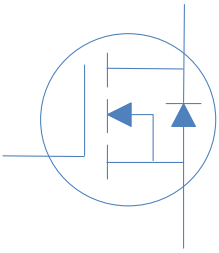
100V N-Ch Power MOSFET

V_{DS}		100	V
$R_{DS(on),typ}$	TO-263	4.5	m
$R_{DS(on),typ}$	TO-220	4.8	m
I_D		125	A



Part Number	Package	Marking
HGB050N10A	TO-263	GB050N10A
HGP050N10A	TO-220	GP050N10A

Absolute Maximum Ratings at T_j 0 l c f c c nc dc

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current	I_D	T_C 0	125	A
		T_C /	89	
Drain to Source Voltage	V_{DS}	-	100	V
Gate to Source Voltage	V_{GS}	-	20	V
Pulsed Drain Current	I_{DM}	-	400	A
Avalanche Energy, Single Pulse	E_{AS}	L=0.1mH, T_C 0	80	mJ
Power Dissipation	P_D	T_C 0	179	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to175	

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Case	R A	0.84	
Thermal Resistance Junction-Ambient	R	60	

Electrical Characteristics at T_j 0 l c f c c nc dc

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		100	-	-	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}=100V, T_j 0		-	-	1	A
		V_{GS}=0V, V_{DS}=100V, T_j /		-	-	100	
Gate to Source Leakage Current	I_{GSS}	V_{GS} 0 $_{DS}$=0V		-	-	100	nA
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=20A	TO-263	-	4.5	5	m
Drain to Source on Resistance	$R_{DS(on)}$	V_{GS}=10V, I_D=20A	TO-220	-	4.8	5.3	m
Transconductance	g_{fs}	V_{DS}=5V, I_D=20A		-	60	-	S
Gate Resistance	R_G	V_{GS}=0V, V_{DS} Open, f=1MHz		-	1.2	-	

Dynamic Characteristics

Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz	-	3490	-	pF
Output Capacitance	C_{oss}		-	571	-	
Reverse Transfer Capacitance	C_{rss}		-	18	-	
Total Gate Charge	Q_g	V_{DD}=50V, I_D=20A, V_{GS}=10V	-	47	-	nC
Gate to Source Charge	Q_{gs}		-	10	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	10	-	
Turn on Delay Time	$t_{d(on)}$	V_{DD}=50V, I_D=20A, V_{GS}=10V, R_G=10 ,	-	12	-	ns
Rise time	t_r		-	7	-	
Turn off Delay Time	$t_{d(off)}$		-	25	-	
Fall Time	t_f		-	5	-	

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=50V, I_F=20A, dI_F/dt=500A/ s	-	50	-	ns
Reverse Recovery Charge	Q_{rr}		-	350	-	nC

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

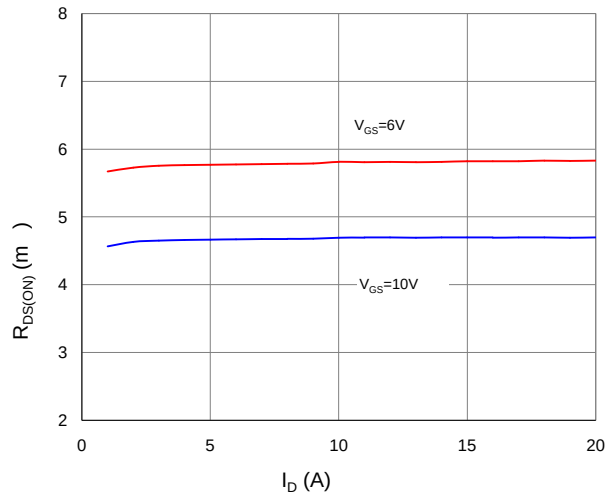
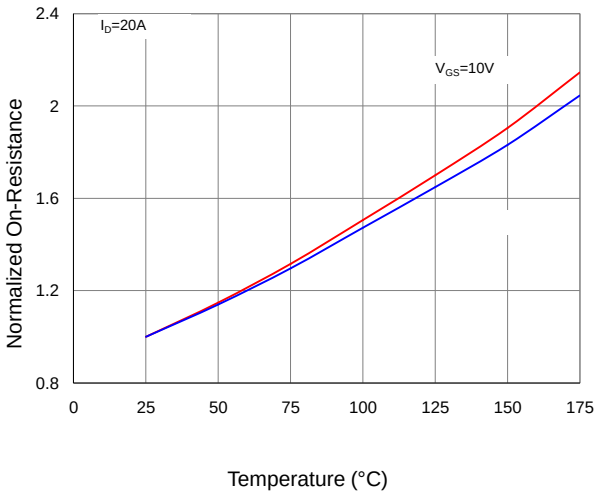
Figure 3. On-Resistance vs. Drain Current and Gate Voltage	Figure 4. Normalized On-Resistance vs. Junction Temperature
	

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

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

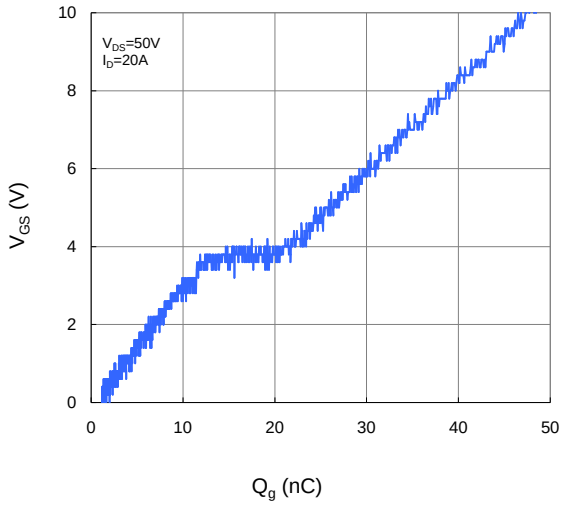


Figure 8. Typical Capacitance vs. Drain-to-Source Voltage

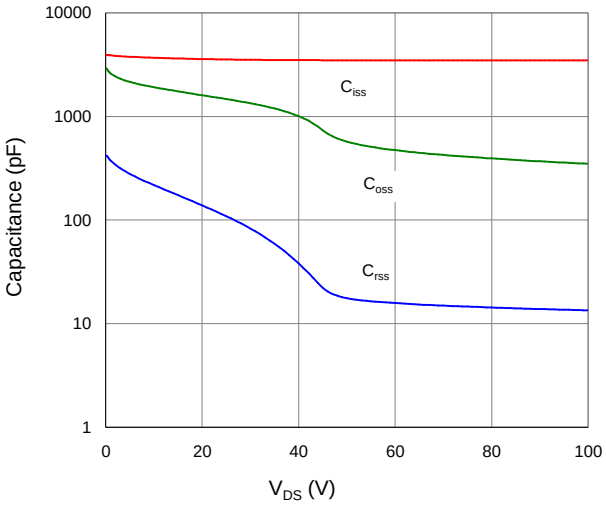


Figure 9. Maximum Safe Operating Area

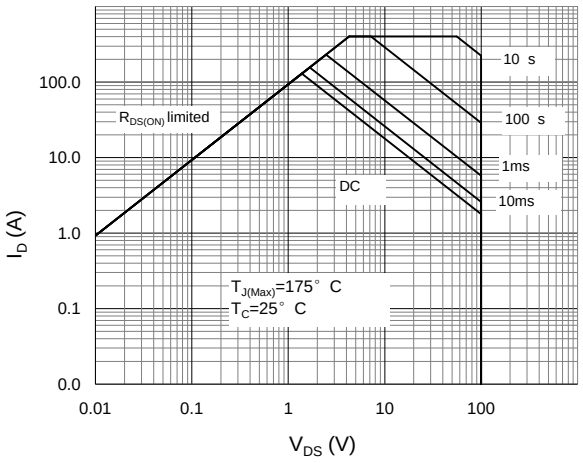


Figure 10. Maximun Drain Current vs. Case Temperature

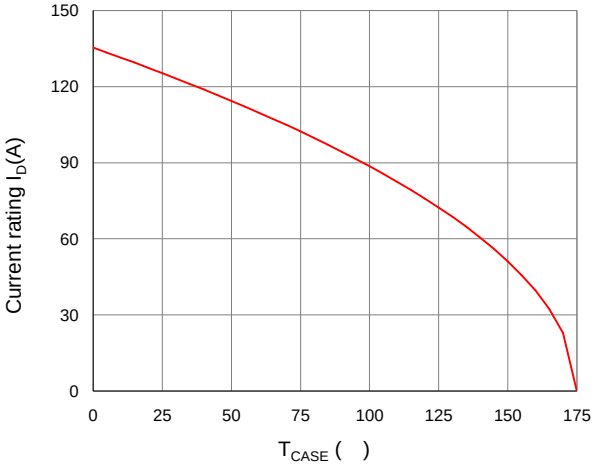
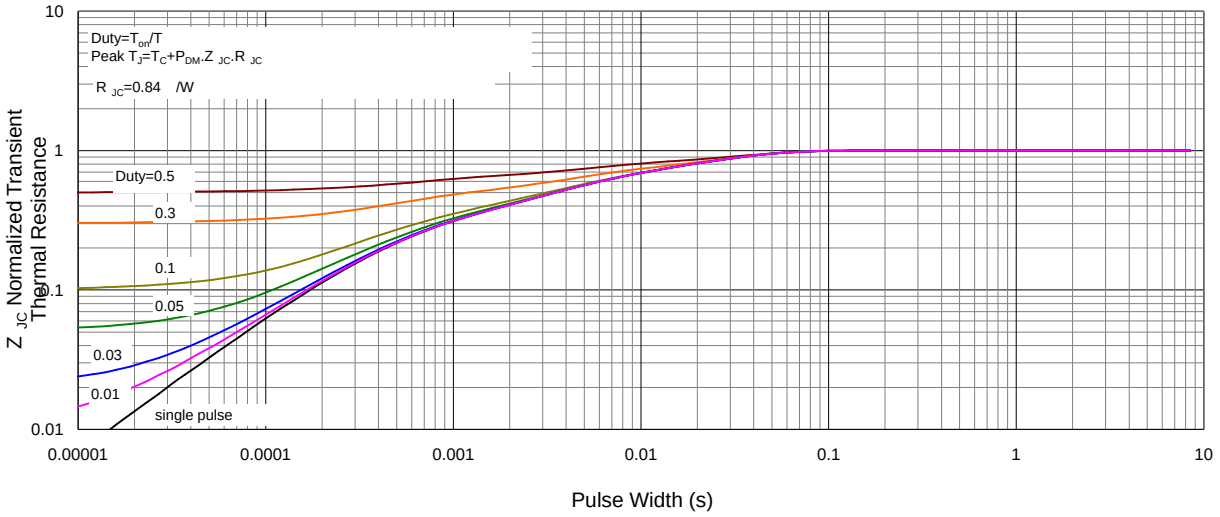
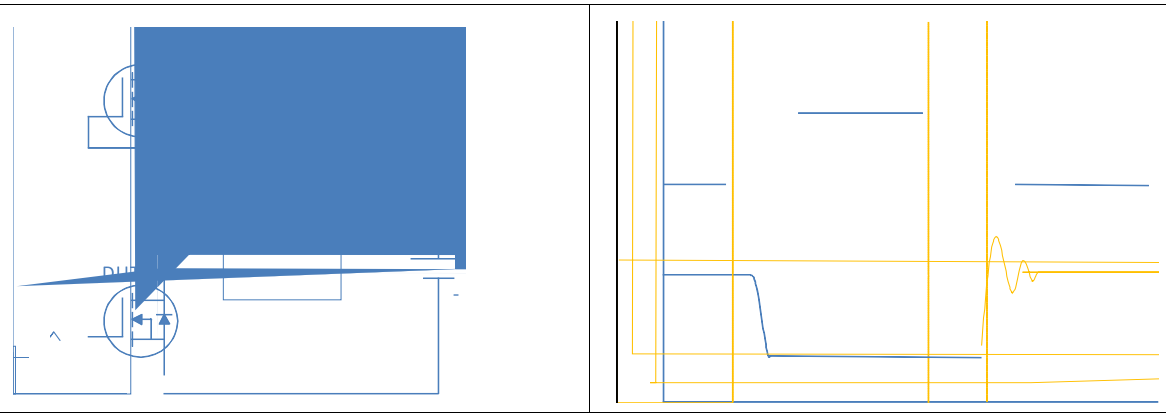


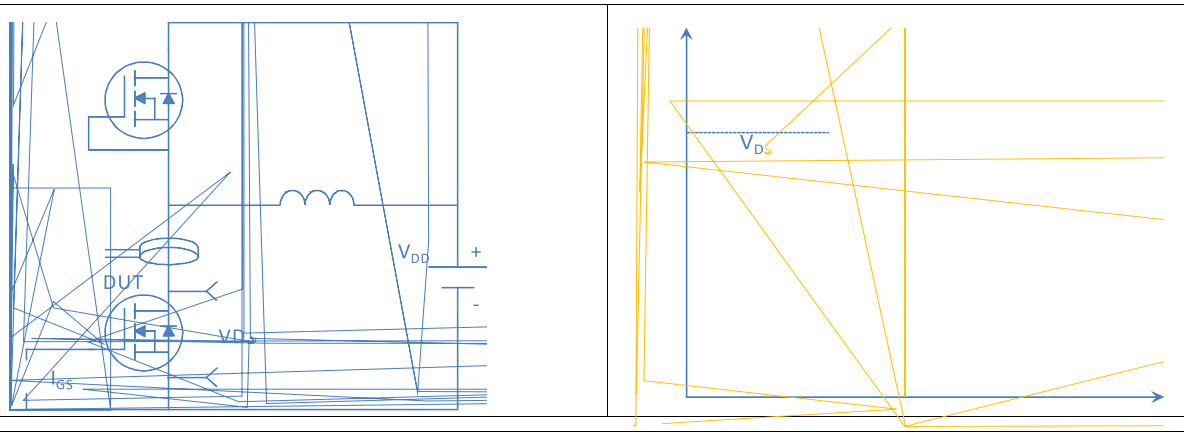
Figure 11. Normalized Maximum Transient Thermal Impedance, Junction-to-Case



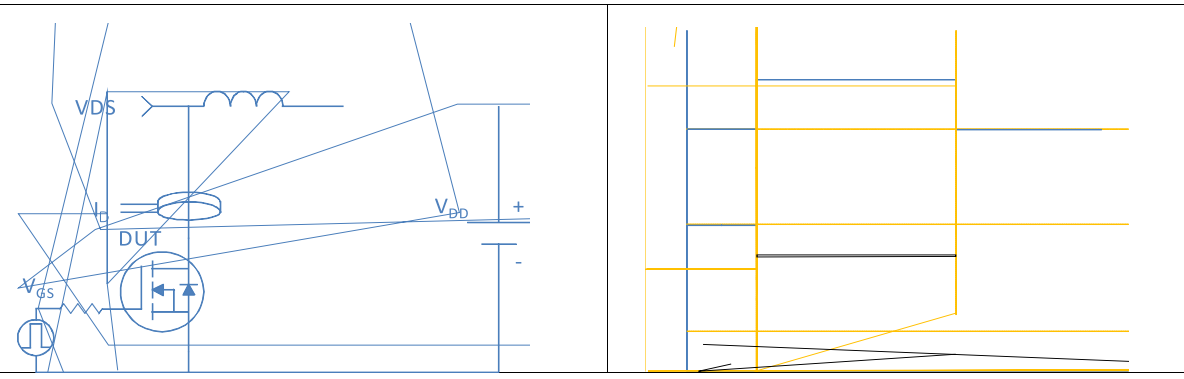
Inductive switching Test



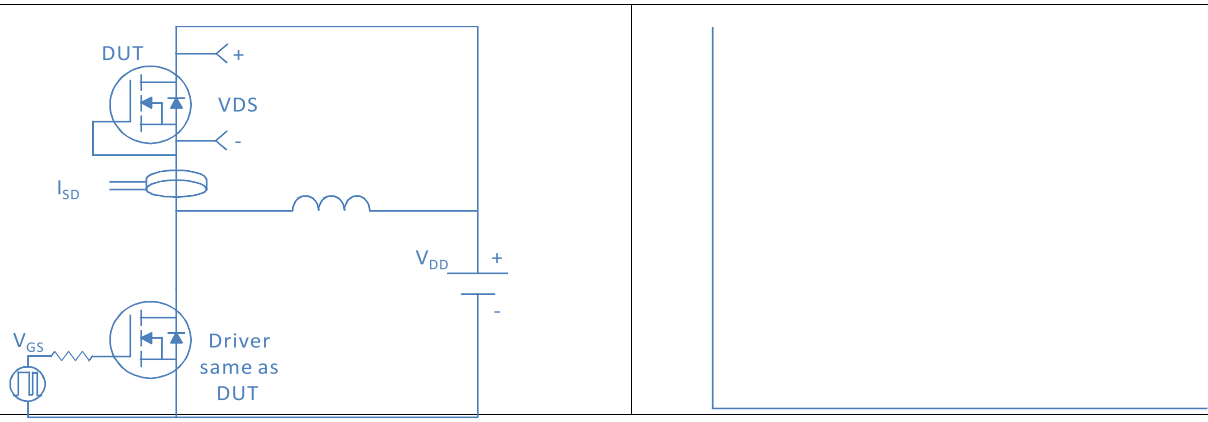
Gate Charge Test



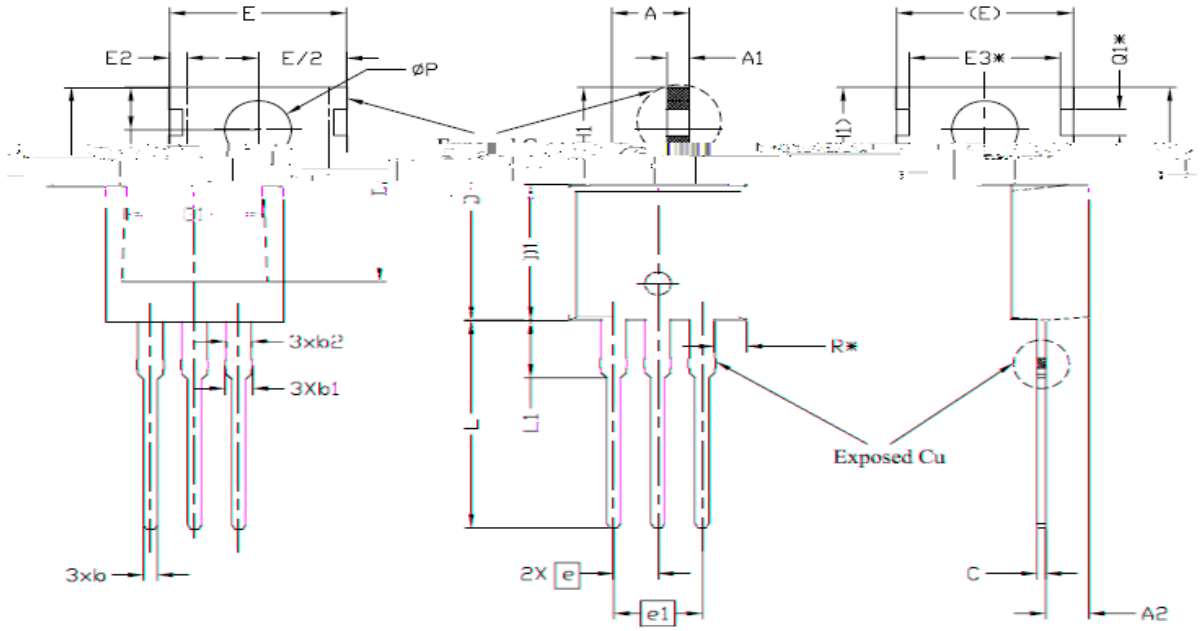
Uclamped Inductive Switching (UIS) Test



Diode Recovery Test

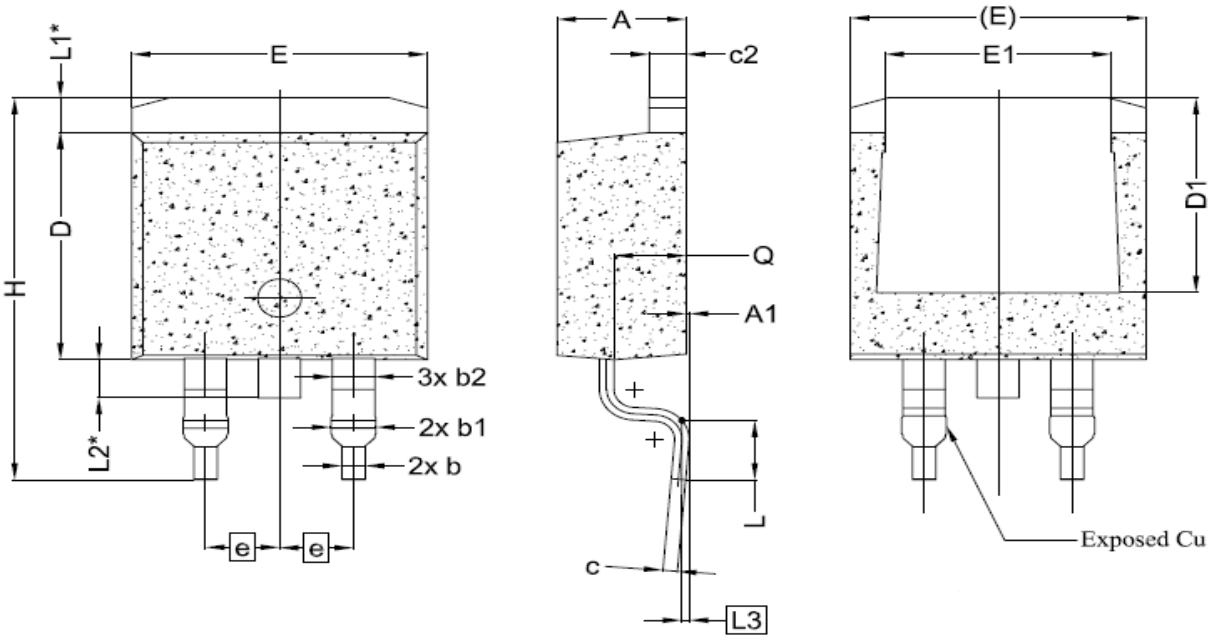


TO-220, 3 leads



SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4.30	4.50	4.70	
A1	2.25	2.40	2.55	
A2	2.05	2.20	2.35	
b	0.66	0.76	0.86	
b2	1.09	1.19	1.29	
b3	1.25	1.35	1.45	
c	0.40	0.50	0.60	
D	14.20	14.50	14.80	5
D1	8.82	9.02	9.22	
D2	12.02	12.22	12.42	6
E	9.86	10.16	10.46	4,5
E1	8.06	8.26	8.46	6
E2			0.25	8
e		2.54BSC		
e1		5.08BSC		
H1	6.30	6.45	6.60	5,8
L	13.47	13.72	13.97	
L1	3.60	3.80	4.00	
øP	3.75	3.84	3.93	
Q	2.65	2.80	2.95	
Q1*		1.75REF		
R*		1.82REF		

TO-263, 3 leads



2,54 BSC			
4,61	15,00	15,88	H
2,78	2,32	2,79	L
1,35 REF			L1
1,50 REF			L2
0,25 BSC			L3
2,30	2,48	2,70	Q