

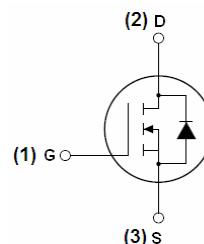
General Features

VDSS	RDS(ON) @ 10V (typ)	ID
650V	330mΩ	11A

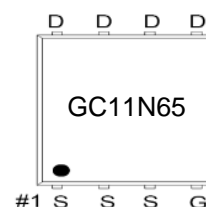
- Optimized for high speed smooth switching
- Enhanced Body diode dv/dt capability
- Enhanced Avalanche Ruggedness
- 100% UIS Tested, 100% Rg Tested
- RoHS Compliant

Application

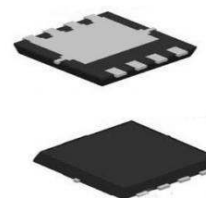
- DC-DC Conversion
- Hard Switching and High Speed Circuit
- Power Tools
- UPS
- SSR



Schematic diagram



Marking and pin assignment



DFN 5x6-8L

Ordering Information

Part Number	Marking	Case	Packaging
GC11N65D5	GC11N65	DFN5*6-8L	5000pcs/Reel

Absolute Maximum Ratings at $T_J=25^{\circ}\text{C}$ (unless otherwise specified)

Parameter	Symbol	Conditions	Value	Unit
Continuous Drain Current (Silicon Limited)	I_D	$T_C=25^{\circ}\text{C}$	11	A
		$T_C=100^{\circ}\text{C}$	6	
Drain to Source Voltage	V_{DS}	-	650	V
Gate to Source Voltage	V_{GS}	-	± 30	V
Pulsed Drain Current	I_{DM}	-	33	A
Avalanche Energy, Single Pulse	E_{AS}	$L=10\text{ mH}, T_C=25^{\circ}\text{C}$	211	mJ
Power Dissipation	P_D	$T_C=25^{\circ}\text{C}$	78	W
Operating and Storage Temperature	T_J, T_{stg}	-	-55 to 150	$^{\circ}\text{C}$

Absolute Maximum Ratings

Parameter	Symbol	Max	Unit
Thermal Resistance Junction-Case	$R_{\theta JC}$	1.6	$^{\circ}\text{C}/\text{W}$
Thermal Resistance Junction-Ambient	$R_{\theta JA}$	62	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics at $T_j=25^\circ\text{C}$ (unless otherwise specified)

Static Characteristics						
Parameter	Symbol	Conditions	Value			Unit
			min	typ	max	
Drain to Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	650	-	-	V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{GS}=V_{DS}, I_D=250\mu A$	2.5	-	4	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{GS}=0V, V_{DS}=650V, T_j=25^\circ\text{C}$	-	-	1	μA
		$V_{GS}=0V, V_{DS}=650V, T_j=100^\circ\text{C}$	-	-	100	
Gate to Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30V, V_{DS}=0V$	-	-	± 100	nA
Drain to Source on Resistance	$R_{DS(on)}$	$V_{GS}=10V, I_D=5.5A$	-	330	360	$m\Omega$
Transconductance	g_{fs}	$V_{DS}=10V, I_D=5.5A$	-	-	-	S

Dynamic Characteristics						
Input Capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=50V, f=1\text{MHz}$	-	901	-	pF
Output Capacitance	C_{oss}		-	50	-	
Reverse Transfer Capacitance	C_{rss}		-	5.5	-	
Total Gate Charge	Q_g	$V_{DD}=520V, I_D=11A, V_{GS}=0V$	-	21	-	nC
Gate to Source Charge	Q_{gs}		-	4.5	-	
Gate to Drain (Miller) Charge	Q_{gd}		-	7	-	
Turn on Delay Time	$t_{d(on)}$	$V_{DD}=400V, I_D=11A, V_{GS}=10V, R_G=25\Omega,$	-	42	-	ns
Rise time	t_r		-	20	-	
Turn off Delay Time	$t_{d(off)}$		-	123	-	
Fall Time	t_f		-	6.4	-	

Reverse Diode Characteristics						
Diode Forward Voltage	V_{SD}	$V_{GS}=0V, I_F=11A$	-	-	1.4	V
Reverse Recovery Time	t_{rr}	$V_R=400V, I_F=11A, diF/dt = 100A/\mu s$	-	280	-	ns
Reverse Recovery Charge	Q_{rr}		-	2.8	-	nC

Typical Electrical And Thermal Characteristics

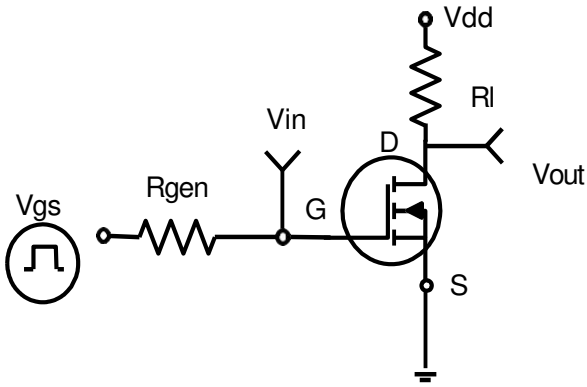


Figure 1. Switching Test Circuit

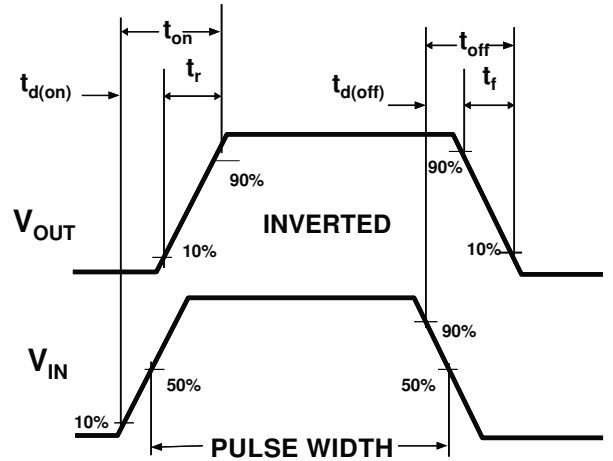


Figure 2. Switching Waveforms

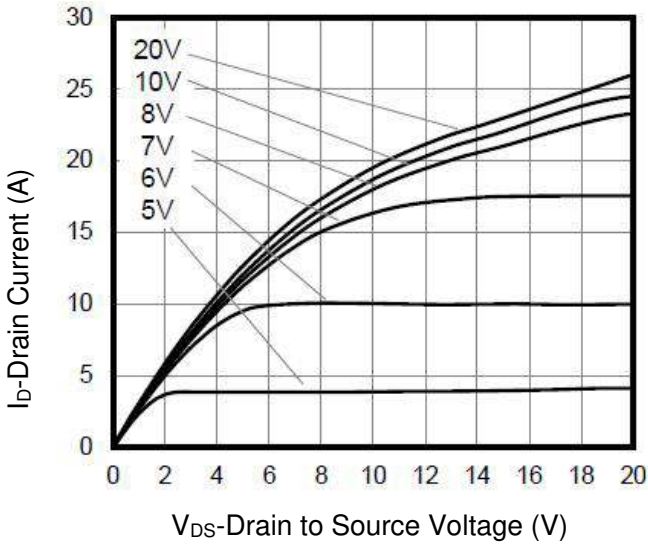


Figure 3. Output Characteristics

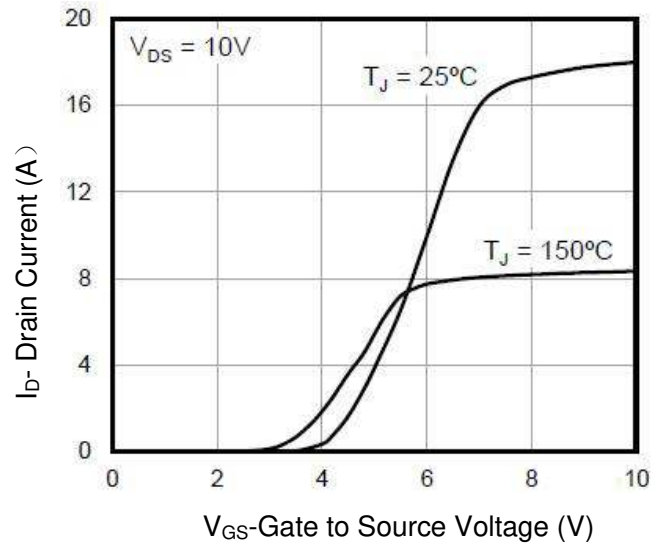


Figure 4. Transfer Characteristics

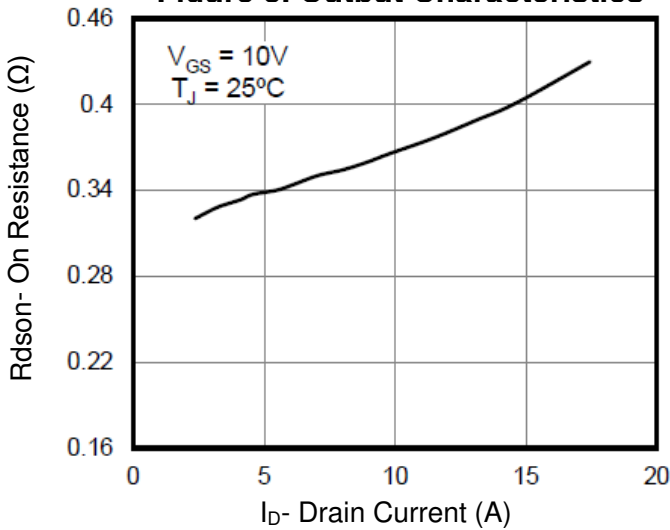


Figure 5. On Resistance vs. Drain Current

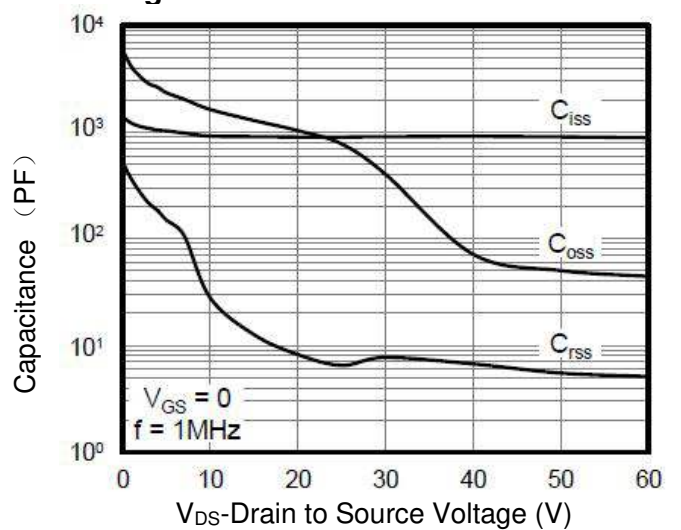


Figure 6. Capacitance

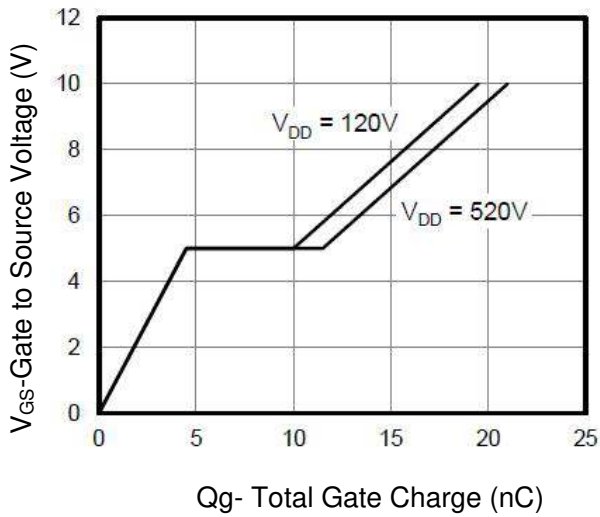


Figure 7. Gate Charge

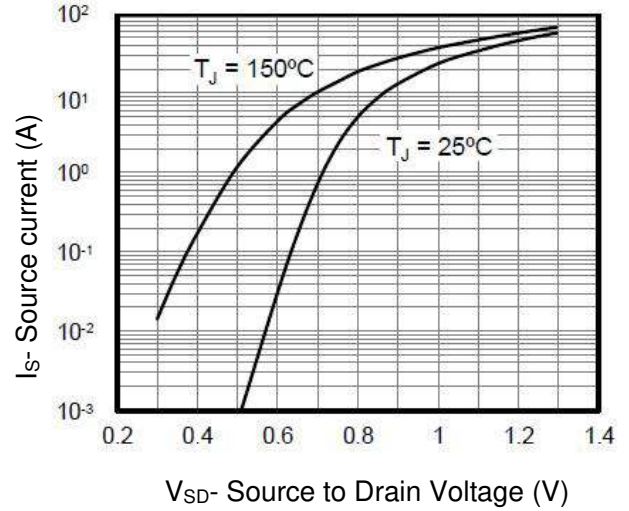


Figure 8. Body Diode Forward Voltage

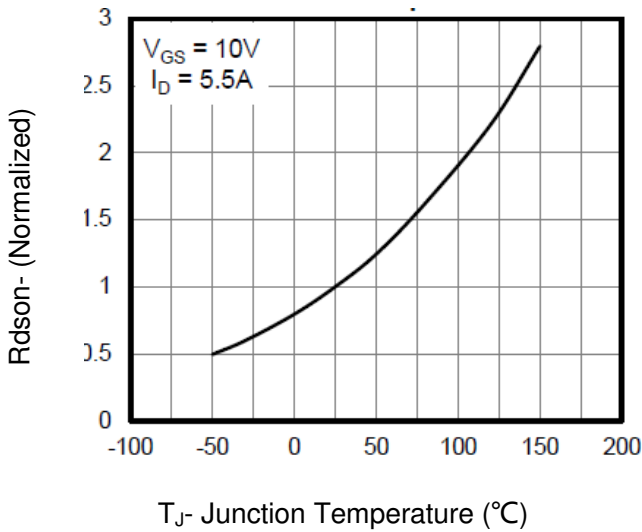


Figure 9. Rdson vs T_J

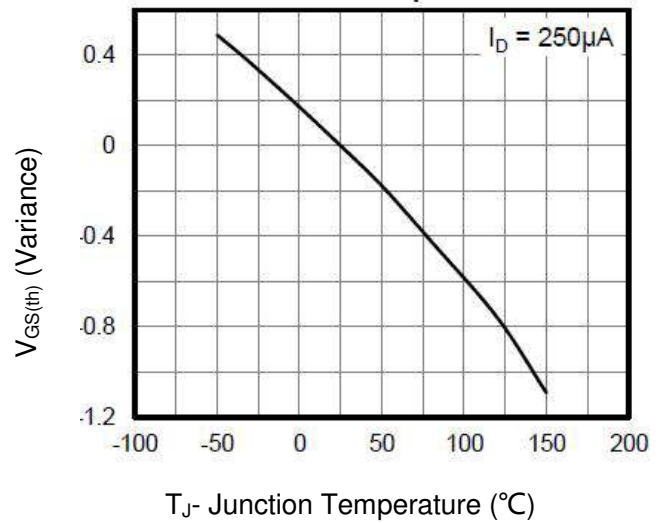


Figure 10. V_{th} vs T_J

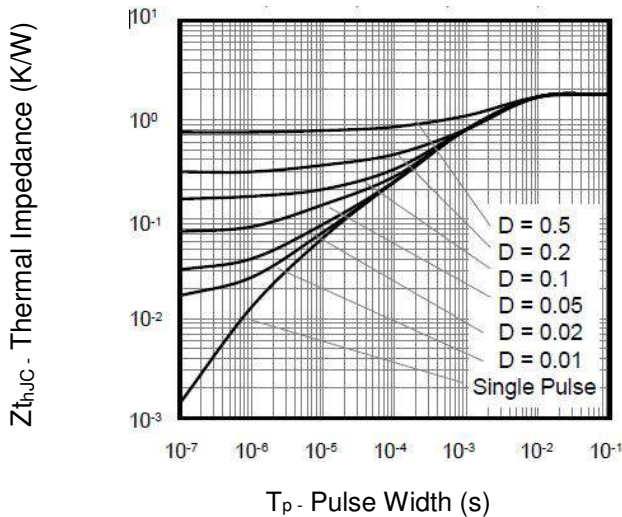


Figure 11. Transient Thermal Impedance (TO-252, TO-220)

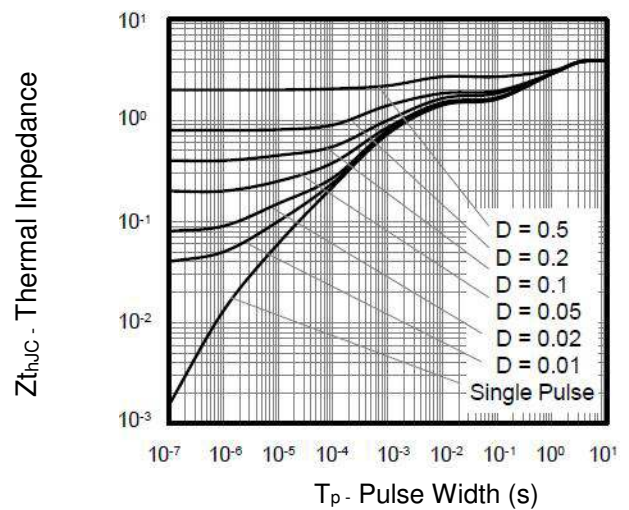
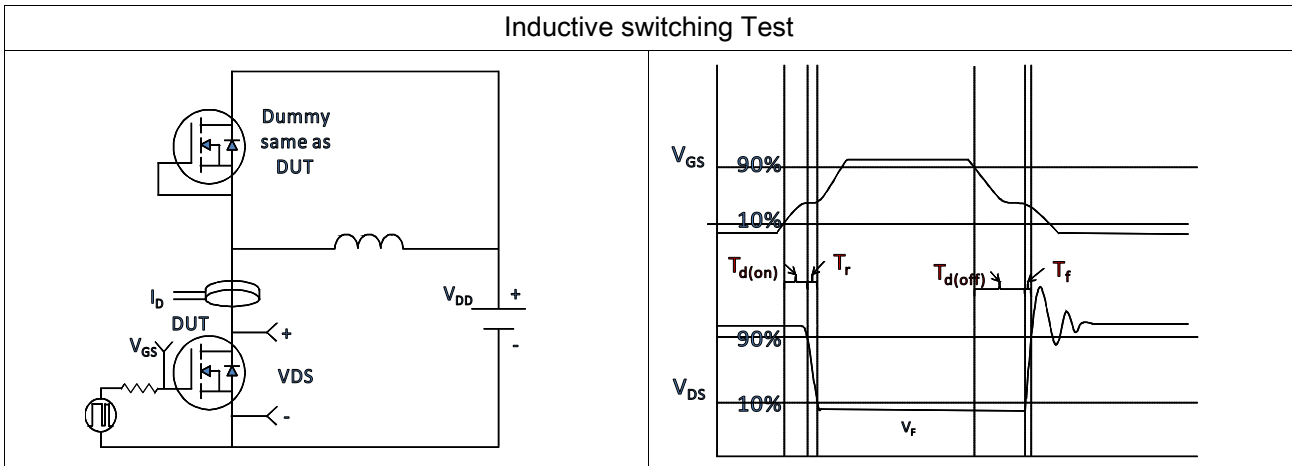
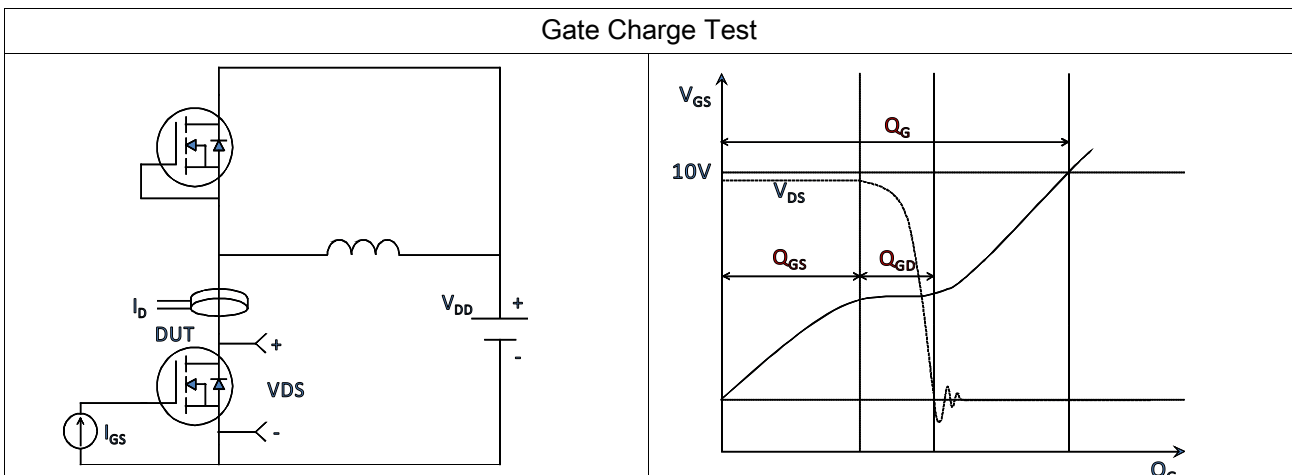


Figure 12. Transient Thermal Impedance (TO-220F)

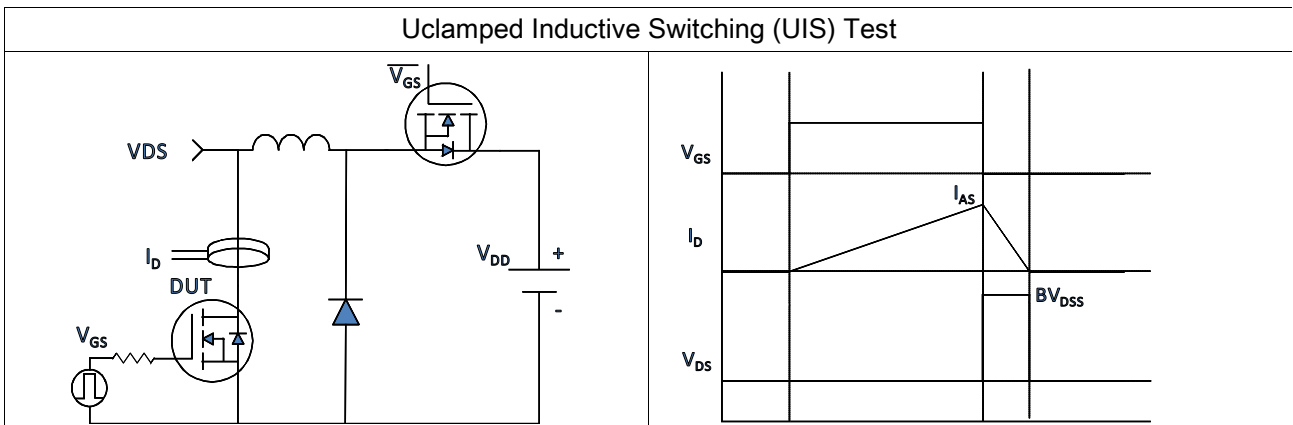
Inductive switching Test



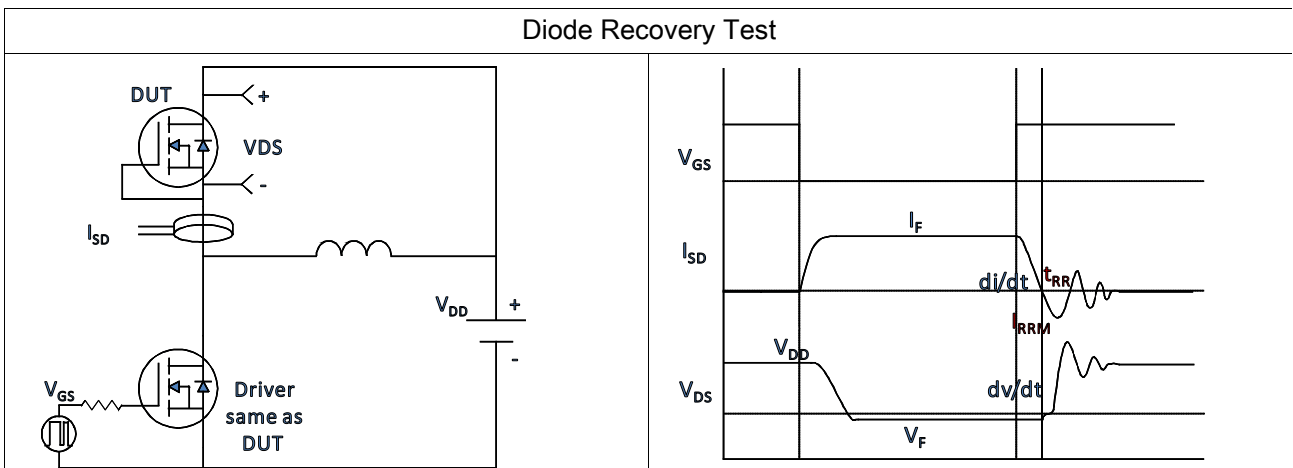
Gate Charge Test



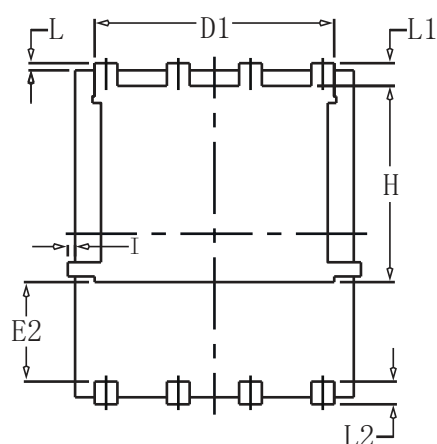
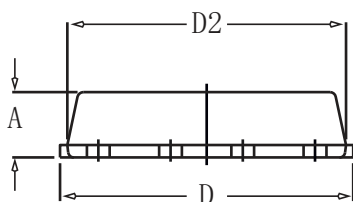
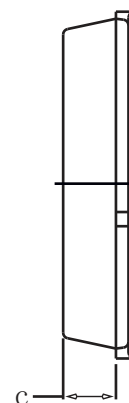
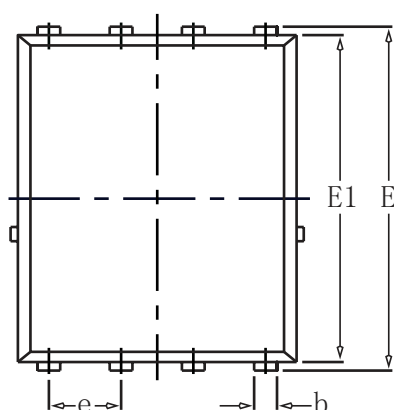
Uclamped Inductive Switching (UIS) Test



Diode Recovery Test



DFN5X6-8L Package information



SYMBOL	COMMON			
	MM		INCH	
	MIN	MAX	MIN	MAX
A	1.03	1.17	0.0406	0.0461
b	0.34	0.48	0.0134	0.0189
c	0.824	0.970	0.0324	0.0382
D	4.80	5.40	0.1890	0.2126
D1	4.11	4.31	0.1618	0.1697
D2	4.80	5.00	0.1890	0.1969
E	5.59	6.15	0.2343	0.2421
E1	5.65	5.85	0.2224	0.2303
E2	1.60	-	0.0630	-
e	1.27 BSC		0.05 BSC	
L	0.05	0.25	0.0020	0.0098
L1	0.38	0.50	0.0150	0.0197
L2	0.38	0.50	0.0150	0.0197
H	3.30	3.50	0.1299	0.1378
I	-	0.18	-	0.0070