

MC33886

5.0 A H-Bridge

Applications

- Automotive Systems
- DC Motor Control in Industrial and Robotic Systems
- DC Motor and Actuator Control in Boats, RVs, and Marine Systems
- Appliance and White Goods Electrical Actuators
- Powered Machine and Hand Tools
- Antenna Rotors and Dish Positioning Systems

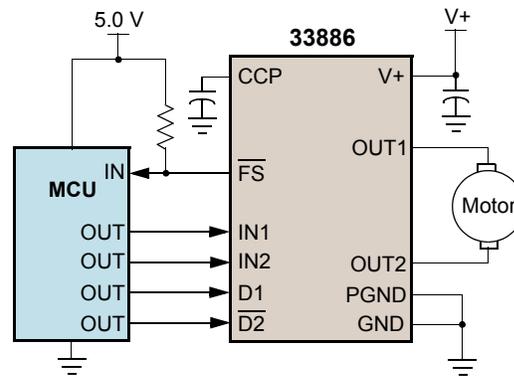
Overview

The 33886 is a monolithic H-Bridge ideal for fractional horsepower DC-motor and bi-directional thrust solenoid control. The IC incorporates internal control logic, charge pump, gate drive, and low $R_{DS(ON)}$ MOSFET output circuitry. The 33886 is able to control continuous inductive DC load currents up to 5.0 A. Output loads can be pulse width modulated (PWM-ed) at frequencies up to 10 kHz.

A Fault Status output reports under-voltage, short-circuit, and over-temperature conditions. Two independent inputs control the two half-bridge totem-pole outputs. Two disable inputs force the H-Bridge outputs to tri-state (exhibit high-impedance).

The 33886 is parametrically specified over a temperature range of $-40\text{ }^{\circ}\text{C} \leq T_A \leq 125\text{ }^{\circ}\text{C}$, $5.0\text{ V} \leq V+ \leq 28\text{ V}$. The IC can also be operated up to 40 V with derating of the specifications. The IC is available in a surface mount power package with exposed pad for heatsinking.

MC33886 Simplified Application Drawing



Performance	Typical Values
Outputs	2
RMS Current	5.0 A
$R_{DS(ON)}$ @ 25 °C	120 mΩ
Operating Voltage	5.0 V to 40 V
Switching Time	5.0 μs
ESD	± 2000 V
Operating Temp	$-40\text{ }^{\circ}\text{C} \leq T_A \leq 125\text{ }^{\circ}\text{C}$
Junction Operating Temp	$-40\text{ }^{\circ}\text{C} \leq T_J \leq 150\text{ }^{\circ}\text{C}$

Features

- 5.0 V to 40 V continuous operation
- 120 mΩ R_{DS(ON)} H-bridge MOSFETs
- TTL /CMOS compatible inputs
- PWM frequencies up to 10 kHz
- Active current limiting via internal constant OFF-time PWM (with temperature dependent threshold reduction)
- Output short-circuit protection
- Under-voltage shutdown
- Fault status reporting
- Additional devices available for comparison in Analog Product Selector Guide SG1002, and Automotive Product Selector Guide SG187

Customer Benefits

- Easy MCU interfacing to a single H-Bridge
- Integral thermal and over-voltage protection
- Enhance device-load status reporting
- H-Bridge Operation to 28 V @ 5.0 A
- Low R_{DS(ON)} H-Bridge maximizes current to load
- Integral charge pump for a simpler design
- Reduced design time

Questions

- Do you need to control a DC motor via microprocessor?
- Are you designing a DC motor controller for motors up to 5.0 A and up to 28 V DC?
- Do you need to drive a motor in both forward and reverse or a solenoid in both push and pull?
- Do you need to incorporate PWM speed and torque control?
- Do you need to provide active braking and freewheeling?

Protection	Detect	Limiting	Shut Down	Auto Retry	Status Reporting
Under-voltage	•		•	•	•
Current Regulation	•	•		•	
Over-temperature	•	•	•		•
Short to GND	•		•		•
Short to V _{PWR}	•		•		•

Ordering Information		
Device	Temperature Range	Package
MC33886PVW/R2	-40 to 125°C	20 HSOP

Evaluation Board	
Device	Package
KIT33887EKEVBE	Evaluation Board

Documentation	
Device	Documentation
MC33886	Data sheet order number
SG1002	Analog Product Selector Guide
SG 187	Automotive Product Selector Guide

20 HSOP



1.27 mm Pitch
16 x 11 mm Body
12.2 x 6.9 mm Exposed Pad

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