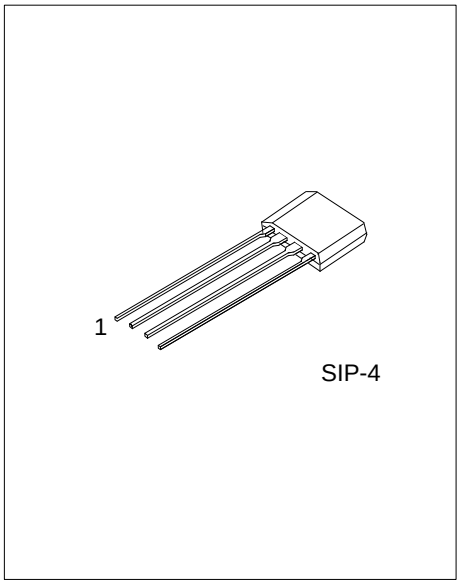
UHC577 **Advance** ***LINEAR INTEGRATED CIRCUIT***

350mA SINGLE PHASE HALL-EFFECT DC FAN DRIVER



■ DESCRIPTION

The UTC **UHC577** is an integrated Hall sensor with H-Bridged output driver designed for brushless DC motor applications. The device is using HV process 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.

Placing the device in a variable magnetic field, if the magnetic flux density is larger than threshold BOP, 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.

■ FEATURES

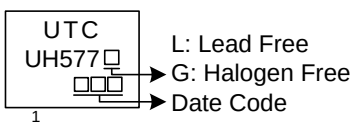
* One-chip Solution (Hall Element + Driver)
* Input Voltage Range : 3V~24V
* Low Output Switching Current Noise
* Built-in VDD To GND reverse voltage protection
* High Sensitivity Hall Sensor
  BOP(25GS), BRP(-25GS)
* Thermal Shutdown Protection
* Temperature Range: -40°C~ +125 °C

■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UH577L-G04-K	UH577G-G04-K	SIP-4	Bulk

UH577G-G04-K (1)Packing Type (2)Package Type (3)Green Package	 (1) K: Bulk (2) G04: SIP-4 (3) G: Halogen Free and Lead Free, L: Lead Free

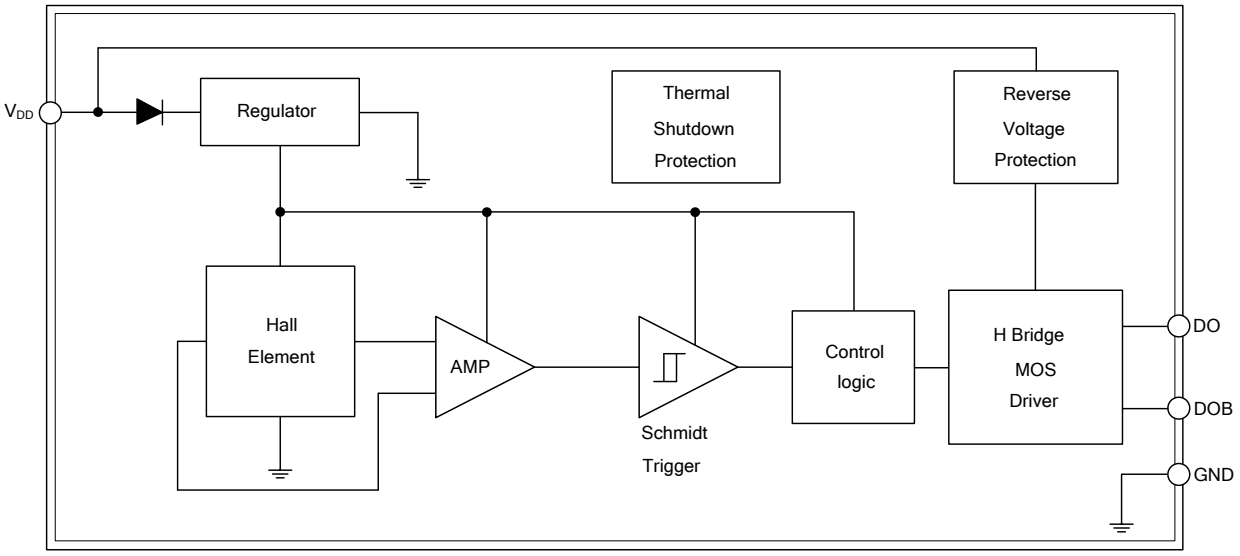
■ MARKING



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	V_{DD}	Positive Power Supply
2	DO	Output 1
3	DOB	Output 2
4	GND	Ground

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, unless otherwise noted)

PARAMETER	SYMBOL	RATINGS	UNIT
V_{DD} Pin to GND	V_{DD}	-30~ +30	V
Continuous Output Current	$I_{O(CONT)}$	350	mA
Hold Output Current	$I_{O(HOLD)}$	700	mA
Peak Output Current	$I_{O(PEAK)}$	1000	mA
Junction Temperature	T_J	+160	°C
Storage Temperature Range	T_{STG}	-55 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS

PARAMETER		SYMBOL	RATINGS	UNIT
V_{DD} Pin Voltage to GND		V_{DD}	3~24	V
Operating Temperature Range	$I_{O(CONT)}$<250mA	T_{OP}	-40 ~ +125	°C
	$I_{O(CONT)}$>250mA	T_{OP1}	-40 ~ +85	°C

■ ELECTRICAL CHARACTERISTICS

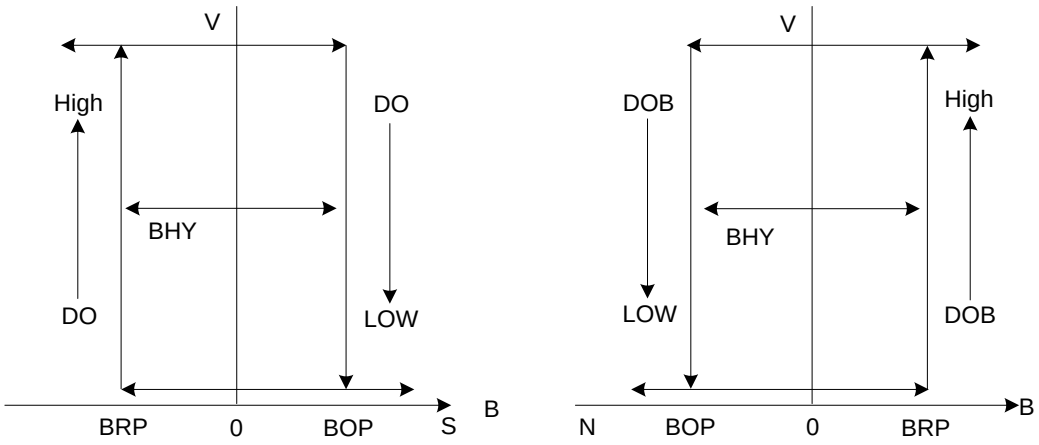
Typical values are at T_A = +25°C, V_{DD}=12V, unless otherwise noted.

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply						
Input Voltage	V_{DD}		3		24	V
Supply Current	I_{DD}	Output Open		2.5	5	mA
Output						
Output On-Resistance	$R_{DS(ON)}$	I_O=0.3A		2.8		Ω
Protection						
Thermal Shutdown Temperature	TSD		150	160		°C
Thermal Shutdown Hystersis	TSH			30		°C
Magnetic Characteristics						
Operating Point	BOP		5	25	45	Gauss
Release Point	BRP		-45	-25	-5	Gauss
Hysteresis	BHYS			50		Gauss

■ DRIVER OUTPUT VS MAGNETIC POLE

Parameter	Test Conditions	DO	DOB
South Pole	B > BOP	Low	High
North Pole	B < BRP	High	Low

■ OPERATING CHARACTERISTICS

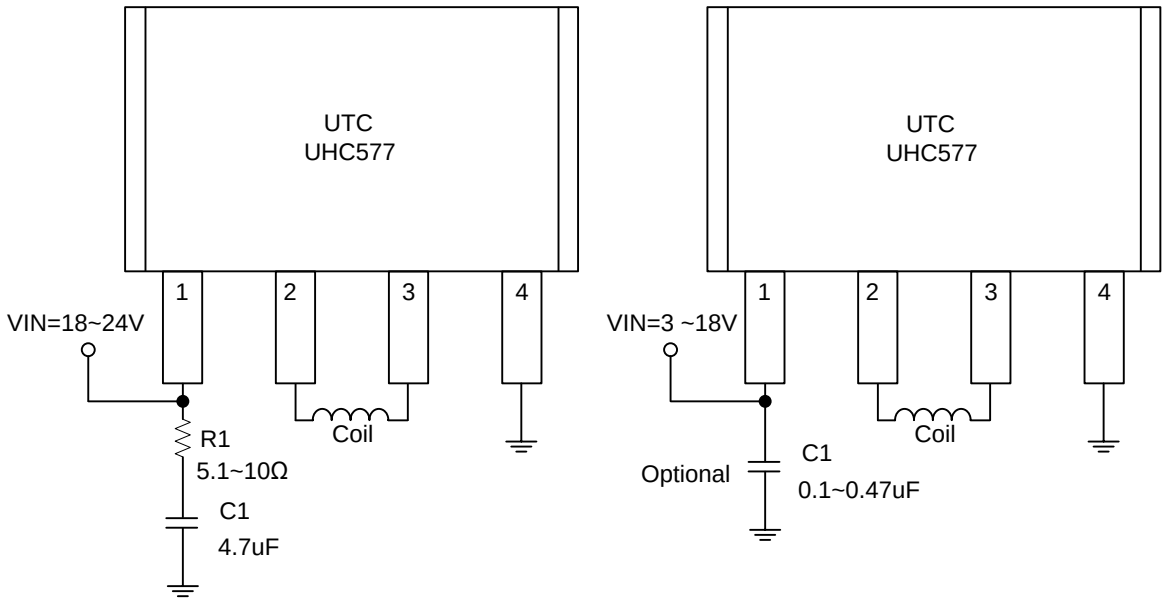


Magnetic Hysteresis Characteristics of UTC **UHC577**

Output Switch Principle

The UTC **UHC577** built in a Hall-effect sensor plane to sense the vertical magnetic flux density (B). There are two output drivers in UTC **UHC577** to drive Single-phase DC brushless fan or motor. When the South pole magnetic field is close to the IC marking surface and the magnetic flux density higher than operate point (BOP), the DO pin output will turned to Low and the DOB pin output will turned to High. When the South pole magnetic field far away the IC marking surface and North pole magnetic field close to the IC marking surface until the magnetic flux density higher than release point (BRP), the DO pin output will turned to High and the DOB pin output will turned to low.

■ TYPICAL APPLICATION CIRCUIT



Note: When the power pulse is relatively large, Must use least C1=4.7μF (ceramic capacitor) capacitor & R1=5.1~10Ω for the decoupling between VIN and GND and place the capacitor as close to the IC as Possible. C1 is an optional capacitor, which can enhance the reliability during hot swap.