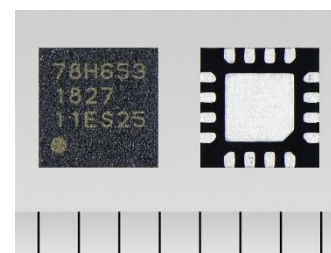


TC78H653FTG

H-Bridge Driver IC Supporting Low voltage (1.8V) and Large current (5.0A(peak)) Drive –Realization of Motor Control with Two Dry Batteries-

We developed “TC78H653FTG”, a dual-H-bridge driver IC that achieves low voltage (1.8V) and large current (5.0A (peak)) drive.

It is suitable to drive DC brushed motors and stepping motors for low voltage equipment (using dry batteries, etc.) such as mobile devices, electronic products for the home, and USB drive devices. Mass production has started.



Three Features

- Supporting large current drive (Output current of absolute maximum rating: 4.0A (DC), 5.0A (10ms or less) in Large mode)
- Low on resistance reduces IC losses generated by voltage drops of the motor driver and increases the applied voltage for the motor. That improves the motor torque. (Output on resistance 0.11Ω (typ.) total of high and low sides when $V_M=5.0V$ and $T_a=25^\circ C$, in Large mode)
- 500kHz PWM control by high-speed output switching characteristics (Switching characteristics $t_{ON}=90ns$ (typ.), $t_{OFF}=90ns$ (typ.))

Applications

Motor applications driven by relatively low voltage batteries (1.8V to 7.0V)

Mobile devices (cameras and compact printers) using 3.7V lithium-ion batteries, products for the home (gas stoves, smart meters, and electronic locks) and toys using two 1.5V dry batteries, and devices using 5V USB power supply.

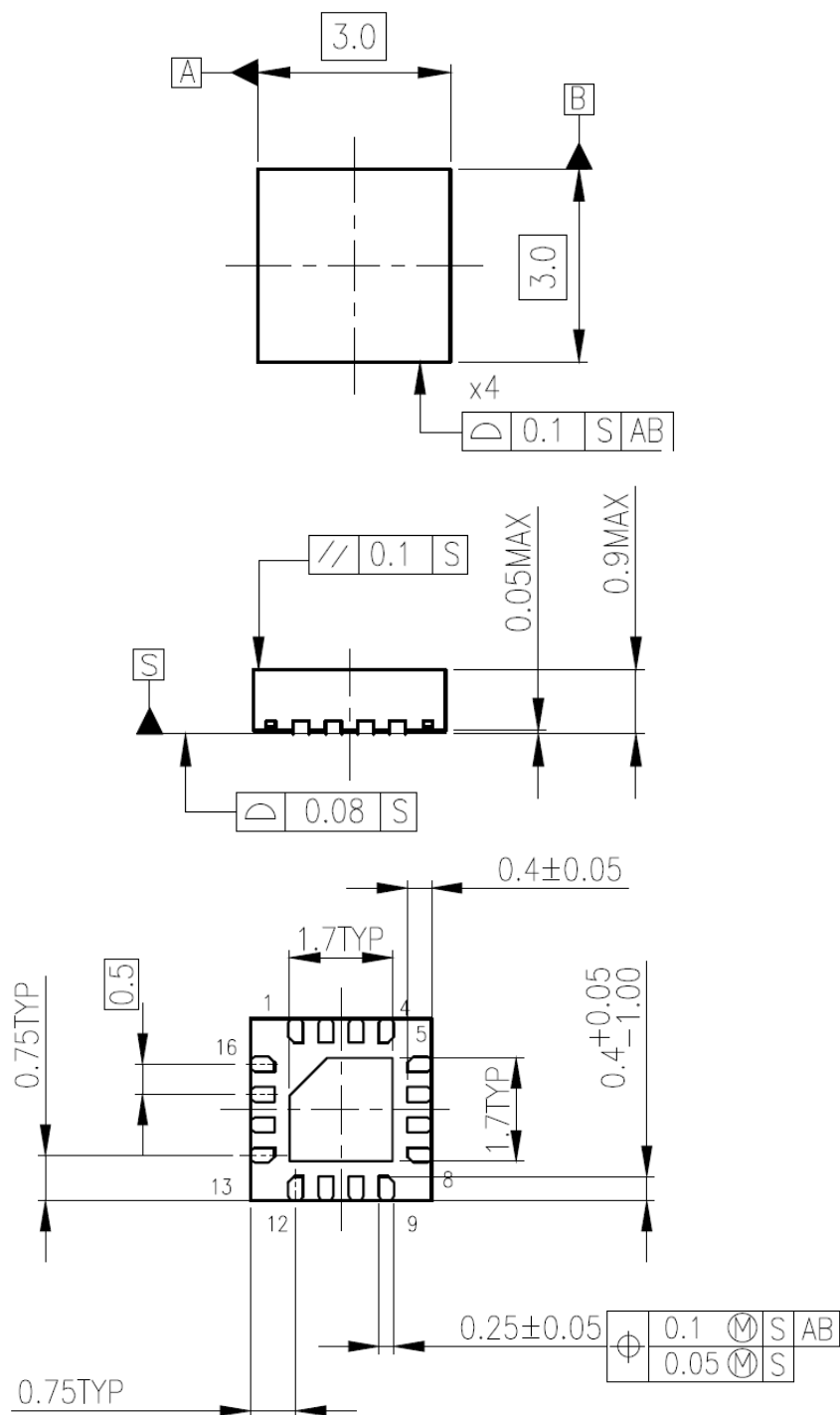
Product Specifications

Specifications	TC78H653FTG
Number of H-Bridge channels	2 channels
Drive motor	DC brushed motor (Driving 2 motors is possible in Small mode.) DC brushed motor (Driving 1 motors is possible in Large mode.) Bipolar stepping motor
Power supply voltage	Absolute maximum rating: 8V, Operating range: 1.8V to 7.0V
Output current Absolute maximum rating	In Small mode: 2.0A (DC), 2.5A (10ms or less) In Large mode: 4.0A (DC), 5.0A (10ms or less)
Output on resistance (total of high and low side)	0.11Ω (typ.) when $V_M=5.0V$, $T_a=25^\circ C$, in Large mode
Output switching	$t_{ON}=90ns$ (typ.), $t_{OFF}=90ns$ (typ.) (Supporting 500kHz PWM control)
Error detections	Over current detection, Thermal shutdown, and Under voltage lockout
Package	Small type QFN16 (size: 3.0mm×3.0mm)
Other features	Built-in standby function: Power consumption 0μA (typ.) Built-in cross conduction protection circuit Supports forward/reverse/stop/brake control

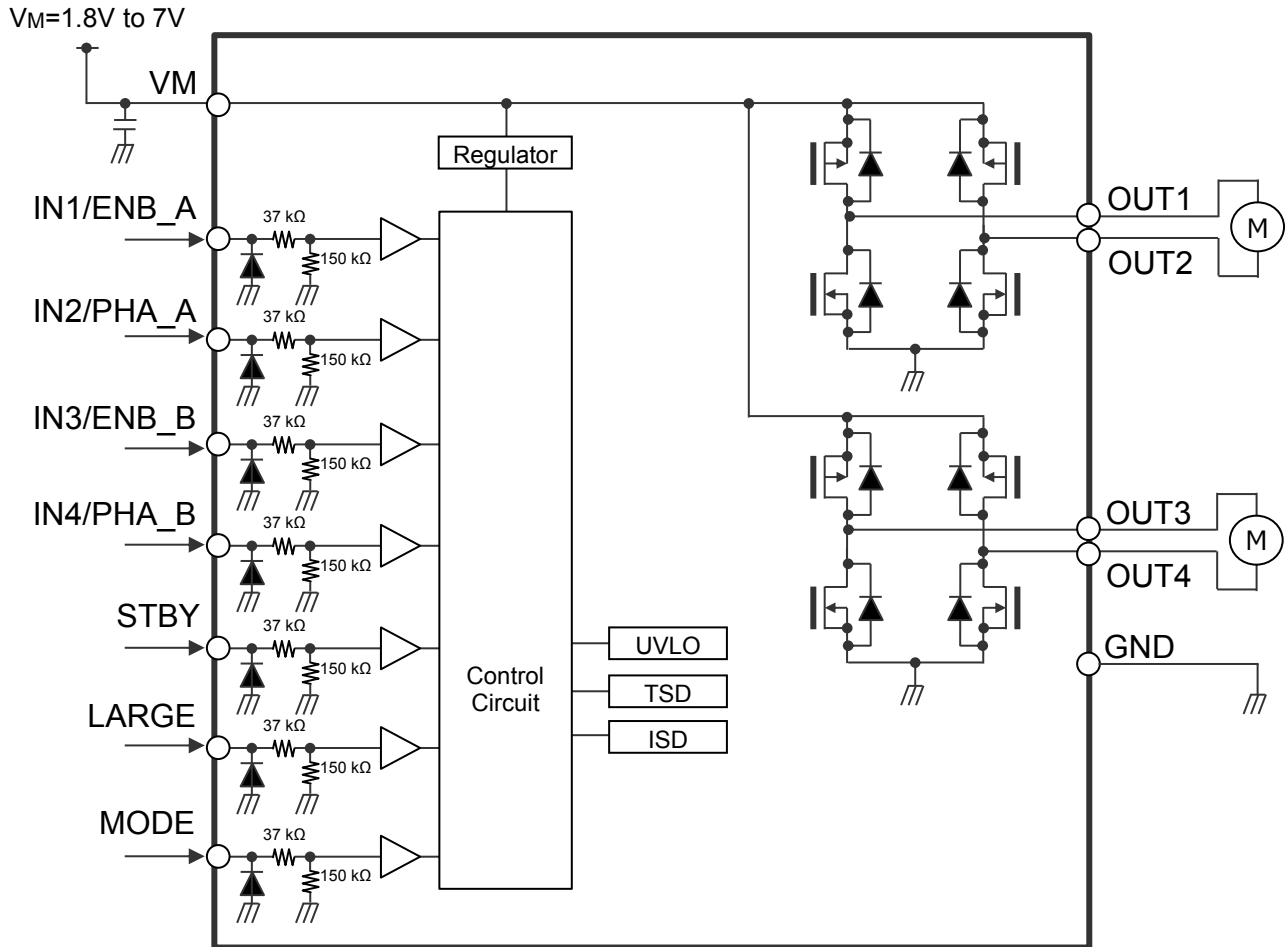
Package

P-VQFN16-0303-0.50-001

Unit: mm



Example of Application Circuit



Note: The application circuits shown in this document are provided for reference purpose only. Especially, thorough evaluation is required on the phase of mass production design. Providing these application circuit examples does not grant a license for industrial property rights.

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