

# MPC17550

## Quad H-Bridge Micromotor Driver with DC/DC Boost Converter

Power Actuation

H-Bridge Motor Drivers

### DESCRIPTION

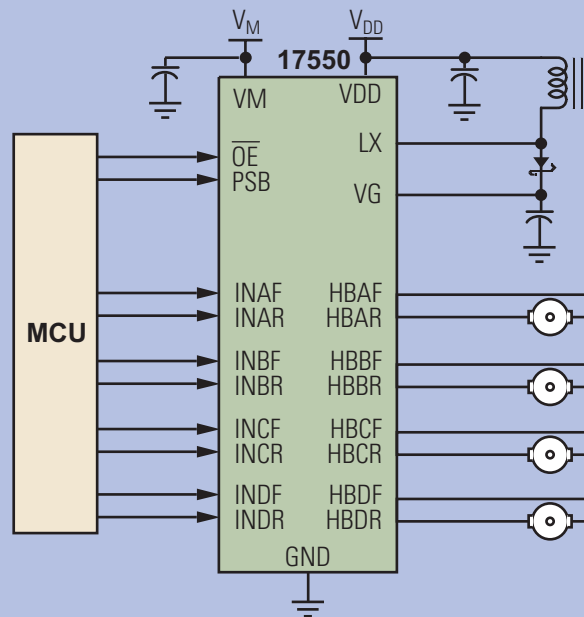
The 17550 is a monolithic quad H-Bridge power IC ideal for portable electronic applications containing tiny bipolar stepper motors and/or brush DC-motors powered by two-to-four cell NiCd/NiMH batteries.

The 17550 operates from 2.5 V to 5.5 V, with independent control of each H-Bridge via parallel 3.0 V or 5.0 V logic-compatible I/O. The device features an on-board DC/DC boost converter that allows motor operation all the way down to 1.6 V (the boost converter supplies the gate-drive voltage for each of the four independent H-bridge output stages). Each output bridge has its own gate-drive and logic circuitry with built-in shoot-through current protection.

The 17550 has four operating modes: Forward, Reverse, Brake, and Tri-States (High Impedance). The 17550 has a low total  $R_{DS(ON)}$  of 1.2  $\Omega$  max @ 25°C. In addition, it can be set into a very low current-drain standby mode.

The H-Bridge outputs can be independently PWM'ed at up to 200 kHz for speed/torque and current control. The 17550 can efficiently drive many types of micromotors owing to its low output resistance and high output slew rates.

### 17550 SIMPLIFIED APPLICATION DIAGRAM



### APPLICATIONS

- Portable Electronics
- Lens Shutter Camera
- Optical Disc Drive (MO, DVD, CD, etc.)
- Robotic Systems

### PERFORMANCE

### TYPICAL VALUES

Outputs	4 ch
Output Current	0.7 A (DC), 2.0 A (PEAK)
Motor Output Voltage	1.6 - 5.5 V
Logic Operating Voltage	2.5 - 5.5 V
Input PWM	200 kHz
Operating Temp	-20°C ≤ T <sub>A</sub> ≤ 65°C

## FEATURES

- Low Total  $R_{DS(ON)}$  0.7  $\Omega$  (Typ), 1.2  $\Omega$  (Max) @ 25°C
- Output Current 700 mA (Continuous per Output)
- Shoot-Through Current Protection Circuit
- PWM Control Input Frequency up to 200 kHz
- Built-In DC/DC Boost Converter
- Low Power Consumption Standby Mode
- Undervoltage Detection and Shutdown Circuit
- Devices available for comparison are in the Analog Product Selector Guide - SG1002 and Automotive Product Selector Guide - SG187

PROTECTION	DETECT	SHUT DOWN
Undervoltage	●	●

## CUSTOMER BENEFITS

- Easy MCU interfacing to four H-Bridges
- Undervoltage detection to prevent erratic operation
- High PWM rate for enhanced motor control
- PWM to 200 kHz
- Low profile package for portable designs
- Low quiescent current
- Reduced design time

## QUESTIONS

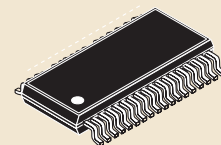
- Are you working with portable electronic battery powered applications?
- Do you need to control a stepper or Brush DC-motor in a 3 or 5 V logic system?
- Are you designing a Brush DC-motor controller for motors up to 2.0 A (peak) and 6.8 V DC?

## ORDERING INFORMATION

Device	Temperature Range ( $T_A$ )	Package
**17550EV/EL	-20°C to 65°C	36 VMFP
Data Sheet Order Number		MPC17550

\*\*Prefix Index:  
PPC = Engineering Samples; MPC = Production

Contact Sales for Evaluation Kit Availability



**36 VMFP**  
0.65 mm Pitch  
5.3 mm x 12.6 mm Body