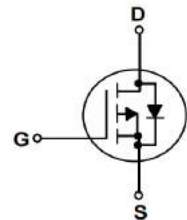


Features

- P-Channel
- Fast Switching
- Low Gate Charge and $R_{DS(on)}$
- Low Reverse transfer capacitances
- 100% EAS Tested

V_{DS}	-60	V
$R_{DS(on),TYP@ V_{GS}=-10V}$	9	m Ω
$R_{DS(on),TYP@ V_{GS}=-4.5V}$	11	m Ω
I_D	-80	A

TO-252



Part ID	Package Type	Marking	Packing
ZTG080P06D	TO-252	ZTG080P06D	2500pcs/reel

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

Symbol	Parameter	Rating	Unit	
Common Ratings ($T_C=25^\circ\text{C}$ Unless Otherwise Noted)				
V_{GS}	Gate-Source Voltage	± 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 175	$^\circ\text{C}$	
I_{DM}	Drain Current-Continuous@ Current-Pulsed (Note 1)	$T_C=25^\circ\text{C}$ -320	A	
Mounted on Large Heat Sink				
I_D	Drain Current-Continuous	$T_C=25^\circ\text{C}$	-80	A
		$T_C=100^\circ\text{C}$	-50	A
P_D	Maximum Power Dissipation	$T_C=25^\circ\text{C}$	150	W
$R_{\theta JC}$	Thermal Resistance-Junction to Case		0.83	$^\circ\text{C/W}$
$R_{\theta JA}$	Thermal Resistance Junction-Ambient		60	$^\circ\text{C/W}$
Drain-Source Avalanche Ratings				
EAS	Avalanche Energy, Single Pulsed (Note 2)		450	mJ

Electrical Characteristics (T_J=25°C 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	-60	--	--	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-60V, 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	-1.3	-1.8	-2.3	V
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =-10V, I _D =-20A	--	9	11	mΩ
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =-4.5V, I _D =-15A	--	11	13.5	mΩ
g _{FS}	Forward Transconductance	V _{DS} =-10V, I _D =-20A	50	--	--	S
Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =-30V, V _{GS} =0V, f=1MHz	--	3957	--	pF
C _{oss}	Output Capacitance		--	610	--	pF
C _{rss}	Reverse Transfer Capacitance		--	33	--	pF
R _g	Gate Resistance	f=1MHz	--	2	--	Ω
Q _g	Total Gate Charge	V _{DS} =-30V, I _D =-20A, V _{GS} =-10V	--	54	--	nC
Q _{gs}	Gate-Source Charge		--	11	--	nC
Q _{gd}	Gate-Drain Charge		--	9	--	nC
Switching Characteristics						
T _{d(on)}	Turn-on Delay Time	V _{DS} =-30V, R _L =0.75Ω, R _G =3Ω, V _{GS} =-10V	--	4.4	--	ns
T _r	Turn-on Rise Time		--	2.4	--	ns
T _{d(off)}	Turn-Off Delay Time		--	14.4	--	ns
T _f	Turn-Off Fall Time		--	3.4	--	ns
Source- Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated)						
I _{SD}	Source-Drain Current (Body Diode)		--	--	-80	A
V _{SD}	Forward on voltage	I _S = -6A, V _{GS} = 0V	--	--	-1.2	V
T _{rr}	Reverse Recovery Time	T _J = 25°C, I _S = -20A, V _{DD} = -30V,	--	60	--	ns
Q _{rr}	Reverse Recovery Charge	di/dt = 100A/μs	--	105	--	nC

Notes :

1. Repetitive rating; pulse width limited by maximum junction temperature
2. V_{DD} = 30V, L = 0.3mH, R_G = 25Ω, Starting T_J = 25°C

Characteristics Curve:

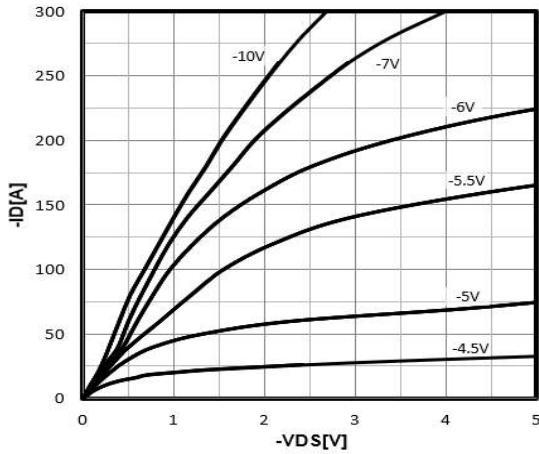


Figure 1 output characteristics
 $-I_D=f(-V_{DS})$

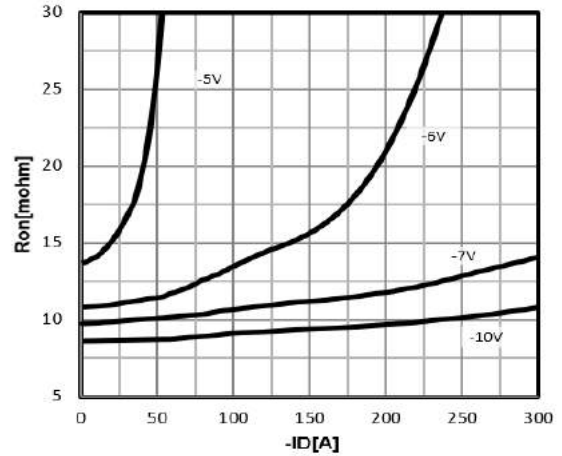


Figure 4 drain -source on resistance
 $R_{DS(on)}=f(-I_D)$

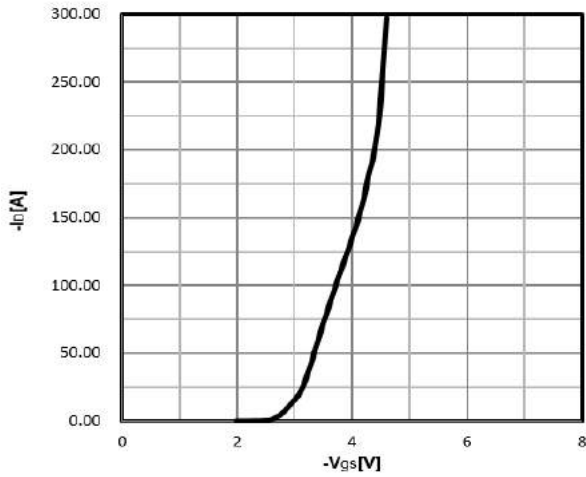


Figure 2 transfer characteristics
 $-I_D=f(-V_{GS})$

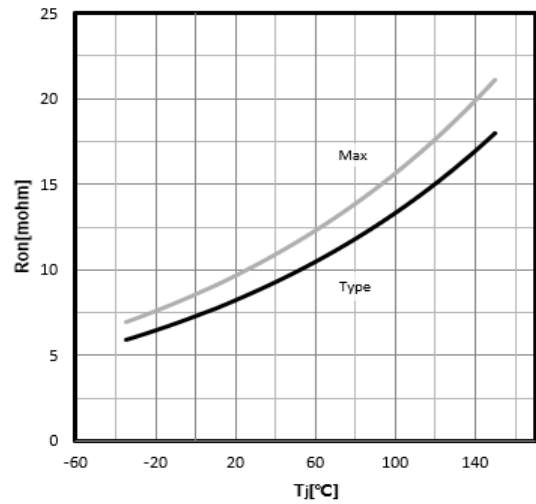


Figure 5 Drain-source on-state resistance
 $R_{DS(on)}=f(T_j); I_D=-20A; V_{GS}=-10V$

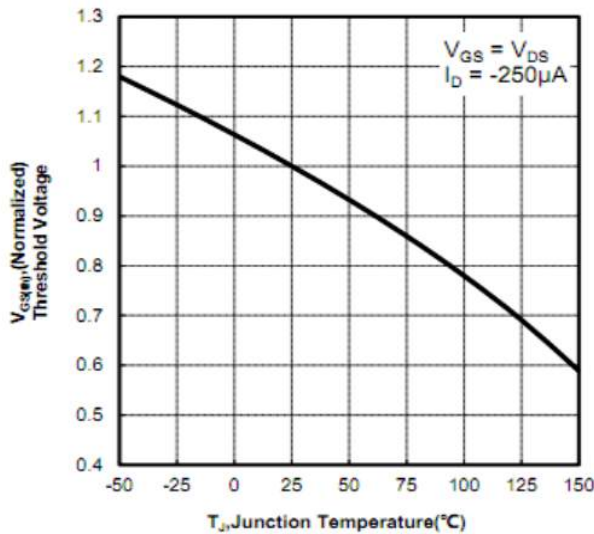


Figure 3 Gate Threshold Voltage
 $-V_{TH}=f(T_j); I_D=-250\mu A$

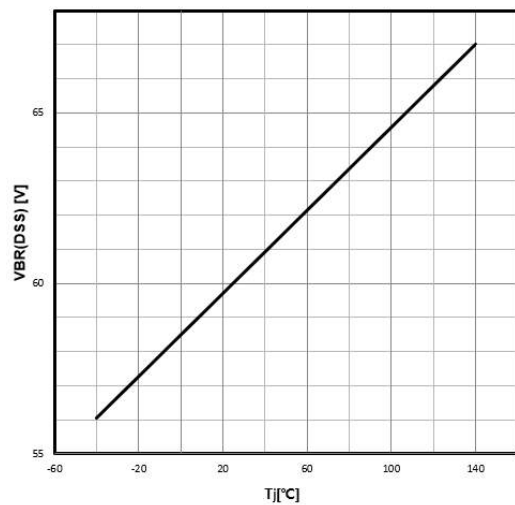


Figure 6 Drain-source breakdown voltage
 $-V_{BR(DSS)}=f(T_j); I_D=-250\mu A$

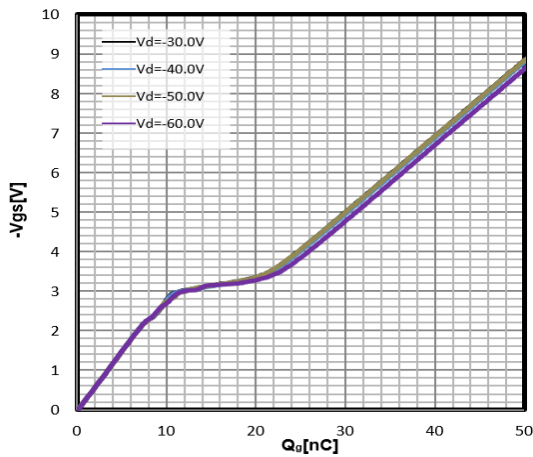


Figure 7 gate charge
 $V_{GS}=f(Q_{gate}) ; I_D=-20A$

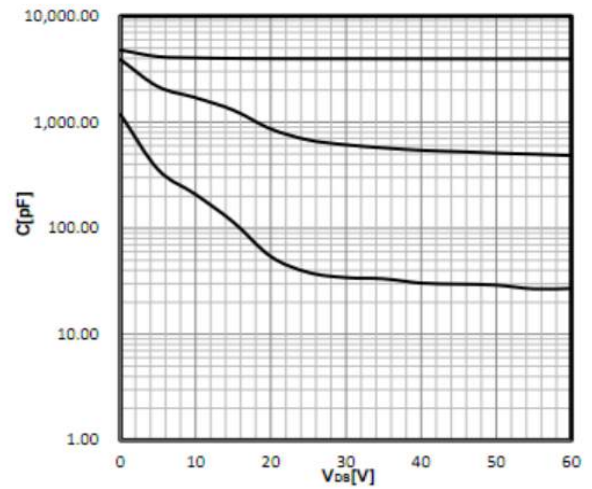


Figure 10 capacitances
 $C=f(-V_{DS}) ; V_{GS}=0V ; f=1MHz$

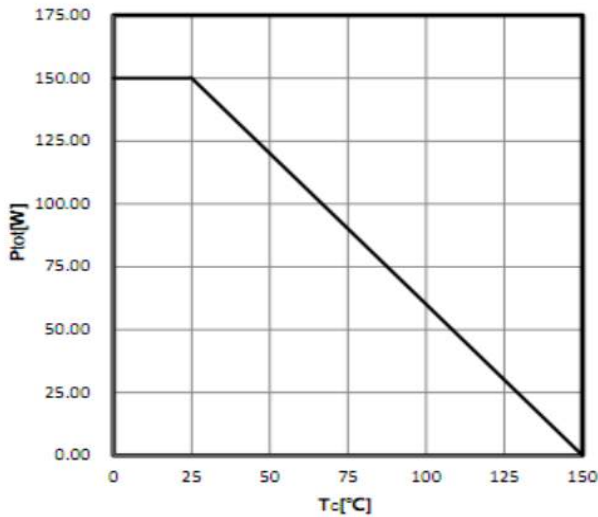


Figure 8 Power Dissipation
 $P_{tot}=f(T_C)$

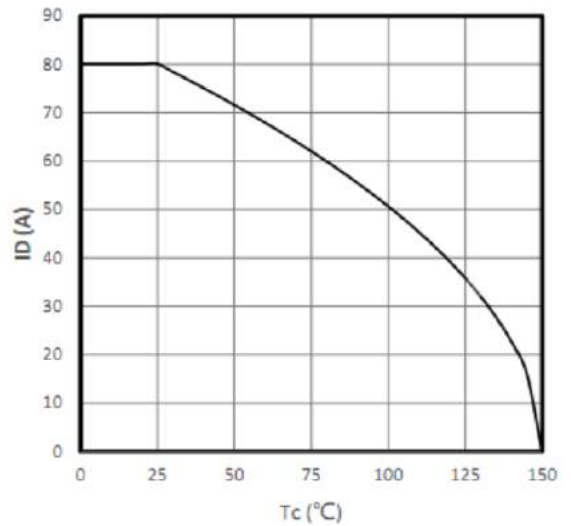


Figure 11 Maximum Drain Current
 $-I_D=f(T_C)$

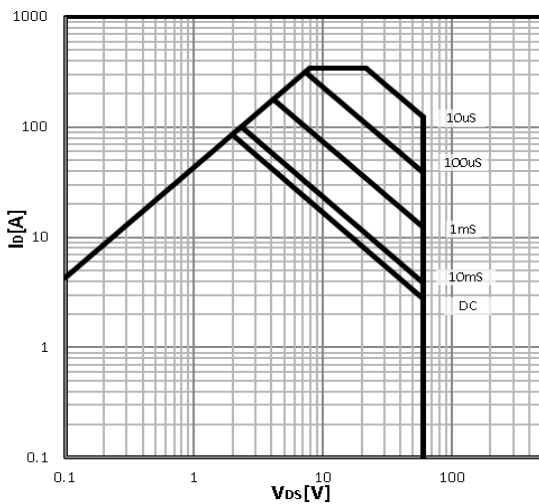


Figure 9 Safe operating area
 $-I_D=f(-V_{DS})$

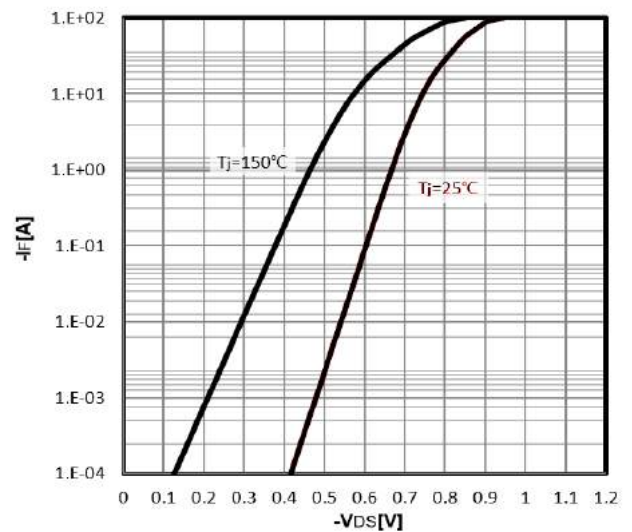


Figure 12 Body Diode Forward Voltage Variation
 $-I_F=f(-V_{DS})$

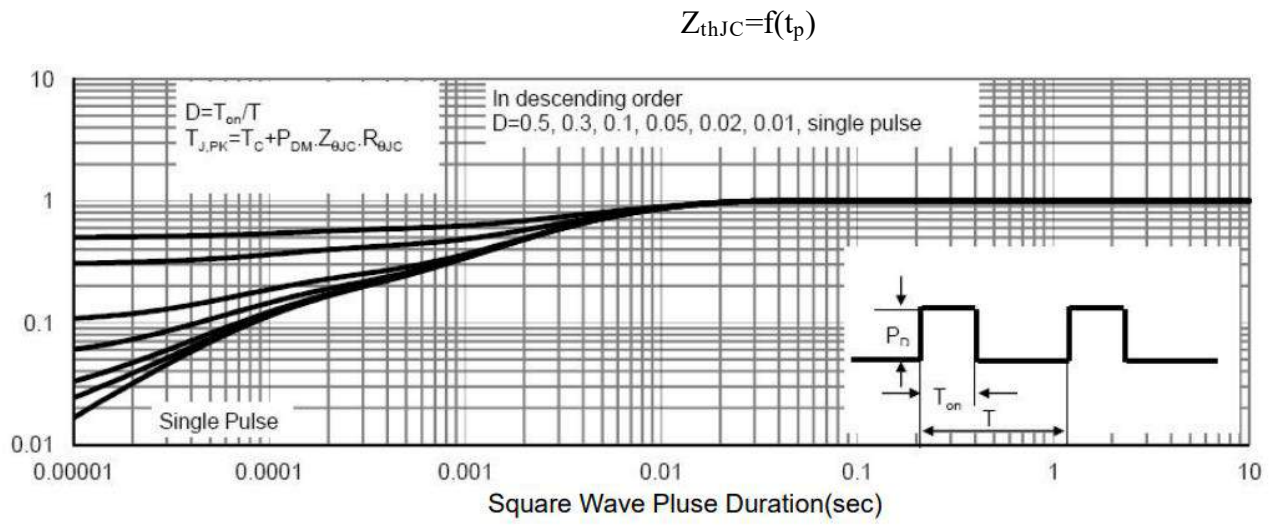
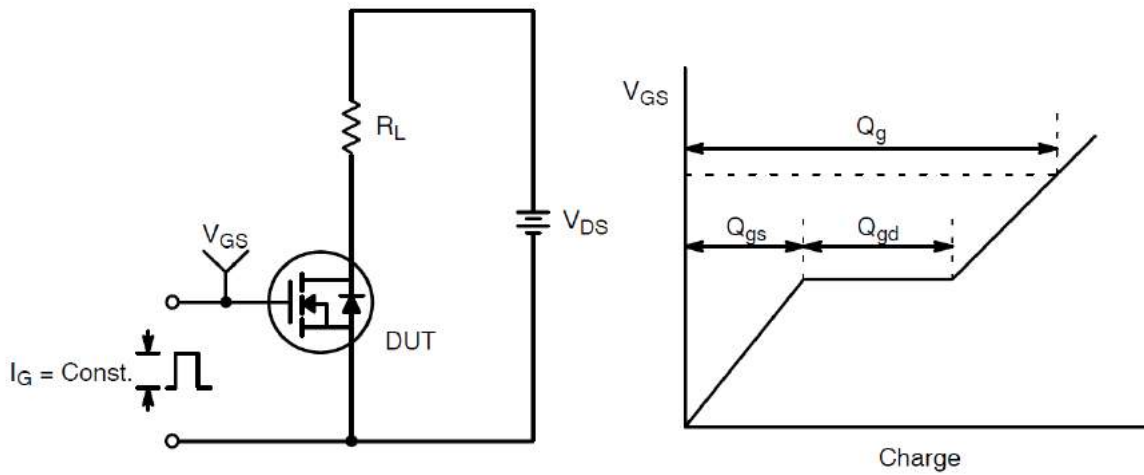
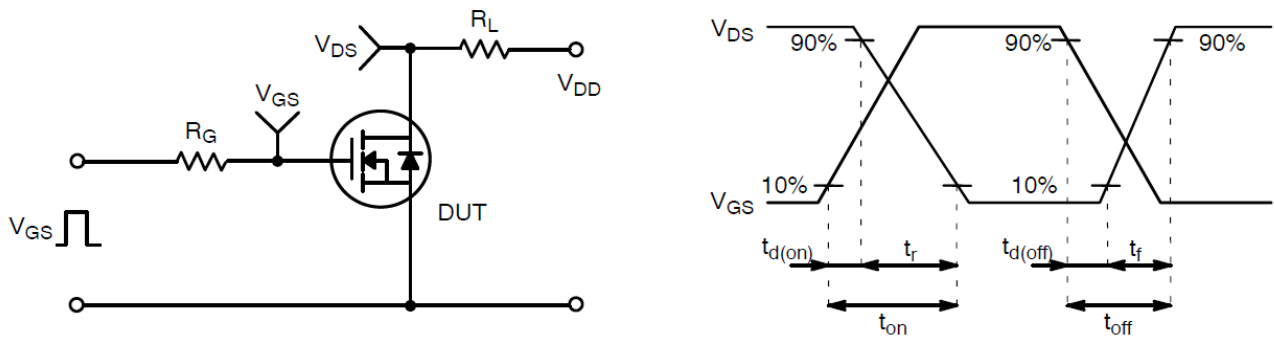


Figure 13 Max. transient thermal impedance

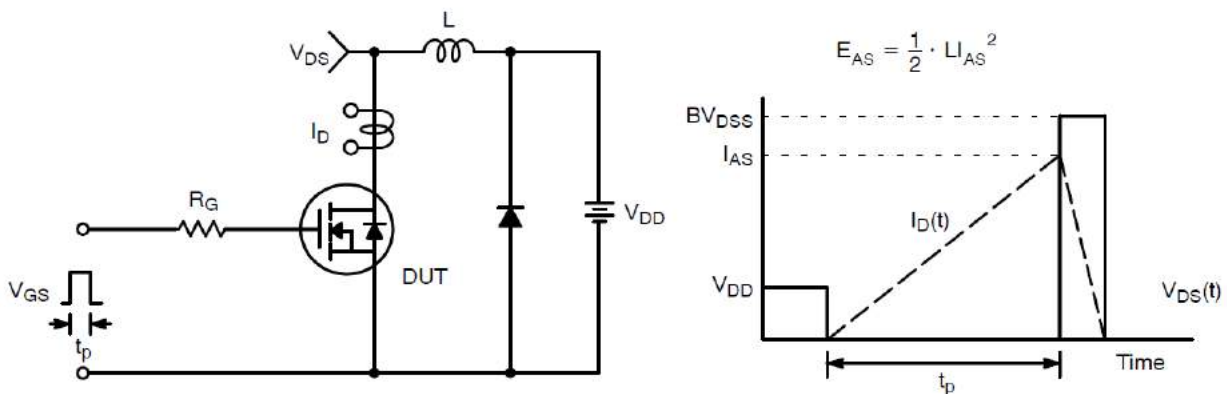
Test Circuit and Waveform:



Gate Charge Test Circuit & Waveform

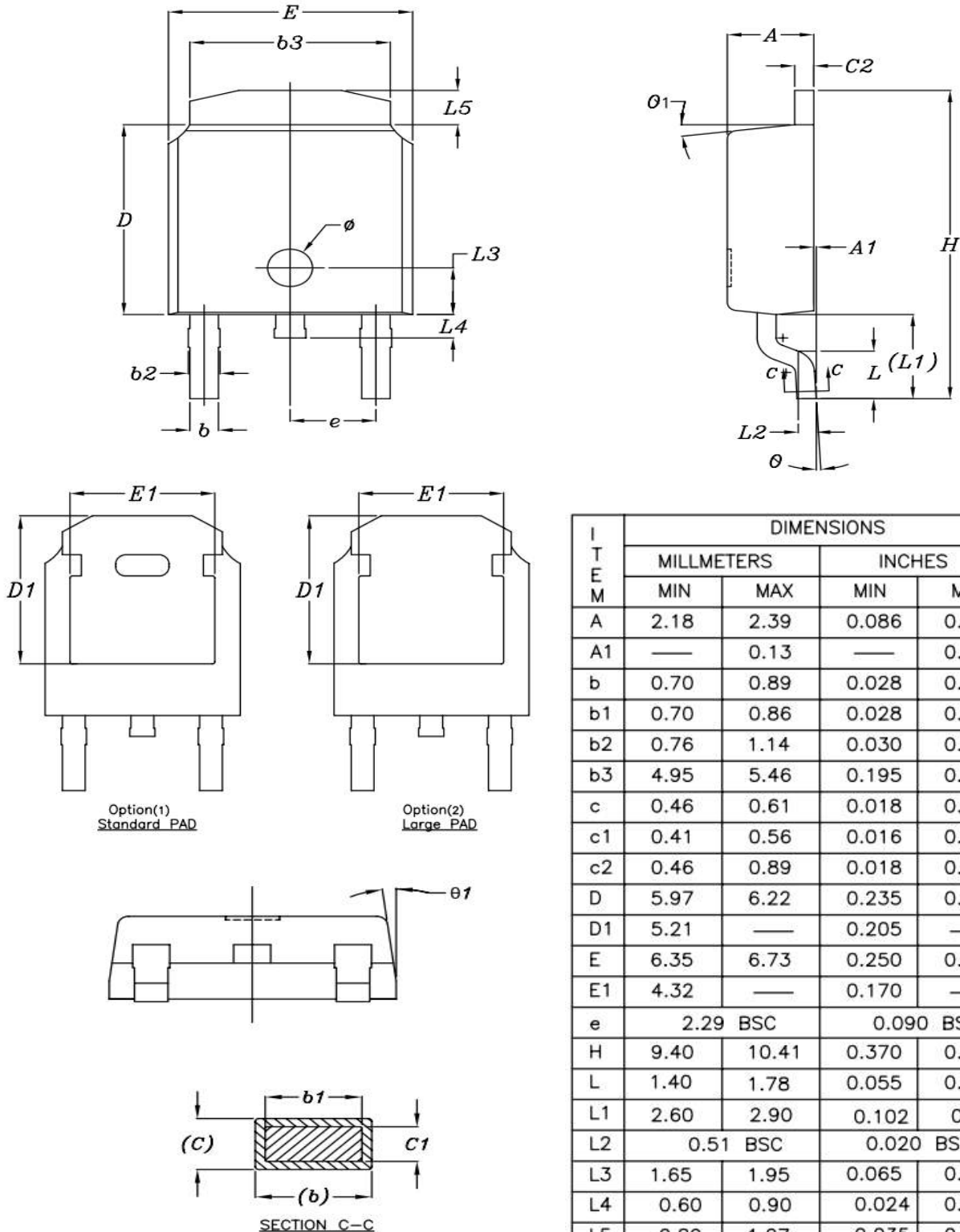


Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

TO-252 Package Information



I T E M	DIMENSIONS			
	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.18	2.39	0.086	0.094
A1	—	0.13	—	0.005
b	0.70	0.89	0.028	0.035
b1	0.70	0.86	0.028	0.034
b2	0.76	1.14	0.030	0.045
b3	4.95	5.46	0.195	0.215
c	0.46	0.61	0.018	0.024
c1	0.41	0.56	0.016	0.022
c2	0.46	0.89	0.018	0.035
D	5.97	6.22	0.235	0.245
D1	5.21	—	0.205	—
E	6.35	6.73	0.250	0.265
E1	4.32	—	0.170	—
e	2.29 BSC		0.090 BSC	
H	9.40	10.41	0.370	0.410
L	1.40	1.78	0.055	0.070
L1	2.60	2.90	0.102	0.114
L2	0.51 BSC		0.020 BSC	
L3	1.65	1.95	0.065	0.077
L4	0.60	0.90	0.024	0.035
L5	0.89	1.27	0.035	0.050
φ	1*	5*	1*	5*
φ1	7* REF		7* REF	
φ	1.20 REF		1.20 REF	

Customer Service

Sales and Service:

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