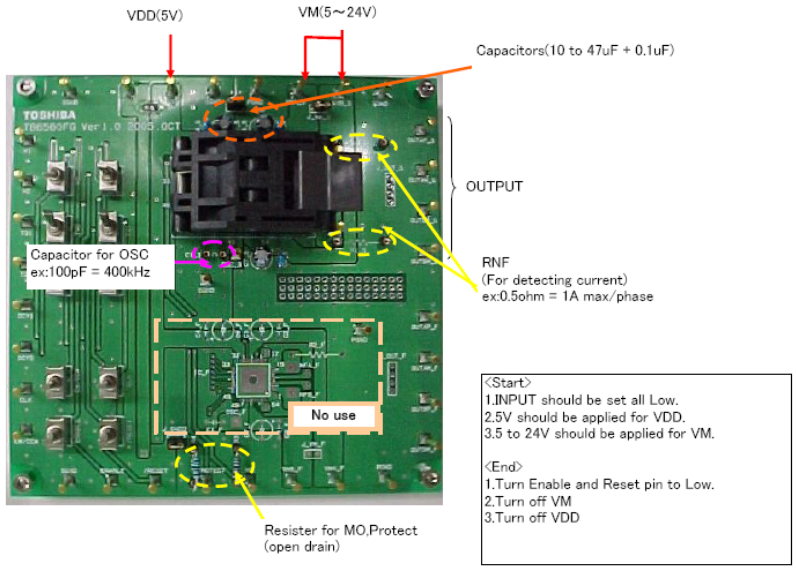
## Evaluation board

Based around a Toshiba PWM micro stepping driver ASSP, the TB6560A evaluation board allows engineers to modify key parameters that adjust start-up performance, motor efficiency and acoustic noise. The board is designed for direct control by voltage input or connection to a host processor, and connects directly to the motor under test with no additional hardware components.




<Start>
1.INPUT should be set all Low.
2.5V should be applied for VDD.
3.5 to 24V should be applied for VM.

<End>
1.Turn Enable and Reset pin to Low.
2.Turn off VM
3.Turn off VDD

**Visit us: http://www.toshiba-components.com/motorcontrol/**



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NEWSFlashTB6560A:0811(M)

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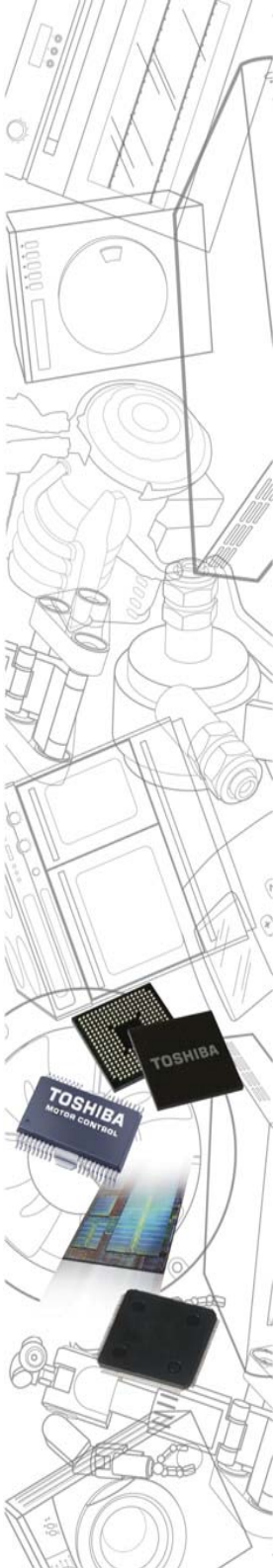
TOSHIBA
Leading Innovation

# Motor Control

# TB6560A

- 2-phase micro stepping motor driver
- Easy control by CLK-in type
- Low $R_{on}$ of 0.6Ω by BiCD process
- High voltage (40V) / high current (3.5A)



# PWM Chopper-Type Bipolar Driver for Stepping Motor Control

Monolithic Bi-CMOS Integrated Circuit; 50V /3.5A; MicroStepping ...

## Introduction

The TB6560A combines 1/16th step resolution with very high output current capability, making it ideal for high accuracy, microcontroller-free micro-stepping control in office automation and industrial applications. In more complex systems the TB6560A can be used to reduce the stepper control overhead on a host microcontroller, allowing a single microcontroller to control multiple motors.

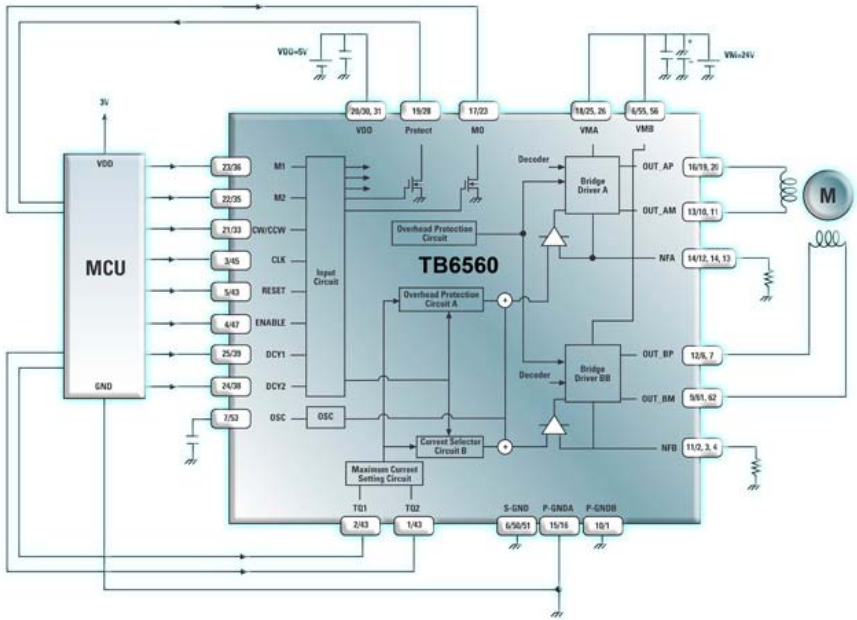
Supplied in HZIP25 (TB6560AHQ) and HQFP64 (TB6560AFG) packaging, the new device is a single-chip, PWM chopper-type sinusoidal micro-step bipolar stepping motor driver delivering peak output currents of 3.5A. Incorporation of all PWM generation and encoding circuitry on-chip provides for the automatic generation of a smooth, sinusoidal micro-step waveform for the high performance driving of bipolar type stepper motors from a single clock signal. The sinusoidal output enables the construction of low-vibration drives, while built in overtemperature protection circuitry further reduces the need for external components.

Providing both forward and reverse rotation control, TB6560A offers significant flexibility by allowing phase drive selection for 2-phase, 1-2-phase, 2W1-2-phase and 4W1-2 phase excitation. The ability to configure torque settings and a sophisticated Selectable Mixed Decay Mode (SMDM) provides significant design flexibility. SMDM allows the ratio of various decay settings to be adjusted so that coil discharge pattern can be modified according to motor load and speed. Choosing the best mix of decay modes allows PWM ripple to be minimised, reducing both audible noise and vibration.

## Features

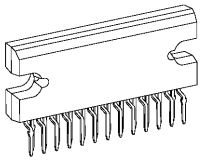
- Single-chip motor driver for sinusoidal microstep control of stepping motors
- High output withstand voltage due to the use of BiCD process: $R_{on}$ (upper and lower sum) = 0.6 Ω (typ.)
- Forward and reverse rotation
- Selectable phase excitation modes (2, 1-2, 2W1-2 and 4W1-2)
- High output withstand voltage: $V_{DSS}$ = 40 V
- High output current: $I_{OUT}$ = AHQ: 3.5 A (peak)
  AFG: 2.5 A (peak)
- Packages: HZIP25-P-1.27/HQFP64-P-1010-0.50
- Internal pull-down resistors on inputs: 100 kΩ (typ.)
- Output monitor pin: MO current ($I_{MO}$ (max) = 1 mA)
- Reset and enable pins
- Thermal shutdown (TSD)

## Application Example




## Package

TB6560AFG
THQFP64-P-10101-0.5



TB6560AH
HZIP25-1.27