Features

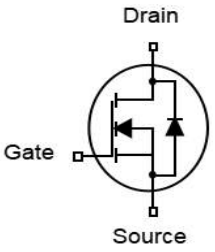
- N-Channel
- Low gate charge
- Low reverse transfer capacitance
- Fast switching speed
- 100% Avalanche test
- 100% EAS Tested

V_{DS}	30	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	1.1	mΩ
I_D	160	A

DFN5x6

RoHS HF

Part ID	Package Type	Marking	Packing
ZTG012N03GC	DFN5x6	ZTG012N03GC	5000pcs/Reel



Absolute Maximum Ratings T_A =25°C, unless otherwise specified

Symbol	Parameter		Rating	Unit
Common Ratings (T_C=25°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 2)	T_C =25°C	640	A
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous (Note 1)	T_C =25°C	160	A
		T_C =100°C	101	A
P_D	Maximum Power Dissipation (Note 3)		88	W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		1.42	°C/W
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		50	°C/W
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed (Note 6)		342	mJ

Electrical Characteristics (T_J=25℃ 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
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=30V,V_{GS}=0V	--	--	1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=250μA	1.2	--	2.2	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=30A	--	1.1	1.4	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated) (Note 4.5)						
Ciss	Input Capacitance	V_{DS}=15V,V_{GS}=0V, f=1MHz	--	3430	--	pF
Coss	Output Capacitance		--	1296	--	pF
Crss	ReverseTransferCapacitance		--	77	--	pF
Rg	Gate Resistance	f=1MHz	--	1.9	--	Ω
Qg	Total Gate Charge	V_{DD}=15V,I_D=60A, V_{GS}=10V	--	48	--	nC
Qgs	Gate-SourceCharge		--	11	--	nC
Qgd	Gate-DrainCharge		--	6	--	nC
$V_{Plateau}$	Gate Plateau Voltage		--	3.3	--	V
Switching Characteristics (Note 4.5)						
Td(on)	Turn-on Delay Time	V_{DD}=20V, I_D =30A, R_G=4.7Ω, V_{GS}=10V	--	10	--	ns
Tr	Turn-on Rise Time		--	30	--	ns
Td(off)	Turn-Off Delay Time		--	54	--	ns
Tf	Turn-Off Fall Time		--	15	--	ns
Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)						
I_S	Diode Forward Current		--	--	160	A
V_{SD}	Forward on voltage	I_S =60A,V_{GS}=0V	--	--	1.4	V
Trr	Reverse Recovery Time (Note 4)	T_j=25℃,I_S =60A di/dt=100A/μs	--	50	--	ns
Qrr	Reverse Recovery Charge		--	59	--	nC

Notes:

1. The rating only refers to the maximum absolute value of 25 °C in the specification. If the shell temperature is higher than 25 °C,it needs to be derated according to the actual environmental conditions.
2. Pulse time 5us,pulse width is limited by the maximum junction temperature.
3. The dissipated power value will change with the change of temperature, when greater than 25 ° C, the dissipated power value will decrease by 0.7 W/ °C with the increase of 1 °C of temperature.
4. Pulse test: pulse width ≤ 300μs, Duty Cycle ≤ 2%.
5. Basically unaffected by operating temperature.
6. EAS condition : T_j=25℃,V_{DD}=24V, L=0.5mH,R_g=25Ω

Typical Electrical and Thermal Characteristics

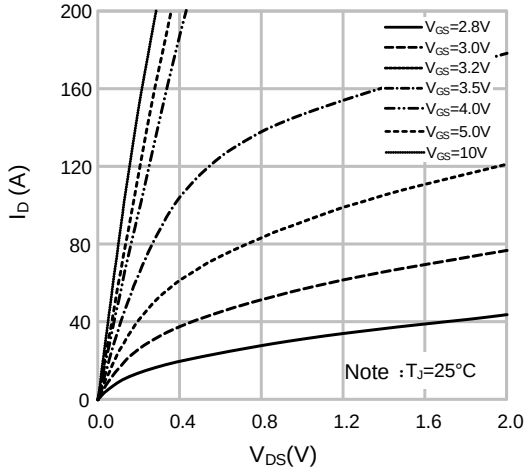


Figure 1 Output Characteristics

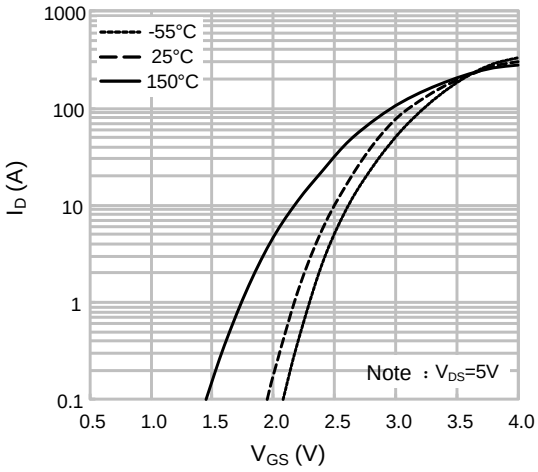


Figure 4 Transfer Characteristics

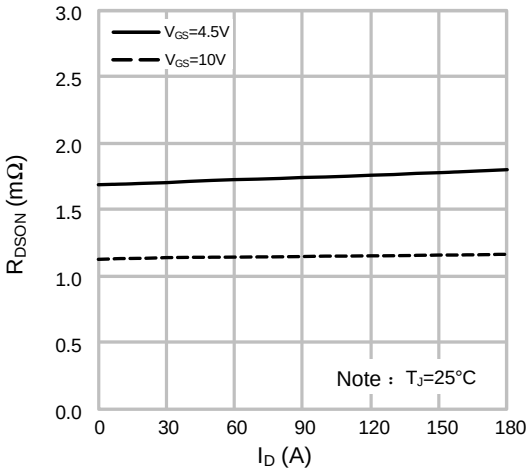


Figure 2 Rdson- Drain Current

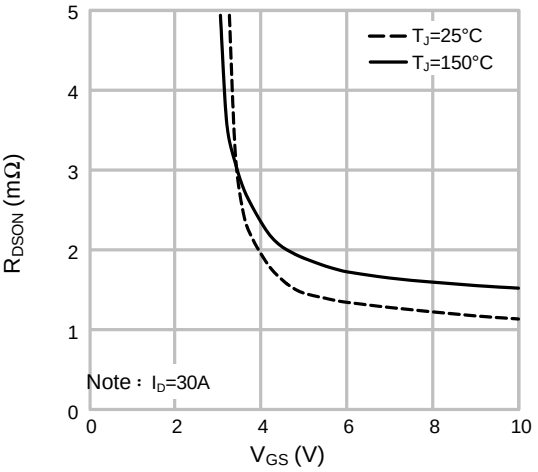


Figure 5 Rds(on) VS V_{GS}

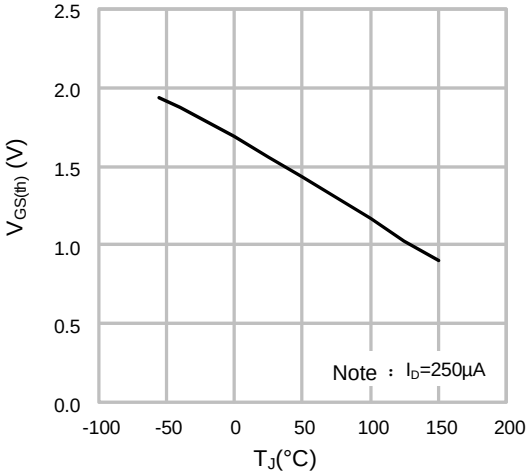


Figure 3 $V_{GS(th)}$ VS Temperature Characteristic

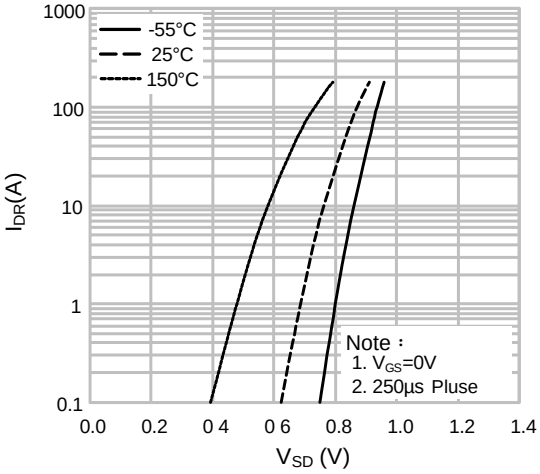


Figure 6 Body Diode Forward Voltage Drop VS Source Current and Temperature

Typical Electrical and Thermal Characteristics

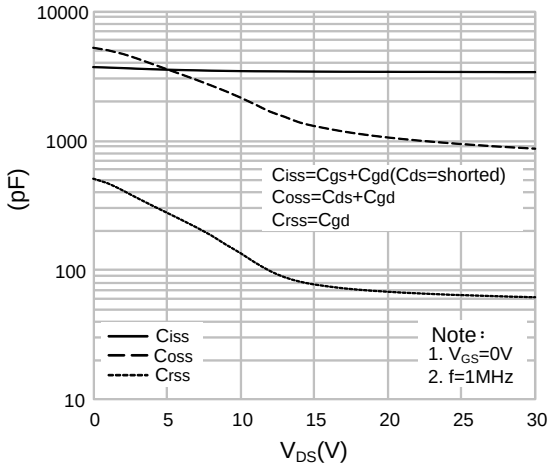


Figure 7 Capacitance Charateristics

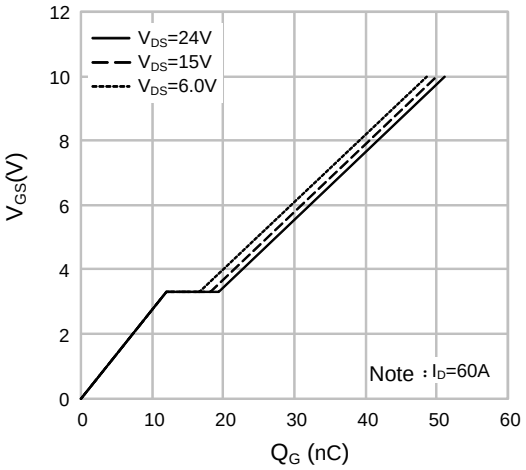


Figure 10 Gate Charge

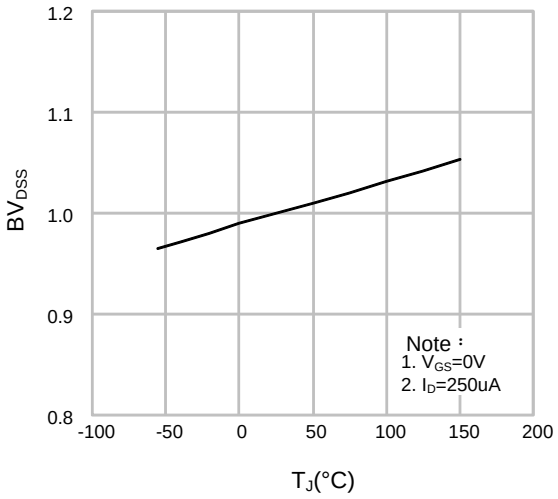


Figure 8 Breakdown Voltage VS Temperature Characteristic

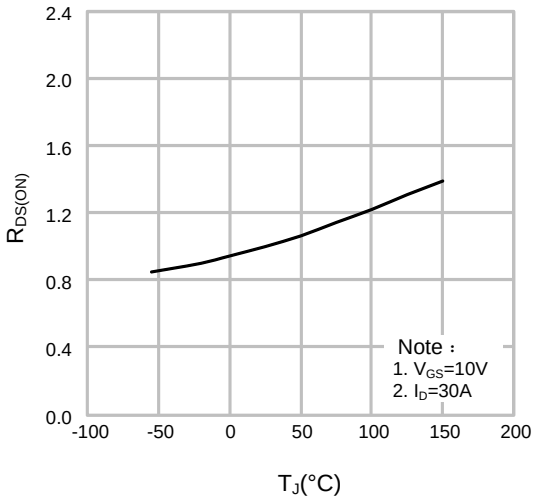


Figure 11 Rds(on) VS Temperature Characteristic

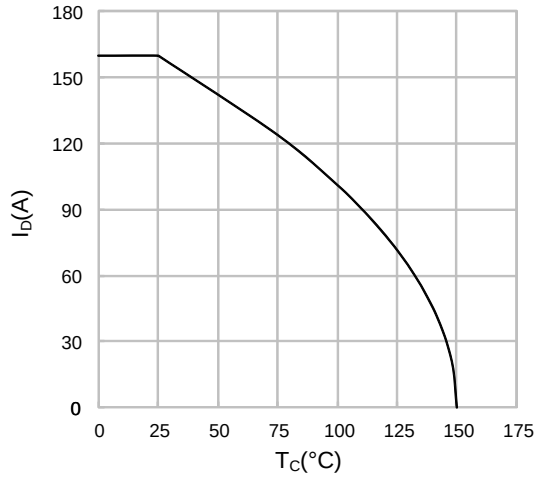


Figure 9 Drain Current VS Case Temperature

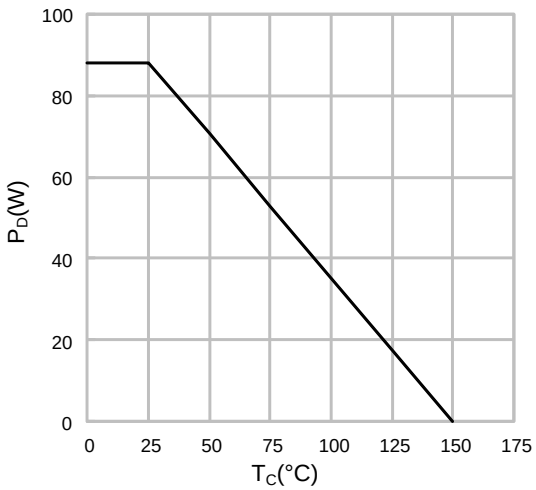


Figure 12 Power Dissipation VS Temperature

Typical Electrical and Thermal Characteristics

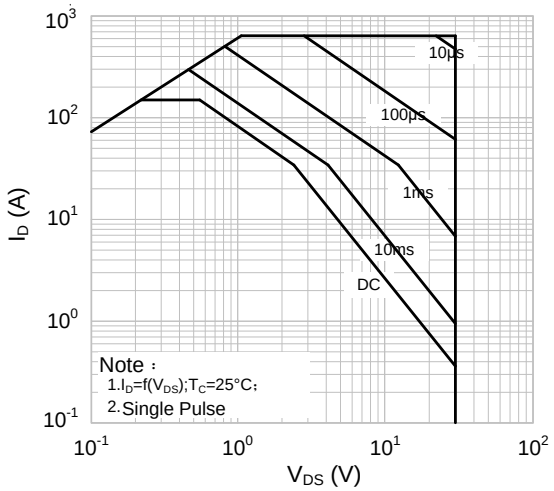


Figure 13 Safe Operation Area

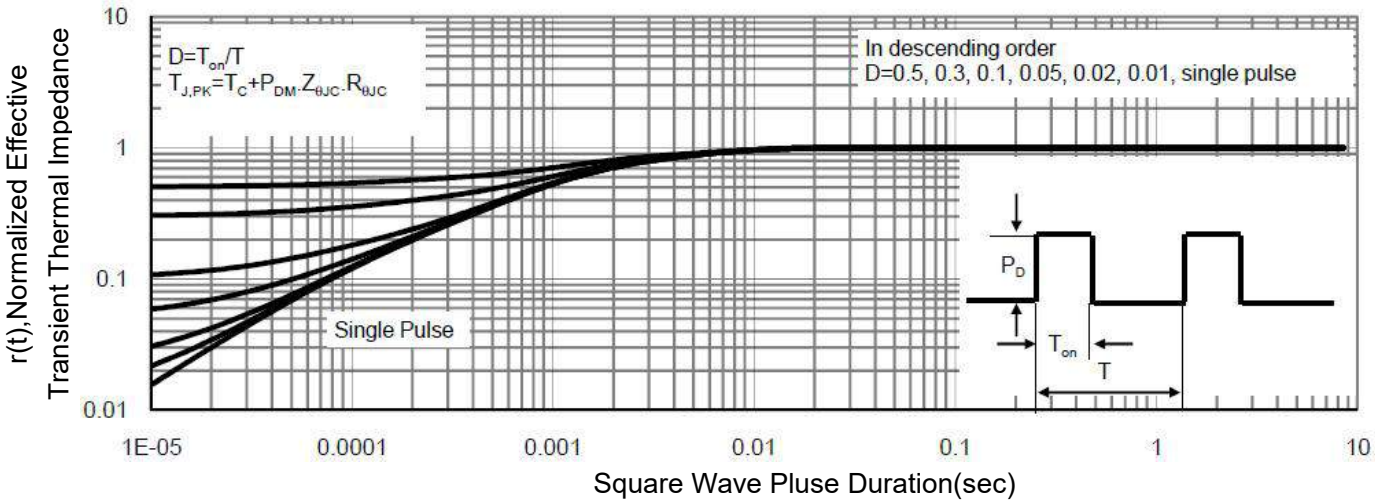
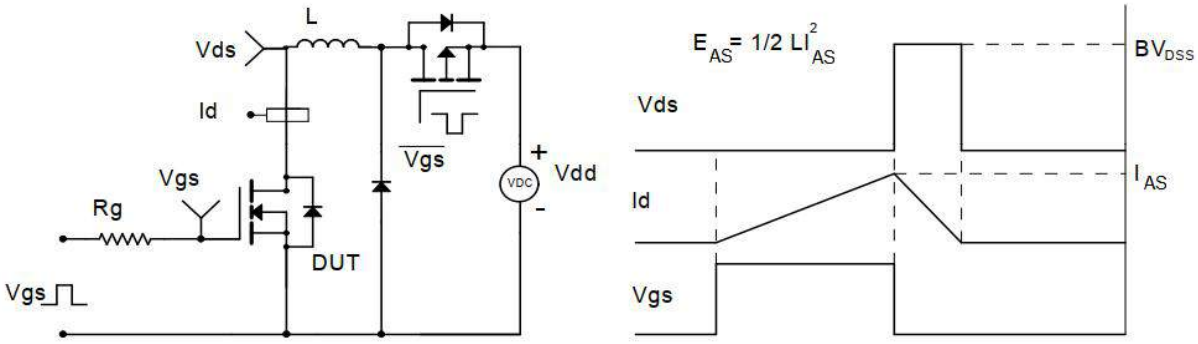


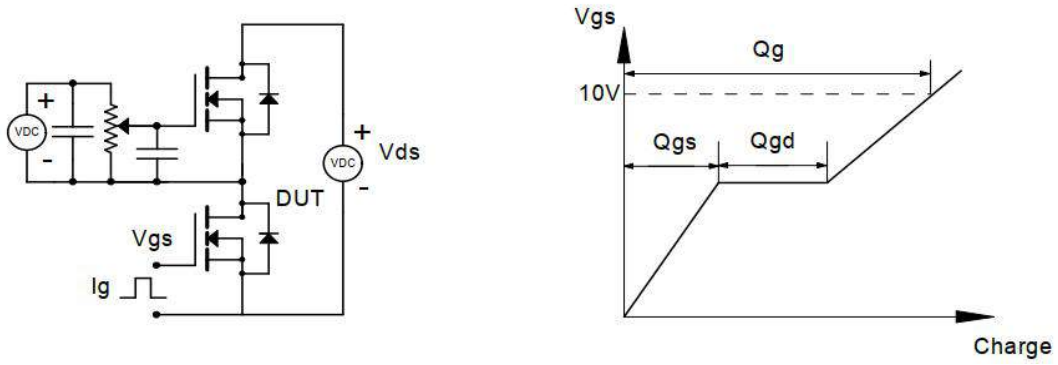
Figure 14 Normalized Maximum Transient Thermal Impedance

Test circuit&Waveform

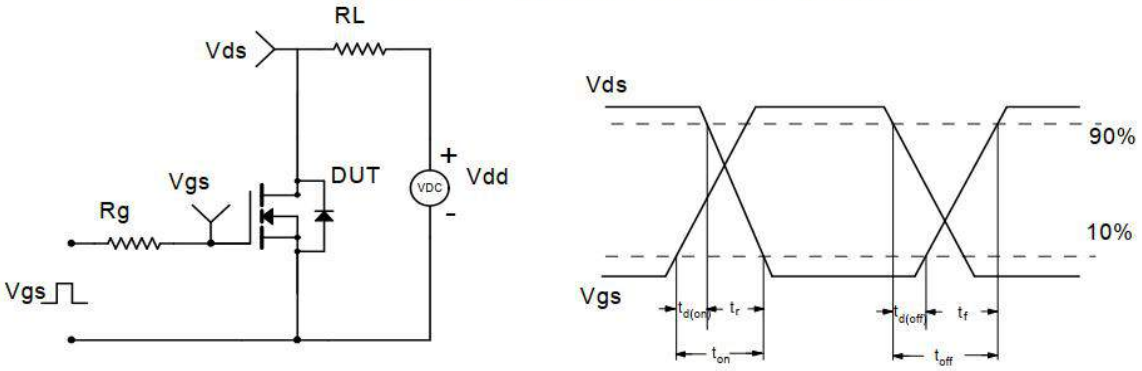
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



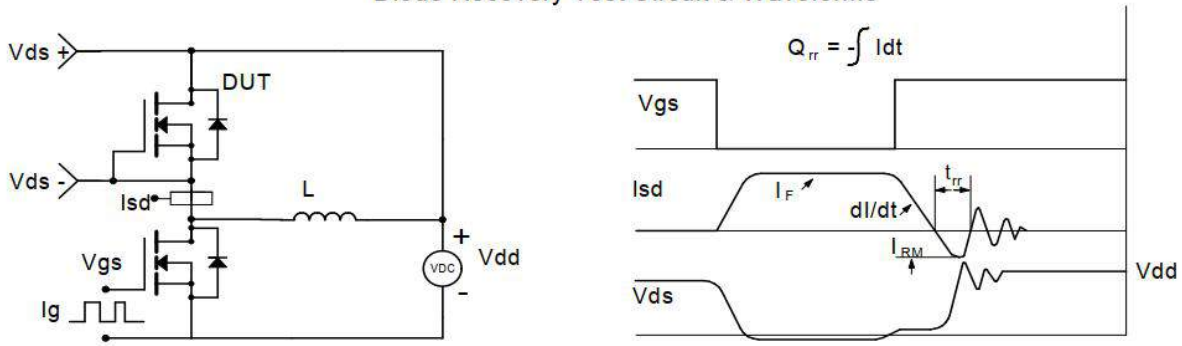
Gate Charge Test Circuit & Waveform



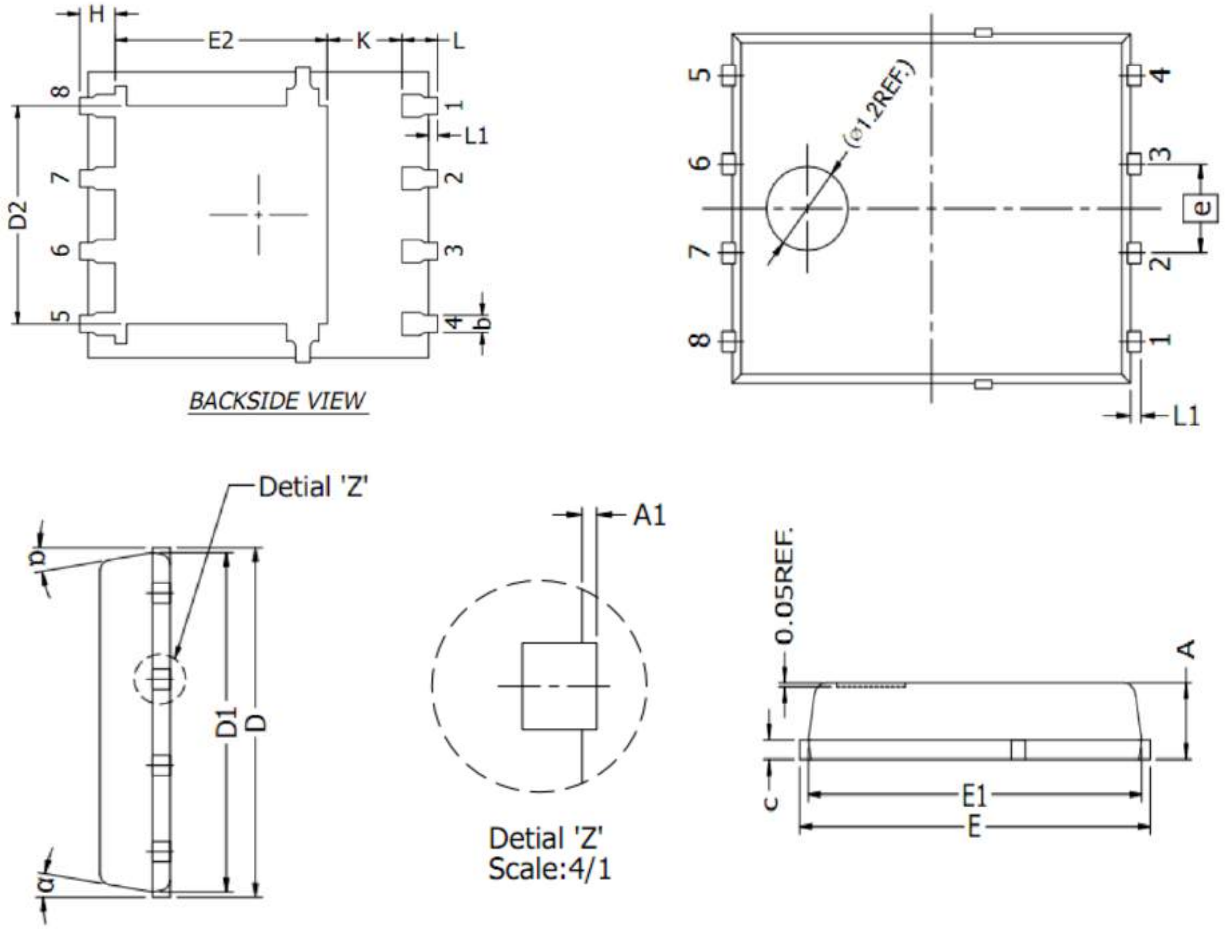
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



DFN5x6-8L Package Information



DIM.	MILLIMETERS		
	MIN.	NOM.	MAX.
A	0.90	1.00	1.10
A1	0	-	0.05
b	0.30	0.40	0.50
c	0.20	0.25	0.30
D	5.15 BSC		
D1	5.00 BSC		
D2	3.76	3.81	3.86
E	6.15 BSC		
E1	5.80	5.85	5.90
E2	3.45	3.65	3.85
e	1.27 BSC		
H	0.51	0.61	0.71
K	1.10	-	-
L	0.51	0.61	0.71
L1	0.08	0.15	0.23
α	10°	11°	12°

Customer Service

Sales and Service:

zj@ztasemi.com