

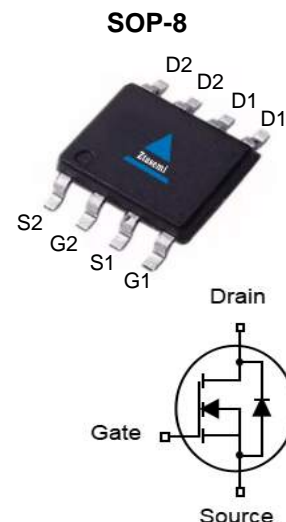
Features

- N-Channel
- Green Device Available
- Super Low Gate Charge
- Excellent dv/dt effect decline
- Advanced high cell density Trench technology
- 100% EAS Tested

V_{DS}	30	V
$R_{DS(on),TYP@ V_{GS}=10V}$	8	mΩ
$R_{DS(on),TYP@ V_{GS}=4.5V}$	11	mΩ
I_D	13	A



Part ID	Package Type	Marking	Packing
ZT4406A	SOP-8	4406A	4000pcs/reel



Absolute Maximum Ratings $T_A = 25^\circ\text{C}$, unless otherwise specified

Symbol	Parameter	Rating	Unit	
Common Ratings ($T_c=25^\circ\text{C}$ Unless Otherwise Noted)				
V_{GS}	Gate-Source Voltage	±20	V	
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	30	V	
T_J	Maximum Junction Temperature	150	°C	
T_{STG}	Storage Temperature Range	-55 to 150	°C	
I_{DM}	Drain Current-Continuous@ Current-Pulsed (Note 1)	$T_c = 25^\circ\text{C}$ 55	A	
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous	$T_c = 25^\circ\text{C}$	13	A
		$T_c = 100^\circ\text{C}$	7.6	A
P_D	Maximum Power Dissipation	2.5	W	
$R_{\theta JA}$	Thermal Resistance Junction-Ambient (Note 2)	50	°C/W	

Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T_J=25°C (unless otherwise stated)						
V(BR)DSS	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	30	--	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	V _{GS} =±20V, V _{DS} =0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	1.0	1.6	3.0	V
RDS(on)	Drain-Source On-State Resistance	V _{GS} =10V, I _D =10A	--	8	12	mΩ
RDS(on)	Drain-Source On-State Resistance	V _{GS} =4.5V, I _D =5A	--	11	17	mΩ
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated) (Note 4)						
Ciss	Input Capacitance	V _{DS} =15V, V _{GS} =0V, f=1MHz	--	1548	--	pF
Coss	Output Capacitance		--	296	--	pF
Crss	Reverse Transfer Capacitance		--	176	--	pF
Qg	Total Gate Charge	V _{DS} =15V, I _D =10A, V _{GS} =10V	--	32	--	nC
Qgs	Gate-Source Charge		--	5.1	--	nC
Qgd	Gate-Drain Charge		--	6.2	--	nC
Switching Characteristics (Note 4)						
Td(on)	Turn-on Delay Time	V _{DD} =25V, I _D =10A, R _G =6.0Ω, V _{GS} =10V	--	29	--	ns
Tr	Turn-on Rise Time		--	21	--	ns
Td(off)	Turn-Off Delay Time		--	98	--	ns
Tf	Turn-Off Fall Time		--	81	--	ns
Source- Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated)						
IS	Diode Forward Current (Note 3)		--	--	13	A
VSD	Forward on voltage (Note 2)	I _S =10A, V _{GS} =0V	--	--	1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production

Typical Performance Characteristics

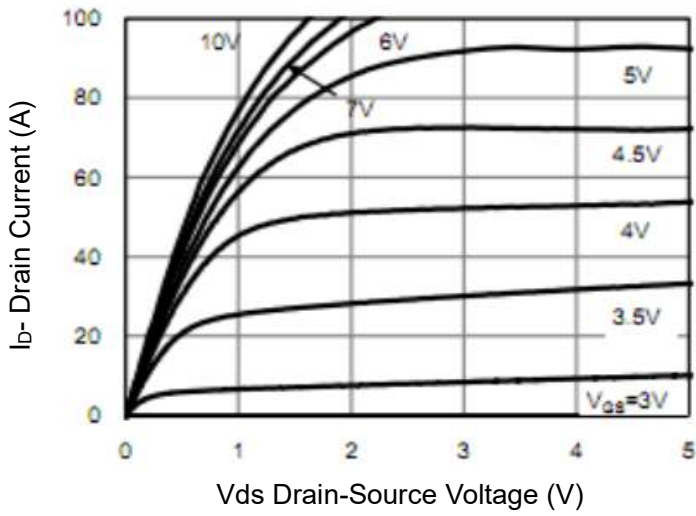


Figure 1 Output Characteristics

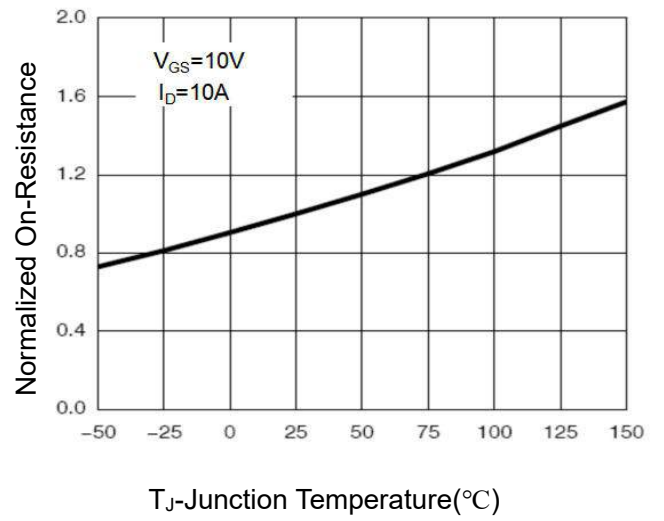


Figure 4 $R_{ds(on)}$ -Junction Temperature

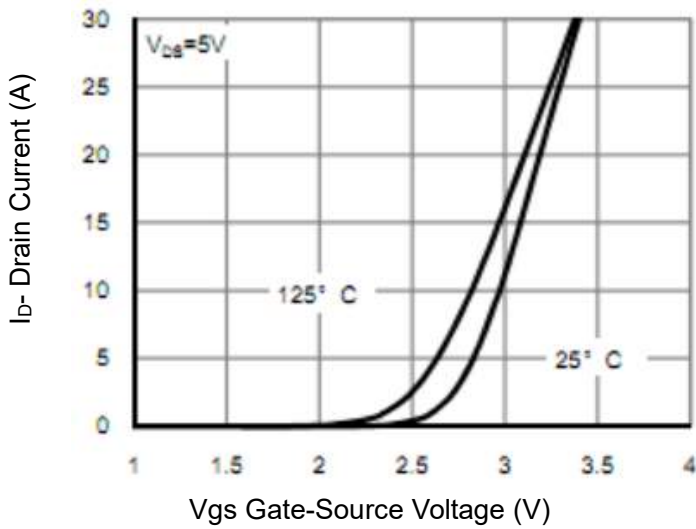


Figure 2 Transfer Characteristics

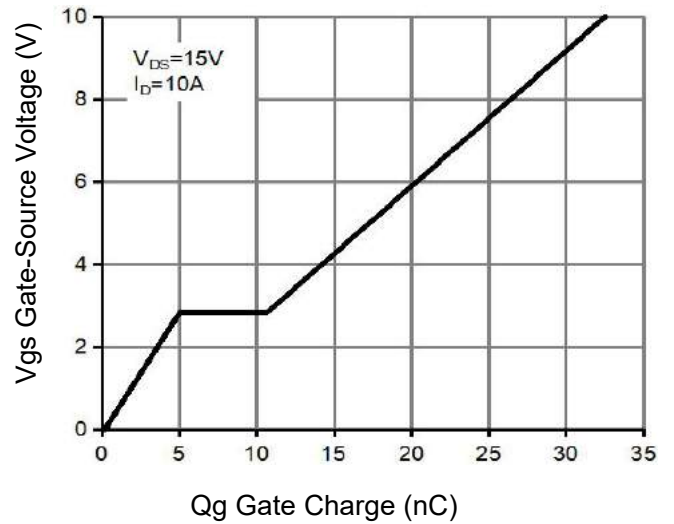


Figure 5 Gate Charge

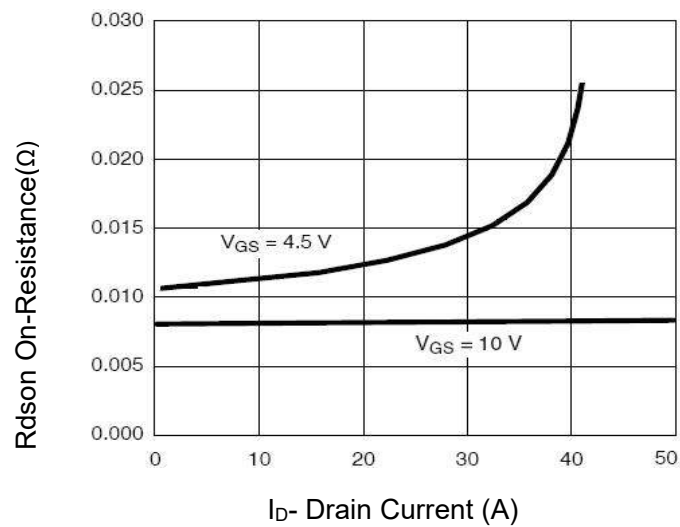


Figure 3 $R_{ds(on)}$ - Drain Current

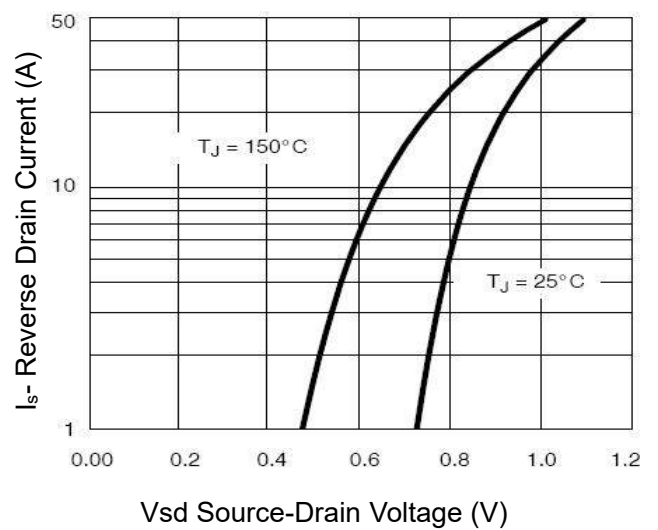


Figure 6 Source- Drain Diode Forward

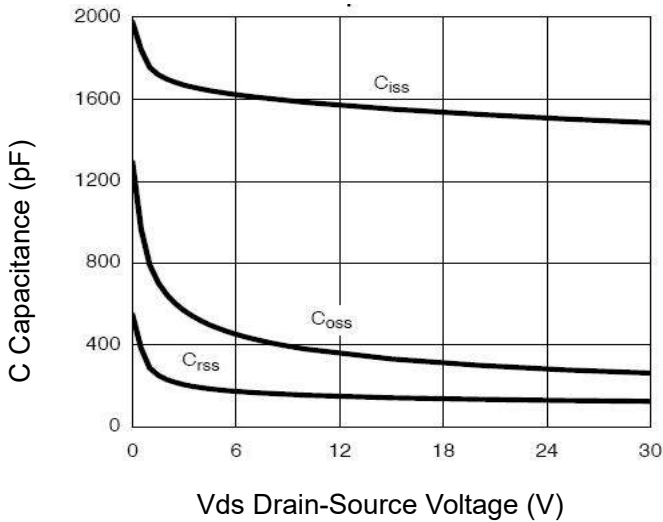


Figure 7 Capacitance vs Vds

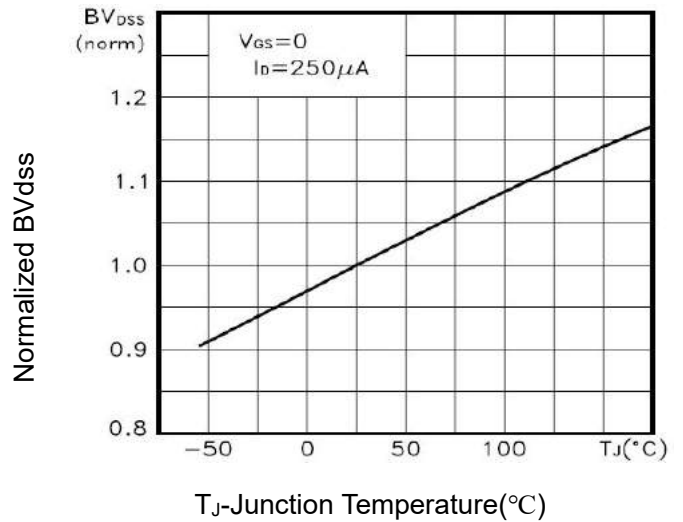


Figure 9 BV_{DSS} vs Junction Temperature

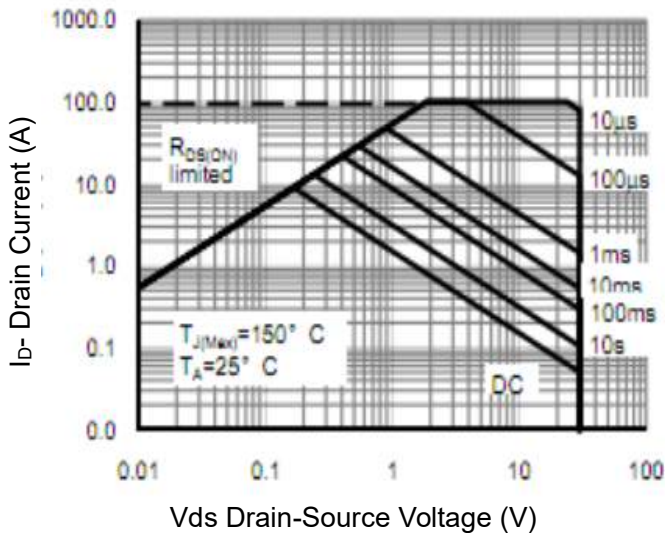


Figure 8 Safe Operation Area

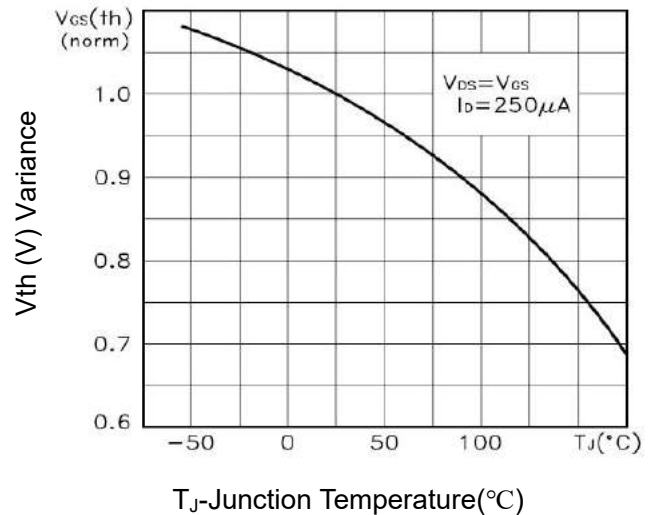


Figure 10 V_{GS(th)} vs Junction Temperature

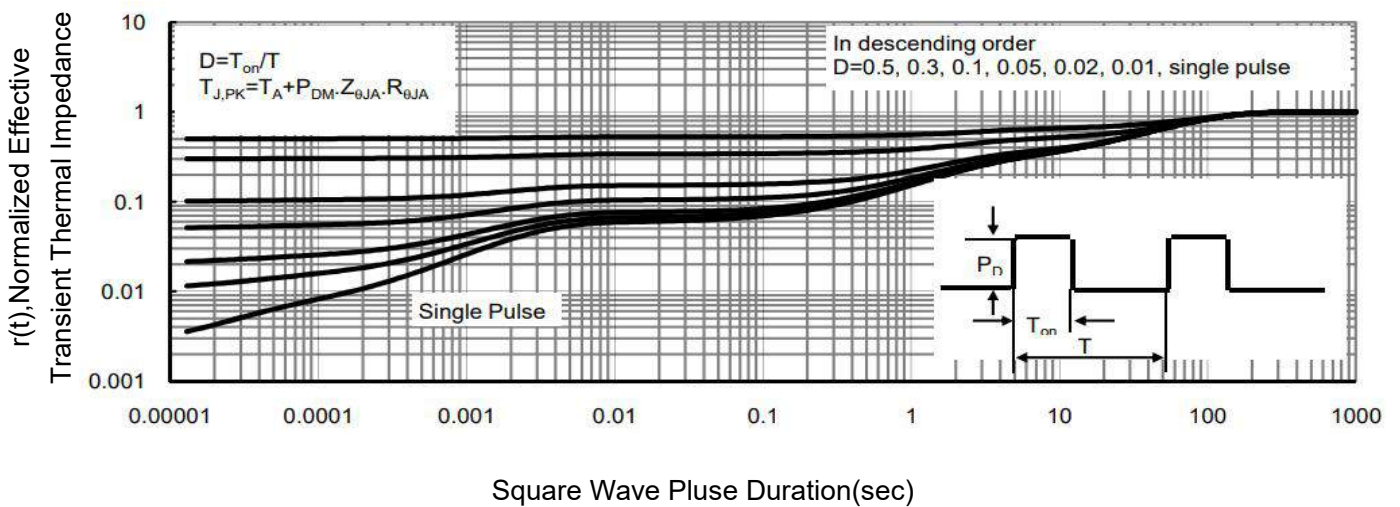


Figure 11 Normalized Maximum Transient Thermal Impedance

Figure A: Gate Charge Test Circuit and Waveform

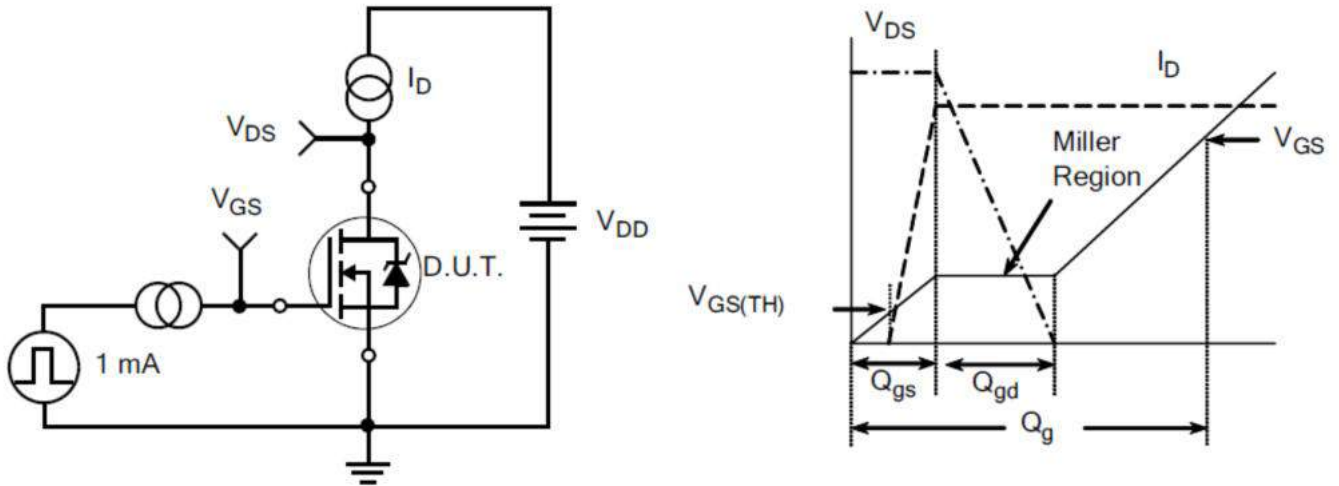


Figure B: Resistive Switching Test Circuit and Waveform

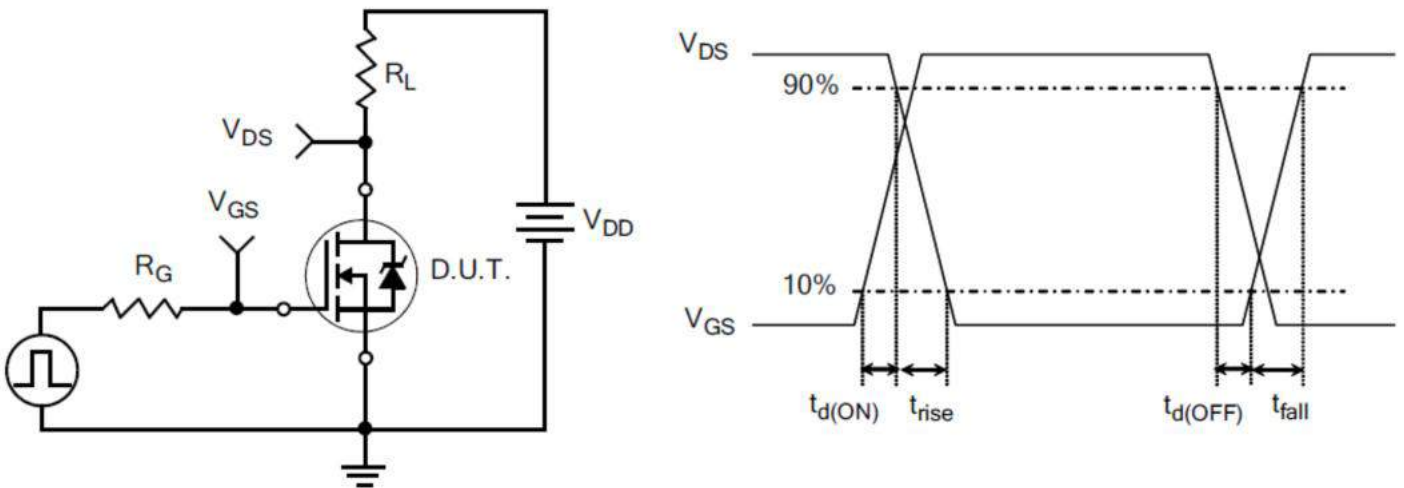
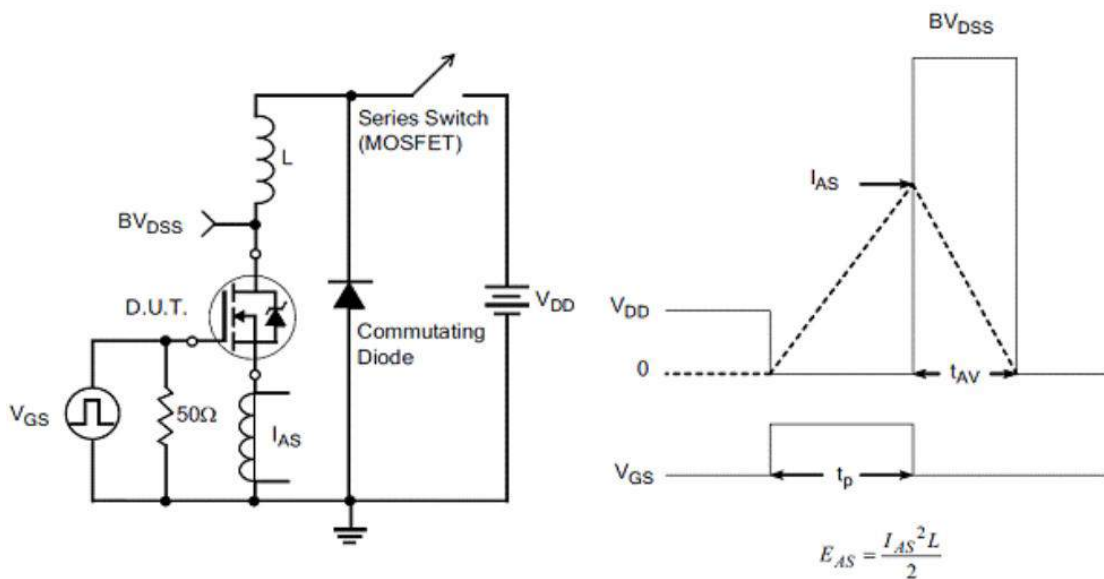
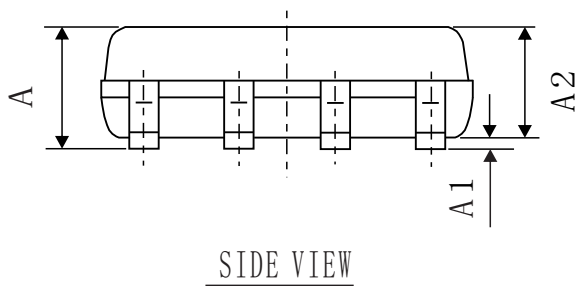
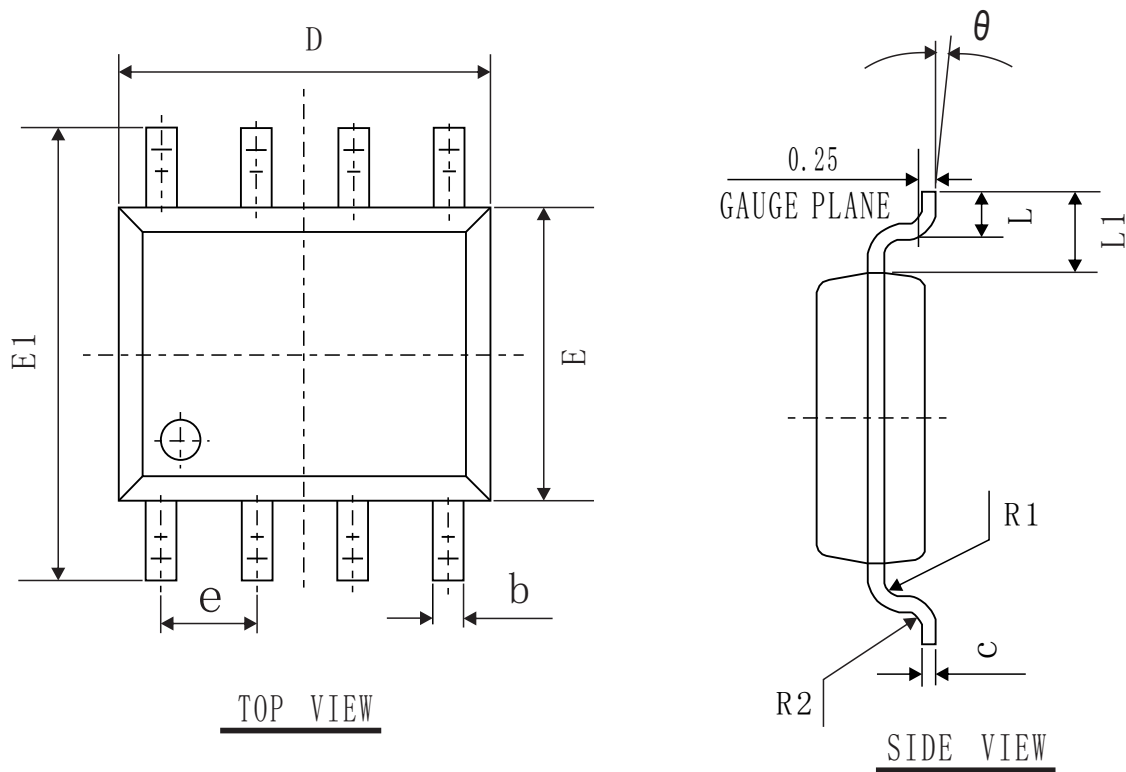


Figure C: Unclamped Inductive Switching Test Circuit and Waveform



SOP-8 Package Information



SYMBOL	MIN	NOM	MAX
A	1.40	1.60	1.80
A1	0.05	0.15	0.25
A2	1.35	1.45	1.55
b	0.30	0.40	0.50
c	0.153	0.203	0.253
D	4.80	4.90	5.00
E	3.80	3.90	4.00
E1	5.80	6.00	6.20
L	0.45	0.70	1.00
θ	2°	4°	6°
L 1	1.04 REF		
e	1.27 BSC		
R1	0.07 TYP		
R2	0.07 TYP		

Customer Service

Sales and Service:

zj@ztasemi.com