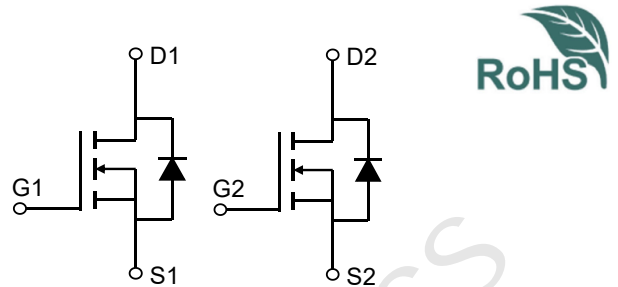


Description

Features

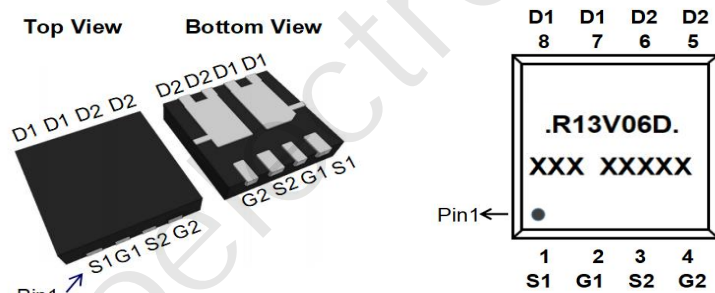
- 60V, 24A
 $R_{DS(ON)}$ Typ = 13.5mΩ @ $V_{GS} = 10V$
 $R_{DS(ON)}$ Typ = 17.5mΩ @ $V_{GS} = 4.5V$
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free
- 100% UIS TESTED!
- 100% ΔV_d s TESTED!



Schematic Diagram

Application

- Load Switch
- PWM Application
- Power Management



Marking and Pin Assignment

Package Marking and Ordering Information

Device	Marking	Package	Outline	Reel Size	Reel (pcs)	Per Carton (pcs)
CRM RGL0612AD	R13V06D	DFN3.3x3.3-8L-D	TAPING	13"	5000	50000

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

Symbol	Parameter	Value	Units
V_{DS}	Drain-to-Source Voltage	60	V
V_{GS}	Gate-to-Source Voltage	± 20	V
I_D	Continuous Drain Current	$T_C = 25^\circ C$	24
		$T_C = 100^\circ C$	14.4
I_{DM}	Pulsed Drain Current ⁽¹⁾	96	A
E_{AS}	Single Pulsed Avalanche Energy ⁽²⁾	27.5	mJ
P_D	Power Dissipation	$T_C = 25^\circ C$	19.8
$R_{\theta JC}$	Thermal Resistance, Junction to Case	6.3	$^\circ C/W$
T_J, T_{STG}	Junction & Storage Temperature Range	-55 to 150	$^\circ C$

Electrical Characteristics (T_J = 25°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	60	-	-	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 60V, 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	1.0	1.3	1.8	V
R _{DS(ON)}	Static Drain-Source ON-Resistance ⁽³⁾	V _{GS} = 10V, I _D = 20A	-	13.5	18	mΩ
		V _{GS} = 4.5V, I _D = 10A	-	17.5	23	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 30V, f = 1MHz	-	593	-	pF
C _{oss}	Output Capacitance		-	183	-	pF
C _{rss}	Reverse Transfer Capacitance		-	4	-	pF
Q _g	Total Gate Charge	V _{GS} = 0 to 10V V _{DS} = 30V, I _D = 20A	-	13.9	-	nC
Q _{gs}	Gate Source Charge		-	1.6	-	nC
Q _{gd}	Gate Drain("Miller") Charge		-	3.1	-	nC
Switching Characteristics						
t _{d(on)}	Turn-On DelayTime	V _{GS} = 10V, V _{DD} = 30V I _D = 20A, R _{GEN} = 6Ω	-	3.7	-	ns
t _r	Turn-On Rise Time		-	4.3	-	ns
t _{d(off)}	Turn-Off DelayTime		-	16.2	-	ns
t _f	Turn-Off Fall Time		-	6.5	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I _S	Maximum Continuous Drain to Source Diode Forward Current		-	-	24	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	96	A
V _{SD}	Drain to Source Diode Forward Voltage	V _{GS} = 0V, I _S = 20A	-	-	1.2	V
trr	Body Diode Reverse Recovery Time	I _F = 15A, di/dt = 100A/us	-	24	-	ns
Qrr	Body Diode Reverse Recovery Charge		-	9.3	-	nC

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. E_{AS} condition: Starting T_J=25°C, V_{DD}=30V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=10.5A
 3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 0.5%.

Typical Performance Characteristics

Figure 1: Output Characteristics

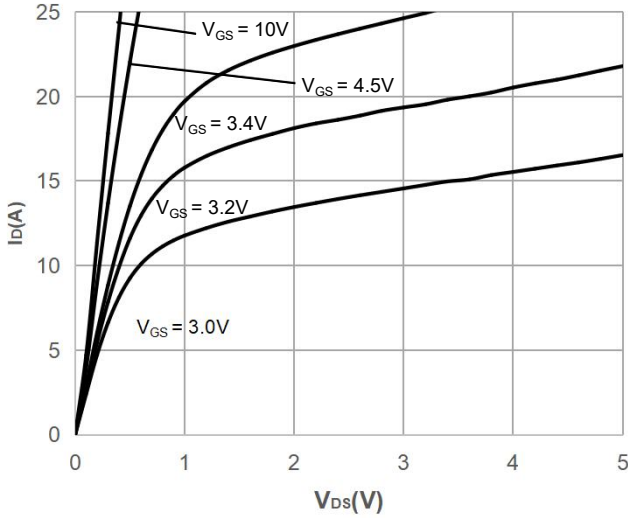


Figure 2: Typical Transfer Characteristics

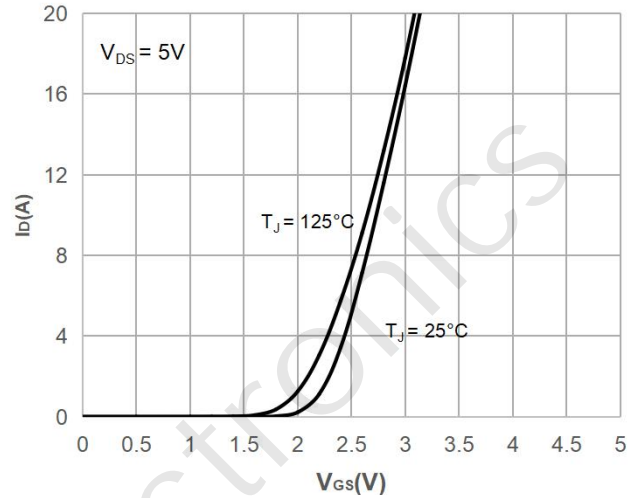


Figure 3: On-resistance vs. Drain Current

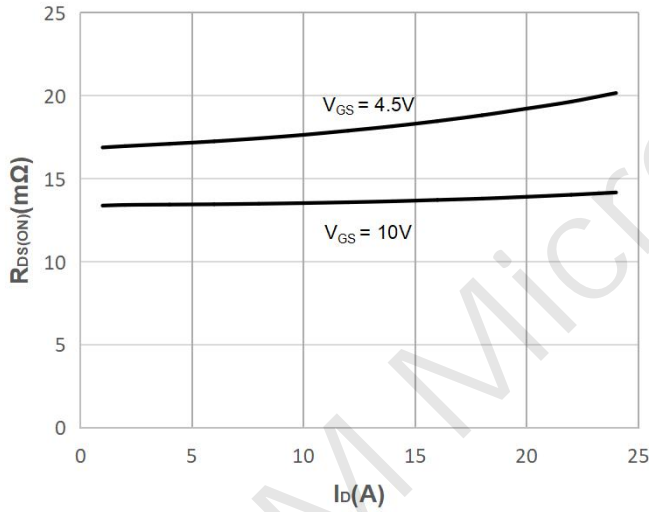


Figure 4: Body Diode Characteristics

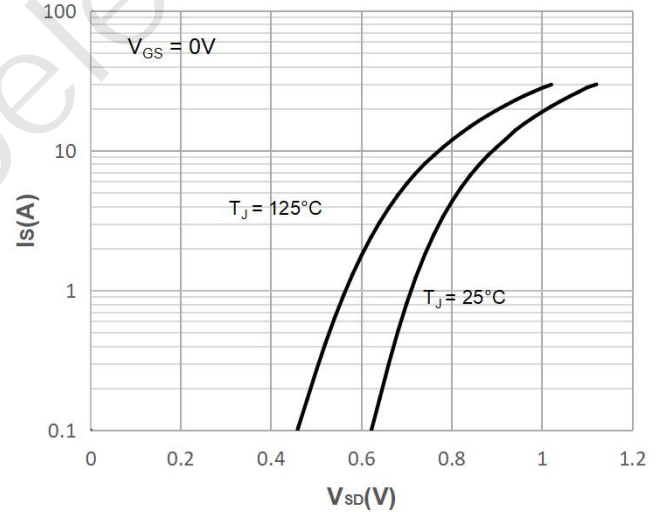


Figure 5: Gate Charge Characteristics

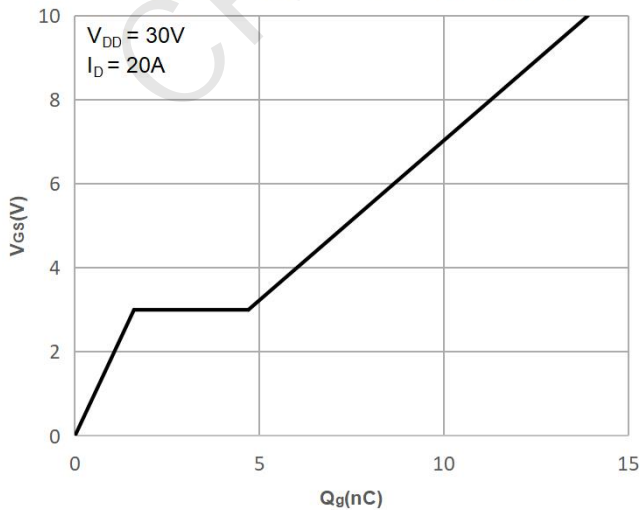
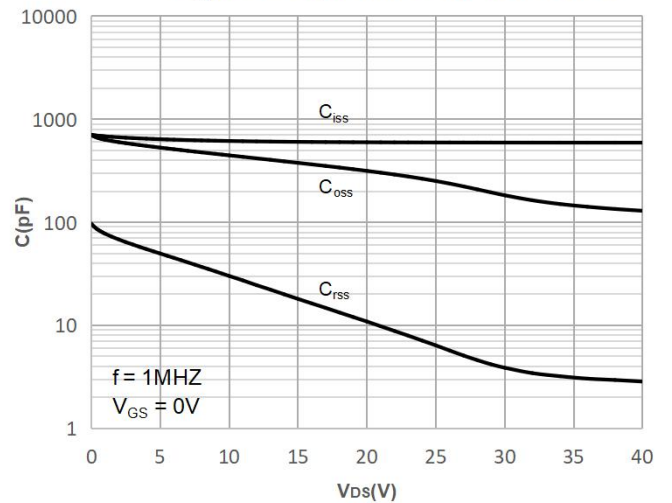


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

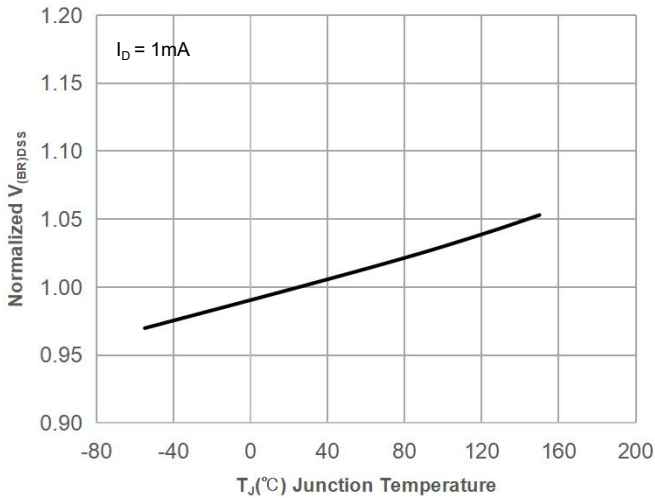


Figure 8: Normalized on Resistance vs. Junction Temperature

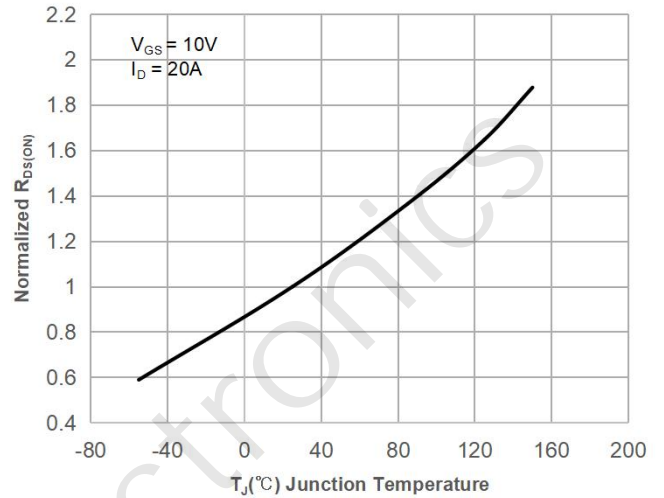


Figure 9: Maximum Safe Operating Area

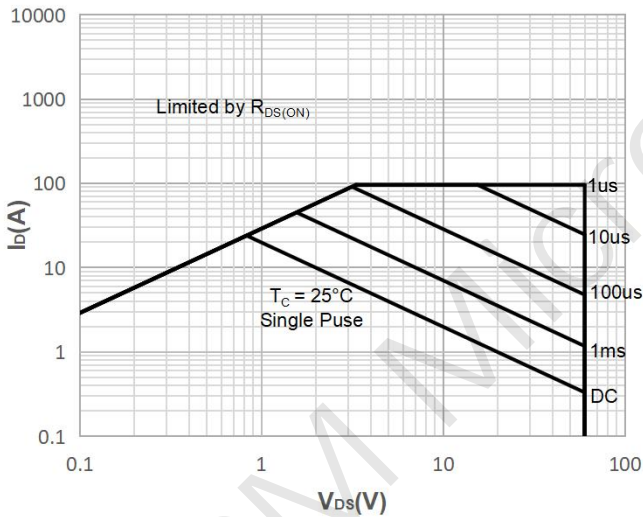


Figure 10: Maximum Continuous Driand Current vs. Case Temperature

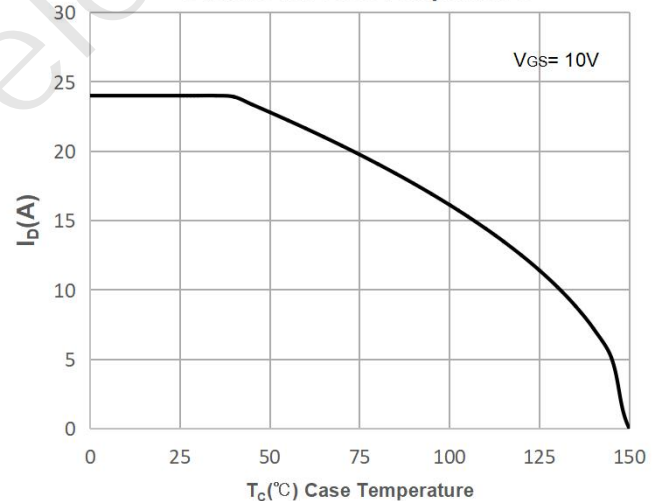


Figure 11: Normalized Maximum Transient Thermal Impedance

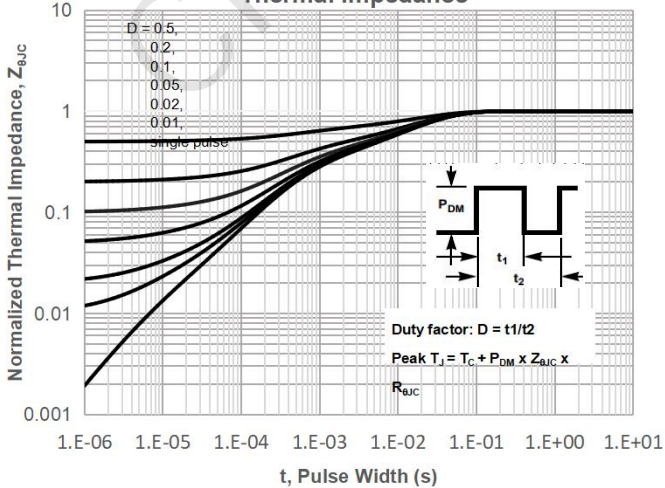
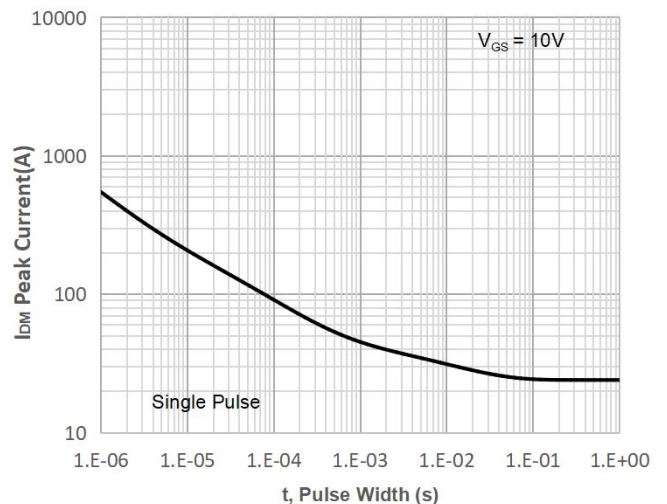


Figure 12: Peak Current Capacity



Test Circuit

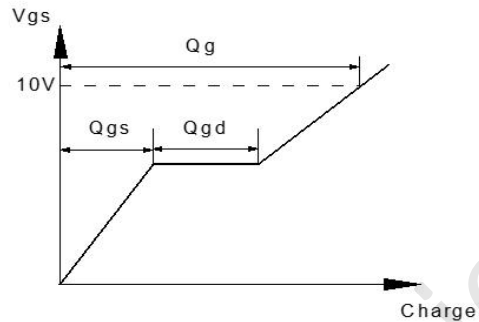
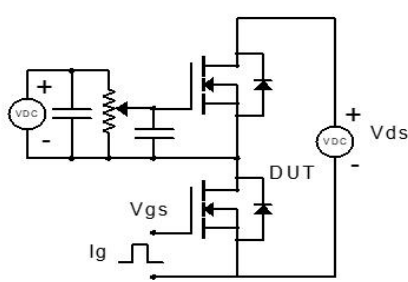


Figure 1: Gate Charge Test Circuit & Waveform

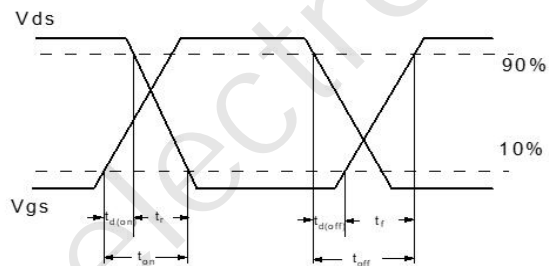
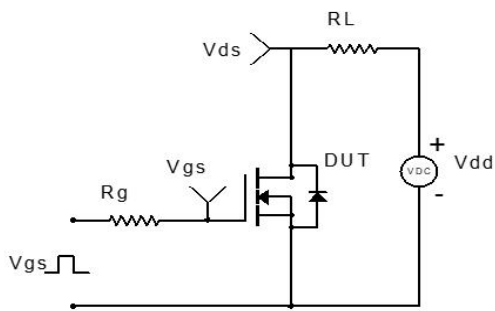


Figure 2: Resistive Switching Test Circuit & Waveform

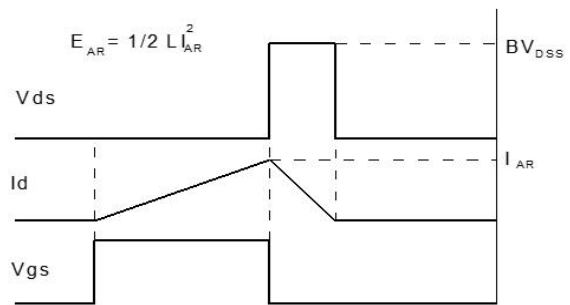
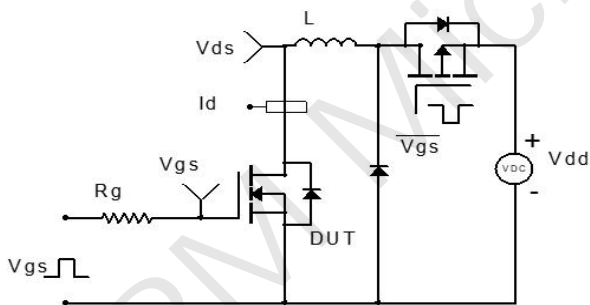


Figure 3: Unclamped Inductive Switching Test Circuit & Waveform

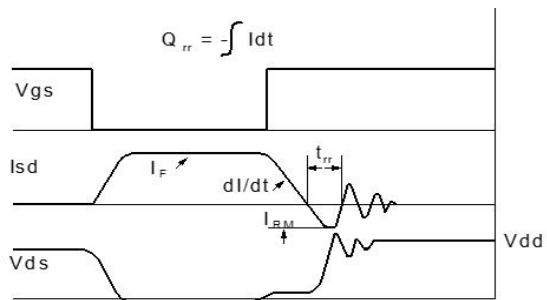
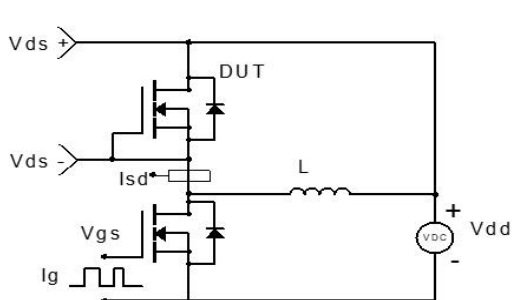
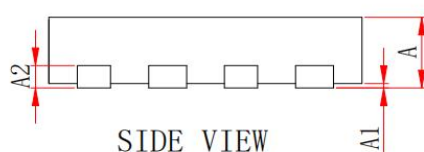
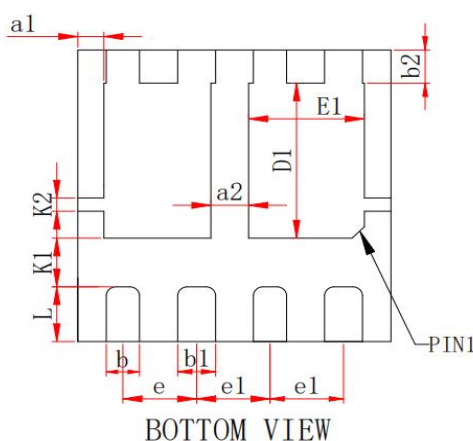
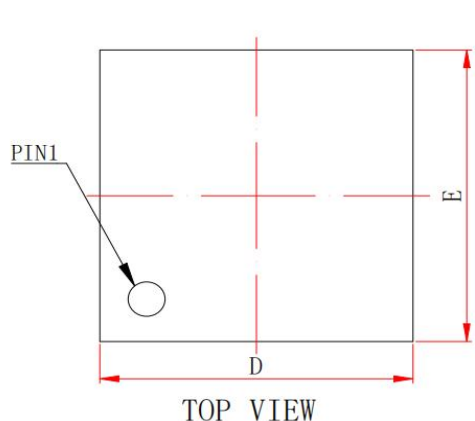


Figure 4: Diode Recovery Test Circuit & Waveform

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




STMBOL	MIN	NOM	MAX
D	3.20	3.30	3.40
E	3.20	3.30	3.40
A	0.70	0.75	0.80
A1	0.00	-	0.05
A2	0.203REF		
L	0.50	0.60	0.70
b	0.30	0.35	0.40
b1	0.35	0.40	0.45
e	0.775BSC		
e1	0.725BSC		
K1	0.500BSC		
K2	0.200BSC		
b2	0.30	0.35	0.40
E1	0.10	1.15	1.20
D1	1.70	1.75	1.80
a1	0.30	0.35	0.40
a2	0.30	0.35	0.40

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