



## UH447

CMOS IC

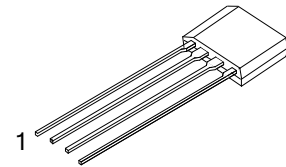
### SMART MOTOR DRIVER WITH INTEGRATED HALL SENSOR

#### DESCRIPTION

The **UH447** is a two-phase half wave motor driver with integrated Hall sensor. Lock-shutdown and auto-restart function protects the motor from being over-heated and restarts the motor after being locked.

Thermal-shutdown protection (TSD) ensures the internal drivers of IC are operating under a safe operating temperature range.

The **UH447** also uses Soft-switch phase-switching technique to reduce the vibration and acoustic noise.



SIP-4

#### FEATURES

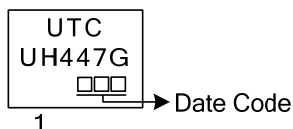
- \* Soft switching output driver
- \* Built-in Hall sensor motor driver
- \* Motor lock protection and automatic restart
- \* Thermal shutdown protection
- \* Open drain MOS driver
- \* For 24V DC motor / FAN systems

#### ORDERING INFORMATION

Ordering Number	Package	Packing
UH447G-G04-K	SIP-4	Bulk

UH447G-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
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#### MARKING

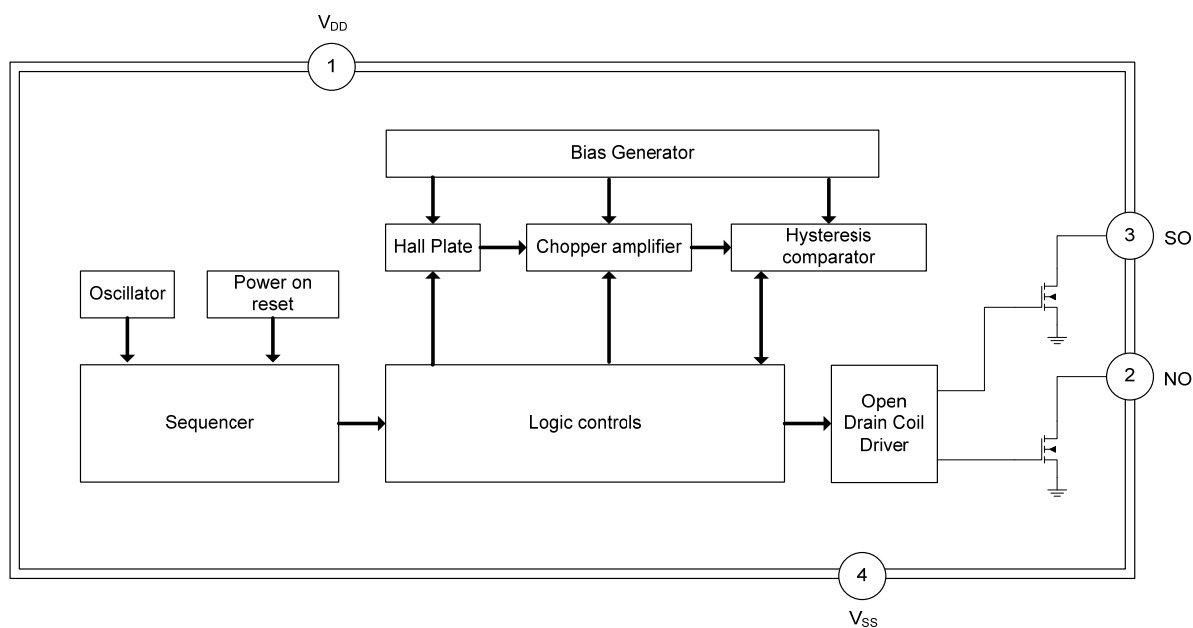


## ■ PIN DESCRIPTION

PIN NO.	PIN NAME	TYPE	DESCRIPTION
1	V <sub>DD</sub>	P	Power supply
2	NO	O	Driver output
3	SO	O	Driver output
4	V <sub>SS</sub>	G	Ground

Note: I=input, O=output, I/O=input/output, P=power supply, G=ground

## ■ BLOCK DIAGRAM



# ■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
DC Supply Voltage( $V_{DD}$ , FG)	$V_{DD}$	32	V
Supply Current	$I_{DD}$	5	mA
Output Current	$I_{CONT}$	350	mA
Power Dissipation	$P_D$	500	mW
Junction Temperature	$T_J$	170	°C
Operation Junction Temperature	$T_{OPR}$	-40 ~ +85	°C
Storage Temperature	$T_{STG}$	-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.

# ■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	$\theta_{JA}$	104	°C/W
Junction to Case	$\theta_{JC}$	90	°C/W

# ■ RECOMMENDED OPERATING COMDITIONS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Supply Voltage	$V_{DD}$	4.5		30	V
Operation Junction Temperature	$T_A$	-40		+85	°C

# ■ ELECTRICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Average Supply Current	$I_{DD}$	$V_{DD}=24\text{V}$ , No Load		3.0		mA
On resistance	$R_{ON}$	$V_{DD}=4.5\text{V}$		8.0		$\Omega$
		$V_{DD}=24\text{V}$		2.0		$\Omega$
Thermal Shutdown Threshold	$T_{SD}$			150		°C
Locked Rotor Period	$T_{ON}$			0.4		S
	$T_{OFF}$			4.1		S

# ■ MAGNETIC CHARACTERISTICS (1mT=10Gauss)

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Operate Point	$B_{OP}$	5	25	50	Gauss
Release Point	$B_{RP}$	-50	-25	-5	Gauss
Hysteresis	$B_{HYS}$		50		Gauss

# ■ DRIVER OUTPUT VS MAGNETIC POLE

PARAMETER	TEST CONDITIONS	NO	SO
North pole	$B < B_{RP}$	High	Low
South pole	$B > B_{OP}$	Low	High

## ■ FUNCTIONAL DESCRIPTIONS

Refer to the block diagram above, **UH447** is composed of the following blocks:

### 1. Bias Generator

The bias generator provides bias references for the analog blocks.

### 2. Oscillator

The integrated oscillator provides the clock signal for the digital control logics.

### 3. Power-on Reset

The block of power-on reset is used to detect the power-up ramp and reset the digital circuits.

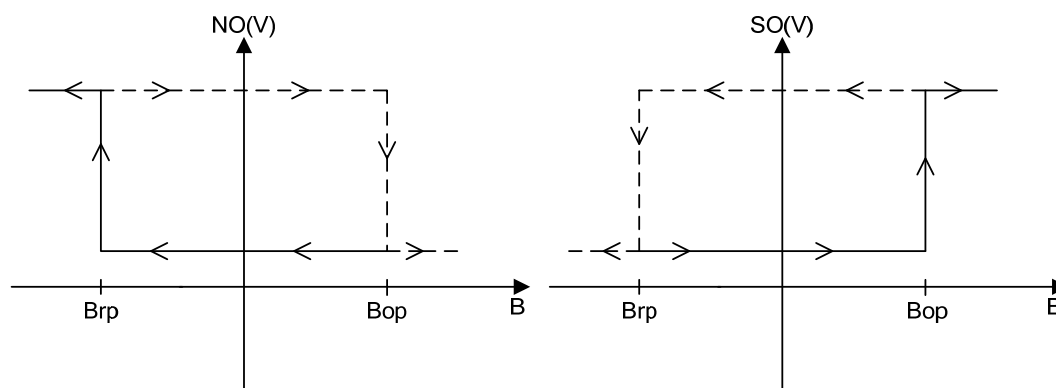
### 4. Chopper Amplifier

The chopper amplifier structure can achieve a higher magnetic sensitivity and dynamically removes both the offset and flicker noise at the same time.

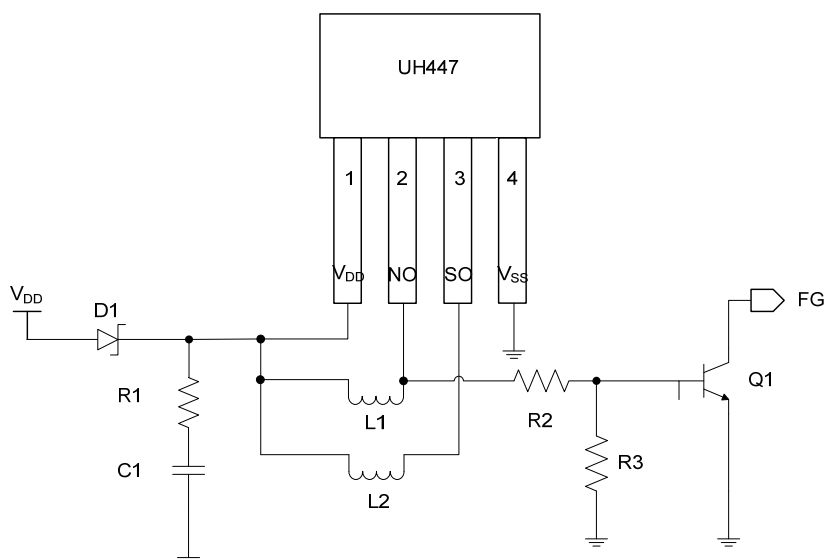
### 5. Digital Control Logics

Generates controlling signals for the Hall sensor and Coil driver and Timer part.

## ■ HYSTERESIS CHARACTERISTICS

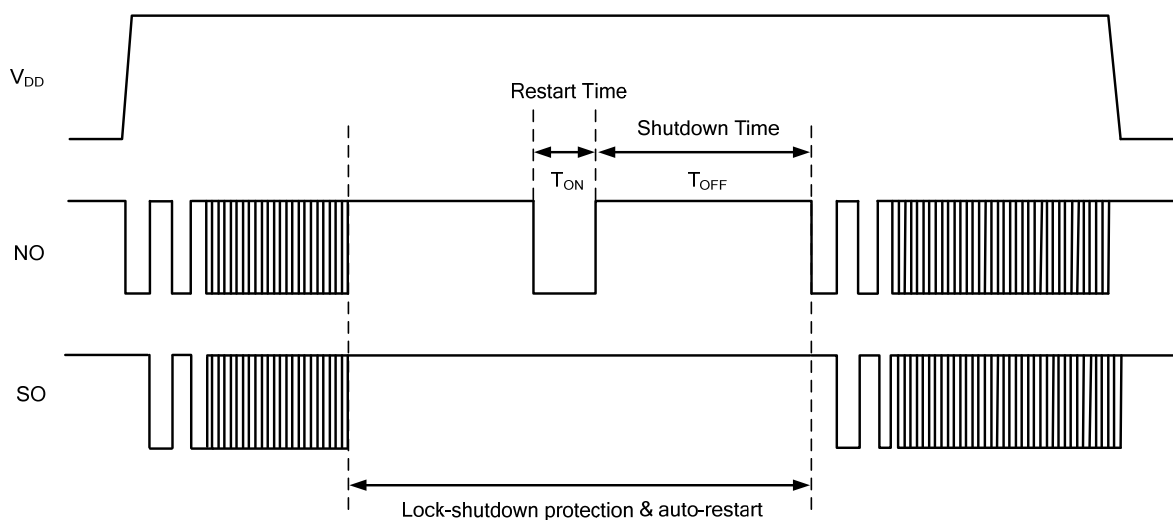


## ■ TYPICAL APPLICATIONS CIRCUIT



Note : Q1、R2 and R3 are FG output signal circuit.

## ■ OUTPUT WAVEFORMS DESCRIPTION



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