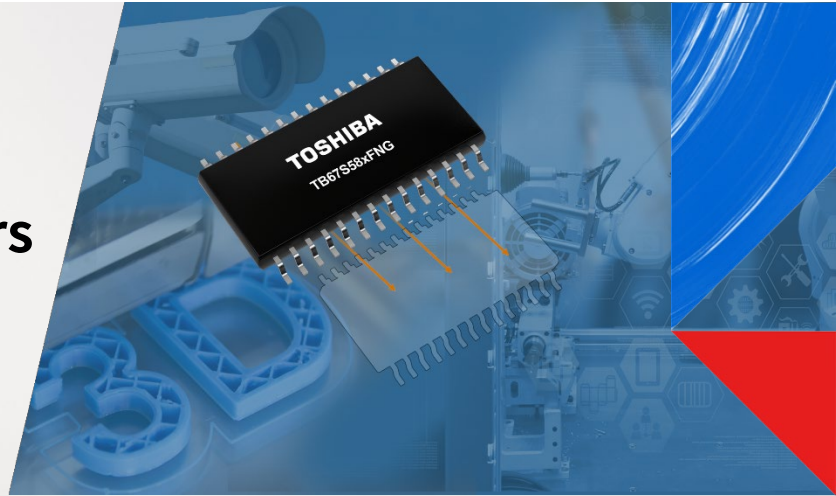


TB67S580FNG TB67S581FNG Stepper Motor Drivers

**Pin-to-pin
compatible
devices**



Stepper Motor Drivers Enabling Second Sourcing Strategies

This set of two pin-to-pin compatible bipolar stepper motor drivers support up to 1/32 micro steps and come with extended features. They have a motor output voltage rating up to 50V, with the TB67S581FNG having an output current rating up to 2.5A and the TB67S580FNG being rated up to 1.6A. $R_{DS(ON)}$ is only 0.4Ω (typ.) for both high-side and low-side (at 24V when a 2A output current is applied). Safety features include overcurrent, thermal shutdown and undervoltage lockout detection. Motor power supply voltages from 8.2V to 44V operational range are supported, and less than 10μA (typ.) is consumed in sleep mode.

Applications

- 3D printer
- Linear actuators
- Textile & sewing machines
- Surveillance camera
- Industrial equipment
- Point of Sales (PoS)

Features

- Clock control interface
- Up to 1/32 micro steps
- Operating range 8.2-44V up to 2.0A
- Low $R_{DS(ON)}(H+L) = 0.40\Omega(\text{typ.})$
- Constant current drive
- Single voltage supply
- Sleep Mode
- Package: HTSSOP 28 pin

Advantages

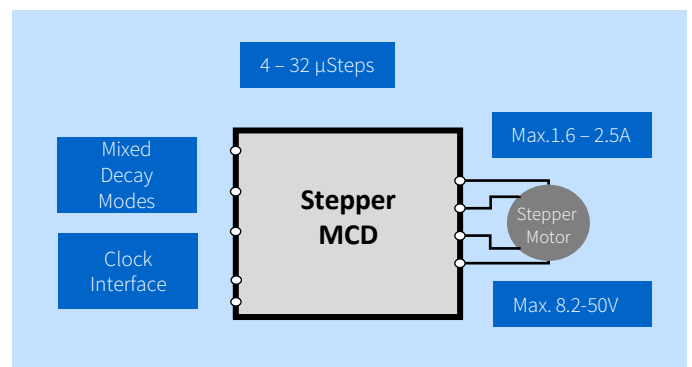
- Micro stepping leads to smooth motor operation
- Flexible and simple control
- Built-in
 - Charge-pump
 - H-Bridge
 - Error detection & signaling
- Pin-compatible to popular products
- Low power sleep mode

Benefits

- One PCB (platform) design with two different drive strength
- Less PCB space and lower BOM
- Error detection & signaling improves system reliability and safety
- Re-use of existing designs due to drop-in replacement option
- Power savings and less heating

Drop in compatible general stepper motor drivers

It is possible to use one PCB with two different drivers of different drive strength. Due to pin-to-pin compatibility to popular devices in the market a second source strategy could be established or an existing design with a compatible device can be replaced.



Functions of the stepper motor drivers

Micro stepping

Up to 32 micro steps are supported with the clock interface.

Sleep mode

In sleep mode several functions of the device will be set on hold and the typ. power consumption is below 10µA.

Single voltage supply

The core voltage is generated internally from the motor supply.

MO

Angle monitor. This output pin signals a full step is done.

LO

This output pin signals a over-current , over-temperature , or under-voltage state.

Safety features

Thermal shutdown function (TSD)

When the junction temperature (Tj) of the IC exceeds 160°C (typ.)

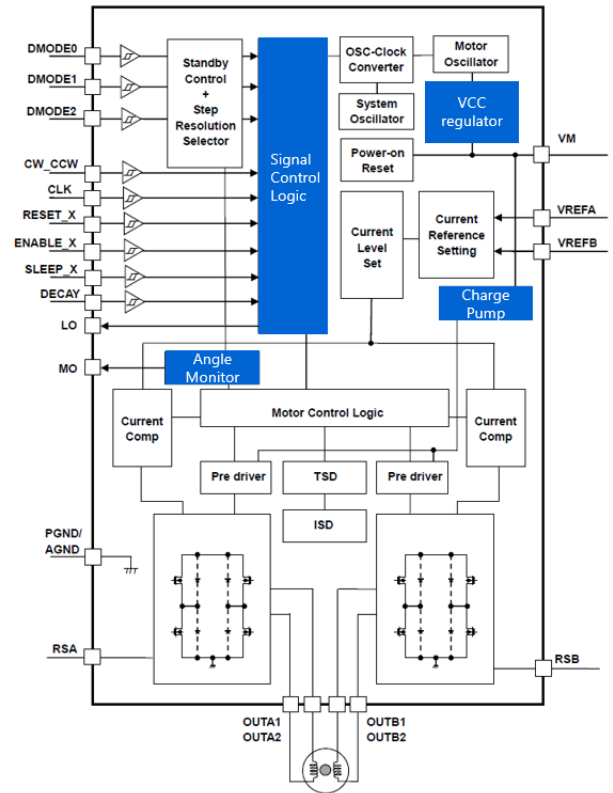
Over current detection function (ISD)

When the output current exceeds the individual device threshold level the output transistors are switched off.

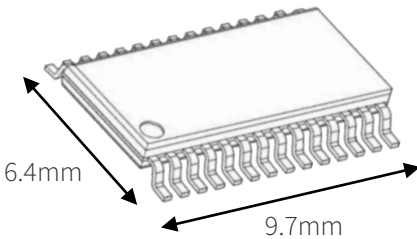
Under Voltage Lockout function (UVLO)

When the motor supply VM falls below 8.2V

Block diagram



HTSSOP28 package



The mounting area of the package is approximately 39% smaller compared to the previous generation.

Low cost evaluations boards from Mikroelektronika



TB67S580FNG

www.mikroe.com/stepper-20-click



TB67S581FNG

www.mikroe.com/stepper-9-click



Table of drive strength

Partnumber	µSteps	Max. voltage	Max. current
TB67S580FNG	32	50 V	1.6A
TB67S581FNG	32	50 V	2.5A

Toshiba stepper motor drivers



<https://toshiba.semicon-storage.com/eu/semiconductor/product/motor-driver-ics/stepping-motor-driver-ics.html>