General Description

The AGMH12H05H 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

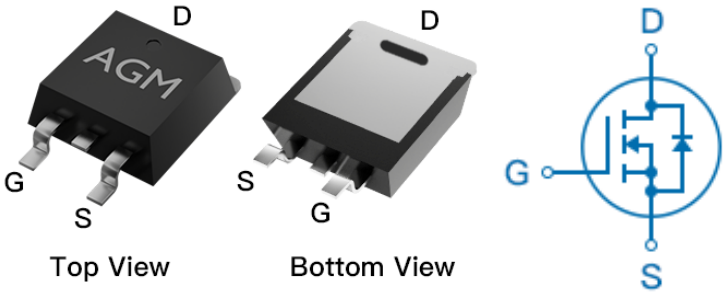
Application

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

Product Summary

BVDSS	RDSON	ID
120V	4.5mΩ	125A

TO-263 Pin Configuration



Package Marking and Ordering Information

Device Marking	Device	Device Package	Reel Size	Tape width	Quantity
AGMH12H05H	AGMH12H05H	TO-263	330mm	25mm	800

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

Symbol	Parameter	Value	Unit
VDS	Drain-Source Voltage (VGS=0V)	120	V
VGS	Gate-Source Voltage (VDS=0V)	±20	V
ID	Drain Current-Continuous(Tc=25℃) **(Note 1)**	125	A
	Drain Current-Continuous(Tc=100℃)	88	A
IDM (pluse)	Drain Current-Pulsed **(Note 2)**	500	A
PD	Maximum Power Dissipation(Tc=25℃)	208	w
	Maximum Power Dissipation(Tc=100℃)	83	w
EAS	Avalanche energy **(Note 3)**	625	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]	---	62	℃/W
RθJC	Thermal Resistance Junction-Case[1]	---	0.6	℃/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	120	--	--	V
IDSS	Zero Gate Voltage Drain Current	VDS=120V,VGS=0V	--	--	1	μA
IGSS	Gate-Body Leakage Current	VGS=±20V,VDS=0V	--	--	±100	nA
VGS(th)	Gate Threshold Voltage	VDS=VGS,ID=250μA	2.0	3.0	4.0	V
gFS	Forward Transconductance	VDS=5V,ID=15A	--	38	--	S
RDS(on)	Drain-Source On-State Resistance	VGS=10V, ID=20A	--	4.5	5.9	mΩ
Dynamic Characteristics						
Ciss	Input Capacitance	VDS=40V,VGS=0V, F=1MHZ	--	4050	--	pF
Coss	Output Capacitance		--	1046	--	pF
Crss	Reverse Transfer Capacitance		--	42	--	pF
Rg	Gate resistance	VGS=0V, VDS=0V,f=1.0MHz	--	0.82	--	Ω
Switching Times						
td(on)	Turn-on Delay Time	VGS=10V,VDS=60V, ID=20A,RGEN=5Ω	--	20	--	nS
tr	Turn-on Rise Time		--	11	--	nS
td(off)	Turn-Off Delay Time		--	55	--	nS
tf	Turn-Off Fall Time		--	28	--	nS
Qg	Total Gate Charge	VGS=10V, VDS=60V, ID=20A	--	61	--	nC
Qgs	Gate-Source Charge		--	17	--	nC
Qgd	Gate-Drain Charge		--	14	--	nC
Source-Drain Diode Characteristics						
ISD	Source-Drain Current(Body Diode)		--	--	125	A
VSD	Forward on Voltage	VGS=0V,IS=20A	--	--	1.2	V
trr	Reverse Recovery Time	IF=20A , dI/dt=100A/μs , TJ=25℃	--	100	--	ns
Qrr	Reverse Recovery Charge		--	250	--	nc

Notes 1.The maximum current rating is package limited.

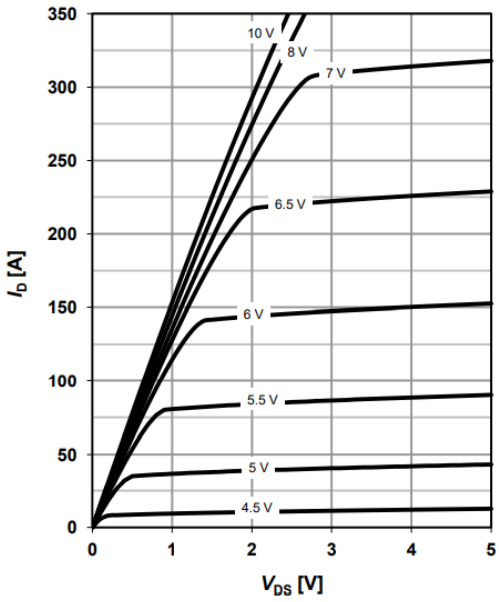
Notes 2.Repetitive Rating: Pulse width limited by maximum junction temperature

Notes 3.EAS condition: TJ=25℃ , VDD=50V,Vgs=10V，ID=50A,L=0.5mH,RG=25ohm

Characteristics Curve:

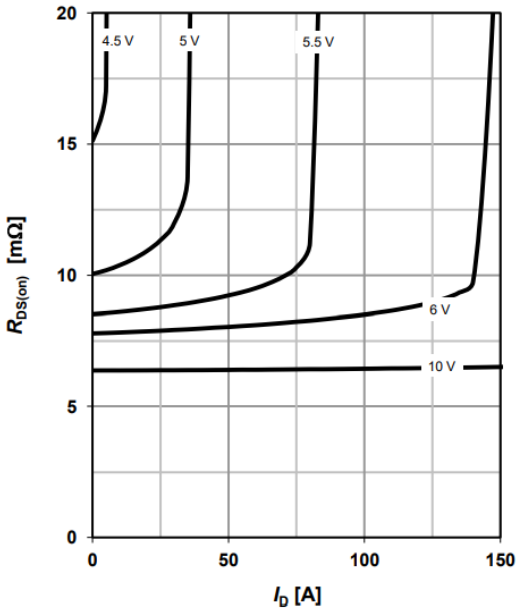
Typ. output characteristics

$I_D=f(V_{DS})$



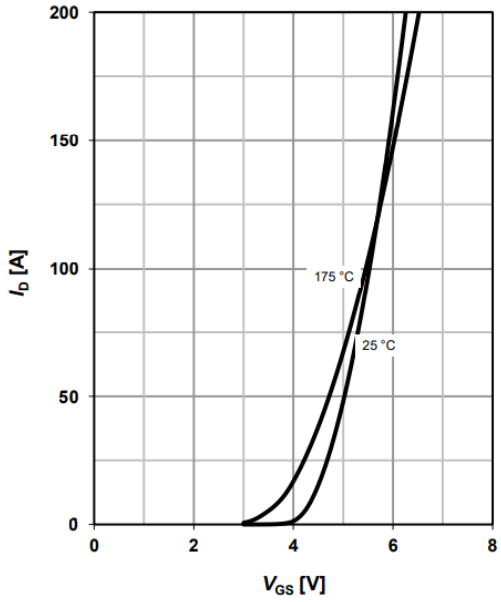
Typ. drain-source on resistance

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



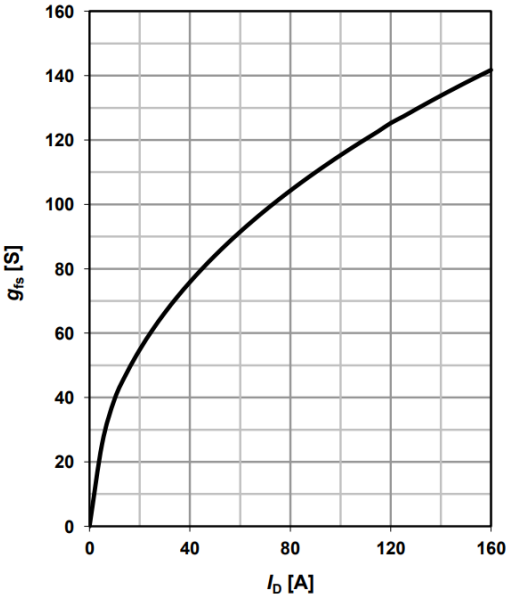
Typ. transfer characteristics

$I_D=f(V_{GS})$



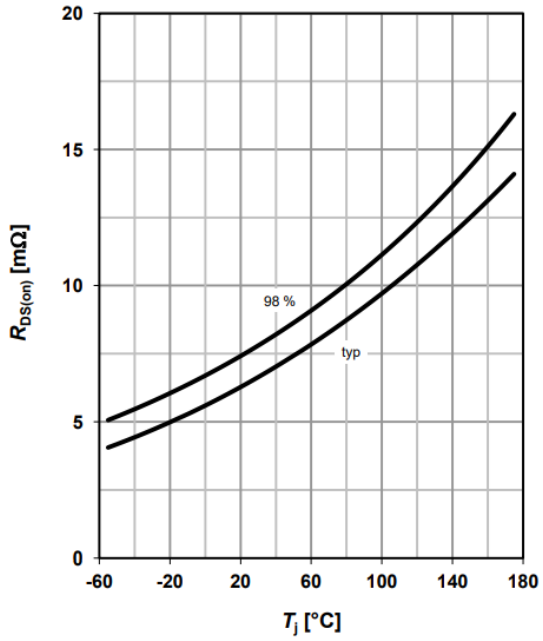
Typ. forward transconductance

$g_{fs}=f(I_D)$



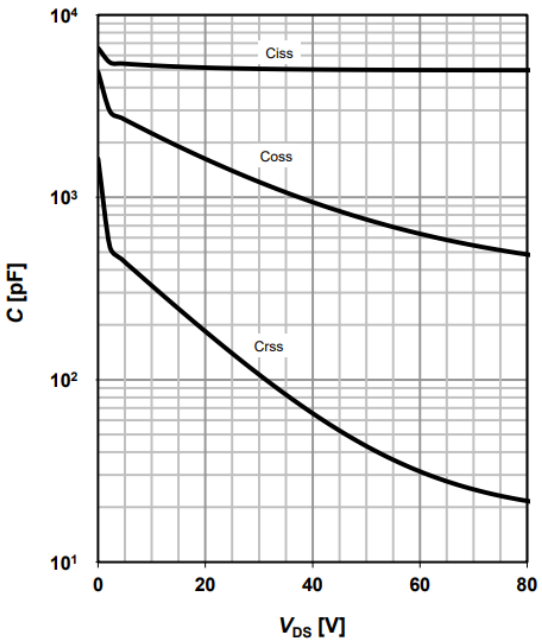
Drain-source on-state resistance

$R_{DS(on)}=f(T_j)$; I_D=50A; V_{GS}=10V



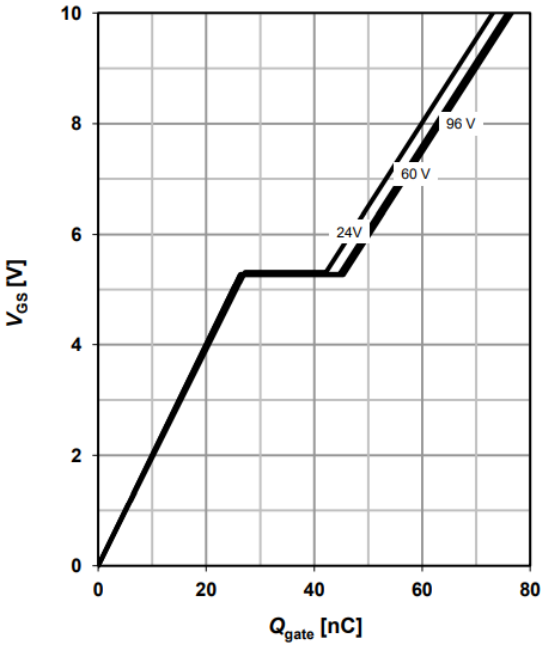
Typ. capacitances

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



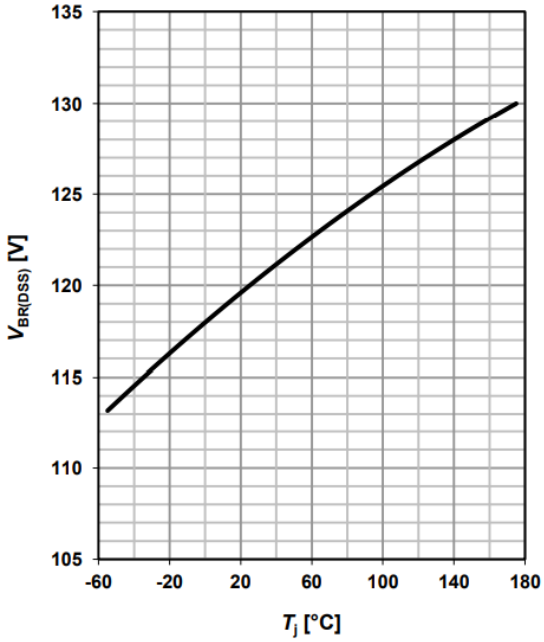
Typ. gate charge

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



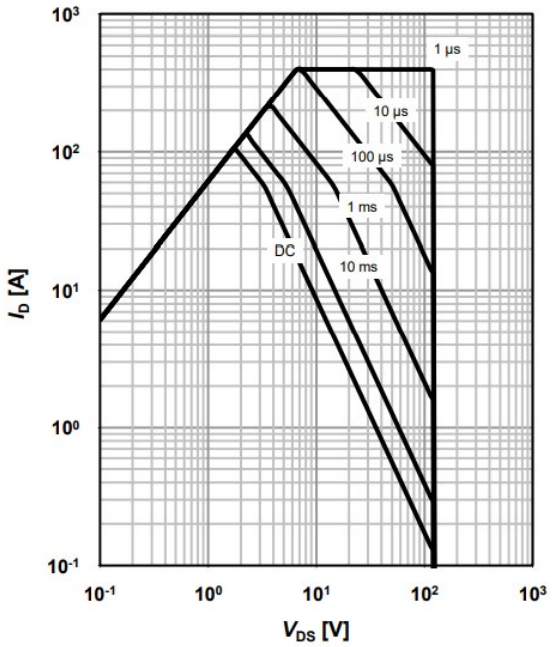
Drain-source breakdown voltage

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



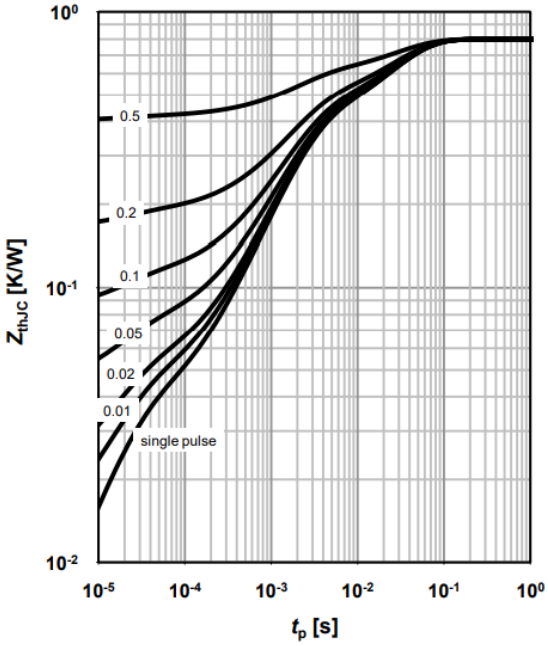
Safe operating area

$I_D=f(V_{DS})$

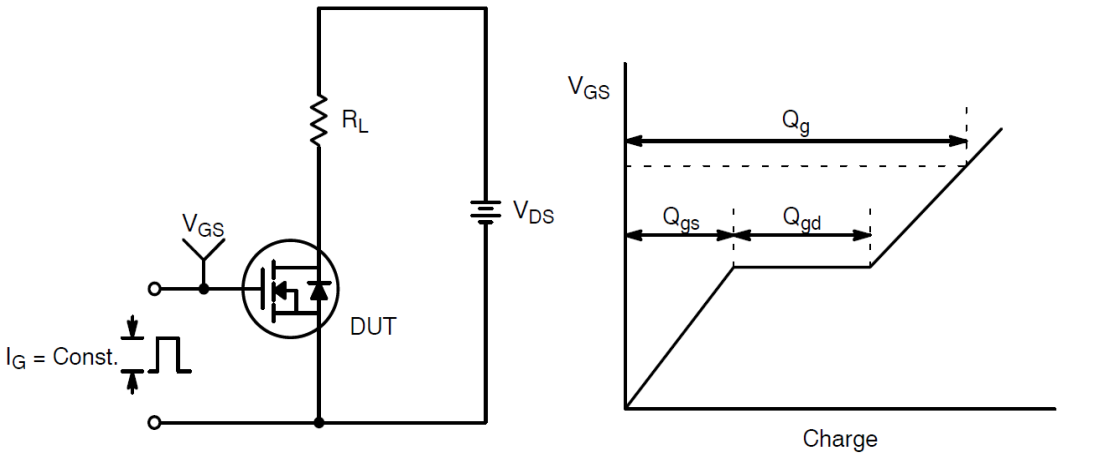


Max. transient thermal impedance

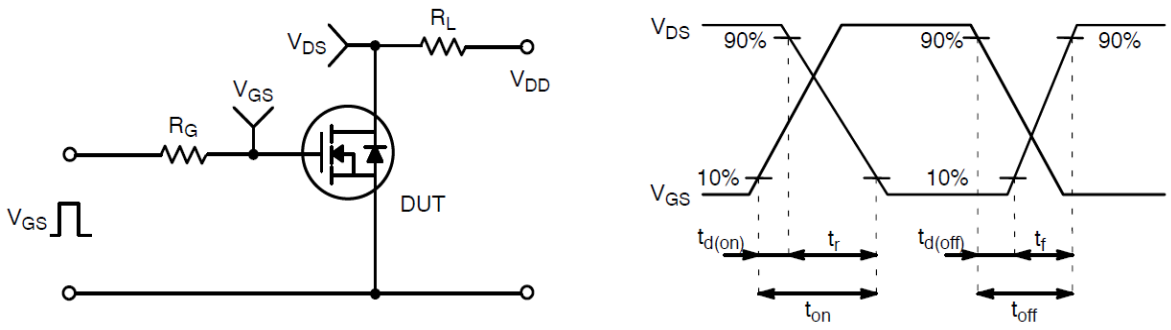
$Z_{thJC}=f(t_p)$



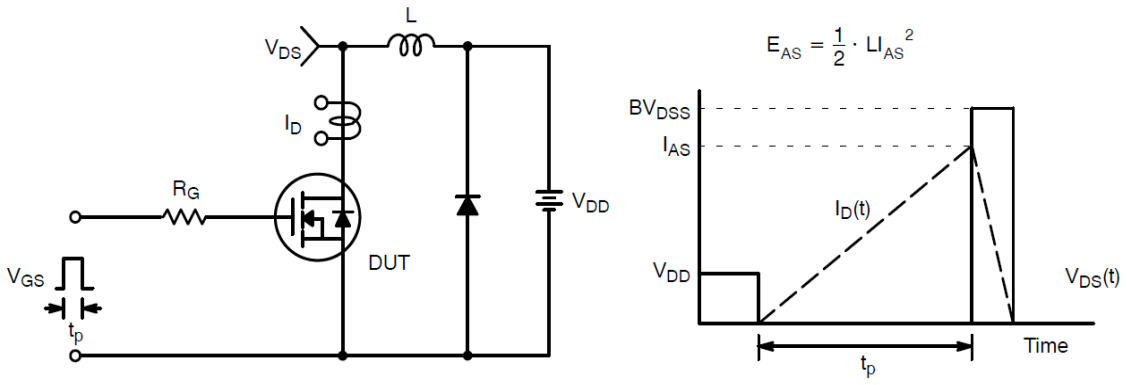
Test Circuit and Waveform



Gate Charge Test Circuit & Waveform

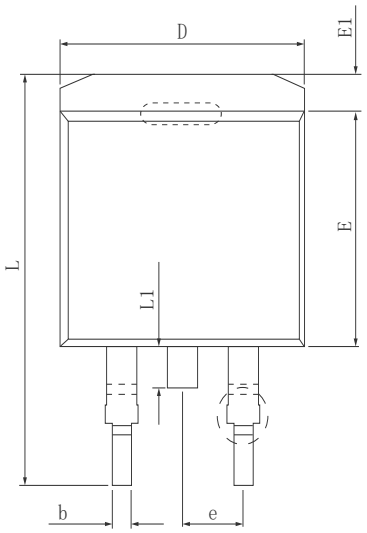


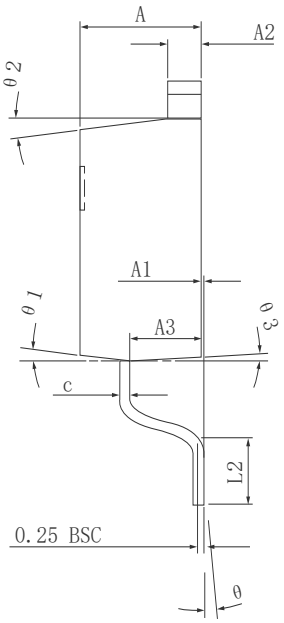
Resistive Switching Test Circuit & Waveforms



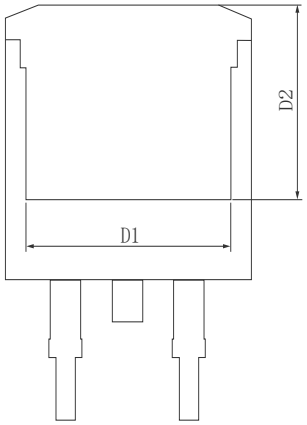
Unclamped Inductive Switching Test Circuit & Waveforms

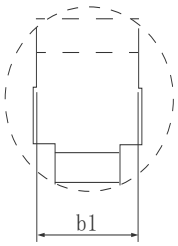
●Dimensions（TO-263）

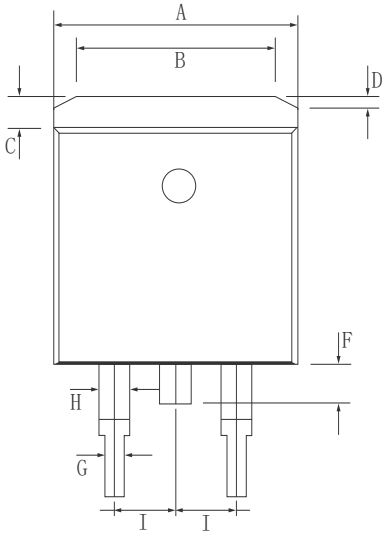


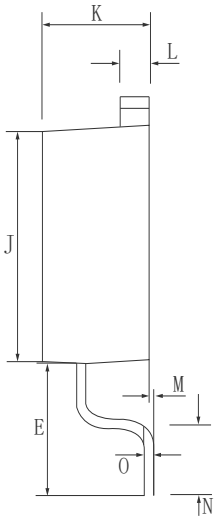


SYMBOL	MILLIMETER		
	MIN	Typ.	MAX
A	4.370	4.570	4.770
A1	0.000		0.250
A2	1.220	1.270	1.420
A3	2.490	2.690	2.890
b	0.700	0.810	0.960
b1	1.170	1.270	1.470
c	0.300	0.380	0.530
D	9.860	10.160	10.360
D1	8.400 REF		
D2	7.073 REF		
E	8.500	8.700	8.900
E1	1.070	1.270	1.470
e	2.540 TYP		
L	14.700	15.100	15.500
L1	1.400	1.550	1.700
L2	2.000	2.300	2.600
θ	0°		9°
θ1	7° TYP		
θ2	7° TYP		
θ3	3° TYP		



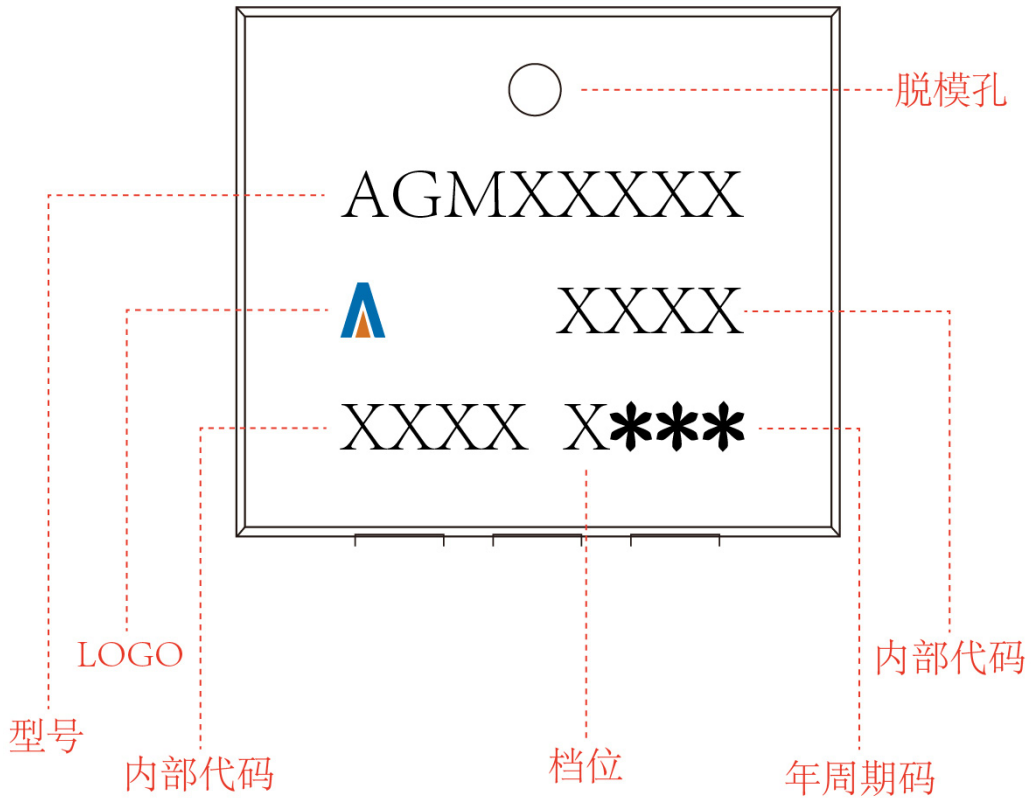






Dim.	Min.	Max.
A	9.8	10.2
B	6.1	6.7
C	1.1	1.4
D	0.5	1.0
E	4.6	5.0
F	1.4	1.6
G	0.7	0.9
H	1.17	1.37
I	Typ2.54	
J	9	9.2
K	4.3	4.7
L	1.25	1.35
M	0.02	0.23
N	2.2	2.8
O	0.45	0.55
All Dimensions in millimeter		

TO-263
Marking Instructions:



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