100V N-Ch Power MOSFET

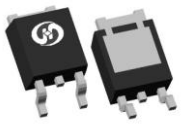
E

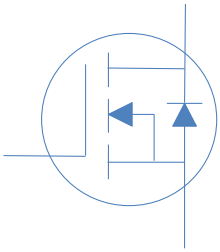
C

C

E

V_{DS}		100	V
$R_{DS(on),typ}$	V_{GS}=10V	4.8	m
$I_{D\ (Sillicon\ Limited)}$		115	A





Part Number	Package	Marking
HGD050N10A	TO-252	GD050N10A

Absolute Maximum Ratings at T_j

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	I_D	T_C	115	A
		T_C	81	
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	80	mJ
Power Dissipation	P_D	T_C	150	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to175	

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Case	R	1	
Thermal Resistance Junction-Ambient	R	46	

Electrical Characteristics at T_j

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	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	-	-	1	A
		V_{GS}=0V, V_{DS}=100V, 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=20A	-	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}		-	3490	-	
Output Capacitance	C_{oss}	V_{GS}=0V, V_{DS}=50V, f=1MHz	-	571	-	pF
Reverse Transfer Capacitance	C_{rss}		-	18	-	
Total Gate Charge	Q_g		-	47	-	
Gate to Source Charge	Q_{gs}	V_{DD}=50V, I_D=20A, V_{GS}=10V	-	10	-	nC
Gate to Drain (Miller) Charge	Q_{gd}		-	10	-	
Turn on Delay Time	$t_{d(on)}$		-		-	
		V_{DD}=50V, I_D=20A, V_{GS}=10V,	-	7	-	
		R_G=10 ,	-	25	-	
				5	-	

Reverse Diode Characteristics

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

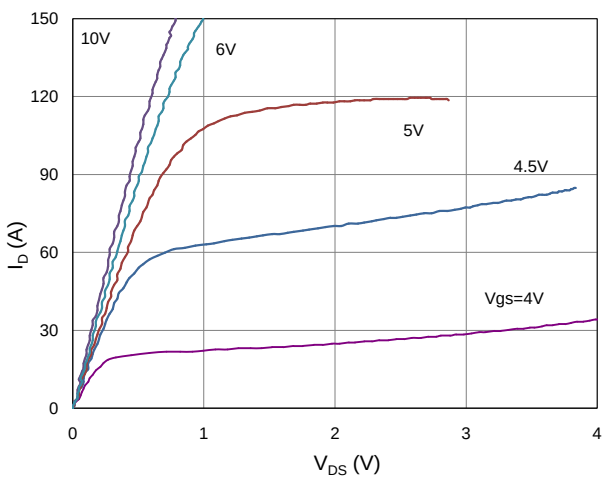


Figure 2. On-Resistance vs. Gate-Source Voltage

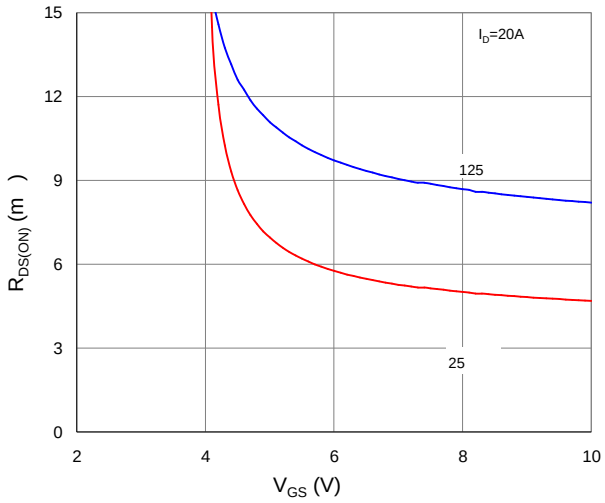


Figure 3. On-Resistance vs. Drain Current and Gate Voltage

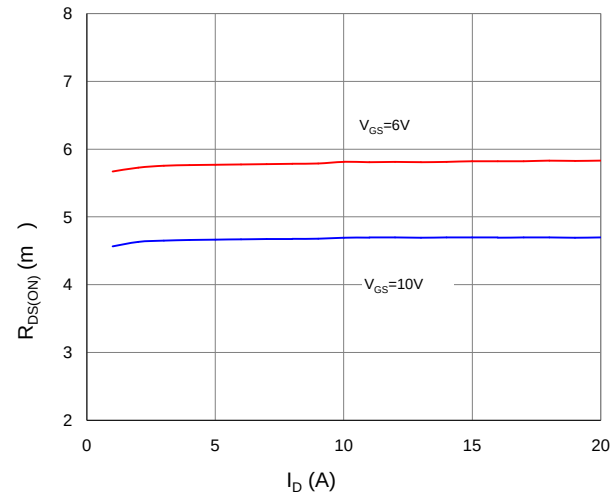


Figure 4. Normalized On-Resistance vs. Junction Temperature

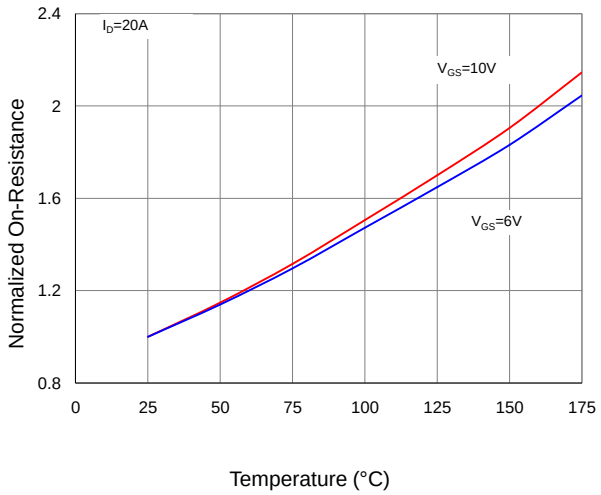


Figure 5. Typical Transfer Characteristics

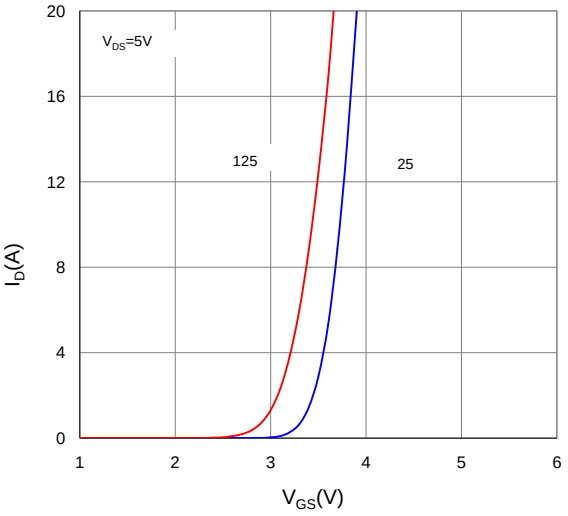


Figure 6. Typical Source-Drain Diode Forward Voltage

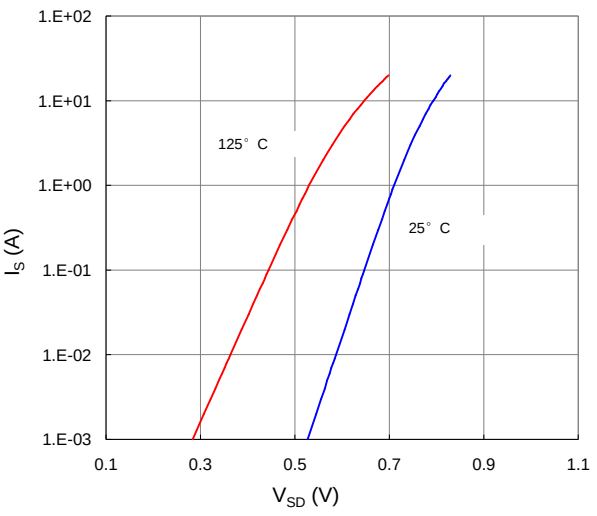
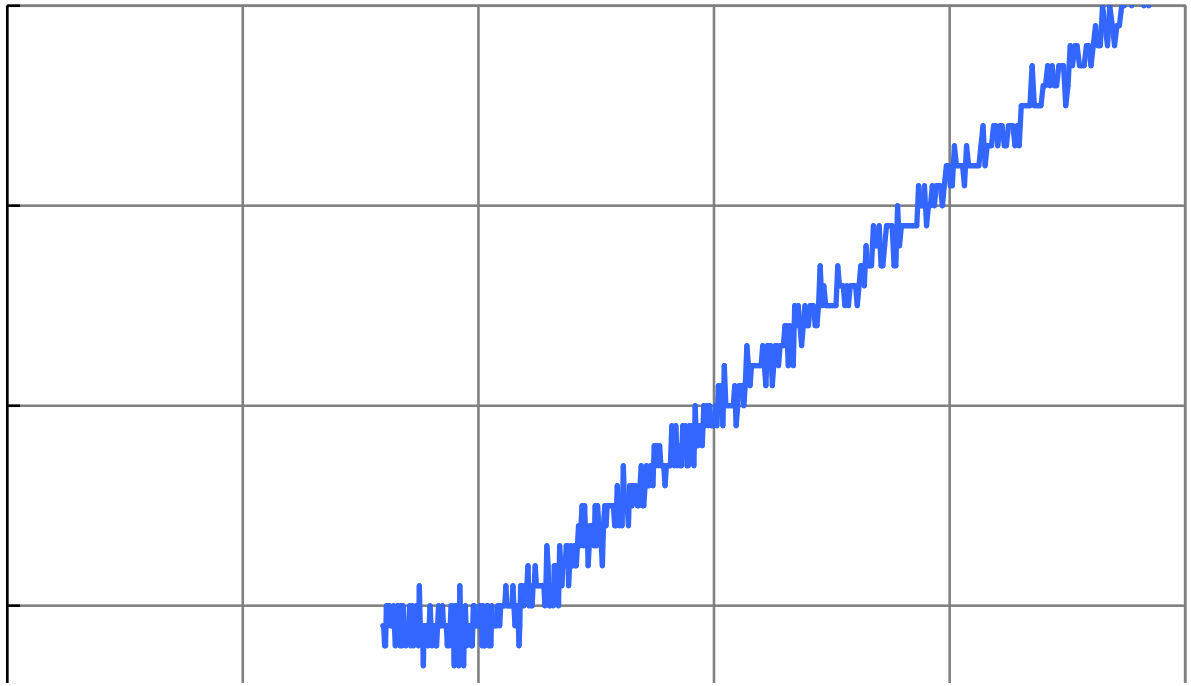
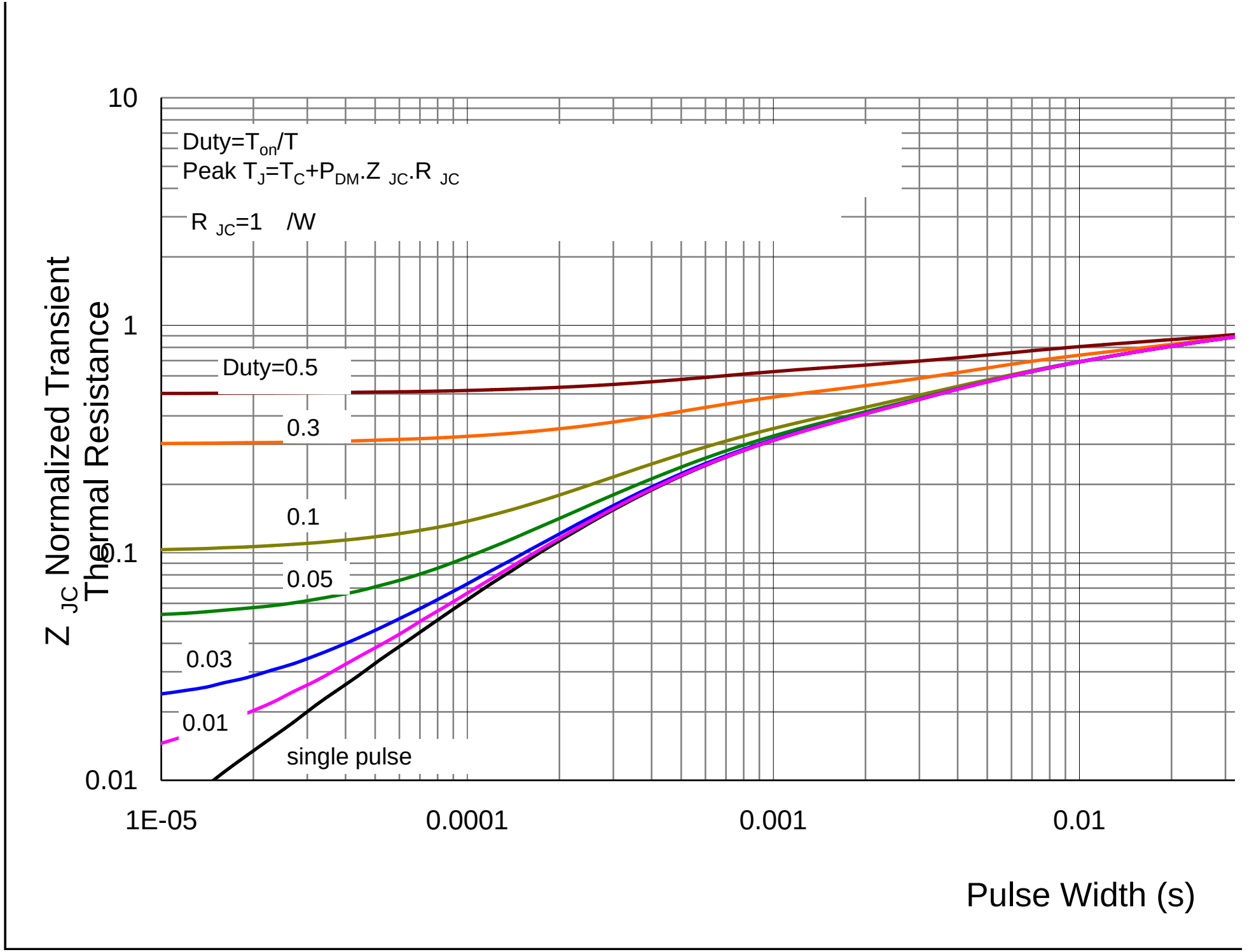
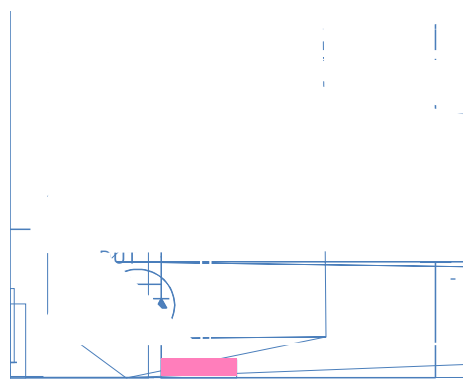
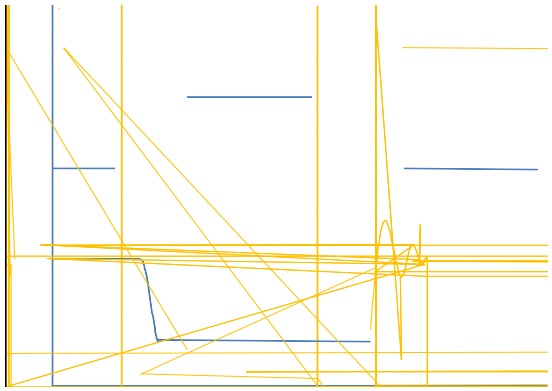


Figure 7. Typical Gate-Charge vs. Gate-to-Source Voltage	Figure 8.
	

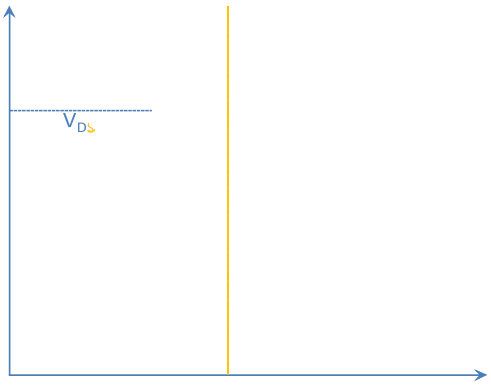

10
1
0.1
0.01
Duty=T_{on}/T
Peak $T_J=T_C+P_{DM}.Z_{JC}.R_{JC}$
R_{JC}=1 /W
Duty=0.5
0.3
0.1
0.05
0.03
0.01
single pulse
Z_{JC} Normalized Transient Thermal Resistance
1E-05
0.0001
0.001
0.01
Pulse Width (s)

Inductive switching Test

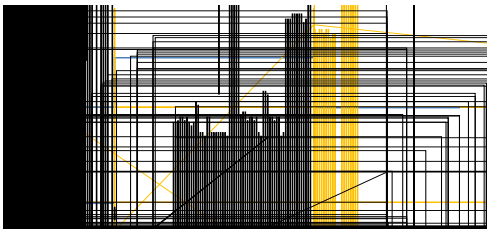


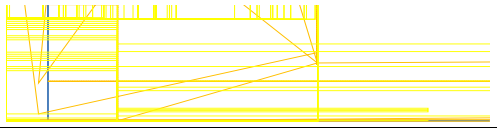


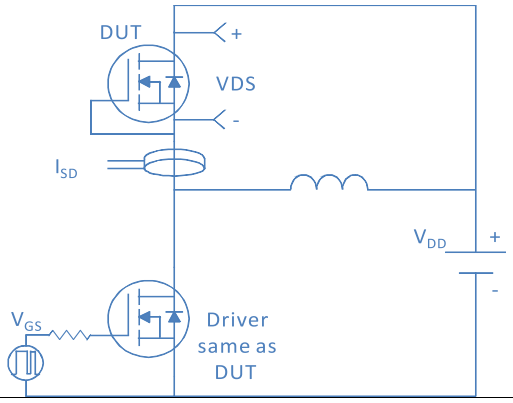
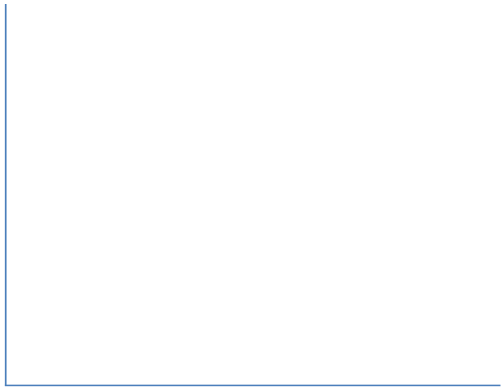
Gate Charge Test



Uclamped Inductive Switching (UIS) Test





Diode Recovery Test	
	

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