

MC33186

5.0 A H-Bridge

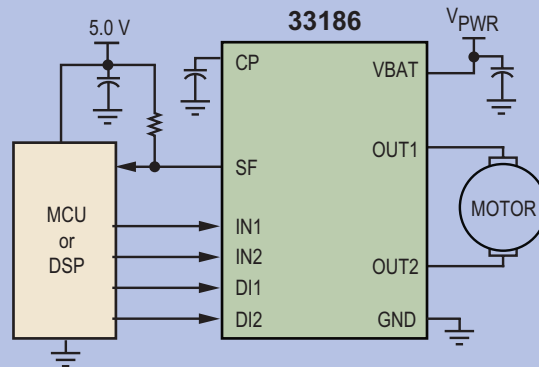
H-Bridge Motor Drivers

DESCRIPTION

The 33186 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 33186 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.

The 33186 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 de-rating of the specifications. The IC is available in a surface mount power package with exposed pad for heat sinking.

33186 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	150 mΩ
Operating Voltage	5.0 V to 40 V
Switching Time	5.0 μs
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

- Overtemperature, Short-Circuit Protection, and Overvoltage Protection against Transients up to 40 V at VBAT Typical
- RDSon = 150 mΩ for each output Transistor at 25°C
- Continuous DC Load Current 5 A (TC < 100°C)
- Output Current Limitation at typ 6,5 A +/- 20%
- Short-Circuit Shutdown for Output Currents over 8 A
- Logic Inputs TTL/CMOS Compatible
- Operating Frequency up to 20 kHz
- Undervoltage Disable Function
- Diagnostic Output, 2 Disable Input
- Coding Input for Alternative Functions
- Stable Operation with an External Capacitance of Maximum 47 μF at VBAT
- 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?

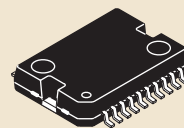
ORDERING INFORMATION

Device	Temperature Range (T _A)	Package
**33186DH1	-40°C to 125°C	20 HSOP
**33186DH1R2		
**33186VW1		
**33186VW1R2		

Data Sheet Order Number MC33186

**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