

# MC33886

## 5.0 A H-Bridge

### H-Bridge Motor Driver

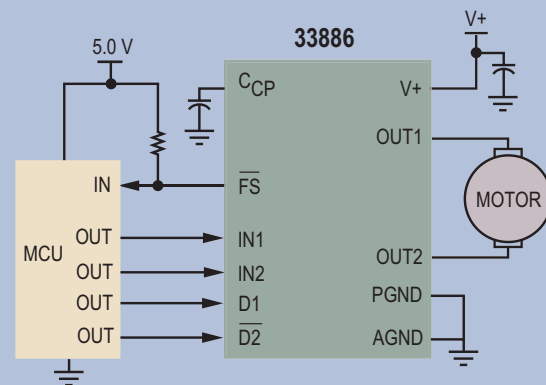
#### DESCRIPTION

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

- 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
- Current feedback for Servo control use
- 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?

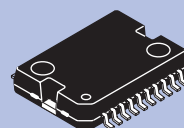
## ORDERING INFORMATION

Device	Temperature Range ( $T_A$ )	Package
**33886DH	-40°C to 125°C	20 HSOP
**33886DHR2		
**33886VW		20 HSOP Pb-Free
**33886VWR2		

Data Sheet Order Number MC33886

\*\*Prefix Index:  
PC = Engineering Samples; MC = Production

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