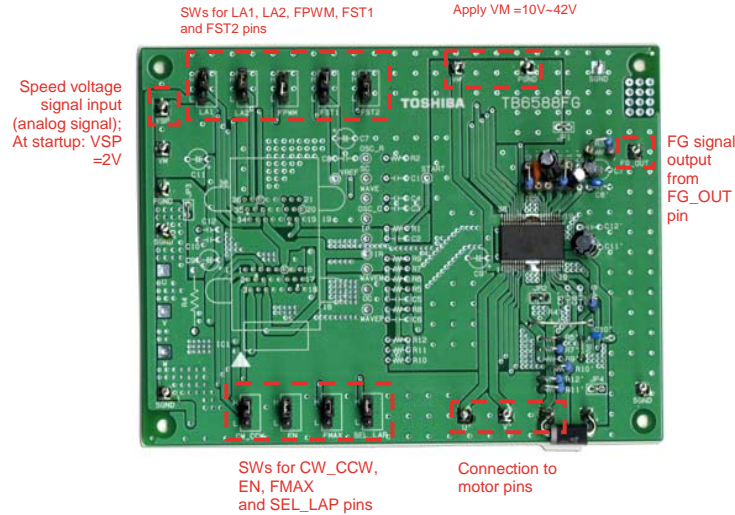


> **Evaluation board**

Based around a Toshiba PWM sensorless driver ASSP, the TB6588FG evaluation board (TB6588FG_EVB1) 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. Target applications for the new board include home appliance, pump, industrial and automotive motion control designs.



Motor Control

> **TB6588FG**

- > **3-phase BLDC Motor Control and Driver**
- > **Sensorless brushless DC Motor Control**
- > **Low PD by BiCD process**
- > **High voltage (50V) / high current (2.5A)**
- > **Rotation speed control by analog control input**

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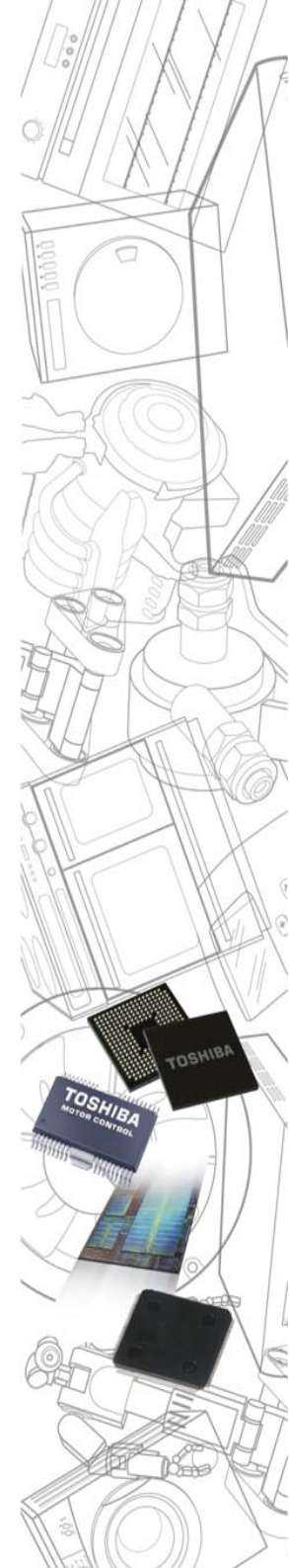
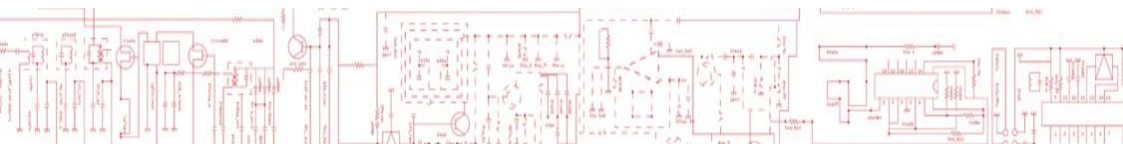
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3-phase Full Wave PWM Driver for Sensorless BLDC Motors

Monolithic Bi-CMOS Integrated Circuit; 50V /2.5A ...

> **Introduction**

The TB6588FG PWM sensorless driver ASSP (application specific standard product) brings together PWM sensorless motor control, protection functionality, an output power stage and an operational amplifier in a single 36-pin HSOP package.



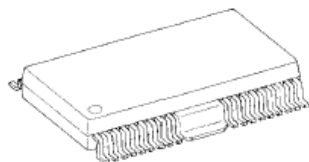
By combining sensorless operation with high levels of on-board functionality, the new ASSP will significantly reduce the component count, design complexity and development time of three-phase, full wave BLDC motor applications with power levels up to 60W. In particular the device is ideal for home appliance, pump, industrial motion, automotive motor and other motion control applications requiring motor bridge voltages ranging from around 10V to 42V.

Toshiba's TB6588FG is a complete motor driver solution that controls forward or reverse rotation speed by changing the PWM duty cycle based on an analogue control signal input. Full wave sine wave PWM operation provides for high-efficiency and low-power operation while minimising electrical and acoustic noise. Lead angle control options of 0°, 7.5°, 15° and 30° allow designers to tune their application for optimum efficiency.

The IC can deliver a maximum current output of 2.5A through its integrated power stage and offers configurable modes for improving the motor start-up characteristic. Built in protection against overcurrent conditions and the ability to enable detection of excessive commutation frequency and low rotation speed further improve design flexibility while minimising the need for external components.

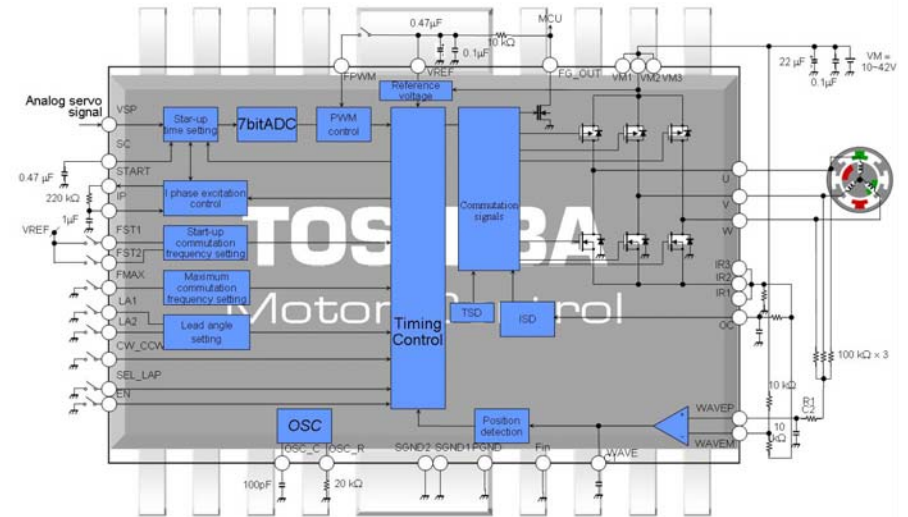
As a result it is ideal for applications such as home appliances, pumps and fans and industrial motion control.

> **Package**



TB6588FG
HSOP36-P-450-0.65

> **Application Example**



> **Features**

Features:

- > Sensorless drive in three-phase full-wave mode
- > PWM chopper control
- > Controls the PWM duty cycle, based on an analog input (7-bit ADC)
- > Output current: I_{OUT} = 1.5 A typ. (2.5 A max)
- > Power supply: V_M = 7 to 42 V (50 V max)
- > Overcurrent protection
- > Forward and reverse rotation
- > Lead angle control (0°, 7.5°, 15°, 30°)
- > Overlapping commutation
- > Rotation speed detecting signal
- > DC excitation mode to improve starting characteristics
- > Adjustable DC excitation time and forced commutation time for a startup operation
- > Forced commutation frequency control: f_{osc}/(6 × 2¹⁶), f_{osc}/(6 × 2¹⁷), f_{osc}/(6 × 2¹⁸), f_{osc}/(6 × 2¹⁹)

