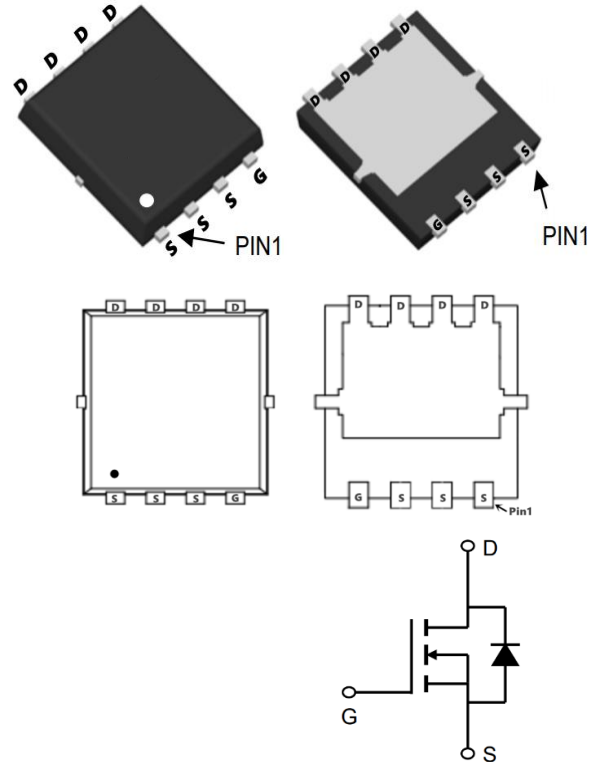


N-Channel 100V, 6.5mΩ Typ. Power MOSFET
Description

Features

- 100V, 100A
 $R_{DS(ON)}$ Typ = 6.5mΩ @ $V_{GS} = 10V$
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔV_{ds} TESTED!

PDFN5*6-8L



Application

- Load Switch
- PWM Application
- Power Management

Package Marking and Ordering Information

Device	Marking	Package	Outline	Reel Size	Reel (pcs)	Per Carton (pcs)
CTKG100N10DF5	CTKG100N10DF5	PDFN5x6-8L	TAPING	13"	5000	50000

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

Symbol	Parameter	Value	Units	
V _{DS}	Drain-to-Source Voltage	100	V	
V _{GS}	Gate-to-Source Voltage	±20	V	
I _D	Continuous Drain Current	T _C = 25°C	100	A
		T _C = 100°C	60	A
I _{DM}	Pulsed Drain Current ⁽¹⁾	400	A	
E _{AS}	Single Pulsed Avalanche Energy ⁽²⁾	144	mJ	
P _D	Power Dissipation	T _C = 25°C	147	W
R _{θJC}	Thermal Resistance, Junction to Case	0.85	°C/W	
T _J , T _{STG}	Junction & Storage Temperature Range	-55 to 150	°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	100	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 100V, 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	2.4	3	3.6	V
R _{DS(ON)}	Static Drain-Source ON-Resistance ⁽³⁾	V _{GS} = 10V, I _D = 30A	-	6.5	8.4	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 50V, f = 1MHz	-	1757	-	pF
C _{oss}	Output Capacitance		-	985	-	pF
C _{rss}	Reverse Transfer Capacitance		-	12	-	pF
Q _g	Total Gate Charge	V _{GS} = 0 to 10V V _{DS} = 50V, I _D = 20A	-	29	-	nC
Q _{gs}	Gate Source Charge		-	6.8	-	nC
Q _{gd}	Gate Drain("Miller") Charge		-	8.4	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On DelayTime	V _{GS} = 10V, V _{DD} = 50V I _D = 20A, R _{GEN} = 6Ω	-	8.4	-	ns
t _r	Turn-On Rise Time		-	9.4	-	ns
t _{d(off)}	Turn-Off DelayTime		-	27	-	ns
t _f	Turn-Off Fall Time		-	18	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current	V _{GS} = 0V, I _S = 30A	-	-	100	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	400	A
V _{SD}	Drain to Source Diode Forward Voltage		-	-	1.2	V
trr	Body Diode Reverse Recovery Time		-	45	-	ns
Qrr	Body Diode Reverse Recovery Charge		I _F = 15A, di/dt = 100A/us	-	53	-

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. E_{AS} condition: Starting $T_J = 25^\circ\text{C}$, $V_{DD} = 50\text{V}$, $V_G = 10\text{V}$, $R_G = 25\text{ohm}$, $L = 0.5\text{mH}$, $I_{AS} = 24\text{A}$
 3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 0.5\%$.

Typical Performance Characteristics

Figure 1: Output Characteristics

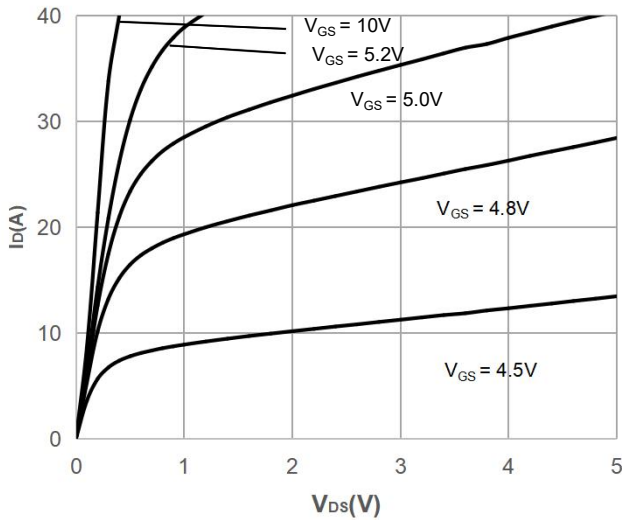


Figure 2: Typical Transfer Characteristics

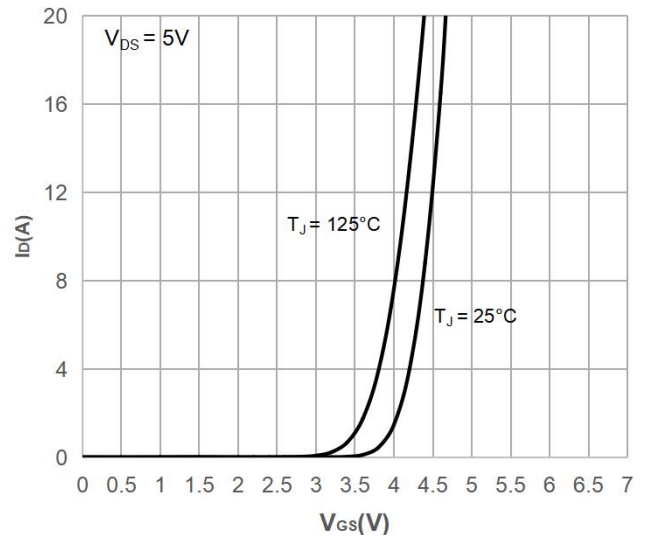


Figure 3: On-resistance vs. Drain Current

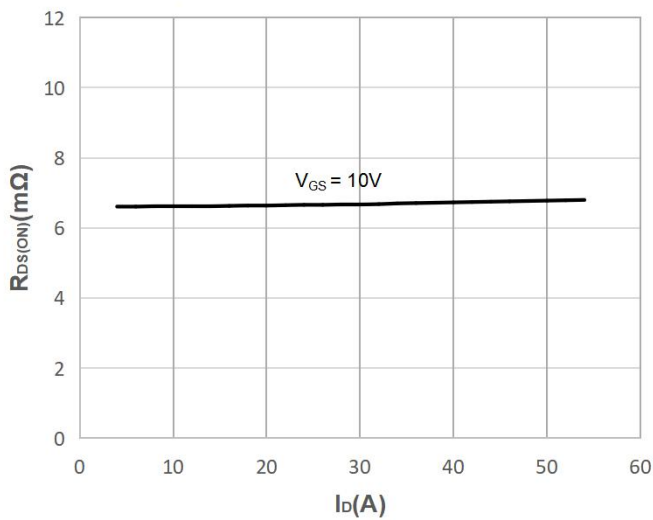


Figure 4: Body Diode Characteristics

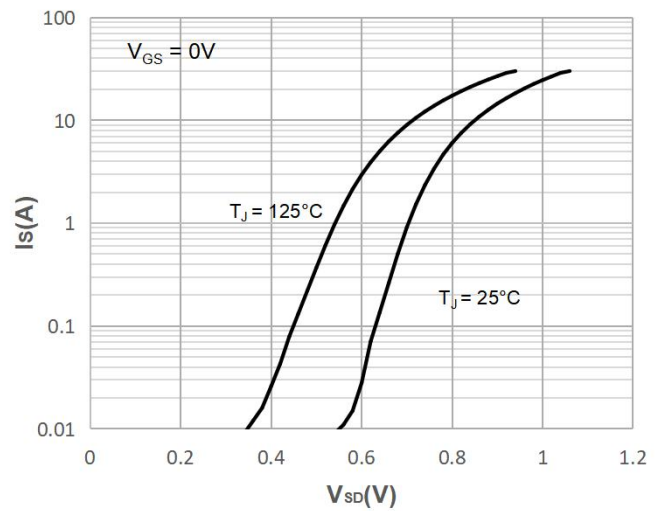


Figure 5: Gate Charge Characteristics

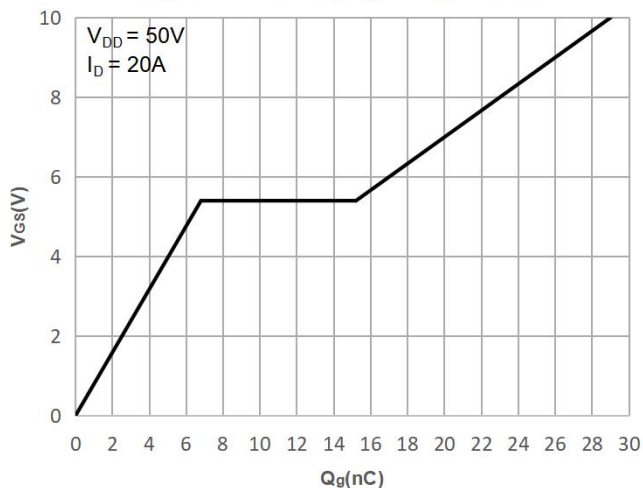
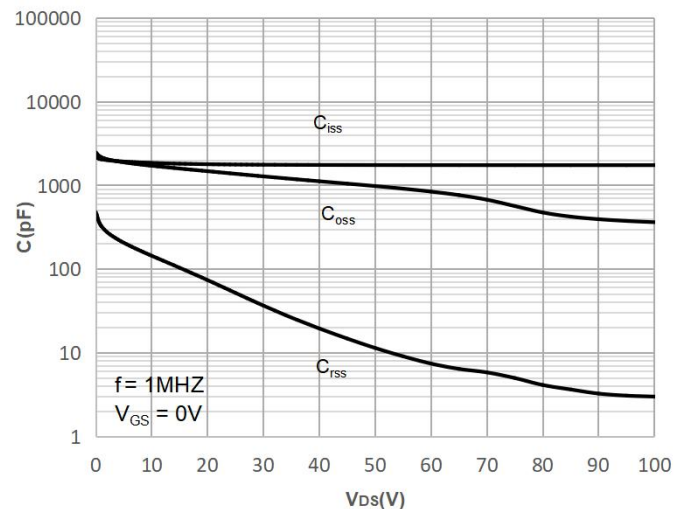


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

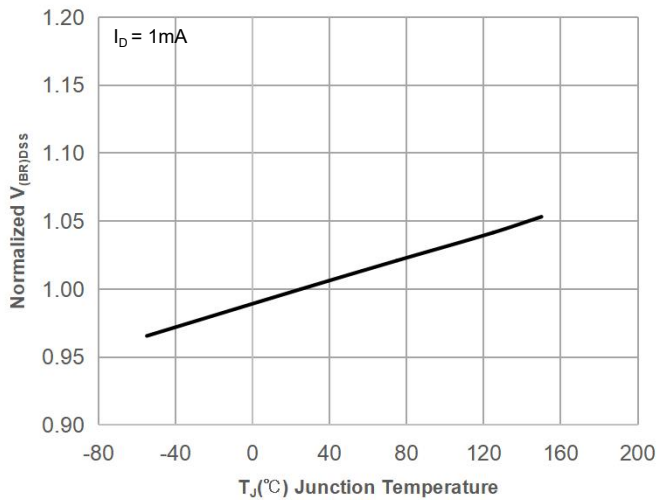


Figure 8: Normalized on Resistance vs. Junction Temperature

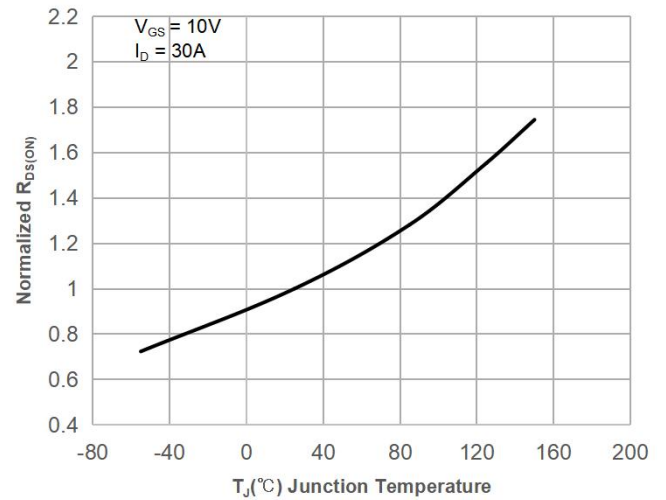


Figure 9: Maximum Safe Operating Area

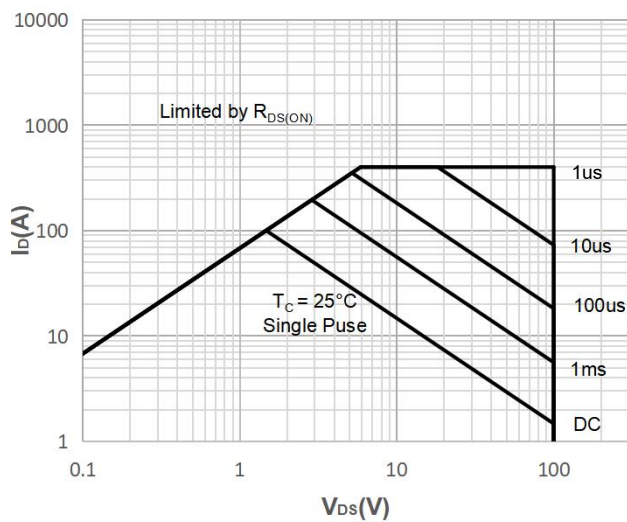


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

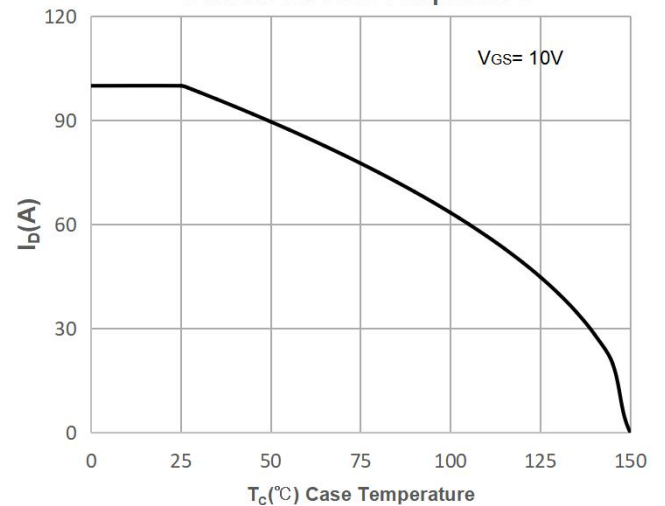


Figure 11: Normalized Maximum Transient Thermal Impedance

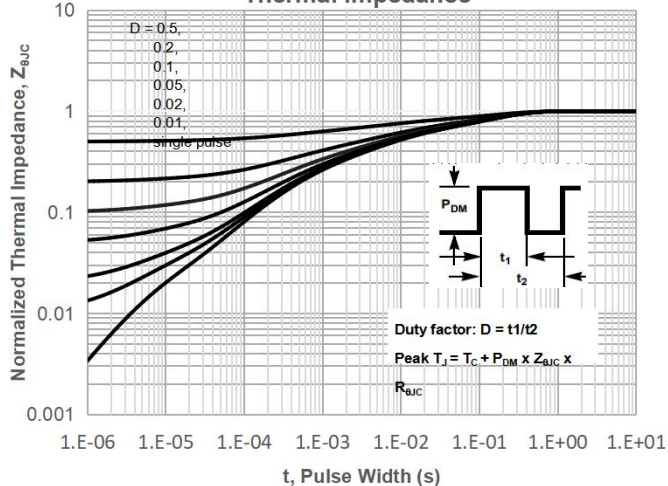
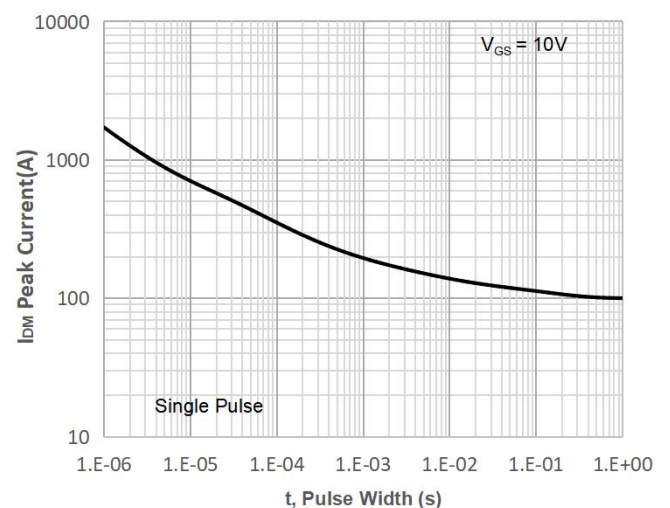


Figure 12: Peak Current Capacity



Test Circuit

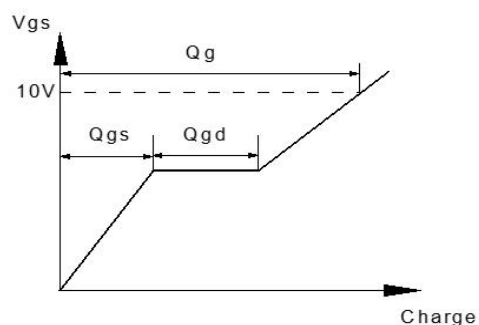
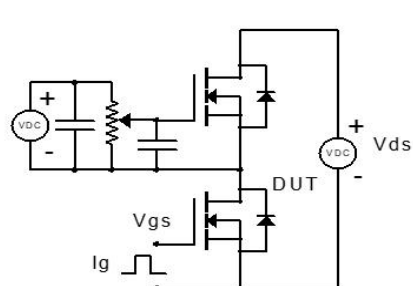


Figure 1: Gate Charge Test Circuit & Waveform

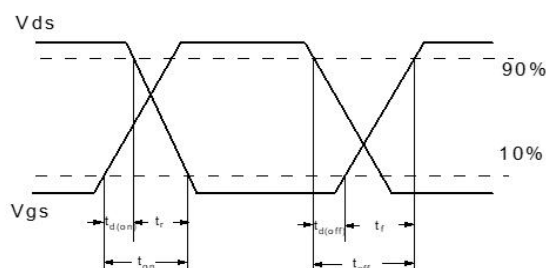
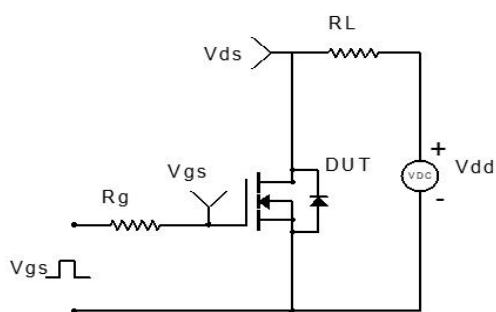


Figure 2: Resistive Switching Test Circuit & Waveform

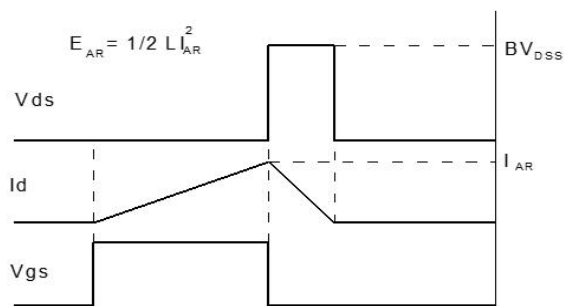
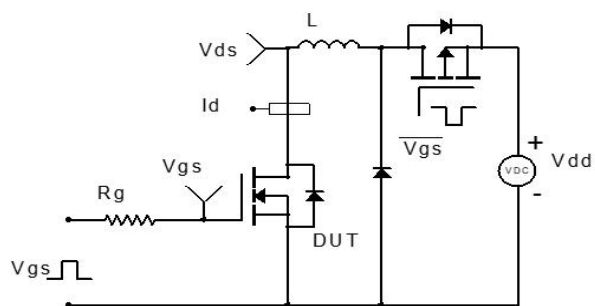


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

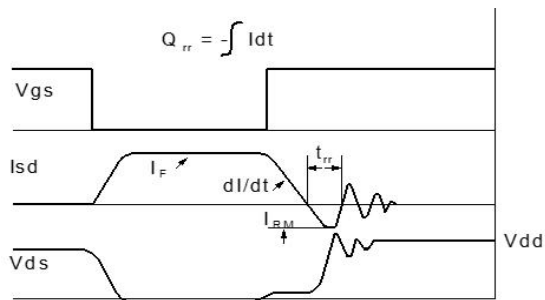
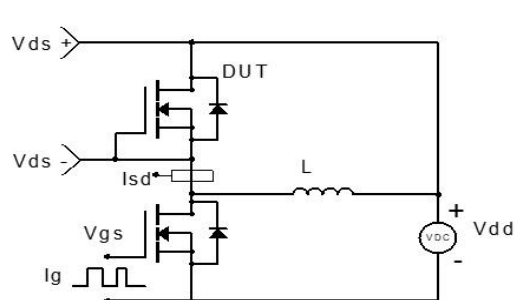
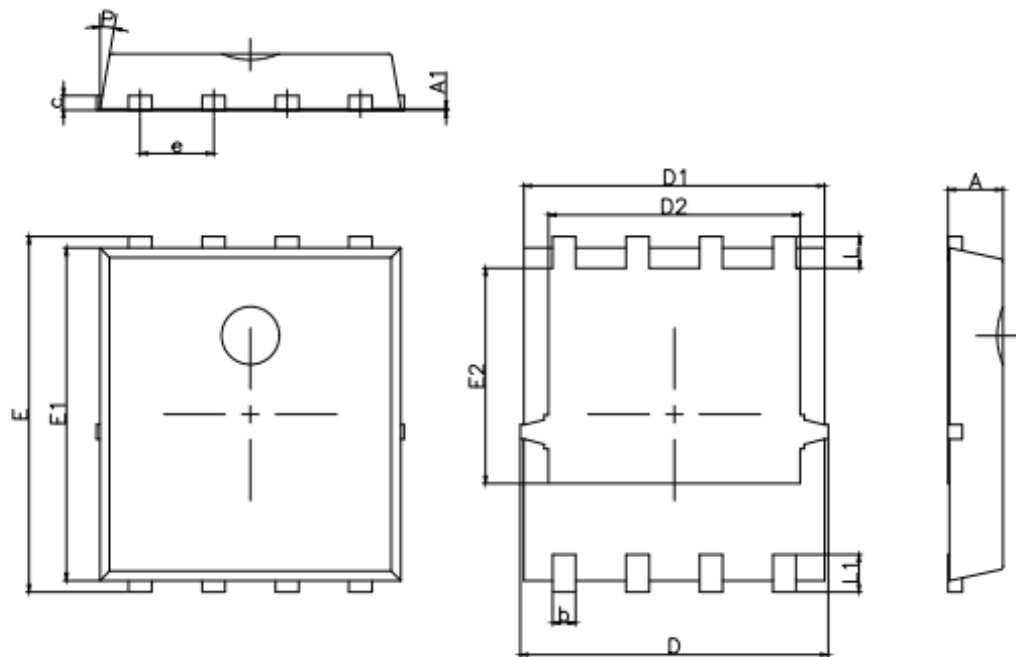


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data-PDFN5*6-8L



DIM.	MILLIMETER		
	MIN.	TYP.	MAX.
A	0.9	0.95	1.2
A1	0	0.025	0.05
b	0.26	0.4	0.54
c	0.15	0.25	0.35
D	5.0	5.3	5.45
D1	4.95	5.15	5.35
D2	4.0	4.35	4.5
E	6.05	6.15	6.25
E1	5.7	5.75	6.1
E2	3.4	3.7	3.8
e	1.27		
L	0.45	0.55	0.65
L1	0.45	0.6	0.7
P	8°	10°	12°