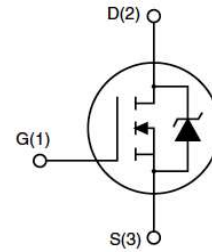


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Features

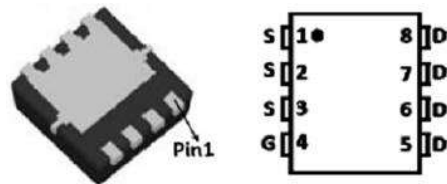
- 30V,120A
- $R_{DS(ON)} = 2.4\text{ m}\Omega$ (Typ.) @ $V_{GS} = 10V$
- $R_{DS(ON)} = 4.5\text{ m}\Omega$ (Typ.) @ $V_{GS} = 4.5V$
- Low Total Gate Charge
- Low Reverse Transfer Capacitance
- Improved dv/dt Capability
- Fast Switching Speed



Application

- Load Switch
- PWM Application

Package



PDFN3.3*3.3-8L

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

Symbol	Parameter	Max.	Units
V _{DSS}	Drain-Source Voltage	30	V
V _{GSS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current	T _C = 25°C	120
		T _C = 100°C	95
I _{DM}	Pulsed Drain Current ^{note1}	570	A
P _D	Power Dissipation	T _C = 25°C	45
R _{θJC}	Thermal Resistance, Junction to Case	2.5	°C/W
R _{θJA}	Thermal Resistance, Junction to Ambient	60	°C/W
T _J , T _{STG}	Operating and Storage Temperature Range	-55 to +175	°C

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

Parameter	Symbol	Test Conditions	Value			Unit
			Min.	Typ.	Max.	
Static						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30	--	--	V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V, T_J = 25^\circ\text{C}$	--	--	1	μA
		$V_{DS} = 30V, V_{GS} = 0V, T_J = 55^\circ\text{C}$	--	--	5	
Gate-Source Leakage	I_{GSS}	$V_{GS} = \pm 20V$	--	--	± 100	nA
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.7	2.4	V
Drain-Source On-Resistance (Note3)	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 30A$	--	2.4	3.2	$m\Omega$
		$V_{GS} = 4.5V, I_D = 20A$	--	4.5	6.2	$m\Omega$
Forward Transconductance (Note3)	g_{fs}	$V_{DS} = 10V, I_D = 20A$	20.8	--	--	S
Dynamic						
Input Capacitance	C_{iss}	$V_{GS} = 0V,$ $V_{DS} = 15V,$ $f = 1.0\text{MHz}$	--	5471	--	pF
Output Capacitance	C_{oss}		--	1628	--	
Reverse Transfer Capacitance	C_{rss}		--	1026	--	
Total Gate Charge	Q_g	$V_{DD} = 15V, I_D = 50A,$ $V_{GS} = 10V$	--	98	--	nC
Gate-Source Charge	Q_{gs}		--	11	--	
Gate-Drain Charge	Q_{gd}		--	21	--	
Turn-on Delay Time	$t_{d(on)}$	$V_{DD} = 15V, I_D = 50A,$ $R_G = 3\Omega$	--	17	--	ns
Turn-on Rise Time	t_r		--	41	--	
Turn-off Delay Time	$t_{d(off)}$		--	55	--	
Turn-off Fall Time	t_f		--	66	--	
Drain-Source Body Diode Characteristics						
Continuous Body Diode Current	I_S	$T_C = 25^\circ\text{C}$	--	--	1Q0	A
Pulsed Diode Forward Current	I_{SM}		--	--	520	
Body Diode Voltage	V_{SD}	$T_J = 25^\circ\text{C}, I_{SD} = 30A, V_{GS} = 0V$	--	--	1.2	V
Reverse Recovery Time	t_{rr}	$I_F = 30A,$ $di_F/dt = 100A/\mu s$	--	27	--	ns
Reverse Recovery Charge	Q_{rr}		--	25	--	nC

Notes

1. Repetitive Rating: Pulse Width limited by maximum junction temperature
2. $V_{DD} = 30V, R_G = 25\Omega, L = 0.3\text{mH}$, Starting $T_J = 25^\circ\text{C}$
3. Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 1\%$

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Typical Performance Characteristics

Figure 1. Output Characteristics

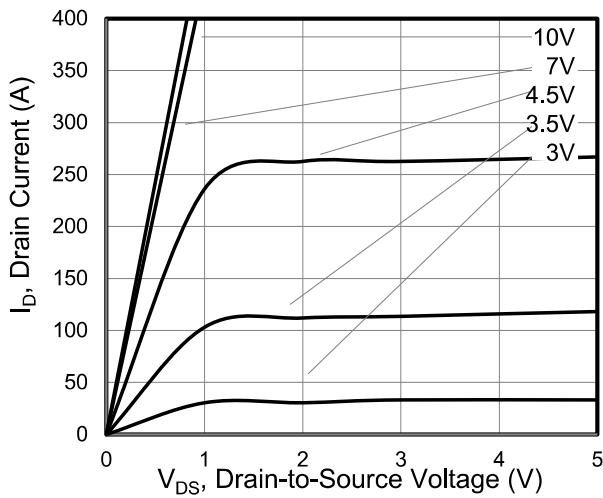


Figure 2. Transfer Characteristics

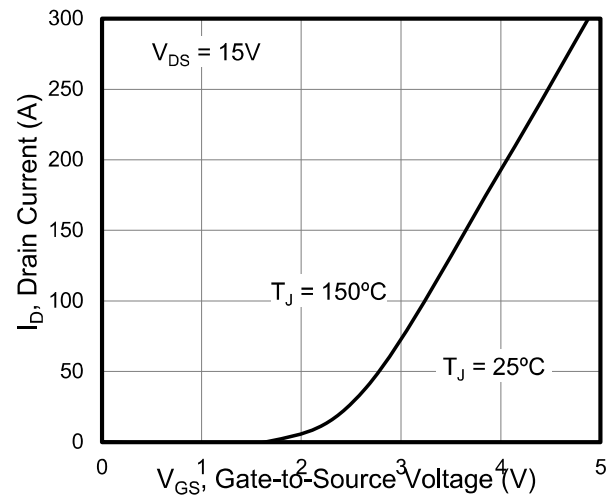


Figure 3. On-Resistance vs. Drain Current

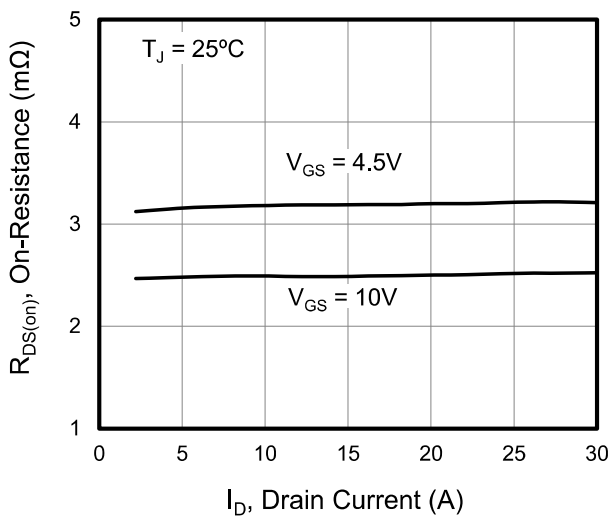


Figure 4. Capacitance

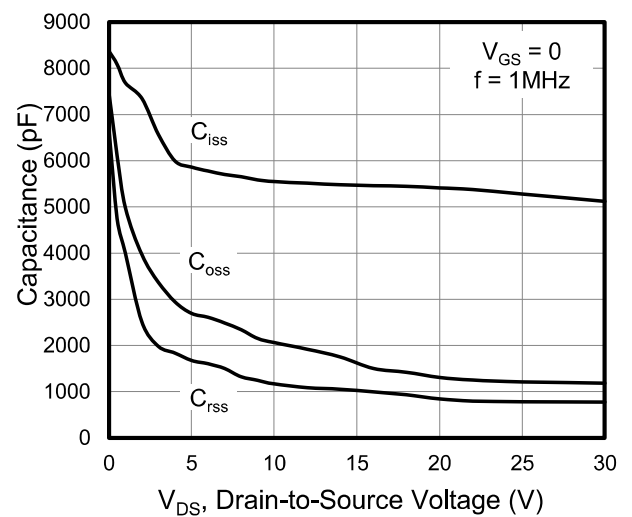


Figure 5. Gate Charge

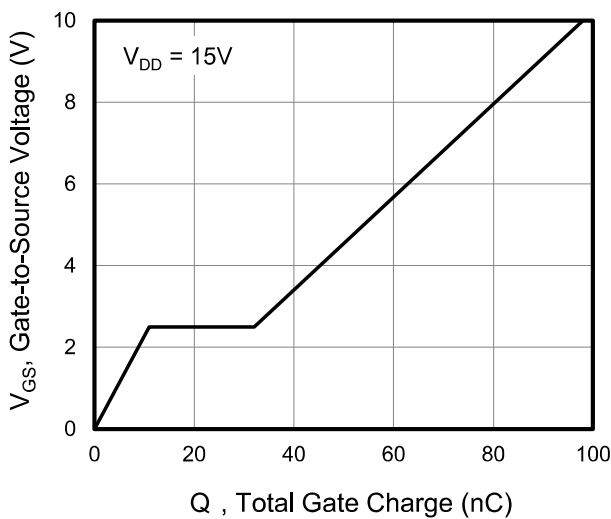
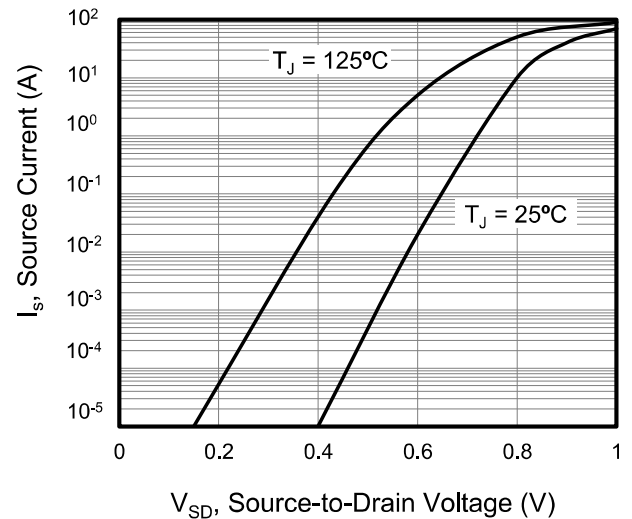


Figure 6. Body Diode Forward Voltage



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Figure 7. On-Resistance vs. Junction Temperature

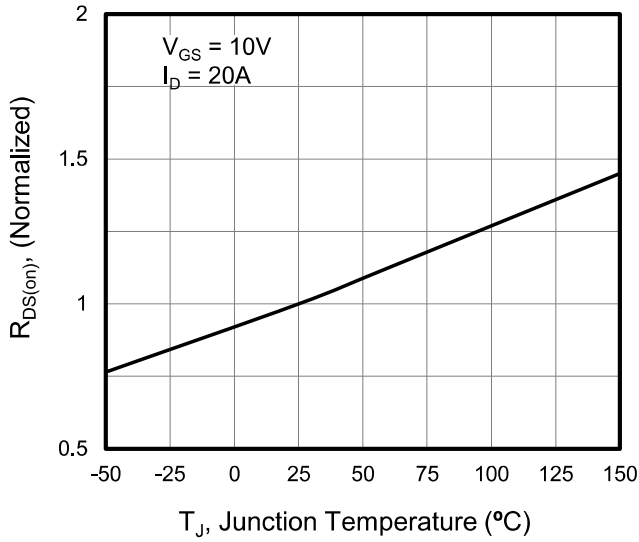


Figure 8. Threshold Voltage vs. Junction Temperature

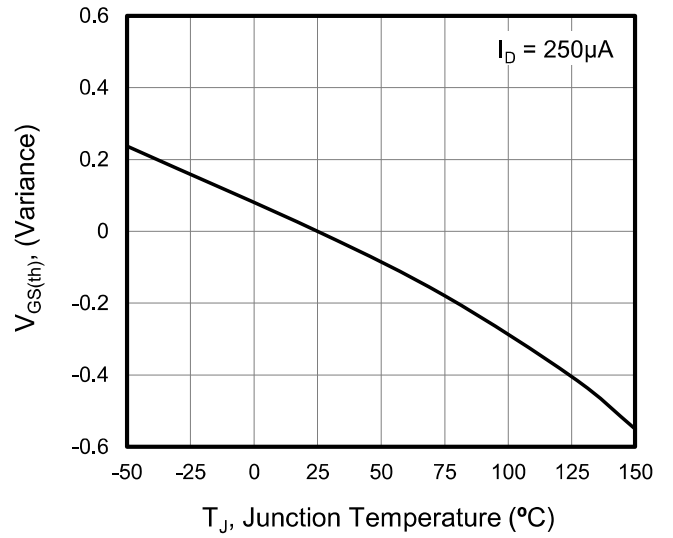


Figure 9. Transient Thermal Impedance

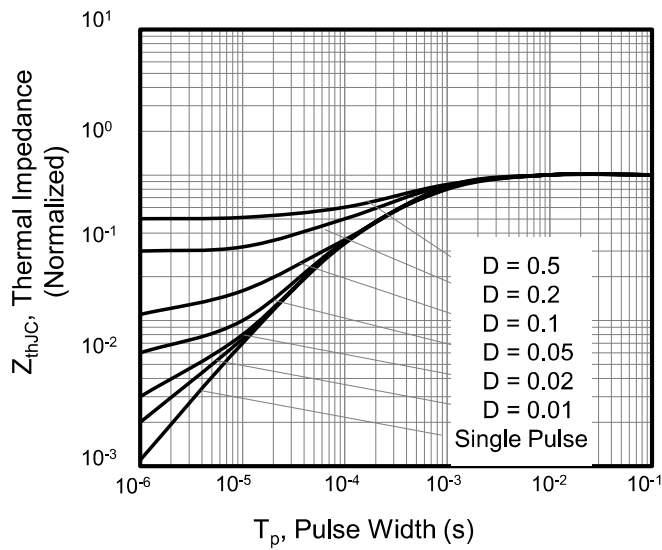
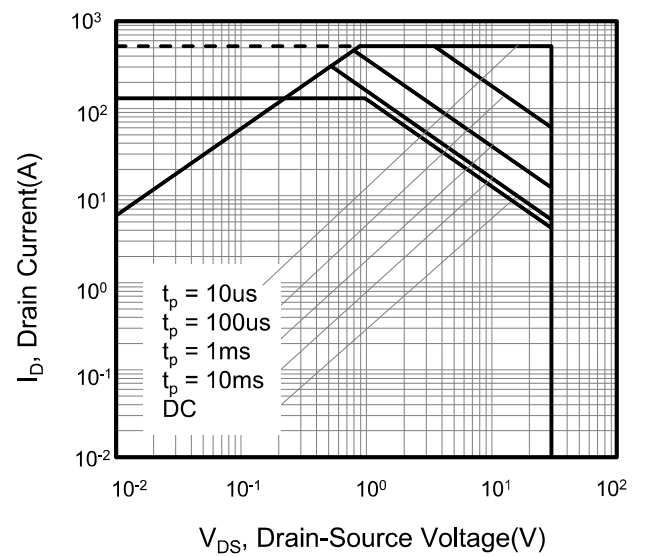


Figure 10. Safe operation area



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Figure 1: Gate Charge Test Circuit and Waveform

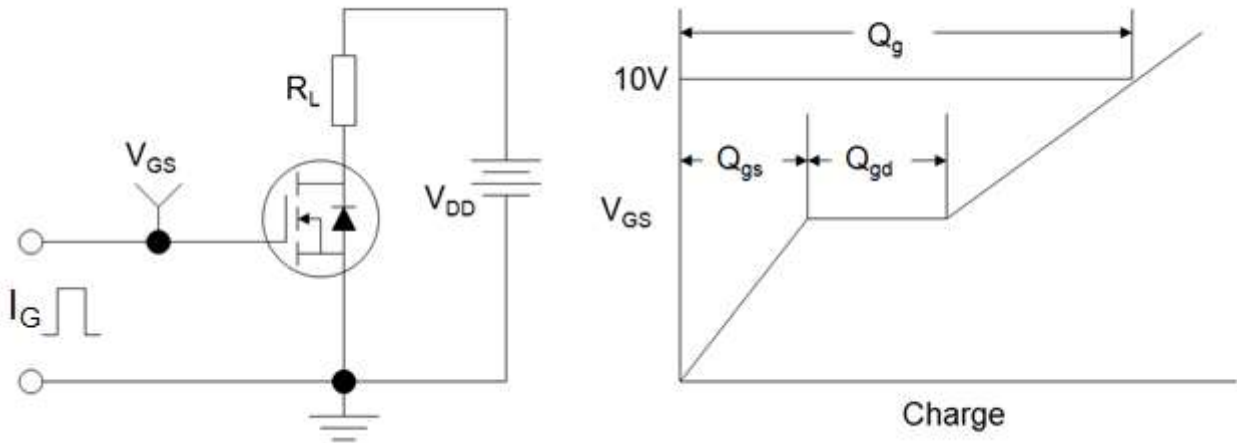


Figure 2: Resistive Switching Test Circuit and Waveform

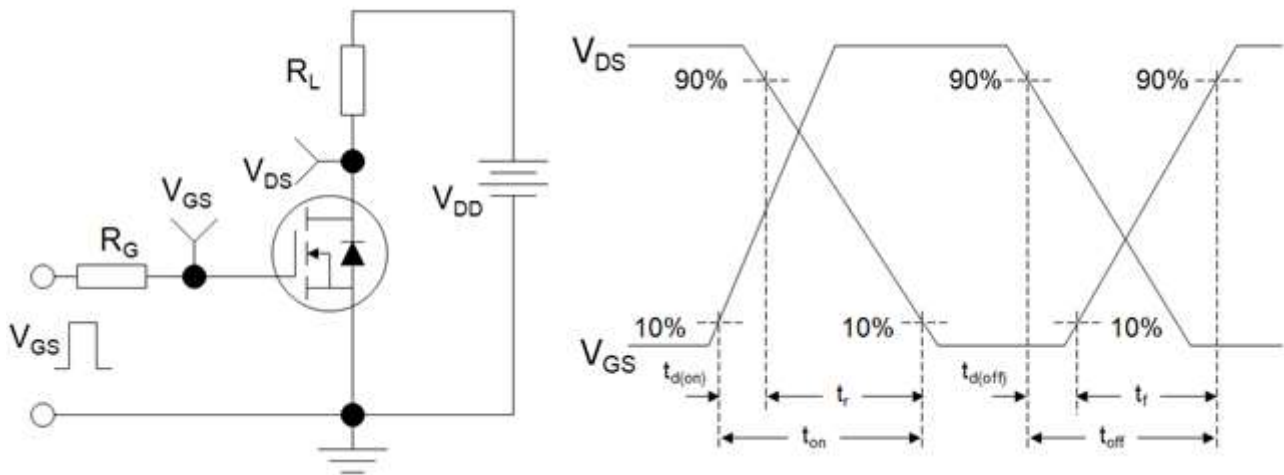
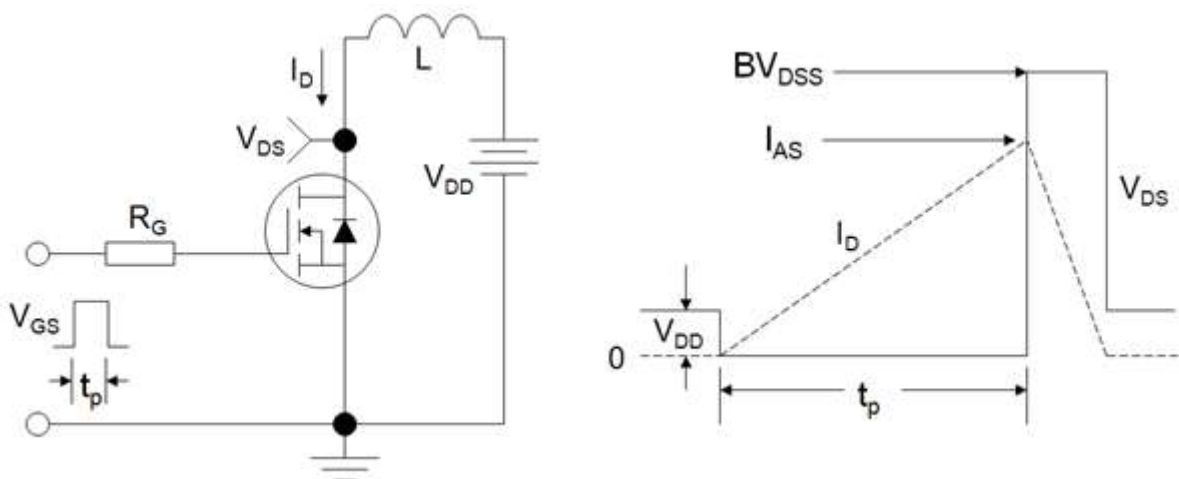


Figure 3: Unclamped Inductive Switching Test Circuit and Waveform



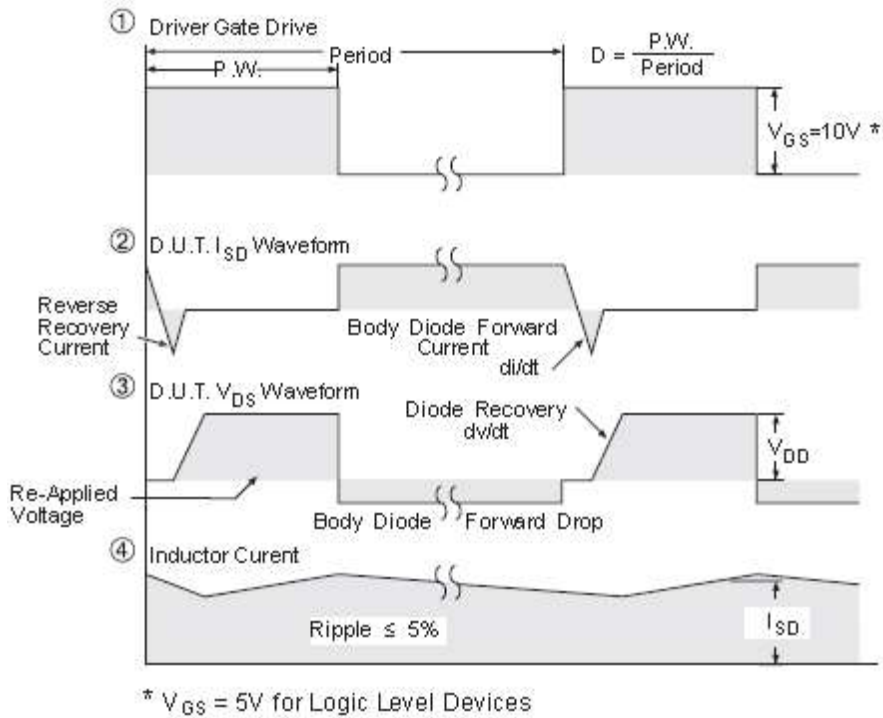
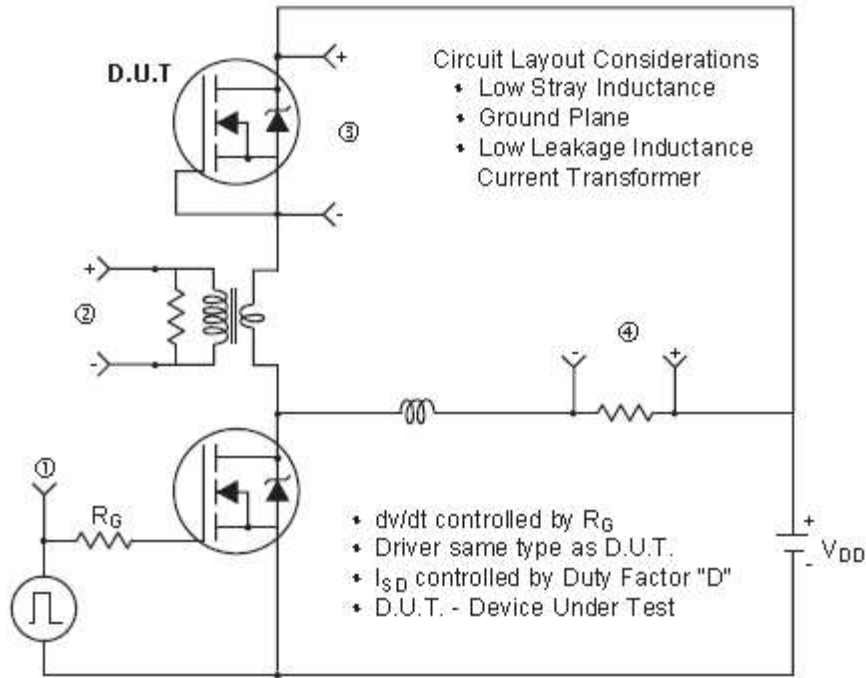
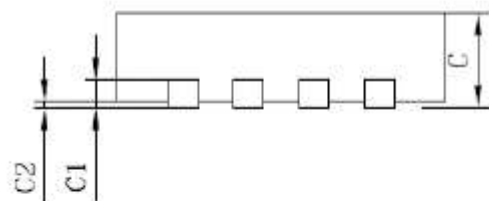
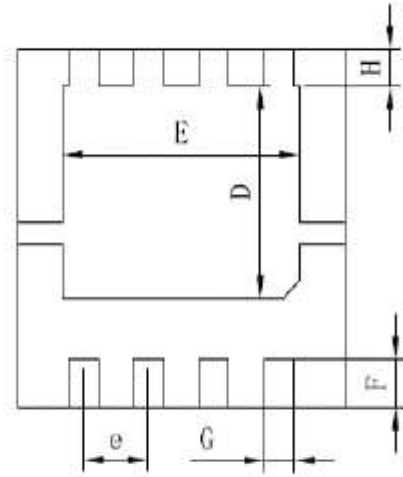
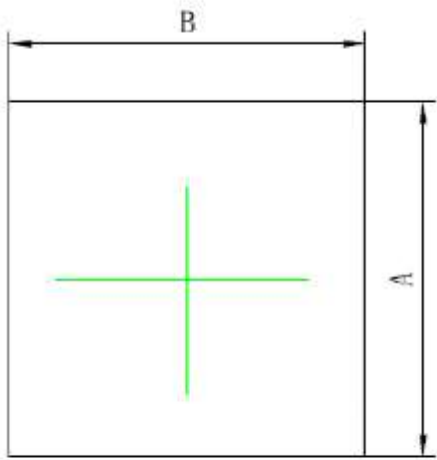


Figure 4: Peak Diode Recovery dv/dt Test Circuit & Waveforms (For N-channel)

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Package Mechanical Data



A	B	C	C1
3.25±0.05	3.25±0.05	0.8±0.05	0.2±0.02
C2	D	E	F
0.05Max	1.9±0.1	2.35±0.15	0.45±0.05
G	H	e	
0.3±0.05	0.35±0.05	0.65±0.05	
单位: mm			