

● General Description

The AGM6018A 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

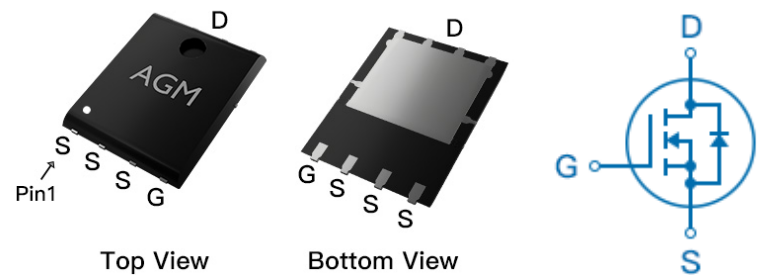
● Application

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

Product Summary

BVDSS	RDSON	ID
60V	1.6mΩ	150A

PDFN5*6 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM6018A	AGM6018A	PDFN5*6	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(Tc=25°C) (Note 1)	150	A
	Drain Current-Continuous(Tc=100°C)	90	A
IDM (pulse)	Drain Current-Pulsed (Note 2)	600	A
PD	Maximum Power Dissipation(Tc=25°C)	113	w
	Maximum Power Dissipation(Tc=100°C)	45	w
EAS	Avalanche energy (Note 3)	870	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	---	1.1	°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	V _{GS} =0V ID=250μA	60	--	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =60V,V _{GS} =0V	--	--	1.0	μA
IGSS	Gate-Body Leakage Current	V _{GS} =±20V,V _{DS} =0V	--	--	±100	nA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} ,ID=250μA	1.2	--	2.2	V
g _{FS}	Forward Transconductance	V _{DS} =5V,ID=15A	--	60	--	S
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, ID=20A	--	1.6	2.0	mΩ
		V _{GS} =4.5V, ID=15A	--	2.1	3.0	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =30V,V _{GS} =0V, F=1.0MHz	--	5471	--	pF
C _{oss}	Output Capacitance		--	1847	--	pF
C _{rss}	Reverse Transfer Capacitance		--	86	--	pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V,f=1.0MHz	--	1.6	--	Ω
Switching Times						
t _{d(on)}	Turn-on Delay Time	V _{GS} =10V,V _{DS} =30V ID=20A,R _{GEN} =3Ω	--	15	--	nS
t _r	Turn-on Rise Time		--	12	--	nS
t _{d(off)}	Turn-Off Delay Time		--	60	--	nS
t _f	Turn-Off Fall Time		--	19	--	nS
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =30V, ID=20A	--	102	--	nC
Q _{gs}	Gate-Source Charge		--	15.7	--	nC
Q _{gd}	Gate-Drain Charge		--	27.9	--	nC
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current(Body Diode)		--	--	150	A
V _{SD}	Forward on Voltage	V _{GS} =0V,IS=20A	--	--	1.2	V
t _{rr}	Reverse Recovery Time	I _s =20A , dI/dt=100A/μs , T _J =25°C	--	50	--	ns
Q _{rr}	Reverse Recovery Charge		--	72	--	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}=30V,V_{gs}=10V,ID=59A, L=0.5mH,R_G=25ohm

Typical Characteristics

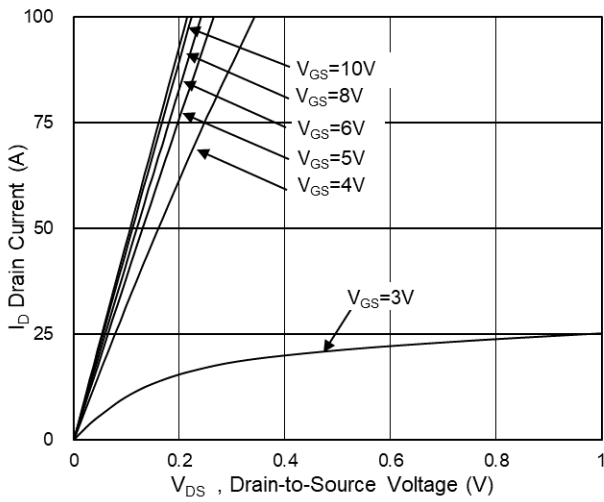


Fig.1 Typical Output Characteristics

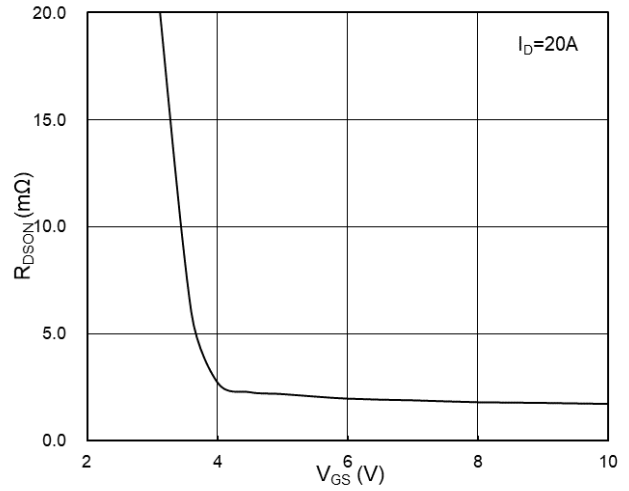


Fig.2 On-Resistance vs G-S Voltage

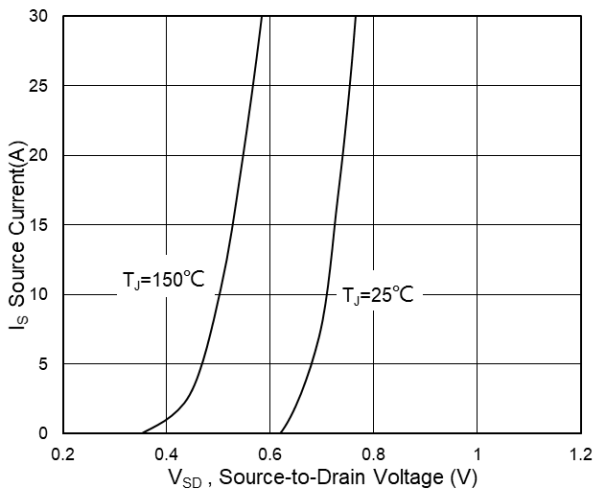


Fig.3 Diode Forward Voltage vs Current

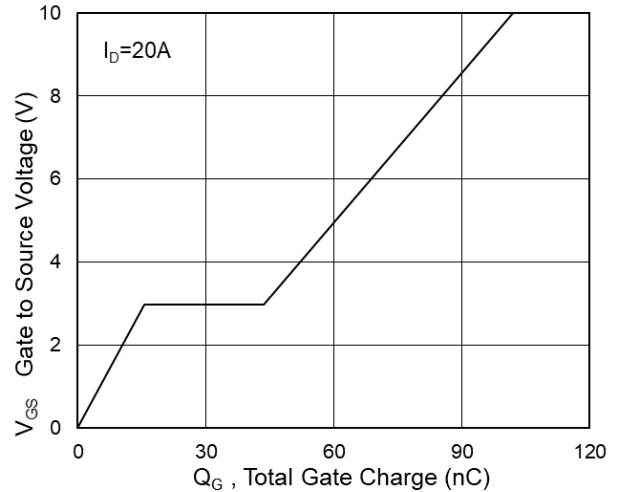


Fig.4 Gate-Charge Characteristics

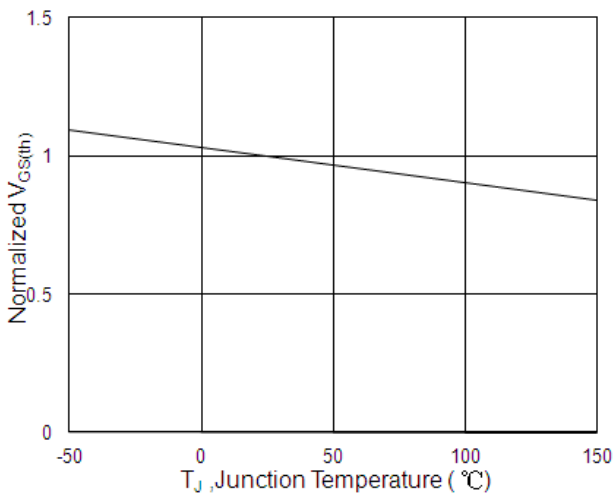


Fig.5 Normalized $V_{GS(th)}$ vs T_J

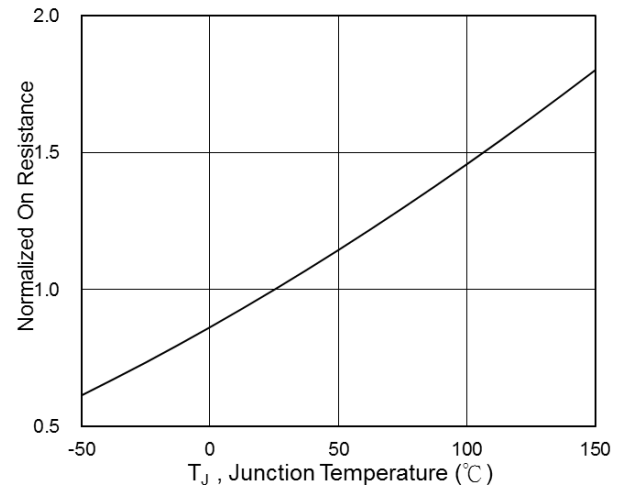


Fig.6 Normalized $R_{DS(on)}$ vs T_J

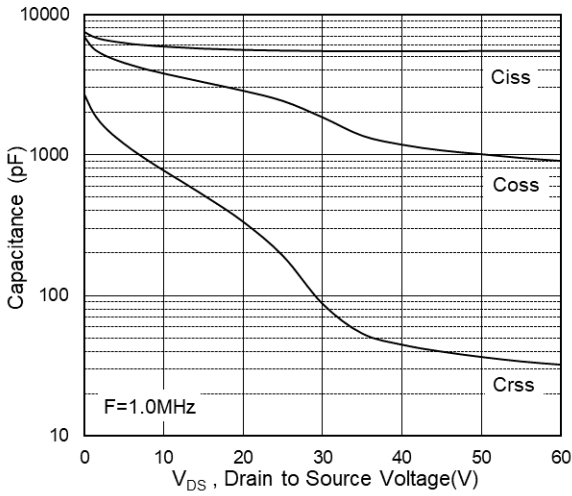


Fig.7 Capacitance

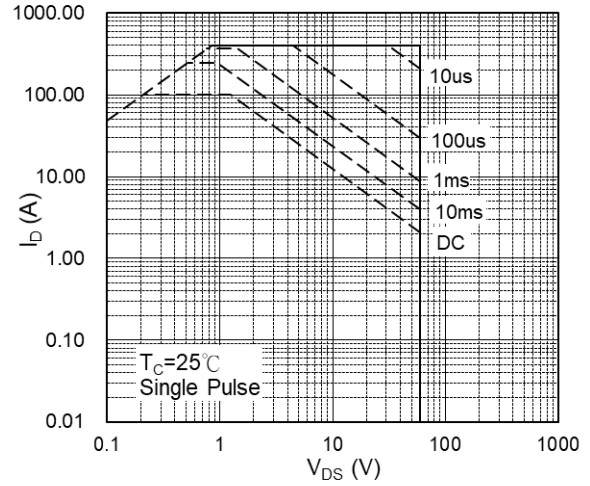


Fig.8 Safe Operating Area

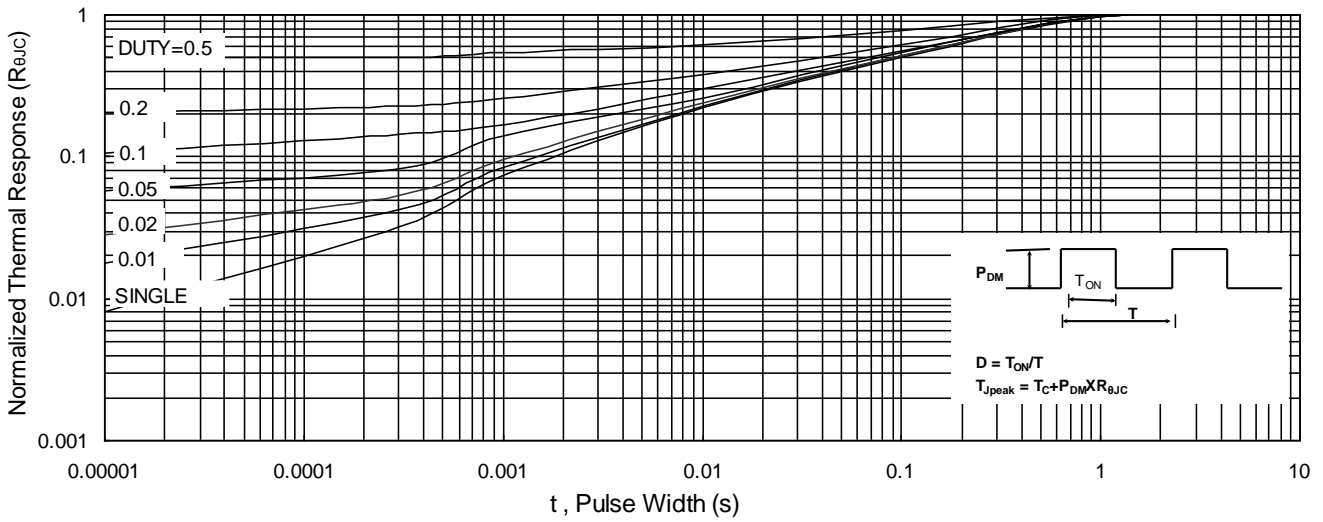


Fig.9 Normalized Maximum Transient Thermal Impedance

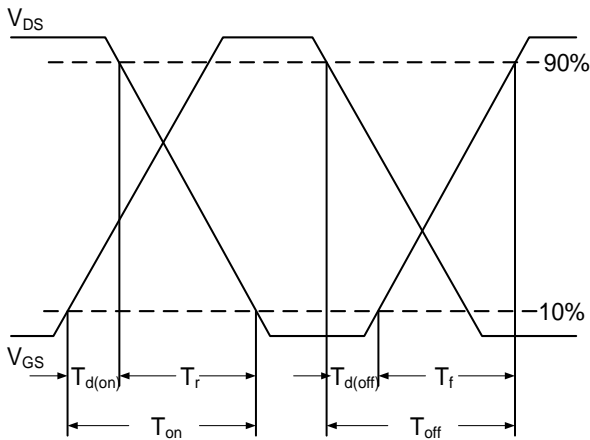


Fig.10 Switching Time Waveform

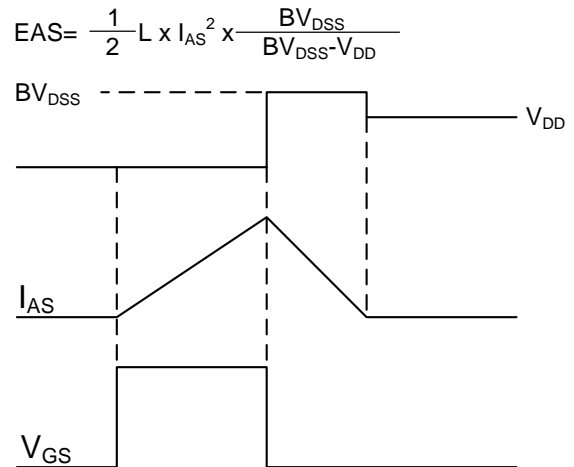
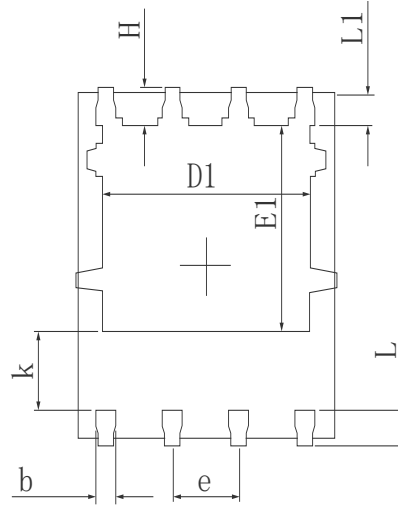
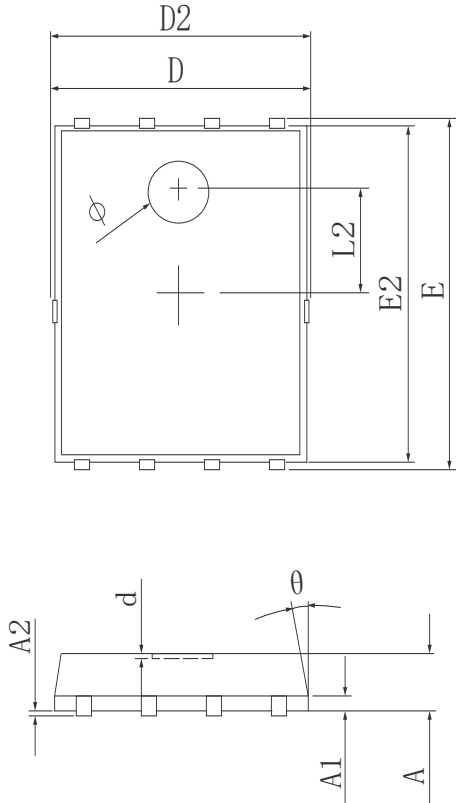
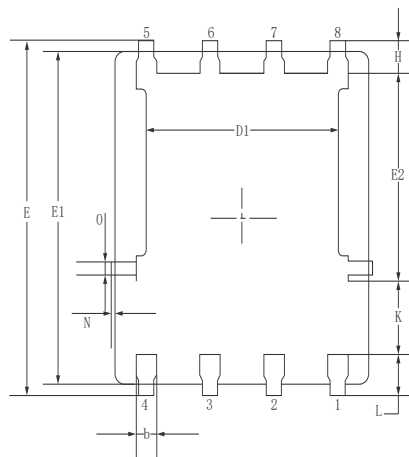
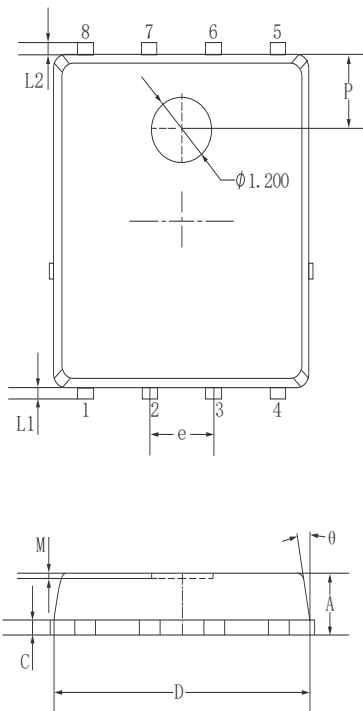


Fig.11 Unclamped Inductive Switching Waveform

•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

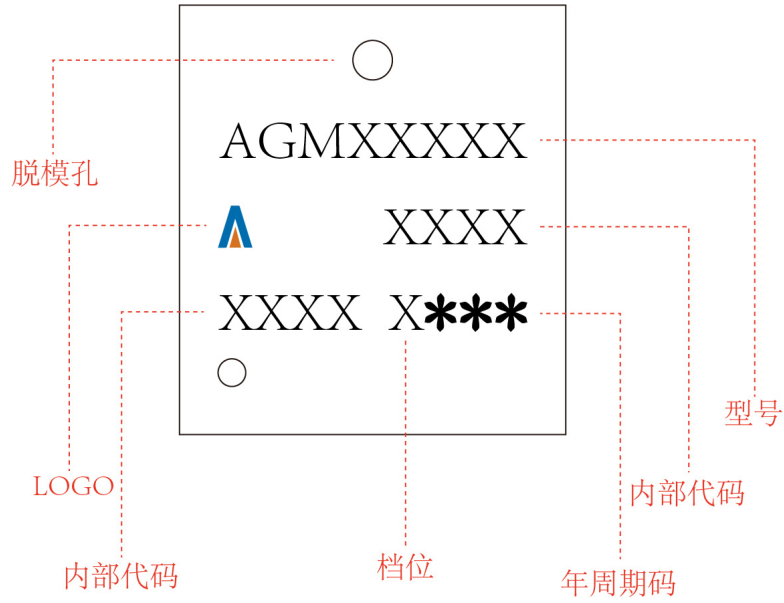


Symbol	Millimeters		
	MIN.	NOM.	MAX.
A	0.90	1.05	1.20
b	0.35	0.40	0.50
C	0.20	0.25	0.35
D	4.90	5.05	5.20
D1	3.72	3.82	3.92
E	6.00	6.15	6.30
E1	5.60	5.75	5.90
E2	3.47	3.57	3.67
e	1.27 BSC.		
H	0.48	0.58	0.68
K	1.17	1.27	1.37
L	0.64	0.74	0.84
L1/L2	0.20 REF.		
θ	8°	10°	12°
M	0.08 REF.		
N	0	-	0.15
O	0.25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

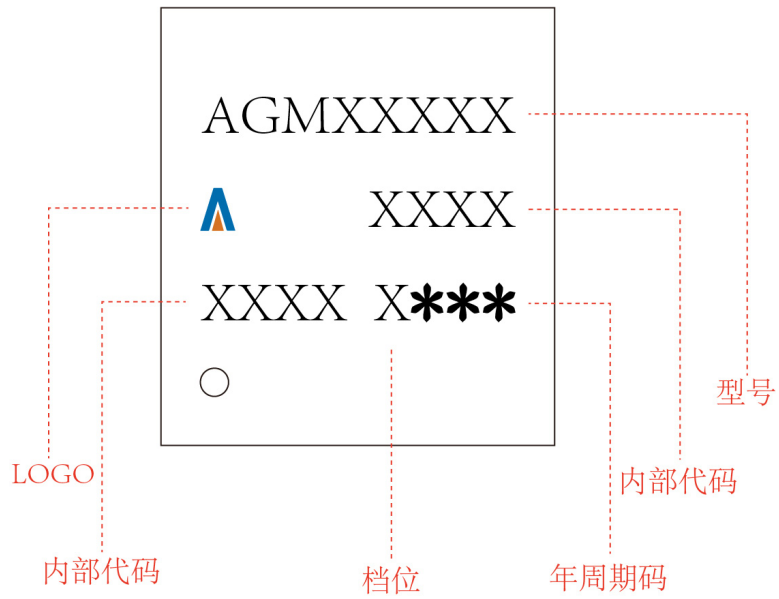
PDFN5*6

Marking Instructions:

Model1:



Model2:




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