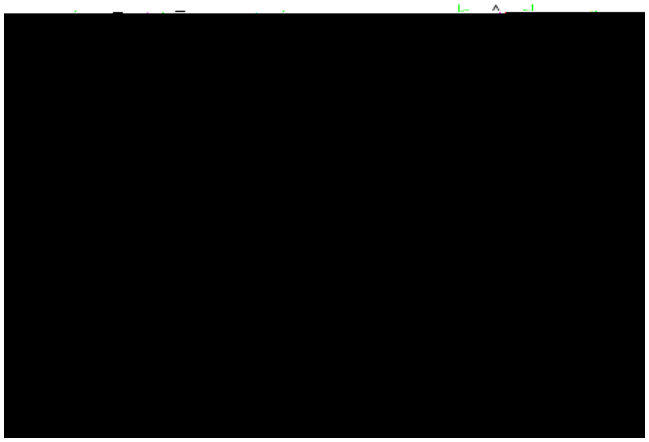
Diode Recovery Test



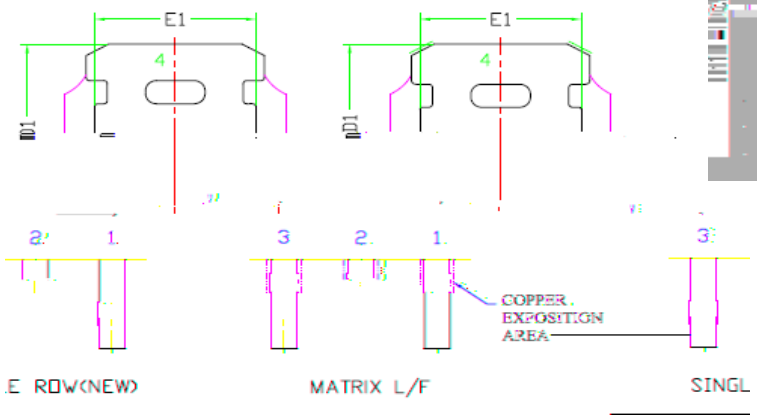


Package Outline

TO-252, 2 leads



SYMBOL	DIMENSIONAL REQMTS		
	MIN	NOM	MAX
E	6.40	6.60	6.731
L	1.40	1.52	1.77
L1		2.743 REF	
L2		0.508 BSC	
L3	0.89	--	1.27
L4	0.64	--	1.01
L5	--	--	--
D	6.00	6.10	6.223



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