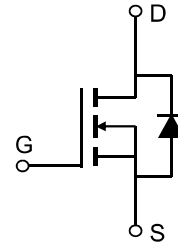


Description

Features

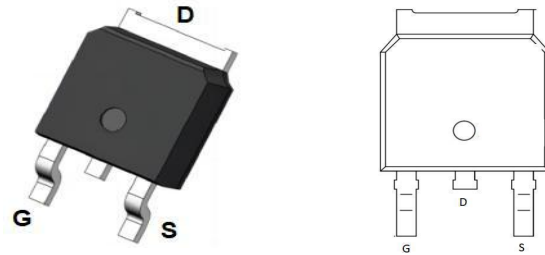
- 100V, 60A
 $R_{DS(ON)}$ Typ = 9.5mΩ @ $V_{GS} = 10V$
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- 100% UIS TESTED!
- 100% ΔV_{ds} TESTED!



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)
CD9R5N10H	CD9R5N10H	TO-252-3L	TAPING	13"	2500	25000

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	$T_C = 25^\circ\text{C}$	60
		$T_C = 100^\circ\text{C}$	36
I_{DM}	Pulsed Drain Current ⁽¹⁾	240	A
E_{AS}	Single Pulsed Avalanche Energy ⁽²⁾	90	mJ
P_D	Power Dissipation	$T_C = 25^\circ\text{C}$	78
$R_{\theta JC}$	Thermal Resistance, Junction to Case	1.6	°C/W
T_J, T_{STG}	Junction & Storage Temperature Range	-55 to 150	°C

Electrical Characteristics (T_J=25 unless otherwise specified)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
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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	-	9.5	12.3	mΩ

Dynamic Characteristics

C _{iss}	Input Capacitance	V _{GS} = 0V, V _{DS} = 50V, f = 1MHz	-	1176	-	pF
C _{oss}	Output Capacitance		-	558	-	pF
C _{rss}	Reverse Transfer Capacitance		-	7.6	-	pF
Q _g	Total Gate Charge	V _{GS} = 0 to 10V V _{DS} = 50V, I _D = 20A	-	28	-	nC
Q _{gs}	Gate Source Charge		-	4.9	-	nC
Q _{gd}	Gate Drain("Miller") Charge		-	7	-	nC

Switching Characteristics

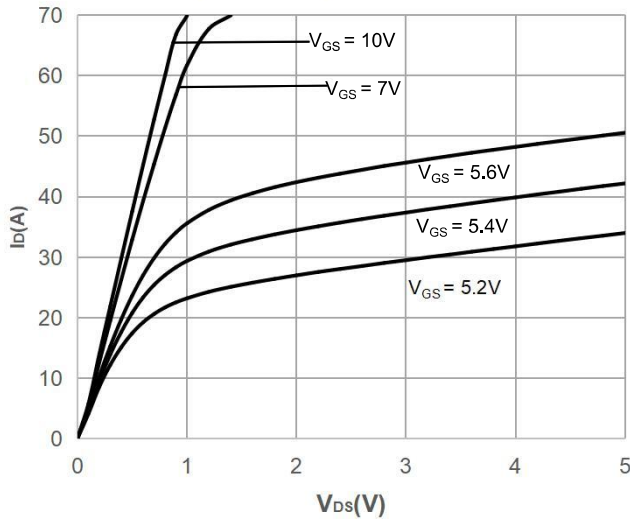
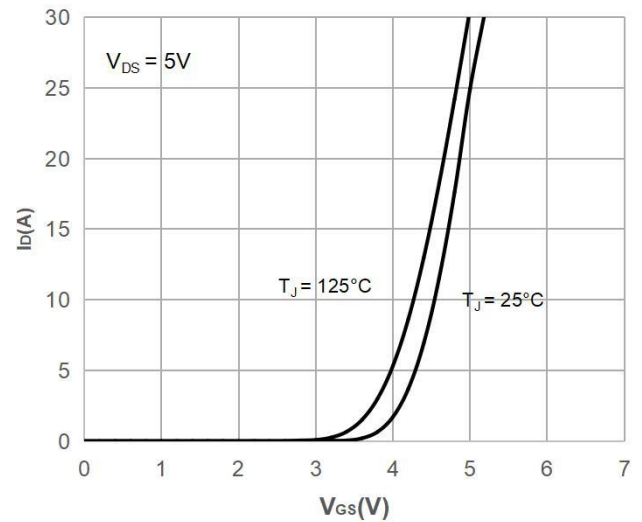
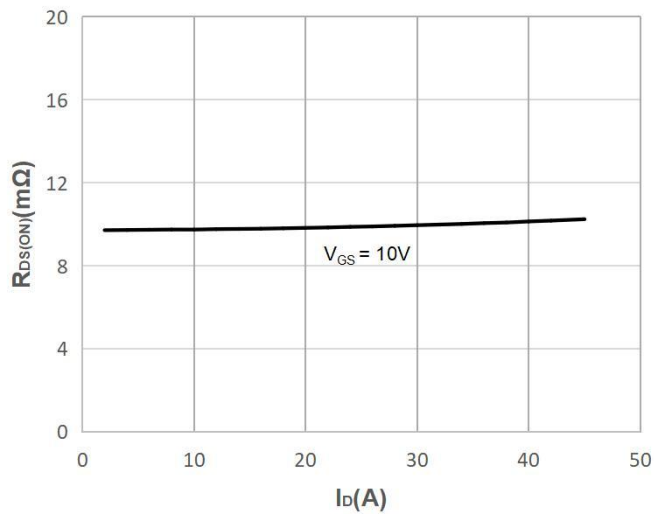
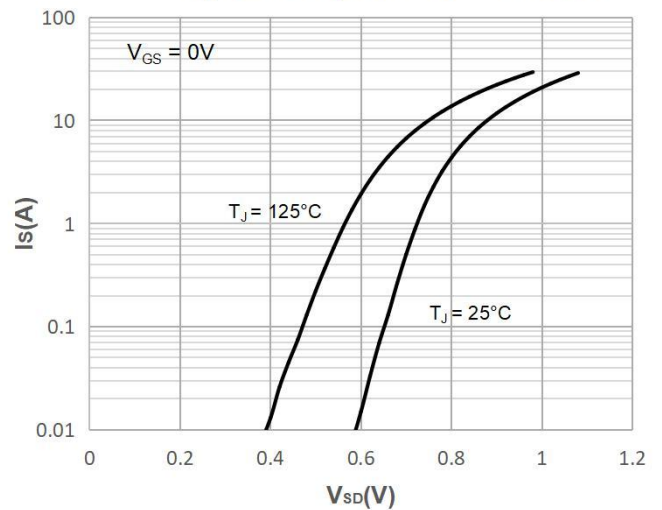
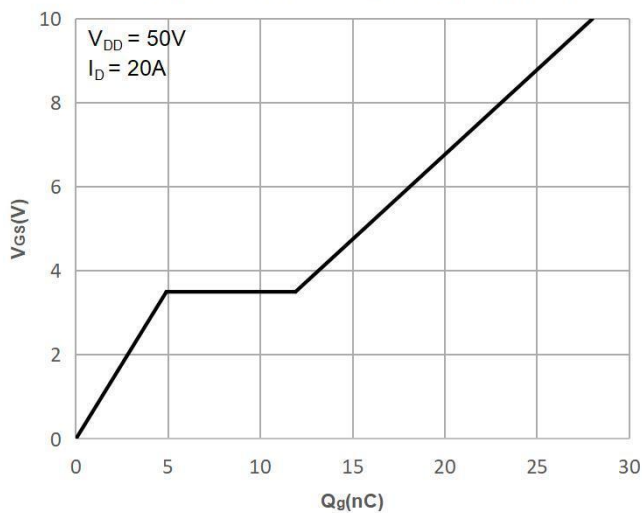
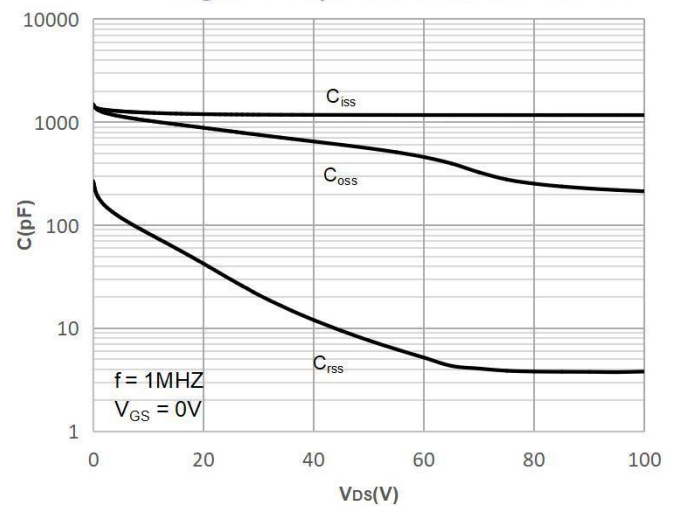
t _{d(on)}	Turn-On DelayTime	V _{GS} = 10V, V _{DD} = 50V I _D = 20A, R _{GEN} = 6Ω	-	13.5	-	ns
t _r	Turn-On Rise Time		-	17.0	-	ns
t _{d(off)}	Turn-Off DelayTime		-	30	-	ns
t _f	Turn-Off Fall Time		-	18	-	ns

Drain-Source Diode Characteristics and Max Ratings

I _S	Maximum Continuous Drain to Source Diode Forward Current	V _{GS} = 0V, I _S = 30A	-	-	60	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	240	A
V _{SD}	Drain to Source Diode Forward Voltage		-	-	1.2	V
t _{rr}	Body Diode Reverse Recovery Time		-	50	-	ns
Q _{rr}	Body Diode Reverse Recovery Charge		-	80	-	nC

- Notes:
1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.
 2. E_{AS} condition: Starting T_J=25°C, V_{DS}=50V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=19A
 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

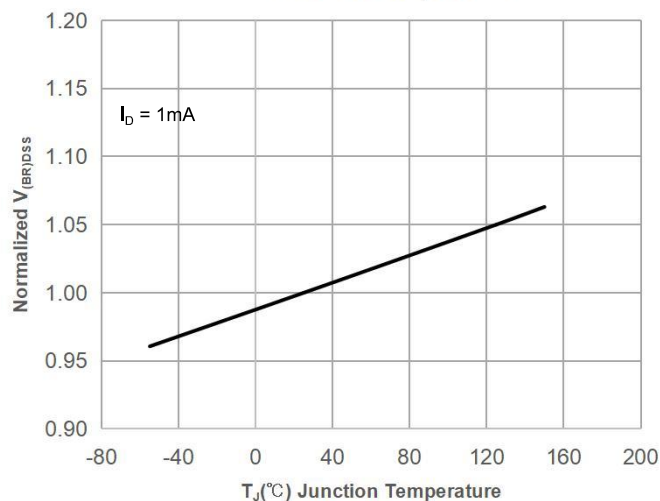


Figure 8: Normalized on Resistance vs. Junction Temperature

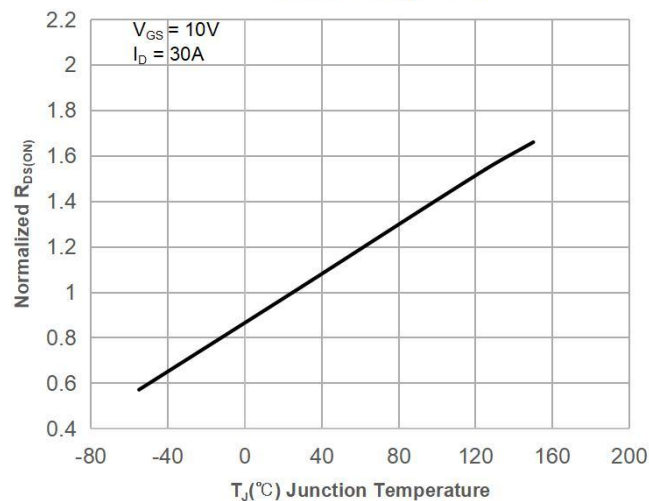


Figure 9: Maximum Safe Operating Area

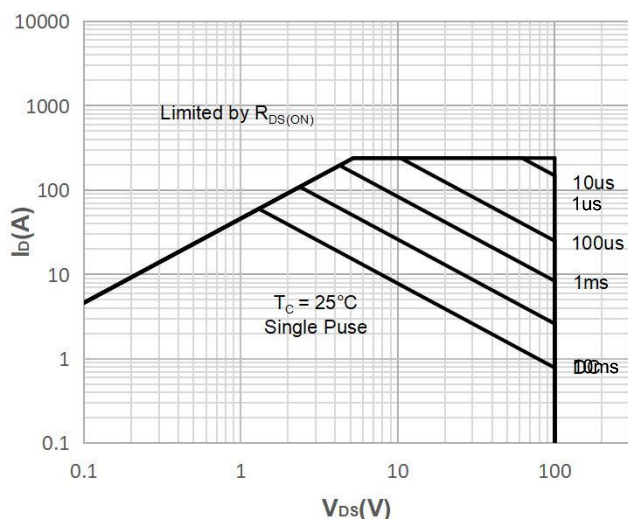


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

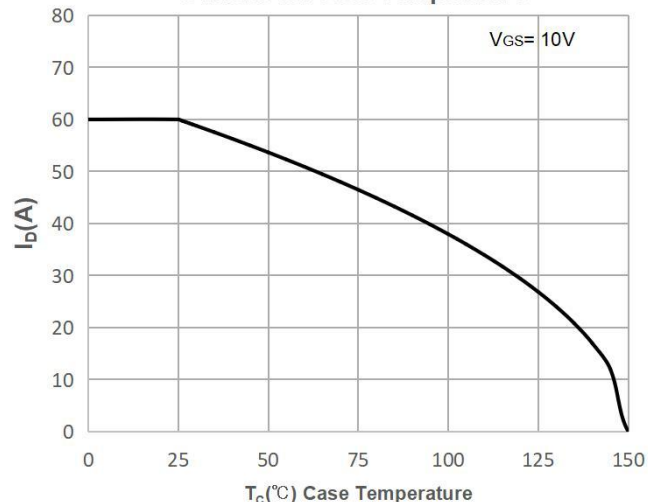


Figure 11: Normalized Maximum Transient Thermal Impedance

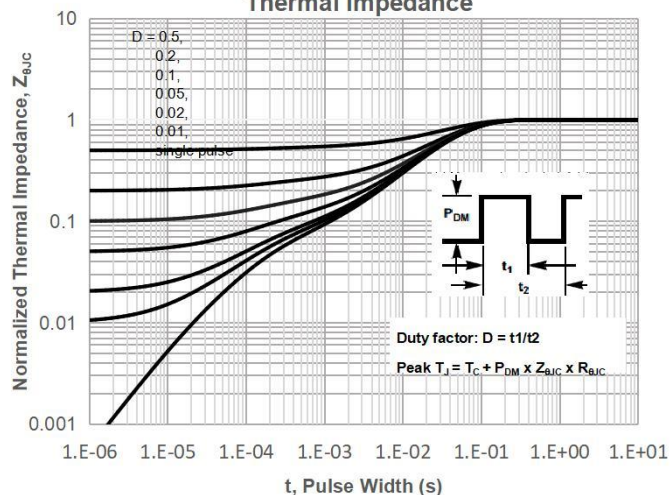
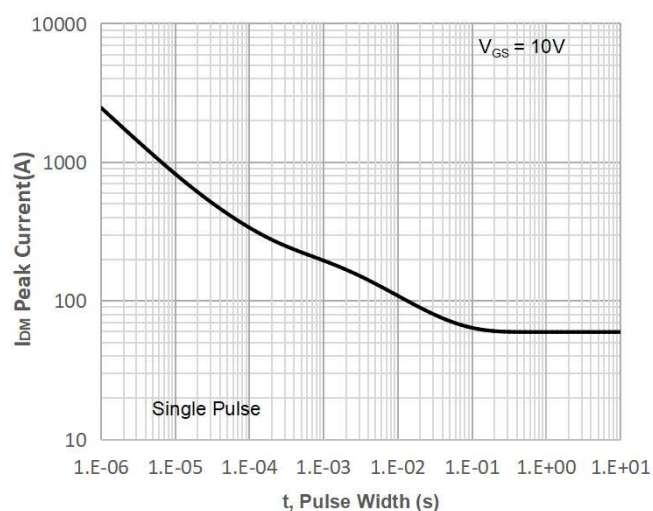


Figure 12: Peak Current Capacity



Test Circuit

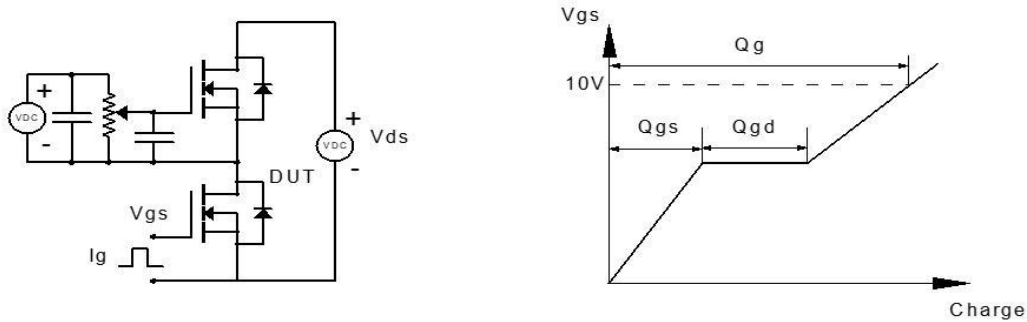


Figure 1: Gate Charge Test Circuit & Waveform

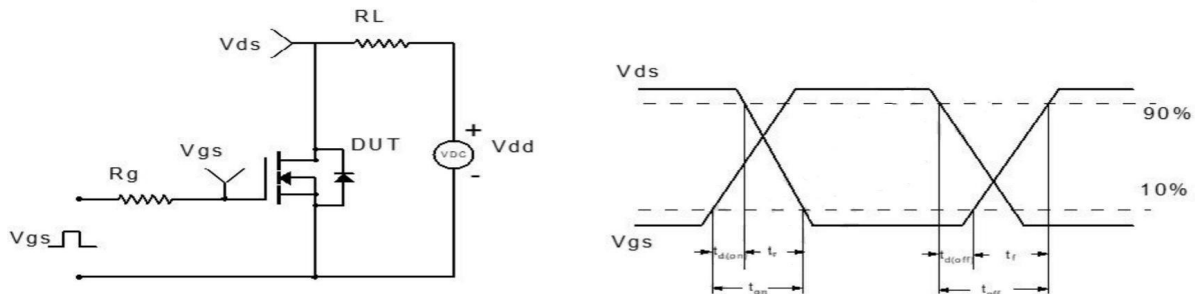


Figure 2: Resistive Switching Test Circuit & Waveform

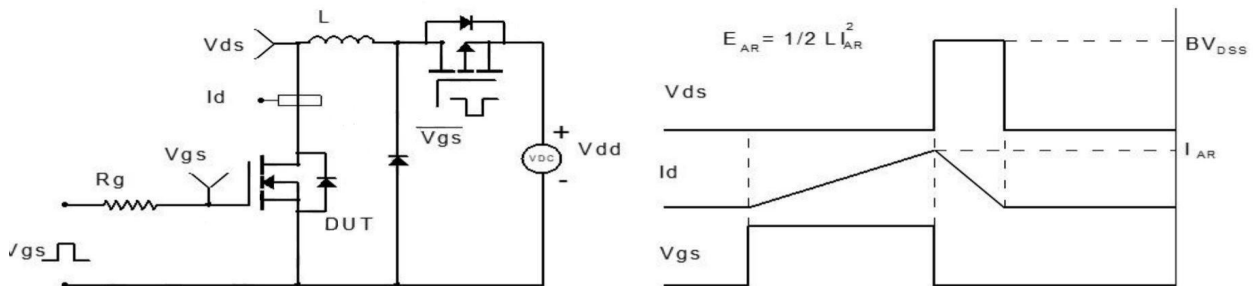


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

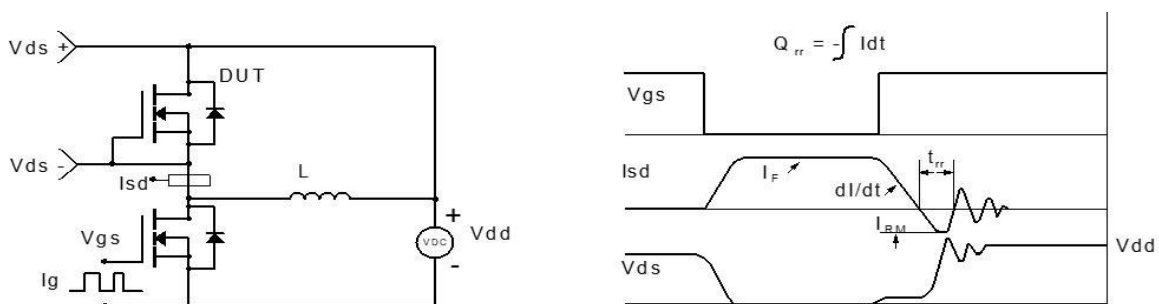
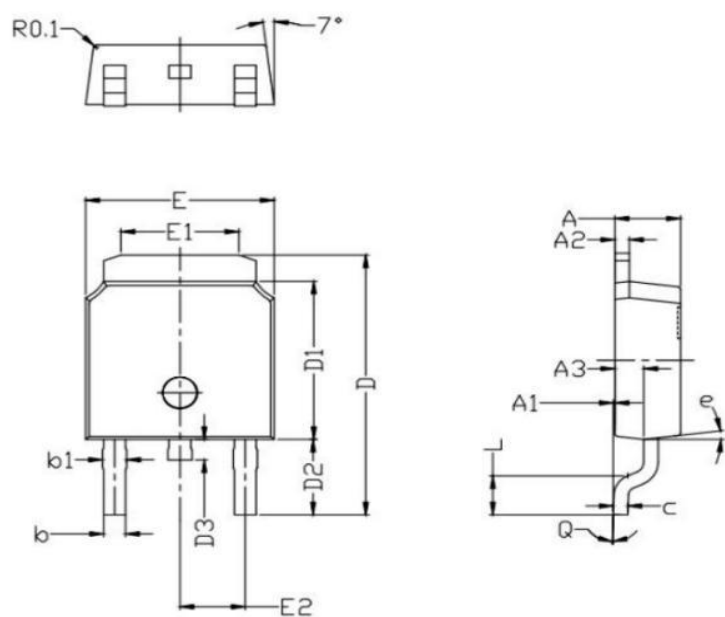


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(TO-252-3L)



COMMON DIMENSION(MM)			
PKG	TO-252-3L		
Symbol	MIN	MON	MAX
A	2.250	2.300	2.400
A1	0.010	0.060	0.150
A2	0.500	0.508	0.550
A3	0.960	1.010	1.060
b	0.740	0.760	0.800
b1	0.880	0.900	0.950
c	0.500	0.508	0.550
D	9.800	10.025	10.350
D1	6.050	6.100	6.180
D2	2.850	2.900	2.950
D3	0.700	0.800	2.900
E	6.550	6.600	6.700
E1	4.050	4.130	4.200
E2	2.250	2.286	2.300
L	1.400	1.500	1.600
e	7.000		
Q	0°	2°	5°

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