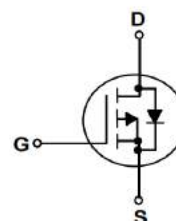
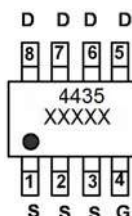


## Features

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

$V_{DS}$	-30	V
$R_{DS(on),TYP@ V_{GS}=-10V}$	16	m $\Omega$
$R_{DS(on),TYP@ V_{GS}=-4.5V}$	21	m $\Omega$
$I_D$	-9.1	A

### SOP-8



Part ID	Package Type	Marking	Packing
ZT4435	SOP-8	4435	4000pcs/reel

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

Symbol	Parameter	Rating	Unit	
<b>Common Ratings (<math>T_C=25^\circ\text{C}</math> Unless Otherwise Noted)</b>				
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V	
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	-30	V	
$T_J$	Maximum Junction Temperature	150	$^\circ\text{C}$	
$T_{STG}$	Storage Temperature Range	-55 to 150	$^\circ\text{C}$	
$I_{DM}$	Drain Current-Continuous@ Current-Pulsed (Note 1)	$T_C = 25^\circ\text{C}$ -36.4	A	
<b>Mounted on Large Heat Sink</b>				
$I_D$	Drain Current-Continuous	$T_A = 25^\circ\text{C}$	-9.1	A
		$T_A = 70^\circ\text{C}$	-7.2	A
$P_D$	Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	3.1	W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 2)		40	$^\circ\text{C/W}$

**Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Condition	Min	Typ	Max	Unit
<b>Static Electrical Characteristics @ T<sub>J</sub>=25°C (unless otherwise stated)</b>						
V(BR)DSS	Drain-Source Breakdown Voltage	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-30	--	--	V
IDSS	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1.0	-1.5	-3.0	V
RDS(on)	Drain-Source On-State Resistance	V <sub>GS</sub> =-10V, I <sub>D</sub> =-9.1A	--	16	20	mΩ
RDS(on)	Drain-Source On-State Resistance	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-6.9A	--	21	35	mΩ
gFS	Forward Transconductance	V <sub>DS</sub> =-15V, I <sub>D</sub> =-9.1A	10	--	--	S
<b>Dynamic Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated) (Note 4)</b>						
Ciss	Input Capacitance	V <sub>DS</sub> =-15V, V <sub>GS</sub> =0V, f=1MHz	--	1589	--	pF
Coss	Output Capacitance		--	346	--	pF
Crss	Reverse Transfer Capacitance		--	288	--	pF
Qg	Total Gate Charge	V <sub>DS</sub> =-15V, I <sub>D</sub> =-9.1A, V <sub>GS</sub> =-10V	--	30	--	nC
Qgs	Gate-Source Charge		--	5.4	--	nC
Qgd	Gate-Drain Charge		--	7.8	--	nC
<b>Switching Characteristics (Note 4)</b>						
Td(on)	Turn-on Delay Time	V <sub>DS</sub> =-15V, I <sub>D</sub> =-1A, R <sub>G</sub> =6Ω, V <sub>GS</sub> =-10V	--	10	--	ns
Tr	Turn-on Rise Time		--	15	--	ns
Td(off)	Turn-Off Delay Time		--	108	--	ns
Tf	Turn-Off Fall Time		--	69	--	ns
<b>Source- Drain Diode Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
ISD	Source-Drain Current (Body Diode)		--	--	-9.1	A
VSD	Forward on voltage (Note 3)	I <sub>S</sub> =-9.1A, V <sub>GS</sub> =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

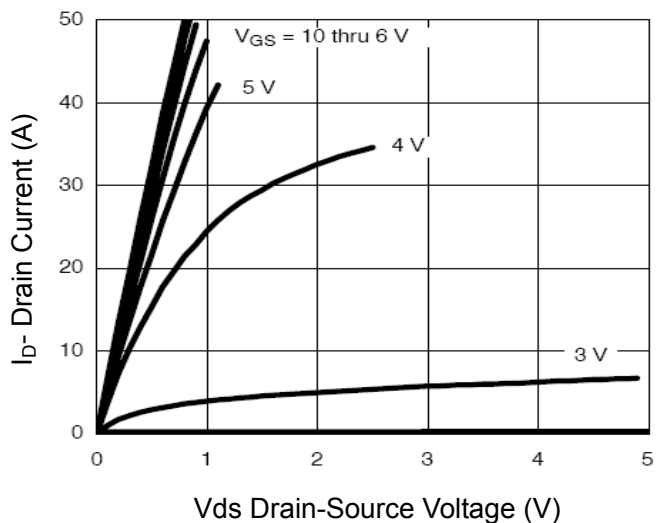


Figure 1 Output Characteristics

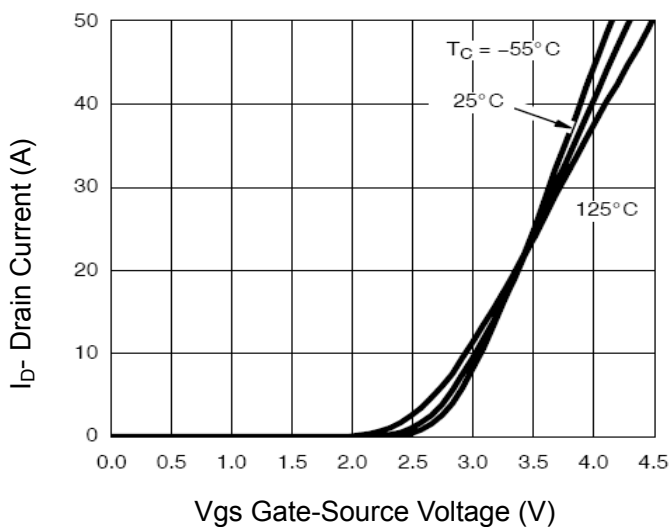


Figure 4 Transfer Characteristics

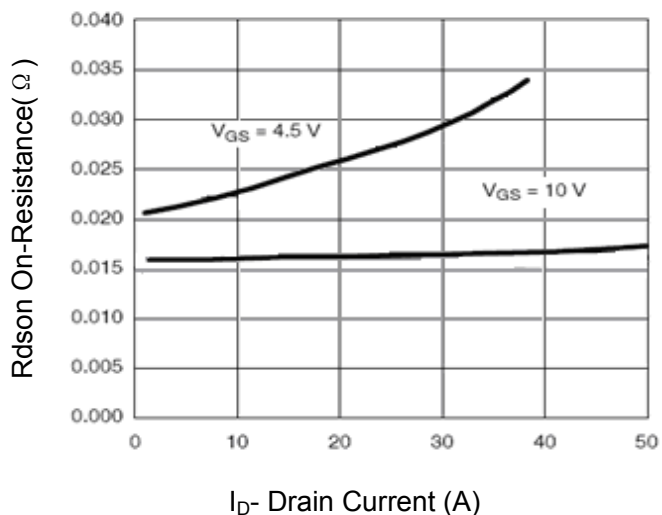


Figure 2 Drain-Source On-Resistance

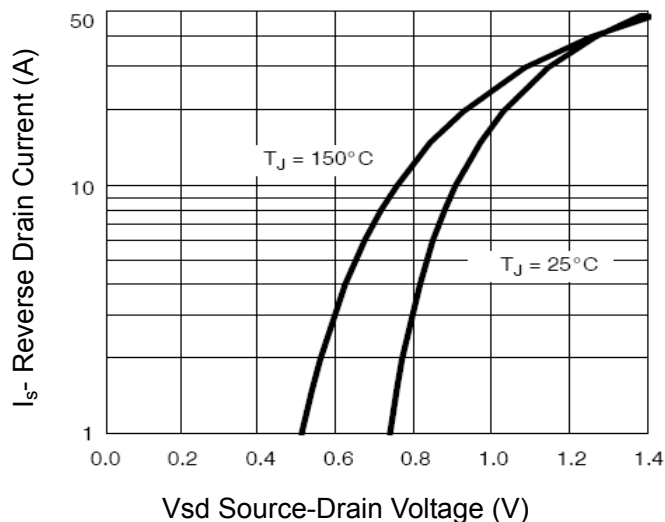


Figure 5 Source- Drain Diode Forward

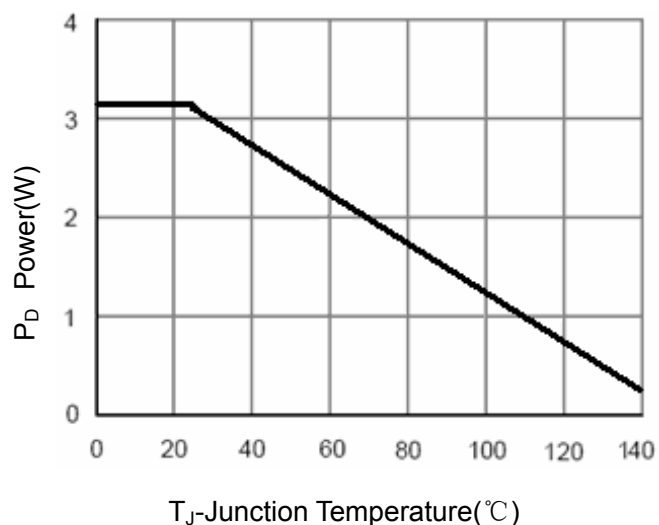


Figure 3 Power Dissipation

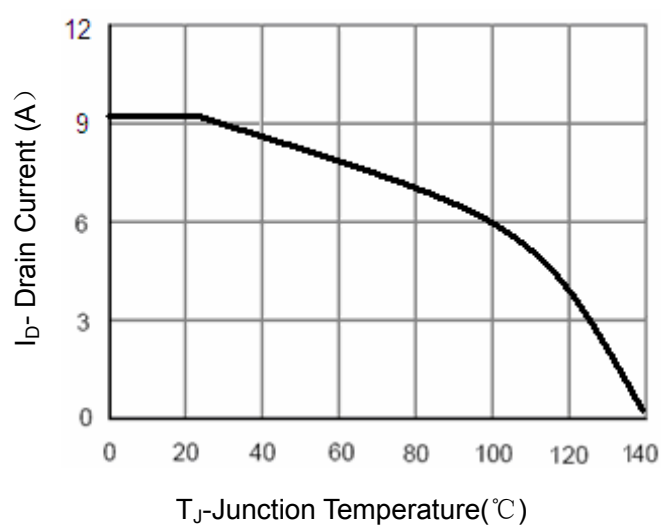


Figure 6 Drain Current

### Typical Performance Characteristics

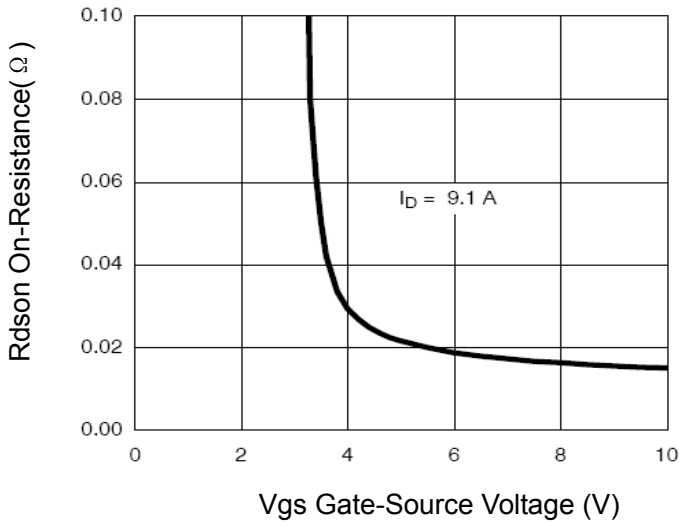


Figure 7 Rdson vs Vgs

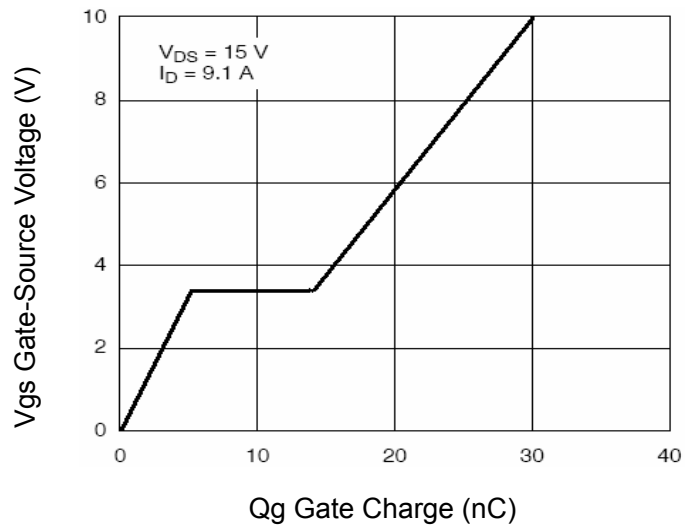


Figure 10 Gate Charge

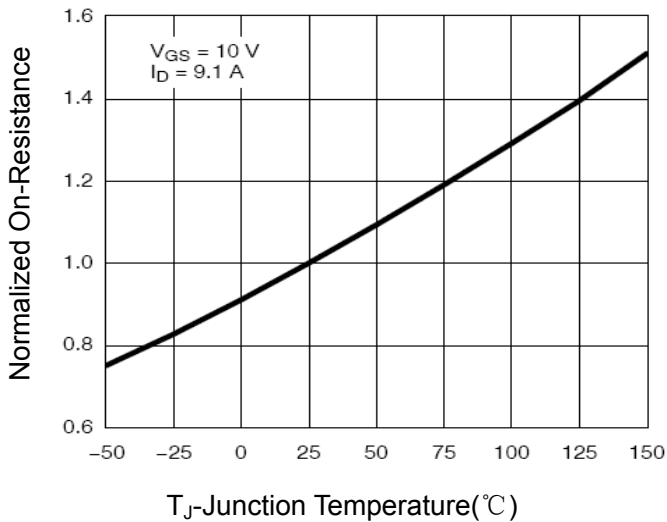


Figure 8 Drain-Source On-Resistance

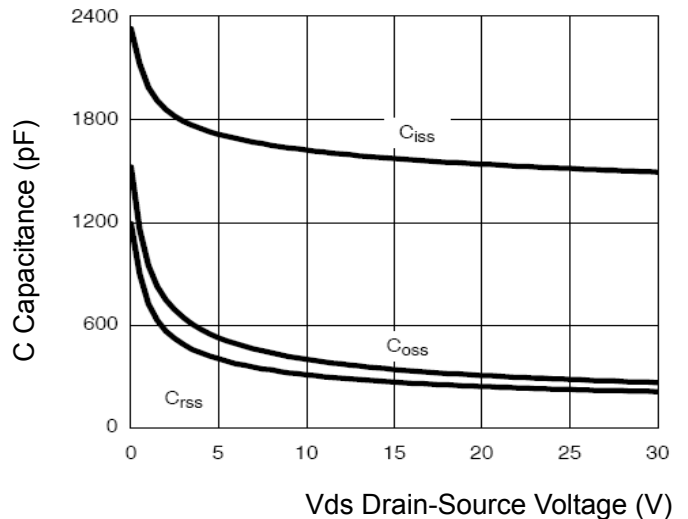


Figure 11 Capacitance vs Vds

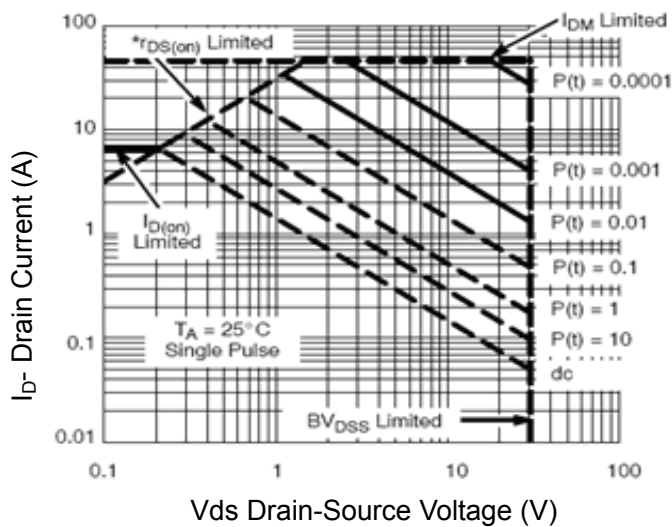


Figure 9 Safe Operation Area

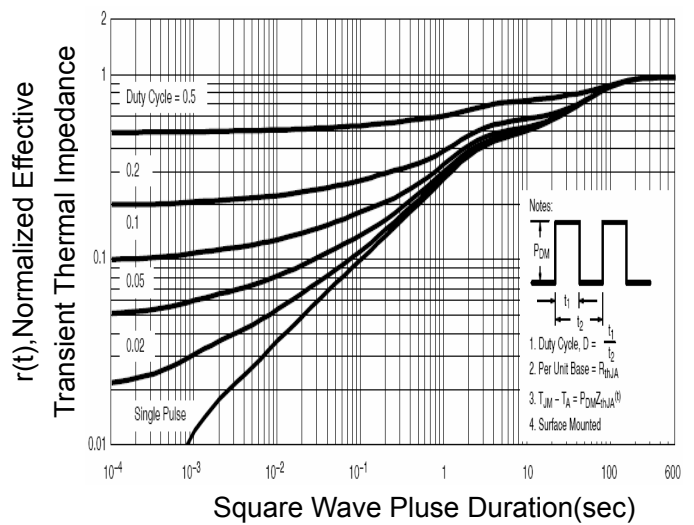
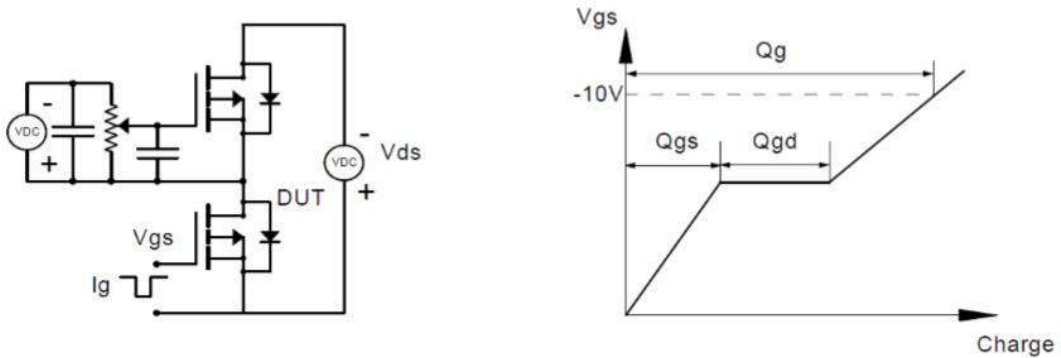


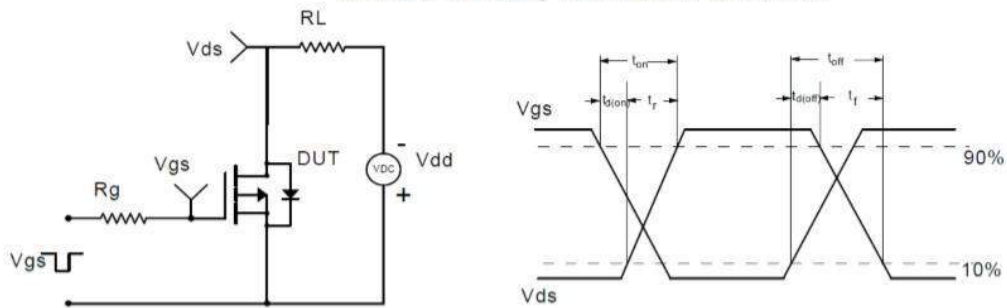
Figure 12 Normalized Maximum Transient Thermal Impedance

## Test Circuit

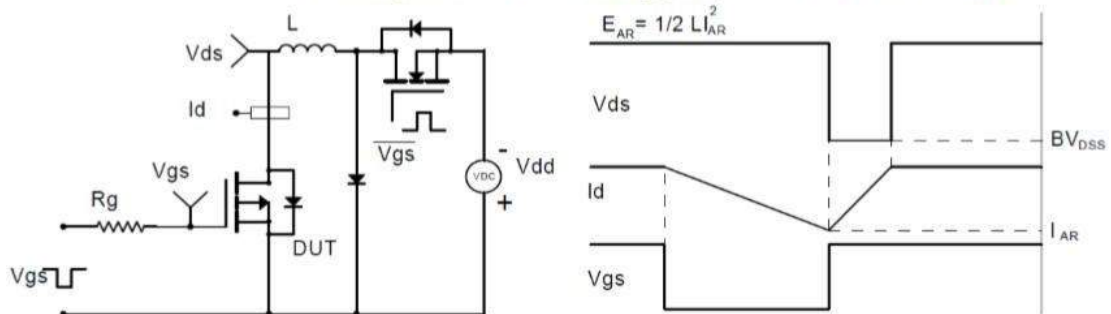
Gate Charge Test Circuit & Waveform



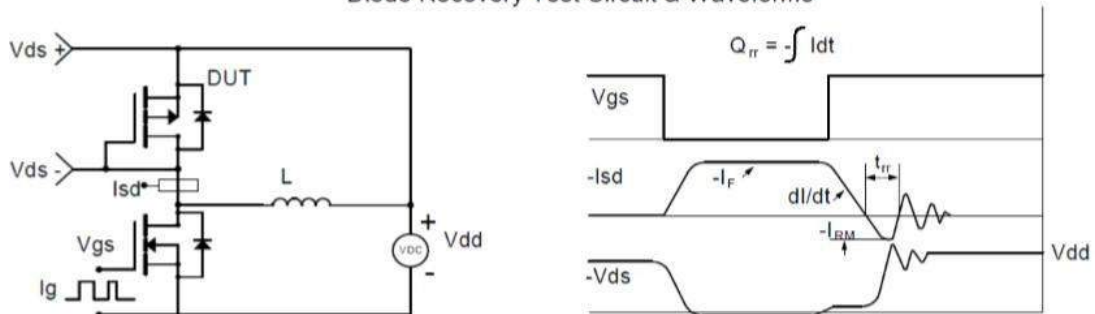
Resistive Switching Test Circuit & Waveforms



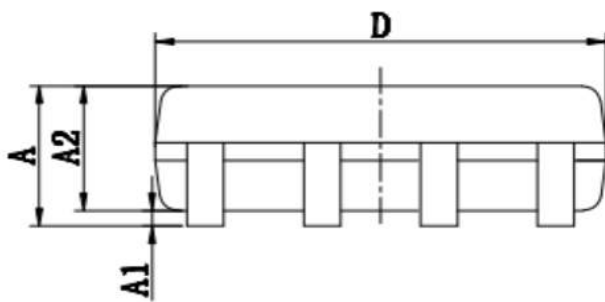
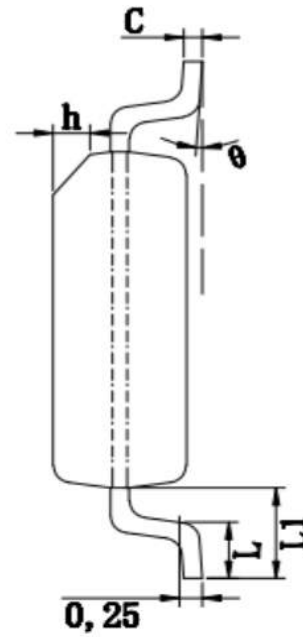
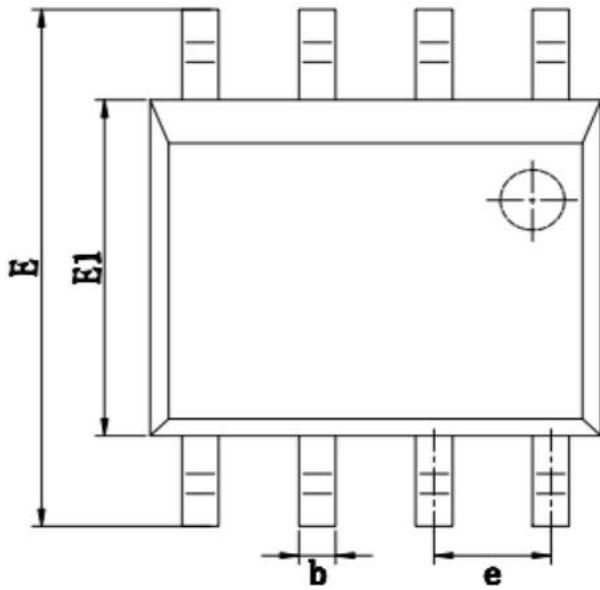
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



## SOP-8 Package Information



SYMBOL	MILLMETER		
	MIN	NOM	MAX
A	—	—	1.55
A1	0.03	—	0.13
A2	1.35	1.40	1.45
b	0.35	0.40	0.45
c	0.203 TYP		
D	4.85	4.90	4.95
E	5.85	6.00	6.15
E1	3.85	3.90	3.95
e	1.27 BSC.		
h	0.25	—	0.50
L	0.50	0.65	0.80
L1	1.06 REF.		
$\theta$	0°	—	8°

## Customer Service

Sales and Service:  
[zj@ztasemi.com](mailto:zj@ztasemi.com)