General Description

The AGM310AS 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

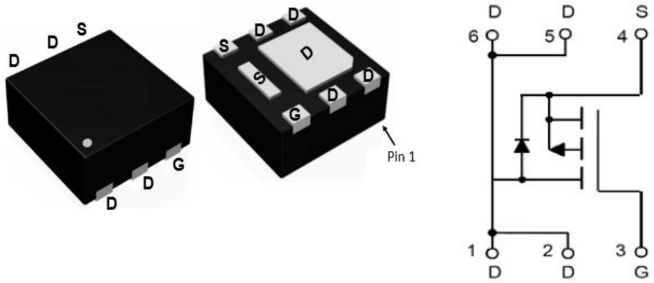
Application

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

Product Summary

BVDSS	RDSON	ID
30V	6.7mΩ	22A

DFN2*2 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM310AS	AGM310AS	DFN2*2	178mm	8mm	3000

Table 1. Absolute Maximum Ratings (TA=25℃)

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	30	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25℃) **(Note 1)**	22	A
	Drain Current-Continuous(Tc=100℃)	15	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed **(Note 2)**	88	A
PD	Maximum Power Dissipation(Tc=25℃)	41	w
	Maximum Power Dissipation(Tc=100℃)	16	w
EAS	Avalanche energy **(Note 3)**	75	mJ
TJ,TSTG	Operating Junction and Storage Temperature Range	-55 To 150	℃

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
RθJA	Thermal Resistance Junction-ambient (Steady State)[1]	---	60	℃/W
RθJC	Thermal Resistance Junction-Case[1]	---	3.1	℃/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BV_{DSS}	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	30	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=30V,VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	1.2	1.6	2.2	V
gFS	Forward Transconductance	VDS=5V,ID=10A	--	10	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=15A	--	6.7	11	mΩ
		VGS=4.5V, ID=10A	--	10.2	16	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=15V,VGS=0V, F=1MHZ	--	850	--	pF
Coss	Output Capacitance		--	130	--	pF
Crss	Reverse Transfer Capacitance		--	98	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	1.9	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=10V,VDS=15V, RL=0.75Ω,RGEN=3.3Ω	--	4.7	--	nS
tr	Turn-on Rise Time		--	11	--	nS
td(off)	Turn-Off Delay Time		--	17	--	nS
tf	Turn-Off Fall Time		--	5.6	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=15V, ID=10A	--	16	--	nC
Qgs	Gate-Source Charge		--	3	--	nC
Qgd	Gate-Drain Charge		--	3.8	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)	VG=VD=0V , Force Current	--	--	22	A
VSD	Forward on Voltage	VGS=0V,IS=15A	--	--	1.2	V
trr	Reverse Recovery Time	IF=15A , dI/dt=100A/μs , TJ=25℃	--	--	--	ns
Qrr	Reverse Recovery Charge		--	--	--	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℃

Fig.1 Power Dissipation Derating Curve

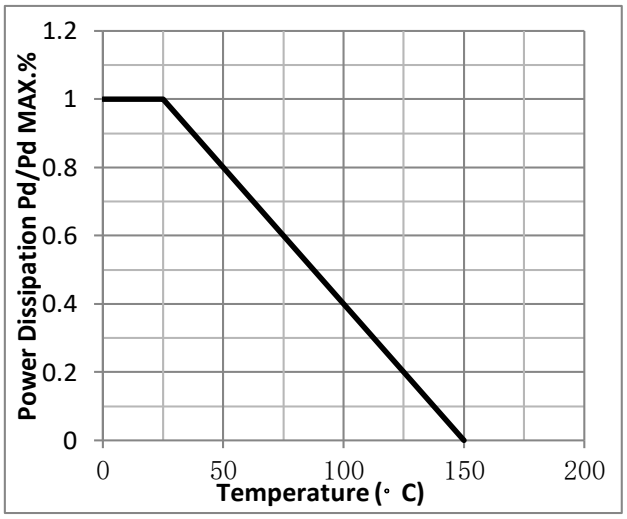


Fig.2 Typical output Characteristics

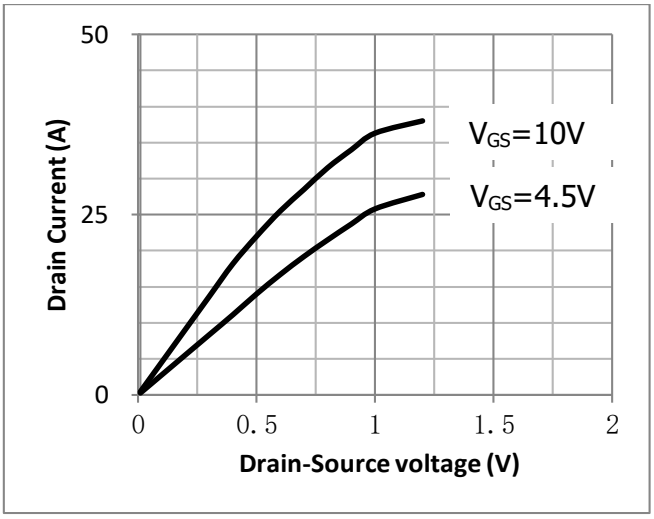


Fig.3 Threshold Voltage V.S Junction Temperature

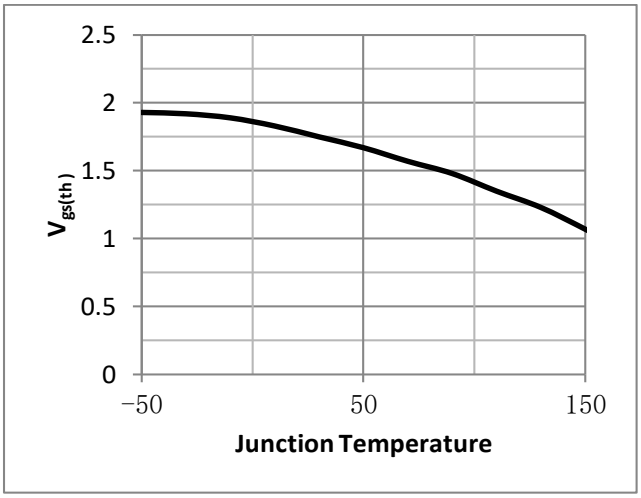


Fig.4 Resistance V.S Drain Current

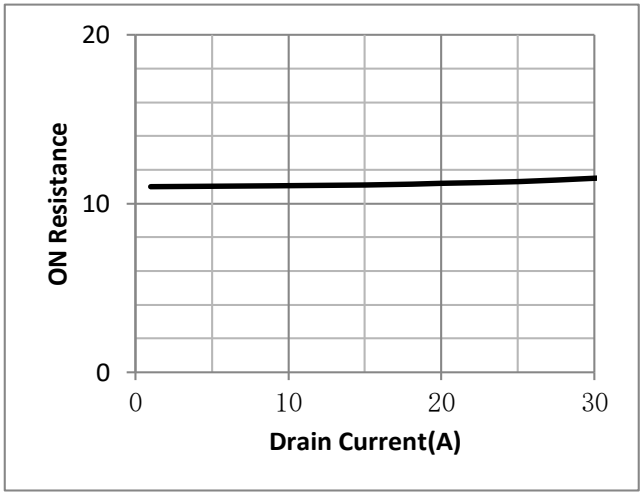


Fig.5 On-Resistance VS Gate Source Voltage

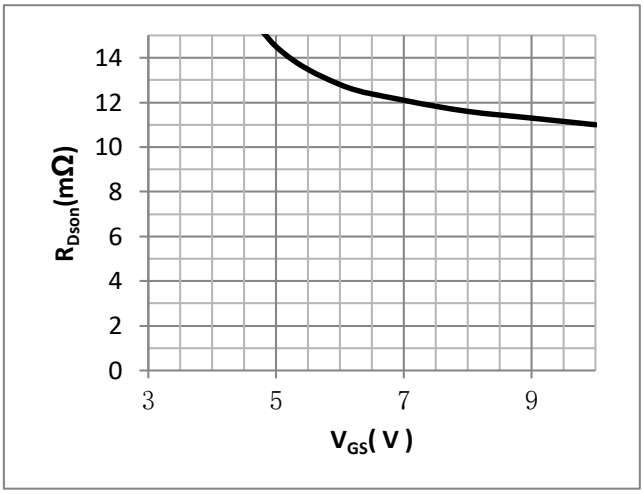


Fig.6 On-Resistance V.S Junction Temperature

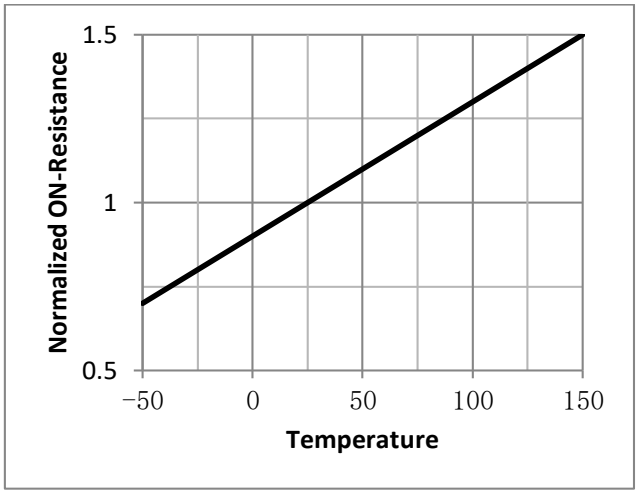


Fig.7 Switching Time Measurement Circuit

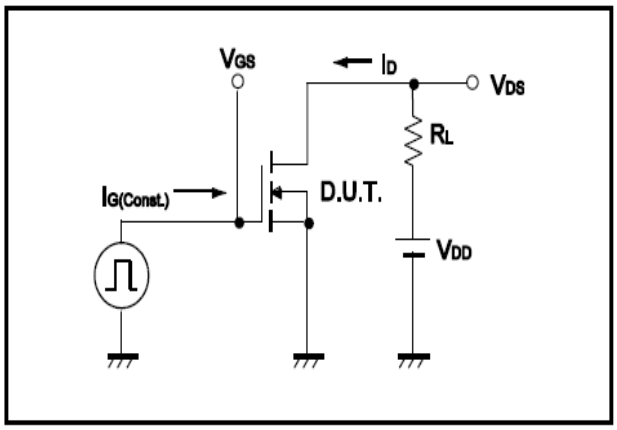


Fig.8 Gate Charge Waveform

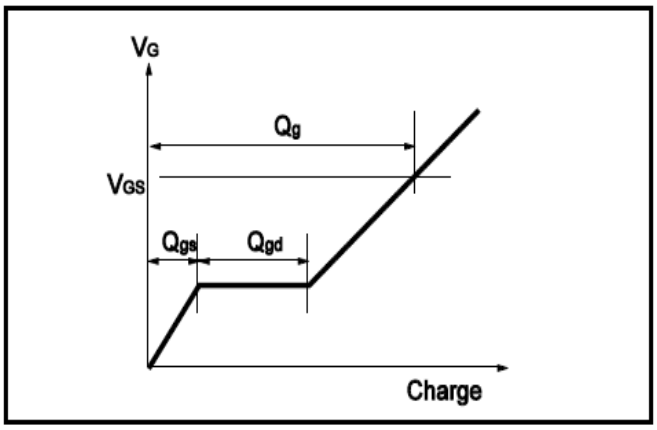


Fig.9 Switching Time Measurement Circuit

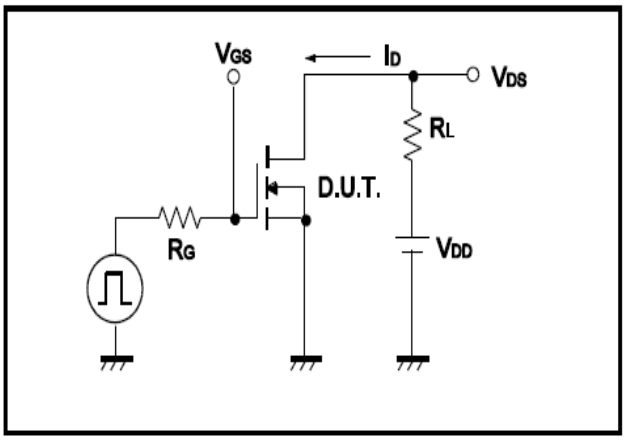


Fig.10 Gate Charge Waveform

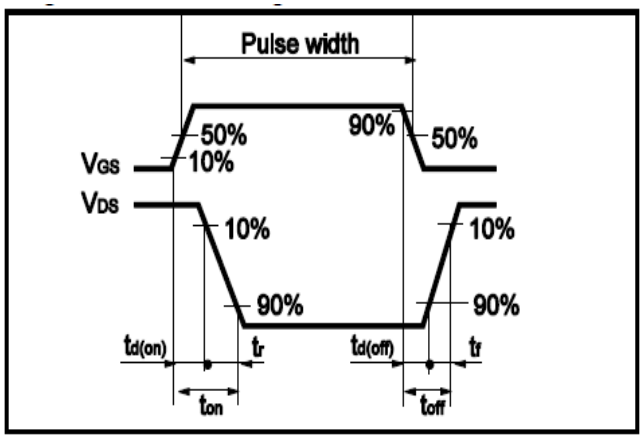


Fig.11 Avalanche Measurement Circuit

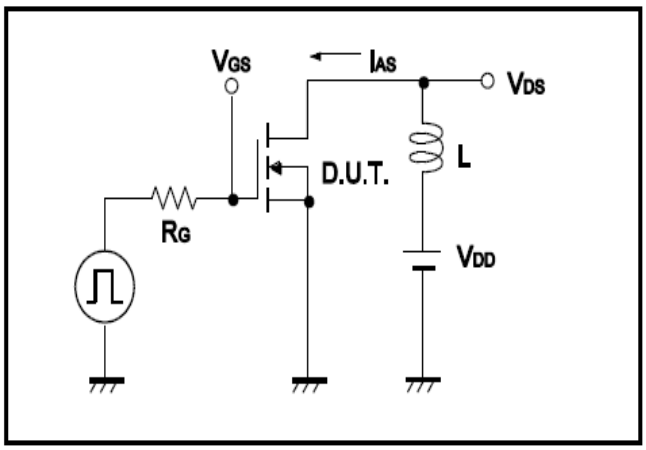
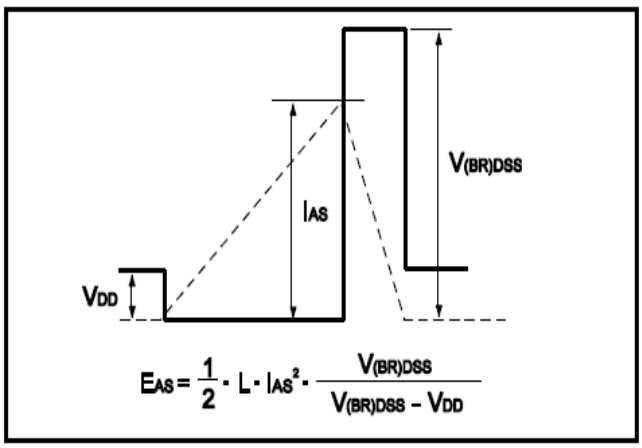


Fig.12 Avalanche Waveform



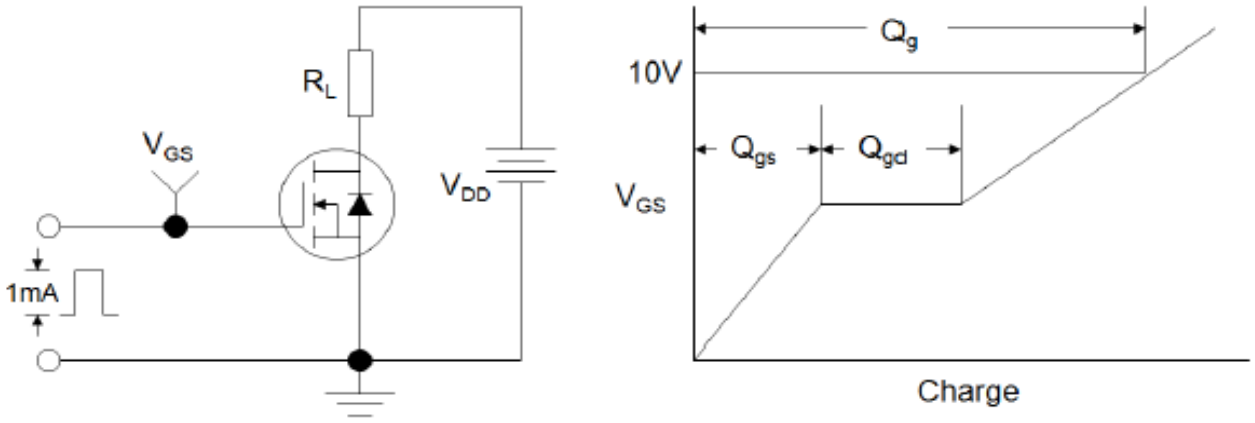


Figure1:Gate Charge Test Circuit & Waveform

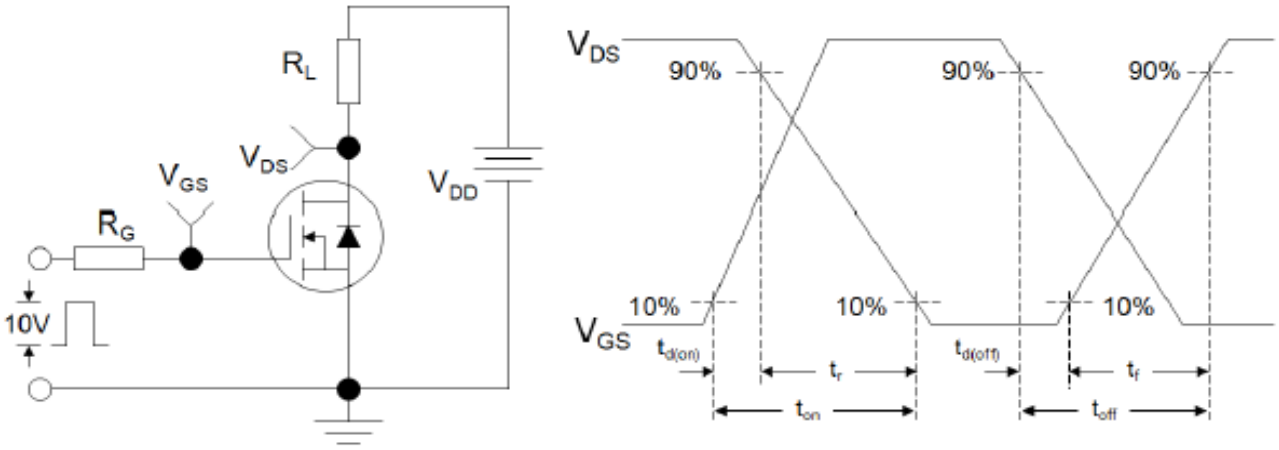


Figure 2: Resistive Switching Test Circuit & Waveforms

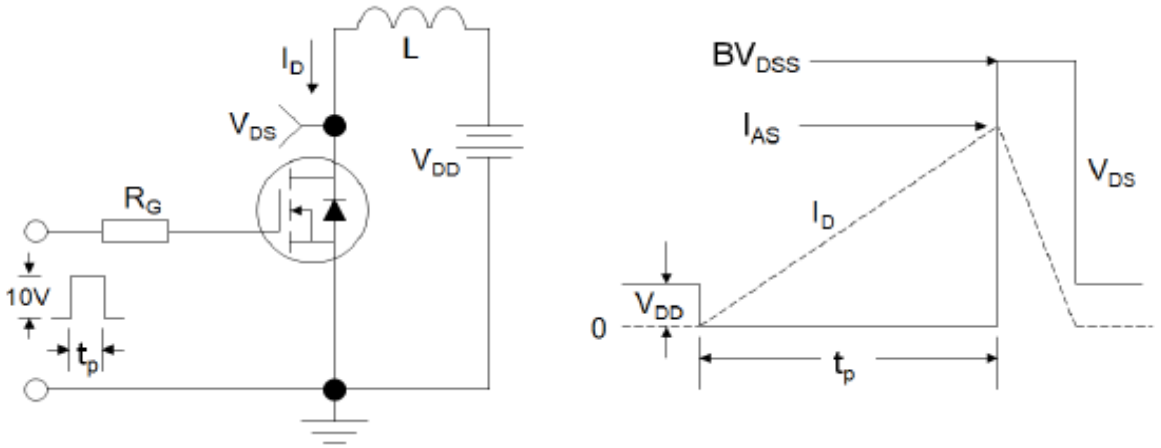
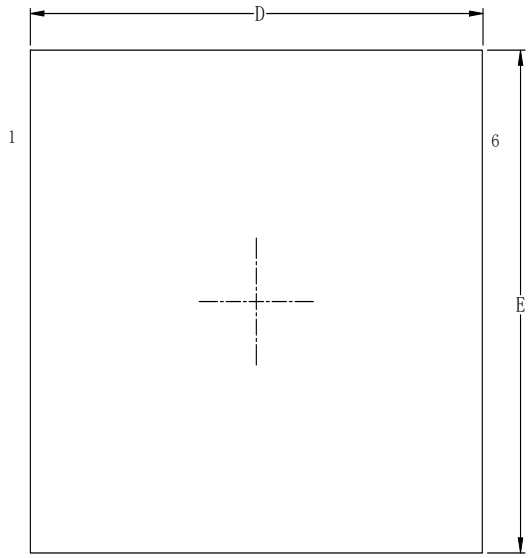
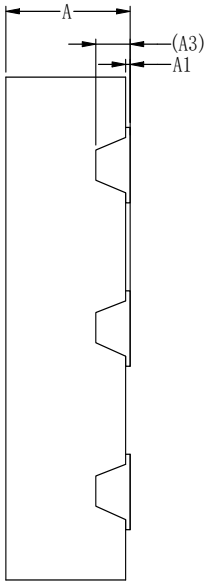


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms

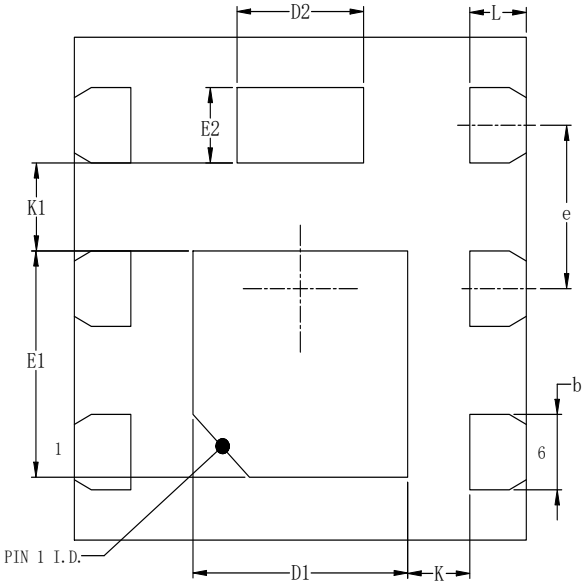
DFN2*2
PACKAGE OUTLINE DIMENSIONS



TOP VIEW
[顶视图]



SIDE VIEW
[侧视图]



BOTTOM VIEW
[背视图]

		SYMBOL	MIN	NOM	MAX
TOTAL THICKNESS		A	0.5	0.55	0.6
STAND OFF		A1	0	0.02	0.05
L/F THICKNESS		A3		0.152 REF	
LEAD WIDTH		b	0.25	0.3	0.35
BODY SIZE	X	D	1.9	2	2.1
	Y	E	1.9	2	2.1
LEAD PITCH		e		0.65 BSC	
EP SIZE	X	D1	0.85	0.95	1.05
		D2	0.46	0.56	0.66
	Y	E1	0.8	0.9	1
		E2	0.2	0.3	0.4
LEAD LENGTH		L	0.2	0.25	0.3
LEAD TIP TO EP EDGE		K		0.275 REF	
EP EDGE TO EP EDGE		K1		0.35 REF	

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