

### ● General Description

The AGM150P10D combines advanced trench MOSFET technology with a low resistance package to provide extremely low  $R_{DS(ON)}$ .

This device is ideal for load switch and battery protection applications.

### ● Features

- Advance high cell density Trench technology
- Low  $R_{DS(ON)}$  to minimize conductive loss
- Low Gate Charge for fast switching
- Low Thermal resistance
- 100% Avalanche tested
- 100% DVDS tested

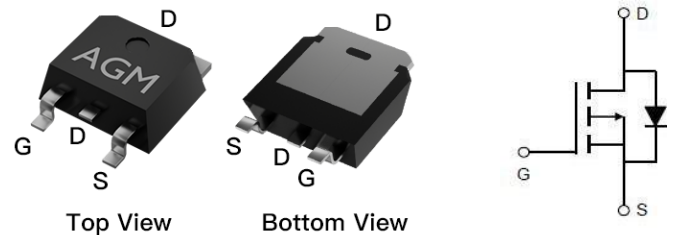
### ● Application

- MB/VGA Vcore
- SMPS 2<sup>nd</sup> Synchronous Rectifier
- POL application
- BLDC Motor driver

### Product Summary

BVDSS	RDSON	ID
-100V	112mΩ	-18A

### TO-252 Pin Configuration



### Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM150P10D	AGM150P10D	TO-252	330mm	16mm	2500

**Table 1. Absolute Maximum Ratings (TC=25°C)**

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	-100	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) <b>(Note 1)</b>	-18	A
	Drain Current-Continuous(Tc=100°C)	-12	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed <b>(Note 2)</b>	-72	A
PD	Maximum Power Dissipation(Tc=25°C)	69	w
	Maximum Power Dissipation(Tc=100°C)	27.8	w
EAS	Avalanche energy <b>(Note 3)</b>	64	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	°C

**Table 2. Thermal Characteristic**

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State) <sup>1</sup>	---	75	°C/W
RθJC	Thermal Resistance Junction-Case <sup>1</sup>	---	1.8	°C/W

**Table 3. Electrical Characteristics (T<sub>J</sub>=25°C unless otherwise noted)**

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
<b>On/Off States</b>						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	-100	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-100V,VGS=0V	--	--	-1.0	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-1.2	--	-2.1	V
gFS	Forward Transconductance	VDS=-5V,ID=-3A	--	9.0	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-5A	--	112	150	mΩ
		VGS=-4.5V, ID=-3A	--	128	165	mΩ
<b>Dynamic Characteristics</b>						
Ciss	Input Capacitance	VDS=-50V,VGS=0V F=1MHZ	--	700	--	pF
Coss	Output Capacitance		--	56	--	pF
Crss	Reverse Transfer Capacitance		--	8.6	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	1.2	--	Ω
<b>Switching Times</b>						
td(on)	Turn-on Delay Time	VGS=-10V,VDS=-50V, ID=-5A,RGEN=5Ω	--	5.9	--	nS
tr	Turn-on Rise Time		--	3.7	--	nS
td(off)	Turn-Off Delay Time		--	39.5	--	nS
tf	Turn-Off Fall Time		--	25	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-50V, ID=-5A	--	13	--	nC
Qgs	Gate-Source Charge		--	2.0	--	nC
Qgd	Gate-Drain Charge		--	2.3	--	nC
<b>Source-Drain Diode Characteristics</b>						
ISD	Source-Drain Current(Body Diode)		--	--	-18	A
VSD	Forward on Voltage	VGS=0V,IS=-5A	--	--	-1.2	V
trr	Reverse Recovery Time	IF=-5A , dI/dt=100A/μs , TJ=25°C	--	21	--	ns
Qrr	Reverse Recovery Charge		--	23	--	nc

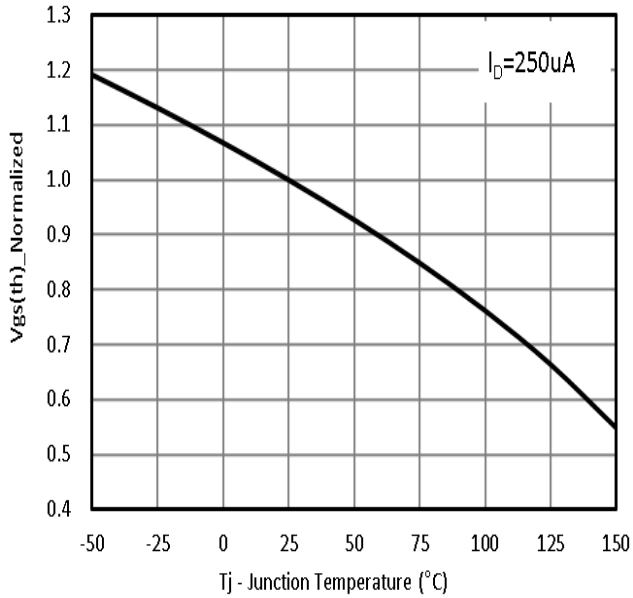
Notes 1.The maximum current rating is package limited.

Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

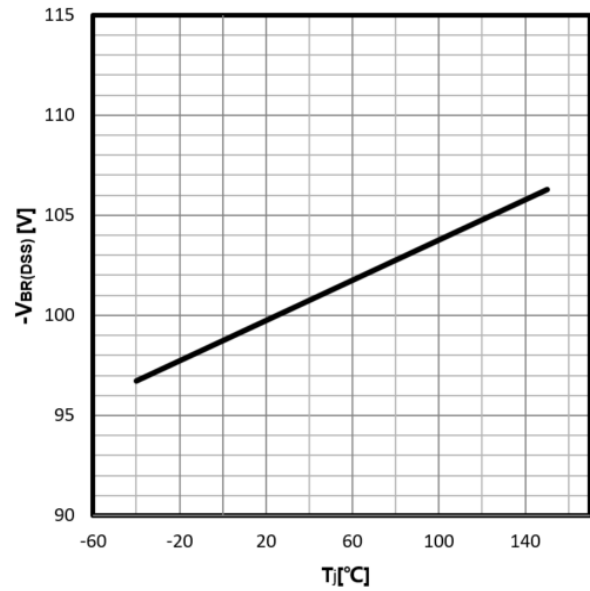
Notes 3.EAS condition: T<sub>J</sub>=25°C,VDD=-50V,Vgs=-10V, ID=-16A,L=0.5mH,RG=25ohm

**Gate Threshold Voltage**

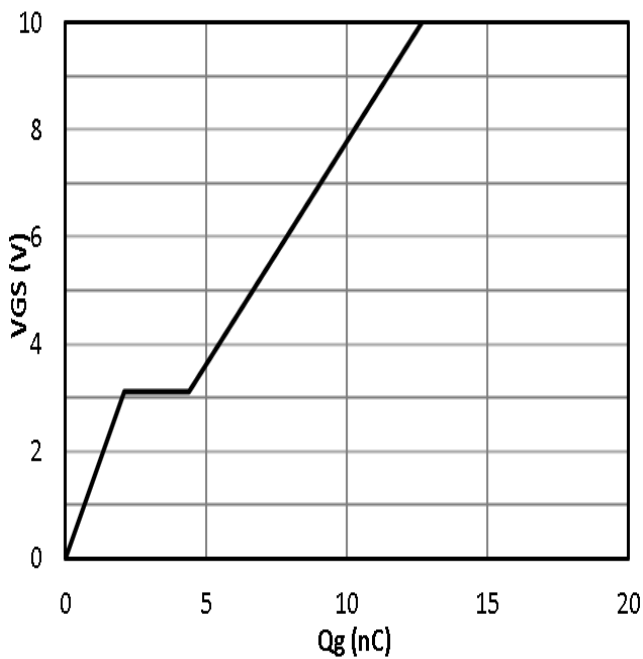
$$-V_{TH}=f(T_j); I_D=-250\mu A$$


**Drain-source breakdown voltage**

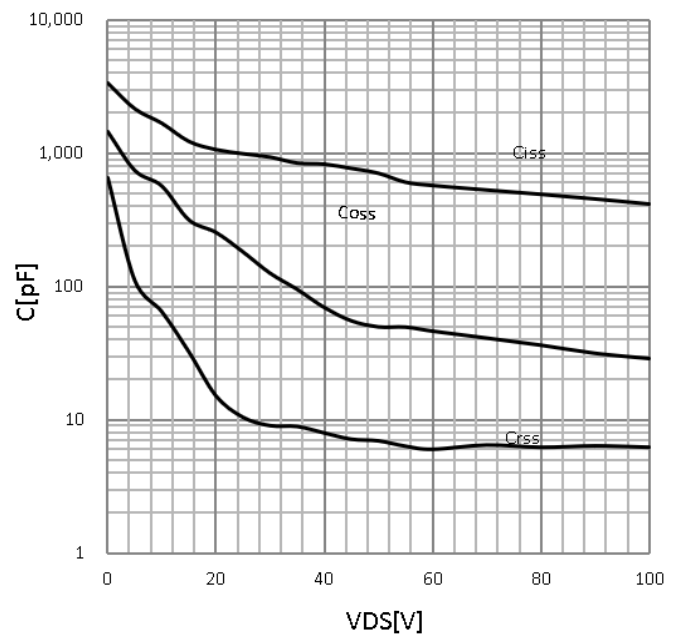
$$-V_{BR(DSS)}=f(T_j); I_D=-250\mu A$$


**Typ. gate charge**

$$-V_{GS}=f(Q_g); I_D=-5A$$

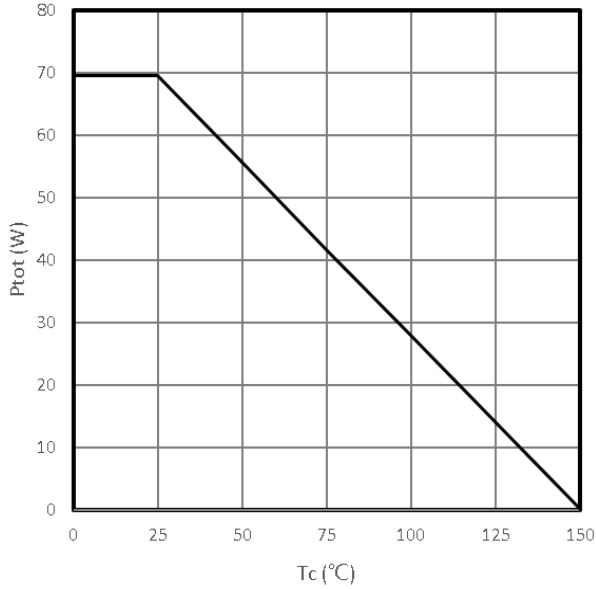

**Typ. capacitances**

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

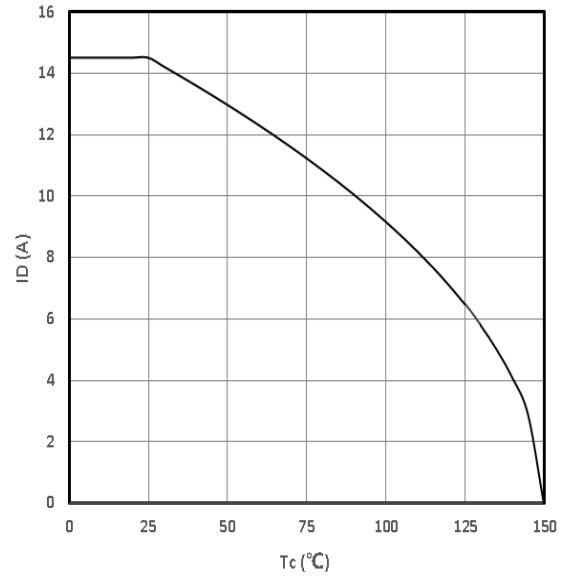


**Power Dissipation**

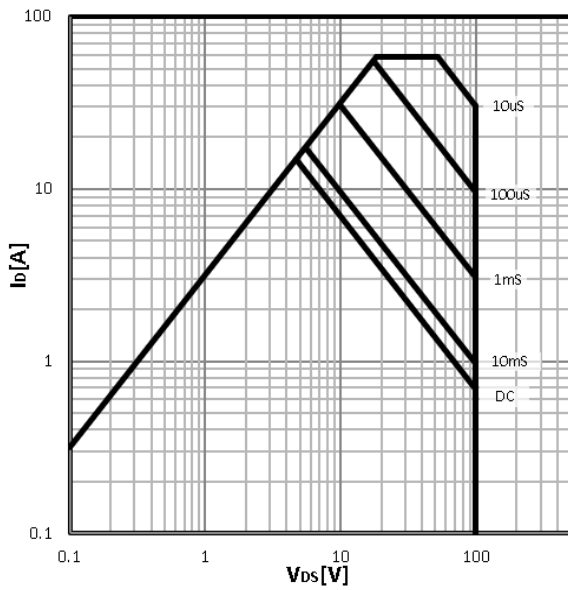
$$P_{tot}=f(T_c)$$


**Maximum Drain Current**

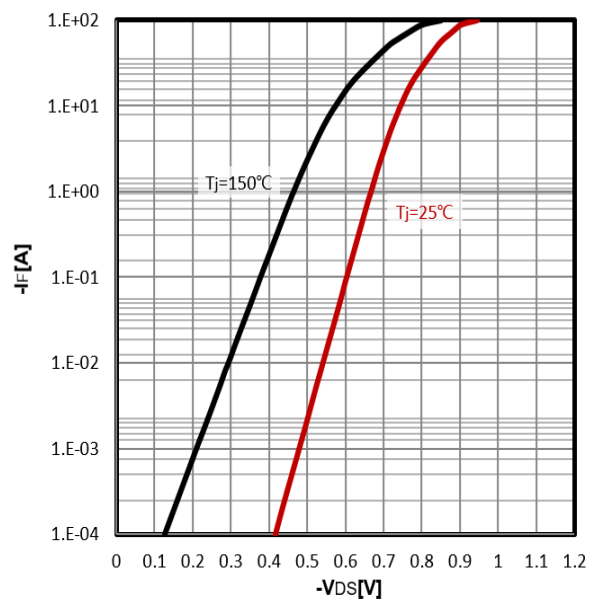
$$-I_D=f(T_c)$$


**Safe operating area**

$$-I_D=f(-V_{DS})$$

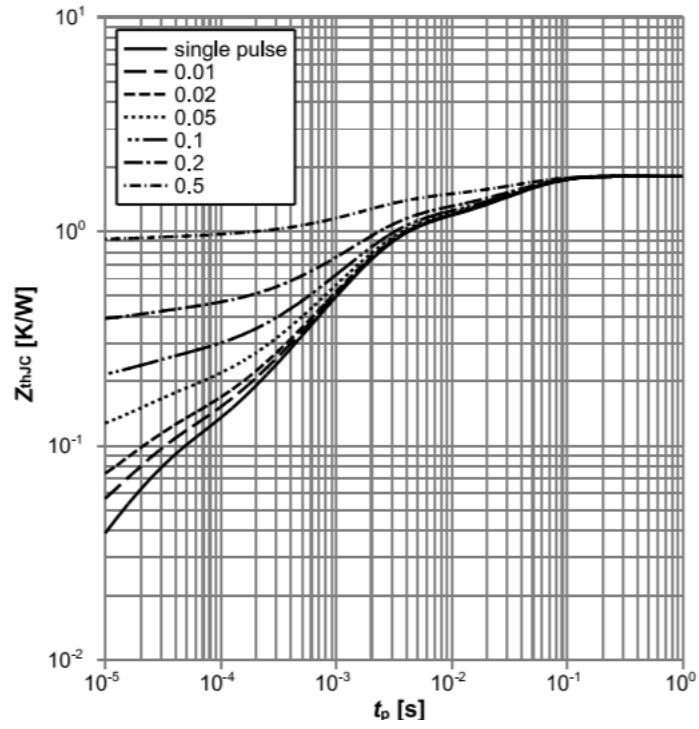

**Body Diode Forward Voltage Variation**

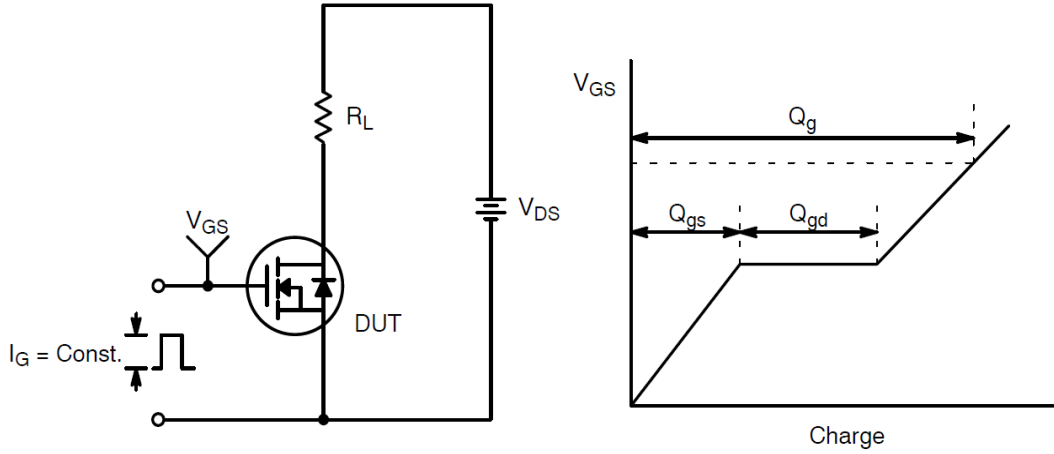
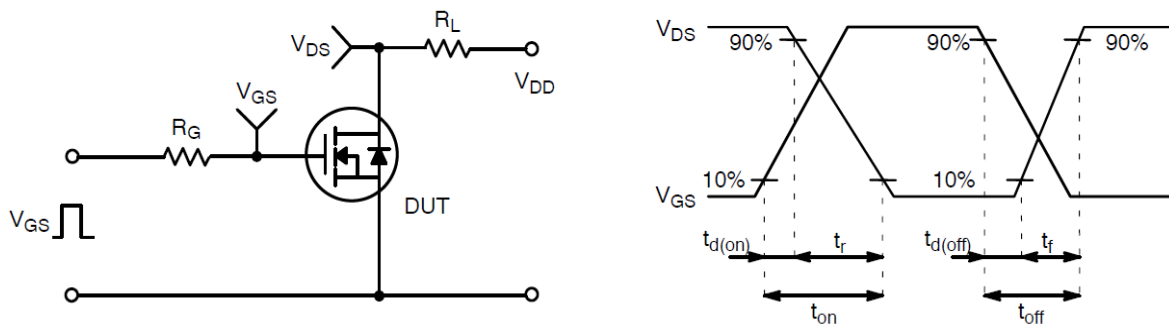
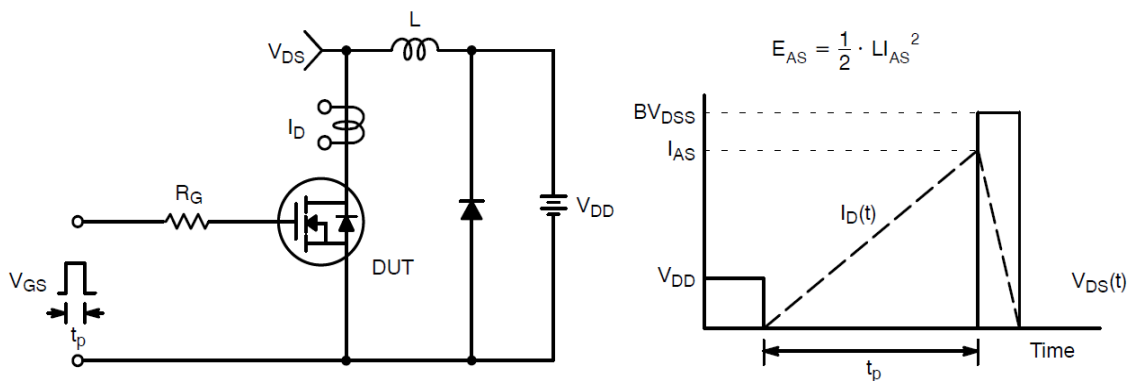
$$-I_F=f(-V_{DS})$$



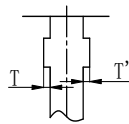
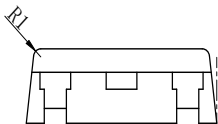
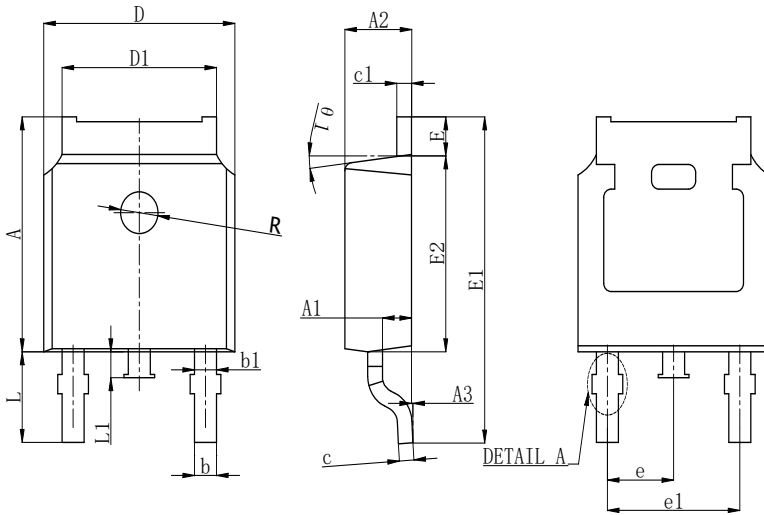
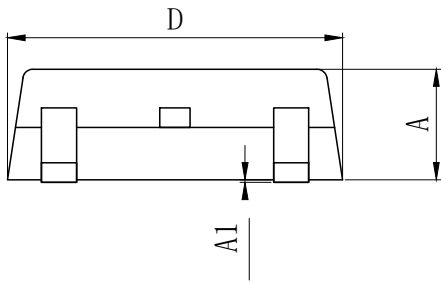
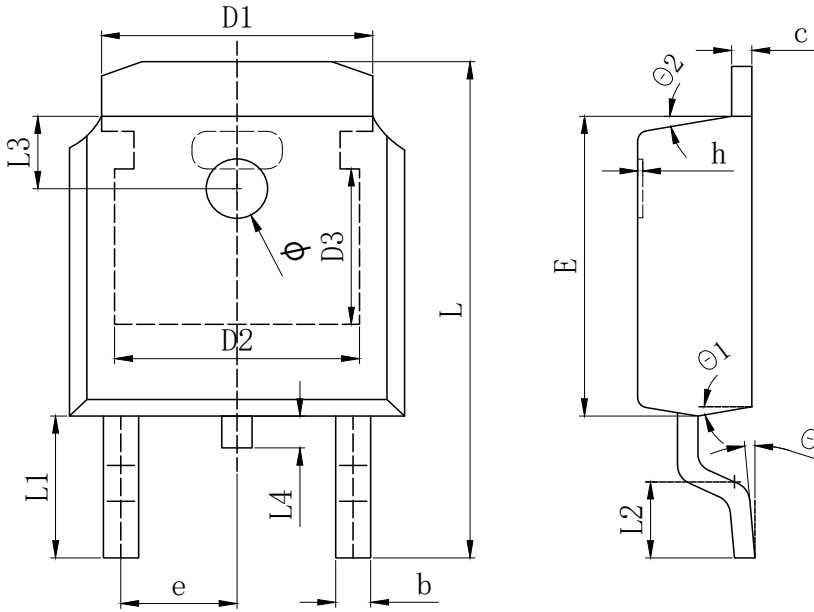
**Max. transient thermal impedance**

$$Z_{thJC} = f(t_p)$$



**Test Circuit and Waveform:**

**Gate Charge Test Circuit & Waveform**

**Resistive Switching Test Circuit & Waveforms**

**Unclamped Inductive Switching Test Circuit & Waveforms**

## TO-252 Package Outline Data



0 < T, T' <= 0.12  
DETAIL A

SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	2.200	2.300	2.400
A1	0.000		0.127
b	0.640	0.690	0.740
c (电镀后)	0.460	0.520	0.580
D	6.500	6.600	6.700
D1	5.334 REF		
D2	4.826 REF		
D3	3.166 REF		
E	6.000	6.100	6.200
e	2.286 TYP		
h	0.000	0.100	0.200
L	9.900	10.100	10.300
L1	2.888 REF		
L2	1.400	1.550	1.700
L3	1.600 REF		
L4	0.600	0.800	1.000
Φ	1.100	1.200	1.300
θ	0°		8°
θ 1	9° TYP		
θ 2	9° TYP		

SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	7.050	7.100	7.150
A1	0.960	1.010	1.060
A2	2.250	2.300	2.350
A3	0.000	0.050	0.100
b	0.760REF.		
b1	1.000REF.		
c	0.508REF.		
c1	0.508REF.		
D	6.550	6.600	6.650
D1	5.220	5.320	5.420
E	0.950	1.000	1.050
E1	9.700	9.900	10.100
E2	6.050	6.100	6.150
e	2.286BSC		
e1	4.572REF.		
L	2.650	2.800	2.950
L1	0.700	0.800	0.900
θ 1	7° REF.		
R	1.300REF.		
R1	0.250REF.		


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