

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

AH477AZ4-MS

Product specification

产品概述

AH477AZ4-MS 系列是一款带有 H 桥输出驱动器的集成式霍尔传感器，专为单相直流无刷电机应用而设计。该产品采用 BCD 工艺，包括用于磁感应的片上霍尔传感器、用于放大霍尔电压的放大器、用于提供开关迟滞以抑制噪声的比较器、用于下沉和驱动大电流负载的双向驱动器。

该产品功耗低，静态工作电流 1.5mA，远低于市场同类产品，有助于提高风扇的效率和可靠性。

用途

- PC/服务器电源散热风扇
- 充电器/变频器/电磁炉散热风扇
- 鼓风机
- 水泵
- 直流无刷电机

推荐工作条件

工作温度范围

$T_{MIN} \leq T_A \leq T_{MAX}$ $-20^{\circ}\text{C} \leq T_A \leq 120^{\circ}\text{C}$

工作电压范围 $3.5\text{V} \leq V_{DD} \leq 24\text{V}$


产品特点

- 内置霍尔元件及输出单线圈驱动，降低风扇制造成本
- 低功耗，静态工作电流低至 1.5mA
- 电流驱动能力强，可达 350mA
- 内置电源反接保护电路，节省外挂防反接二极管
- 内置温度补偿电路，优异的温度稳定性
- 抗机械应力强，有效减少磁灵敏度漂移

封装（符合 RoHS）

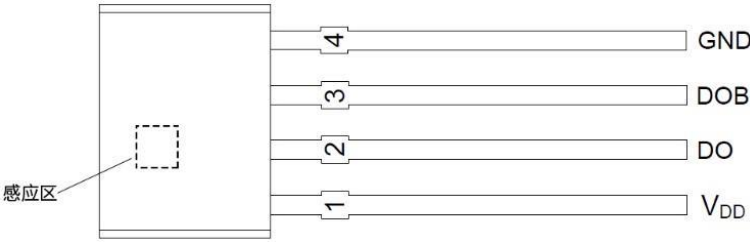
- SIP-4L

包装和订单信息

产品编号	封装		管体标记	最小包装 (PCS)
AH477AZ4-MS	SIP-4L		477h XXXX	1000

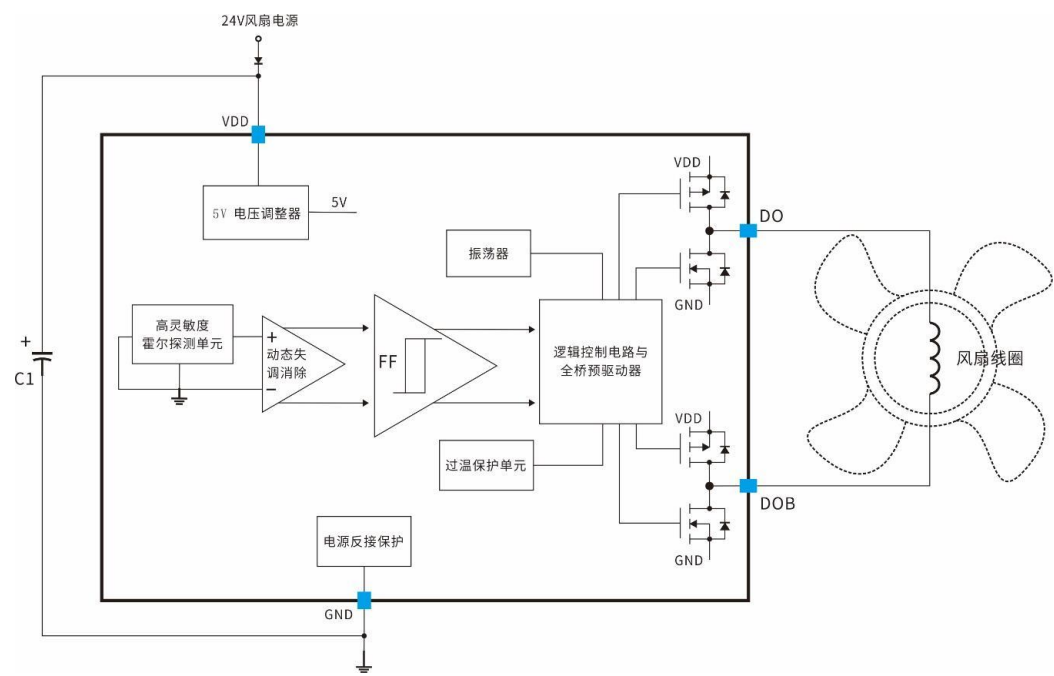
工作电流 最小值 (mA)	输出持续电流 (mA)	工作点 B_{op} 最大值 (GS)	释放点 B_{RP} 最小值 (GS)	磁滞窗口 B_{HYST} 最大值 (GS)	输出形式
1.5	350	35	-35	70	双向 H 桥

引脚定义



引脚号	引脚名	功能
1	VDD	电源电压
2	DO	H 桥输出 1 脚
3	DOB	H 桥输出2 脚
4	GND	接地端

功能框图

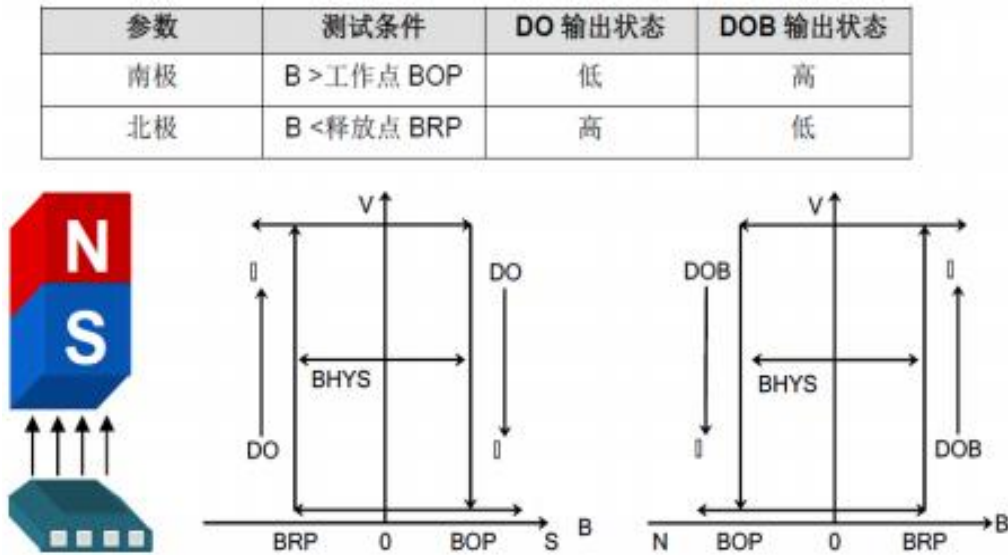


磁性参数的定义

符号	术语	定义
BOP	Operating Point	磁通密度作用于器件的品牌标签侧时驱动打开器件输出。 ($V_{out} = V_{Dson}$) ($V_{out} = V_{Dson}$)
BRP	Release Point	磁通密度作用于器件的品牌标签侧时驱动关闭器件输出。 ($V_{out} = HIGH$) ($V_{out} = HIGH$)
BHYST	Hysteresis Window	磁滞窗口 $B_{OP} - B_{RP}$

输出状态和磁场极性

当南极磁场接近 IC 标记面，直到磁场的磁通密度高于工作点（BOP），DO 引脚输出变为低，DOB 引脚输出变为高；当南极磁场远离 IC 标记面和北极磁场接近 IC 标记面，直到磁场的磁通密度小于释放点（BRP），DO 引脚输出变为高，DOB 引脚输出变低。



最大额定值

最大额定值是偶尔应用的极限值，超过该限值，电路可能造成不可逆损坏。长时间暴露在最大额定值条件下虽然功能不一定失效，但可能会影响设备的可靠性。

项目	符号	值	单位
工作电压	V_{DD}	30	V
反向VDD 极性电压	V_{RDD}	-30	V
磁通密度	B	Unlimited	Gauss
输出电流	$I_{O(CONT)}$	350	mA
	$I_{O(HOLD)}$	700	mA
	$I_{O(PEAK)}$	1000	mA
封装功耗	P_d	500mW	mA
结晶温度	T_j	270°C	Us
热阻	Die to atmosphere	θ_{JA}	°C/W
	Die to package case	θ_{JC}	°C/W
工作温度	T_A	-20 ~ +85	°C
贮存温度	T_s	-50 ~ +150	°C

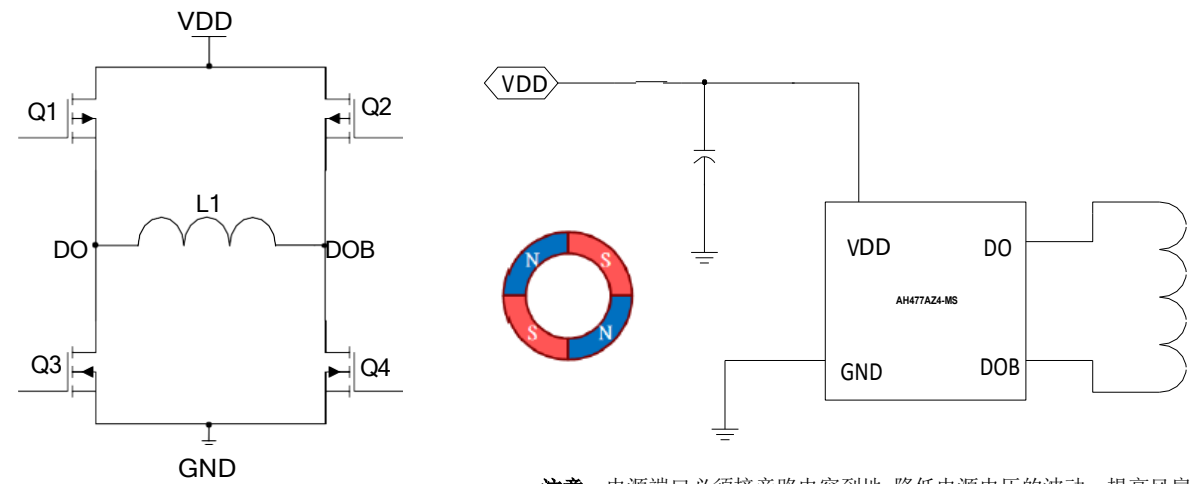
电气和磁特性

除非另有说明，以下参数基于 TA=25℃

符号	参数	测试条件	最小	典型	最大	单位	备注
V _{SAT}	输出饱和电压（Sink）	V _{DD} =14V，I _o =300mA	—	0.30	0.45	V	
	输出饱和电压（Drive）		V _{DD} - 1.3	V _{DD} - 1.0	V _{DD}	V	
I _{DD}	工作电流	V _{DD} =20V，输出打开	1.5	2.5	5	mA	
t _r	输出上升时间	V _{DD} =14V，R _L =820 C _L =20pF	—	15	20	uS	
t _f	输出下降时间			15	20	uS	
B _{OP}	磁性工作点		5		35	GS	
B _{RP}	磁性释放点		-35		-5	GS	
B _{HYST}	磁滞窗口		30		70	GS	

H 桥输出简介及典型应用图

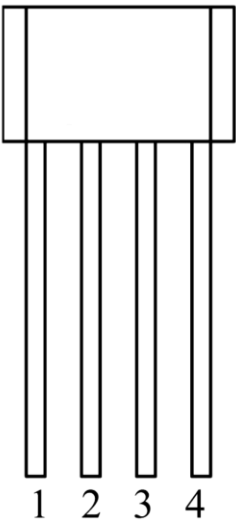
通过开关管控制流过单线圈 L1 上的电流方向来实现单相马达转换。当磁场为 N 极时，Q2、Q3 关断，Q1、Q4 开启，线圈 L1 上电流从 DO 流向 DOB。当磁场为 S 极时，Q1、Q4 关断，Q2、Q3 开启，线圈 L1 上电流从 DOB 流向 DO。



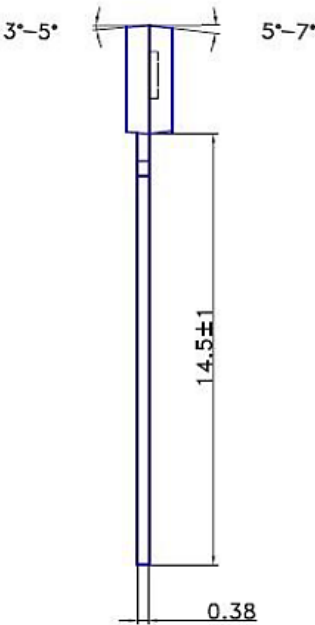
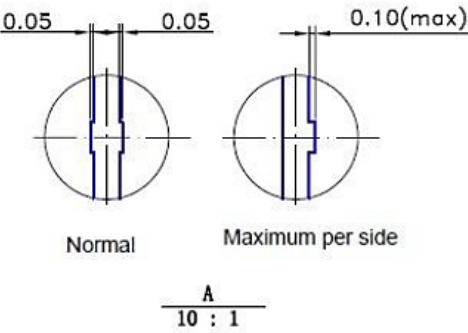
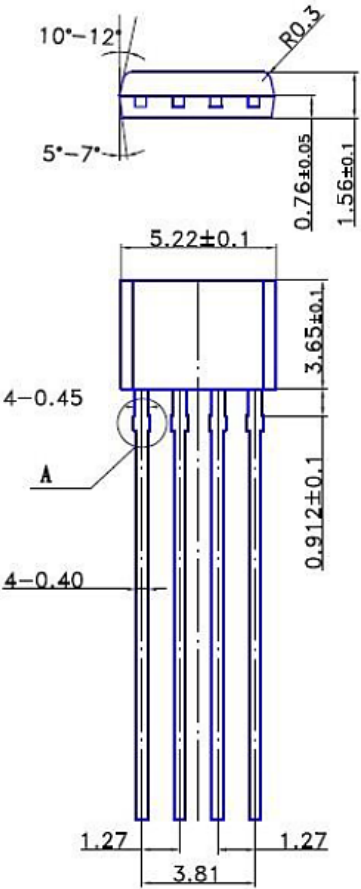
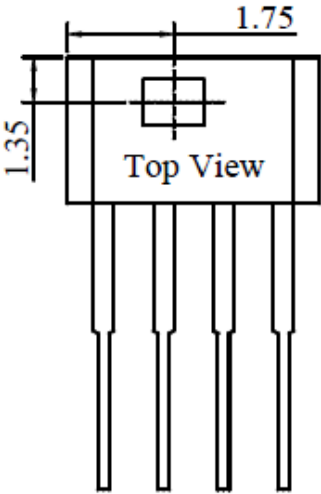
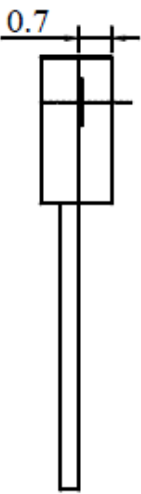
注意：电源端口必须接旁路电容到地, 降低电源电压的波动, 提高风扇的稳定性。

封装信息

SIP-4L



Y:Year 0~9
WW:Weeks 01~52
X:Internal Code



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