Description

Features

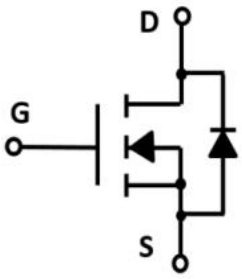
- 2 0 V,6.0A
- $R_{DS}(on)_{Typ}$=20mΩ@V_{GS} = 4.5 V
- $R_{DS}(on))_{Typ}$= 27mΩ@V_{GS} = 2.5V
- Very Low On-resistance $R_{DS}(on)$
- Improved dv/dt capability
- Low Crss

Application

- PWM Application
- Load Switch
- Power Management

Package

SOP-8



Schematic diagram

Absolute Maximum Ratings (T_C=25℃ unless otherwise specified)

Symbol	Parameter	SLV2302A	Units
V_{DSS}	Drain-Source Voltage	20	V
I_D	Drain Current- Continuous (TC = 25°C)	6.0	A
	- Continuous (TC = 70°C)	4.5	A
I_{DM}	Drain Current - Pulsed (Note 1)	24	A
V_{GSS}	Gate-Source Voltage	±10	V
P_D	Power Dissipation (TC = 25°C)	2.0	W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	68.5	°C/W
T_J, T_{STG}	Operating and Storage Temperature Range	-55 to +150	°C
T_L	Maximum lead temperature for soldering purposes, 1/8" from case for 5 seconds	300	°C

Package Marking and Ordering Information

Part no.	Marking	Package	PCS/Reel
9926A/M	9926	SOP-8	4000

Electrical Characteristics (T_C=25℃ unless otherwise specified)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
Off Characteristic						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=250μA	20	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =20V, V_{GS} = 0V,	-	-	1.0	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS} =0V,V_{GS} = ±10V	-	-	±100	nA
On Characteristics						
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D=250μA	0.45	-	1.1	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note3	V_{GS} =4.5V, I_D =4.3A	-	20	27	mΩ
		V_{GS} =2.5V, I_D =3.0A	-	27	38	
g_{FS}	Forward Transconductance	V_{DS} =10V, I_D =20A	-	24.6	-	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS} =10V, V_{GS} =0V, f = 1.0MHz	-	468	-	pF
C_{oss}	Output Capacitance		-	87	-	pF
C_{rss}	Reverse Transfer Capacitance		-	76	-	pF
R_g	Gate resistance	-	-	-	-	Ω
Switching Characteristics						
Q_g	Total Gate Charge	V_{DS} =10V, I_D =4.3A, V_{GS} =5V	-	8.4	-	nC
Q_{gs}	Gate-Source Charge		-	0.8	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	3.9	-	nC
$V_{plateau}$	Gate plateau voltage		-	-	-	V
$t_{d(on)}$	Turn-on Delay Time	V_{DS}=10V, V_{GS} =5V R_L=2.7Ω,R_{GEN}=6Ω	-	5.2	-	ns
t_r	Turn-on Rise Time		-	37	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	15	-	ns
t_f	Turn-off Fall Time		-	5.7	-	ns
Drain-Source Diode Characteristics and Maximum Ratings						
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	6	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S=10A	-	-	1.2	V

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

2. EAS condition: T_J=25°C,VDD=20V,VG=10V, RG=25Ω，L=0.5mH

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

Typical Performance Characteristics

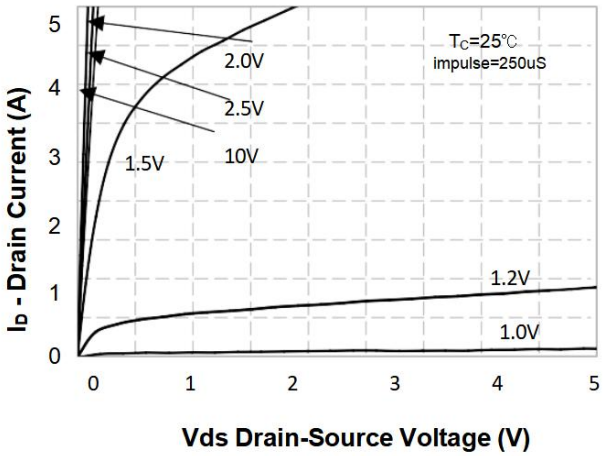


Figure 1. On-Region Characteristics

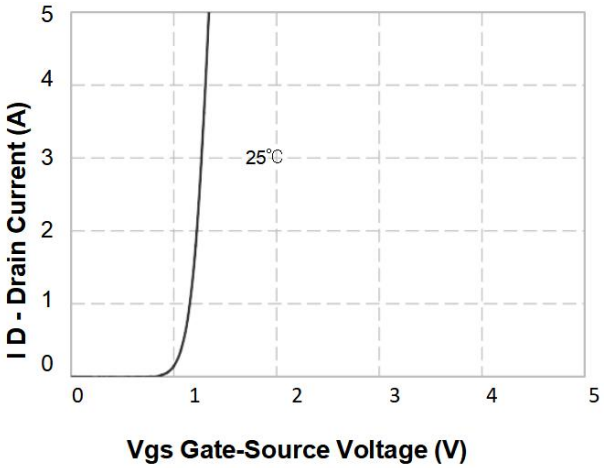


Figure 2. Transfer Characteristics

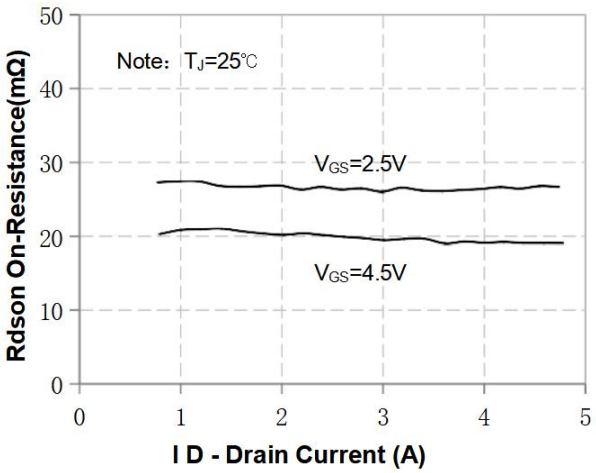


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

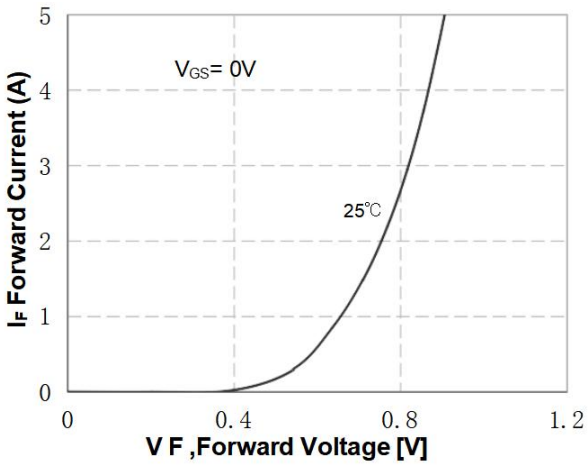


Figure 4. Body Diode Forward Voltage Variation with Source Current

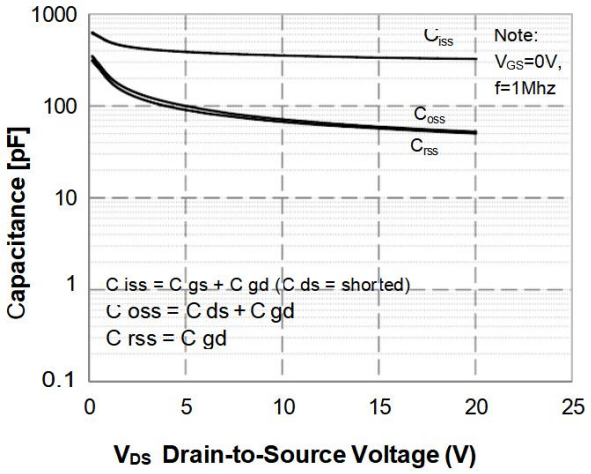


Figure 5. Capacitance Characteristics

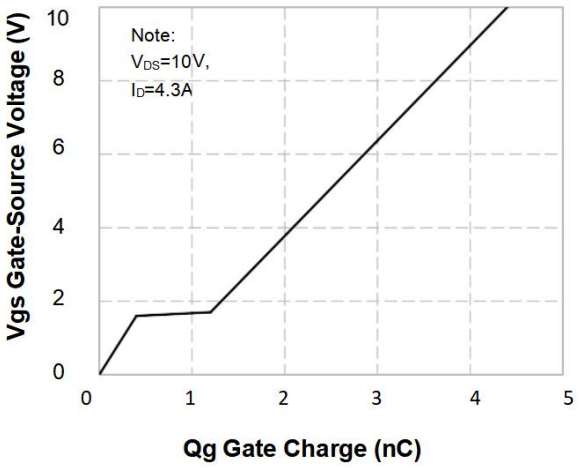


Figure 6. Gate Charge Characteristics

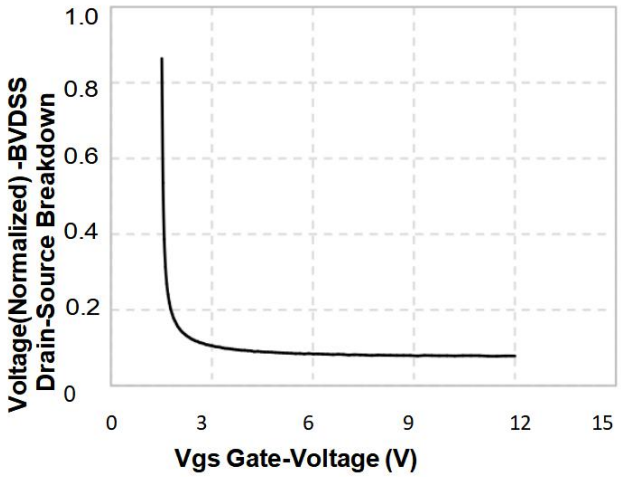


Figure 7. Breakdown Voltage Variation vs Gate-Voltage

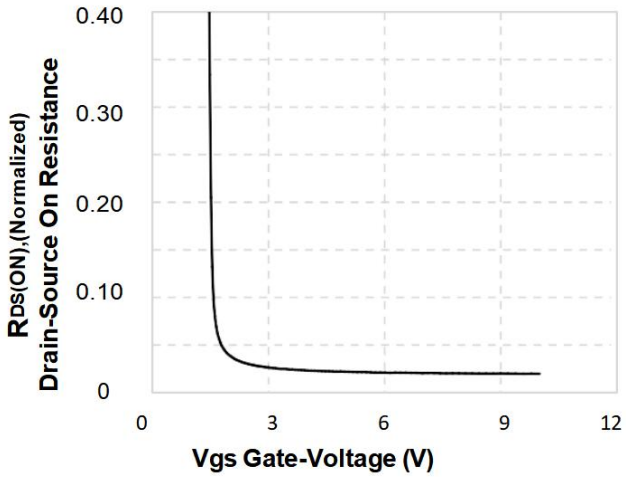


Figure 8. On-Resistance Variation vs Gate Voltage

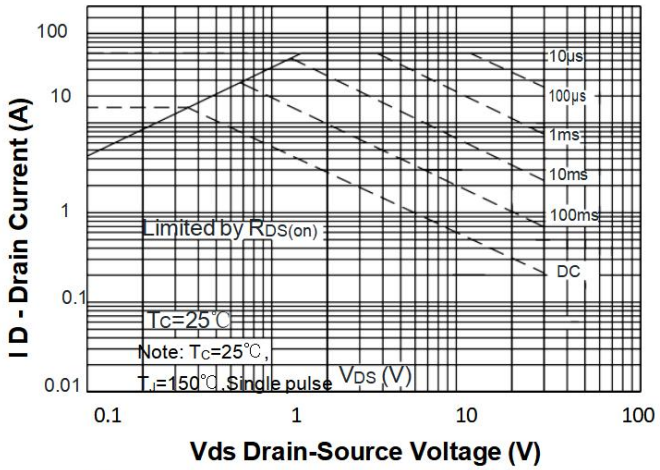


Figure 9. Maximum Safe Operating Area

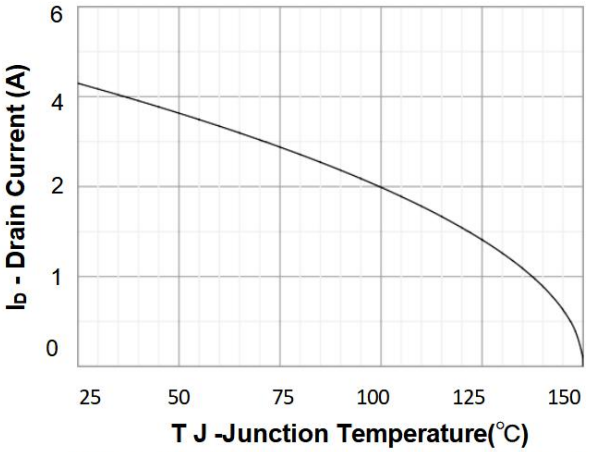


Figure 10. Maximum Continuous Drain Current vs Temperature

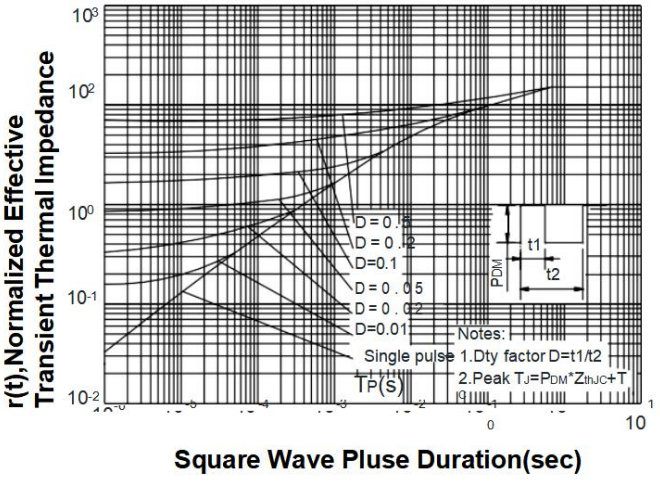
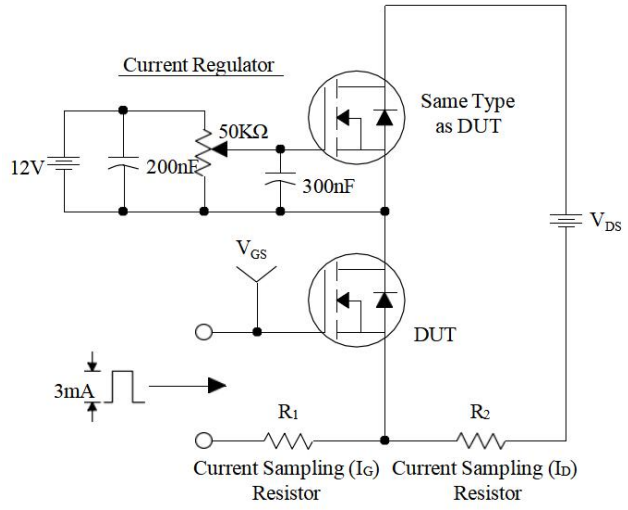
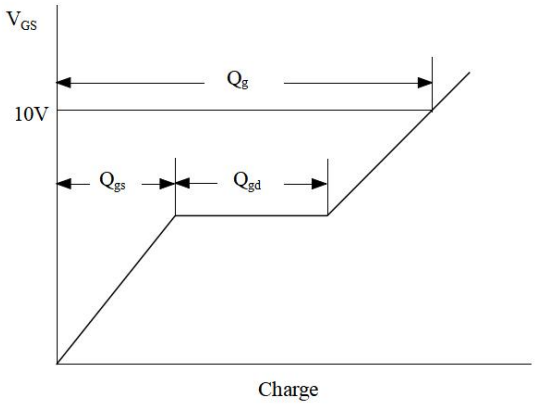


Figure 11. Transient Thermal Response Curve

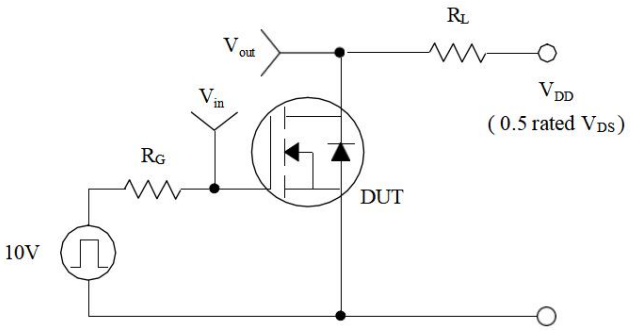
Test Circuit

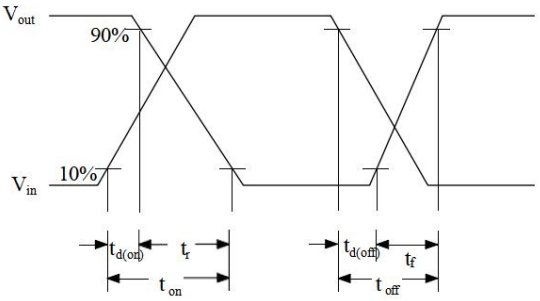
Gate Charge Test Circuit & Waveform



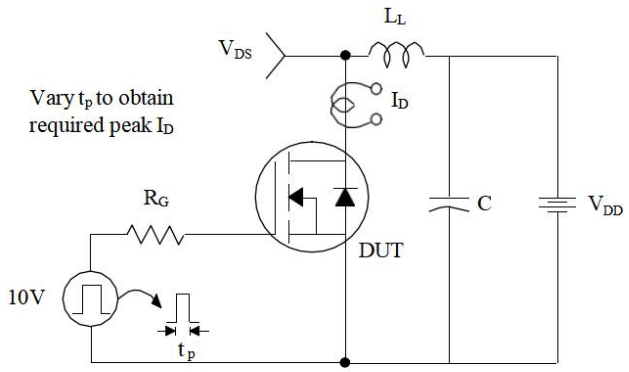


Resistive Switching Test Circuit & Waveforms

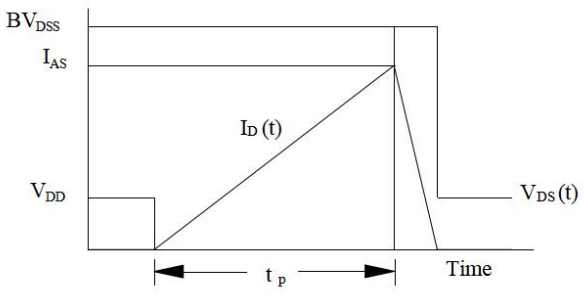




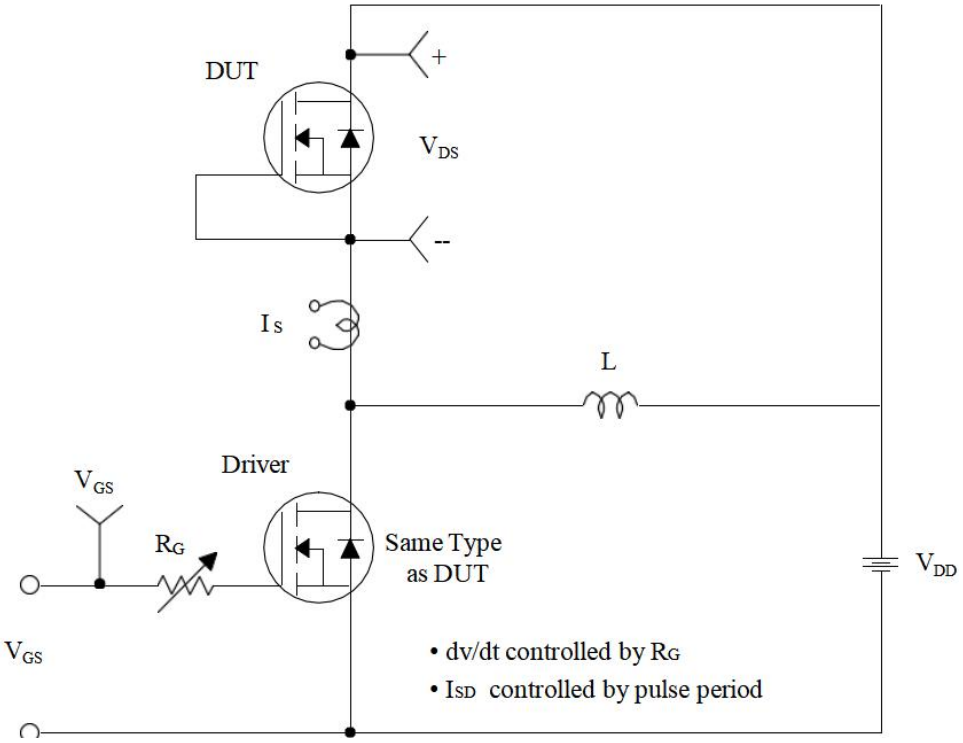
Unclamped Inductive Switching Test Circuit & Waveforms

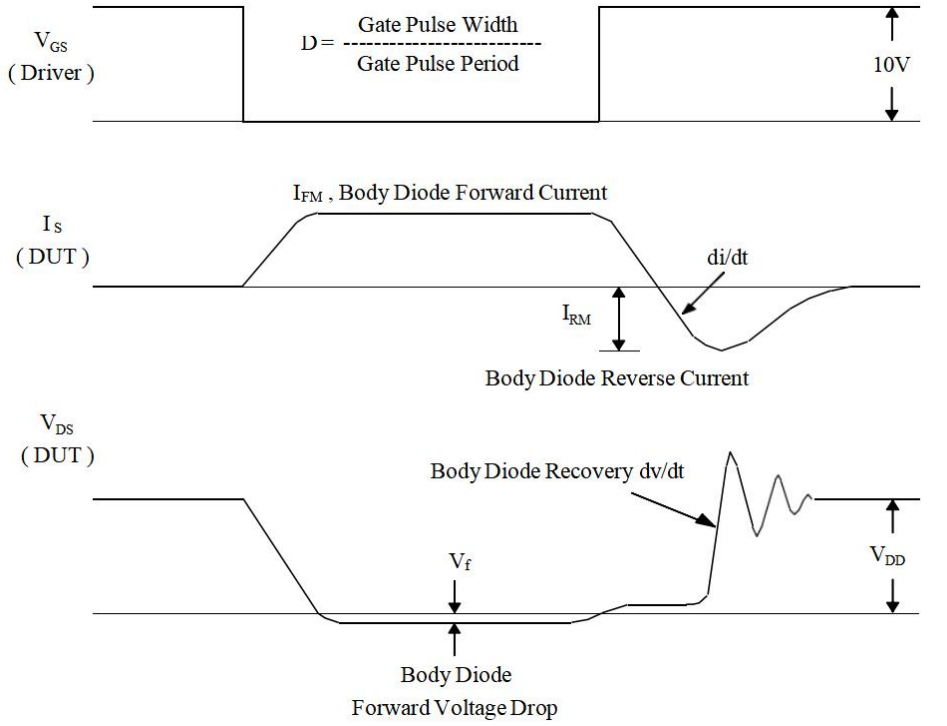


$$E_{AS} = \frac{1}{2} L_L I_{AS}^2$$



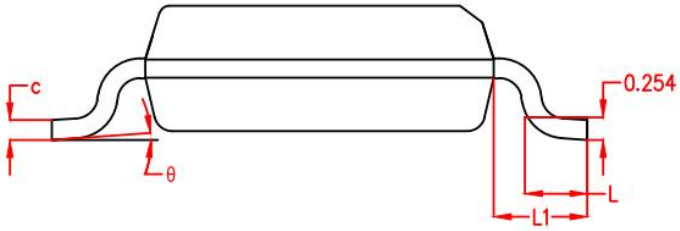
Peak Diode Recovery dv/dt Test Circuit & Waveforms

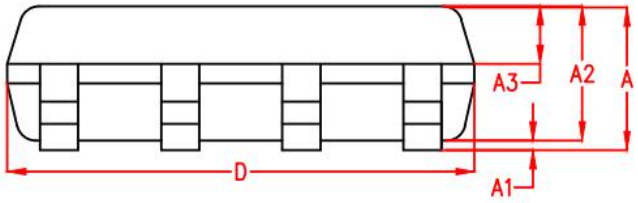


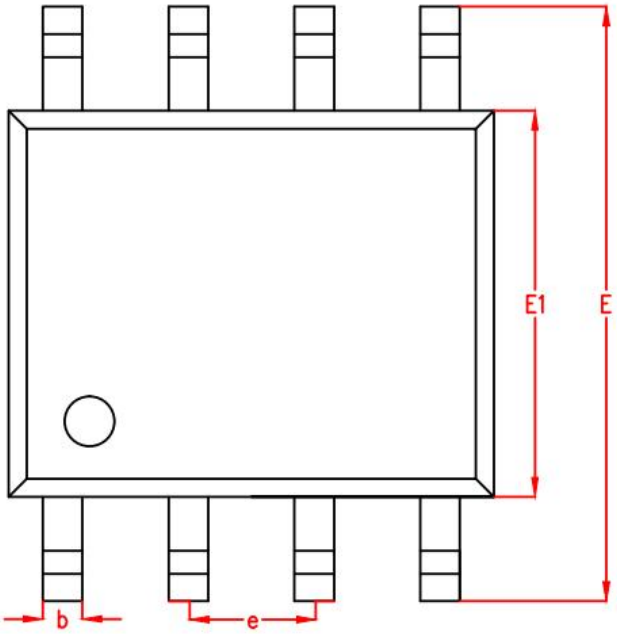


Package Information

- SOP-8







SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	1.38	1.50	1.60
A1	0.03	0.10	0.15
A2	1.35	1.40	1.45
A3	0.55	0.60	0.65
b	0.35	0.40	0.45
c	0.19	0.22	0.25
D	4.85	4.90	4.95
E	5.80	6.00	6.20
E1	3.85	3.90	3.95
e	1.27BSC		
L	0.45	0.60	0.75
L1	1.05BSC		
θ	0°	4°	8°