

ANALOG PRODUCTS

MC33887 FACT SHEET



POWER ICs
H-BRIDGE

APPLICATIONS

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

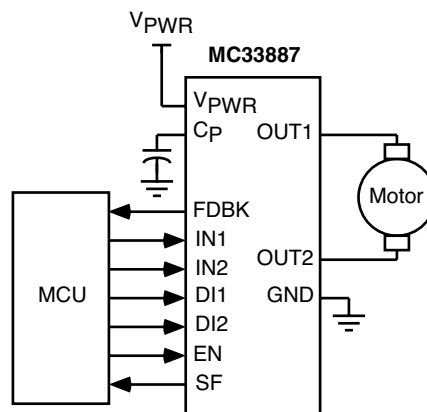
MC33887 POWER H-BRIDGE DRIVER WITH SLEEPMODE

The MC33887 is a monolithic power IC comprising control logic, charge pump, gate drive, and low $R_{DS(on)}$ MOSFET output H-Bridge circuitry into a small surface mount package. It is designed to drive inductive loads with RMS currents up to 5.2 A in both directions. In addition, the current drive can be pulse width modulated (PWM) at frequencies up to 20 kHz. An internal current mirror circuit provides a proportional ($1/400^{th}$) sample of the output current, which may be used to provide feedback or load information to a microcontroller's A/D input.

Under voltage, over temperature, and over current conditions are detected and reported via a status flag output. Output control is via two independent inputs (each half of the bridge may be utilized as an independent totem pole output). Enables can place the bridge into sleep mode ($<25 \mu A$).

Typical applications include: DC-motor acme lead screw actuators, servo gear actuators, bi-directional thrust solenoids, and fractional horsepower DC-motor control.

Simplified Application Diagram



CUSTOMER BENEFITS


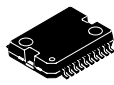
- Easiest way to interface a microcontroller to a DC-motor
- Simplified system design
- Built-in current limiting
- Built-in thermal shutdown
- Versatile output control (each half of H-Bridge is independently controllable)
- Reduced board space
- Enhanced reliability

Performance	Typical Values
Outputs	2
RMS Current	5.2 A
$R_{DS(on)}$ @ 25°C	120 mΩ
Operating Voltage	5.0 – 28 V
Peak Current	8.0 A each output
Load Dump Transient	+40 V
Switching Time	8 μS
ESD	2000 V
Operating Temp	-40°C ≤ T _A ≤ 125°C
Junction Operating Temp	-40°C ≤ T _J ≤ 150°C

FEATURES

- Withstands transients up to 40 V at V_{BAT}
- 120 m Ω typical $R_{DS(on)}$ each output fet at T_J 25 °C
- Logic inputs TTL/CMOS compatible
- Operating frequency up to 20 kHz
- Power saving sleep mode
- Diagnostic status flag output, current mirror output

Protection	Detect	Shut Down	Limiting	Auto Retry	Status Reporting
Under Voltage	●	●		●	●
Over Current/SC	●		●	●	●
Over Temperature	●	●	●	●	●
Open Load	●				●
Short to GND	●		●	●	●
Short to V_{PWR}	●		●	●	●

Ordering Information	Package	Ship Method	Motorola Part Number
Thermally Enhanced SOICW		Rail T/R	PC33887DW PC33887DWR2
Contact Factory for Samples			
	44 QFN	Rail T/R	PC33887FC PC33887FCR2
	20 HSOP	Rail T/R	PC33887DH PC33887DHR2
Data Sheet Order Number			MC33887/D

QUESTIONS

- Do you need to control a DC-motor via microprocessor?
- Are you designing a DC-motor controller for motors up to 5.2 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?

How to reach us:

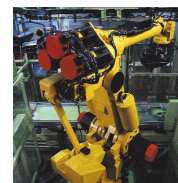
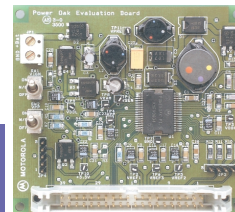
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