



UH447

CMOS IC

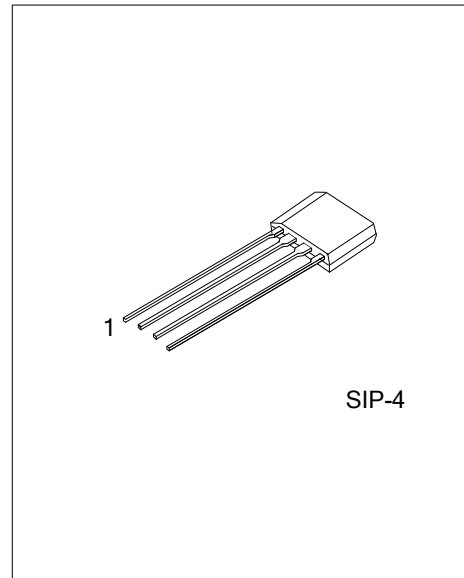
SMART MOTOR DRIVER WITH INTEGRATED HALL SENSOR

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.



FEATURES

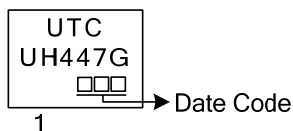
- * Soft switching output driver
- * Built-in Hall sensor motor driver
- * Motor lock protection and automatic restart
- * Thermal shutdown protection
- * Open drain MOS driver
- * For 24V DC motor / FAN systems

ORDERING INFORMATION

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

<p>UH447G-G04-K</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) K: Bulk (2) G04: SIP-4 (3) G: Halogen Free and Lead Free</p>
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MARKING

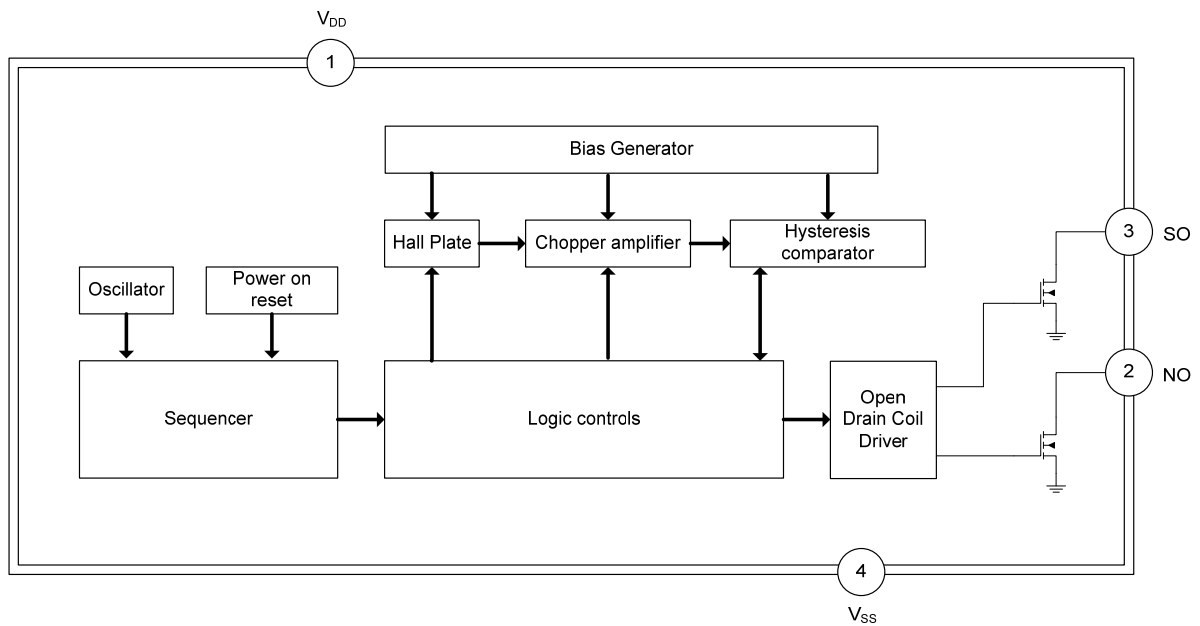


■ PIN DESCRIPTION

PIN NO.	PIN NAME	TYPE	DESCRIPTION
1	V _{DD}	P	Power supply
2	NO	O	Driver output
3	SO	O	Driver output
4	V _{SS}	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	θ_{JA}	104	°C/W
Junction to Case	θ_{JC}	90	°C/W

■ RECOMMENDED OPERATING CONDITIONS

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		Ω
		$V_{DD}=24\text{V}$		2.0		Ω
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.

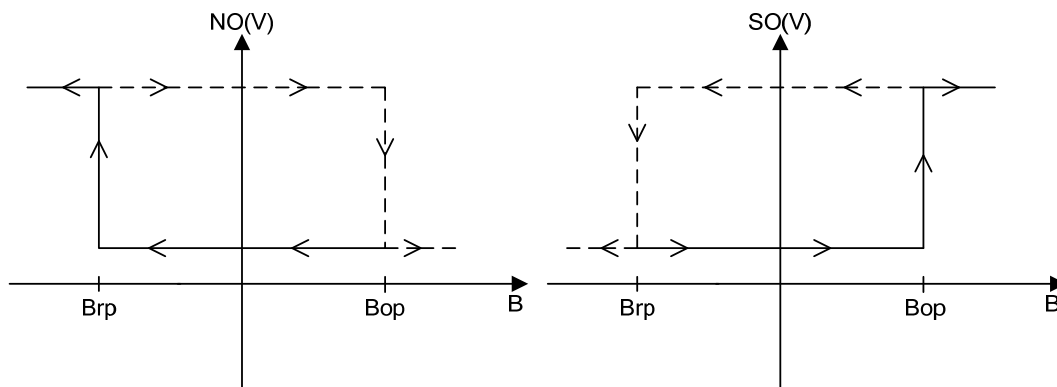
4. Chopper Amplifier

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

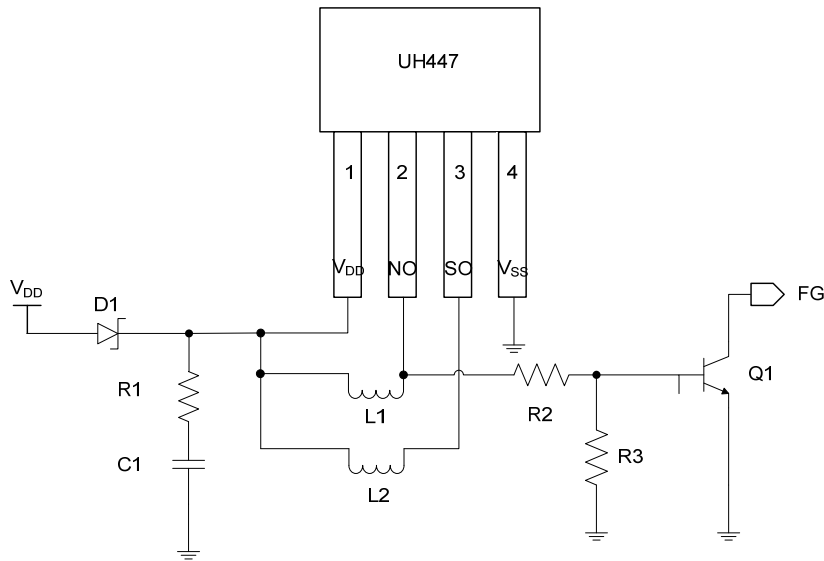
5. Digital Control Logics

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

■ HYSTERESIS CHARACTERISTICS

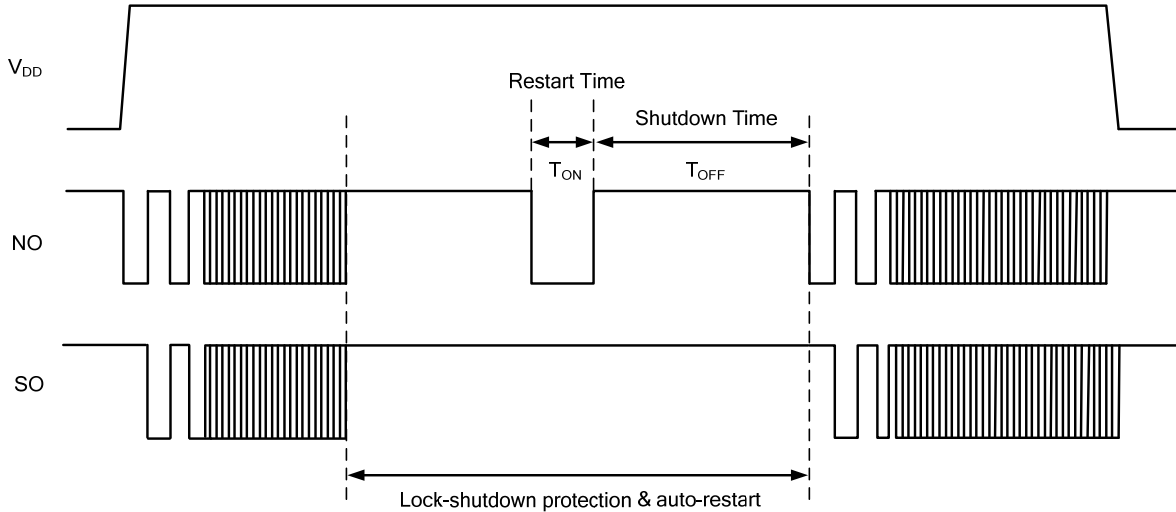


■ TYPICAL APPLICATIONS CIRCUIT



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

■ OUTPUT WAVEFORMS DESCRIPTION



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