

MC33886

5.0 A H-Bridge

H-Bridges and Motor Drivers

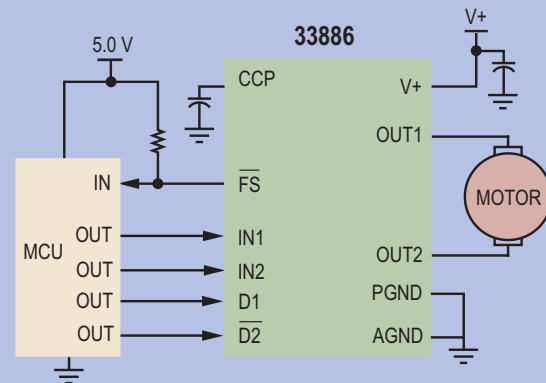
DESCRIPTION

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 undervoltage, short circuit, and overtemperature 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 $-40^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$, $5.0\text{ V} \leq V_+ \leq 28\text{ V}$. 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.

33886 SIMPLIFIED APPLICATION DIAGRAM



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

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	$-40^{\circ}\text{C} \leq T_A \leq 125^{\circ}\text{C}$
Junction Operating Temp	$-40^{\circ}\text{C} \leq T_J \leq 150^{\circ}\text{C}$

FEATURES

- Similar to the MC33186DH1 with enhanced 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
- Undervoltage shutdown
- Fault status reporting
- Pb-free packaging designated by suffix code VW
- Additional devices available for comparison in Analog Product Selector Guide SG1002, and Automotive Product Selector Guide SG187

PROTECTION	DETECT	LIMITING	SHUT DOWN	AUTO RETRY	STATUS REPORTING
Undervoltage	●		●	●	●
Current Regulation	●	●		●	
Overtemperature	●	●	●		●
Short to GND	●		●		●
Short to V_{PWR}	●		●		●

CUSTOMER BENEFITS

- Easy MCU interfacing to a single H-Bridge
- Integral thermal and overvoltage 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

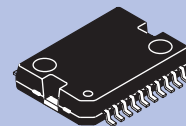
QUESTIONS

- 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?

ORDERING INFORMATION

Device	Temperature Range (T_A)	Package
MC33886DH/R2	-40°C to 125°C	20 HSOP
MC33886VW/R2		
Data Sheet Order Number		MC33886

Contact Sales for Evaluation Kit Availability



20 HSOP
1.27 mm Pitch
16.0 mm x 11.0 mm Body
12.2 mm x 6.9 mm Exposed Pad