Description

N-channel Enhancement Mode Power MOSFET

Features

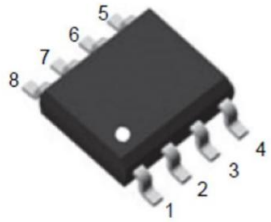
- 100V, 12A
  $R_{DS(ON)}$ Typ = 10mΩ @ V_{GS} = 10V
  $R_{DS(ON)}$ Typ = 13mΩ @ V_{GS} = 4.5V
- Advanced Split Gate Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free

Applications

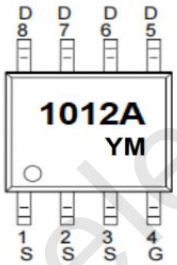
- Load Switch
- PWM Application
- Power Management

100% UIS TESTED!

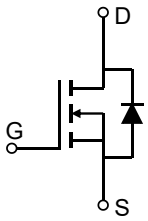
RoHS



SOP-8



Marking and Pin Assignment



Schematic Diagram

Package Marking and Ordering Information

Device Marking	Device	Outline	Package	Reel Size	Reel(pcs)	Per Carton (pcs)
1012A	CRMPGL1012A	TAPING	SOP-8	13"	4000	40000

Absolute Maximum Ratings (@ T_J = 25°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_A = 25°C	12	A
		T_A = 100°C	7.5	
I_{DM}	Pulsed Drain Current (1)		48	A
E_{AS}	Single Pulsed Avalanche Energy (2)		72	mJ
P_D	Power Dissipation	T_A = 25°C	3.1	W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient (3)		40	°C/W
T_J, T_{STG}	Junction & Storage Temperature Range		-55 to 150	°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	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	1.0	1.7	2.5	V
$R_{DS(ON)}$	Static Drain-Source ON-Resistance(4)	V_{GS} = 10V, I_D = 12A	-	10.0	13.0	mΩ
		V_{GS} = 4.5V, I_D = 10A	-	13.0	17.0	mΩ
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz	-	1500	-	pF
C_{oss}	Output Capacitance		-	840	-	pF
C_{rss}	Reverse Transfer Capacitance		-	30	-	pF
Q_g	Total Gate Charge	V_{GS} = 0 to 10V, V_{DS} = 50V, I_D = 12A	-	35	-	nC
Q_{gs}	Gate Source Charge		-	4.5	-	nC
Q_{gd}	Gate Drain("Miller") Charge		-	8	-	nC
Switching Characteristics						
$t_{d(on)}$	Turn-On DelayTime	V_{GS} = 10V, V_{DD} = 50V, I_D= 12A, R_{GEN} = 3Ω	-	16	-	ns
t_r	Turn-On Rise Time		-	13	-	ns
$t_{d(off)}$	Turn-Off DelayTime		-	37	-	ns
t_f	Turn-Off Fall Time		-	17	-	ns
Drain-Source Diode Characteristics and Max Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	12	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	48	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = 12A	-	-	1.2	V

Notes: 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2. E_{AS} condition: Starting T_J=25C, V_{DD}=30V, V_G=10V, R_G=25ohm, L=0.5mH, I_{AS}=17A

3. $R_{\theta JA}$ is measured with the device mounted on a 1inch^2 pad of 2oz copper FR4 PCB

4. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%.

Typical Performance Characteristics

Figure 1: Output Characteristics

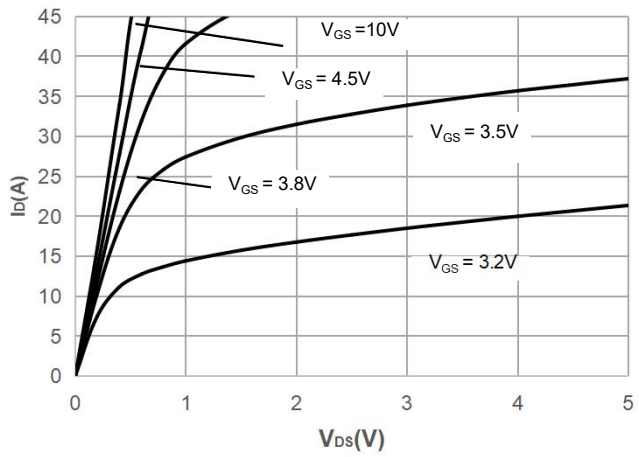


Figure 2: Typical Transfer Characteristics

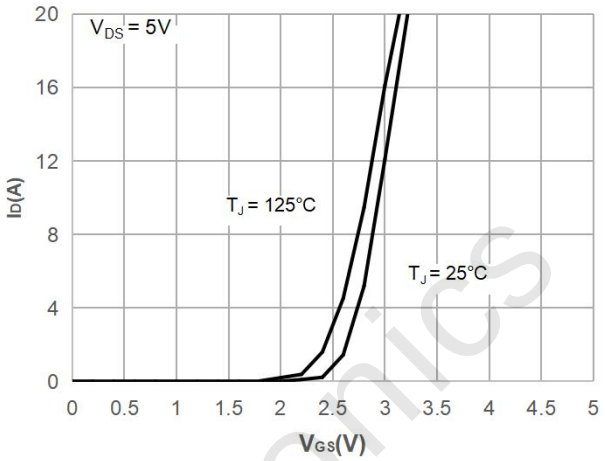


Figure 3: On-resistance vs. Drain Current

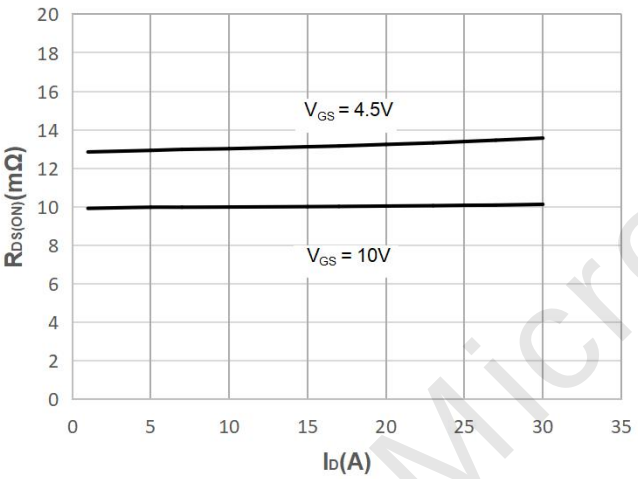


Figure 4: Body Diode Characteristics

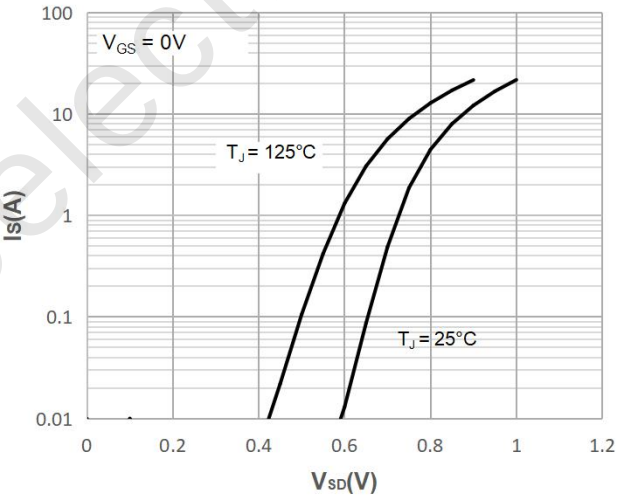


Figure 5: Gate Charge Characteristics

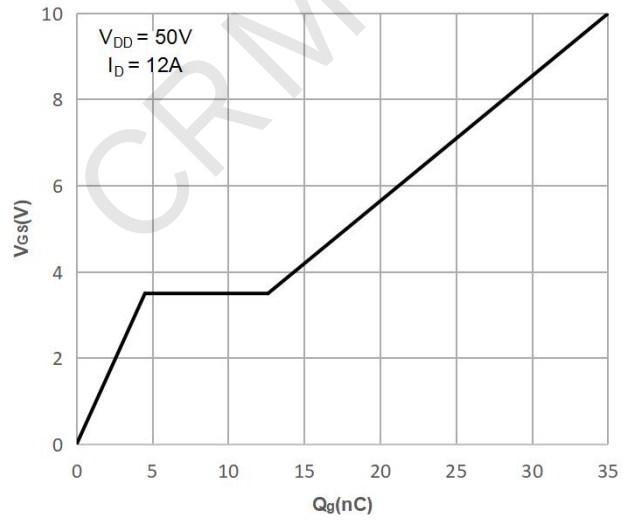
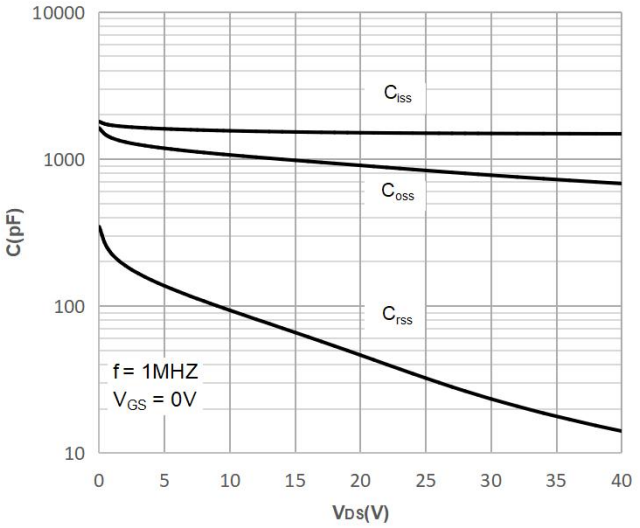


Figure 6: Capacitance Characteristics



Typical Performance Characteristics

Figure 7: Normalized Breakdown voltage vs. Junction Temperature

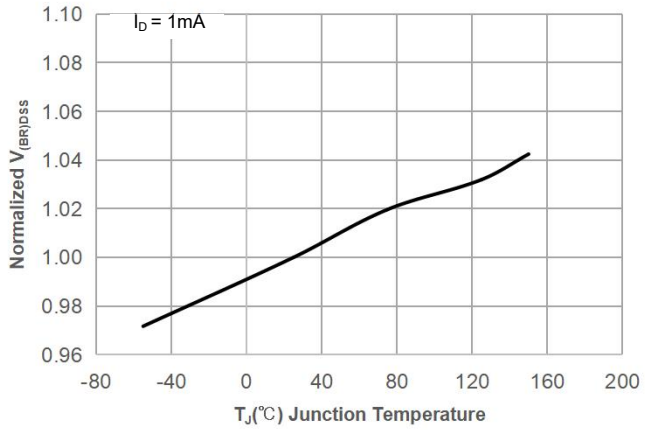


Figure 8: Normalized on Resistance vs. Junction Temperature

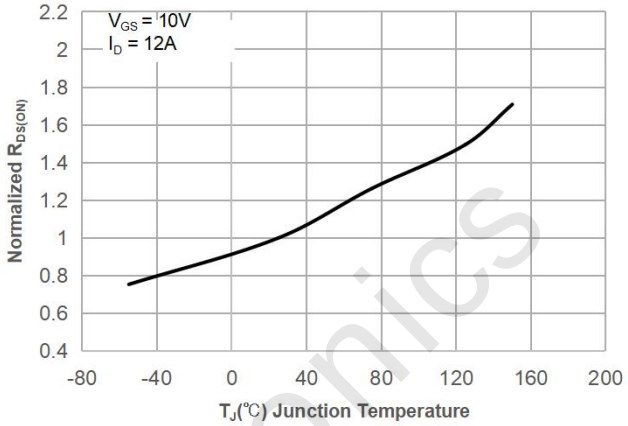


Figure 9: Maximum Safe Operating Area

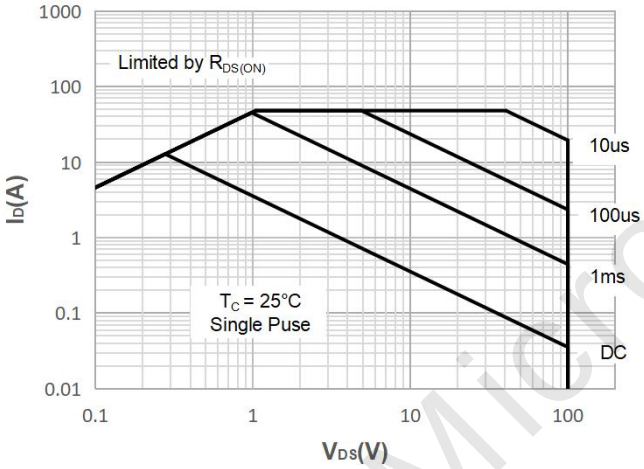


Figure 10: Maximum Continuous Drian Current vs. Case Temperature

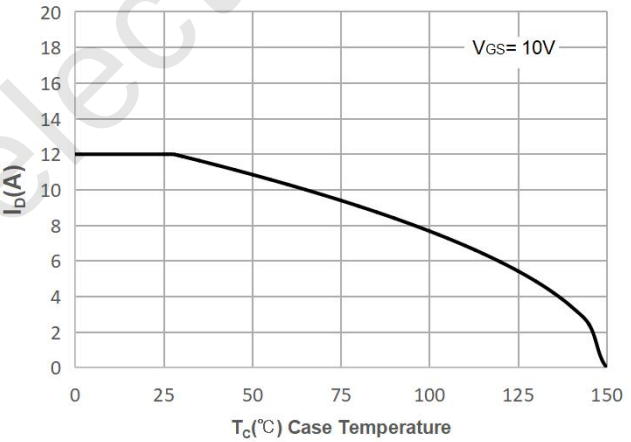


Figure 11: Normalized Maximum Transient Thermal Impedance

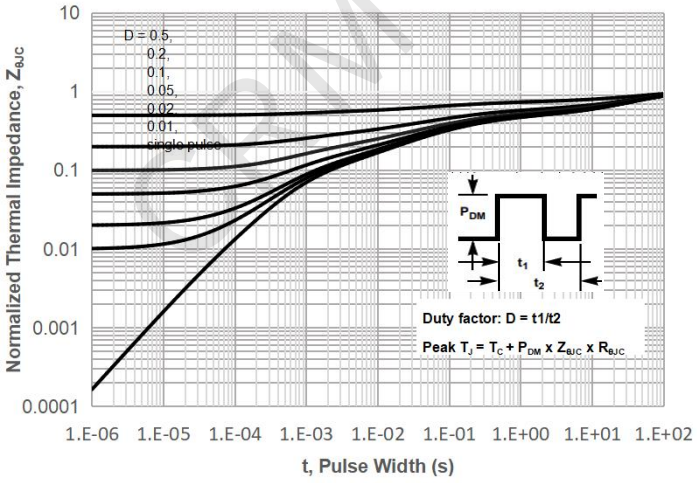
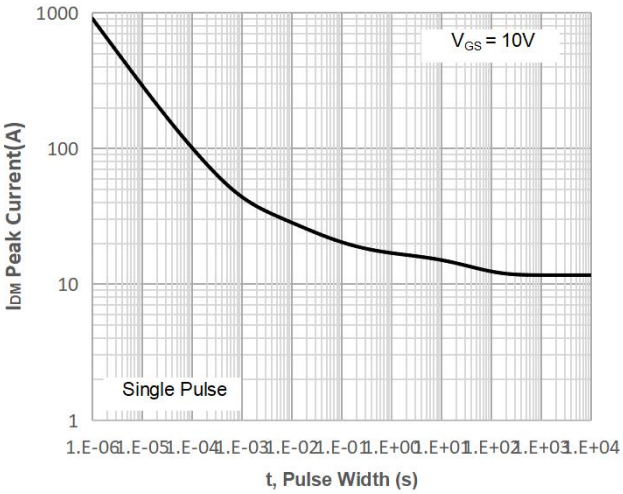


Figure 12: Peak Current Capacity



Test Circuit

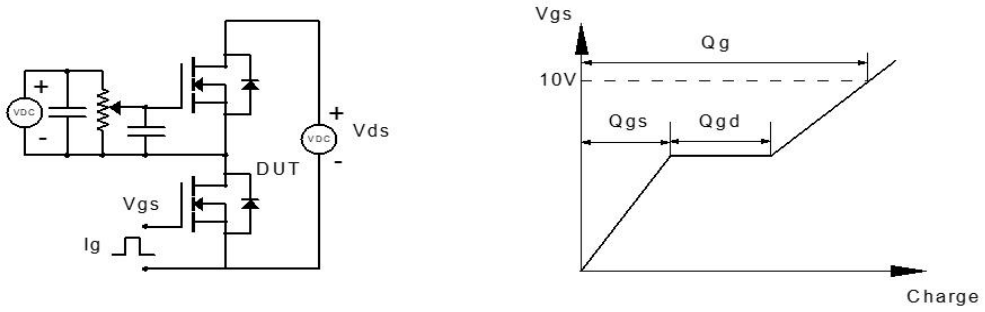


Figure 1: Gate Charge Test Circuit & Waveform

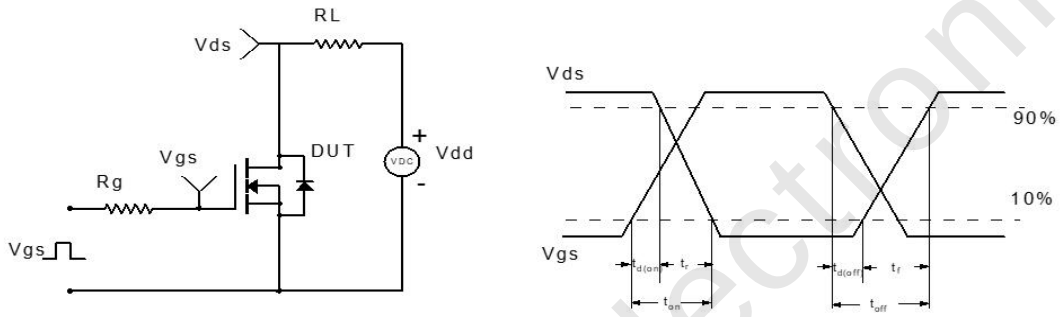


Figure 2: Resistive Switching Test Circuit & Waveform

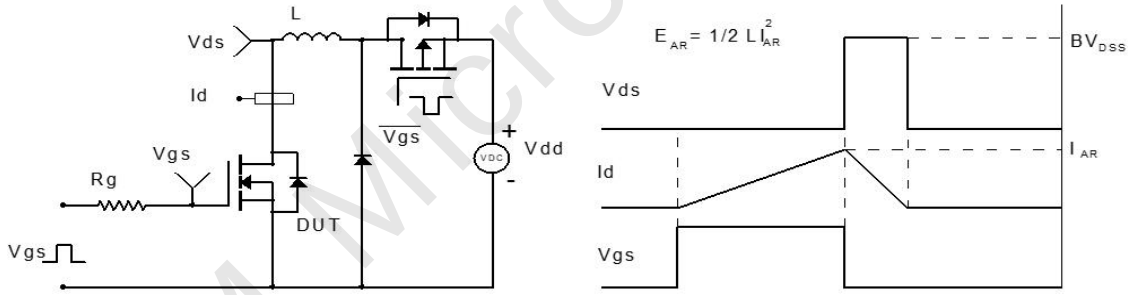


Figure 3: Unclamped Inductive Switching Test Circuit& Waveform

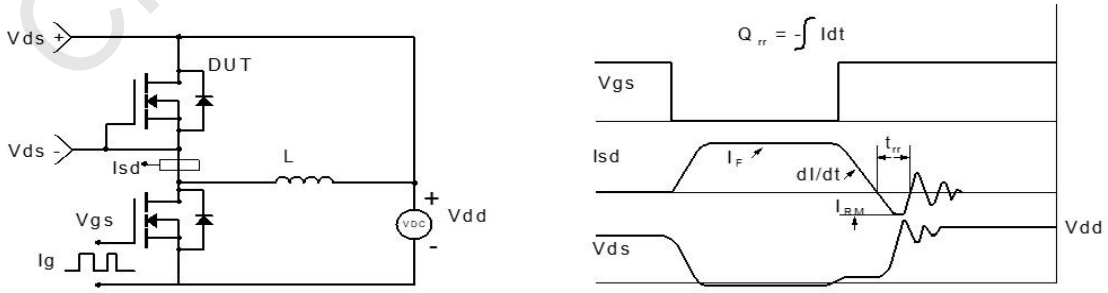
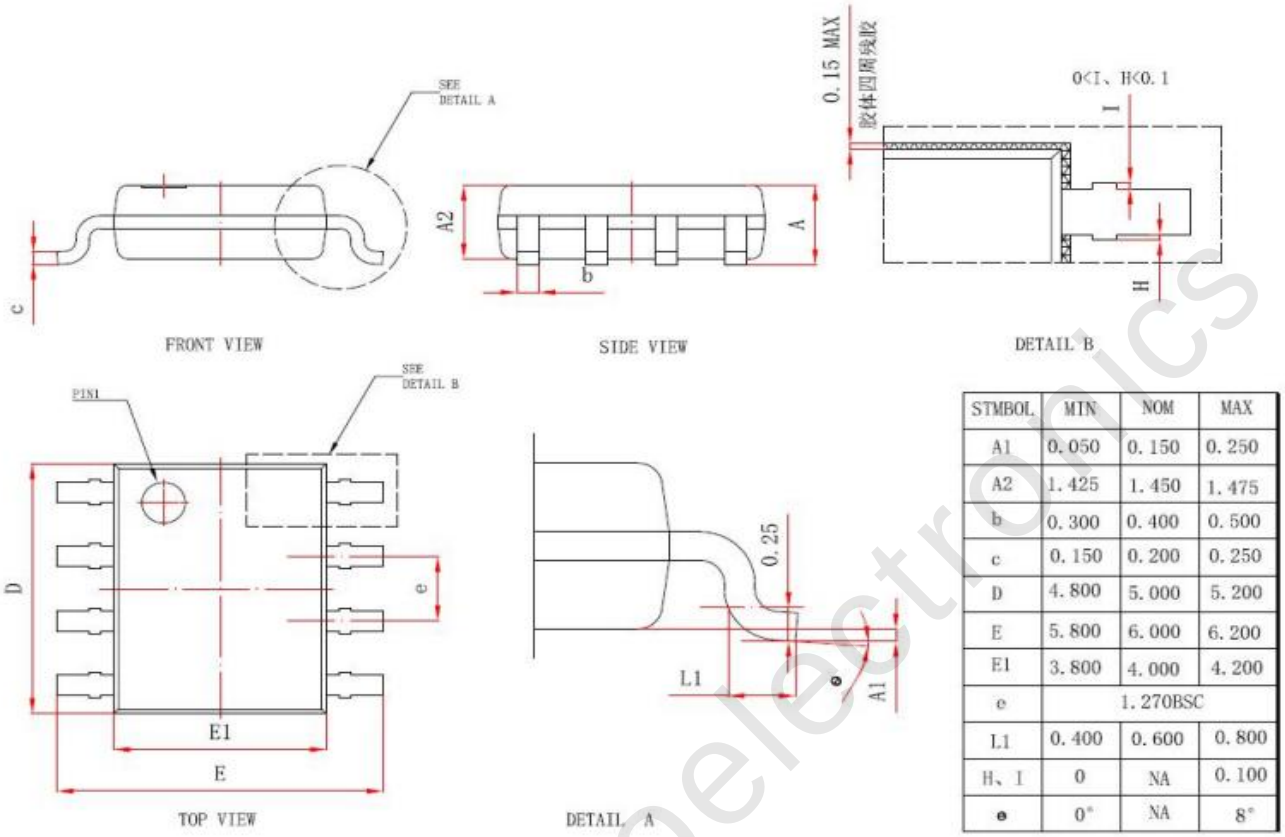


Figure 4: Diode Recovery Test Circuit & Waveform

Package Mechanical Data(SOP-8)



STMBOL	MIN	NOM	MAX
A1	0.050	0.150	0.250
A2	1.425	1.450	1.475
b	0.300	0.400	0.500
c	0.150	0.200	0.250
D	4.800	5.000	5.200
E	5.800	6.000	6.200
E1	3.800	4.000	4.200
e	1.270BSC		
L1	0.400	0.600	0.800
H、I	0	NA	0.100
θ	0°	NA	8°