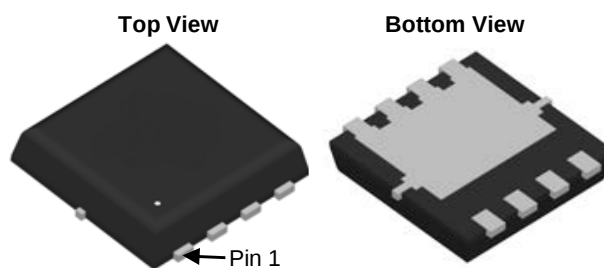


Features

- 30V, 80A
- $R_{DS(ON)}$ Typ = 2.2m Ω @ V_{GS} = 10V
- $R_{DS(ON)}$ Typ = 4.0m Ω @ V_{GS} = 4.5V
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free
- 100% UIS TESTED!
- 100% ΔV_{ds} TESTED!

Application

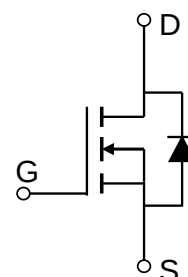
- Load Switch
- PWM Application
- Power Management



PDFN3X3-8L



Pin Assignment



Schematic Diagram

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

Symbol	Parameter	Value	Units
V_{DS}	Drain-to-Source Voltage	30	V
V_{GS}	Gate-to-Source Voltage	± 20	V
I_D	Continuous Drain Current	$T_C = 25^\circ\text{C}$	80
		$T_C = 100^\circ\text{C}$	48
I_{DM}	Pulsed Drain Current ⁽¹⁾	320	A
E_{AS}	Single Pulsed Avalanche Energy ⁽²⁾	169	mJ
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$	33.7
$R_{\theta JC}$	Thermal Resistance, Junction to Case	3.7	$^\circ\text{C/W}$
T_J, T_{STG}	Junction & Storage Temperature Range	-55 to 150	$^\circ\text{C}$

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

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
Off Characteristics						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	I _D = 250μA, V _{GS} = 0V	30	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 30V, V _{GS} = 0V	-	-	1.0	μA
I _{GSS}	Gate-Body Leakage Current	V _{DS} = 0V, V _{GS} = ±20V	-	-	±100	nA
On Characteristics						
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA	1	1.5	2.2	V
R _{DS(ON)}	Static Drain-Source ON-Resistance ⁽³⁾	V _{GS} = 10V, I _D = 20A	-	2.2	3.1	mΩ
		V _{GS} = 4.5V, I _D = 10A	-	4.0	4.7	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz	-	3767	-	pF
C _{oss}	Output Capacitance		-	442	-	pF
C _{rss}	Reverse Transfer Capacitance		-	340	-	pF
Q _g	Total Gate Charge	V _{GS} = 0 to 10V V _{DS} = 15V, I _D = 15A	-	67	-	nC
Q _{gs}	Gate Source Charge		-	11	-	nC
Q _{gd}	Gate Drain("Miller") Charge		-	19	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On DelayTime	V _{GS} = 10V, V _{DD} = 15V I _D = 30A, R _{GEN} = 3Ω	-	10	-	ns
t _r	Turn-On Rise Time		-	19	-	ns
t _{d(off)}	Turn-Off DelayTime		-	50	-	ns
t _f	Turn-Off Fall Time		-	20	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current	V _{GS} = 0V, I _S = 30A	-	-	80	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	320	A
V _{SD}	Drain to Source Diode Forward Voltage		-	-	1.2	V
trr	Body Diode Reverse Recovery Time		-	18	-	ns
Qrr	Body Diode Reverse Recovery Charge		I _F = 20A, di/dt = 100A/us	-	6	-

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. E_{AS} condition: Starting $T_J = 25^\circ\text{C}$, $V_{DD} = 15\text{V}$, $V_G = 10\text{V}$, $R_G = 25\Omega$, $L = 0.5\text{mH}$, $I_{AS} = 26\text{A}$
 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Typical Performance Characteristics

Figure 1: Output Characteristics

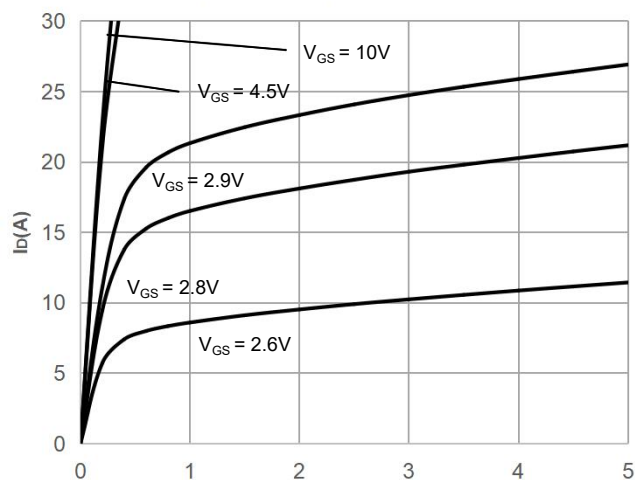


Figure 2: Typical Transfer Characteristics

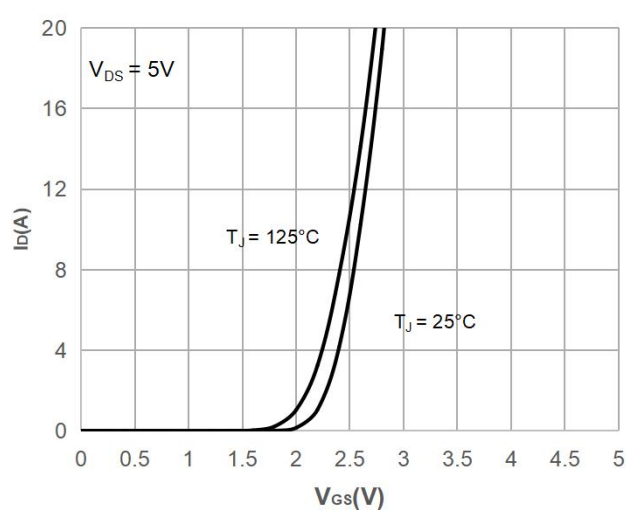


Figure 3: On-resistance vs. Drain Current

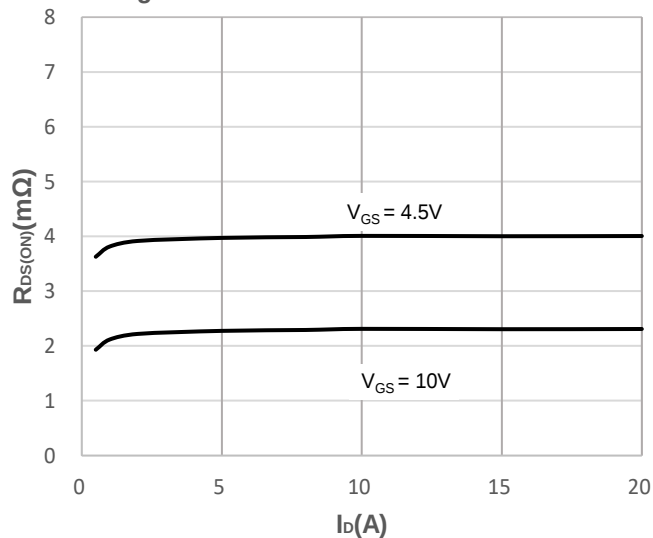


Figure 4: Body Diode Characteristics

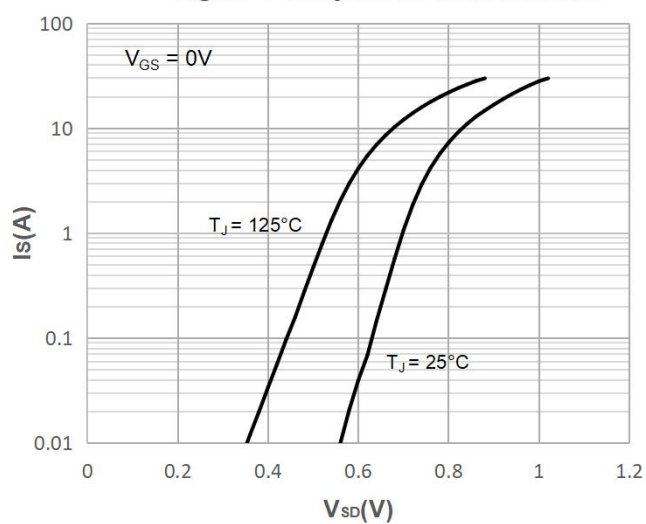


Figure 5: Gate Charge Characteristics

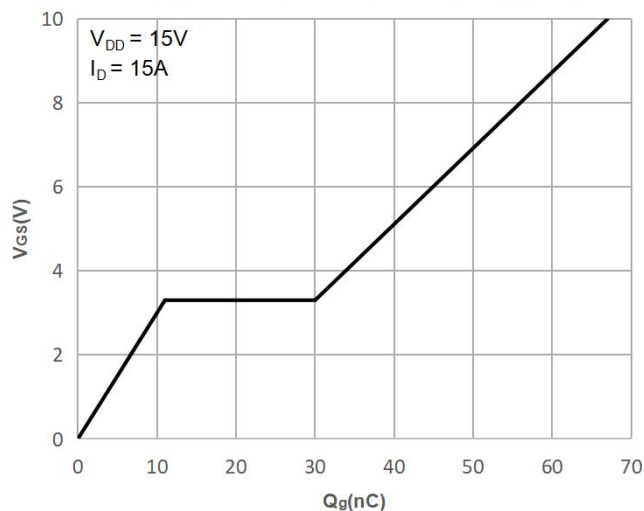
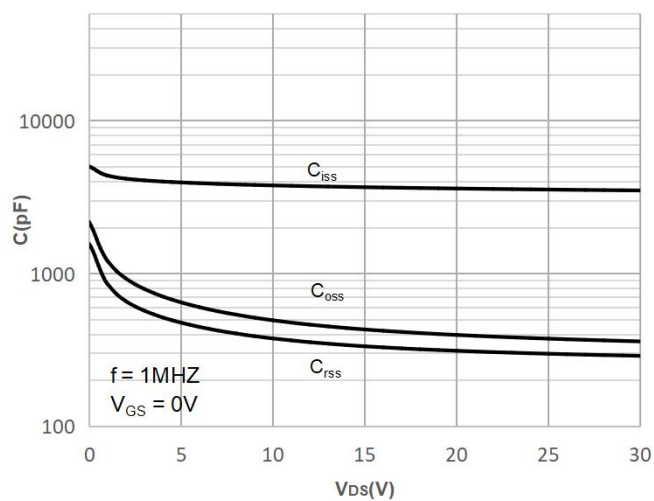


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

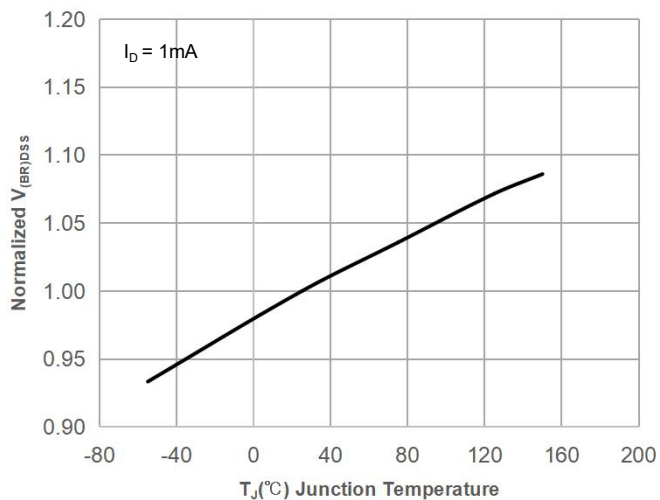


Figure 8: Normalized on Resistance vs. Junction Temperature

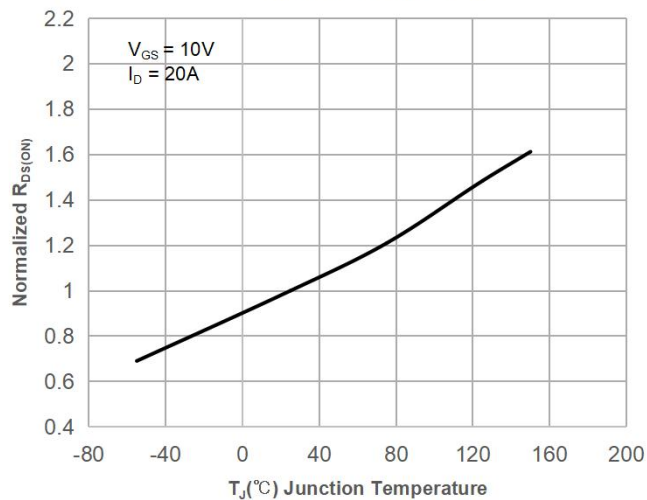


Figure 9: Maximum Safe Operating Area

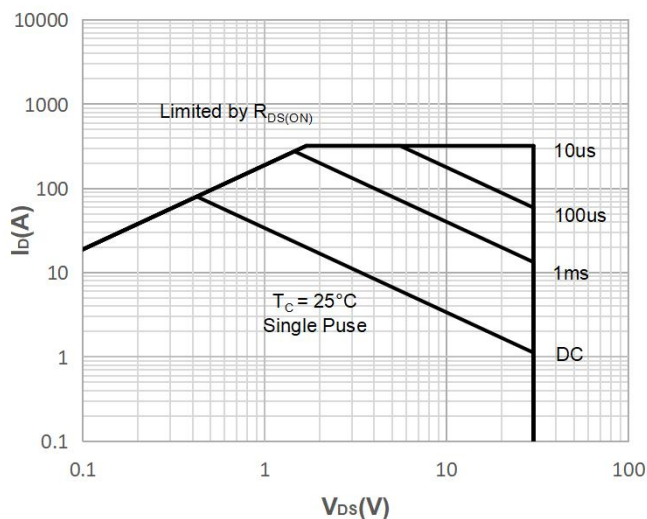


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

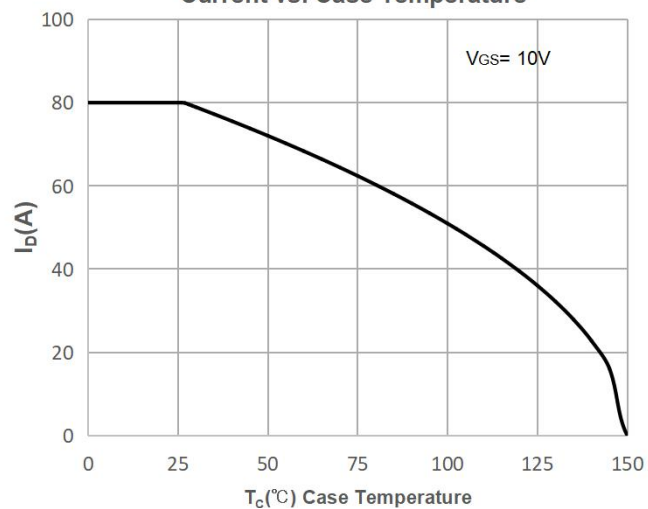


Figure 11: Normalized Maximum Transient Thermal Impedance

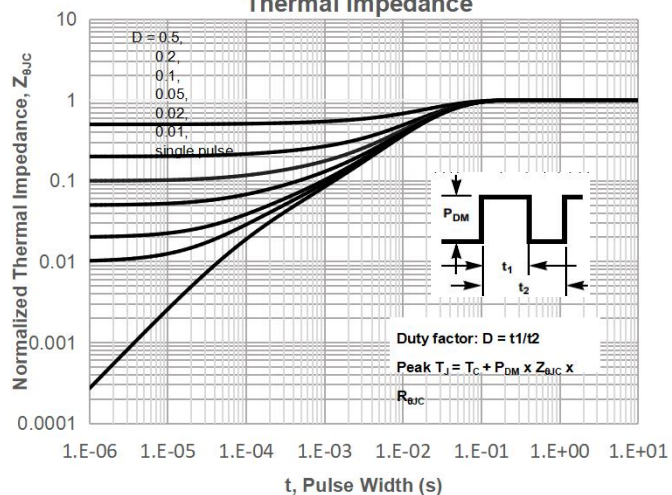
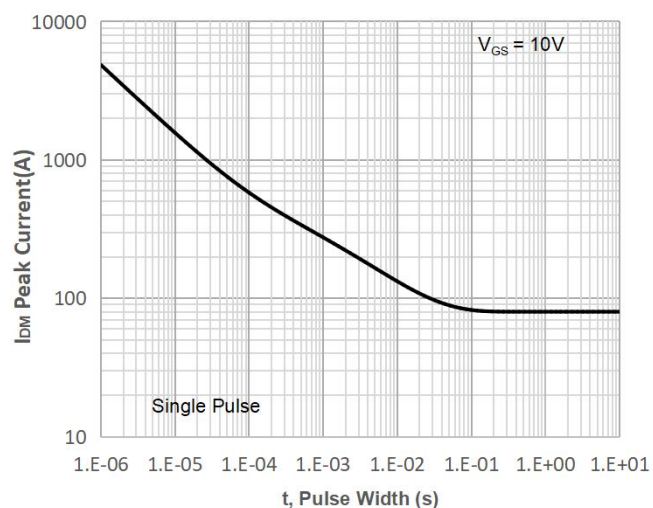


Figure 12: Peak Current Capacity



Test Circuit

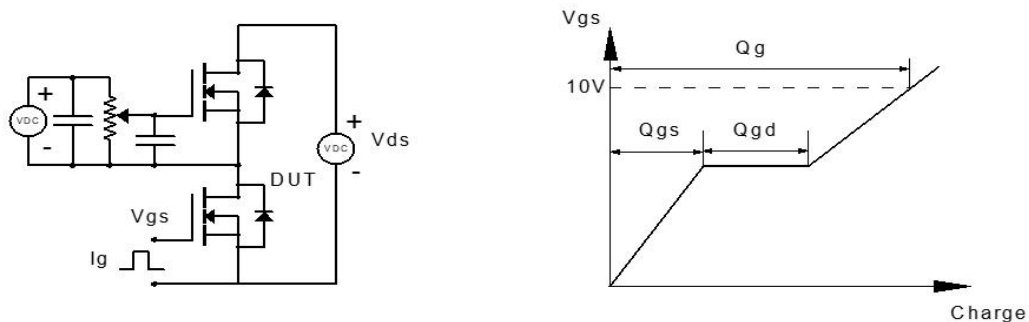


Figure 1: Gate Charge Test Circuit & Waveform

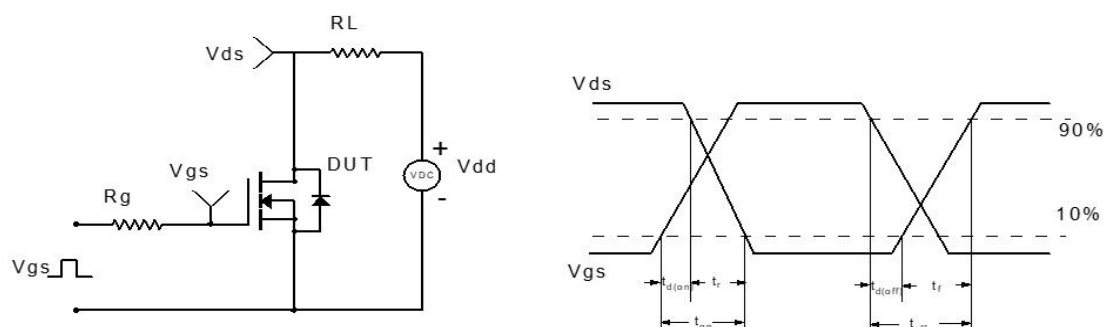


Figure 2: Resistive Switching Test Circuit & Waveform

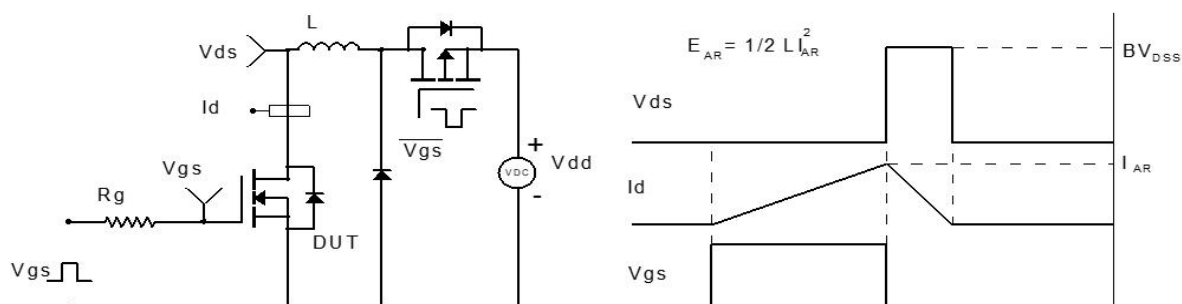


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

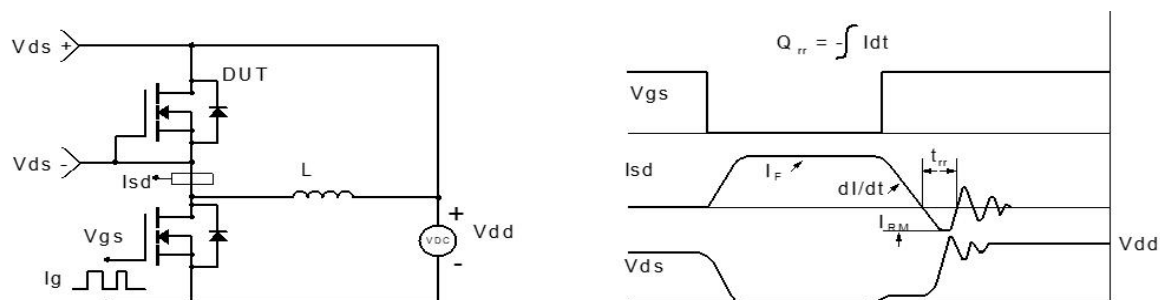
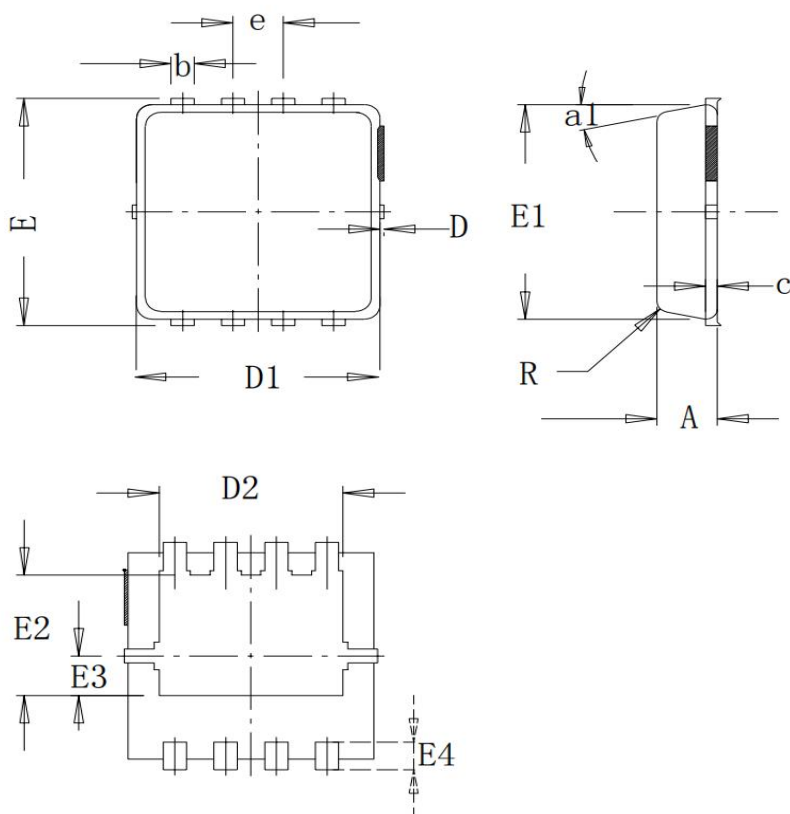


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(PDFN3.3x3.3-8L)



SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.75	0.78	0.81
* b	0.297	0.3	0.35
c	—	0.152	—
* D	0.00	0.05	0.1
D1	3.12	3.15	3.18
* D2	—	2.35	—
* E	3.2	3.3	3.4
E1	3.09	3.12	3.15
E2	—	1.75	—
E3	—	0.575	—
* E4	—	0.4	—
R	—	0.15	—
* e	0.65BSC		
a1°	—	12°	—