

General Description

The AGM205AP 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

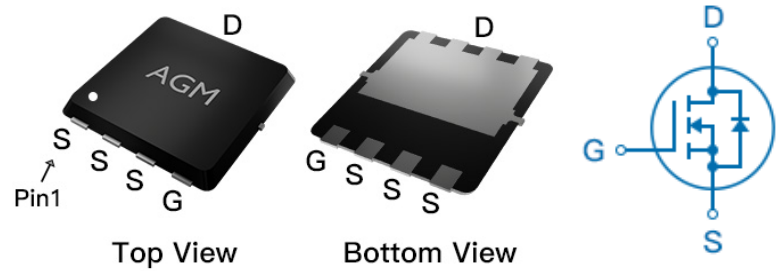
Application

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

Product Summary

BVDSS	RDSON	ID
20V	3mΩ	100A

PDFN3.3*3.3 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM205AP	AGM205AP	PDFN3.3*3.3	330mm	12mm	5000

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	20	V
VGS	Gate-Source Voltage (VDS=0V)	±12	V
ID	Drain Current-Continuous(Tc=25°C) (Note 1)	100	A
	Drain Current-Continuous(Tc=100°C)	65	A
IDM (pluse)	Drai Current-Pulsed (Note 2)	400	A
PD	Maximum Power Dissipation(Tc=25°C)	58	w
	Maximum Power Dissipation(Tc=100°C)	22.8	w
EAS	Avalanche energy (Note 3)	210	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	---	20	°C/W
RθJC	Thermal Resistance Junction-Case ¹	---	2.2	°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	20	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=20V,VGS=0V	--	--	1.0	μA
IGSS	Gate-Body Leakage Current	VGS=±12V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	0.4	0.7	1.1	V
RDS(on)	Drain-Source On-State Resistance	VGS=4.5V, ID=30A	--	3.0	5.0	mΩ
		VGS=2.5V, ID=20A	--	4.0	6.0	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=15V,VGS=0V, F=1MHZ	--	2620	--	pF
Coss	Output Capacitance		--	338	--	pF
Crss	Reverse Transfer Capacitance		--	294	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	1.9	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=4.5V,VDS=15V RG=17A,RGEN=1.8Ω	--	9.7	--	nS
tr	Turn-on Rise Time		--	37	--	nS
td(off)	Turn-Off Delay Time		--	63	--	nS
tf	Turn-Off Fall Time		--	33	--	nS
Qg	Total Gate Charge	VGS=4.5V, VDS=15V, ID=17A	--	38	--	nC
Qgs	Gate-Source Charge		--	4.4	--	nC
Qgd	Gate-Drain Charge		--	12	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	100	A
VSD	Forward on Voltage	VGS=0V,IS=30A	--	--	1.2	V
trr	Reverse Recovery Time	IF=30A , dI/dt=100A/μs ,	--	27	--	ns
Qrr	Reverse Recovery Charge	TJ=25℃	--	9.8	--	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, V_{DD}=15V, V_{GS}=5V, I_D=29A, L=0.5mH, R_G=25ohm

N- Channel Typical Characteristics

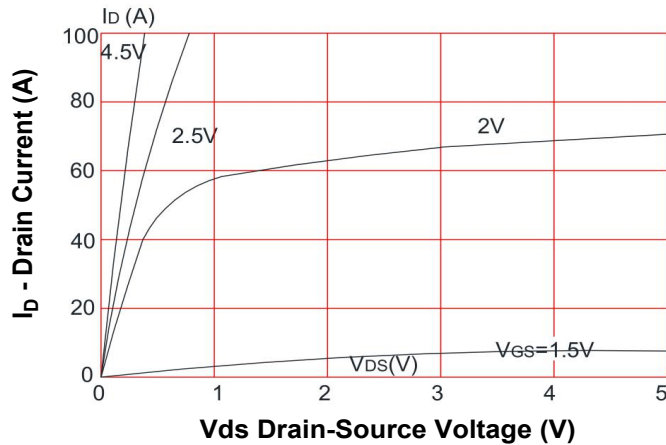


Figure 1. On-Region Characteristics

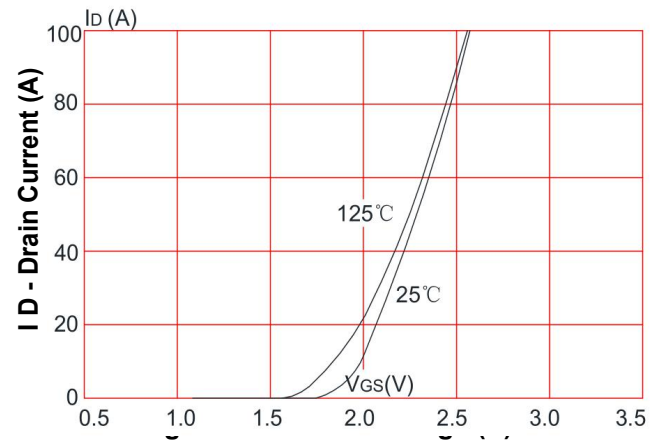


Figure 2. Transfer Characteristics

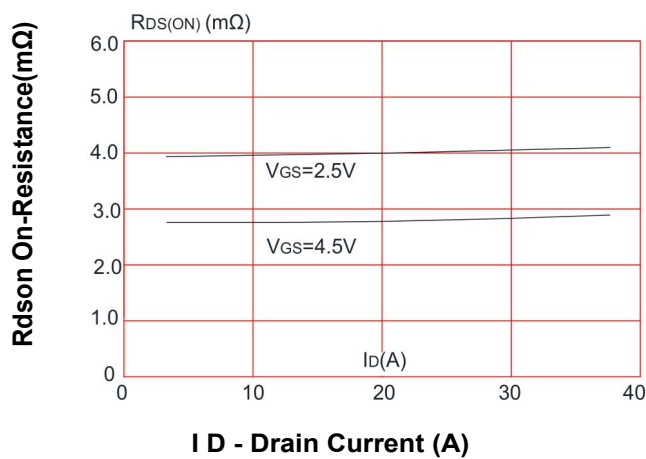


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

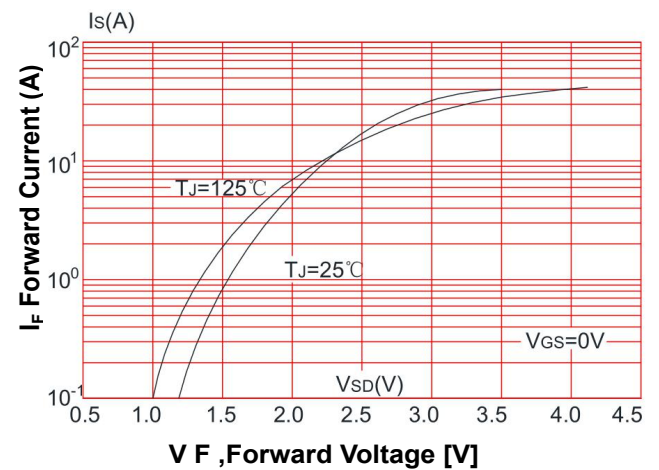


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

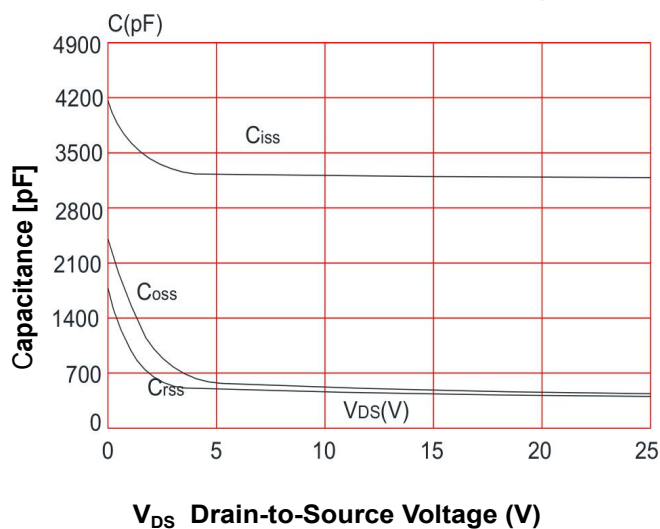


Figure 5. Capacitance Characteristics

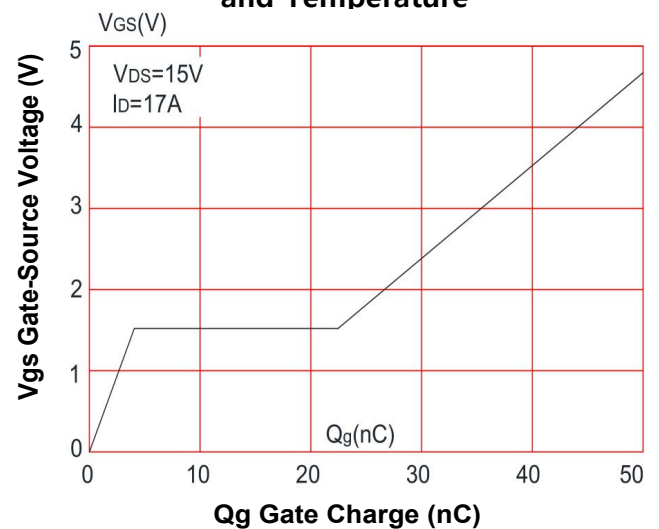


Figure 6. Gate Charge Characteristics

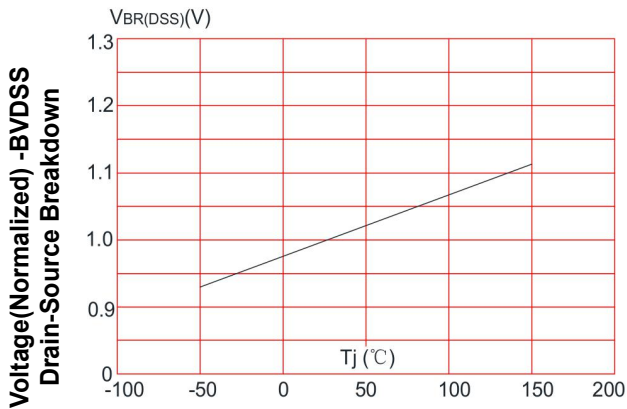


Figure 7. Breakdown Voltage Variation vs Temperature

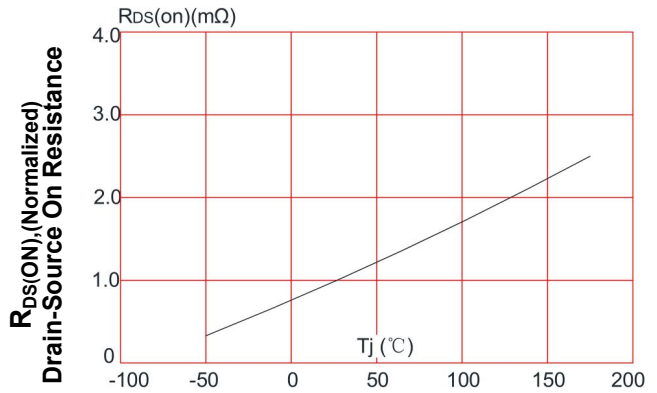


Figure 8. On-Resistance Variation vs Temperature

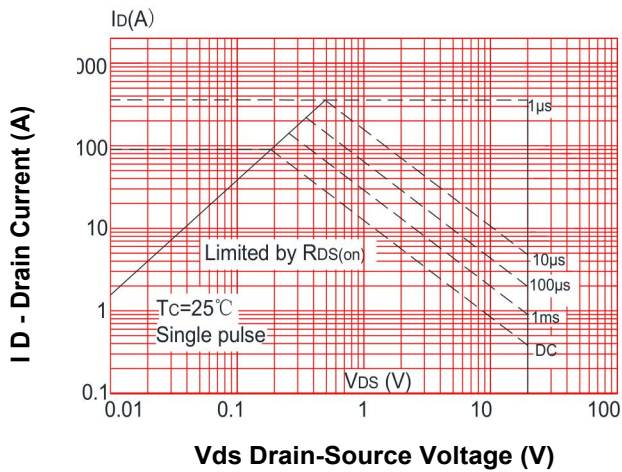


Figure 9. Maximum Safe Operating Area

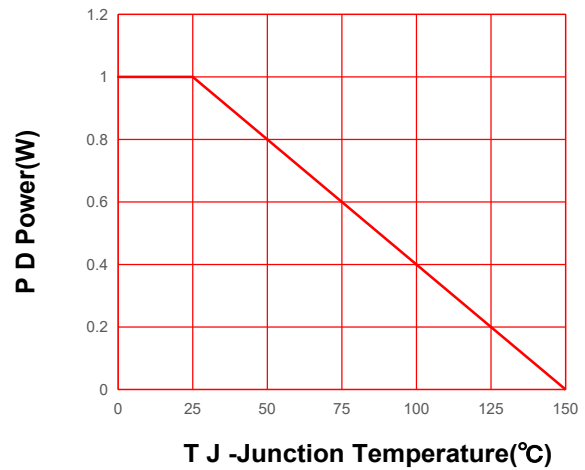


Figure 10. Maximum Power Dissipation vs Case Temperature

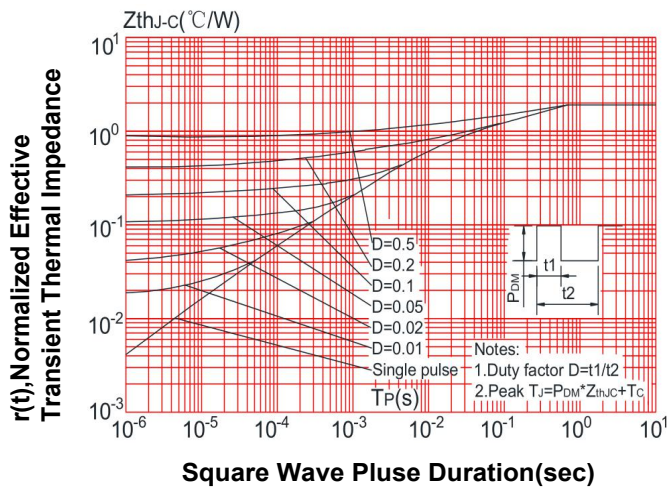
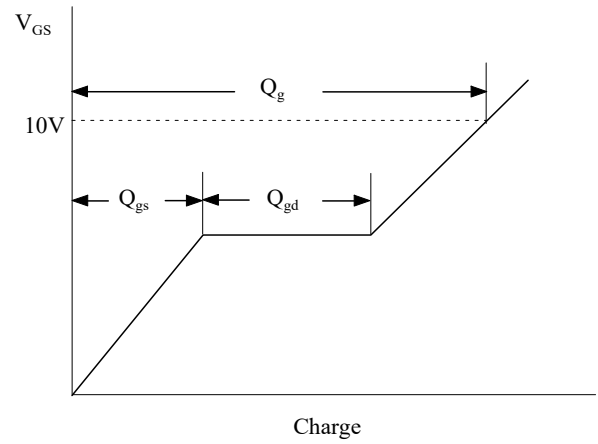
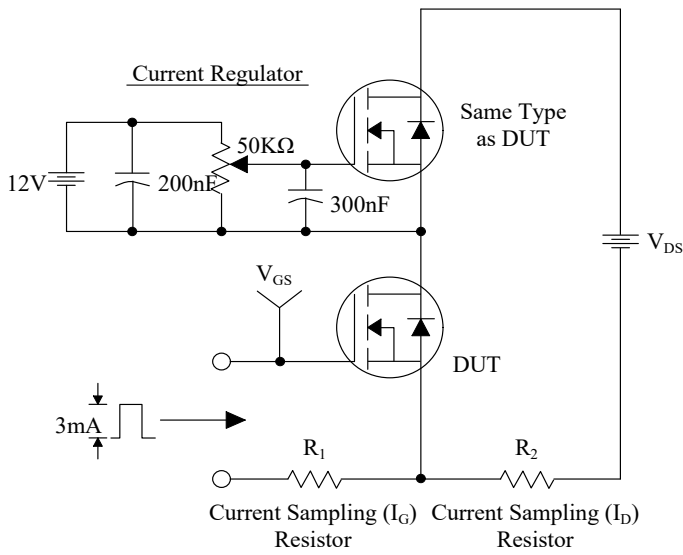
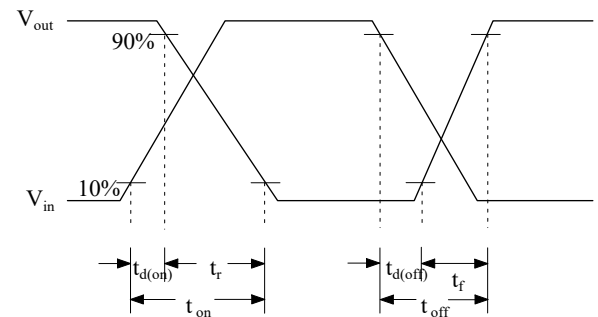
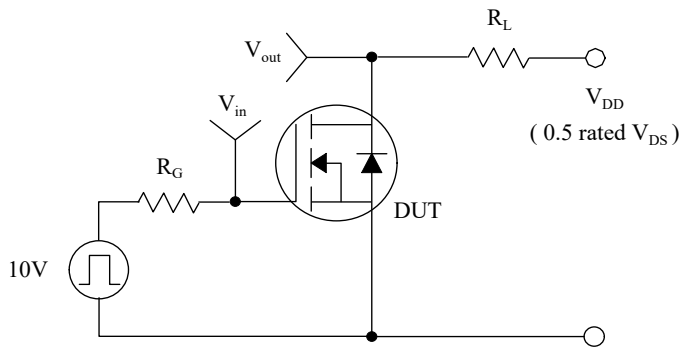


Figure 11. Transient Thermal Response Curve

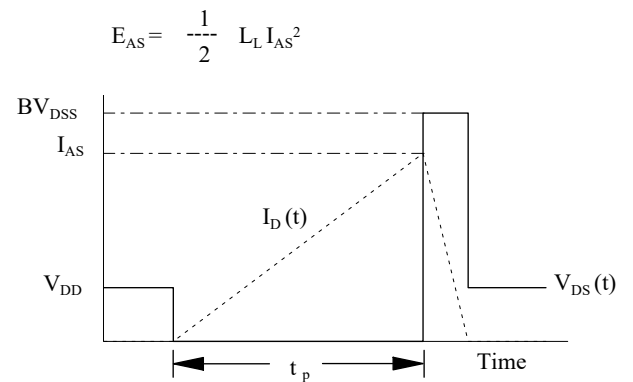
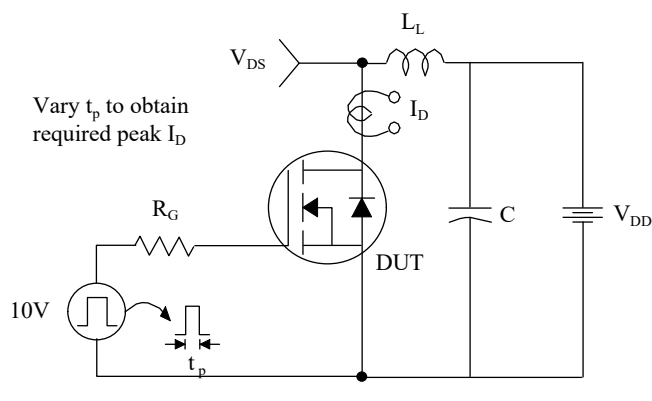
Gate Charge Test Circuit & Waveform



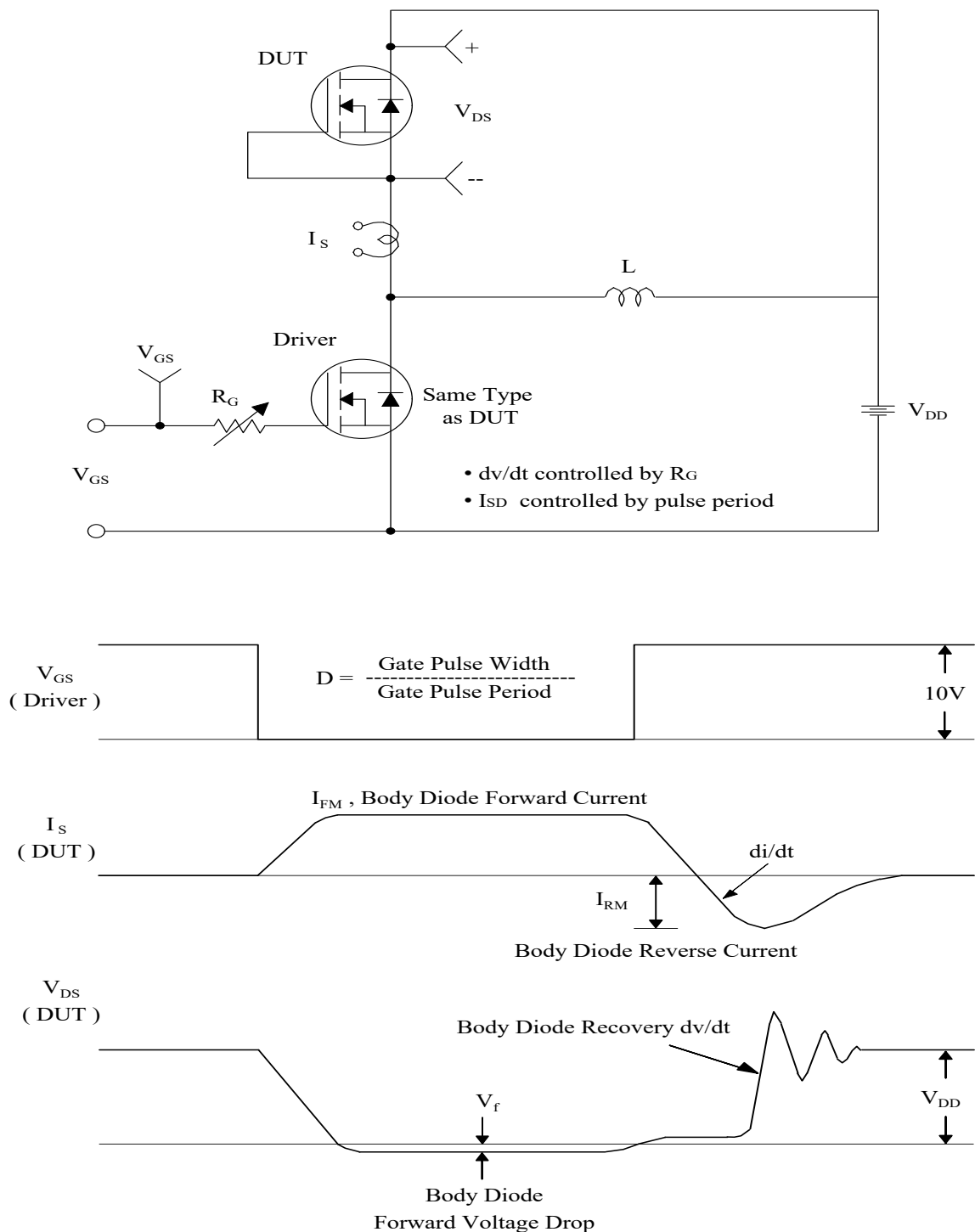
Resistive Switching Test Circuit & Waveforms



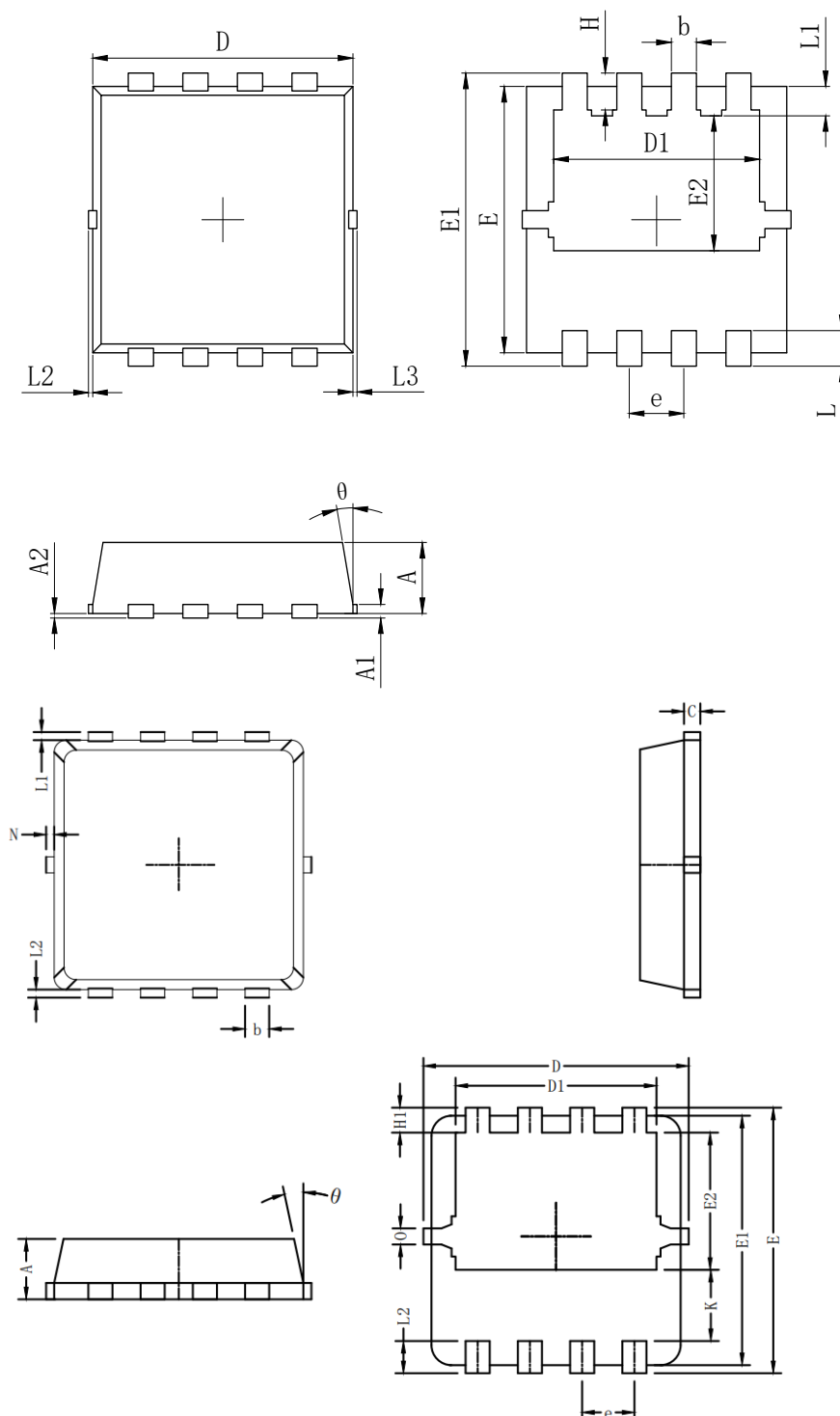
Unclamped Inductive Switching Test Circuit & Waveforms



Peak Diode Recovery dv/dt Test Circuit & Waveforms



Dimensions (PDFN3.3*3.3)

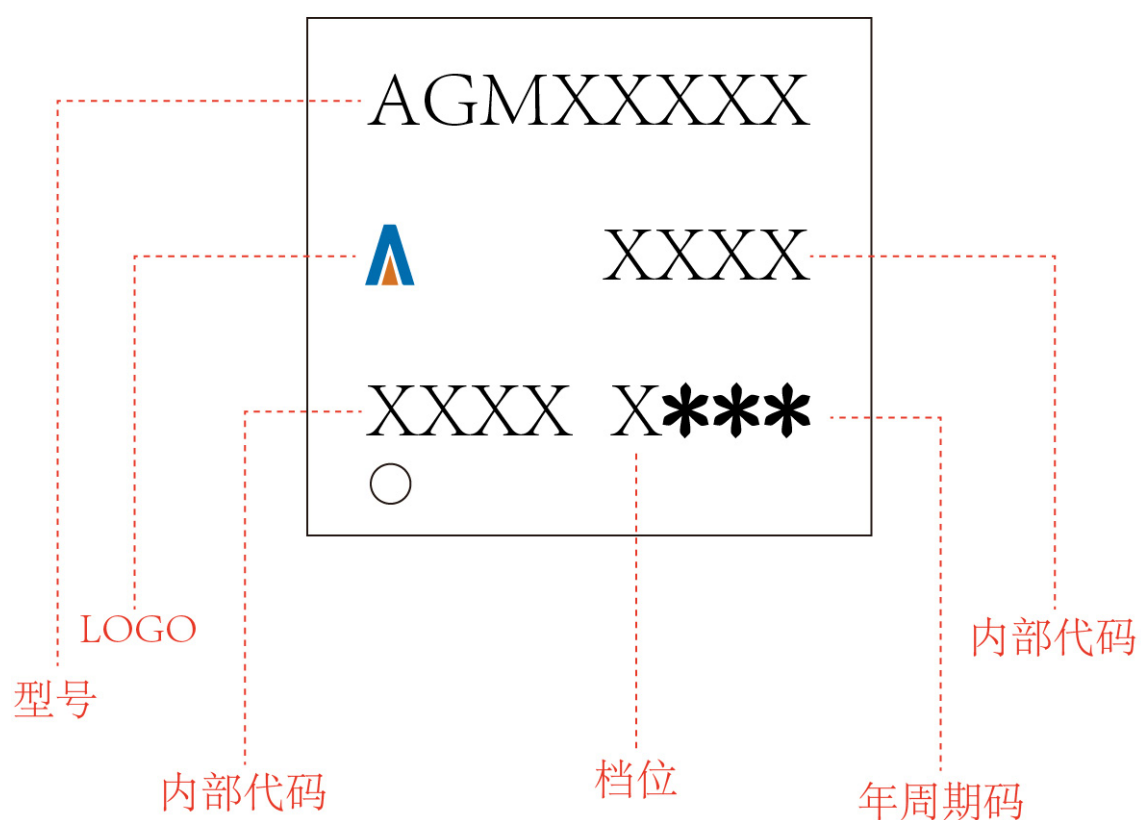


SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.700	0.800	0.900
A1	0.152 REF.		
A2	0°0.05		
D	3.000	3.100	3.200
D1	2.300	2.450	2.600
E	2.900	3.000	3.100
E1	3.150	3.300	3.450
E2	1.320	1.520	1.720
b	0.200	0.300	0.400
e	0.550	0.650	0.750
L	0.300	0.400	0.500
L1	0.180	0.330	0.480
L2	0°0.100		
L3	0°0.100		
H	0.315	0.415	0.515
θ	8°	10°	12°

Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	0.65	0.75	0.85
b	0.25	0.30	0.35
C	0.15	0.20	0.25
D	3.00	3.10	3.20
D1	2.40	2.50	2.60
E	3.20	3.30	3.40
E1	3.00	3.10	3.20
E2	1.60	1.70	1.80
e	0.65 BSC.		
H1	0.21	0.31	0.41
H2	0.30	0.40	0.50
K	0.78	0.88	0.98
L1/L2	0.10 REF.		
θ	11°	12°	13°
N	0	-	0.15
0	0.2 REF.		

PDFN3.3*3.3

Marking Instructions:



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