General Description

The AGM1010A-F 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

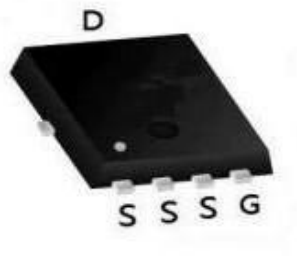
Application

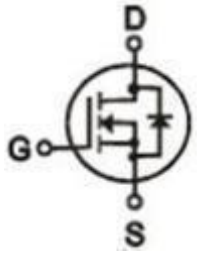
- Electronic Ballast
- Electronic Transformer
- Switch Mode Power Supply

Product Summary

BVDSS	RDSON	ID
100V	6.2mΩ	70A

PDFN5*6 Pin Configuration





Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM1010A-F	AGM1010A-F	PDFN5*6	330mm	12mm	3000

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

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℃) **(Note 1)**	70	A
	Drain Current-Continuous(Tc=100℃)	44	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed **(Note 2)**	280	A
PD	Maximum Power Dissipation(Tc=25℃)	79	w
	Maximum Power Dissipation(Tc=100℃)	32	w
EAS	Avalanche energy **(Note 3)**	183	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]	---	48	℃/W
RθJC	Thermal Resistance Junction-Case[1]	---	1.58	℃/W

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

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	Drain-Source Breakdown Voltage	VGS=0V ID=250μA	100	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=100V,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	2.3	V
gFS	Forward Transconductance	VDS=5V,ID=8A	--	30	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=15A	--	6.2	8.0	mΩ
		VGS=4.5V, ID=8A	--	7.5	11	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=50V,VGS=0V, F=1MHZ	--	1750	--	pF
Coss	Output Capacitance		--	710	--	pF
Crss	Reverse Transfer Capacitance		--	18	--	pF
Rg	Gate resistance	VGS=0V, VDS=50V,f=1.0MHz	--	0.6	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	ID =30A VDS = 50V VGS = 10V RG = 5Ω	--	15	--	nS
tr	Turn-on Rise Time		--	23	--	nS
td(off)	Turn-Off Delay Time		--	45	--	nS
tf	Turn-Off Fall Time		--	35	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=50V, ID=20A	--	30	--	nC
Qgs	Gate-Source Charge		--	6.8	--	nC
Qgd	Gate-Drain Charge		--	7.4	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	70	A
VSD	Forward on Voltage	VGS=0V,ISD=15A	--	--	1.2	V
trr	Reverse Recovery Time	VDD=50V,IF=15A , dI/dt=100A/μs , TJ=25℃	--	60	--	ns
Qrr	Reverse Recovery Charge		--	110	--	nc

Notes 1.The maximum current rating is package limited.

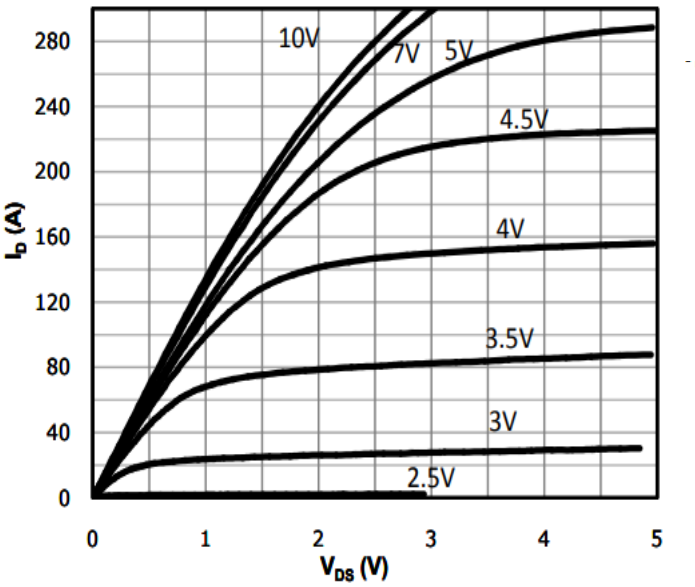
Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3.EAS condition: TJ=25℃

Characteristics Curve:

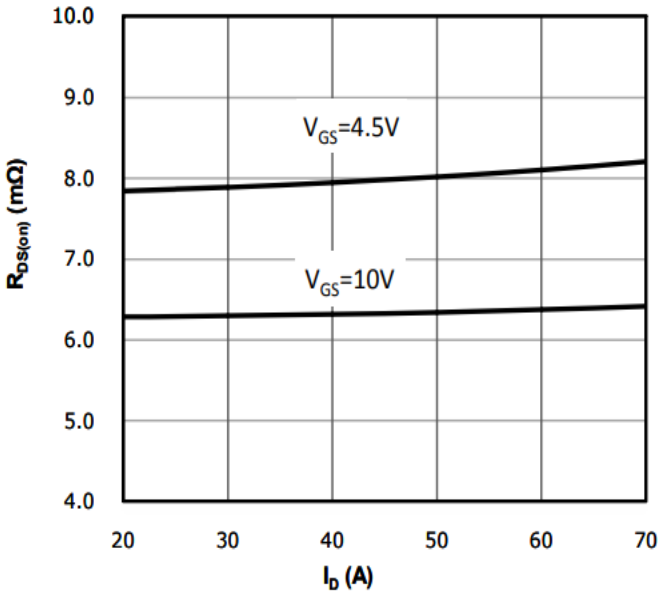
Typ. output characteristics

$I_D=f(V_{DS})$



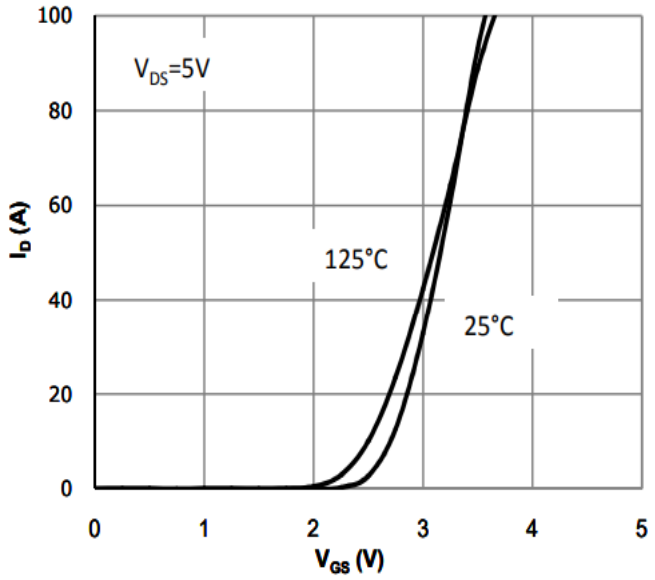
Typ. drain-source on resistance

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



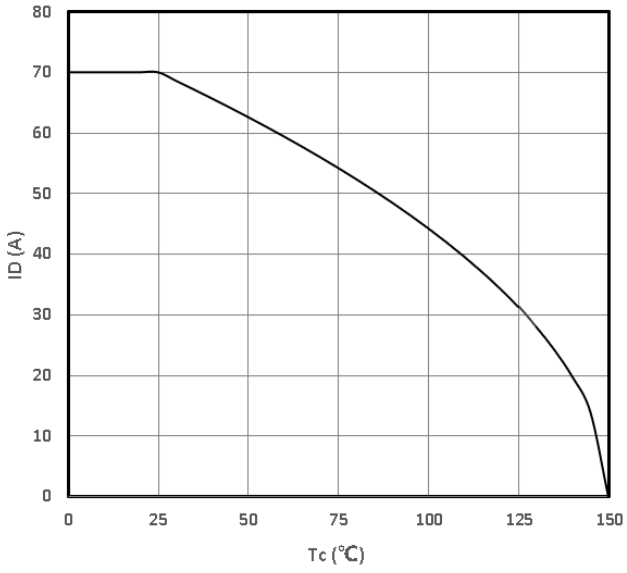
Typ. transfer characteristics

$I_D=f(V_{GS})$



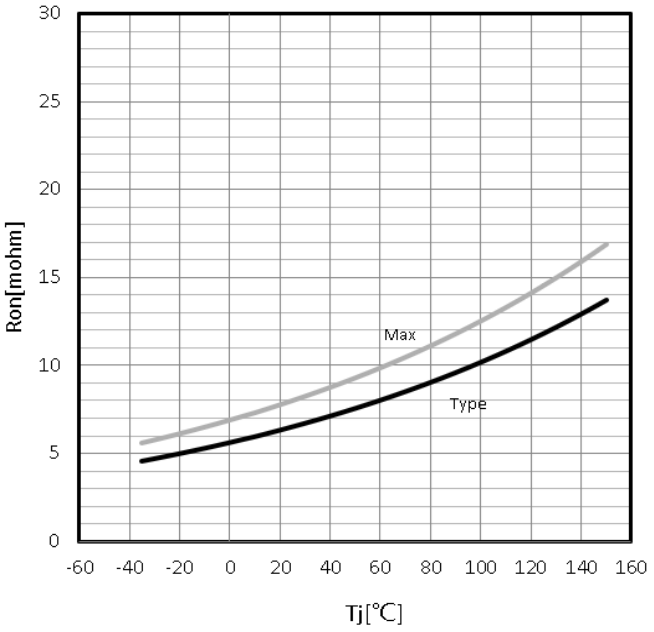
Maximum Drain Current

ID=f(TC)



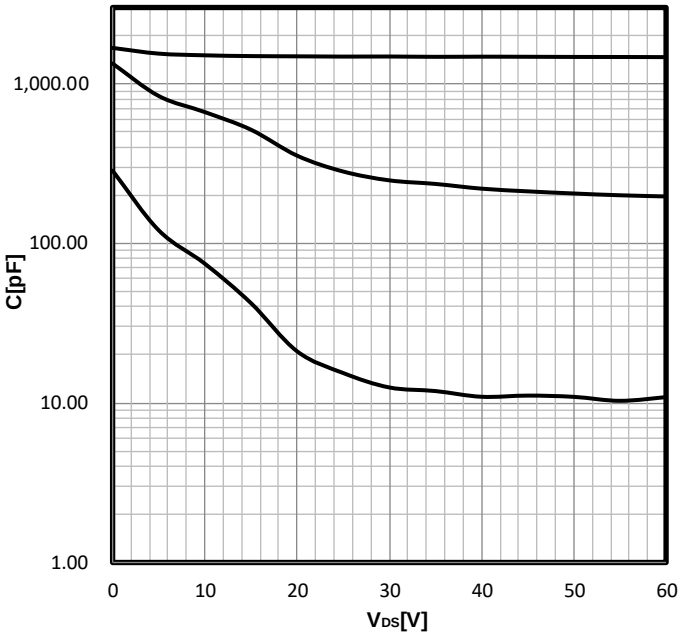
Drain-source on-state resistance

$R_{DS(on)}=f(T_j)$; $I_D=20A$; $V_{GS}=10V$



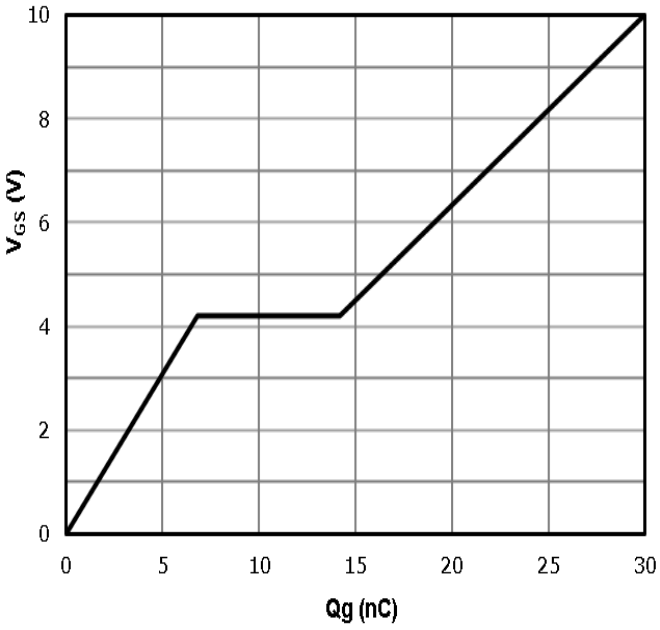
Typ. capacitances

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



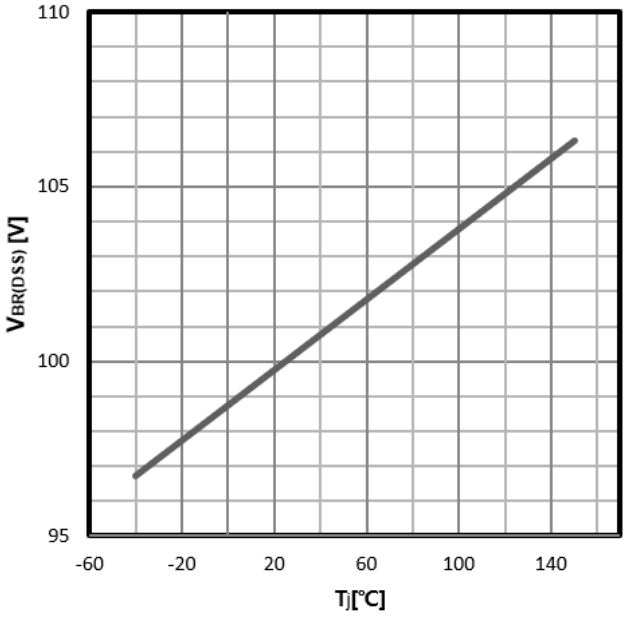
Typ. gate charge

$V_{GS}=f(Q_{gate})$



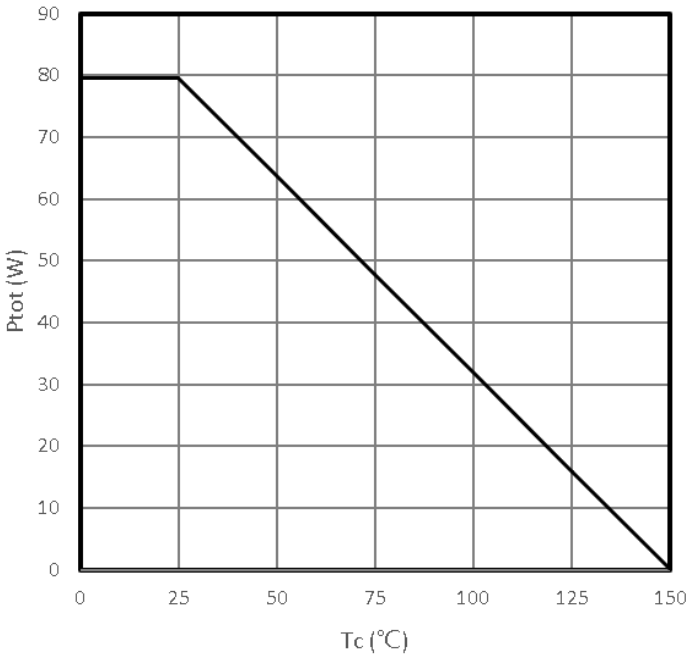
Drain-source breakdown voltage

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



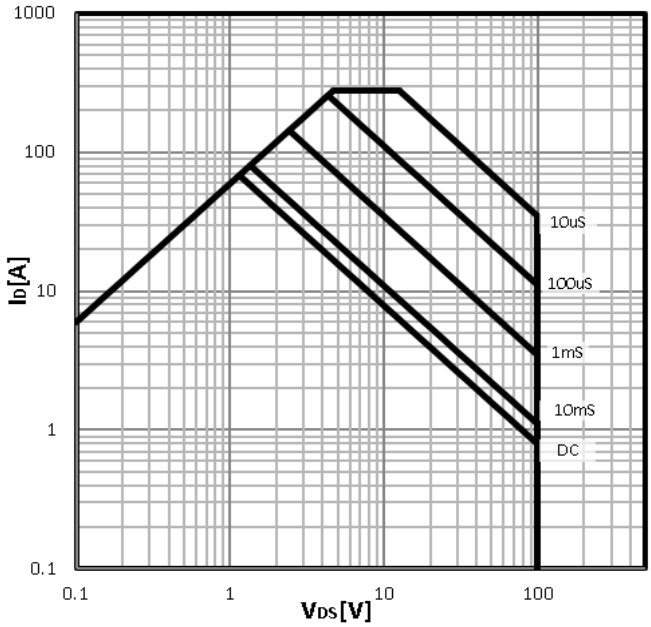
Power Dissipation

$P_{tot}=f(T_j)$



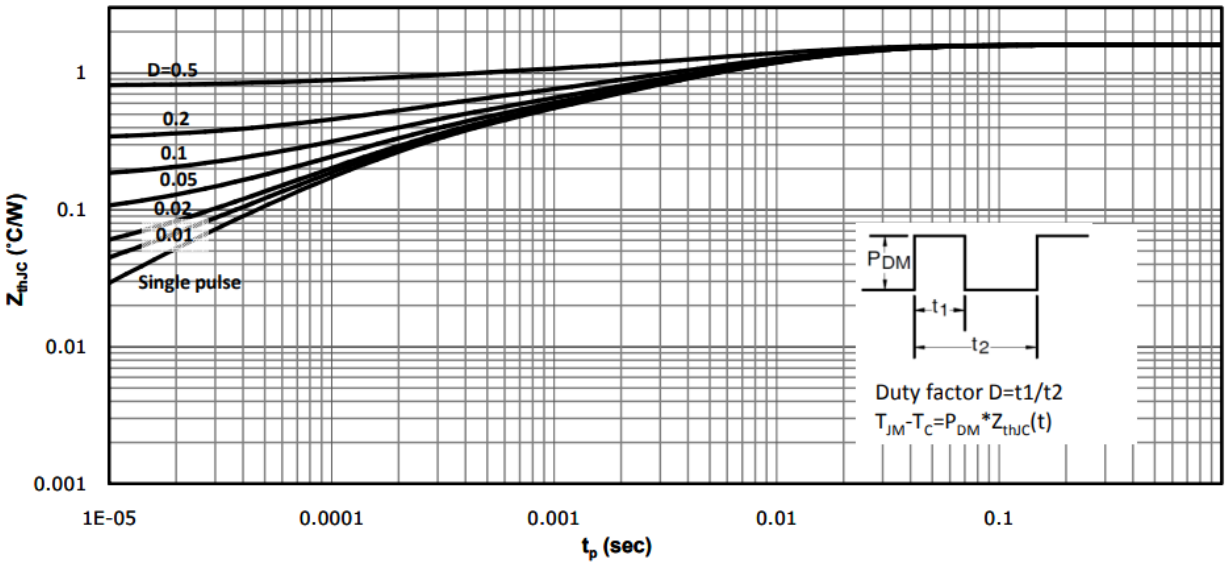
Safe operating area

$I_D=f(V_{DS})$

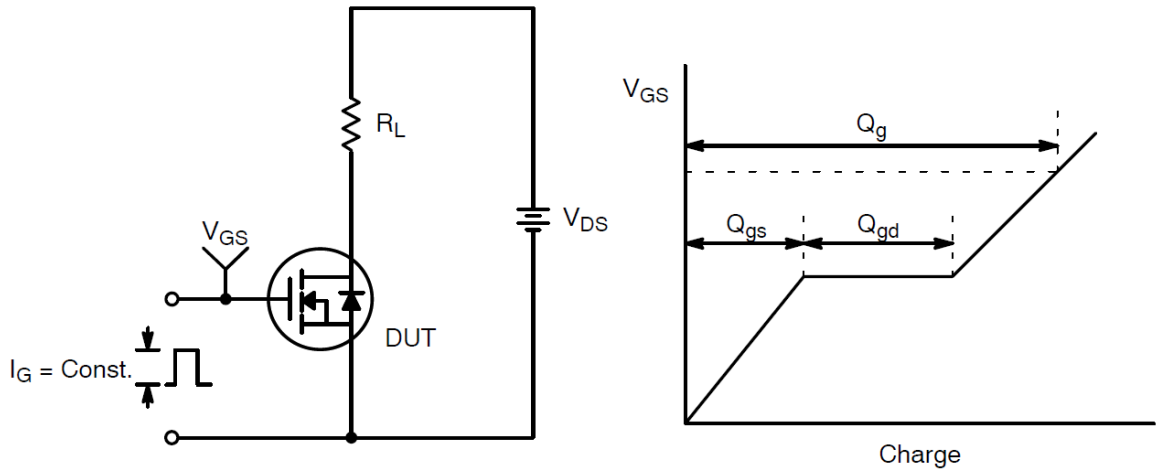


Max. transient thermal impedance

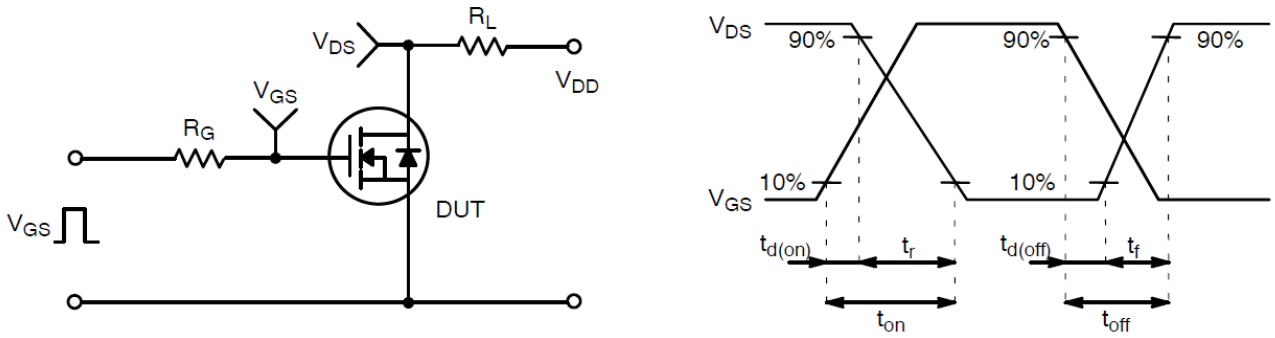
$Z_{thJC}=f(t_p)$



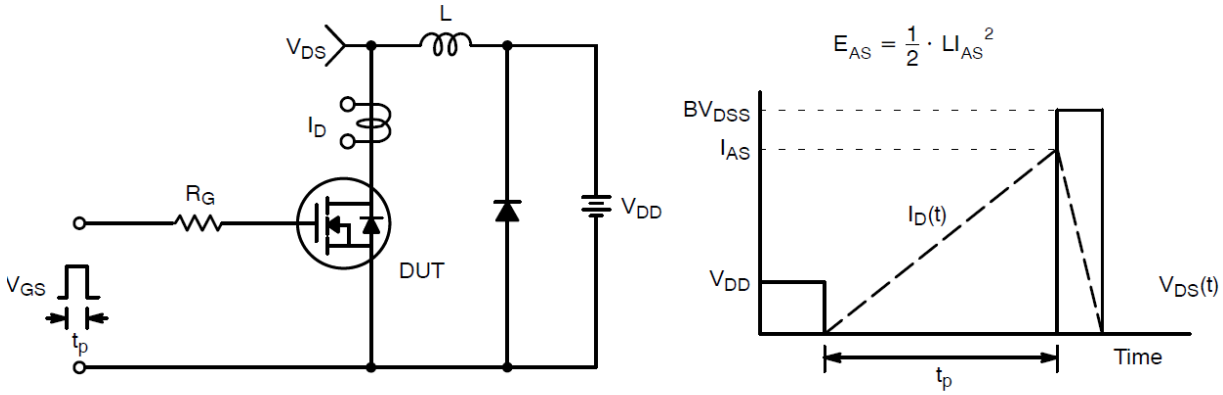
Test Circuit and Waveform:



Gate Charge Test Circuit & Waveform

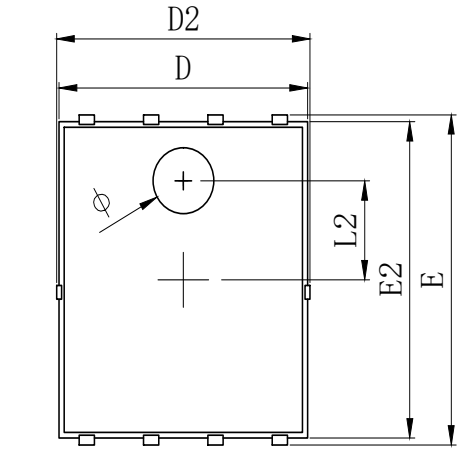


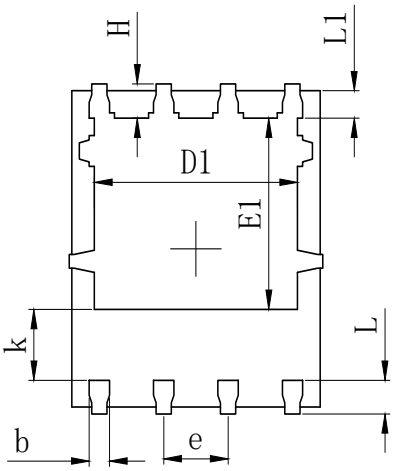
Resistive Switching Test Circuit & Waveforms

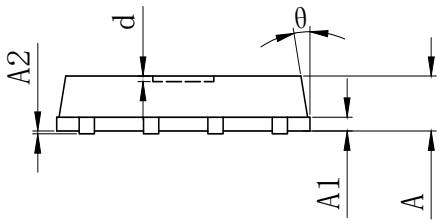


Unclamped Inductive Switching Test Circuit & Waveforms

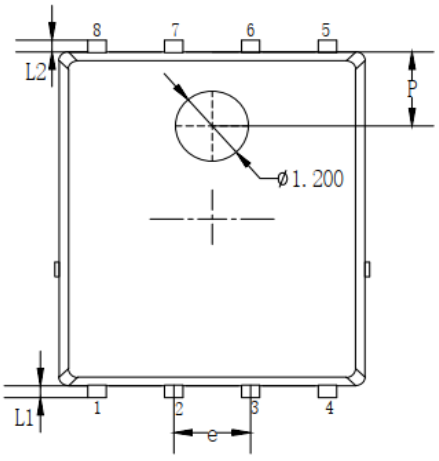
●Dimensions（PDFN5*6）

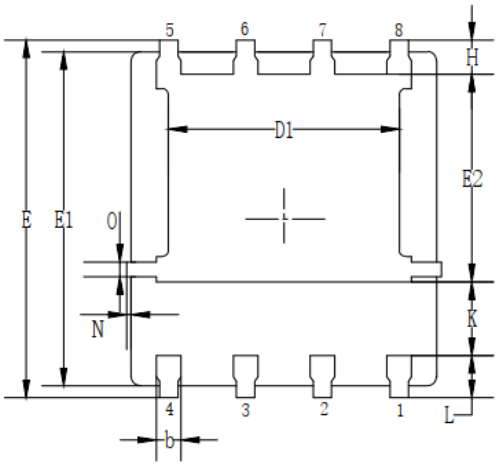


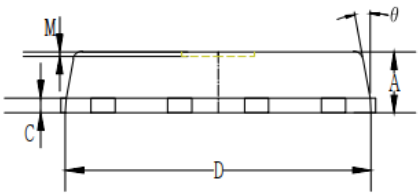




SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.900	1.000	1.100
A1	0.254 REF.		
A2	0~0.05		
D	4.824	4.900	4.976
D1	3.910	4.010	4.110
D2	4.924	5.000	5.076
E	5.924	6.000	6.076
E1	3.375	3.475	3.575
E2	5.674	5.750	5.826
b	0.350	0.400	0.450
e	1.270 TYP.		
L	0.534	0.610	0.686
L1	0.424	0.500	0.576
L2	1.800 REF.		
k	1.190	1.290	1.390
H	0.549	0.625	0.701
θ	8°	10°	12°
Φ	1.100	1.200	1.300
d			0.100







Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	0.90	1.05	1.20
b	0.35	0.40	0.50
C	0.20	0.25	0.35
D	4.90	5.05	5.20
D1	3.72	3.82	3.92
E	6.00	6.15	6.30
E1	5.60	5.75	5.90
E2	3.47	3.57	3.67
e	1.27 BSC.		
H	0.48	0.58	0.68
K	1.17	1.27	1.37
L	0.64	0.74	0.84
L1/L2	0.20 REF.		
θ	8°	10°	12°
M	0.08 REF.		
N	0	-	0.15
O	0.25 REF.		
P	1.28 REF.		

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This document is the first version issued on August 20th, 2023. This document replaces all previously provided information.