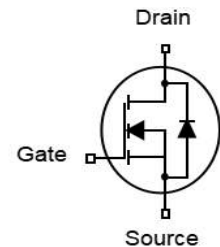
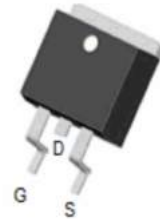


## Features

- N-Channel
- Low FOM  $R_{DS(on)} \times Q_{gd}$
- 100% avalanche tested
- Easy to use/drive
- RoHS compliant
- 100% EAS Tested

$V_{DS}$	100	V
$R_{DS(on),TYP@ V_{GS}=10V}$	3.5	m $\Omega$
$R_{DS(on),TYP@ V_{GS}=4.5V}$	4.5	m $\Omega$
$I_D$	130	A

**TO-263**


Part ID	Package Type	Marking	Packing
ZTG035N10B	TO-263	ZTG035N10B	1000pcs/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	100	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)	$T_c = 25^\circ\text{C}$ 520	A	
<b>Mounted on Large Heat Sink</b>				
$I_D$	Drain Current-Continuous	$T_c = 25^\circ\text{C}$	130	A
		$T_c = 100^\circ\text{C}$	84	A
$P_D$	Maximum Power Dissipation	131.5	W	
$R_{\theta JC}$	Thermal Resistance-Junction to Case	0.95	$^\circ\text{C/W}$	
$R_{\theta JA}$	Thermal Resistance Junction-Ambient	50	$^\circ\text{C/W}$	
<b>Drain-Source Avalanche Ratings</b>				
EAS	Avalanche Energy, Single Pulsed (Note 2)	502	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	100	--	--	V
I <sub>DSS</sub>	Zero Gate Voltage Drain Current	V <sub>DS</sub> =100V, 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	2.5	3.0	3.5	V
R <sub>DS(on)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =10V, I <sub>D</sub> =56A	--	3.5	3.9	mΩ
R <sub>DS(on)</sub>	Drain-Source On-State Resistance	V <sub>GS</sub> =4.5V, I <sub>D</sub> =20A	--	4.5	5.9	mΩ
<b>Dynamic Electrical Characteristics @ T<sub>J</sub> = 25°C (unless otherwise stated)</b>						
C <sub>iss</sub>	Input Capacitance	V <sub>DS</sub> =50V, V <sub>GS</sub> =0V, f=1MHz	--	3802	--	pF
C <sub>oss</sub>	Output Capacitance		--	1235	--	pF
C <sub>rss</sub>	Reverse Transfer Capacitance		--	28	--	pF
R <sub>g</sub>	Gate Resistance f=1MHz	f=1MHz	--	0.9	--	Ω
Q <sub>g</sub>	Total Gate Charge	V <sub>DS</sub> =50V, I <sub>D</sub> =20A, V <sub>GS</sub> =10V	--	65	--	nC
Q <sub>gs</sub>	Gate-Source Charge		--	16	--	nC
Q <sub>gd</sub>	Gate-Drain Charge		--	16	--	nC
<b>Switching Characteristics</b>						
T <sub>d(on)</sub>	Turn-on Delay Time	V <sub>DS</sub> =50V, I <sub>D</sub> =20A, R <sub>G</sub> =5Ω, V <sub>GS</sub> =10V	--	25	--	ns
T <sub>r</sub>	Turn-on Rise Time		--	33	--	ns
T <sub>d(off)</sub>	Turn-Off Delay Time		--	93	--	ns
T <sub>f</sub>	Turn-Off Fall Time		--	75	--	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)		--	--	130	A
V <sub>SD</sub>	Forward on voltage	I <sub>S</sub> =20A, 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> =20A, di/dt=100A/μs	--	82	--	ns
Q <sub>rr</sub>	Reverse Recovery Charge		--	182	--	nC

**Notes**

1. Repetitive rating; pulse width limited by maximum junction temperature
2. L=0.2mH, R<sub>G</sub>=25Ω, Starting T<sub>J</sub>=25°C

Typical Characteristics  $T_J = 25^\circ\text{C}$ , unless otherwise noted

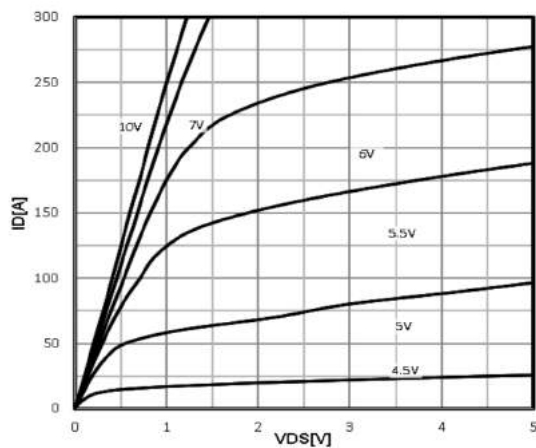


Figure 1 output characteristics  
 $I_D = f(V_{DS})$

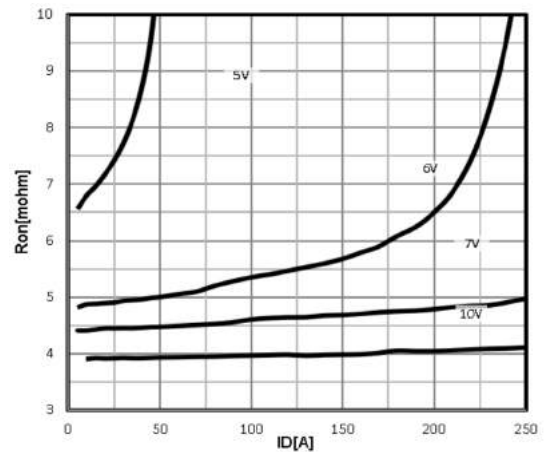


Figure 4 drain-source on resistance  
 $R_{DS(on)} = f(I_D)$

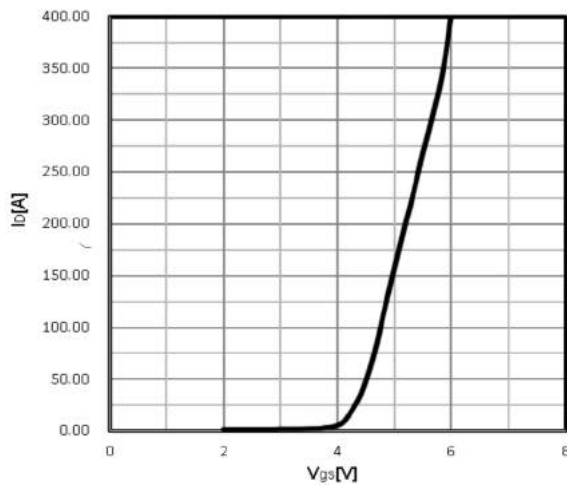


Figure 2 transfer characteristics  
 $I_D = f(V_{GS})$

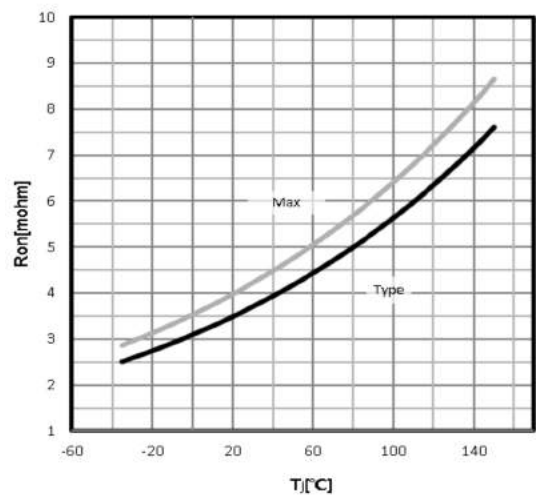


Figure 5 Drain-source on-state resistance  
 $R_{DS(on)} = f(T_J); I_D = 56A; V_{GS} = 10V$

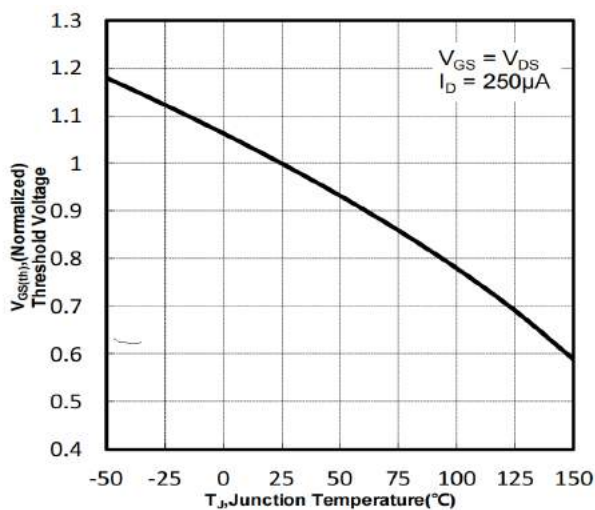


Figure 3 Gate Threshold Voltage  
 $V_{TH} = f(T_J); I_D = 250\mu A$

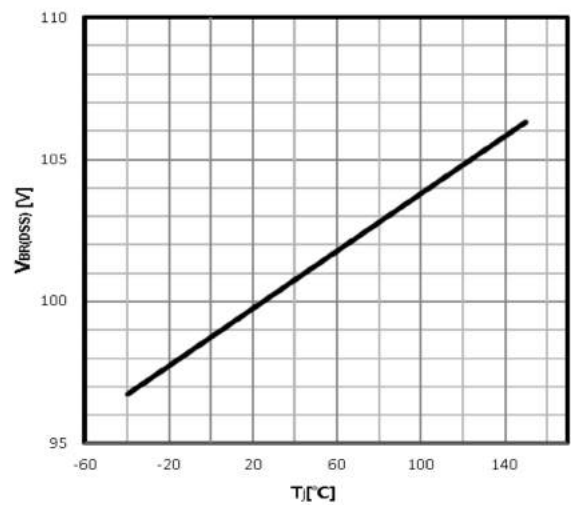
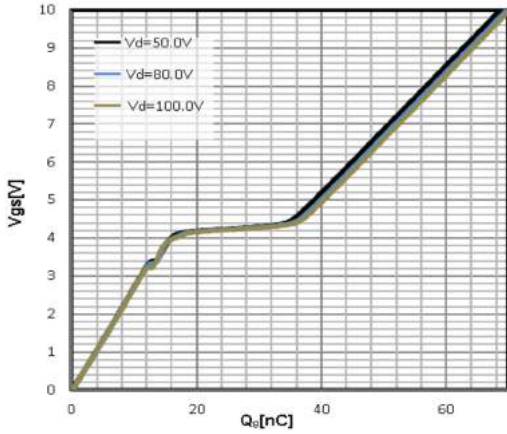
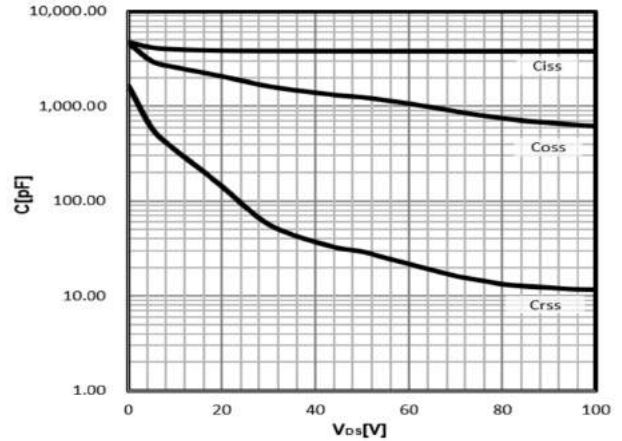


Figure 6 Drain-source breakdown voltage  
 $V_{BR(DSS)} = f(T_J); I_D = 250\mu A$

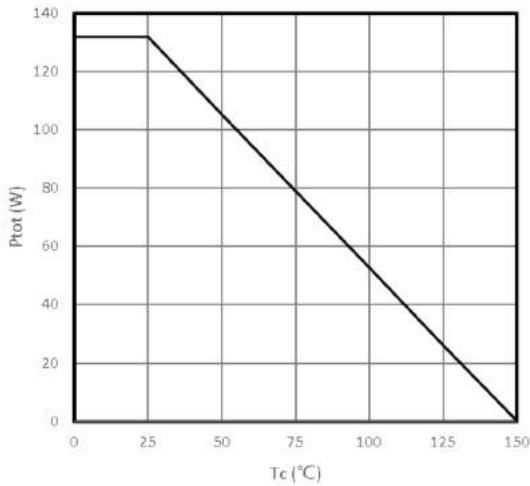
Typical Characteristics  $T_J = 25^\circ\text{C}$  unless otherwise noted



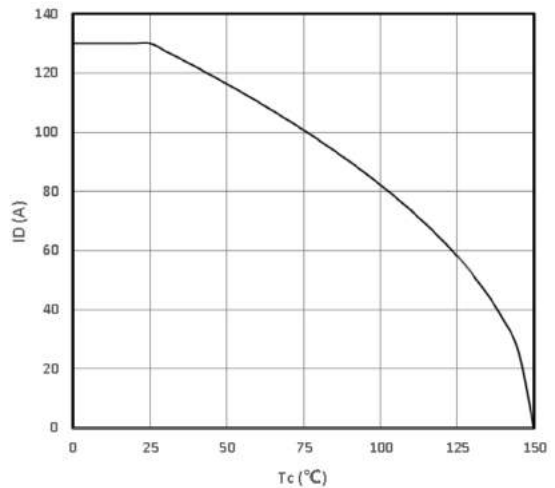
**Figure 7 gate charge**  
 $V_{GS}=f(Q_g)$ ;  $I_D=20\text{A}$



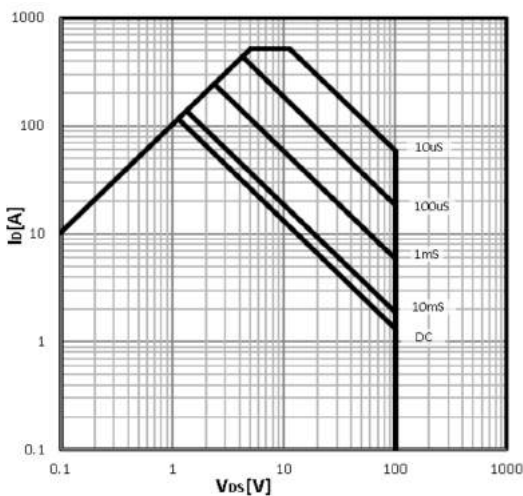
**Figure 10 capacitances**  
 $C=f(V_{DS})$ ;  $V_{GS}=0\text{V}$ ;  $f=1\text{MHz}$



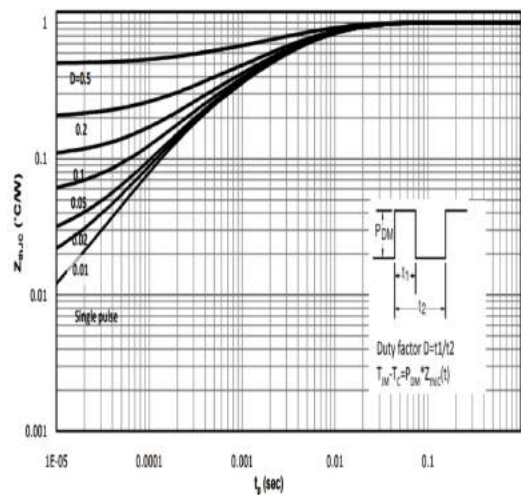
**Figure 8 Power Dissipation**  
 $P_{tot}=f(T_C)$



**Figure 11 Maximum Drain Current**  
 $I_D=f(T_C)$



**Figure 9 Safe operating area**  
 $I_D=f(V_{DS})$



**Figure 12 Max. transient thermal impedance**  
 $Z_{thJC}=f(t_p)$

Figure A: Gate Charge Test Circuit and Waveform

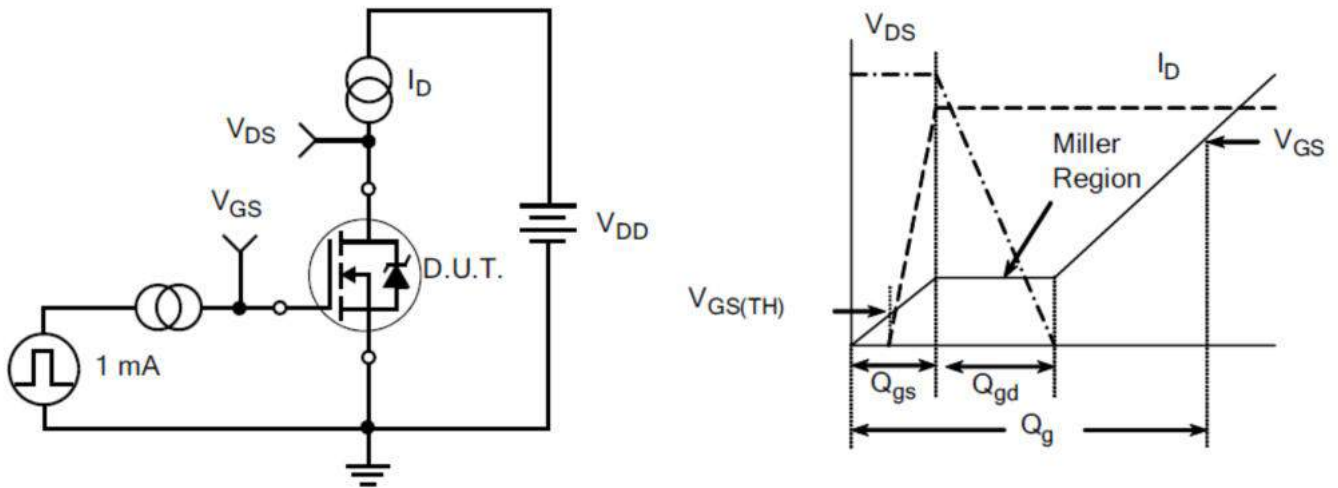


Figure B: Resistive Switching Test Circuit and Waveform

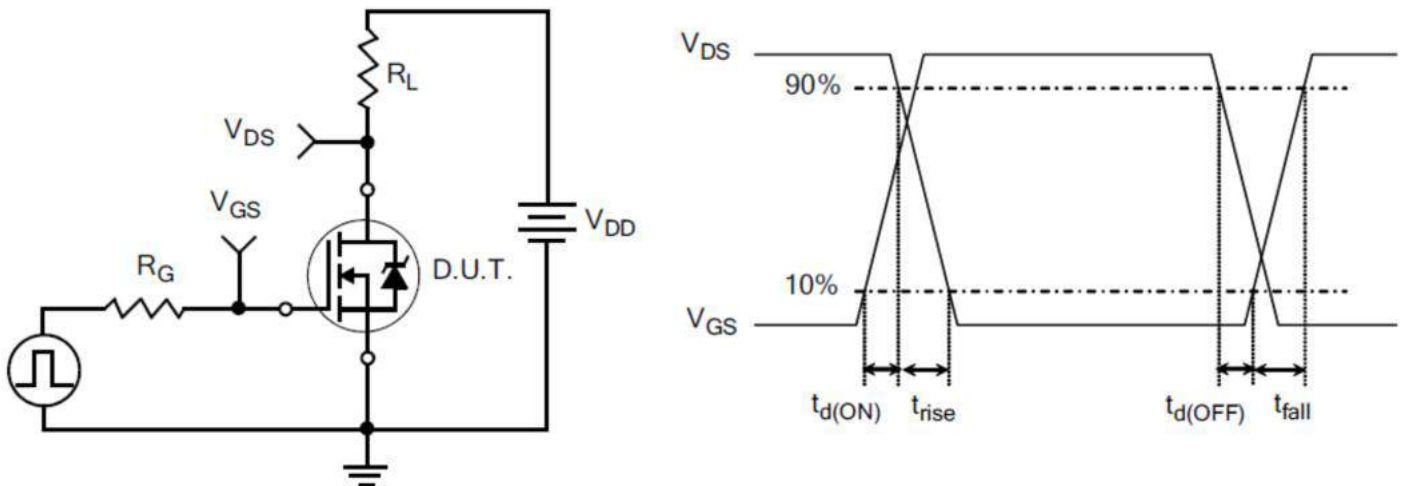
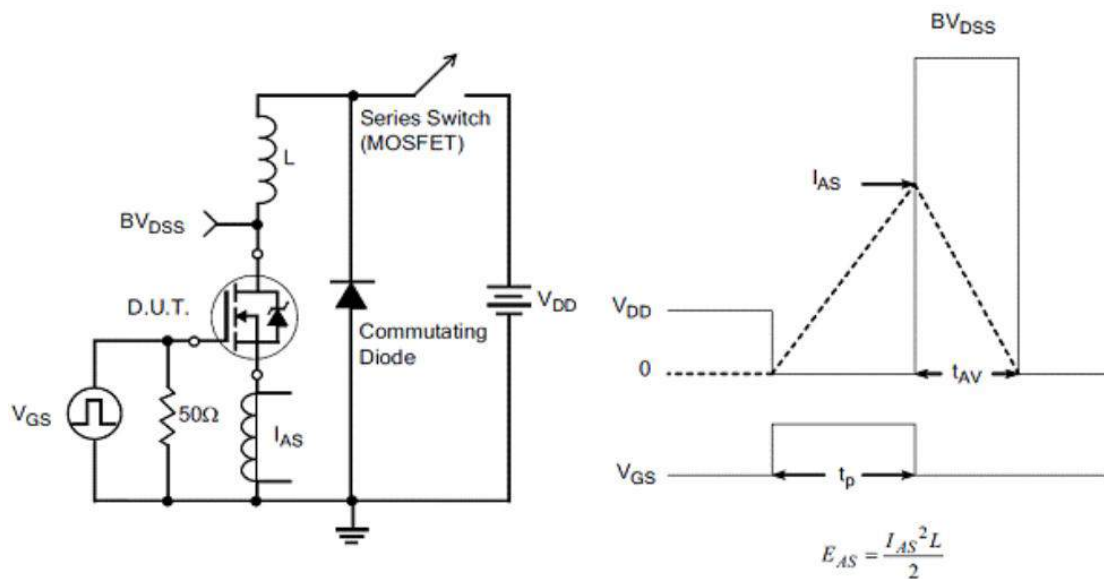
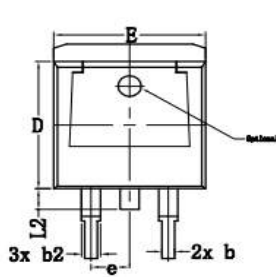


Figure C: Unclamped Inductive Switching Test Circuit and Waveform



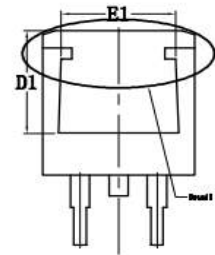
## TO-263-2L Package Information



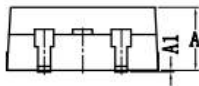
TOP VIEW



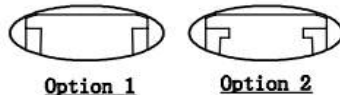
SIDE VIEW(Right)



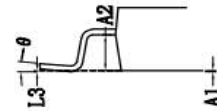
BOTTOM VIEW



SIDE VIEW(Front)



Detail D



VIEW C

SYMBOL	DIMENSIONS			
	mm		inch	
	MIN.	MAX.	MIN.	MAX.
A	4.30	4.86	0.169	0.191
A1	0.00	0.25	0.00	0.010
A2	2.34	2.79	0.092	0.110
b	0.68	0.94	0.027	0.037
b2	1.15	1.35	0.045	0.053
c	0.33	0.65	0.013	0.026
c2	1.17	1.40	0.046	0.055
D	8.38	9.45	0.330	0.372
D1	6.90	8.17	0.272	0.322
E	9.78	10.50	0.385	0.413
E1	6.50	8.60	0.256	0.339
H	14.61	15.88	0.575	0.625
e	2.54 BSC.		0.100 BSC.	
L	1.78	2.79	0.070	0.110
L1	0.70	1.60	0.028	0.063
L2	1.00	1.78	0.039	0.070
L3	0.254 BSC.		0.010 BSC.	
θ	0°	8°	0.00	0.315

## Customer Service

Sales and Service:

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