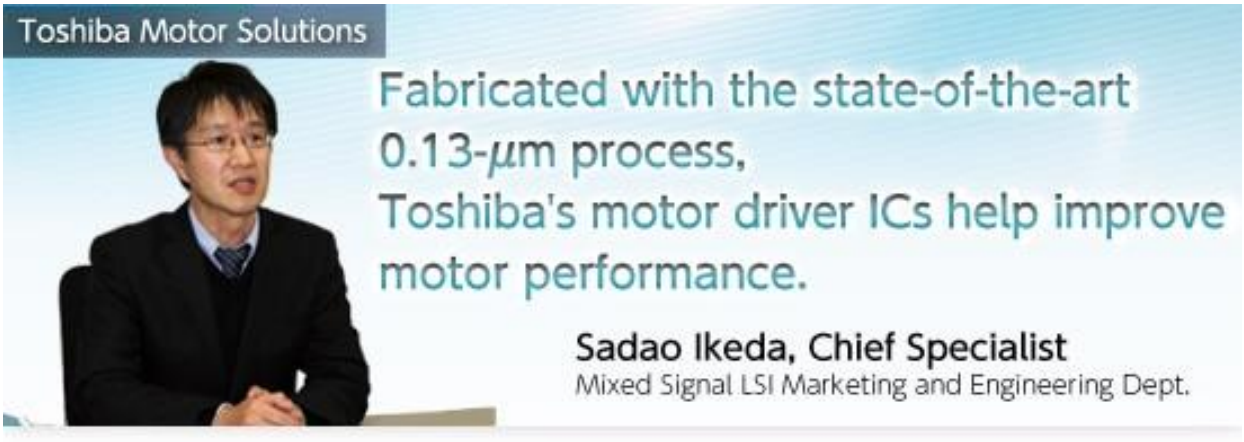


Industry's first motor driver ICs fabricated with the state-of-the-art 0.13-µm BiCD/CD process

In order to develop motor driver ICs that will help reduce the power consumption and acoustic noise of motor applications, it is necessary to improve the speed and performance of AD converters and power transistors and to increase logic integration density. However, it is not practical to try to address all these needs using conventional technologies because doing so will cause the die size to increase and thus impact the overall cost.

Instead, Toshiba has adopted the state-of-the-art BiCD/CD process, an industry-leading 0.13-µm high-voltage mixed-signal process with the world's lowest on-resistance (RonA). Thanks to the significant increase in circuit density, new driver ICs will help improve motor performance with smaller footprints and lower costs and thus meet exacting customer needs.

Safety features for improving the motor reliability

Since 1980, Toshiba has accumulated over 30 years of experience in the development of motor driver ICs. Toshiba has continuously led the industry, establishing a highly successful track record. During this period, Toshiba has used each new generation of processes to enhance performance and add new features for ensuring smooth and quiet motor operation. Toshiba has continued to improve the IC performance. Recent additions to our product portfolio include motor driver ICs with various safety features for detecting abnormal conditions, such as overcurrent, overtemperature and faulty behavior. These ICs contribute to improving the motor reliability. Furthermore, Toshiba has been integrating peripheral circuit functions onto the same chip to reduce the external parts count and thus the overall cost.

Over 100 motor driver ICs to meet a wide range of needs

To meet a wide range of market needs, Toshiba offers over 100 motor driver ICs for brushless motor, stepping motor and brushed motor applications. Our product portfolio includes many motor driver ICs that are specifically designed to address the market's growing needs, such as sine-wave driver ICs for air-conditioner fan motor applications that integrate an IPD and the controller section of a motor driver in a system-in-package (SiP) and single-chip driver ICs for small fan motor applications in refrigerators, ventilators, etc. Additionally, Toshiba is actively developing new motor driver ICs to expand its product portfolio.

Setting a new trend for the industry

Toshiba will continue to use the state-of-the-art process to increase the levels of integration, improve performance, reduce size and cut costs. At the same time, Toshiba stays in close contact with its customers to better understand their needs and respond to them in a timely fashion.

Moreover, Toshiba will cooperate with the Corporate Manufacturing Engineering Center, which is involved in the R&D of electrical motors to actively offer new proposals for improving motor performance and to develop new trend-setting and industry-leading technologies.

- Line-up of Motor Driver ICs
- 500V/2A Sine-Wave Motor Driver ICs
- Single-Chip Motor Driver ICs for Small Fan Applications

500V/2A Sine-Wave Motor Driver ICs

TB67B000HG

500V/2A 3-Phase BLDC Driver with Sine-Wave PWM & 150° Commutation

Applications:
Air conditioner fans, industrial fans, etc.

Evaluation samples: Avail.
Mass production: Scheduled to begin in March 2013

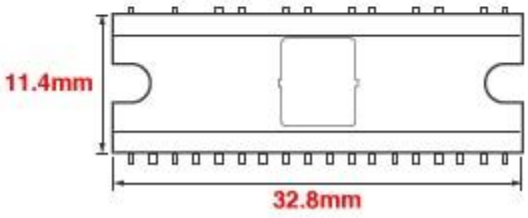
Single-package implementation using an SiP: Controller + driver chip (IPD)
- Small package with a small footprint area
- Eases board layout

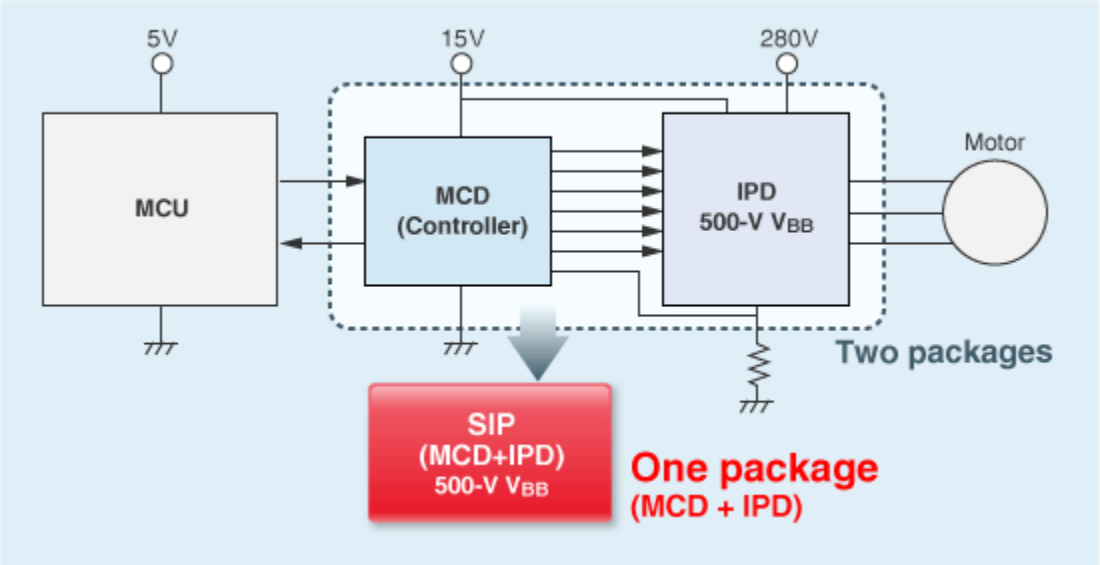
180° sine-wave and 150° square-wave commutation
- Low acoustic noise and low vibration
- High efficiency

Features

- 500V / 2A
- Position signals:
  Support both Hall elements and Hall ICs.
- On-chip RC oscillator: External resistor required
- External lead angle control
- TSD, ISD and motor lock detection
- Selectable FG pulse count:
  1 or 3 pulses per electrical degree
- Ta=-30 to 115°C

Package: HDIP30 Under development





Single-Chip Motor Driver ICs for Small Fan Applications

TC78B002FTG

18V/1.0A Single-Phase BLDC Motor Driver

Applications: PC fans, power supply fans, projector fans, etc.

Evaluation samples: Avail.
Mass production: Scheduled to begin in April 2013

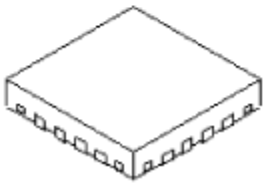
Adjustable commutation waveforms and lead angles
- Low power consumption
- Low acoustic noise and low vibration

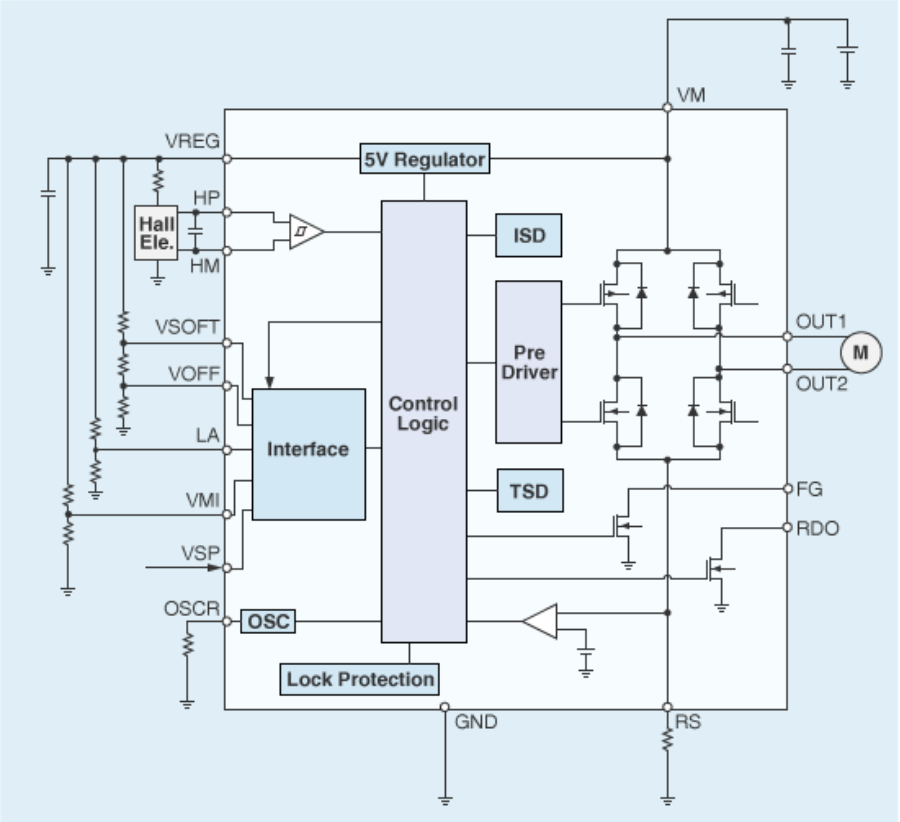
Small package
- QFN16(3.0 mm x 3.0 mm x 0.7 mm)

Features

- Microstepped sine wave drive supported
- Selectable lead angle
- VM = 3.5 V to 16 V
- TSD, ISD, UVLO
- Ron (H+L) = 1.6 Ω
- Ta(opr.) = –40°C to 105°C

package: QFN16





Before creating and producing designs and using, customers must also refer to and comply with the latest versions of all relevant TOSHIBA information and the instructions for the application that Product will be used with or for.