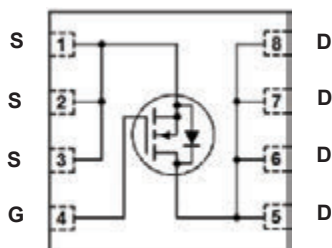
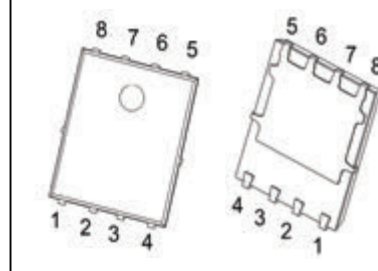


■ Features

- $V_{DS} = 100\text{ V}$
- I_D (at $V_{GS}=10\text{ V}$) = 100 A
- $R_{DS(ON)}$ (at $V_{GS} = 10\text{ V}$) < 4.2 m Ω
- $R_{DS(ON)}$ (at $V_{GS} = 4.5\text{ V}$) < 6.0 m Ω
- 100% UIS Tested
- 100% R_g Tested



PDFN5x6-8(PDFNWB5x6-8L)



■ Absolute Maximum Ratings ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	$T_C = 25^\circ\text{C}$	A
		$T_C = 100^\circ\text{C}$	
Pulsed Drain Current (Note 2)	I_{DM}	320	
Continuous Drain Current	I_{DSM}	$T_A = 25^\circ\text{C}$	
		$T_A = 70^\circ\text{C}$	
Avalanche Current (Note 2)	I_{AS}	65	A
Avalanche Energy $L = 0.1\text{ mH}$ (Note 2)	E_{AS}	211	mJ
Thermal Resistance, Junction- to-Ambient (Note 5)	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Thermal Resistance, Junction- to-Case	$R_{\theta JC}$	0.58	
Power Dissipation (Note 4)	P_D	$T_C = 25^\circ\text{C}$	W
		$T_C = 100^\circ\text{C}$	
Power Dissipation (Note 5)	P_{DSM}	$T_A = 25^\circ\text{C}$	
		$T_A = 70^\circ\text{C}$	
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to 150	

Notes:

1. The maximum current rating is package limited.
2. Single pulse width limited by junction temperature $T_{J(MAX)}=150^\circ\text{C}$.
3. The $R_{\theta JA}$ is the sum of the thermal impedance from junction to case $R_{\theta JC}$ and case to ambient.
4. The power dissipation P_D is based on $T_{J(MAX)}=150^\circ\text{C}$, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
5. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$. The Power dissipation P_{DSM} is based on $R_{\theta JA}$ $t \leq 10\text{ s}$ and the maximum allowed junction temperature of 150°C . The value in any given application depends on the user's specific board design.

■ Electrical Characteristics (T_J = 25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	I _D = 250 μA, V _{GS} = 0V	100			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 100 V, V _{GS} = 0 V			1	μA
		V _{DS} = 100 V, V _{GS} = 0 V, T _J =55℃			5	
Gate to Source Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±20 V			±100	nA
Gate to Source Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	2.3		4.3	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10 V, I _D = 20 A		3.7	4.2	mΩ
		V _{GS} = 10 V, I _D = 20 A, T _J =125℃			6.8	
		V _{GS} = 4.5 V, I _D = 20 A			6.0	
Forward Transconductance	g _{FS}	V _{DS} = 5 V, I _D = 20 A		100		S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{GS} = 0 V, V _{DS} = 50 V, f = 1 MHz		5940		pF
Output Capacitance	C _{oss}			1475		
Reverse Transfer Capacitance	C _{rss}			24		
Gate Resistance	R _g	V _{GS} =0V, V _{DS} =0V, f = 1MHz	0.3	0.6	1.0	Ω
Switching Characteristics						
Total Gate Charge (10V)	Q _g	V _{GS} = 10V, V _{DS} = 50 V, I _D = 20 A		80	115	nC
Total Gate Charge (4.5V)				35	50	
Gate Source Charge	Q _{gs}			18		
Gate Drain Charge	Q _{gd}			11		
Turn-On DelayTime	t _{d(on)}	V _{GS} = 10V, V _{DS} = 50 V, R _L = 2.5 Ω, R _{GEN} = 3 Ω		16.5		ns
Turn-On Rise Time	t _r			6.5		
Turn-Off DelayTime	t _{d(off)}			46		
Turn-Off Fall Time	t _f			12		
Drain-Source Diode Characteristics						
Body Diode Reverse Recovery Time	t _{rr}	I _F = 20A, di/dt = 500 A/μs		43		ns
Body Diode Reverse Recovery Charge	Q _{rr}			207		nC
Maximum Body-Diode Continuous Current	I _S	(Note 1)			100	A
Diode Forward Voltage	V _{SD}	V _{GS} = 0 V, I _S = 1 A		0.68	1	V

Notes:

- The static characteristics in Figures 1 to 6 are obtained using <300μs pulses, duty cycle 0.5% max.
- These curves are based on the junction-to-case thermal impedance which is measured with the device mounted to a large heatsink, assuming a maximum junction temperature of T_{J(MAX)}=150°C. The SOA curve provides a single pulse rating.
- These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

■ Typical Electrical and Thermal Characteristics

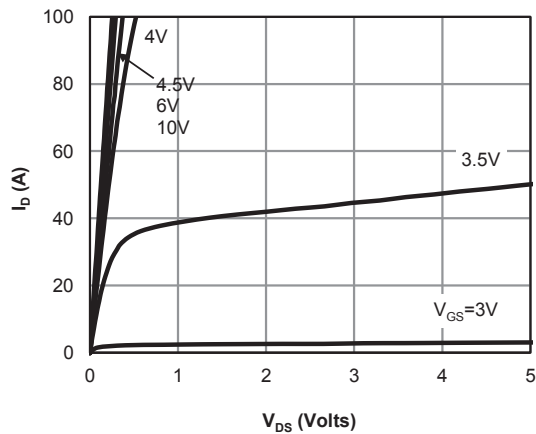


Figure 1: On-Region Characteristics (NOTE 6)

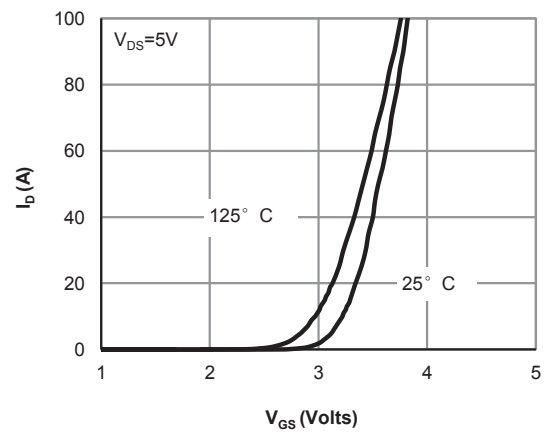


Figure 2: Transfer Characteristics (NOTE 6)

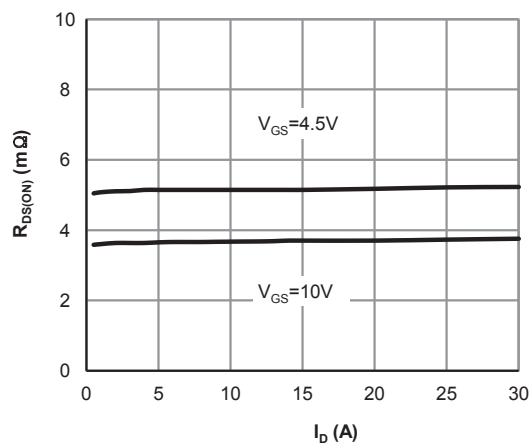


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (NOTE 6)

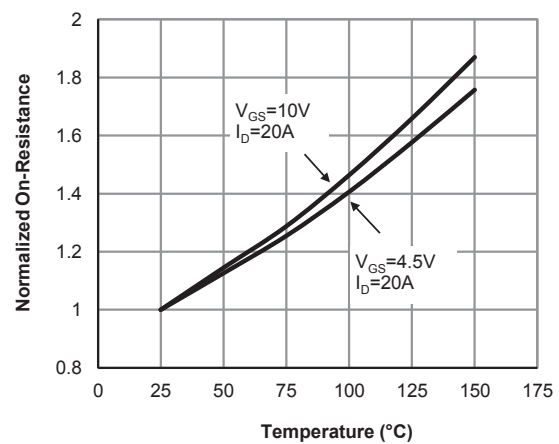


Figure 4: On-Resistance vs. Junction Temperature (NOTE 6)

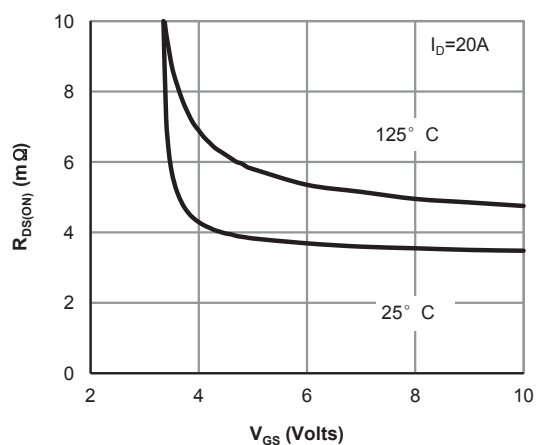


Figure 5: On-Resistance vs. Gate-Source Voltage (NOTE 6)

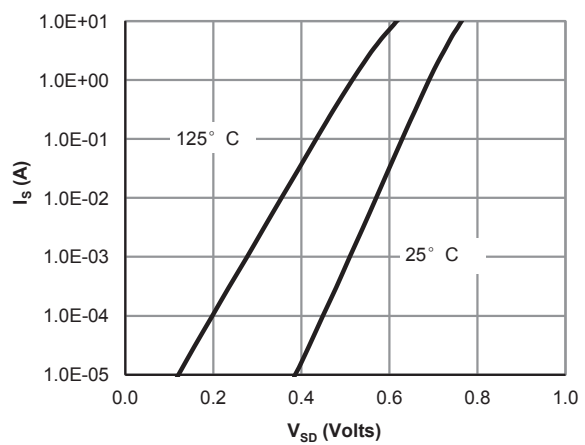
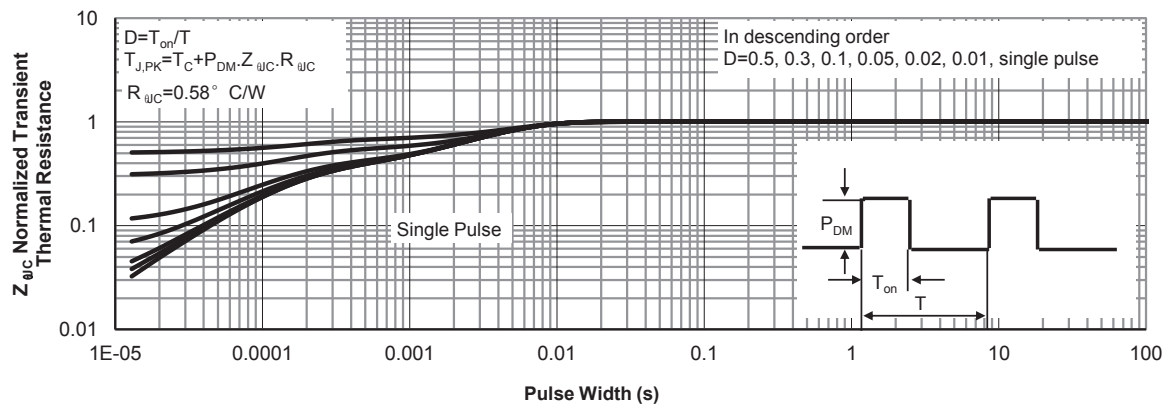
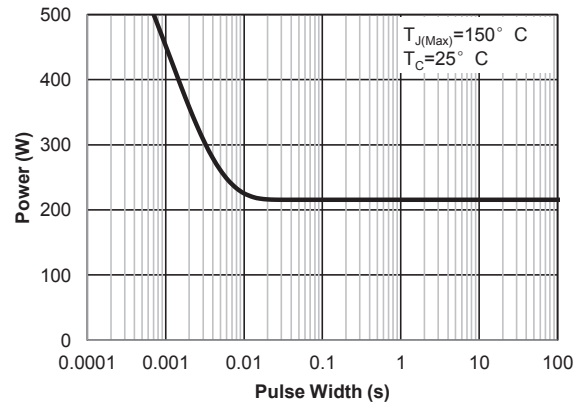
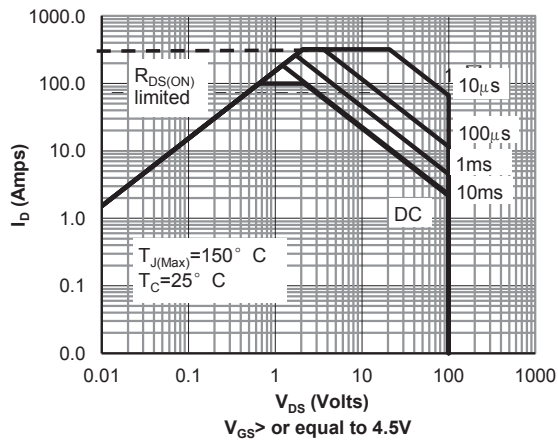
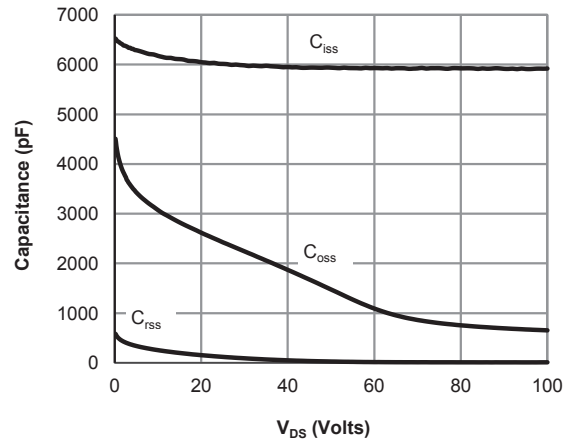
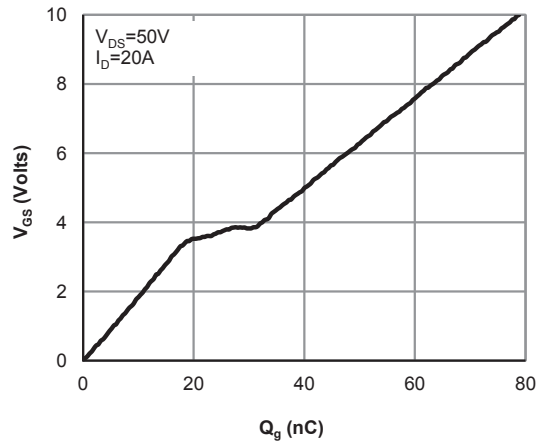


Figure 6: Body-Diode Characteristics (NOTE 6)



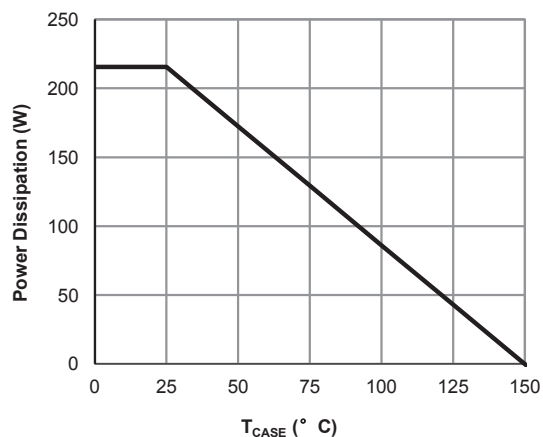


Figure 12: Power De-rating (NOTE 7)

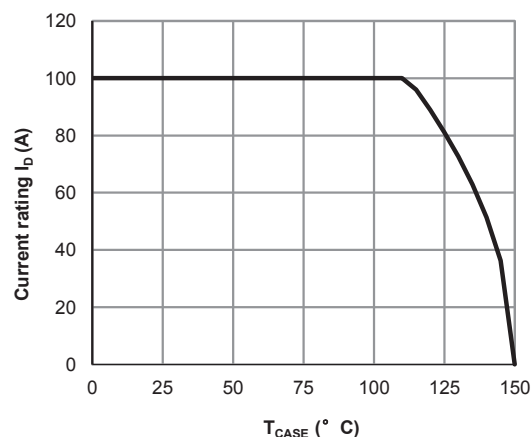


Figure 13: Current De-rating (NOTE 7)

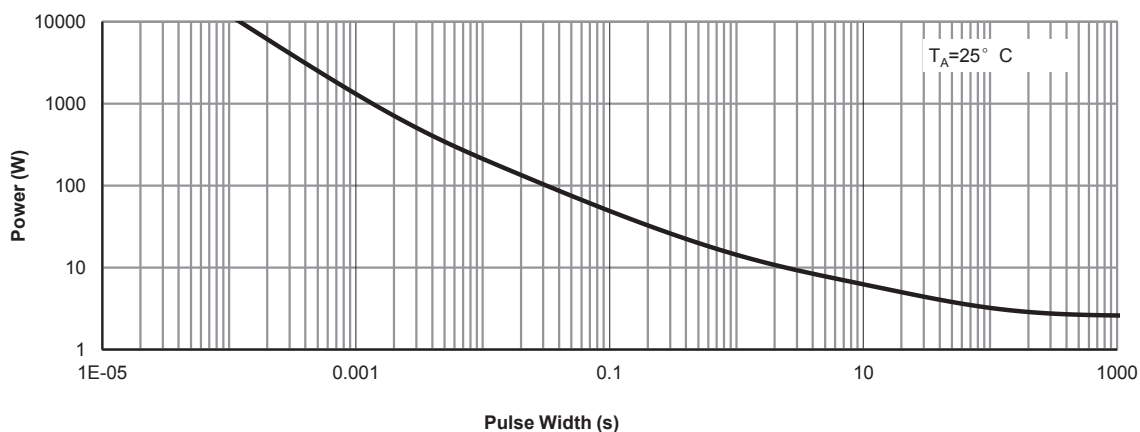


Figure 14: Single Pulse Power Rating Junction-to-Ambient (NOTE 8)

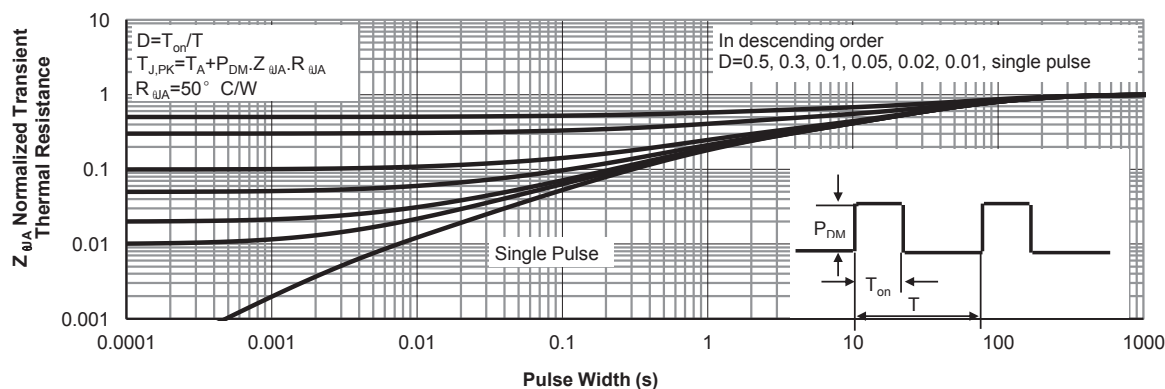


Figure 15: Normalized Maximum Transient Thermal Impedance (NOTE 8)

Figure A: Gate Charge Test Circuit & Waveforms

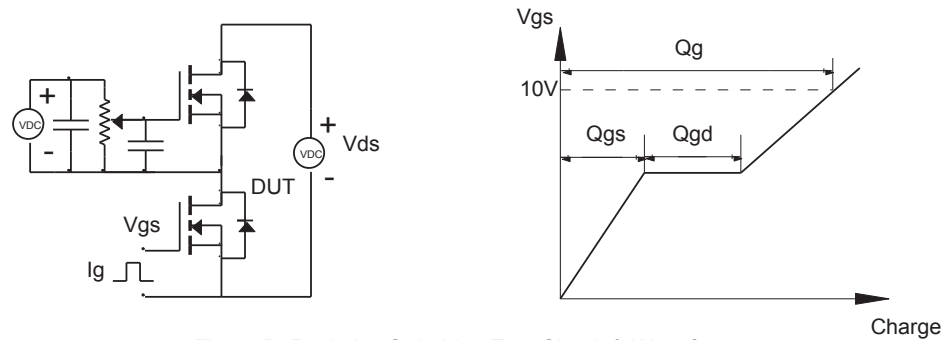


Figure B: Resistive Switching Test Circuit & Waveforms

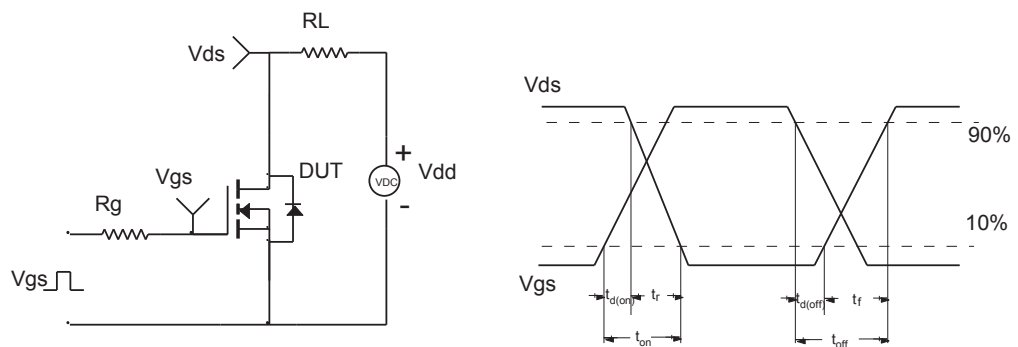


Figure C: Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

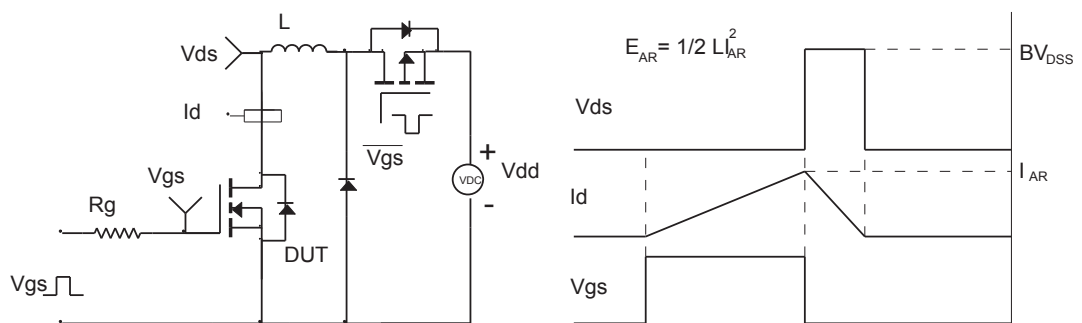
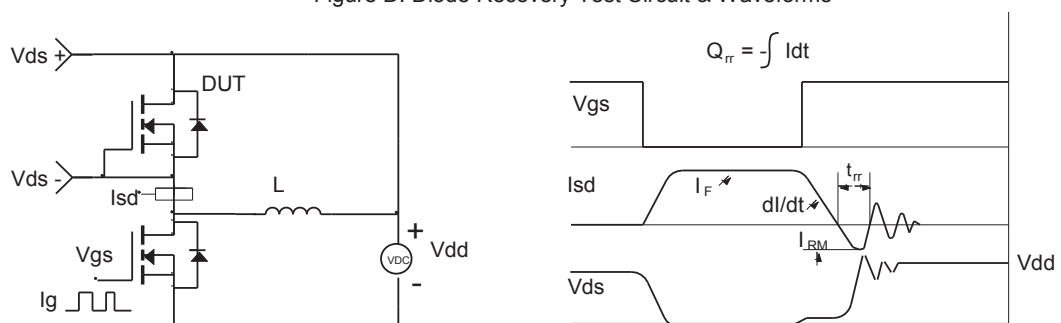
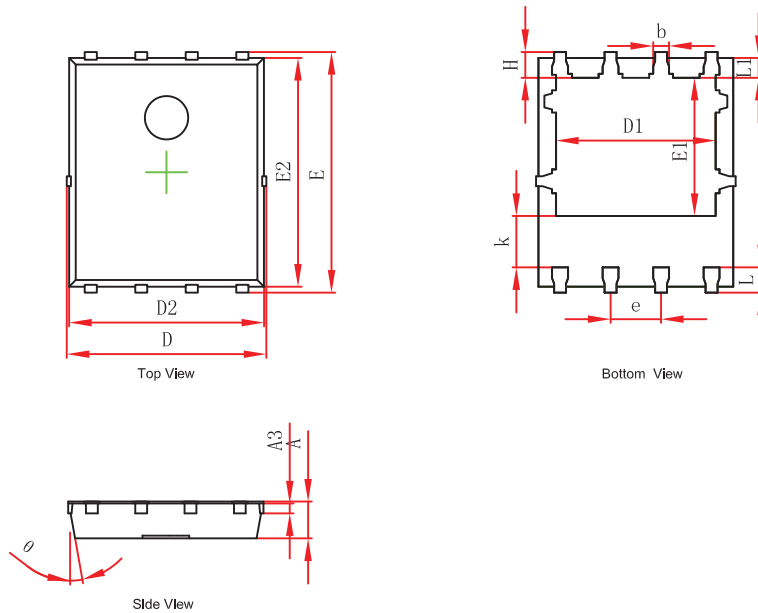


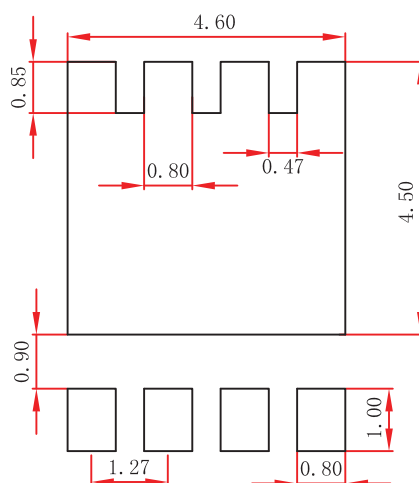
Figure D: Diode Recovery Test Circuit & Waveforms



■ PDFN5x6-8(PDFNWB5x6-8L) Package Outline Dimensions



■ PDFN5x6-8(PDFNWB5x6-8L) Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.