1. Description

The ME1477 is an integrated Hall sensor with H-bridged output driver designed for brushless DC motor applications. The device includes an on-chip Hall sensor for magnetic sensing, an amplifier that amplifies the Hall voltage, a comparator to provide switching hysteresis for noise rejection, a bi-directional drivers for sinking and driving large current load. It also includes an internal bandgap regulator to provide temperature compensated bias for internal circuits and allows a wide operating supply voltage range.

Placing the device in a variable magnetic field, if the magnetic flux density is larger than threshold B_{OP}, the DO is turned to sink and DOB is turned to drive. This output state is held until the magnetic flux density reverses and falls below BRP, then causes DO to be turned to drive and DOB turned to sink.

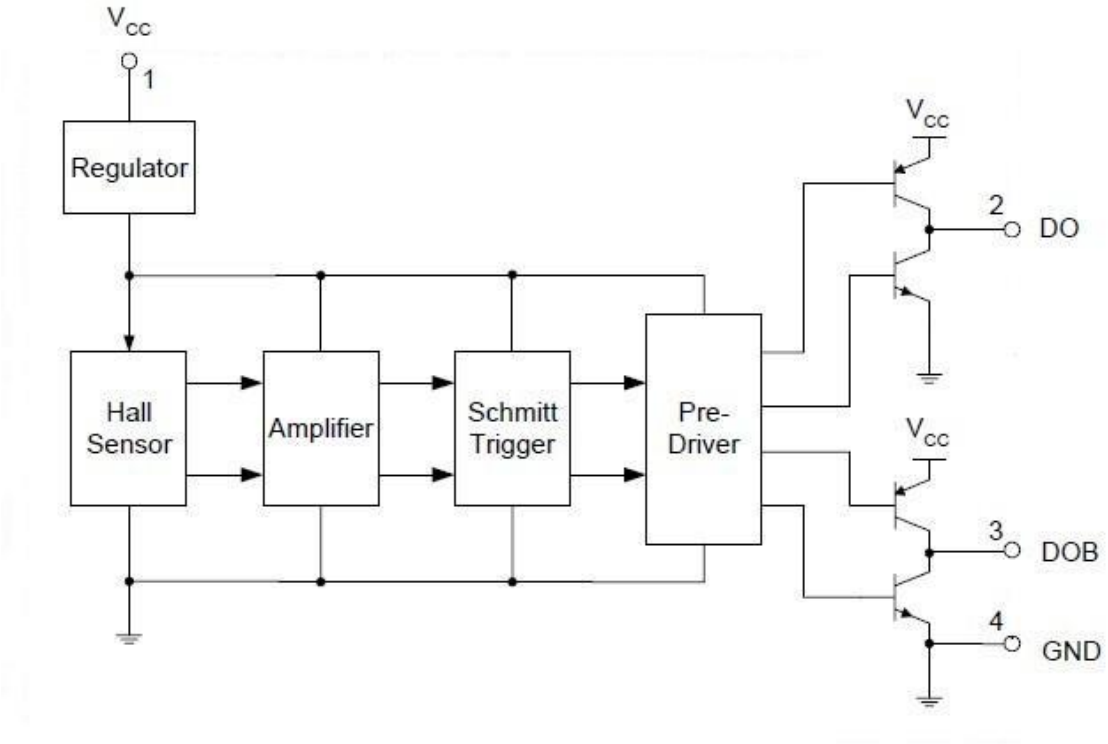
2. Features

- On-Chip Hall Sensor
- Operating Voltage: 3.5V to 18V
- H-Bridge Output Drivers for Single Coil
- Internal Bandgap Regulator for Temperature
- Compensation
- Low Output Switching Current Noise
- -20℃ to 85℃ Operating Temperature
- Low Profile TO-94 Package
- ESD Rating: 3000V (Human Body Model)

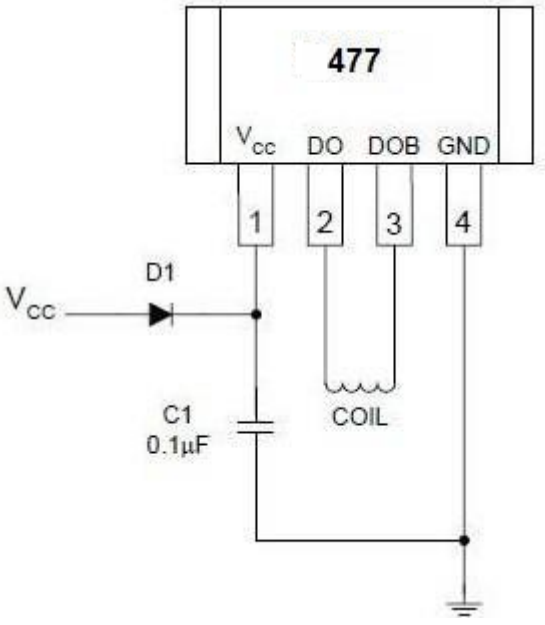
3. Applications

- Single-Coil Brush-less DC Motor
- Single-Coil Brush-less DC Fan

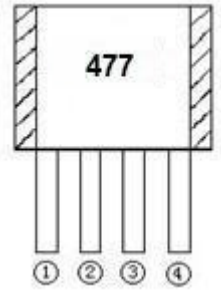
4. Functional Block Diagrams



5. Typical Application Circuit



6. Pin Definitions and Descriptions



Name	No.	Status	Description
1	VCC		Power supply
2	DO	IN/OUT	Coil driver/power input
3	DOB	IN/OUT	Coil driver/power input
4	GND		IC Ground

7. Absolute Maximum Ratings (T_A = 25℃)

Parameter		Symbol	Value	Units
Supply Voltage (Operating)		V_{DD}	24	V
Output Current	Continuous	Io	250	mA
	Hold		300	mA
	Peak (start up)		600	mA
Power Dissipation		PD	550	mW
Storage Temperature		TSTG	-50 to 150	℃
ESD (Machine Model)			300	V
ESD (Human Body Model)			3000	V

8. Recommended Operating Conditions(T_A = 25℃)

Parameter	Symbol	Min	Max	Units
Supply Voltage	V_{DD}	3.5	20	V
Ambient Temperature	T_A	-20	85	mA

9. Electrical Characteristics

DC Operating Parameters: T_A=25℃, V_{CC} =14V

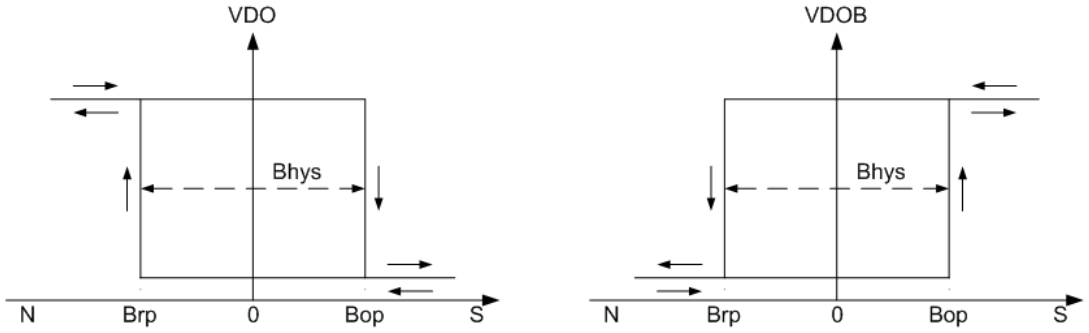
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Output Saturation Voltage (Sink)	V_{SAT}	V_{CC} =14V I_{CC} =200mA		0.35	0.6	V
Output Saturation Voltage (Drive)		V_{CC} =14V I_{CC} =200mA	V_{CC} -0.5		V_{CC}	V
Supply Current	I_{CC}	V_{CC} =20V Output Open		14	25	mA
Output Rise Time	T_R	R_L = 820Ω C_L= 20pF		3.0	10	μs

Output Fall Time	T_F	R_L = 820Ω C_L= 20pF		0.3	1.5	μs
Switch Time Differential	Δt	R_L = 820Ω C_L= 20pF		3.0	10	μs

10. Magnetic Specifications (T_A=25℃，V_{DD}=12V_{DC})

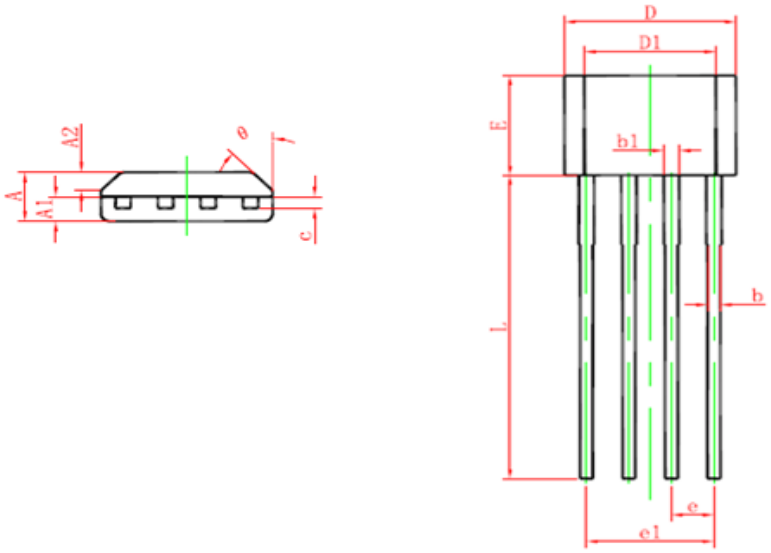
Parameter	Symbol	Grade	Min	Typ	Max	Units
Operating Point	B_{OP}	A	5		70	Gs
		B			100	Gs
Release Point	B_{RP}	A	-70		-5	Gs
		B	-100			Gs
Hysteresis	B_{HYS}			70		Gs

11. Magnetic Hysteresis Characteristics



12. Package Information

VK（TO - 94）



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.800	0.055	0.071
A1	0.700	0.900	0.028	0.035
A2	0.500	0.700	0.020	0.028
b	0.360	0.500	0.014	0.020
b1	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.980	5.280	0.196	0.208
D1	3.780	4.080	0.149	0.161
E	3.450	3.750	0.136	0.148
e	1.270 TYP.		0.050 TYP.	
e1	3.710	3.910	0.146	0.154
L	14.900	15.300	0.587	0.602
θ	45° TYP.		45° TYP.	

13. Ordering Information

Part No.	Package Code
ME1477	VK (TO-94)