



## UHC211

Advance

CMOS IC

### COMPLEMENTARY OUTPUT HALL EFFECT FAN DRIVER

#### DESCRIPTION

UTC **UHC211** is a motor driver for the brushless DC motor. It is designed by advanced CMOS process, could worked in high voltage up to 30V.

UTC **UHC211** includes the regulator, protecting diode, Hall plate, Chopper for offset cancellation amplifier, comparator, and a pair of complementary open-Drain outputs (DO, DOB).

#### FEATURES

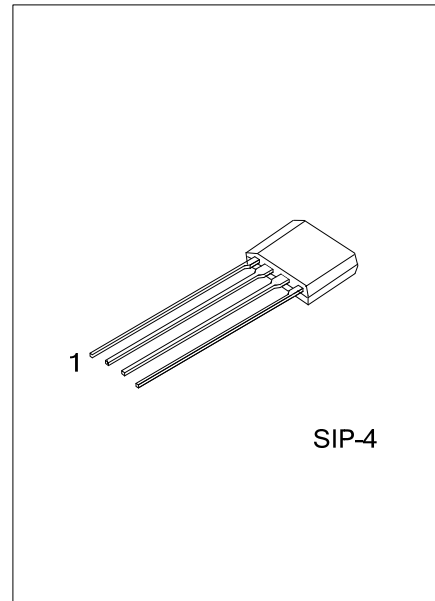
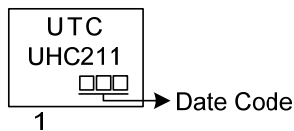
- \* Built in Hall sensor
- \* Wide operating voltage range: 4.0V~20V
- \* Output sink current up to 0.4A
- \* Built-in FG output

#### ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UHC211L-G04-K	UHC211G-G04-K	SIP-4	Bulk

<p>UHC211G-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, L: Lead Free</p>
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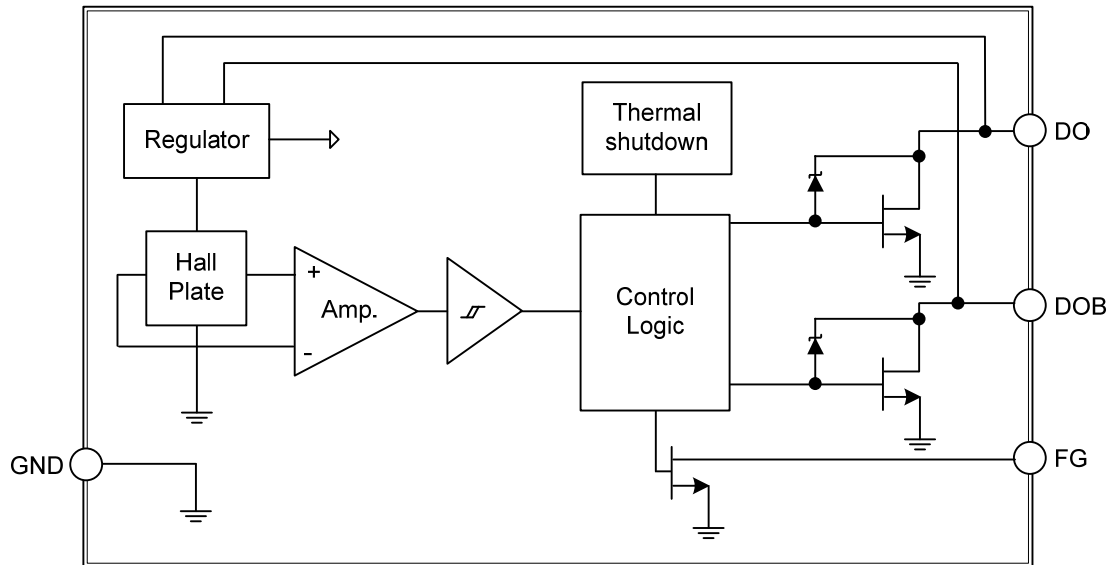
#### MARKING



### ■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	FG	Rotation speed output
2	DO	Output 1
3	DOB	Output 2
4	GND	Ground

### ■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING ( $T_A=25^{\circ}\text{C}$ , unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
DO/DOB Voltage		$V_{DO/DOB}$	30	V
FG OFF Voltage		$V_{FG}$	30	V
Reverse Current		$I_R$	100	mA
Magnetic Flux Density		B	Unlimited	Gauss
Output Current	Continuous	$I_O$	400	mA
	Hold		500	mA
	Peak (start up)		700	mA
Operating Ambient Temperature		$T_A$	-40 ~ +85	$^{\circ}\text{C}$
Storage Temperature		$T_{STG}$	-65 ~ +150	$^{\circ}\text{C}$

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.

■ ELECTRICAL CHARACTERISTICS ( $V_{DD}=12\text{V}$ ,  $T_A=+25^{\circ}\text{C}$ , unless otherwise noted.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	$V_{DD}$	Operating	4		20	V
Supply current	$I_{DD}$	Operating		3.5	5	mA
Output Leakage Current	$I_{OFF}$	$V_{OUT}=12\text{V}$		< 0.1	10	$\mu\text{A}$
Output On resistance	$R_{DS(ON)}$	$I_{OUT}=300\text{mA}$		1.7		$\Omega$
Output Clamping Voltage	$V_Z$	DO, DOB		32		V
FG OFF Leakage Current	$I_{FG}$				1	$\mu\text{A}$
FG ON Saturation Voltage $V_{ON}$	$V_{SAT(FG)}$	10mA			0.5	V
Thermal shutdown Temp	$T_{SD}$		150			$^{\circ}\text{C}$
Thermal Shutdown Hysteresis	$T_{SH}$			30		$^{\circ}\text{C}$

■ MAGNETIC PARAMETER

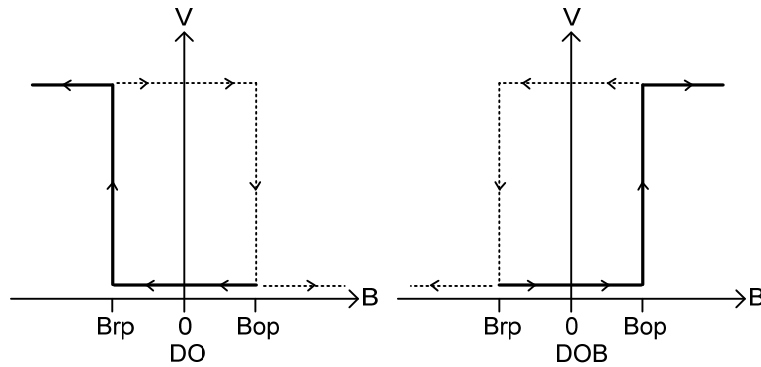
PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Operate Point	$B_{OP}$	5	25	50	Gauss
Release Point	$B_{RP}$	-50	-25	-5	Gauss
Hysteresis	$B_{HYS}$		50		Gauss

■ OUTPUT vs. MAGNETIC POLE

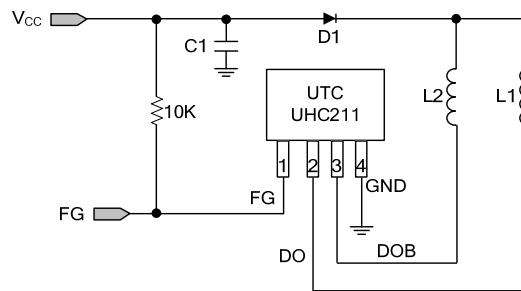
PARAMETER	TEST CONDITIONS	DO	DOB
North pole	$B < B_{RP}$	H	L
South pole	$B < B_{OP}$	L	H

Note: The magnetic pole is applied facing the branded side of the package.

■ TEST CIRCUIT



■ TYPICAL APPLICATION CIRCUIT



12V brush-less DC fan

- Notes: 1. C1 (Optional) is for power stabilization, Recommended E-Cap 1 $\mu$ F/50V
- 2. D1 (Optional) is a reverse protect diode.

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