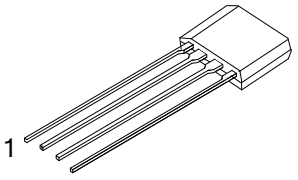
HIGH-VOLTAGE FULL-BRIDGE BRUSHLESS DC HALL MOTOR DRIVER



SIP-4

■ DESCRIPTION

The UTC **UHC1477** is a full-bridge motor driver for the single coil brushless DC motor. It is designed by advanced CMOS process, could worked in high voltage up to 40V Besides, this device has extremely low power dissipation, the quiescent current only 2mA.

The UTC **UHC1477** includes the Hall sensor, Chopper for offset cancellation, Hall temperature compensation, voltage regulator, thermal shutdown and the output full bridge. Rotor-lock shutdown detection circuit shut down the output driver if the rotor is blocked and then the automatic recovery circuit will try to restart the motor. This function repeats while rotor is blocked. Until the blocking is removed, the motor recovers running normally.

The UTC **UHC1477** is optimized for vibration motor applications in single coil brushless direct current motor or fan.

■ FEATURES

* Built in Hall sensor
* Rotor-locked restart function
* Built in 40V full-wave motor driver
* Wide input range 3.3V~36V
* Thermal shutdown protection
* Excellent temperature stability
* Output driver capability up to 450mA

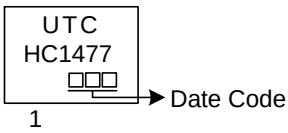
■ ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UHC1477L-G04-K	UHC1477G-G04-K	SIP-4	Bulk

UHC1477G-G04-K

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

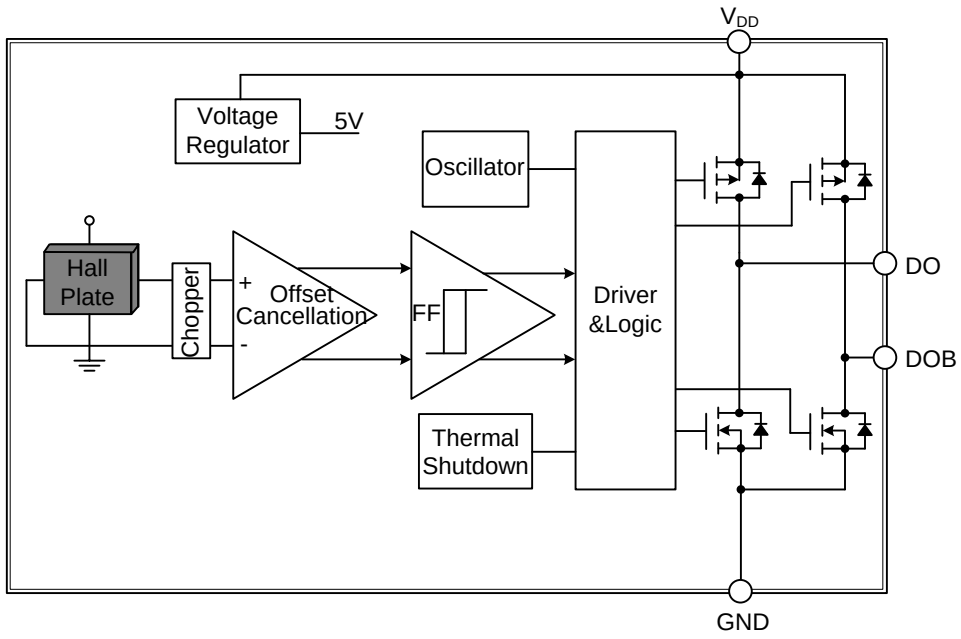
■ MARKING



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	V_{DD}	Power supply voltage
2	DO	First output
3	DOB	Second output
4	GND	Ground

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING

PARAMETER	SYMBOL	RATINGS	UNIT
Power Supply Voltage	V_{DD}	40	V
Peak Output Current	I_{PEAK}	1000	mA
Continuous Output Current	I_{CONT}	450	mA
Operating Ambient Temperature	T_A	-40 ~ +125	°C
Maximum Junction Temperature	T_J	+160	°C
Storage Temperature	T_S	-55 ~ +150	°C
Magnetic Field Intensity	B	No limit	mT

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
Power Supply Voltage	V_{DD}	3.3 ~ 32	V
Continuously Current	I_{DD}	450	mA
Frequency	F_{RWM}	0.1 ~ 25	kHz
Operating Ambient Temperature	T_A	-20 ~ +125	°C

■ ELECTRICAL CHARACTERISTICS

(V_{DD}=18V, T_A=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Supply Voltage Range	V_{DD}		3.3		36	V
Operating Current	I_{DD}			2	4	mA
Output Saturation Voltage (Sink)	V_{SAT}	V_{DD}=14V, I_{OUT}=200mA		0.15		V
Output Saturation Voltage (Source)		V_{DD}=14V, I_{OUT}=200mA		V_{DD}-0.25		V
Output Rising Time	t_r	R_L=820Ω, C_L=20pF		7		μs
Output Falling Time	t_f	R_L=820Ω, C_L=20pF		7		μs
On Time	T_{ON}	V_{DD}>7V		0.33		s
Off Time	T_{OFF}	V_{DD}>7V		2		s
Dead Time	t_{Dead}	R_L=820Ω, C_L=20pF		60		μs
Thermal Shutdown Temperature	T_{SD}	V_{IN}=18V		160		°C
Temperature Hysteresis	ΔT_{SD}			30		°C

■ MAGNETIC PARAMETER

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
Operate Point	B_{OP}	5	25	45	Gauss
Release Point	B_{RP}	-45	-25	-5	Gauss
Hysteresis	B_{HYS}	20	50	80	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

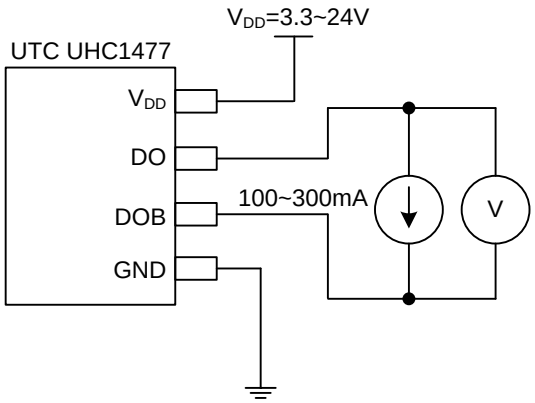


Fig 1. R_{DSON} Test Circuit

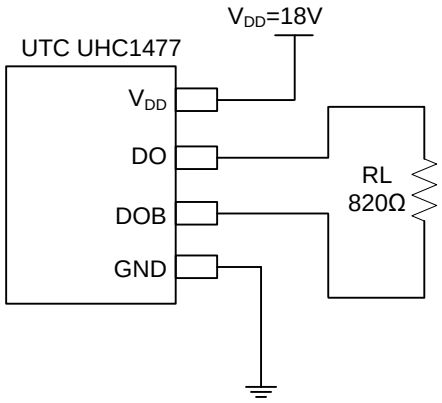


Fig 2. Switching Characteristics Test Circuit

■ TYPICAL APPLICATION CIRCUIT