

● General Description

The AGM3012AP-CP 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

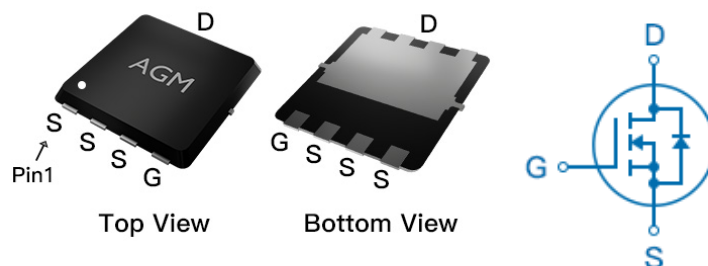
● Application

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

Product Summary

BVDSS	RDSON	ID
30V	1.1mΩ	139A

PDFN3.3*3.3 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM3012AP	AGM3012AP-CP	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)	30	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25°C) (Note 1)	139	A
	Drain Current-Continuous(Tc=100°C)	93	A
IDM (pluse)	Drain Current-Continuous@ Current-Pulsed (Note 2)	556	A
PD	Maximum Power Dissipation(Tc=25°C)	42	w
	Maximum Power Dissipation(Tc=100°C)	17	w
EAS	Avalanche energy (Note 3)	336	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	---	50	°C/W
RθJC	Thermal Resistance Junction-Case ¹	---	3.0	°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	30	35	--	V
IDSS	Zero Gate Voltage Drain Current	V _{DS} =30V, V _{GS} =0V	--	--	1	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	--	40	--	S
R _{DS(on)}	Drain-Source On-State Resistance	V _{GS} =10V, ID=20A	--	1.1	1.4	mΩ
		V _{GS} =4.5V, ID=15A	--	1.9	2.6	mΩ
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =15V, F=1MHz	--	2990	--	pF
C _{oss}	Output Capacitance		--	2025	--	pF
C _{rss}	Reverse Transfer Capacitance		--	217	--	pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1.0MHz	--	1.8	--	Ω
Switching Times						
t _{d(on)}	Turn-on Delay Time	V _{GS} =10V, V _{DS} =15V, ID=20A, R _{GEN} =3Ω	--	6.5	--	nS
t _r	Turn-on Rise Time		--	30	--	nS
t _{d(off)}	Turn-Off Delay Time		--	34	--	nS
t _f	Turn-Off Fall Time		--	22	--	nS
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =15V, ID=20A	--	51	--	nC
Q _{gs}	Gate-Source Charge		--	10.5	--	nC
Q _{gd}	Gate-Drain Charge		--	11	--	nC
Source-Drain Diode Characteristics						
I _{SD}	Source-Drain Current(Body Diode)		--	--	139	A
V _{SD}	Forward on Voltage	V _{GS} =0V, I _S =20A	--	--	1.2	V
t _{rr}	Reverse Recovery Time	I _F =20A , dI/dt=100A/μs , T _J =25°C	--	49	--	ns
Q _{rr}	Reverse Recovery Charge		--	58	--	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

Typical Electrical and Thermal Characteristics

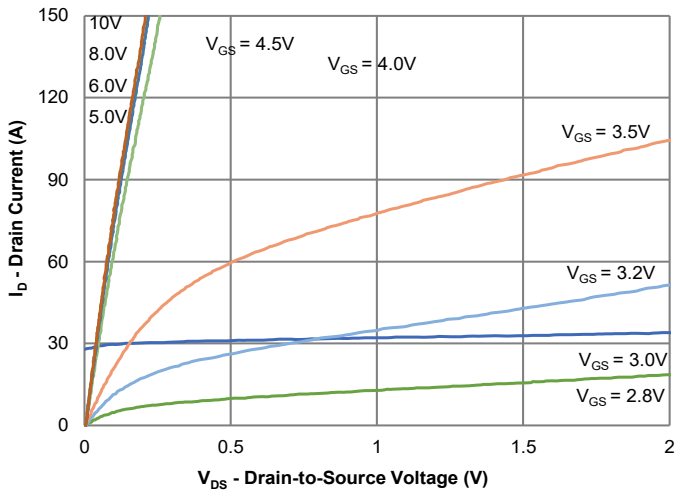


Figure 1: Output Characteristics

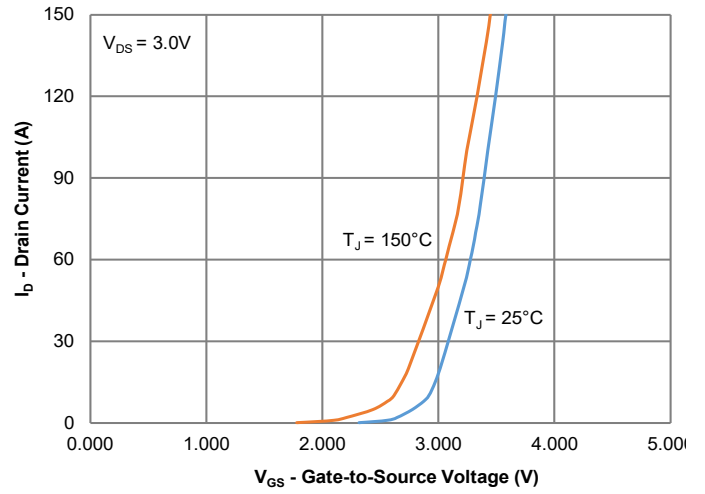


Figure 2: Transfer Characteristics

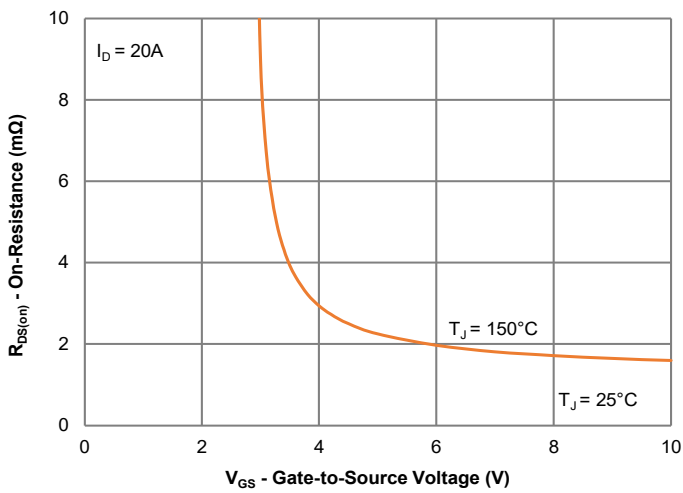


Figure 3: On-Resistance vs. Gate-Source Voltage

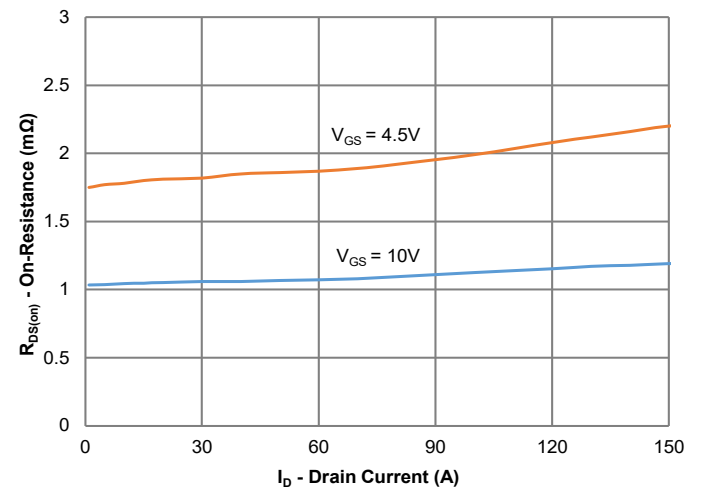


Figure 4: On-Resistance vs. Gate-Source Voltage

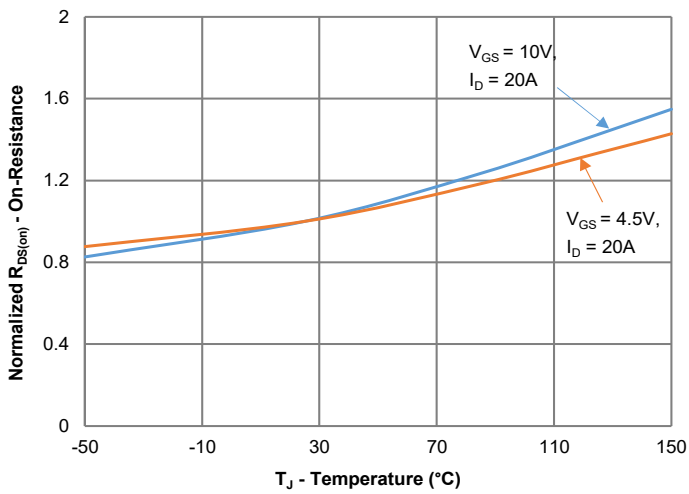


Figure 5: On-Resistance vs. Junction Temperature

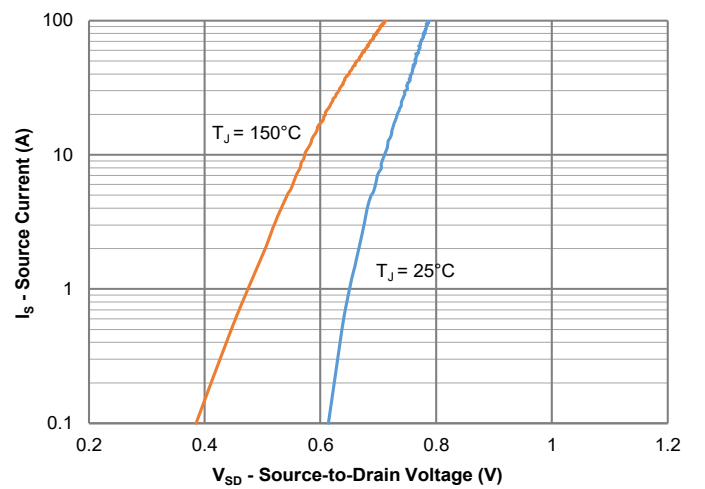
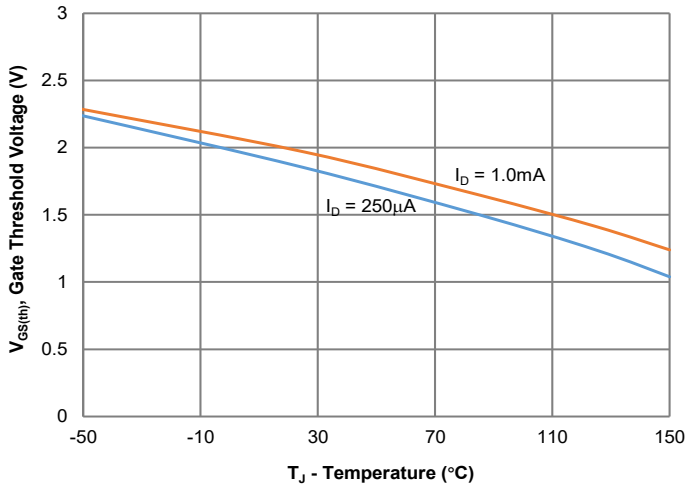
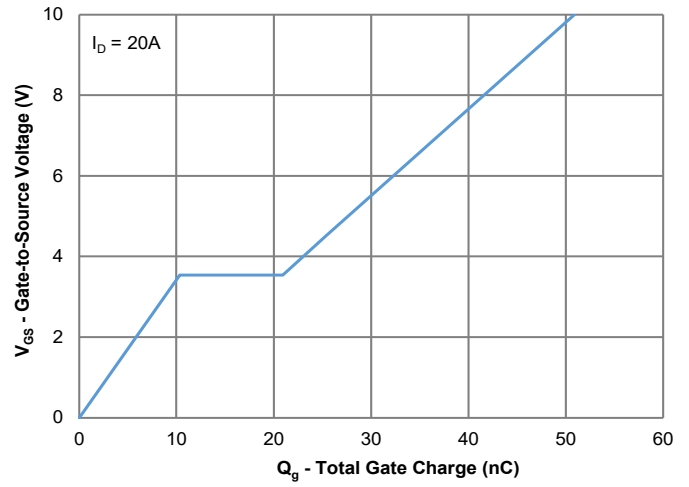
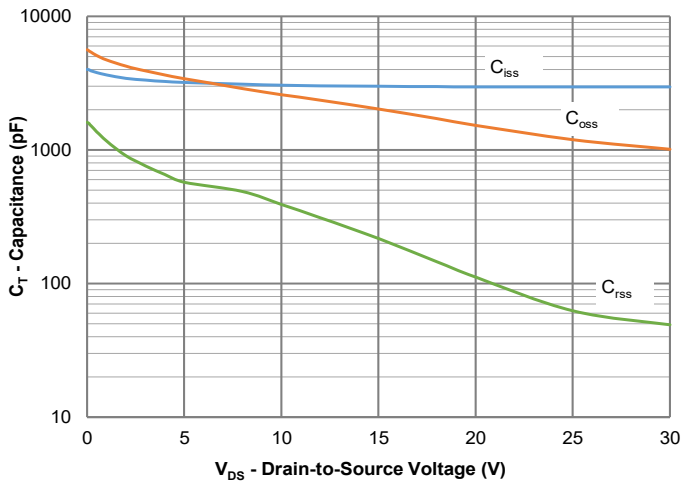
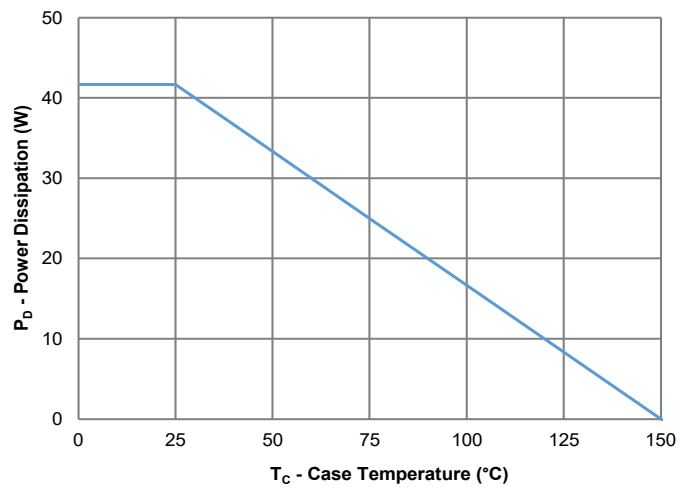
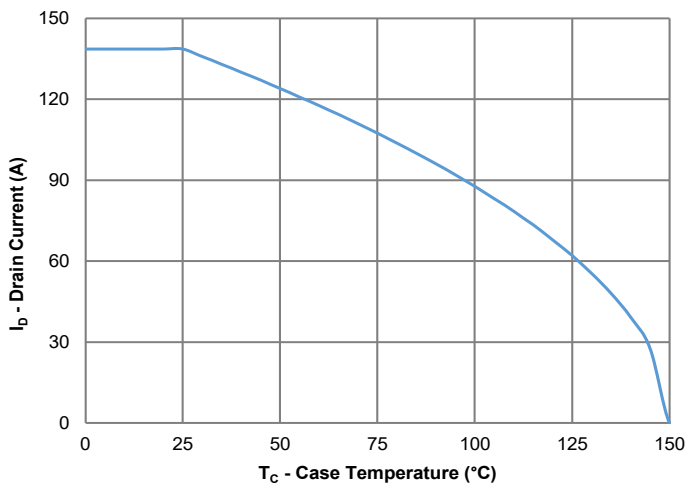
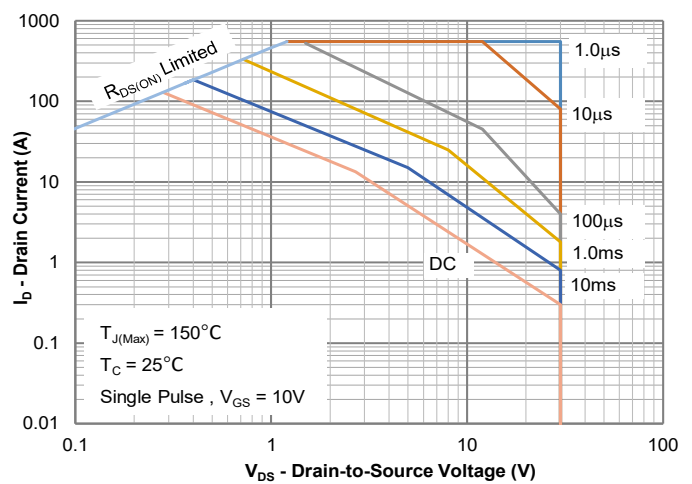


Figure 6: Source-Drain Diode Forward Voltage

Typical Electrical and Thermal Characteristics

Figure 7: Gate Threshold Variation vs. Junction Temperature

Figure 8: Gate Charge Characteristics

Figure 9: Capacitance Characteristics

Figure 10: Power Derating

Figure 11: Current Derating

Figure 12: Safe Operating Area

Typical Electrical and Thermal Characteristics

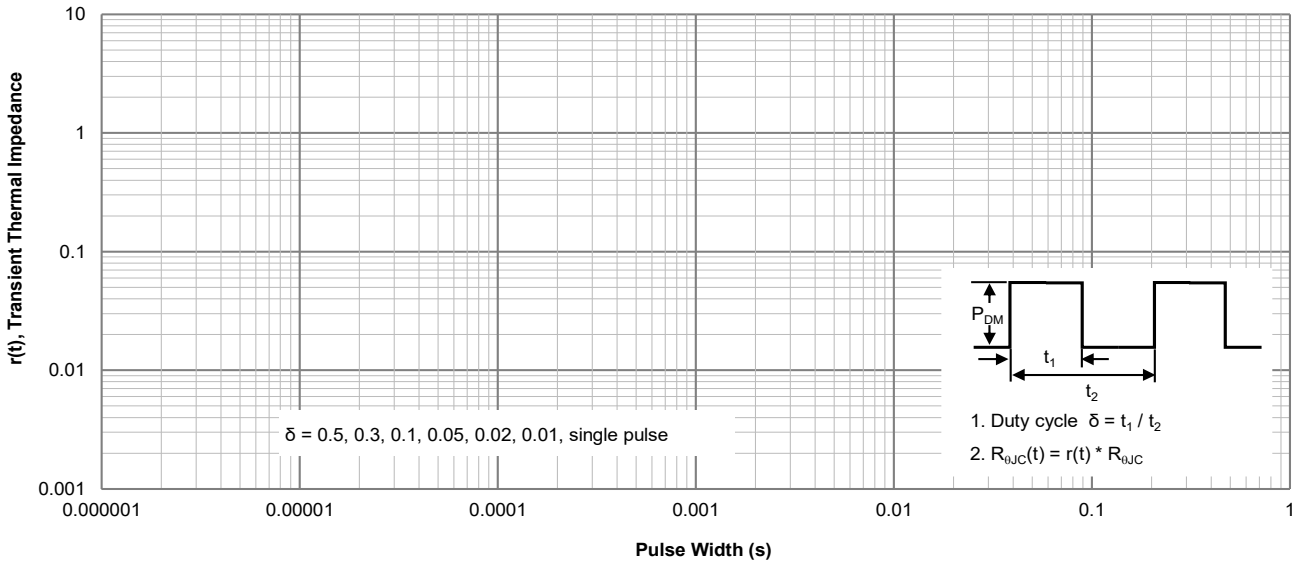
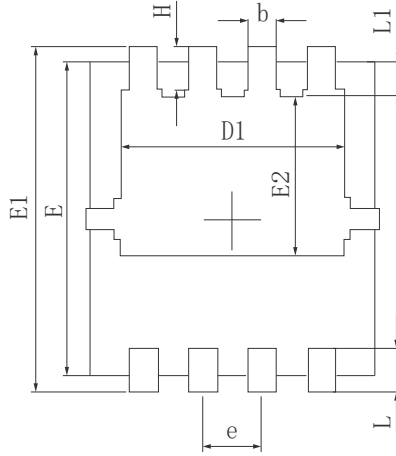
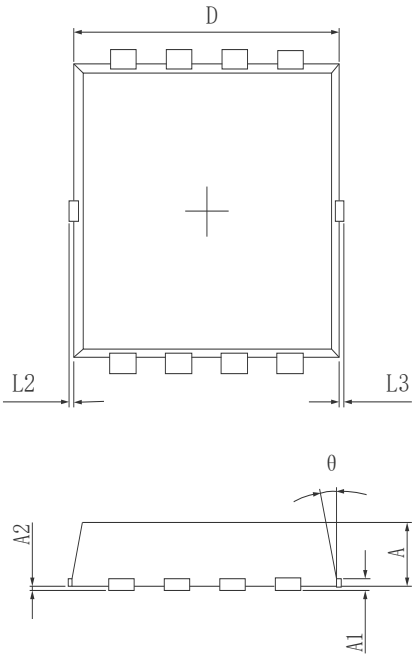
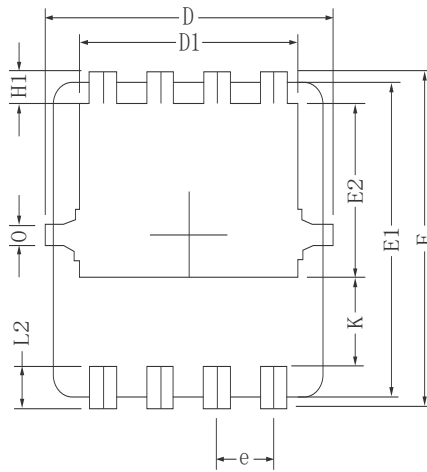
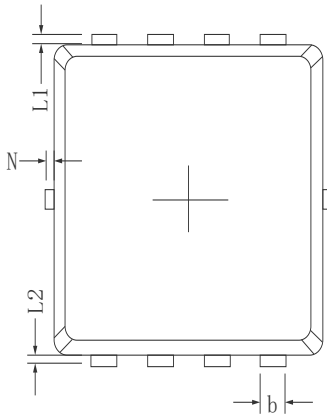


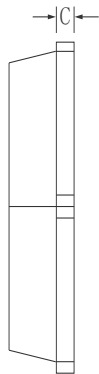
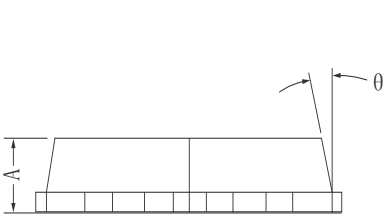
Figure 13: Normalized Maximum Transient Thermal Impedance

●Dimensions (PDFN3.3*3.3)


SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	0.700	0.800	0.900
A1	0.152REF.		
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°

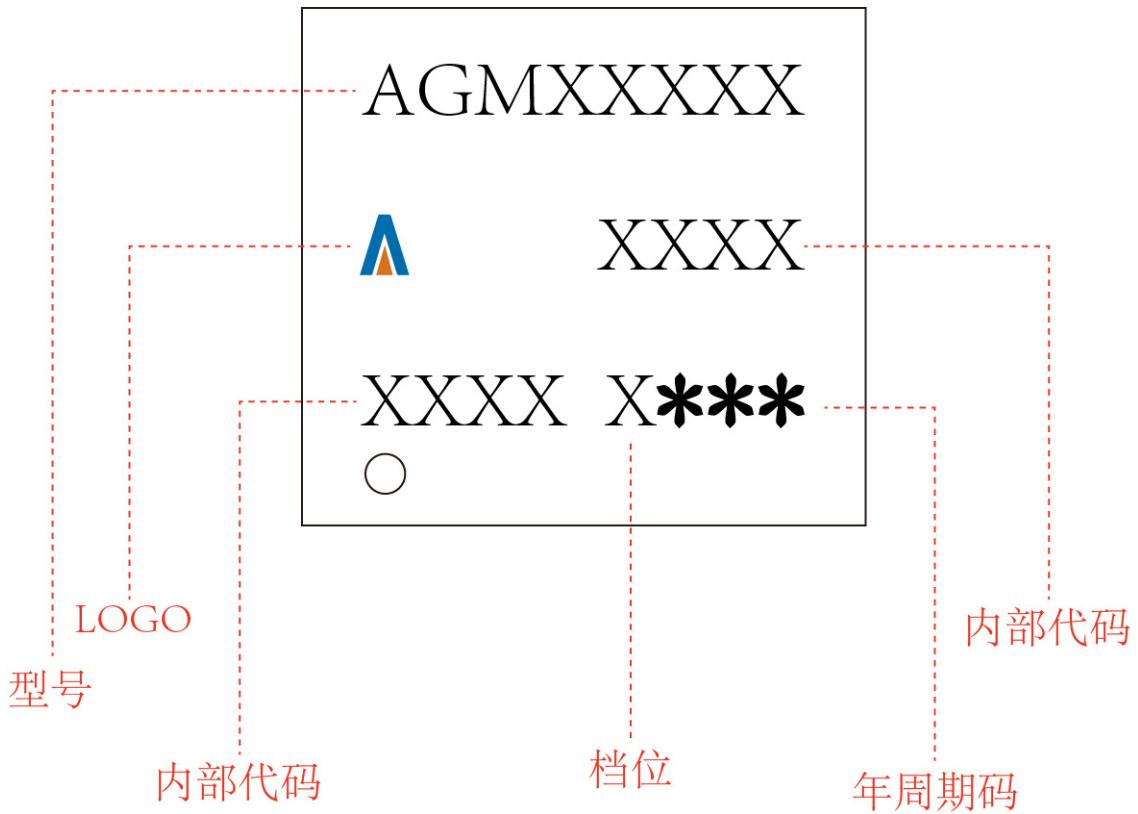


Symbols	Millimeters		
	MIN.	NOM.	MAX.
A	0.65	0.75	0.85
b	0.25	0.30	0.35
C	0.15	0.20	0.25
D	3.00	3.10	3.20
D1	2.40	2.50	2.60
E	3.20	3.30	3.40
E1	3.00	3.10	3.20
E2	1.60	1.70	1.80
e	0.65 BSC.		
H1	0.21	0.31	0.41
H2	0.30	0.40	0.50
K	0.78	0.88	0.98
L1/L2	0.10 REF.		
θ	11°	12°	13°
N	0	-	0.15
0	0.2 REF.		



PDFN3.3*3.3

Marking Instructions:




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