

■ General Description

OCH2992 is a fan motor driver for the single coil brushless DC motor. With its high efficient direct PWM control mode, OCH2992 controls the speed of brushless DC motor with an external hall switch IC. OCH2992 is suitable to drive variable speed motors for personal computer's power supply radiation fans and CPU coolers.

OCH2992 integrates PWM fan speed control, minimum speed mode, soft start, soft switch, fan tachometer, lock protection, auto restart and Hall IC power circuit. PWM mode controls fan speed in low noise and low vibration ways by adjusting PWM signal duty. OCH2992 can set minimum fan speed by presetting MINSP voltage. With soft start function, OCH2992 can effectively reduce the peak current when power on. To reduce fan driver audible noise and power loss, the OCH2992 features a soft on/off phase transition and automatic phase-lock function of the motor winding BEMF and current.

Robust protections in OCH2992 include under-voltage lockout (UVLO), rotor deadlock protection, over current protection (OCP) and thermal shutdown.

The OCH2992 requires a minimal number of external components to save solution cost. The OCH2992 is available in, SOP-8L-EP packages.

■ Features

- Supporting speed: Max. 15000 Rpm/Min.
- Wide Operating Input Voltage Range: 3.0V~16V
Integrated Power MOSFETs: Total 350mΩ(High side + Low side)
- PWM Fan Speed Control
- Programmable Minimum Fan Speed
- MINSP Setting Minimum Fan Speed
- Soft Start And Soft Restart Function
- FG Output
- External Hall Switch
- Lock-shutdown protection & auto-restart function
- Automatic Phase Lock Detection of Winding BEMF and Current Zero-Crossing
- 20kHz to 60kHz PWM Input Frequency Range
- Fixed 26kHz Output Switching Frequency
- OCP (Over Current Protection)
- Current Limit
- Thermal Protection and Automatic Recovery
- Built-In Input UVLO
- -40°C to + 105 °C Temperature Range
- RoHS Compliant
- SOP-8L-EP packages

■ Applications

- Single Coil Brushless DC Motor
- Single Coil Brushless DC Fan

■ Pin Configuration

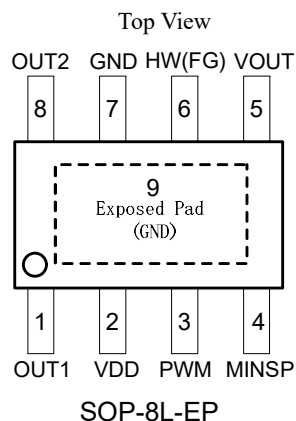


Figure 1, Pin Assignments Of OCH2992

Pin Name	Pin Number	Pin Function
OUT1	1	Output 1
VDD	2	Positive Power Supply
PWM	3	PWM Signal Input
MINSP	4	Input to set minimum speed or fan off range
VOUT	5	Regulator Output(Power supply for external HALL switch)
HW(FG)/SCL	6	Rotation Speed Detection(connect the external Hall Switch output)
GND	7	Ground
OUT2	8	Output 2
GND	Exposed pad	Ground

■ Typical Application Circuit

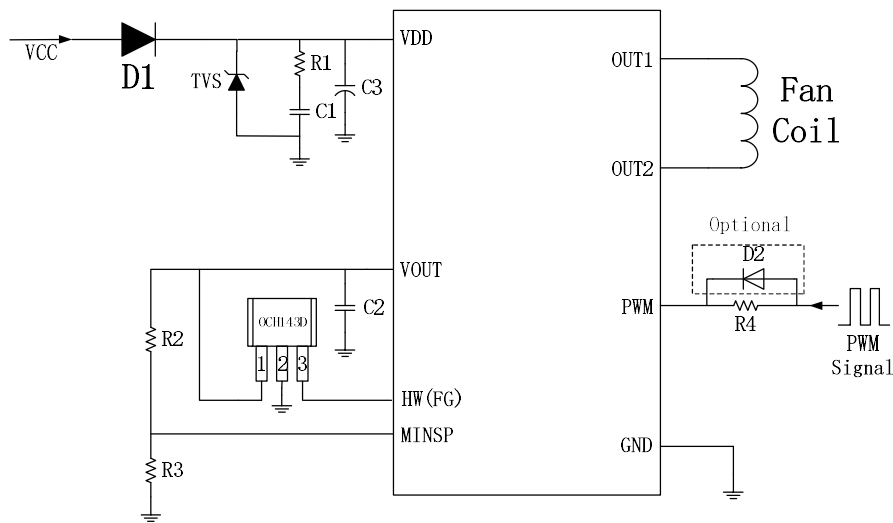


Figure 2, Typical Application Circuit Of OCH2992

Note1:

- 1) Must use least $C1=4.7\mu\text{F}\sim 10\mu\text{F}$ and $R1=1\Omega$ (Typ.) for the decoupling between VDD and GND and place the capacitor as close to the IC as Possible.
- 2) A TVS diode is needed in application, for a 12V case, an 15V/SOD-123package TVS diode is sufficient.
- 3) C2 is Optional, the typical value is 1uF.
- 4) C3 is Electrolytic Capacitor, the typical value is $10\mu\text{F}\sim 47\mu\text{F}$.
- 5) R2/R3 value decided the minimum output duty setting.
- 6) D2 is optional, the typical value R4 is 10k Ω , the D2 is used to prevent the negative voltage interference.

■ Block Diagram

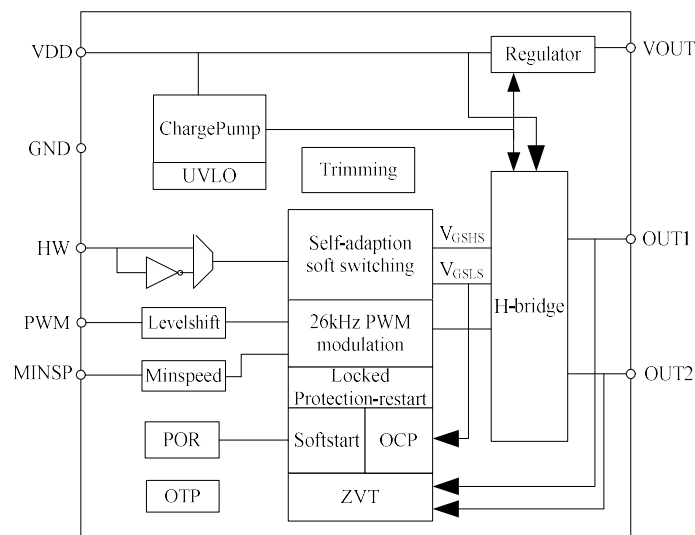


Figure 3, Block Diagram Of OCH2992