ZERRO

ZPS268

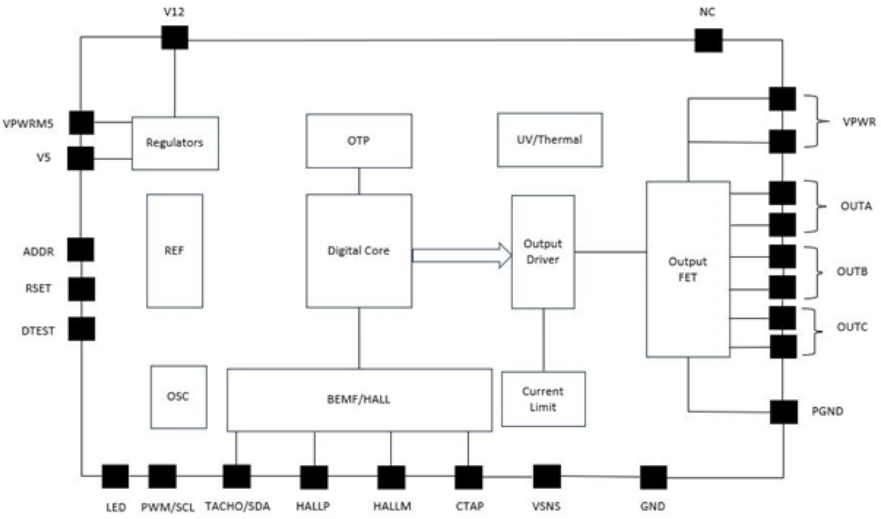
Product Overview

The ZPS268 drives a 3-phase brushless and sensorless DC motor in full bridge mode. Various functions and parameter are predefined in the OTP registers. The OTP registers can be programmed through standard I^2C protocol. The motor driver block integrates the pre-drivers, internal power FETs and commutation logic. This device is capable of spinup the motor and maintain constant speed. The start-up includes an inductive sense routine, blind spin routine or hall assisted start-up followed by a six-step spin up and then hand over to sine mode. The speed of the fan can be controlled through the PWMIN pin.

Features

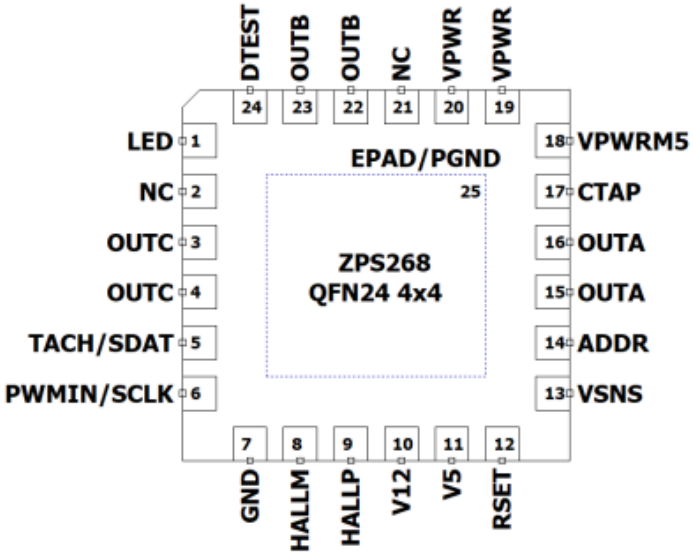
- Sensor-less 3 phase fan motor control
- Integrated pre-drivers and internal MOSFET
- Up to 4A drive capability (3A for QFN24L)
- Auto spin-up using inductive sensing for position detect or blind spin startup or hall assisted startup mechanism
- Open or closed loop speed control
- 8-point Programmable PWM profile
- Sinusoidal (sine) PWM drive with bit selectable option for a 6-step drive
- Pole mismatch compensation to minimize jitter
- 5-bit torque adjustment for best torque ripple
- Programmable spin up current limit
- Speed fault detection
- I^2C compatible PWMIN pin
- Optional Emergency Brake upon power loss
- Inrush current control
- 5.0V/10mA linear regulator
- Open loop PWMIN mapping
- Windowless hall sensor only operation
- Multi options for FG/TACHO signal output
- Programmable alarm and retry timing
- 6V to 18.0V operation
- Guaranteed start-up from reverse spin condition
- ZPS2681 up to 1A drive
- ZPS2682 up to 2A drive
- ZPS2683 up to 3A drive
- ZPS2684 up to 4A drive

Figure 1: Chip Level Block Diagram



1. QFN 4x4 Pin Configurations and Description

Figure 2: 24-Pin QFN 4x4 Package Top View



2. Application Information

2.1. Fan with all Device Features

The Shown for information about all the features. For typical applications, 22uF and 0.1uF capacitors are sufficient at VPWR. For fans with hot-plug requirements, emergency brake can be enabled to stop the fan quickly as soon as the power is lost to prevent any physical injury to the service person. Braking time is proportional to Capacitor size at VPWR. 66uF will provide 500ms brake time.

Figure 3: Configuration of the device with all features