200V N-Ch Power MOSFET

V_{DS}	200	V
$R_{DS(on),typ}$	28	m
I_D	50	A

Part Number	Package	Marking
HGD320N20S	TO-252	GD320N20S

Absolute Maximum Ratings at T_j " n " " eh f

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current	I_D	T_C	50	A
		T_C 22	35	
		-		V
		-		V
Pulsed Drain Current	I	-		A
	E_{AS}	L=0.4mH, T_C	180	mJ
Power Dissipation	P_D	T_C	200	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to175	

Electrical Characteristics at T_j " n " " eh f

Static Characteristics

Parameter	Symbol	Conditions	Value min	Value typ	Value max	Unit
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=250 A	200	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	V_{GS}=V_{DS}, I_D=250 A	2	3	4	
Zero Gate Voltage Drain Current	I_{DSS}	V_{GS}=0V, V_{DS}=200V, T_j	-	-	1	A
		V_{GS}=0V, V_{DS}=200V, T_j 22	-	-	100	
Gate to Source Leakage Current	I_{GSS}	V_{GS} 2 " $_{DS}$=0V	-	-	100	nA
				28	32	m
Transconductance	g_{fs}	V_{DS}=5V, I_D=10A	-	31	-	S
Gate Resistance	R_G				-	

Dynamic Characteristics

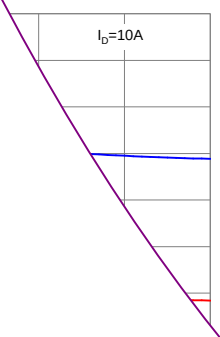
Input Capacitance	C_{iss}		-	1598	-	
Output Capacitance	C_{oss}	V_{GS}=0V, V_{DS}=100V, f=1MHz	-	124	-	pF
Reverse Transfer Capacitance	C_{rss}		-	7.5	-	
Total Gate Charge	Q_g		-	19	-	
Gate to Source Charge	Q_{gs}	V_{DD}=100V, I_D=10A, V_{GS}=10V	-	7	-	nC
Gate to Drain (Miller) Charge	Q_{gd}		-	2	-	
Turn on Delay Time	$t_{d(on)}$		-	12	-	
Rise time		V_{DD}=100V, I_D=10A, V_{GS}=10V,	-	17	-	ns
Turn off Delay Time	$t_{d(off)}$	R_G=10 ,	-	23	-	
Fall Time	t_f		-	10	-	

Reverse Diode Characteristics

Diode Forward Voltage		V_{GS}=0V, I_F=10A	-			V
Reverse Recovery Time	t_{rr}		-	90	-	ns
Reverse Recovery Charge	Q_{rr}		-	306	-	nC

Dp5(B)e0V. f=1MHz

e Voltage



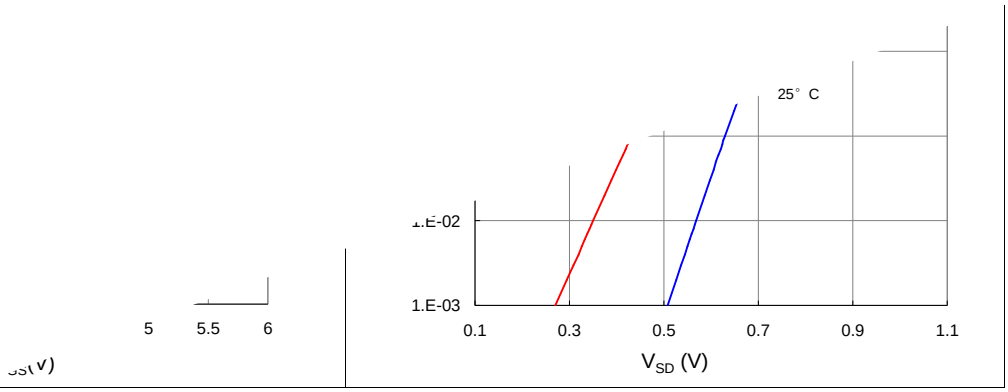


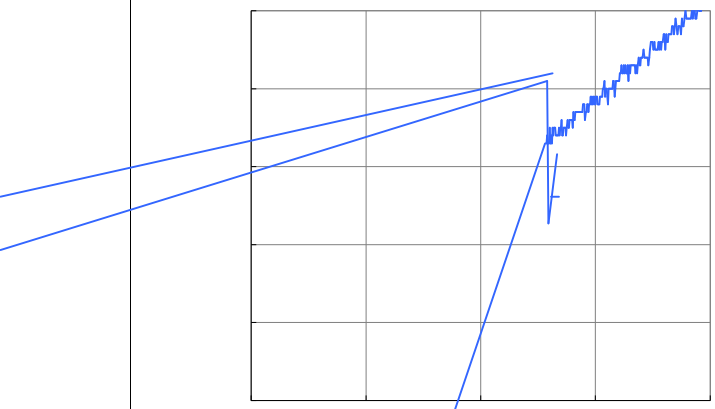
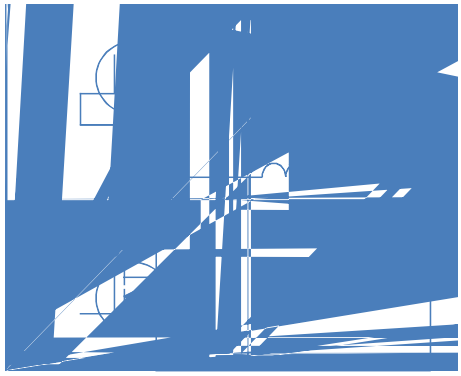
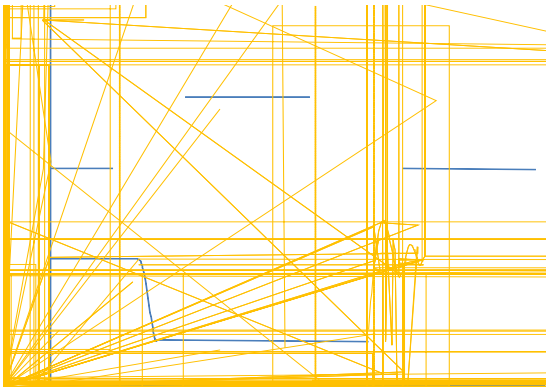
Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage	Figure 8. Typical Capacitance vs. Drain-to-Source Voltage
	

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

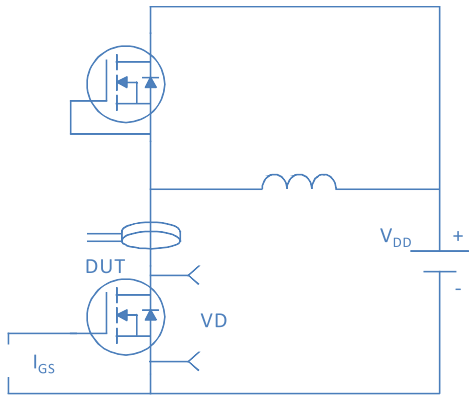
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case

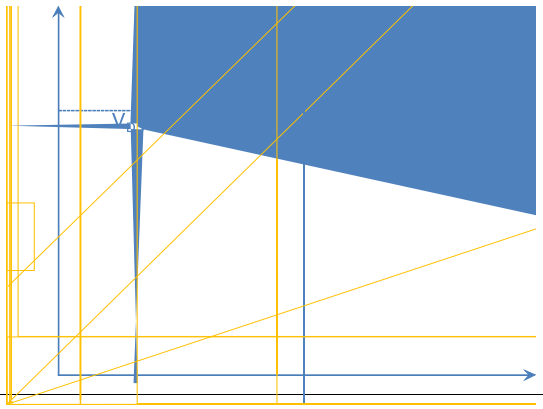
Inductive switching Test



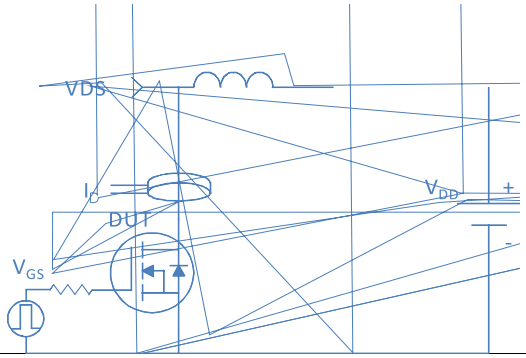


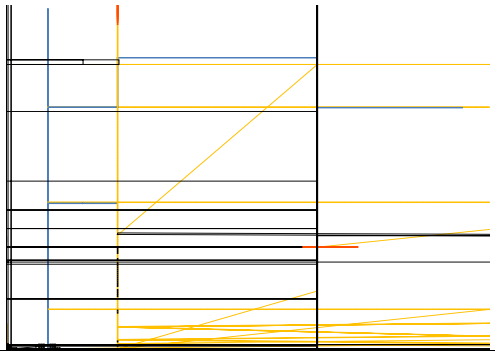
Gate Charge Test



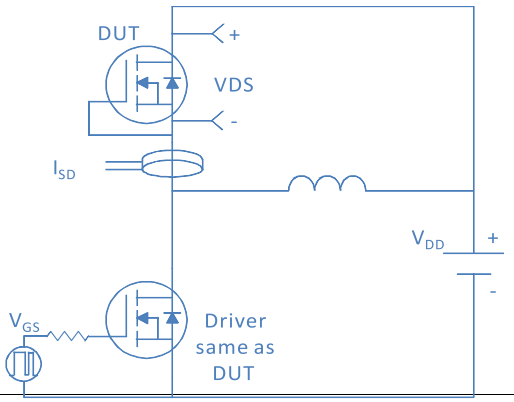


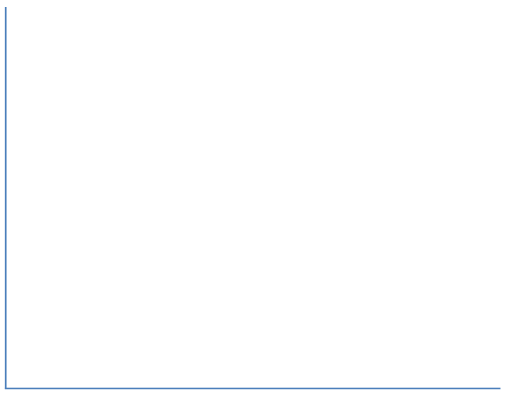
Uclamped Inductive Switching (UIS) Test



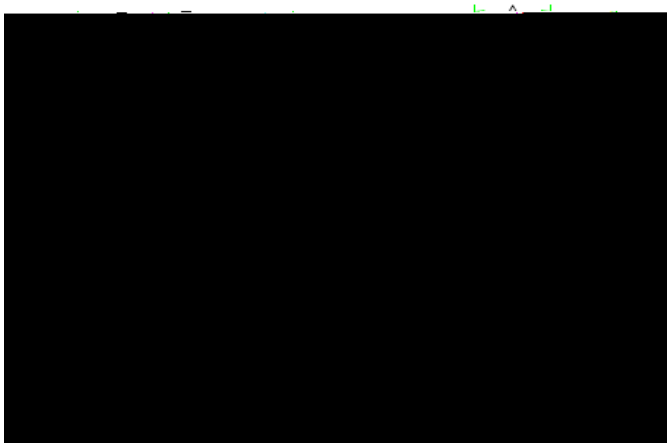


Diode Recovery Test





TO-252, 3 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