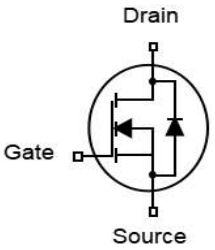
Features

- N-Channel
- Low FOM $R_{DS(ON)}$ X Q_G
- Ultra-low on-resistance
- RoHS compliant (Note 1)
- Halogen-free (Note 1)
- 100% EAS Tested

V_{DS}	40	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	5.5	mΩ
$R_{DS(on),TYP}$@ V_{GS}=4.5 V	7.0	mΩ
I_D	50	A

DFN5x6

Part ID	Package Type	Marking	Packing
ZTG055N04G	DFN5x6	ZTG055N04G	5000pcs/Reel



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

Symbol	Parameter		Rating	Unit
Common Ratings (Tc=25°C Unless Otherwise Noted)				
V_{GS}	Gate-Source Voltage		±20	V
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage		40	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	200	A
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous (Note 1)	T_C =25°C	50	A
		T_C =100°C	32	A
P_D	Maximum Power Dissipation		34	W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		3.7	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient, Steady State (Note 4)		49.8	°C/W
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed (Note 3)		45.5	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	40	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=40V,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	1.1	1.6	2.1	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=10V, I_D=20A	--	5.5	6.6	mΩ
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=4.5V, I_D=15A	--	7.0	10	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
Ciss	Input Capacitance	V_{DS}=20V,V_{GS}=0V, f=1MHz	--	842	--	pF
Coss	Output Capacitance		--	321	--	pF
Crss	ReverseTransferCapacitance		--	13	--	pF
Rg	Gate Resistance	f=1MHz	--	4.2	--	Ω
Qg	Total Gate Charge	V_{DD}=20V,I_D=20A, V_{GS}=10V	--	13.5	--	nC
Qgs	Gate-SourceCharge		--	2.4	--	nC
Qgd	Gate-DrainCharge		--	2.6	--	nC
Switching Characteristics						
Td(on)	Turn-on Delay Time	V_{DD}=20V, R_L=1.0Ω, R_G=1.6Ω, V_{GS}=10V	--	5.5	--	ns
Tr	Turn-on Rise Time		--	49.5	--	ns
Td(off)	Turn-Off Delay Time		--	18	--	ns
Tf	Turn-Off Fall Time		--	5.5	--	ns
Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)						
I_S	Diode Forward Current		--	50	--	A
I_{SM}	Maximum Pulsed Drain-Source Diode Forward Current (Note 1)		--	200	--	A
V_{SD}	Forward on voltage	I_S=20A,V_{GS}=0V	--	--	1.2	V
Trr	Reverse Recovery Time	V_{DD}=20V,I_D=20A di/dt=100A/μs	--	28.6	--	ns
Qrr	Reverse Recovery Charge		--	15	--	nC

Notes:

1. The max drain current rating is package limited
2. Repetitive Rating: Pulse width limited by maximum junction temperature
3. L = 0.5 mH, V_{DD} = 20V, I_{AS} = 13.5 A, R_G = 25 Ω, Starting T_J = 25 °C
4. Mount on minimum PCB layout

Electrical Characteristics Diagrams

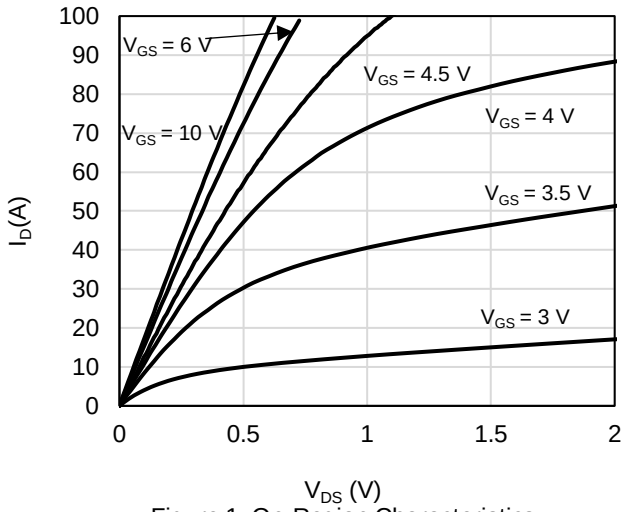


Figure 1: On-Region Characteristics

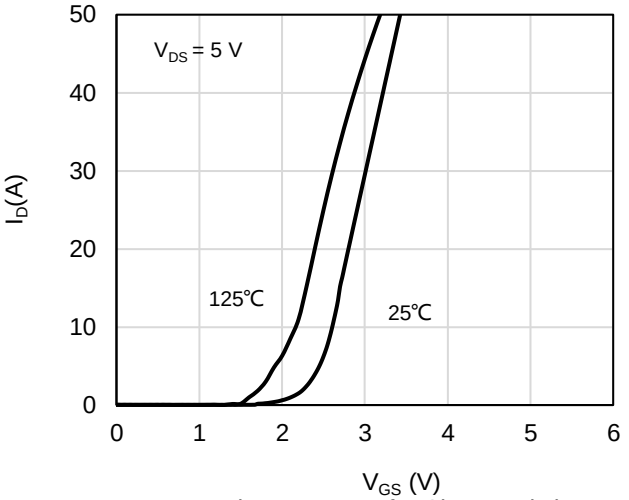


Figure 4: Transfer Characteristics

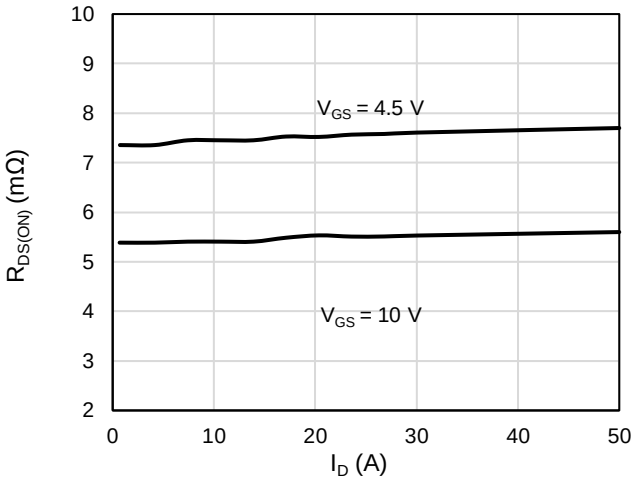


Figure 2: On-Resistance vs. Drain Current and Gate Voltage

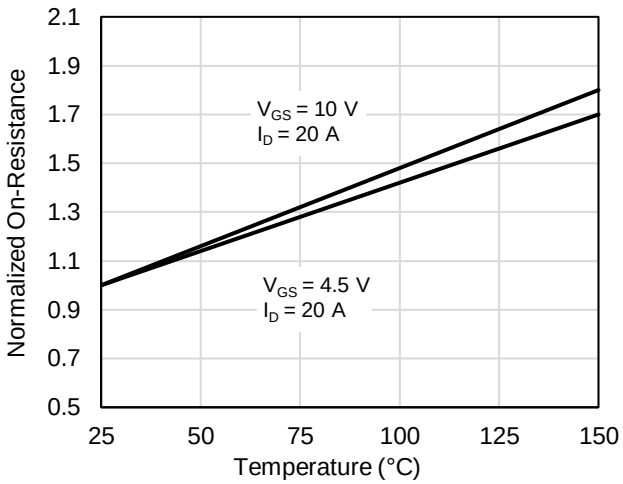


Figure 5: On-Resistance vs. Junction Temperature

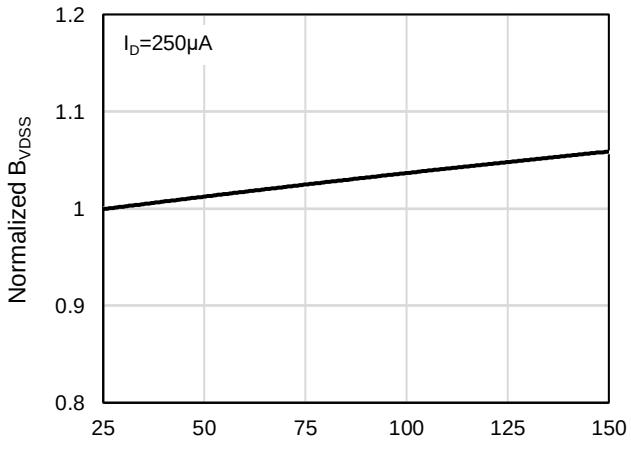


Figure 3: Breakdown Voltage vs. Junction Temperature

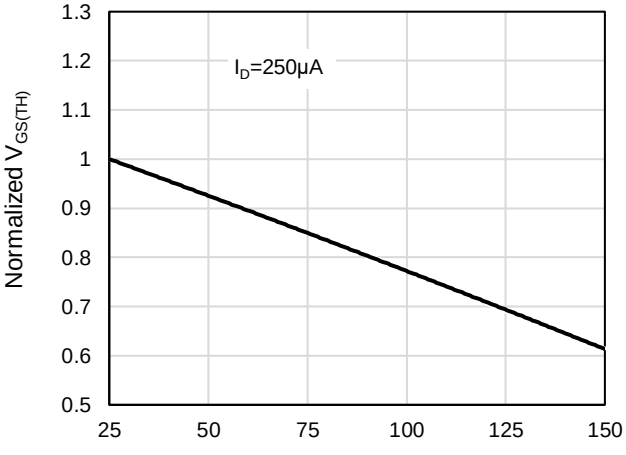


Figure 6: Threshold Voltage vs. Junction Temperature

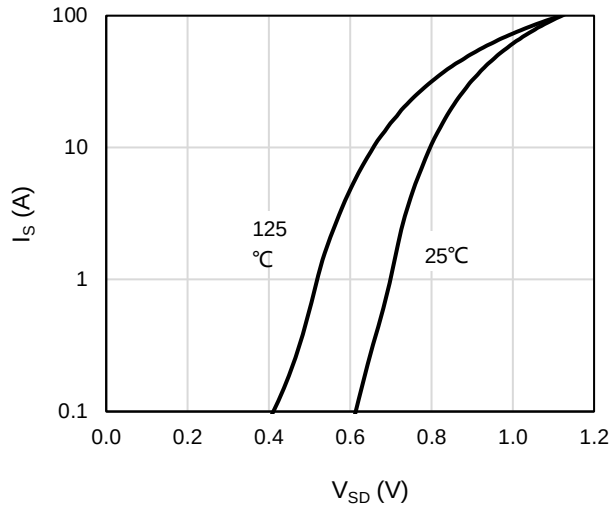


Figure 7: Body-Diode Characteristics

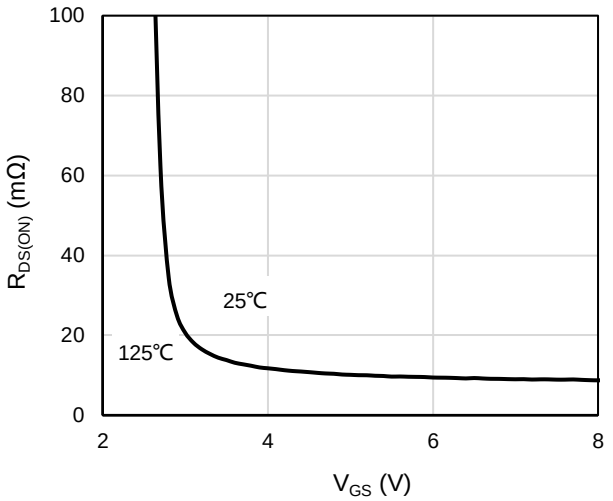


Figure 10: On-Resistance vs. Gate-Source Voltage

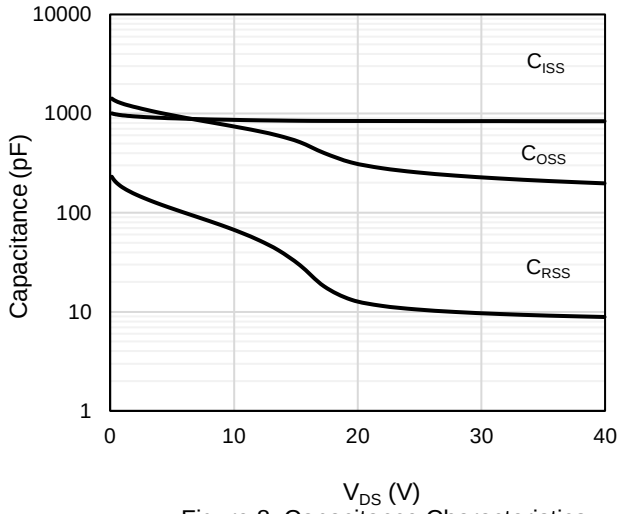


Figure 8: Capacitance Characteristics

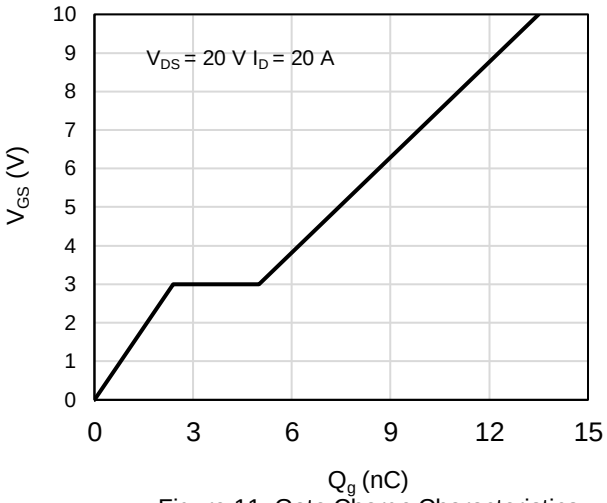


Figure 11: Gate-Charge Characteristics

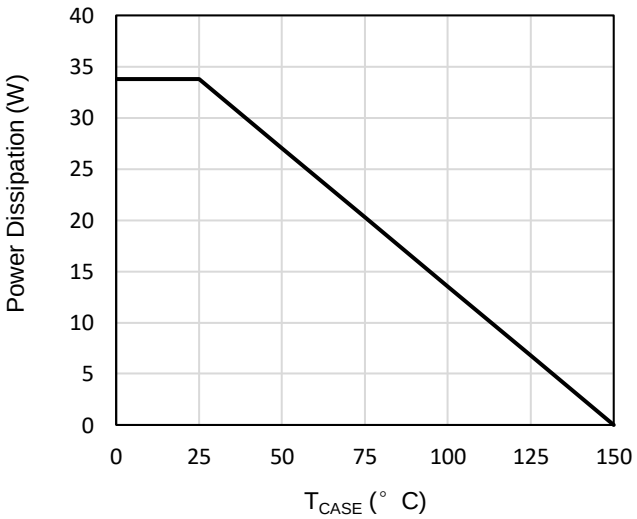


Figure 9: Power De -rating

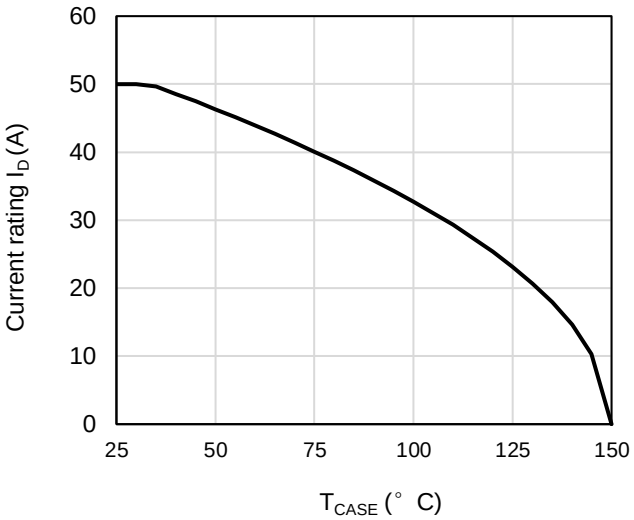


Figure 12: Current De-rating

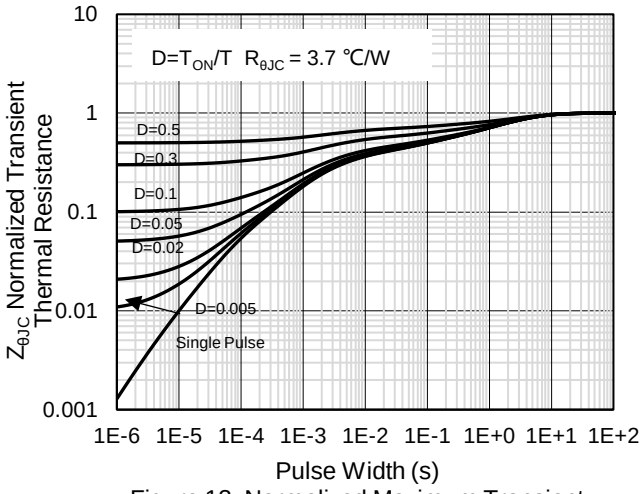


Figure 13: Normalized Maximum Transient Thermal Impedance

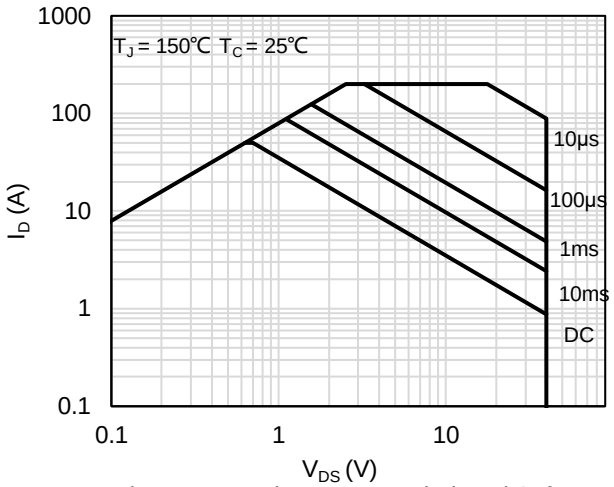
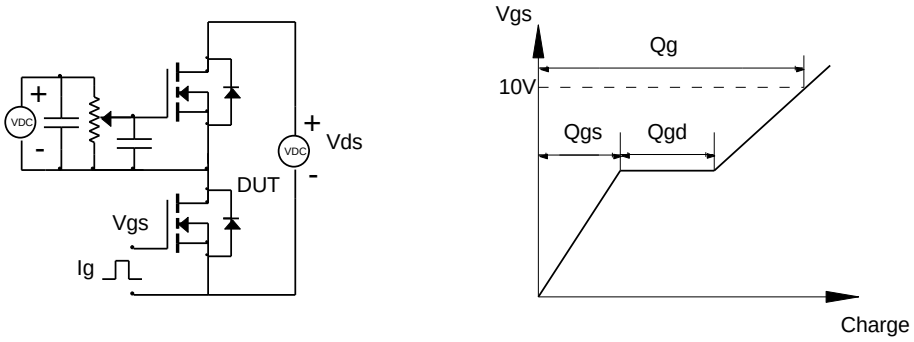


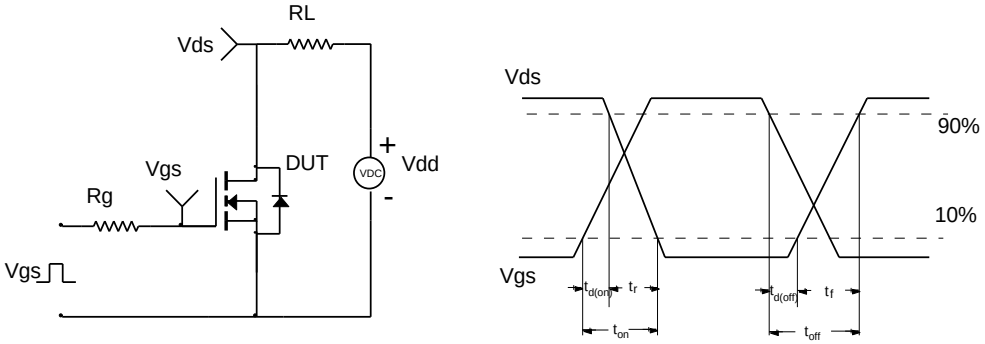
Figure 14: Maximum Forward Biased Safe Operating Area

Test Circuit and Waveform

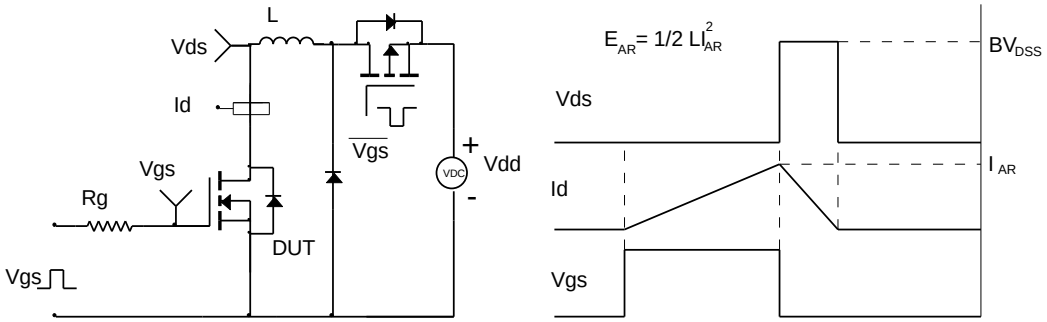
Gate Charge Test Circuit & Waveform



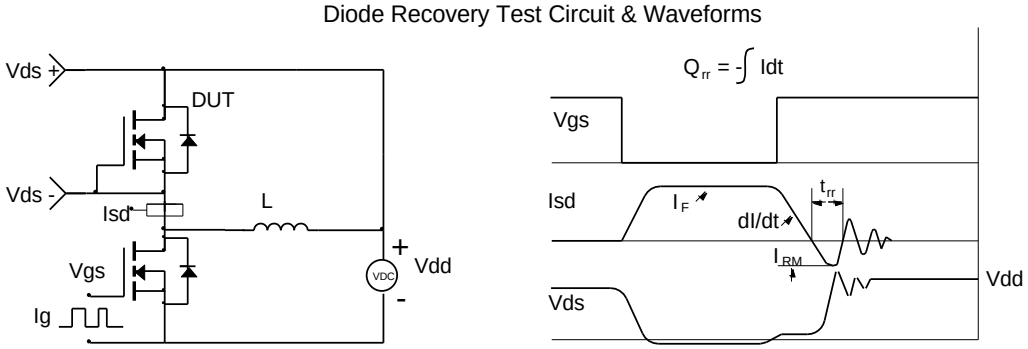
Resistive Switching Test Circuit & Waveforms



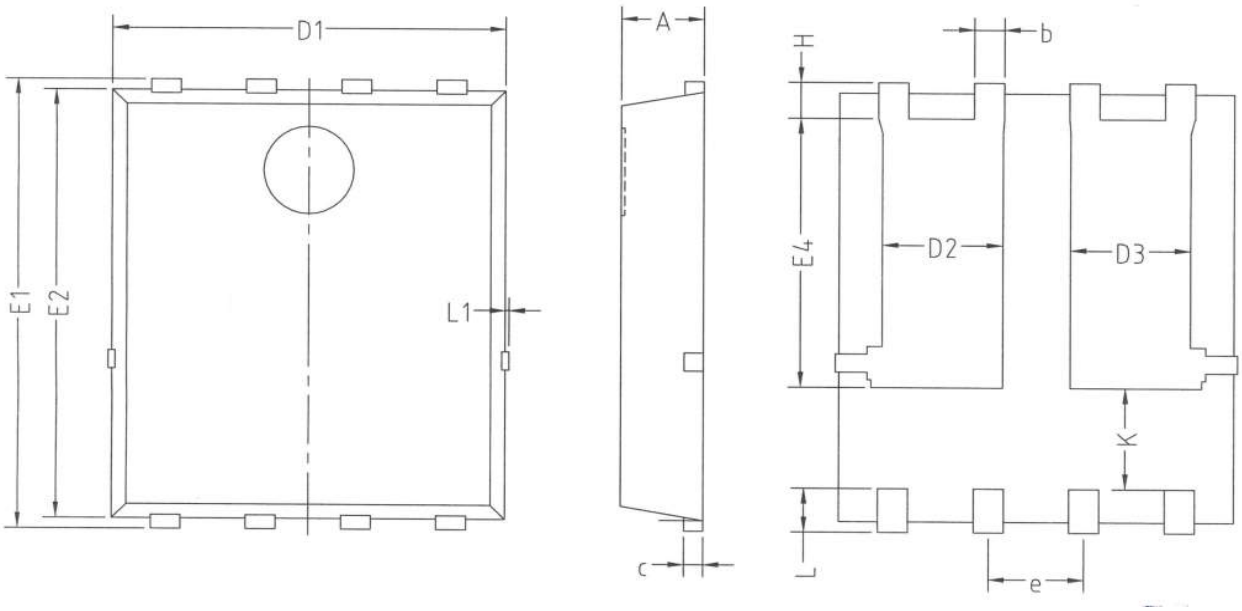
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



DFN5x6-8L Package Information



COMMON DIMENSIONS

SYMBOL	mm		
	MIN	NOM	MAX
A	1.00	1.10	1.20
b	0.30	0.40	0.50
c	0.154	0.254	0.354
D1	5.00	5.20	5.40
D2	1.40	1.60	1.80
D3	1.40	1.60	1.80
e	1.27BSC		
E1	5.95	6.15	6.35
E2	5.66	5.86	6.06
E4	3.47	3.67	3.87
H	0.40	0.50	0.60
K	1.23	1.38	1.53
L	0.30	0.60	0.70
L1			0.12

Customer Service

Sales and Service:

zj@ztasemi.com