

● General Description

The AGM60P20R 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

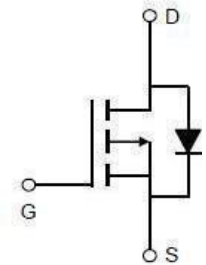
● Application

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

Product Summary

BVDSS	RDSON	ID
-60V	65mΩ	-10A

SOT-223 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM60P20R	AGM60P20R	SOT223	330mm	12mm	3000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	-60	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(TA=25°C) (Note 1)	-10	A
	Drain Current-Continuous(TA=100°C)	-6.3	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	-32	A
PD	Maximum Power Dissipation(TA=25°C)	3.0	w
EAS	Avalanche energy (Note 3)	60	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	°C

Table2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State) ¹	---	42	°C/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=-250μA	-60	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=-60V,VGS=0V	--	--	-1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=-250μA	-1.3	-1.8	-2.5	V
gFS	Forward Transconductance	VDS=5V,ID=-5A	--	7.0	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=-10V, ID=-5A	--	65	89	mΩ
		VGS=-4.5V, ID=-4A	--	95	120	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=-30V,VGS=0V, F=1MHZ	--	525	--	pF
Coss	Output Capacitance		--	80	--	pF
Crss	Reverse Transfer Capacitance		--	3.9	--	pF
Rg	Gate resistance	f=1.0MHz	--	3.5	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=-10V,VDS=-30V, ID=-5A,RGEN=3Ω	--	10	--	nS
tr	Turn-on Rise Time		--	6.0	--	nS
td(off)	Turn-Off Delay Time		--	40	--	nS
tf	Turn-Off Fall Time		--	13	--	nS
Qg	Total Gate Charge	VGS=-10V, VDS=-30V, ID=-5A	--	8.5	--	nC
Qgs	Gate-Source Charge		--	1.8	--	nC
Qgd	Gate-Drain Charge		--	1.5	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	-10	A
VSD	Forward on Voltage	VGS=0V,IS=-5A	--	--	-1.2	V
trr	Reverse Recovery Time	Isd=-5A , dI/dt=100A/μs , TJ=25℃	--	50	--	ns
Qrr	Reverse Recovery Charge		--	105	--	nc

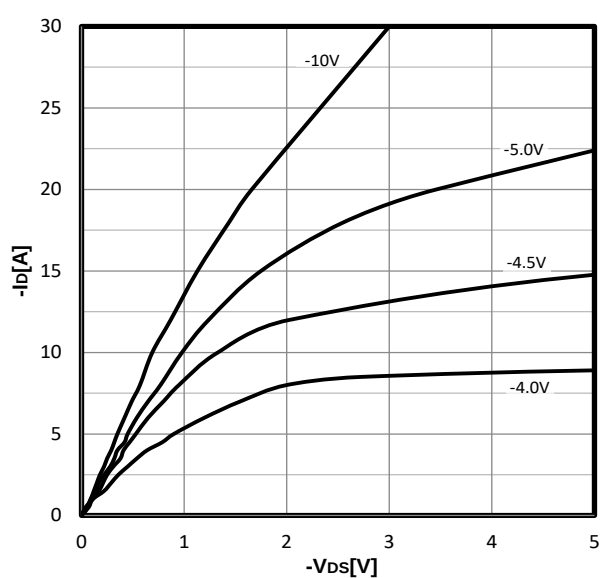
Notes 1.The maximum current rating is package limited.

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

Notes 3.EAS condition: TJ=25°C

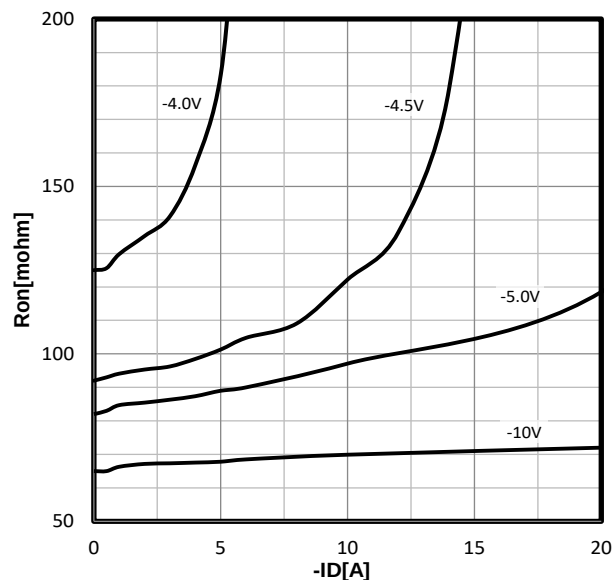
Typ. output characteristics

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



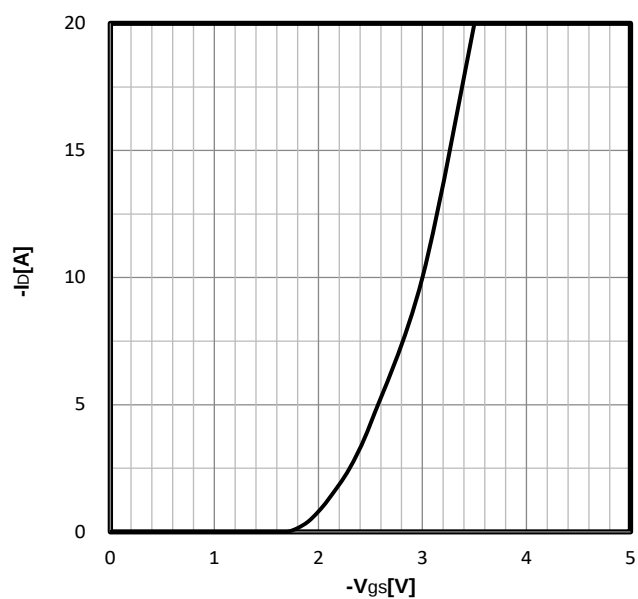
Typ. drain-source on resistance

$$R_{DS(on)} = f(-I_D)$$



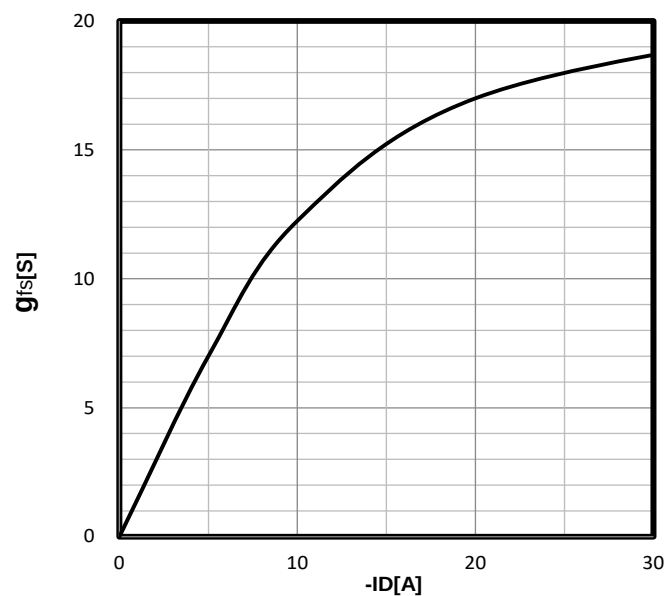
Typ. transfer characteristics

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



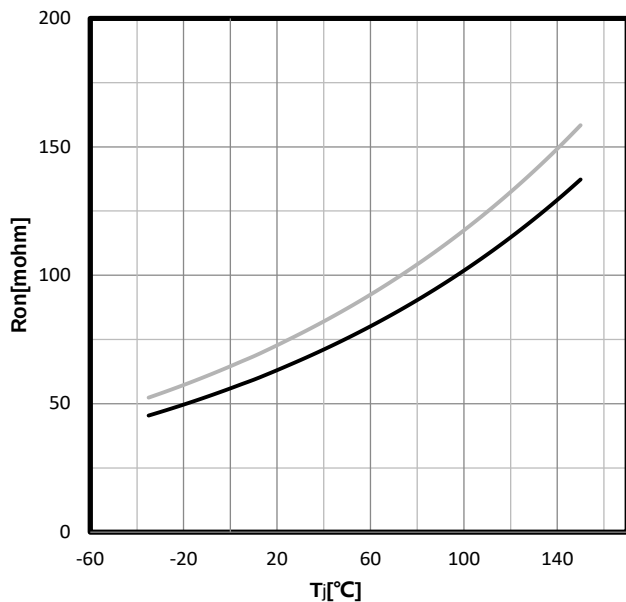
Typ. forward transconductance

$$g_{fs} = f(-I_D)$$



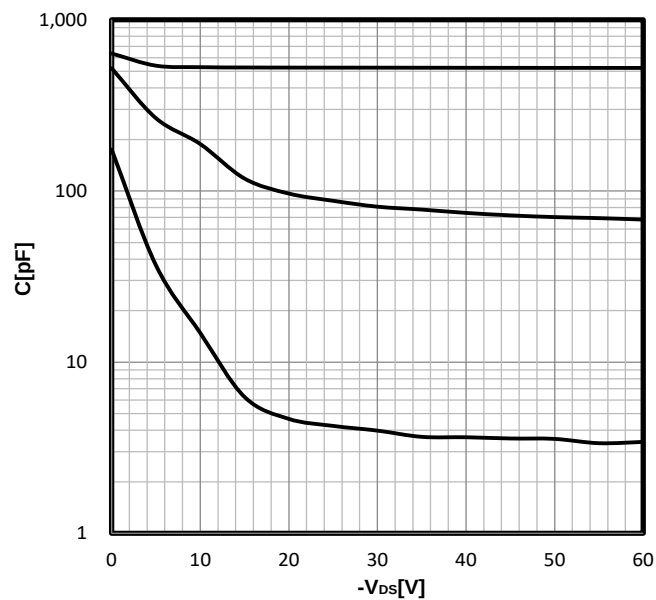
Drain-source on-state resistance

$$R_{DS(on)} = f(T_j); I_D = -5.0A; V_{GS} = -10V$$



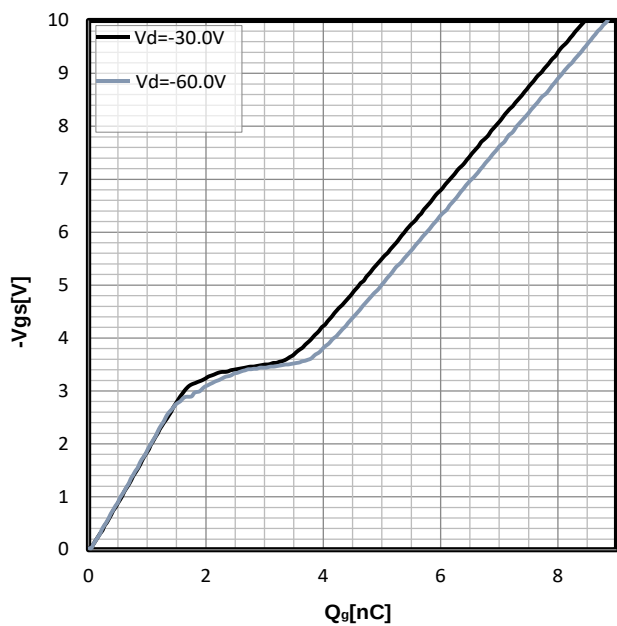
Typ. capacitances

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



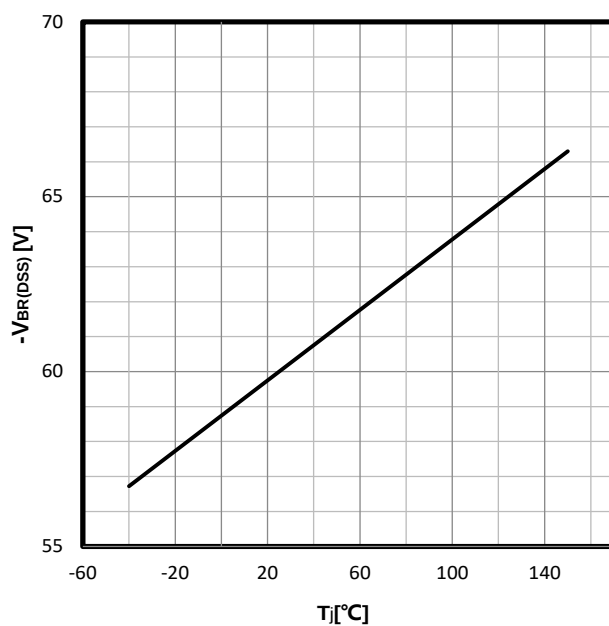
Typ. gate charge

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



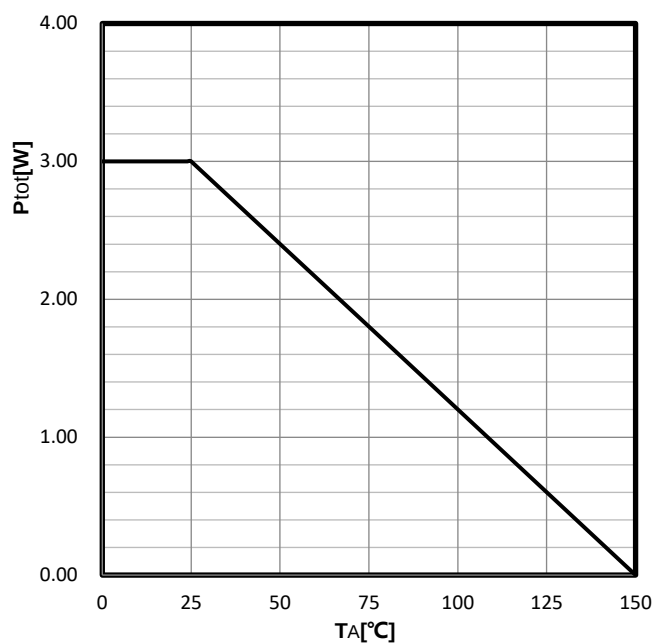
Drain-source breakdown voltage

$$-V_{BR(DSS)} = f(T_j); I_D = -250uA$$



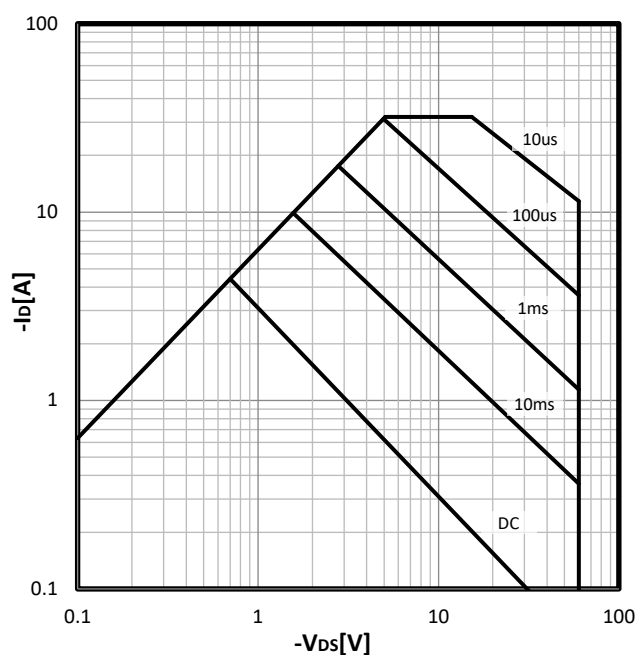
Power Dissipation

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



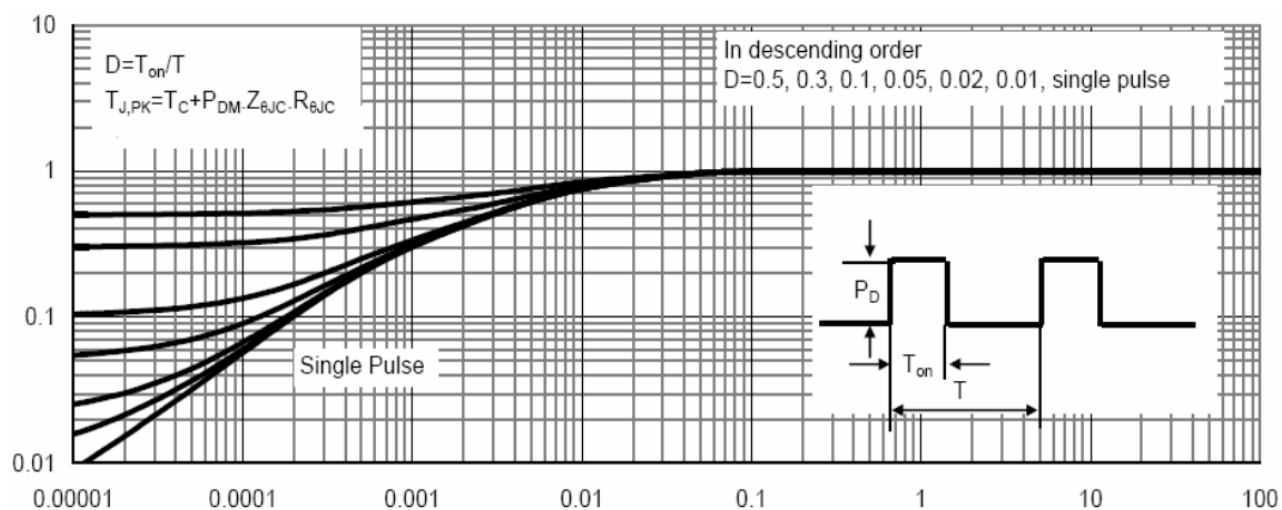
Safe operating area

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

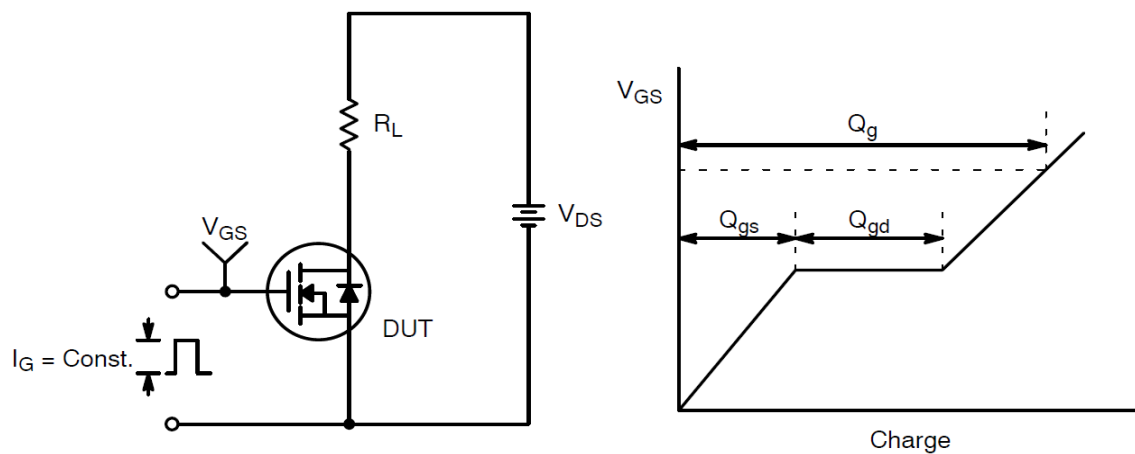


Max. transient thermal impedance

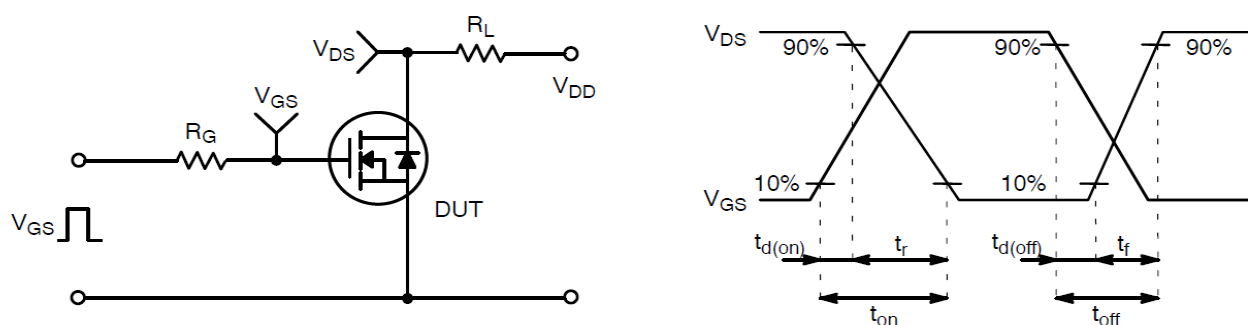
$$Z_{thJC}=f(t_p)$$



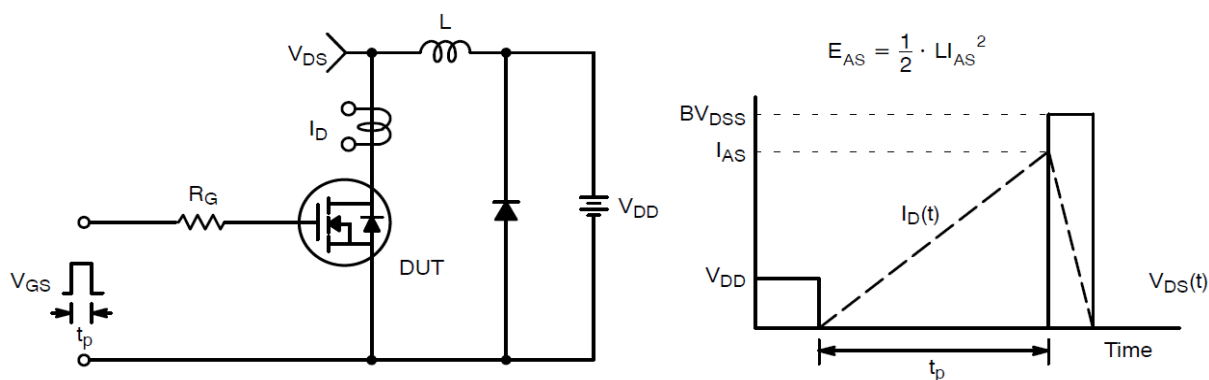
Test Circuit and Waveform:



Gate Charge Test Circuit & Waveform

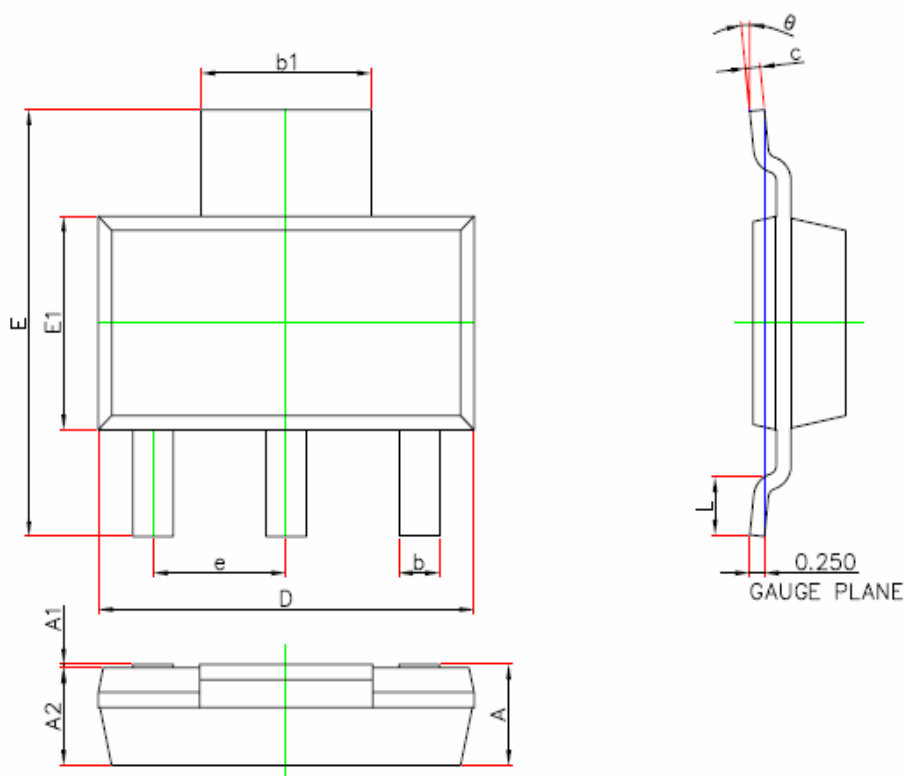


Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms

SOT-223 Package Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	—	1.800	—	0.071
A1	0.020	0.100	0.001	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.840	0.026	0.033
b_1	2.900	3.100	0.114	0.122
c	0.230	0.350	0.009	0.014
D	6.300	6.700	0.248	0.264
E	6.700	7.300	0.264	0.287
E_1	3.300	3.700	0.130	0.146
e	2.300(BSC)		0.091(BSC)	
L	0.750	—	0.030	—
θ	0°	10°	0°	10°

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