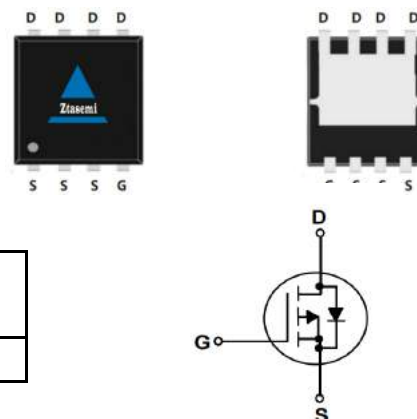


## Features

- P-Channel
- Advance high cell density Trench technology
- Low  $R_{DS(on)}$  to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance
- 100% Vds tested
- 100% EAS Tested

$V_{DS}$	-60	V
$R_{DS(on),TYP@ V_{GS}=-10V}$	5.5	m $\Omega$
$R_{DS(on),TYP@ V_{GS}=-4.5V}$	6.2	m $\Omega$
$I_D$	-135	A

DFN5X6



Part ID	Package Type	Marking	Packing
ZTG055P06G	DFN5x6	ZTG055P06G	5000pcs/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	-60	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 2)	$T_C = 25^\circ\text{C}$ -540	A	
<b>Mounted on Large Heat Sink</b>				
$I_D$	Drain Current-Continuous (Note 1)	$T_C = 25^\circ\text{C}$	-135	A
		$T_C = 100^\circ\text{C}$	-85	A
$P_D$	Maximum Power Dissipation	$T_C = 25^\circ\text{C}$	210	W
		$T_C = 100^\circ\text{C}$	60	W
$R_{\theta JC}$	Thermal Resistance-Junction to Case (Note 1)	0.83	$^\circ\text{C/W}$	
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	60	$^\circ\text{C/W}$	
<b>Drain-Source Avalanche Ratings</b>				
EAS	Avalanche Energy, Single Pulsed (Note 3)	237	mJ	

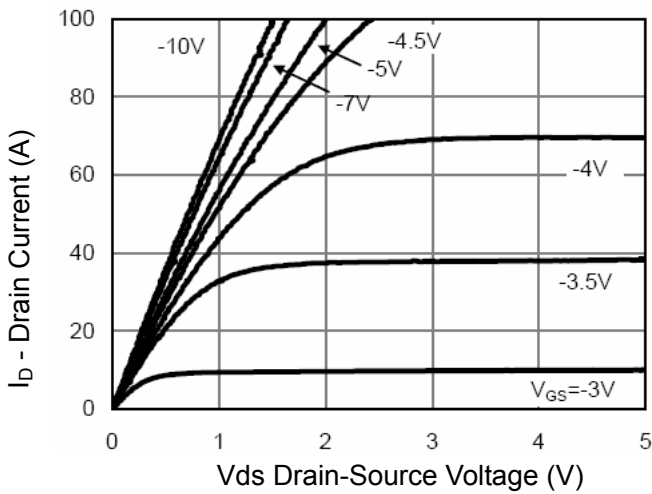
**Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

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	-60	--	--	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =-60V, V <sub>GS</sub> =0V	--	--	-1	μA
I <sub>GSS</sub>	Gate-Body Leakage Current	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V	--	--	±100	nA
V <sub>GS(th)</sub>	Gate Threshold Voltage	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1.3	-2.0	-2.5	V
R <sub>DS(on)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =-10V, I <sub>D</sub> =-15A	--	5.5	6.4	mΩ
R <sub>DS(on)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-10A	--	6.2	8.8	mΩ
g <sub>FS</sub>	Forward Transconductance	V <sub>DS</sub> =-10V, I <sub>D</sub> =-10A	--	36	--	S
<b>Dynamic Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V, f=1MHz	--	3026	--	pF
C <sub>oss</sub>	Output Capacitance		--	605	--	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		--	19	--	pF
R <sub>g</sub>	Gate Resistance	f=1MHz	--	2.0	--	Ω
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =-30V, I <sub>D</sub> =-15A, V <sub>GS</sub> =-10V	--	55	--	nC
Q <sub>gs</sub>	Gate-Source Charge		--	10	--	nC
Q <sub>gd</sub>	Gate-Drain Charge		--	8	--	nC
<b>Switching Characteristics</b>						
T <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =-30V, I <sub>D</sub> =-20A, R <sub>G</sub> =3Ω, V <sub>GS</sub> =-10V	--	4.4	--	ns
T <sub>r</sub>	Turn-on Rise Time		--	2.4	--	ns
T <sub>d(off)</sub>	Turn-Off Delay Time		--	14.3	--	ns
T <sub>f</sub>	Turn-Off Fall Time		--	3.4	--	ns
<b>Source- Drain Diode Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
I <sub>SD</sub>	Source-Drain Current (Body Diode)		--	--	-135	A
V <sub>SD</sub>	Forward on voltage	I <sub>S</sub> =-15A, V <sub>GS</sub> =0V	--	--	-1.2	V
T <sub>rr</sub>	Reverse Recovery Time	T <sub>J</sub> =25°C, I <sub>F</sub> =-15A, V <sub>GS</sub> =0V	--	60	--	ns
Q <sub>rr</sub>	Reverse Recovery Charge	di/dt=100A/μs	--	105	--	nC

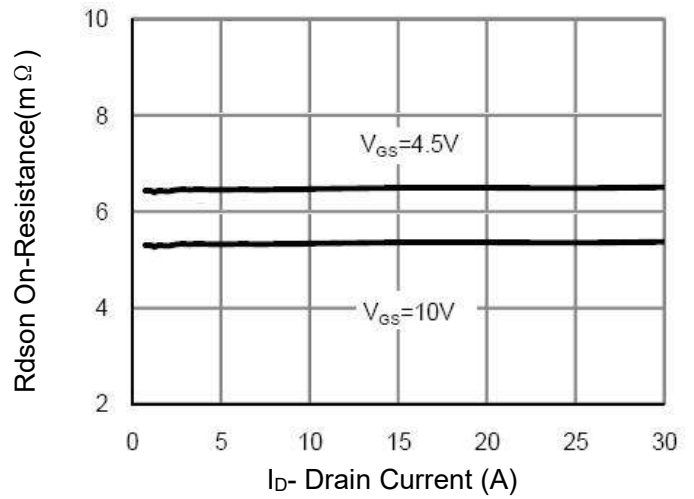
Notes:

- 1.The maximum current rating is package limited.
- 2.Repetitive Rating: Pulse width limited by maximum junction temperature
- 3.EAS condition: T<sub>J</sub>=25°C

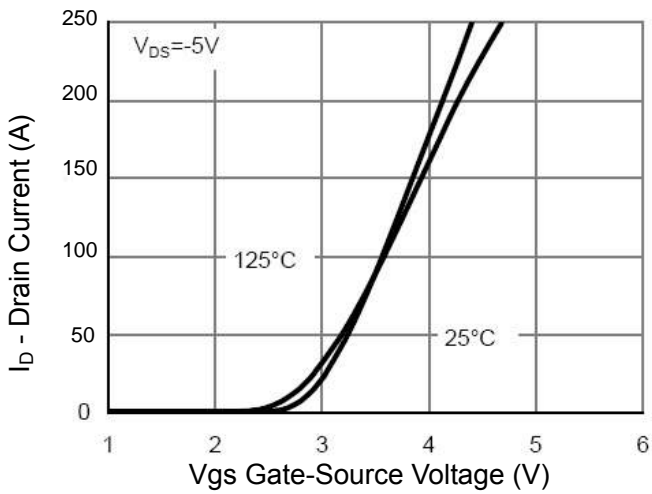
**Characteristics Curve:**



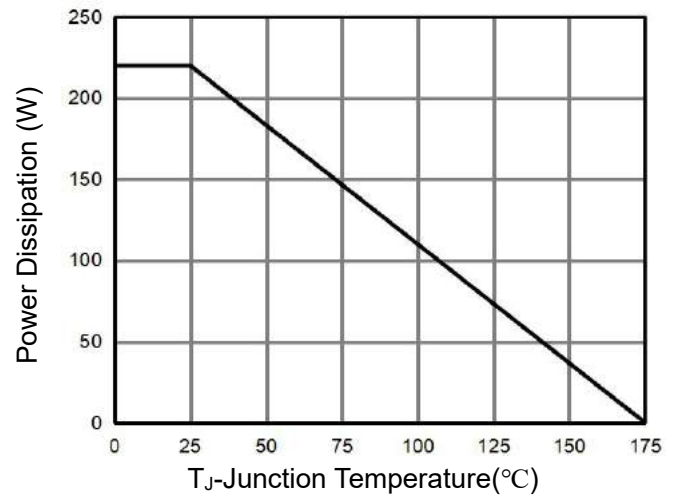
**Figure 1 Output Characteristics**



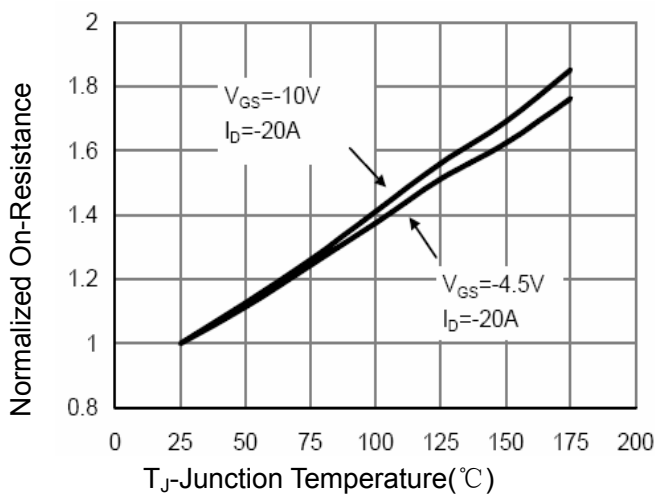
**Figure 4 Rdson- Drain Current**



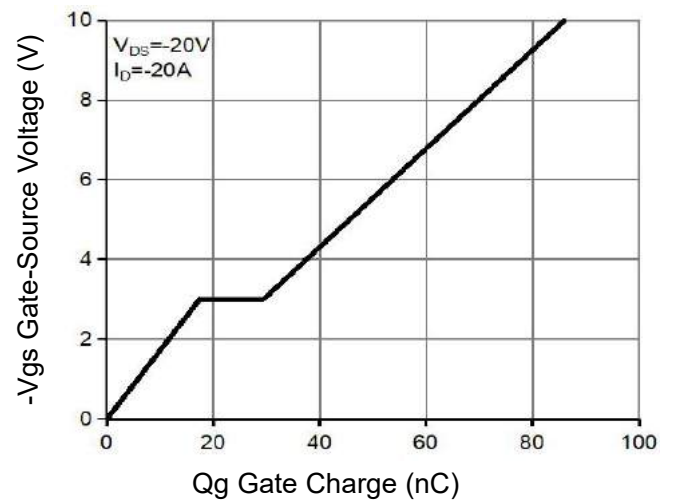
**Figure 2 Transfer Characteristics**



**Figure 5 Power De-rating**



**Figure 3 Rdson-Junction Temperature**



**Figure 6 Gate Charge**

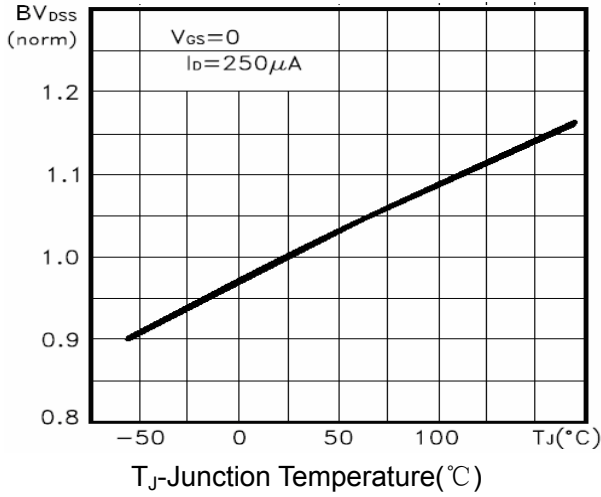


Figure 7  $BV_{DSS}$  vs Junction Temperature

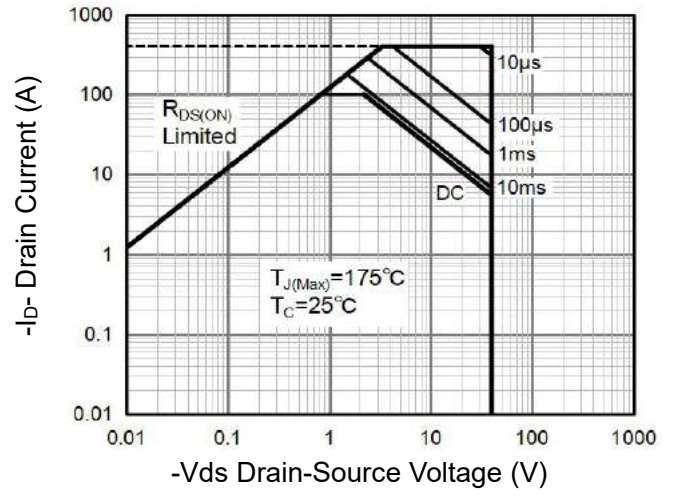


Figure 8 Safe Operation Area<sup>(Note4)</sup>

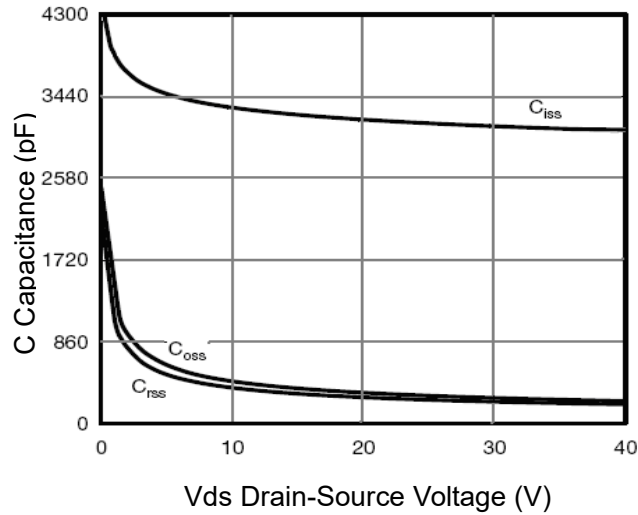


Figure 9 Capacitance vs  $V_{DS}$

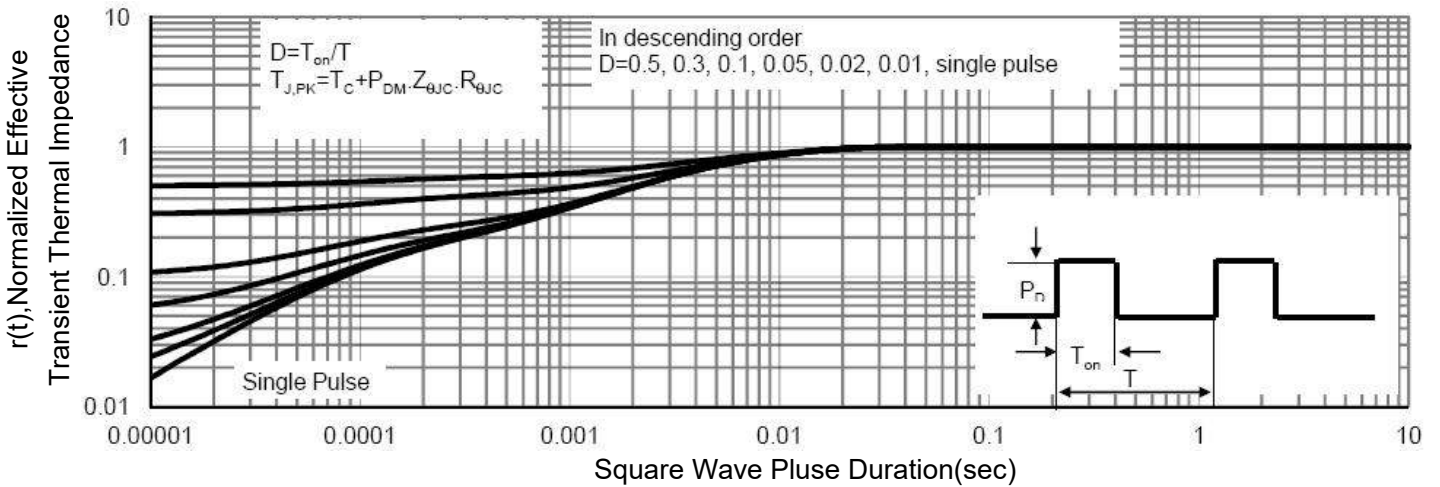
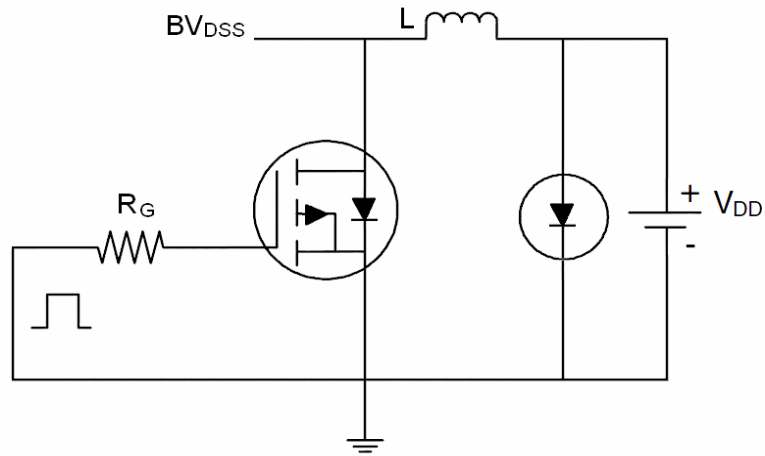


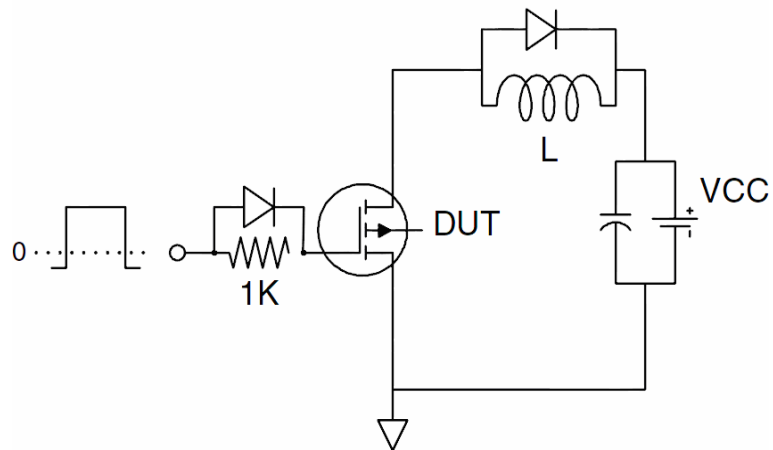
Figure 10 Normalized Maximum Transient Thermal Impedance

## Test Circuit

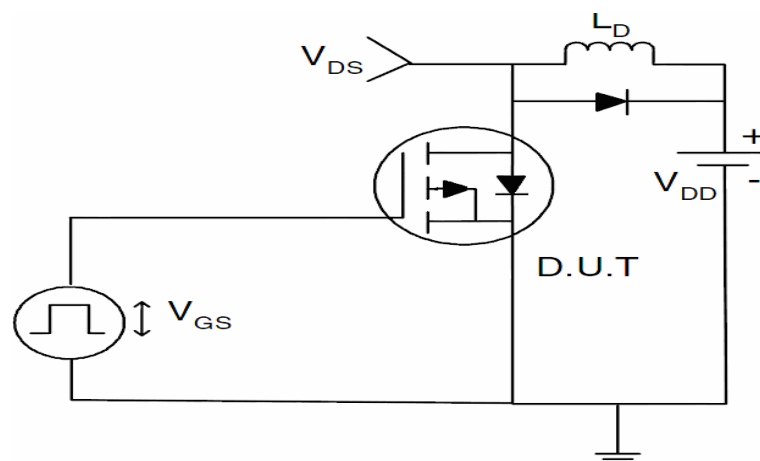
### 1) $E_{AS}$ Test Circuit



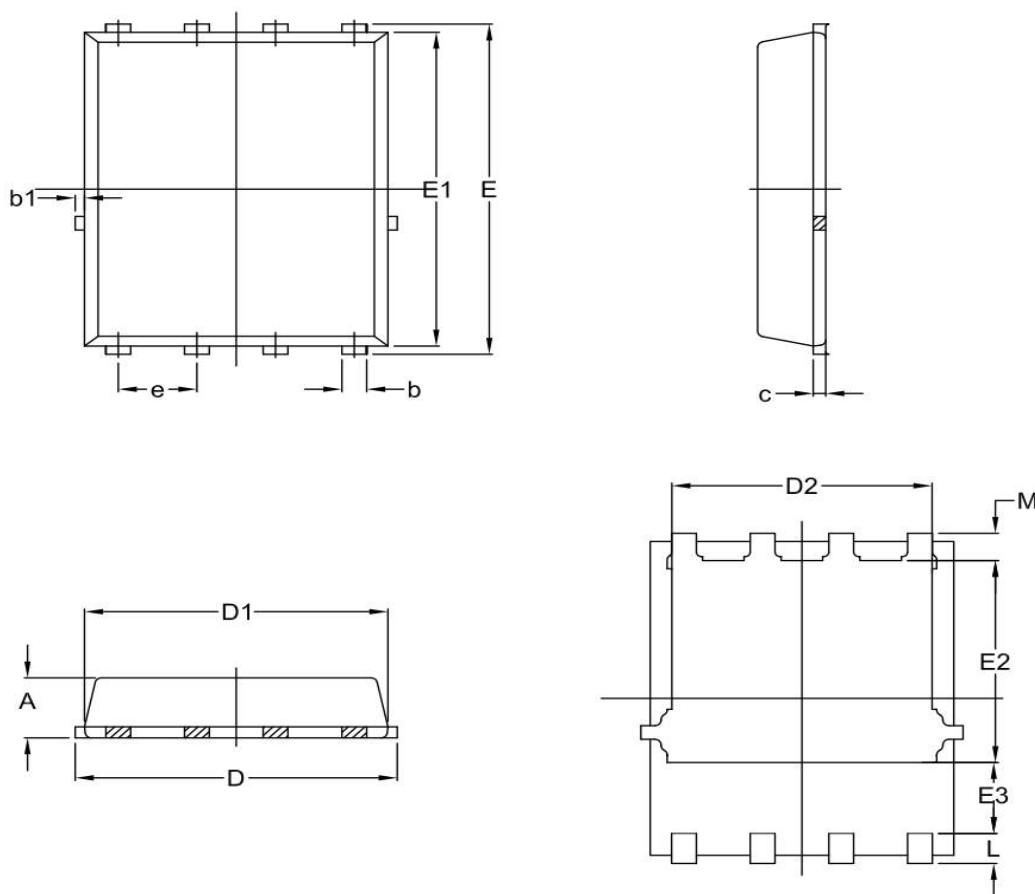
### 2) Gate Charge Test Circuit



### 3) Switch Time Test Circuit



## DFN5x6-8L Package Information



DIM	MILLIMETERS		
	MIN	NOM	MAX
A	1.00	1.10	1.20
b	0.30	0.40	0.50
b1	0.02	0.15	0.22
c	0.15	0.20	0.35
D	4.95	5.15	5.35
D1	4.80	4.90	5.00
D2	4.00	4.20	4.40
E	5.95	6.05	6.25
E1	5.65	5.75	5.85
E2	3.50	3.70	3.90
E3	1.10	/	/
e	1.27		
L	0.40	0.55	0.70
M	0.35	0.50	0.65

## Customer Service

Sales and Service:

[zj@ztasemi.com](mailto:zj@ztasemi.com)