50V / 3.5A H-Bridge Driver

TB67H453FNG
TB67H453FTG

DC Motor Driver with Realtime Current Monitor

The TB67H453 is an integrated H-Bridge driver with a low $R_{ds(on)}$ (H+L=0.6 Ω typ.), supporting an operating voltage range of 4.5V to 44V and a maximum output current of 3.5A. It features a current monitoring output (ISENSE), multiple error detections mechanisms (TSD, ISD, UVLO), and a fully integrated charge pump, making it suitable for brushed DC motor control, robotics, and industrial automation. Additionally, it offers low power consumption and comes in HTSSOP16/VQFN16 package options with thermal pads for efficient heat dissipation

Applications

- Robotics
- Industrial automation
- Consumer electronics
- Motor current sensing
- Compact motor driver circuits
- Portable devices
- Industrial equipment

Features

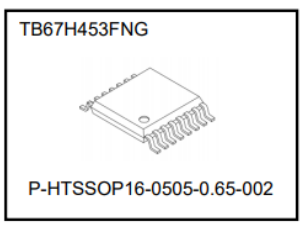
- Integrated H-Bridge driver with low $R_{ds(on)}$ (H+L=0.6 Ω typ.)
- Operation voltage range: 4.5V to 44V
- Output current: 3.5A (Max)
- Current monitoring function (ISENSE)
- Multiple error detections (TSD, ISD, UVLO)
- Fully integrated charge pump
- Low power consumption/standby current
- Error detection signal output function
- HTSSOP16/VQFN16 packages with thermal pad

Advantages

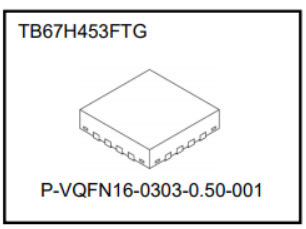
- Simplifies motor control
- Cover wide range of applications
- Supports wide voltage range
- Real-time current feedback
- Enhanced reliability
- Energy-efficient operation
- Easy fault diagnosis
- Efficient heat dissipation

Benefits

- Reduces design complexity
- Enhanced performance
- Improved safety and control
- Simplifies circuit design
- Extends battery life
- Protects against faults
- Quick troubleshooting
- Improved thermal management



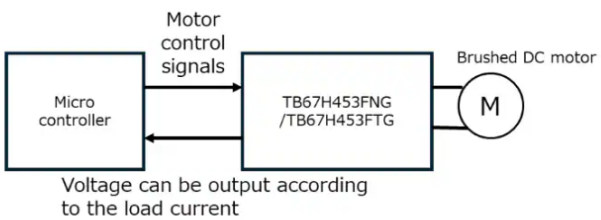
Weight: 0.06 g (typ.)



Weight: 0.02 g (typ.)

Integrated current monitoring

The TB67H453FNG/FTG features an integrated current monitoring function that outputs a current level proportional to the current flowing through the low-side MOSFETs in the H-Bridge. This function uses a current mirror architecture, eliminating the need for an external current sense resistor. It allows for continuous current monitoring in forward, reverse, and short brake modes.



TB67H453FNG/FTG functions

H-Bridge Motor Driver:

The TB67H453 controls the direction and speed of a brushed DC motor using an integrated H-Bridge. It supports bidirectional control for one motor or unidirectional control for two motors.

Current Monitoring:

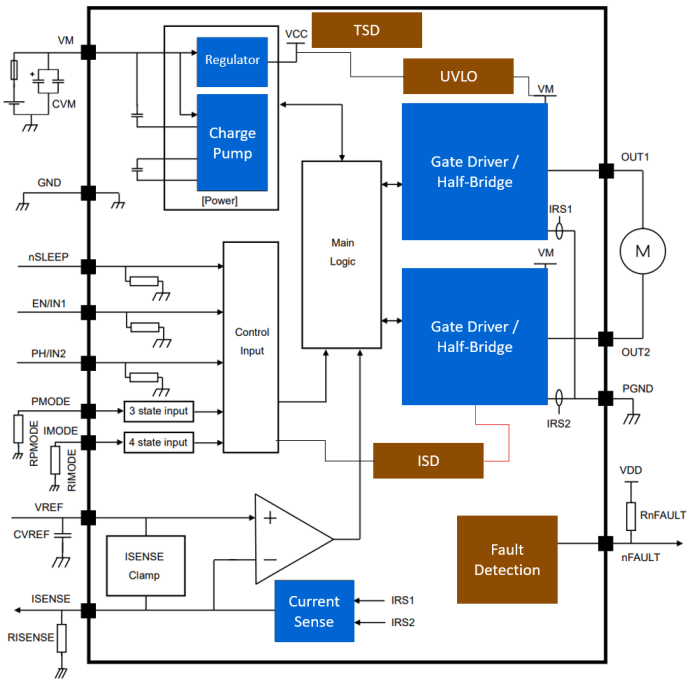
This feature measures the current flowing through the motor, providing feedback via the ISENSE pin. It helps in monitoring and managing the motor's performance.

Integrated Charge Pump:

The charge pump enhances voltage stability without requiring an external capacitor. This ensures consistent performance of the motor driver.

Internal Regulator:

The TB67H453 includes an internal voltage regulator that provides a stable 5V supply for the internal logic circuits. This ensures consistent performance and reliability of the motor driver.



Block diagram of TB67453FNG/FTG

Safety features

Thermal Shutdown (TSD):

Disables the H-Bridge to prevent overheating. Normal operation resumes once the temperature drops below the recovery threshold.

Undervoltage Lockout (UVLO):

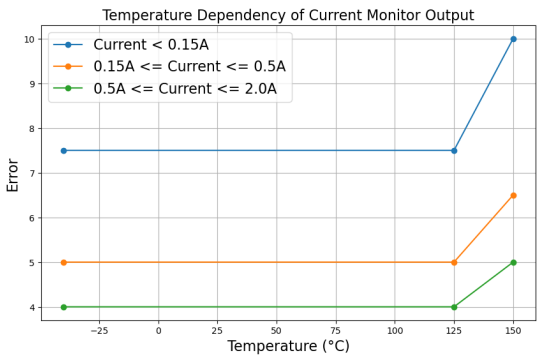
Turns off the H-Bridge during low voltage conditions, preventing malfunction. The device resumes normal operation when the voltage returns to a safe level.

Overcurrent Shutdown (ISD):

Protects the device by disabling the H-Bridge when excessive current is detected. Depending on the mode, it can either auto-recover or require a reset to resume operation.

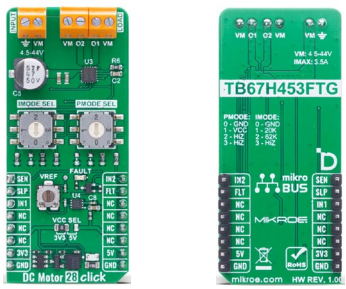
Current Monitor temperature dependency

Temperature (°C)	Error <0.15A (mA)	Error 0.15A <= Current <= 0.5A	Error for 0.5A <= Current <= 2.0A
-40	7.5	5.0	4
125	7.5	5.0	4
150	10	6.5	5



Low-Cost Evaluation Boards

The Mikroelektronika Click board™ DC Motor 28 click allows quick and easy device evaluation and prototyping.
https://www.mikroe.com/dc-motor-28-click-ftg
https://www.mikroe.com/dc-motor-28-click-fng



Mikroelektronika DC Motor 28 Click

Toshiba brushed DC motor drivers

Further product information on website