

General Description

The AGM307MNQ 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

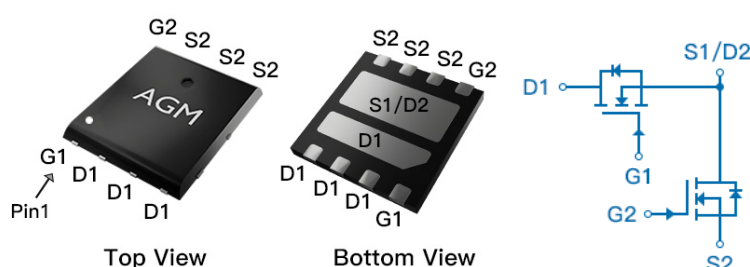
Application

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

Product Summary

BVDSS	RDSON	ID
30V	7.5mΩ	42A

WQFN5*6 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGM307MNQ	AGM307MNQ	WQFN5*6	330mm	12mm	3000

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)	42	A
	Drain Current-Continuous(Tc=100°C)	26	A
IDM (pluse)	Drain Current-Pulsed (Note 2)	168	A
PD	Maximum Power Dissipation(Tc=25°C)	21	w
	Maximum Power Dissipation(Tc=100°C)	8.5	w
EAS	Avalanche energy (Note 3)	64	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	---	6.0	°C/W

Table 3. Electrical Characteristics (Tj=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
On/Off States						
BVDSS	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=20A	--	7.5	11	mΩ
		VGS=4.5V, ID=10A	--	11	16	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=15V,VGS=0V, F=1MHZ	--	895	--	pF
Coss	Output Capacitance		--	140	--	pF
Crss	Reverse Transfer Capacitance		--	100	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	4.3	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=10V,VDS=30V, ID=20A,RGEN=3Ω	--	6.0	--	nS
tr	Turn-on Rise Time		--	5.0	--	nS
td(off)	Turn-Off Delay Time		--	25	--	nS
tf	Turn-Off Fall Time		--	7.0	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=15V, ID=20A	--	19	--	nC
Qgs	Gate-Source Charge		--	4.3	--	nC
Qgd	Gate-Drain Charge		--	6.5	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	42	A
VSD	Forward on Voltage	VGS=0V,Is=20A	--	--	1.2	V
trr	Reverse Recovery Time	IF=20A , dI/dt=100A/μs , TJ=25℃	--	7.0	--	ns
Qrr	Reverse Recovery Charge		--	6.3	--	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°C,VDD=20V,Vgs=10V,ID=16A,L=0.5mH,RG=25ohm

Typical Characteristics

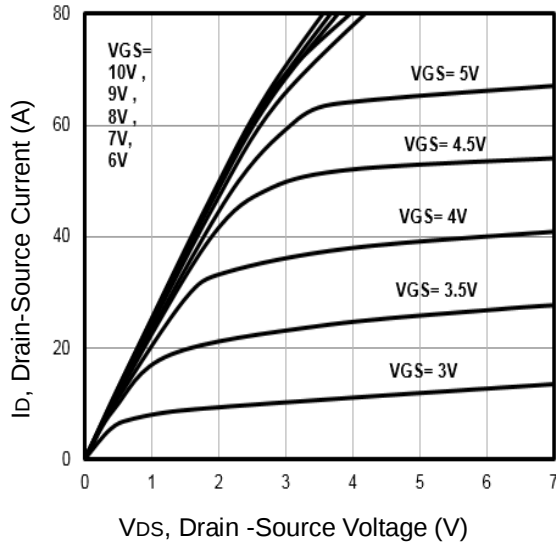


Fig1. Typical Output Characteristics

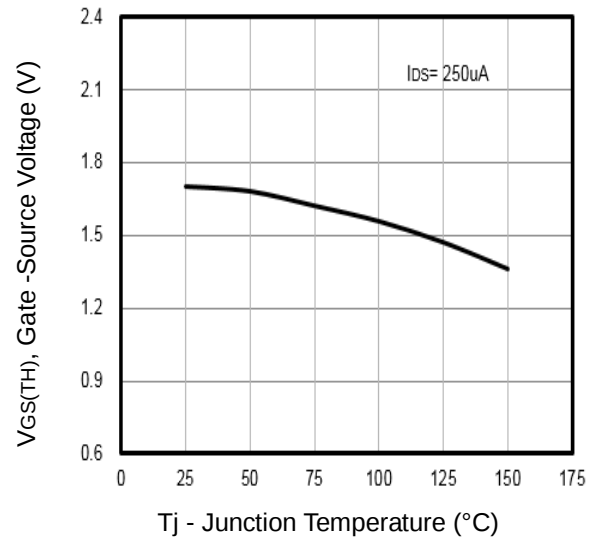


Fig2. Threshold Voltage Vs. Temperature

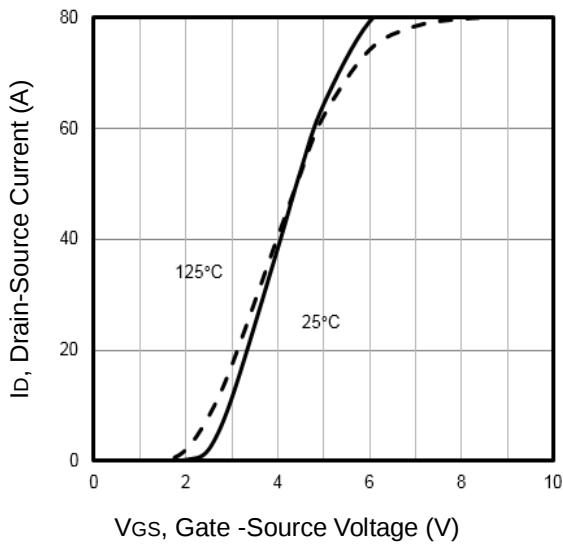


Fig3. Typical Transfer Characteristics

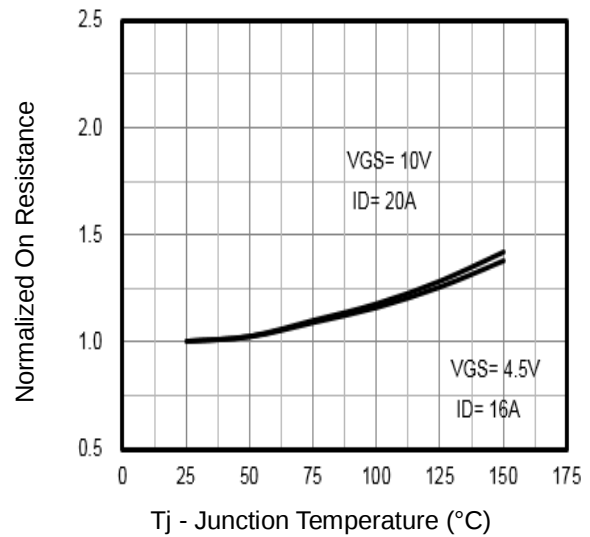


Fig4. Normalized On-Resistance Vs. Temperature

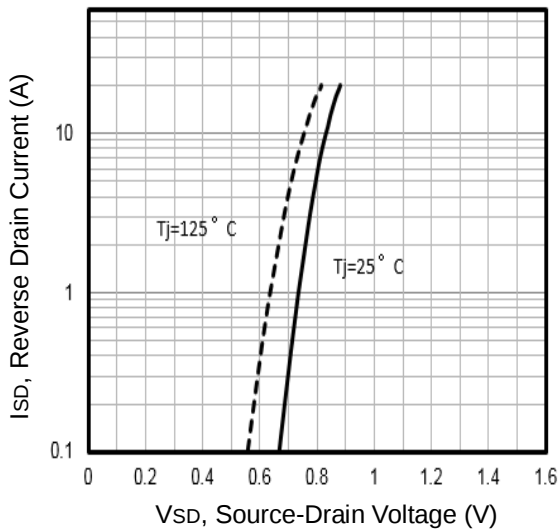


Fig5. Typical Source-Drain Diode Forward Voltage

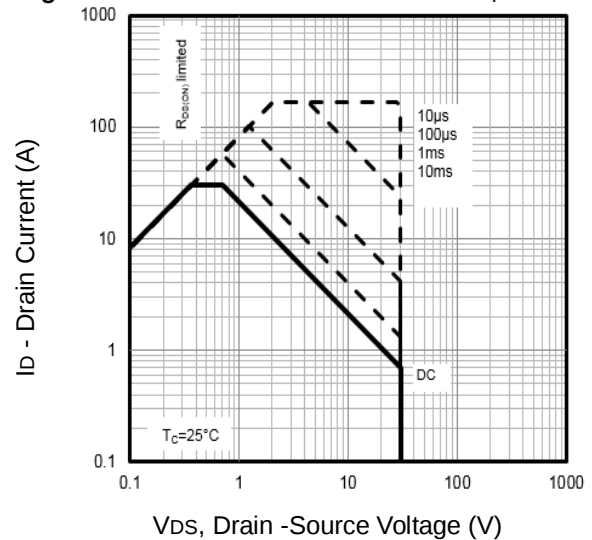


Fig6. Maximum Safe Operating Area

Typical Characteristics

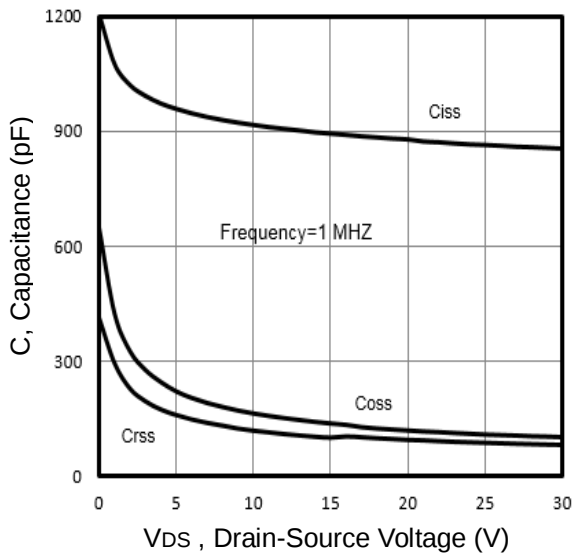


Fig7. Typical Capacitance Vs. Drain-Source Voltage

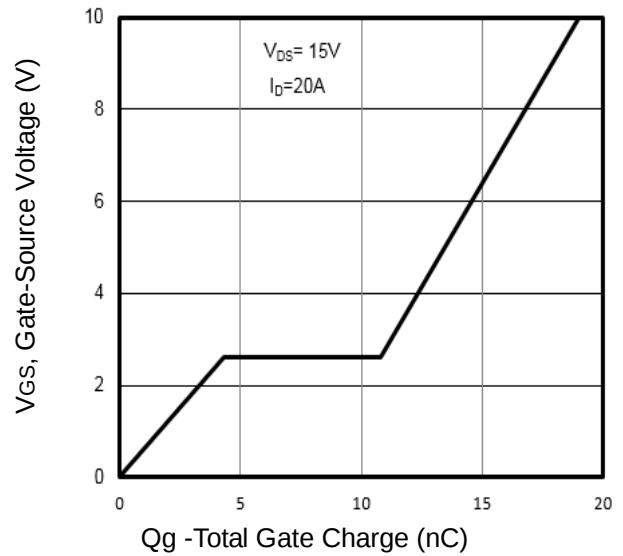


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

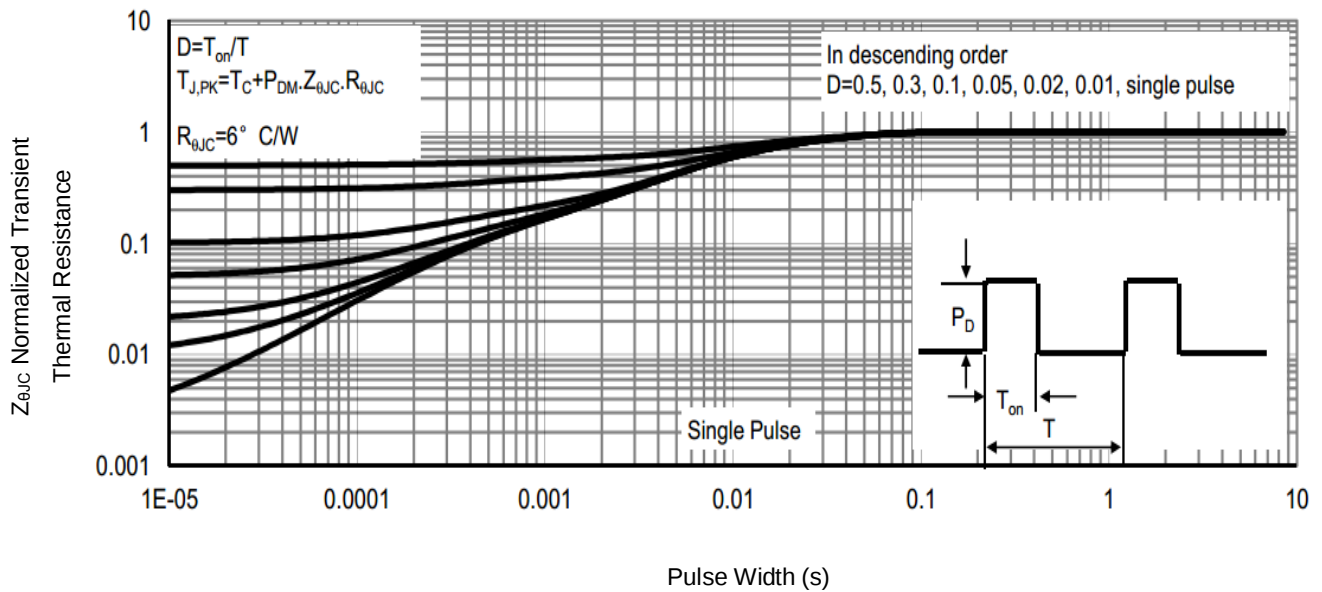


Fig9. Normalized Maximum Transient Thermal Impedance

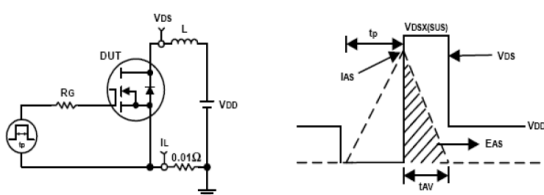


Fig10. Unclamped Inductive Test Circuit and waveforms

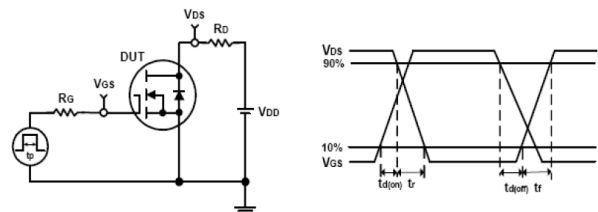
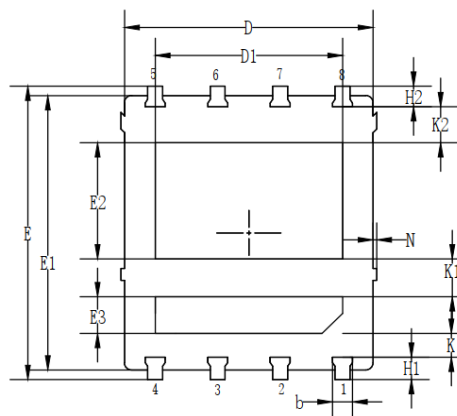
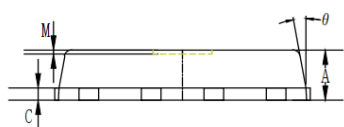
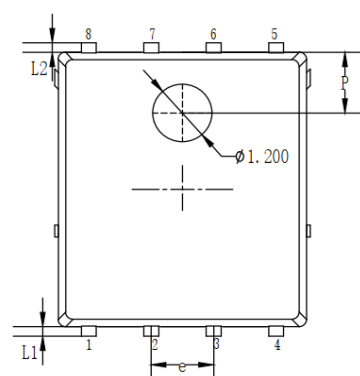
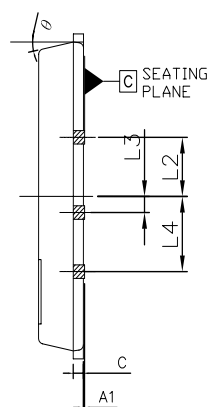
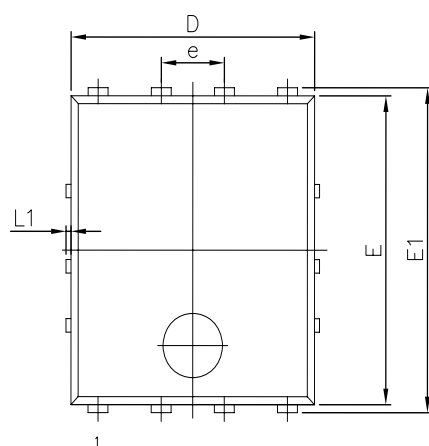


Fig11. Switching Time Test Circuit and waveforms

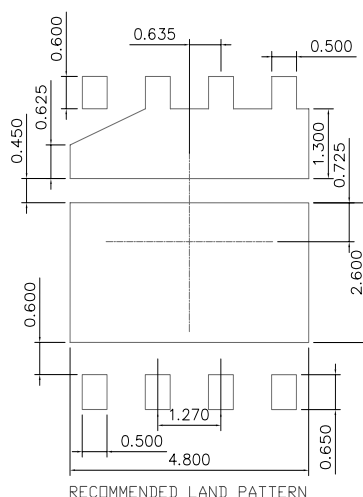
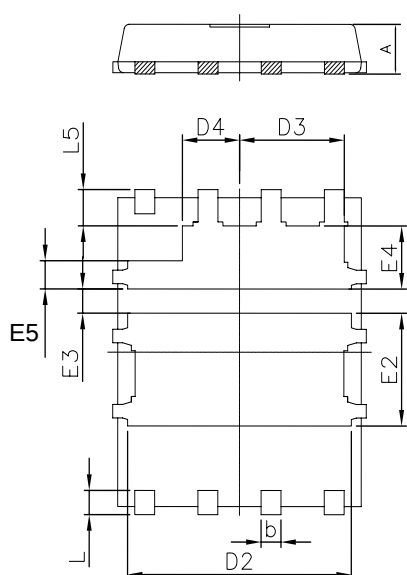
WQFN5*6 Package Outline Data



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	3.71	3.81	3.91
E	6.00	6.15	6.30
E1	5.65	5.75	5.85
E2	2.34	2.44	2.54
E3	0.67	0.77	0.87
e	1.27 BSC.		
H1	0.37	0.47	0.57
H2	0.33	0.43	0.53
K	0.40	0.50	0.60
K1	0.69	0.79	0.89
K2	0.65	0.75	0.85
L1/L2	0.20 REF.		
theta	8°	10°	12°
M	0.08 REF.		
N	0	-	0.15
P	1.28 REF.		



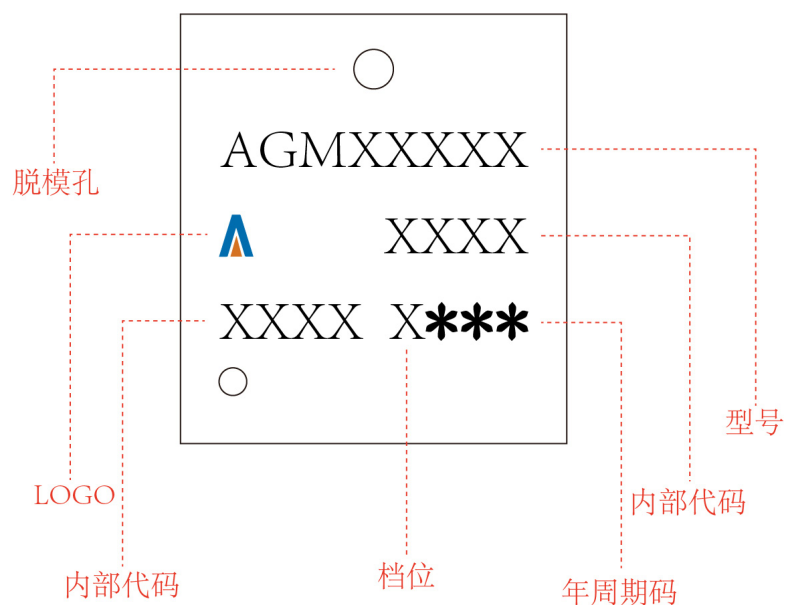
DIM	MILLIMETERS		
	MIN	NOM	MAX
A	0.85	0.90	1.00
A1	0.00	/	0.05
b	0.35	0.40	0.48
c	0.15	0.20	0.28
D	4.80	4.90	5.00
D2	4.30	4.50	4.70
D3	1.955	2.105	2.255
D4	1.000	1.150	1.300
E	5.65	5.75	5.85
E1	5.90	6.05	6.20
E2	1.95	2.10	2.25
E3	0.30	0.45	0.60
E4	1.025	1.175	1.325
E5	0.375	0.525	0.675
e	/	1.27	/
L	0.35	0.45	0.55
L1	0	/	0.15
L2	1.00	1.10	1.20
L3	0.20	0.30	0.40
L4	1.30	1.40	1.50
L5	0.575	0.675	0.775
theta	0°	12°	14°



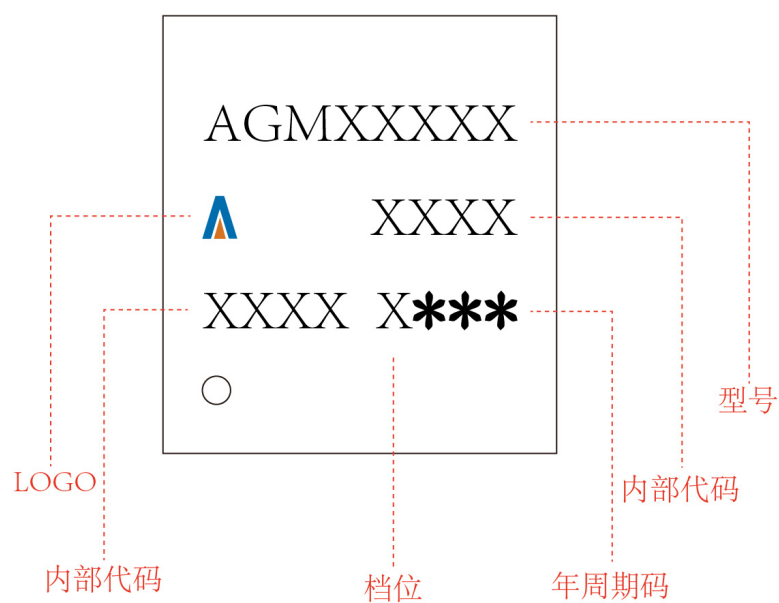
WQFN5*6

Marking Instructions:

Model1:



Model2:



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