

Description

Features

- Trench Power LV MOSFET technology
- Excellent package for heat dissipation
- High density cell design for low $R_{DS(ON)}$

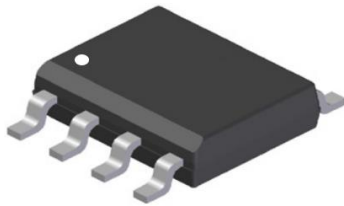
Application

- High current load application
- Load switching
- Quick Charge

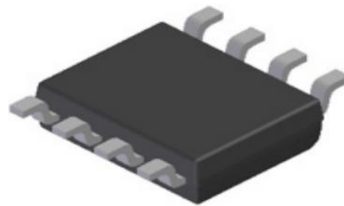
V_{DS}	30	V
$R_{ds(on),typ}@V_{gs}=10V$	7.8	mΩ
$R_{ds(on),typ}@V_{gs}=4.5V$	11.5	mΩ
I_D	40	A



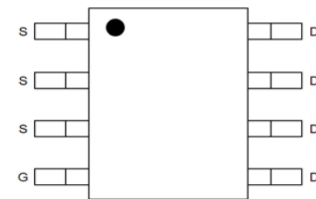
Top View



Bottom View



Pin Configuration



Package Marking and Ordering Information

Part	Marking	Package	Packing	Reel Size	Tape Width	Qty
CMT4406S	T4406S	SOP-8L	Reel	NA	NA	4000pcs

Key Performance Parameters

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	30	V
V_{GS}	Gate-Source Voltage	±20	V
$I_{D@Tc=25^{\circ}C}$	Continuous Drain Current, $V_{GS}=10V$	40	A
$I_{D@Tc=100^{\circ}C}$	Continuous Drain Current, $V_{GS}=10V$	30	A
IDM	Pulsed Drain Current ¹	160	A
$PD@Tc=25^{\circ}C$	Total Power Dissipation	32	W
T_{STG}	Storage Temperature Range	-55 to 150	°C
T_j	Operating Junction Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Typ	Max	Units
R _{θJA}	Thermal Resistance Junction-Ambient	75	90	°C/W
R _{θJC}	Thermal Resistance Junction-Case	3.2	3.8	°C/W

Electrical Characteristics (T_J=25 °C, Unless otherwise noted)

Symbol	Parameter	Values			Unit	Note / Test Condition
		Min.	Typ.	Max.		
BVDSS	Drain-Source Breakdown Voltage	30	--	--	V	V _{GS} =0V, I _D =250uA
R _{DS(ON)}	Static Drain-Source On-Resistance	--	7.8	12	mΩ	V _{GS} =10V, I _D =10A
		--	11.5	17		V _{GS} =4.5V, I _D =5A
V _{GS(th)}	Gate Threshold Voltage	1	1.6	2.5	V	V _{GS} =V _{DS} , I _D =250uA
IDSS	Drain-Source Leakage Current	--	--	1	uA	V _{DS} =30V, V _{GS} =0V, T _J =25°C
		--	--	10	uA	V _{DS} =24V, V _{GS} =0V, T _J =125°C
IGSS	Gate-Source Leakage Current	--	--	±100	nA	V _{GS} =±20V, V _{DS} =0V
g _{fs}	Forward Transconductance	--	24	--	S	V _{DS} =5V, I _D =10A
R _g	Gate Resistance	--	1.2	--	Ω	V _{DS} =0V, V _{GS} =0V, f=1MHz
Q _g	Total Gate Charge ^{2,3}	--	20	--	nC	V _{DS} =15V, V _{GS} =10V, I _D =10A
Q _{gs}	Gate-Source Charge ^{2,3}	--	3.1	--		
Q _{gd}	Gate-Drain Charge ^{2,3}	--	4.1	--		
T _{d(on)}	Turn-On Delay Time ^{2,3}	--	20	--	ns	V _{DD} =15V, V _{GS} =10V, R _G =3Ω I _D =10A
T _r	Rise Time ^{2,3}	--	27	--		
T _{d(off)}	Turn-Off Delay Time ^{2,3}	--	40	--		
T _f	Fall Time ^{2,3}	--	23	--		
C _{iss}	Input Capacitance	--	1041	--	pF	V _{DS} =15V, V _{GS} =0V, f=1MHz
C _{oss}	Output Capacitance	--	164	--		
C _{rss}	Reverse Transfer Capacitance	--	101	--		

Diode Characteristics

Symbol	Parameter	Conditions	Min	Typ	Max	Units
I _S	Continuous Source Current	V _G =V _D =0V, Force Current	--	--	40	A
I _{sm}	Pulsed Source Current		--	--	160	A
T _{rr}	Body Diode Reverse Recovery Time	I _F =10A, di/dt=100A/us	--	12	--	ns
Q _{rr}	Body Diode Reverse Recovery Charge		--	1.5	--	nC
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =10A, T _J =25°C	--	--	1.3	V

Note:

1. Repetitive Rating: Pulsed width limited by maximum junction temperature.
2. The data tested by pulsed, pulse width ≤ 300us, duty cycle ≤ 2%.
3. Essentially independent of operating temperature.

Typical Performance Characteristics

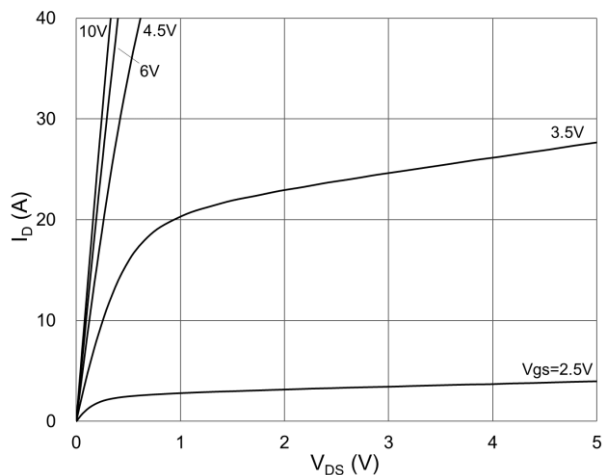
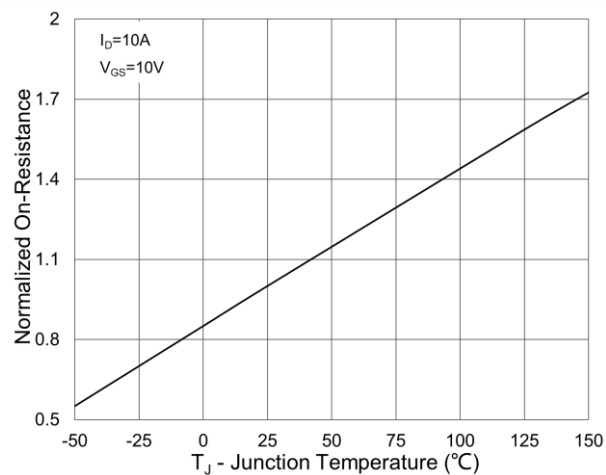
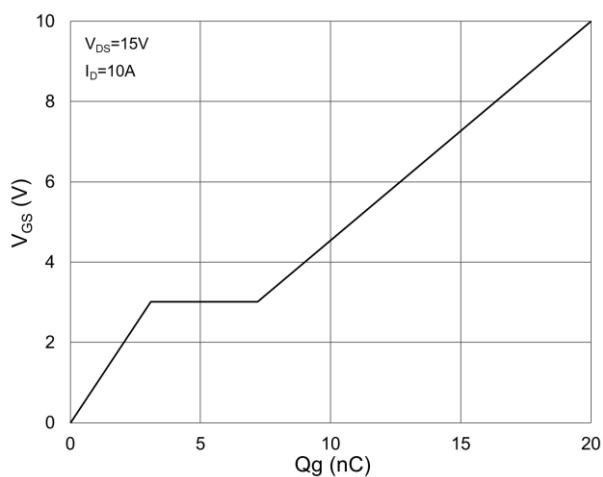
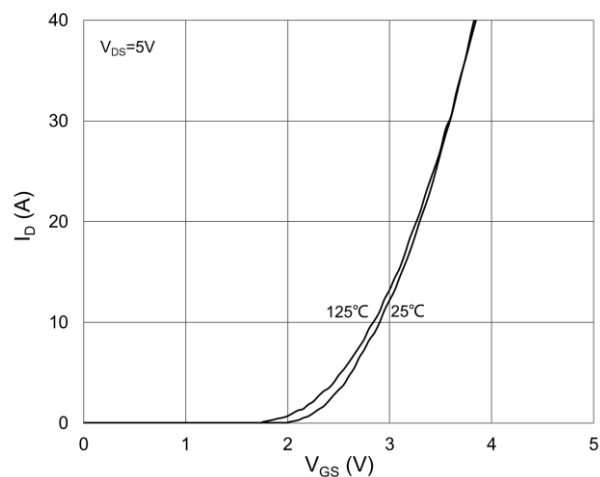
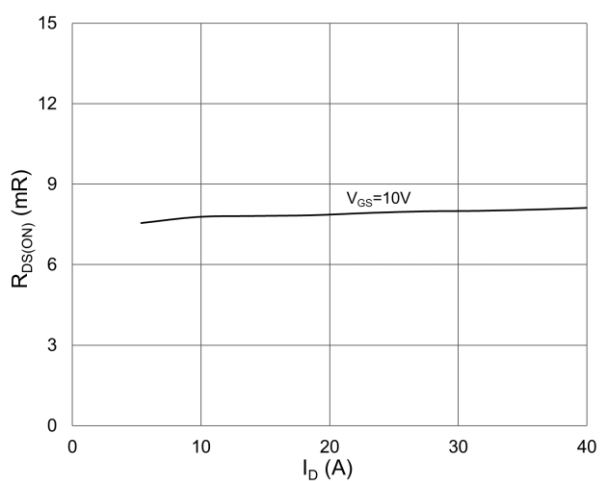
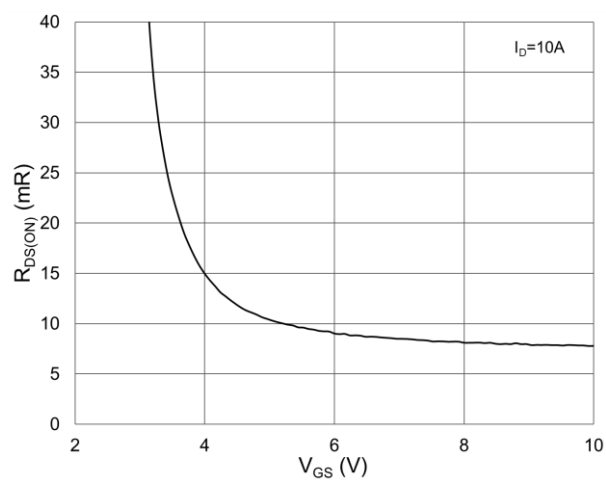
Fig1 Output Characteristics

Fig2 Normalized $R_{DS(on)}$ vs. T_J

Fig3 Gate Charge Waveform

Fig4 Transfer Characteristics

Fig5 $R_{DS(on)}$ vs. Drain Current and Gate Voltage

Fig6 $R_{DS(on)}$ vs. Gate Voltage


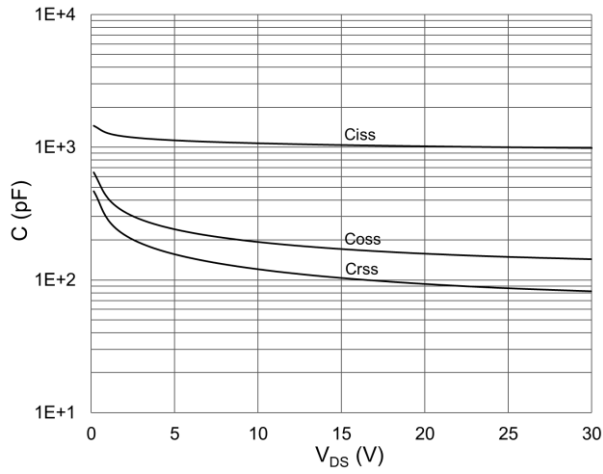
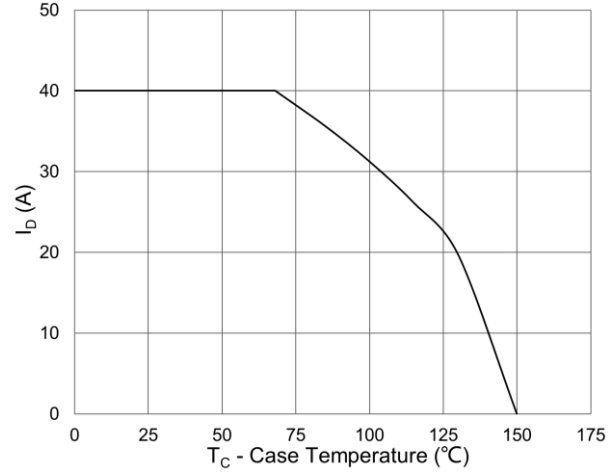
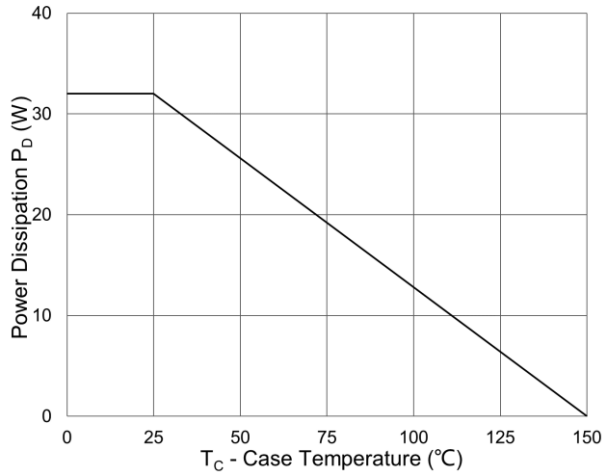
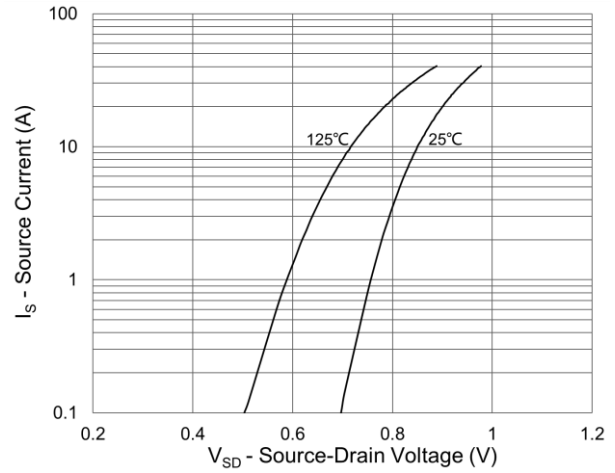
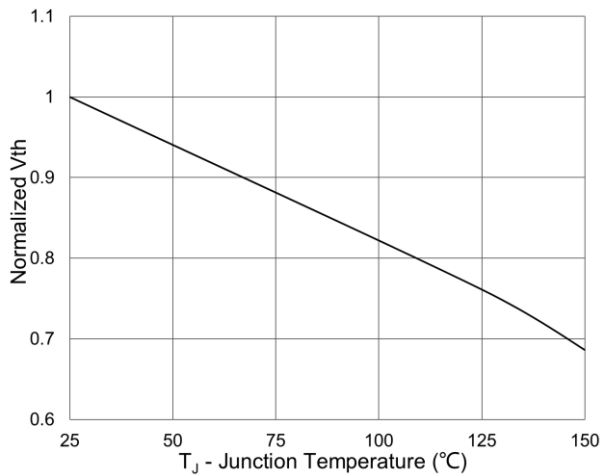
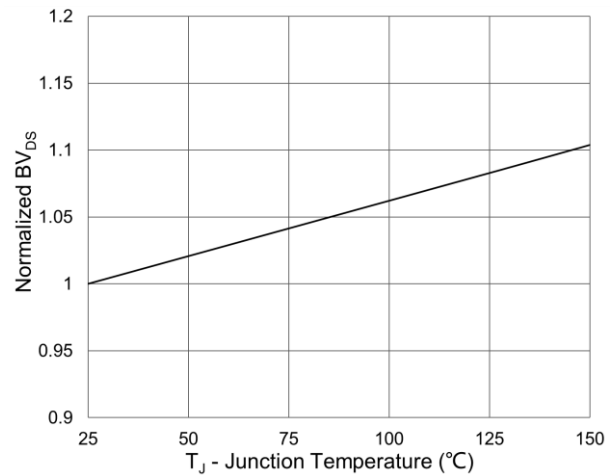
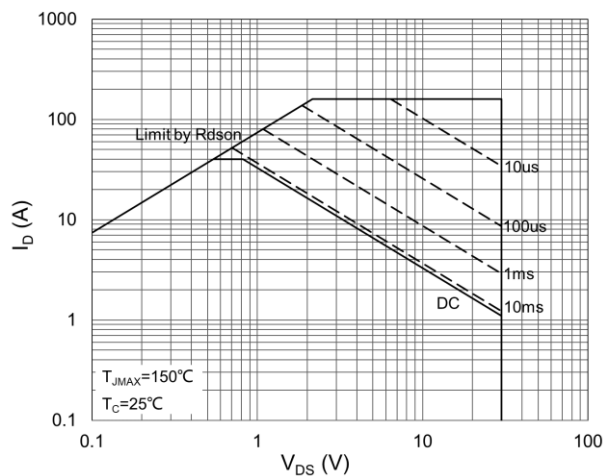
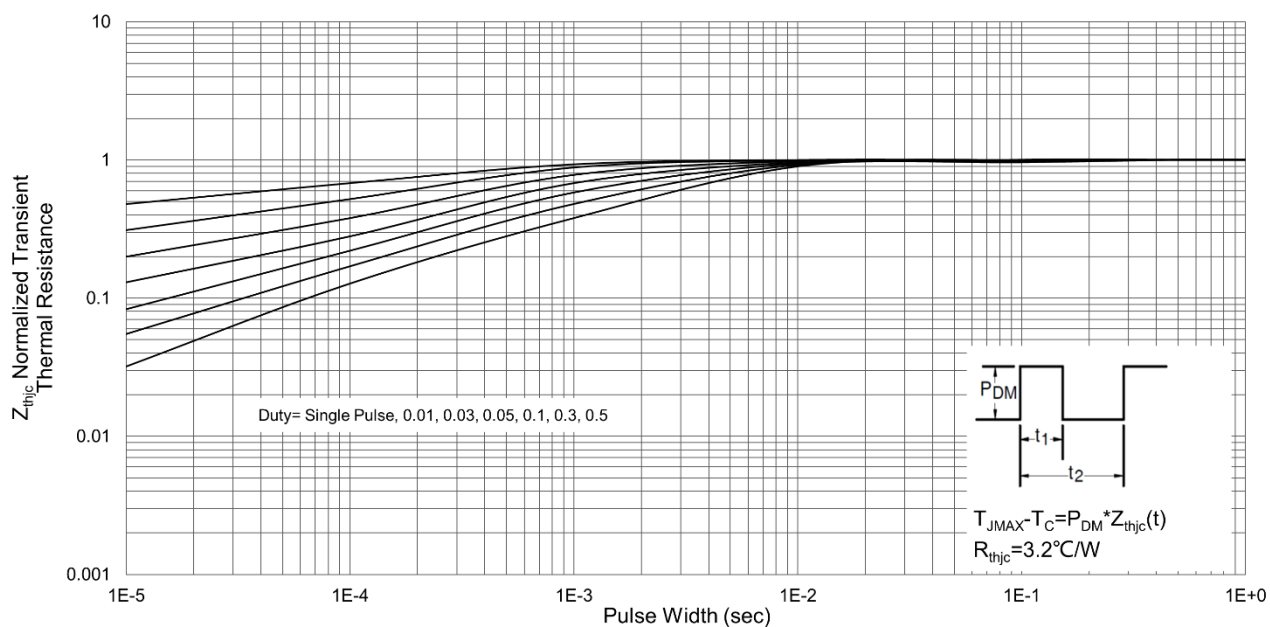
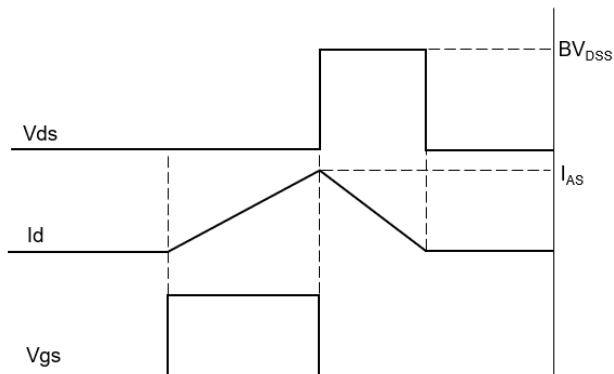
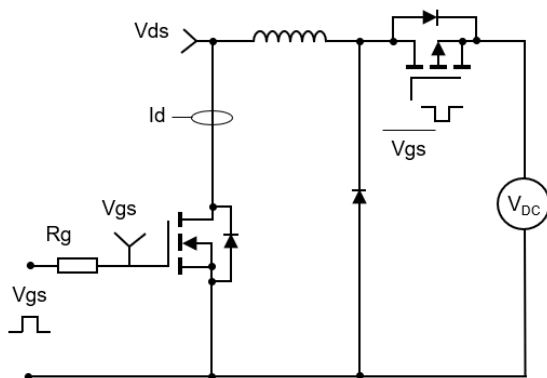
Fig7 Capacitance Characteristics

Fig8 Drain Current Derating

Fig9 Power Dissipation

Fig10 Source-Drain Diode Forward Characteristics

Fig11 Normalized Threshold Voltage vs. T_J

Fig12 Normalized Breakdown Voltage vs. T_J


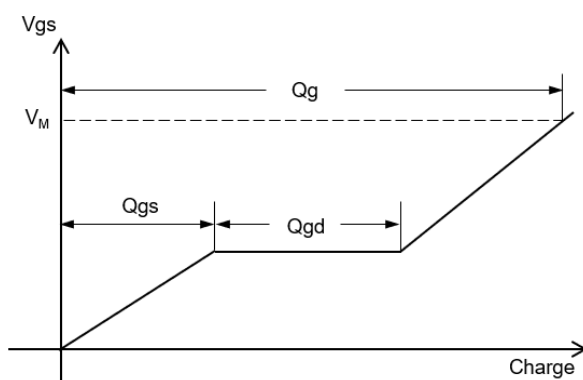
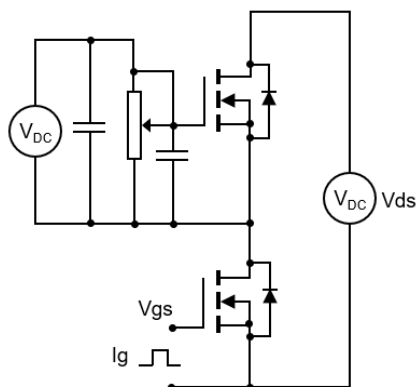
Fig13 Maximum Safe Operation Area

Fig14 Normalized Transient Impedance


Test Circuit & Waveform

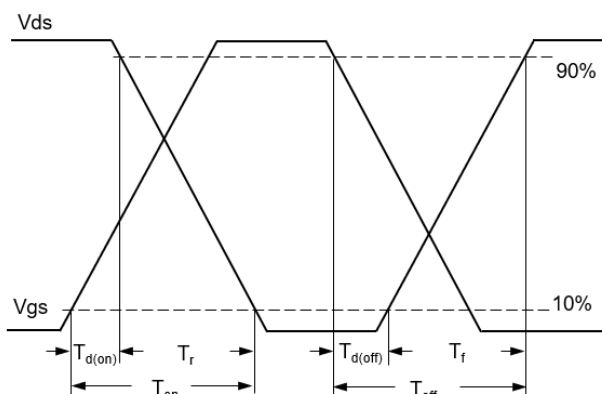
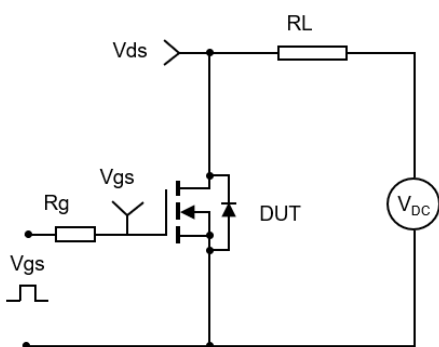
1. Unclamped Inductive Switching Test Circuit & Waveform



2. Gate Charge Test Circuit & Waveform

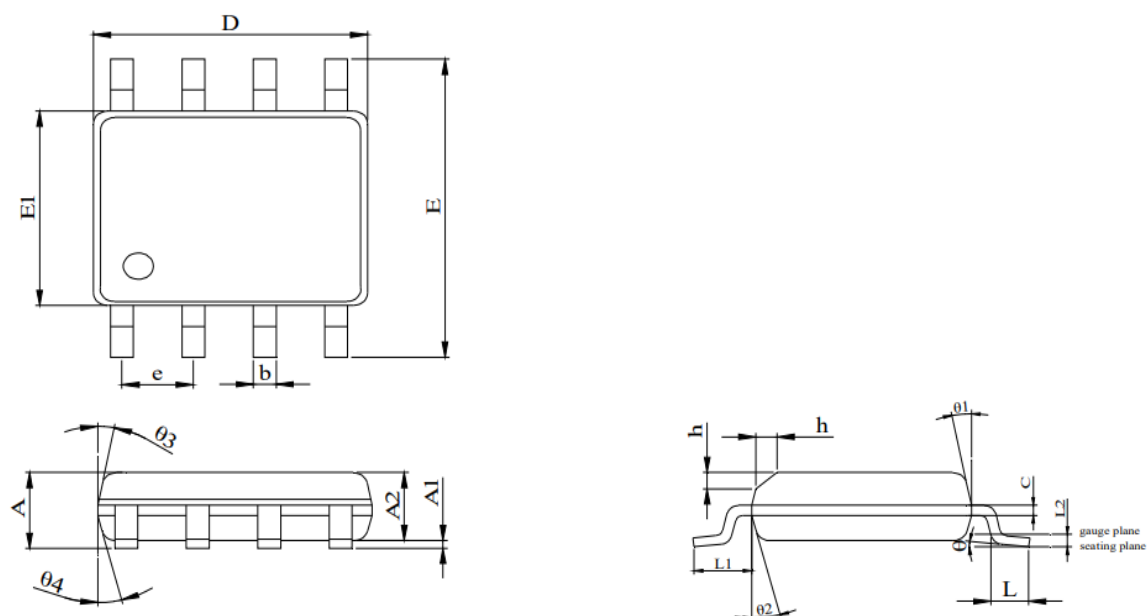


3. Resistive Switching Test Circuit & Waveform



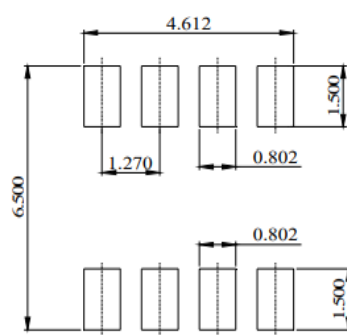
SOP-8L Package Information

Package Outline



DIM	MILIMETER		
	MIN	MOM	MAX
A	1.35	1.50	1.65
A1	0.05	0.10	0.15
A2	1.35	1.40	1.55
b	0.38	--	0.50
c	0.17	--	0.25
D	4.70	4.90	5.10
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27(BSC)		
L	0.45	0.60	0.80
L1	1.04 REF		
L2	0.25BSC		
h	0.30	0.40	0.50
θ	0°	--	8°
θ1	10°	12°	14°
θ2	8°	10°	12°
θ3	10°	12°	14°
θ4	8°	10°	12°

Recommend Soldering Footprint



DIMENSIONS:MILLIMETERS