Highly Integrated 3-Phase BLDC Sinusoidal Sensorless Motor Fan Drivers and Dual Full-Bridge Drivers

More Cost Effective and Faster Time to Market

3-Phase BLDC Sinusoidal Motor Drivers

The MTD6501C/D/2B/5 product family is a 3-phase full-wave sensorless driver for brushless DC (BLDC) motors. It features 180° sinusoidal drive, high torque output and silent drive. With the adaptive features, parameters and wide range of power-supplies, the MTD6501C/D/2B/5 are intended to cover a broad range of motor characteristics, while requiring minimum external components. Speed control can be achieved through either power supply modulation (PSM) or pulse-width modulation (PWM). The compact packaging and the minimal bill-of-material make the MTD6501C/D/2B/5 product family extremely cost efficient in fan applications.

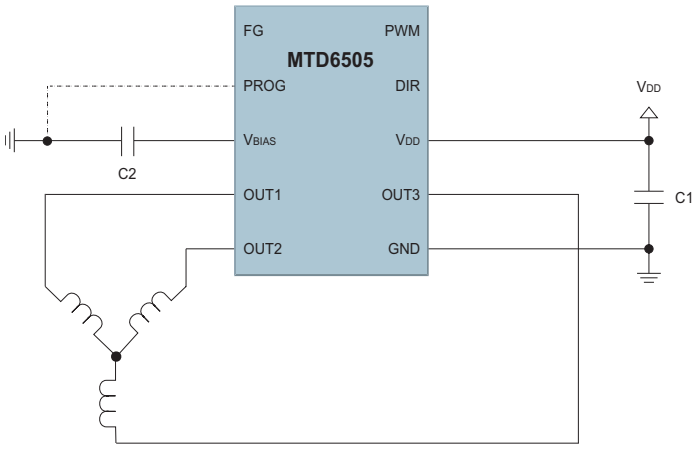
For example, the CPU cooling fans in notebook computers require designs that provide low acoustic noise, low mechanical vibration, and are highly efficient. The frequency generator (FG) output enables precision speed control in closed-loop applications.



Device	Vmax	Fsw	Package	Features
MTD6501C	15.3V	20 kHz	Thermally enhanced SOIC-8	FG, PWM, Lockup recovery
MTD6501D	15.3V	20 kHz	MSOP-10	FG, PWM, Boost, Lockup recovery
MTD6501G	15.3V	23 kHz	Thermally enhanced SOIC-8	FG, PWM, Lockup recovery
MTD6502B	5.5V	30 kHz	TDFN-10	FG, PWM, DIR, Lockup recovery
MTD6505	5.5V	30 kHz	UDFN-10	FG, PWM, DIR, Lockup recovery, programmable BEMF coefficient

The MTD6501C/D/2B/5 includes Lockup Protection mode to turn off the output current when the motor is in a lock condition, with an automatic recovery feature to restart the fan when the lock condition is removed. Motor overcurrent limitation and thermal shutdown protection are included for safety enhanced operations.

MTD6505 Application CIrcuit Diagram



Features

- 180° sinusoidal drive, for high efficiency and low acoustic noise
- Position sensorless BLDC Motor Drivers (no hall-effect sensor required)
- Integrated power transistors
- Speed control through Power Supply Modulation (PSM) and/or Pulse-Width Modulation (PWM)
- Built-in frequency generator (FG Output Signal)
- Built-in lockup protection and automatic
- Recovery circuit
- Built-in overcurrent limitation
- Built-in thermal shutdown protection
- No external tuning required

Applications

- 3-phase BLDC motors
- 3-phase BLDC fans
- Pumps; e.g. water pumps

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Dual Full-Bridge Drivers

The MTS2916A/MTS62C19A motor drivers are integrated circuit to drive both windings of a bipolar stepper motor or bi-directionally control of two DC motors. The two output bridges can sustain 40V and deliver up to 750 mA of continuous current each. The maximum output current, controlled by a PWM circuit, is determined by the user's selection of a reference voltage, a sensing resistor and two logic inputs. The outputs have been optimized for a low output saturation voltage drop.

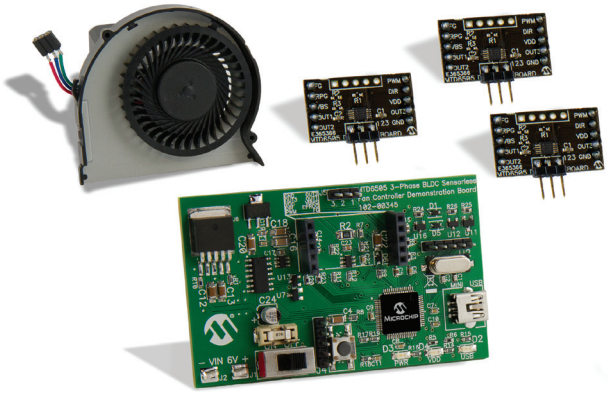
Features

- Load voltage supply range: 10V to 40V
- Output current up to 750 mA (each bridge)
- Internal fixed Toff time PWM current control
- Built-in protection diodes
- Internal thermal shutdown
- Under-voltage lockout
- LS-TTL compatible logic inputs with pull-up resistors
- Low Ron output resistance
- Low quiescent current
- Industry standard footprint

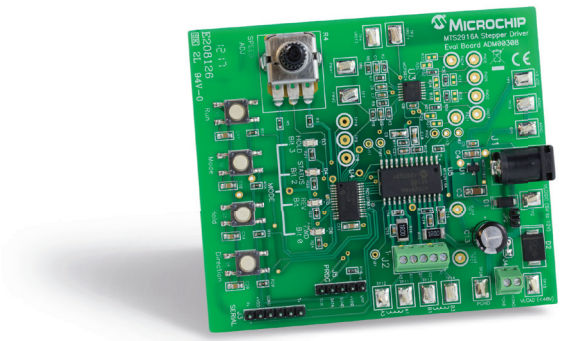
Device	Vmax	I_{OUT}	Package	Features
MTS2916A	40V	750 mA	SOIC-24	Selectable output current limit, Current direction control, Power bridge gate control, Current level control
MTS62C19A	40V	750 mA	SOIC-24	Selectable output current limit, Current direction control, Power bridge gate control, Current level control

Development Tools

MTD6505 3-Phase BLDC Sensorless Fan Controller Demonstration Board (ADM00345)



MTS2916A Stepper Driver Evaluation Board (ADM00308)



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