

General Description

The AGM15P30EL 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

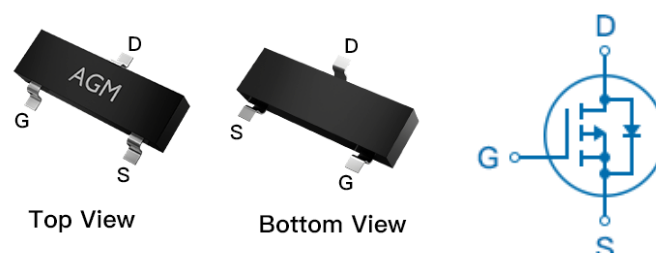
Application

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

Product Summary

BVDSS	RDSON	ID
-15V	34mΩ	-4.1A

SOT23 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
15P30	AGM15P30EL	SOT23	178mm	8mm	3000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	-15	V
VGS	Gate-Source Voltage (VDS=0V)	±10	V
ID	Drain Current-Continuous(Tc=25°C) (Note 1)	-4.1	A
	Drain Current-Continuous(Tc=100°C)	-2.7	A
IDM (pluse)	Drain Current-Pulsed (Note 2)	-16.4	A
PD	Maximum Power Dissipation(Tc=25°C)	1.25	w
	Maximum Power Dissipation(Tc=100°C)	0.5	w
EAS	Avalanche energy (Note 3)	---	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) ¹	---	100	°C/W

Table 3. Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=-250μA	-15	-18	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-15V,VGS=0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	VGS=±10V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-0.4	-0.6	-1.0	V
gFS	Forward Transconductance	VDS=5V,ID=-3A	--	5	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-4.5V, ID=-3.5A	--	34	40	mΩ
		VGS=-2.5V, ID=-3A	--	45	55	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=-10V,VGS=0V, F=1MHZ	--	661	--	pF
Coss	Output Capacitance		--	304	--	pF
Crss	Reverse Transfer Capacitance		--	268	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	18	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	ID =-3.3A,VDS = -10V VGS =-4.5VRG = 10Ω	--	12	--	nS
tr	Turn-on Rise Time		--	32	--	nS
td(off)	Turn-Off Delay Time		--	30	--	nS
tf	Turn-Off Fall Time		--	11	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-10V, ID=-3.3A	--	12	--	nC
Qgs	Gate-Source Charge		--	0.7	--	nC
Qgd	Gate-Drain Charge		--	1.6	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	-4.1	A
VSD	Forward on Voltage	VGS=0V,IS=-3.5A	--	--	-1.2	V
trr	Reverse Recovery Time	Isd=-3.5A ,	--	--	--	ns
Qrr	Reverse Recovery Charge	dl/dt=100A/μs , TJ=25℃	--	--	--	nc

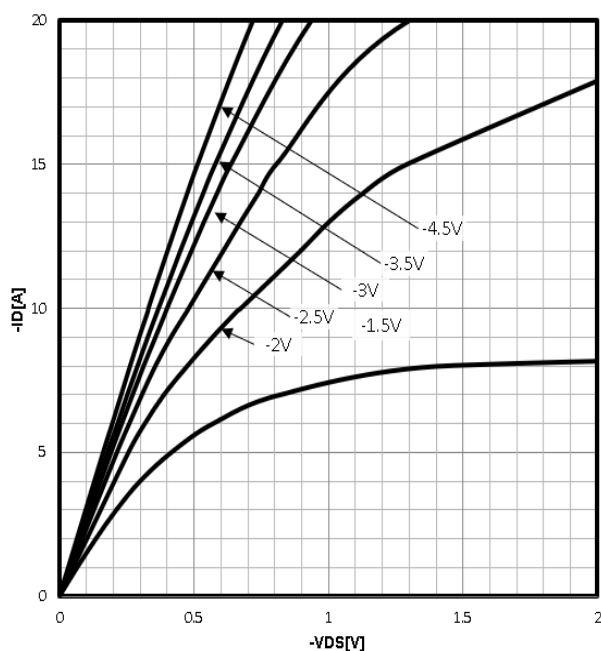
Notes 1.The maximum current rating is package limited.

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

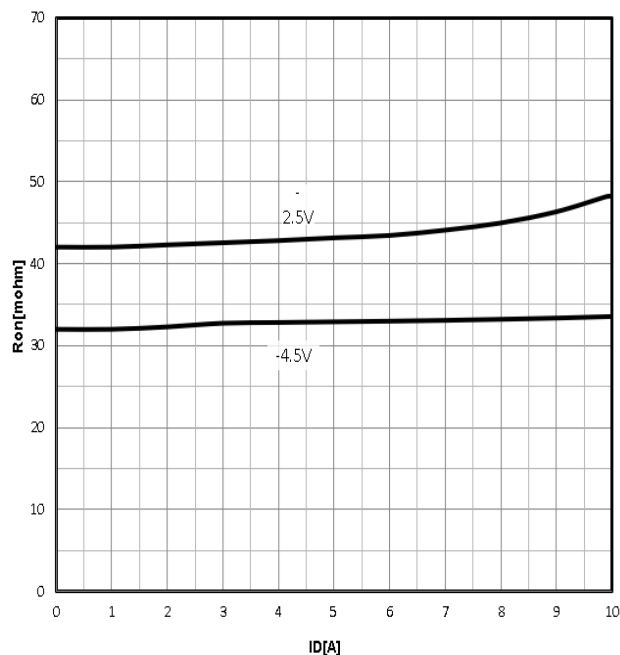
Notes 3.EAS condition: T_J=25°C

Characteristics Curve:

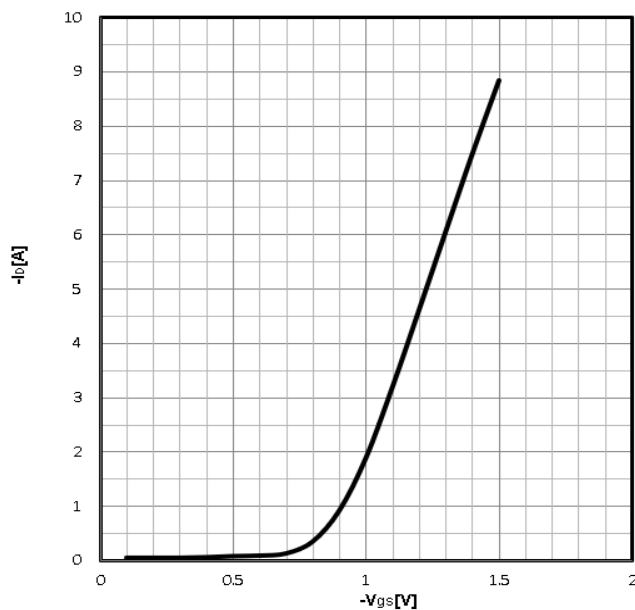
Typ. output characteristics
 $I_D = f(V_{DS})$



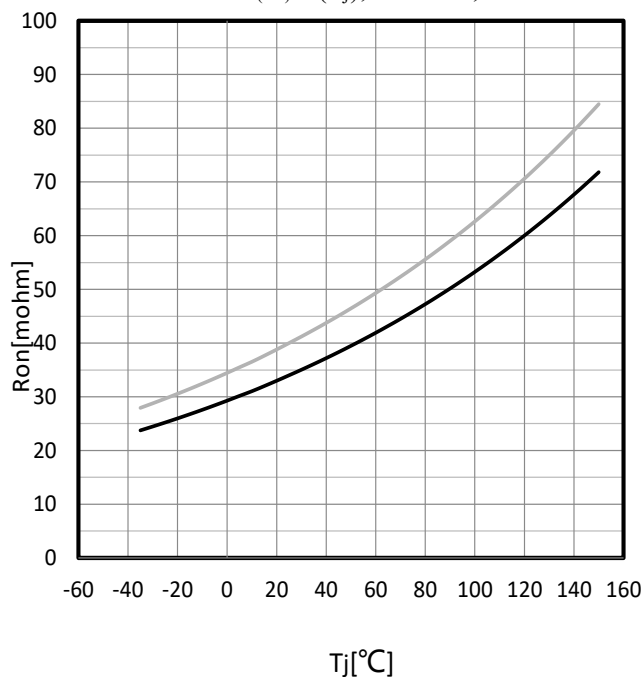
Typ. drain-source on resistance
 $R_{DS(on)} = f(I_D)$



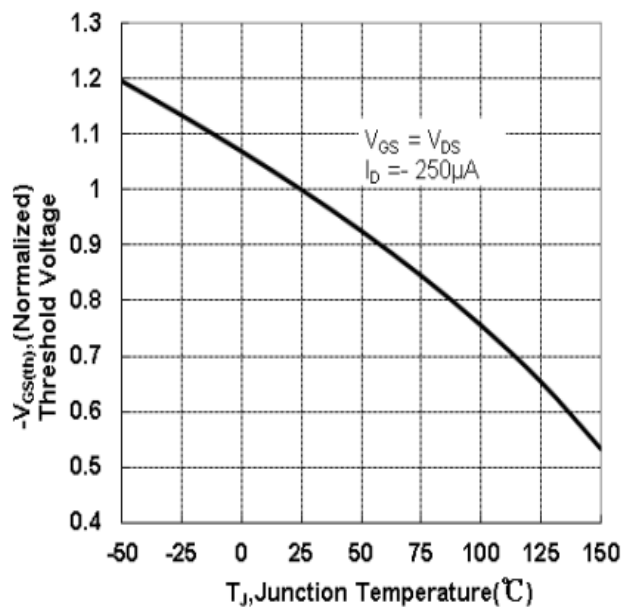
Typ. transfer characteristics
 $I_D = f(V_{GS})$



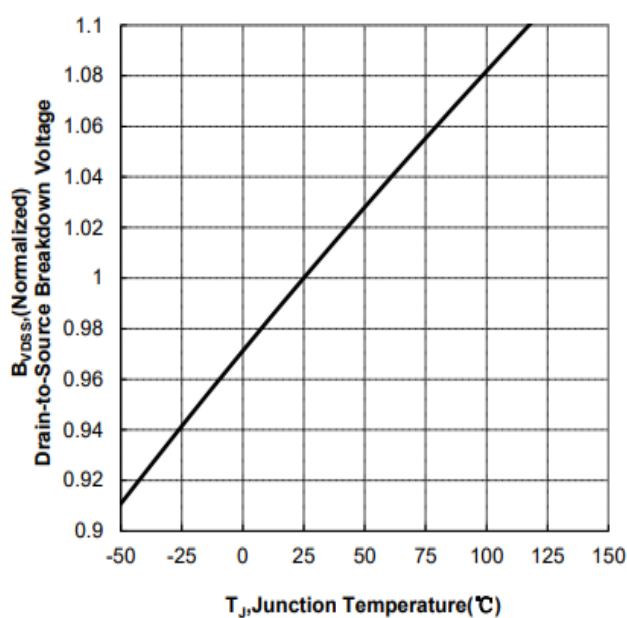
Drain-source on-state resistance
 $R_{DS(on)} = f(T_j); I_D = -3.5A$



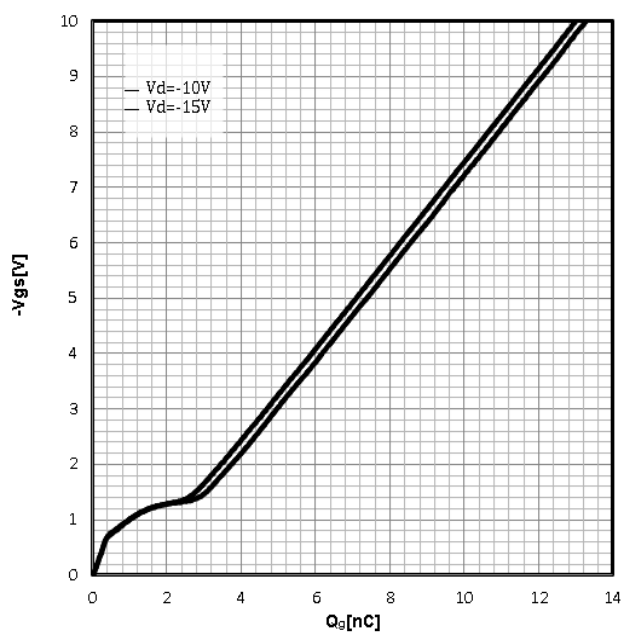
Gate Threshold Voltage

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


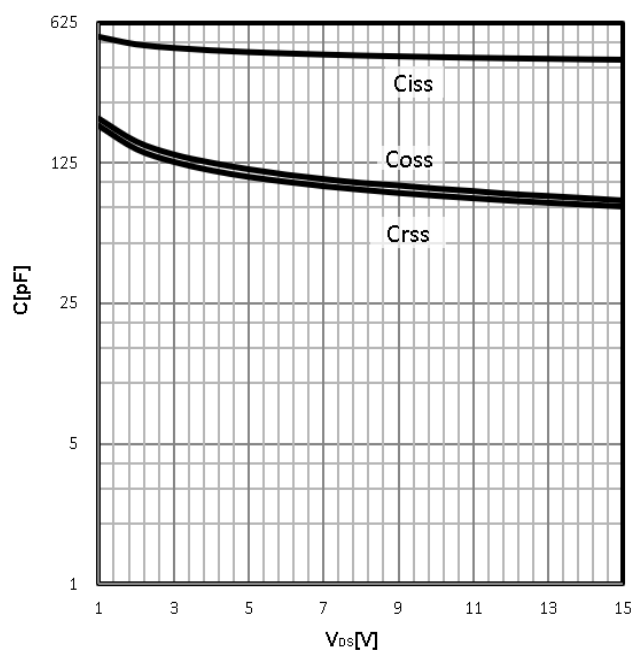
Drain-source breakdown voltage

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


Typ. gate charge

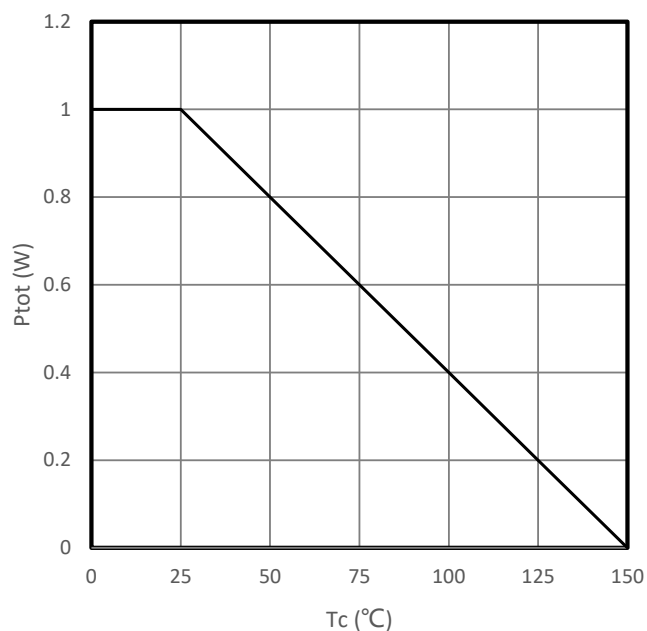
 $V_{GS}=f(Q_g); I_D=-3.3A$


Typ. capacitances

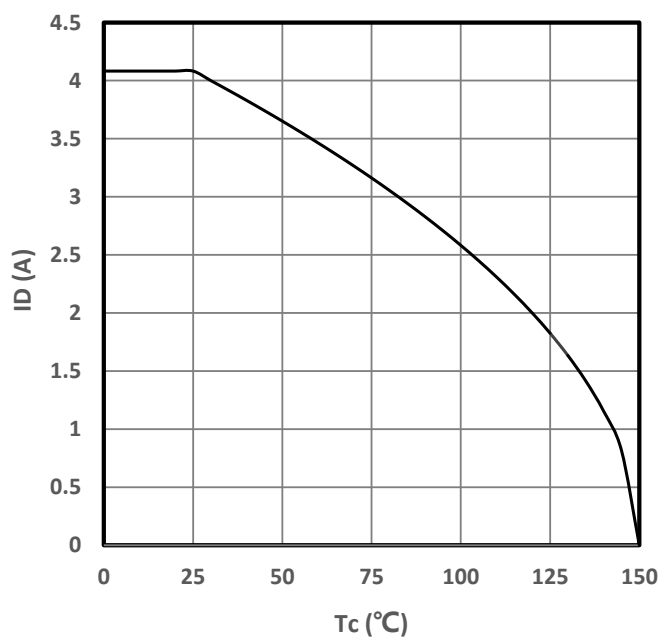
 $C=f(V_{DS}); V_{GS}=0V; f=1MHz$


Power Dissipation

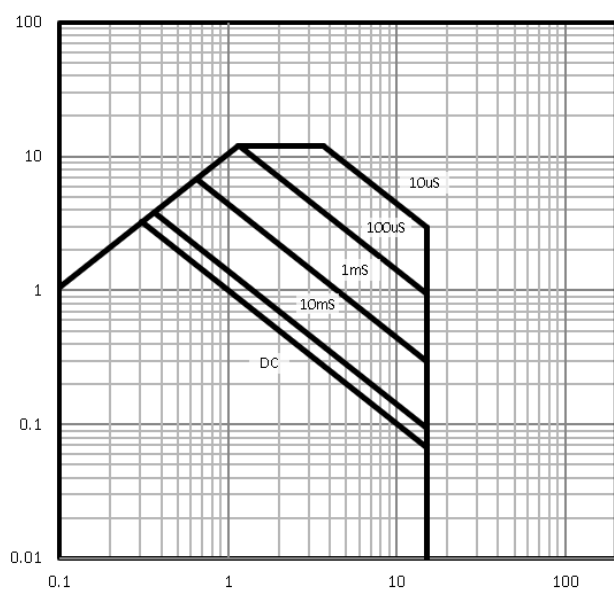
$$P_{\text{tot}} = f(T_C)$$


Maximum Drain Current

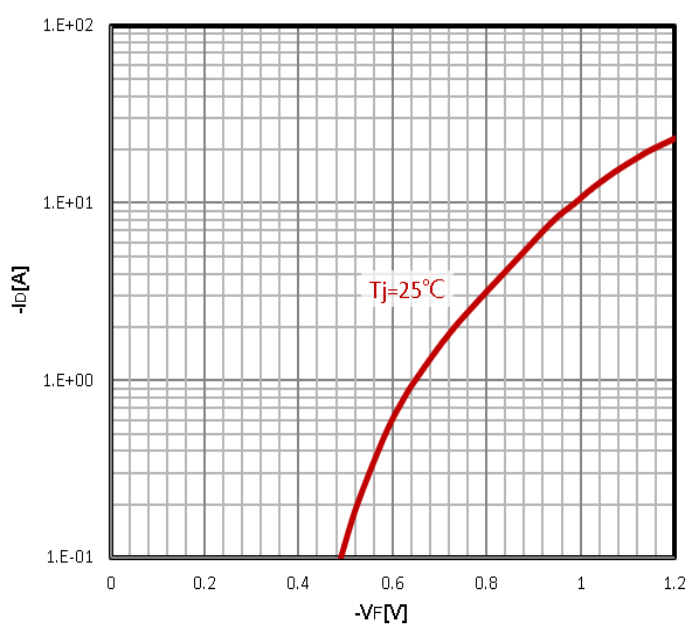
$$-I_D = f(T_C)$$


Safe operating area

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

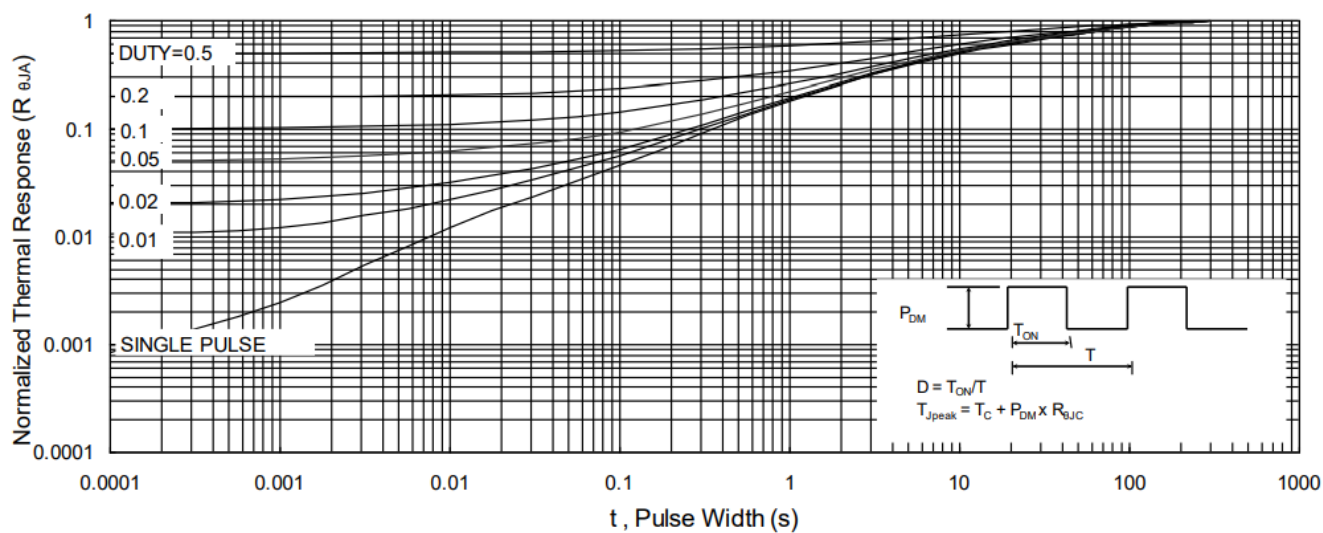

Body Diode Forward Voltage Variation

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

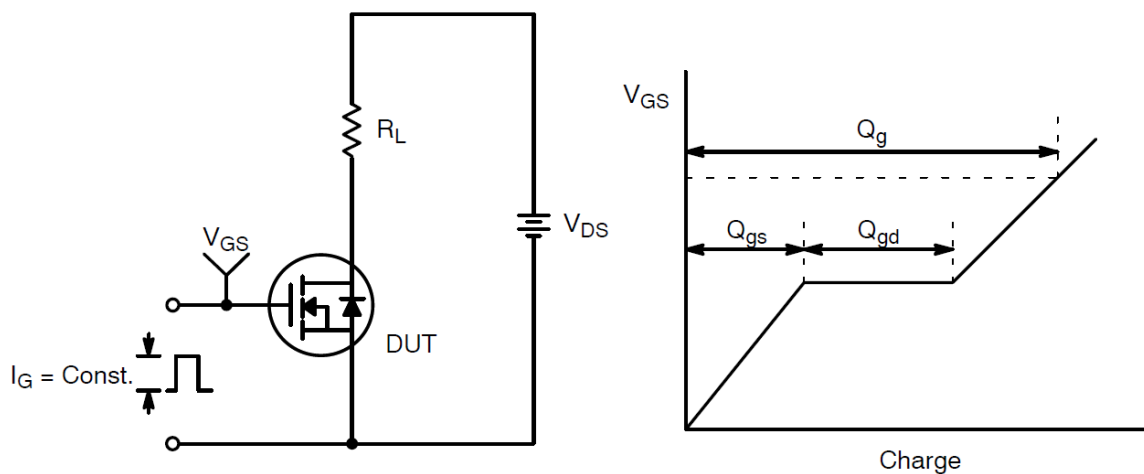


Max. transient thermal impedance

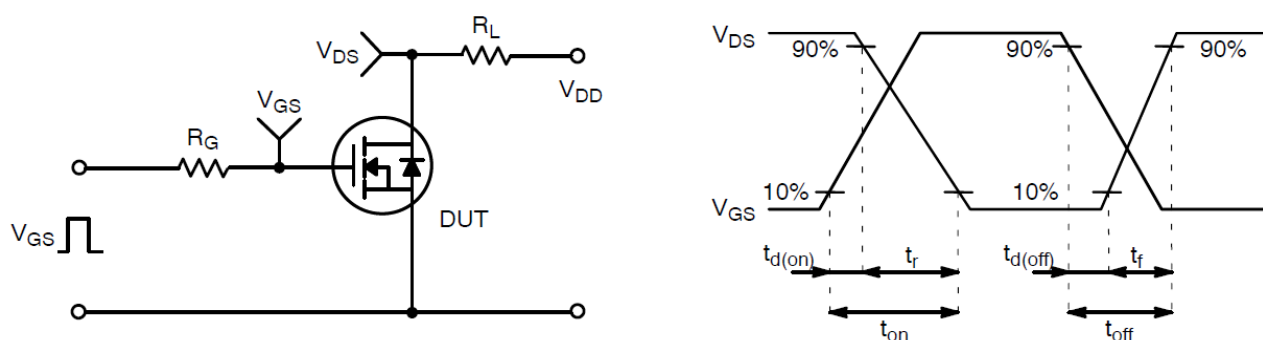
$$Z_{thJC}=f(t_p)$$



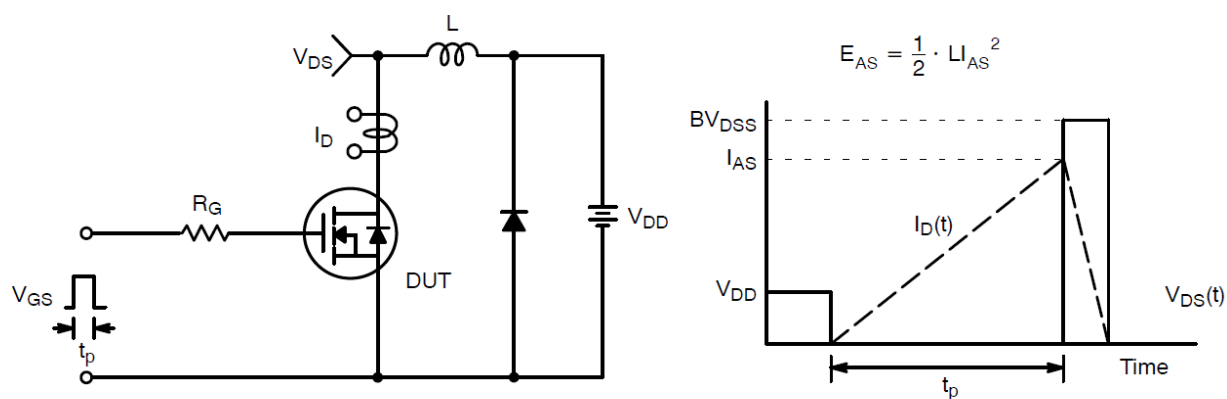
Test Circuit and Waveform:



Gate Charge Test Circuit & Waveform

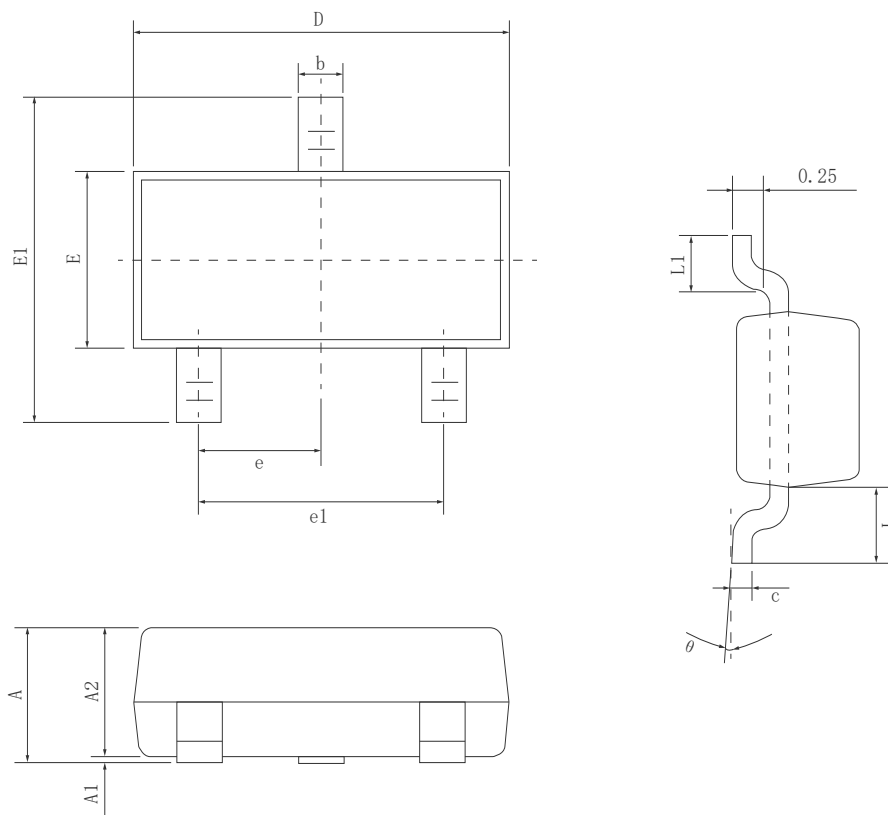


Resistive Switching Test Circuit & Waveforms

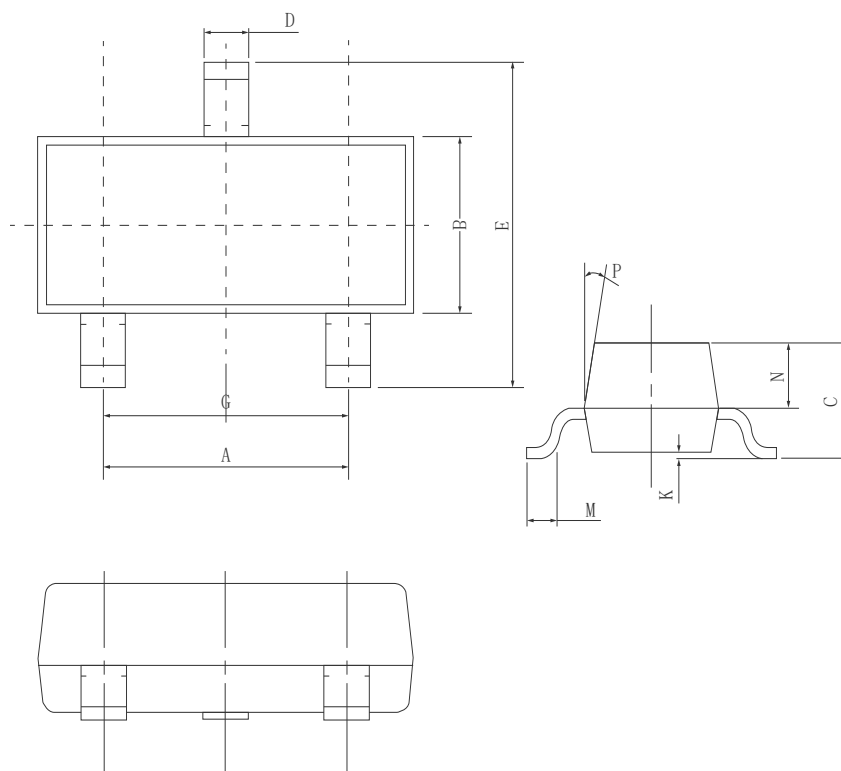


Unclamped Inductive Switching Test Circuit & Waveforms

●Dimensions (SOT23)



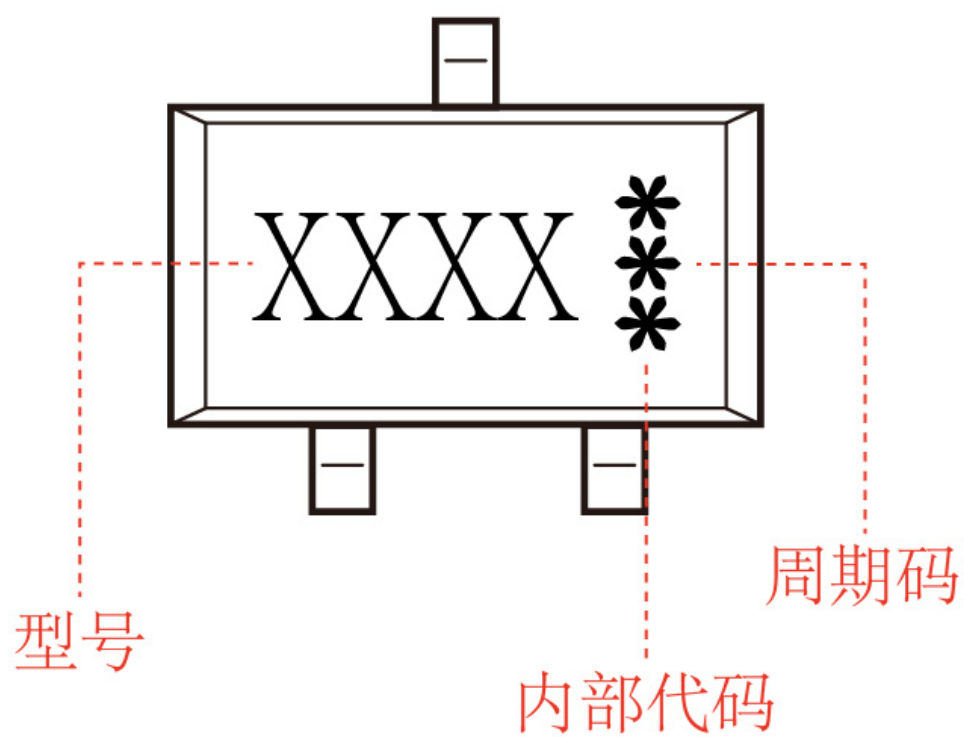
SYMBOL	MILLIMETER		
	MIN	NOM	MAX
A	0.90	—	1.15
A1	0.00	—	0.10
A2	0.90	0.95	1.05
b	0.30	0.40	0.50
c	0.15	—	0.25
D	2.85	2.90	2.95
E	1.25	1.30	1.35
E1	2.25	2.40	2.55
e	0.95 TYP.		
e1	1.80	—	2.00
L	0.55 REF.		
L1	0.30	—	0.50
θ	0°	—	8°



DIM	MILLIMETERS
A	2.90±0.1
B	1.30±0.10
C	0.90~1.15
D	0.40±0.10
E	2.40±0.15
G	1.90±0.10
K	0.00~0.10
M	0.30MIN
N	0.60±0.10
P	10° TYP

SOT23

Marking Instructions:



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