

## ANALOG PRODUCTS

### MC33887 FACT SHEET



#### 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 or Dish Positioning Systems

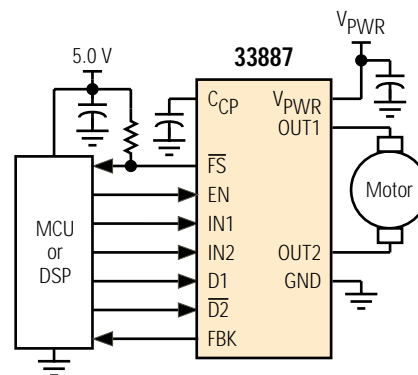
#### 33887 5.2 AMP H-BRIDGE WITH SLEEP MODE

The 33887 is a monolithic H-Bridge that is ideal in applications to control fractional horsepower DC-motors or bi-directional thrust solenoids. The IC incorporates internal control logic, charge pump, gate drive, and low  $R_{DS(on)}$  MOSFET output circuitry. The 33887 is able to control continuous inductive DC load currents to 5.2 A. Output loads can be Pulse Width Modulation (PWM) controlled at frequencies to 10 kHz. A unique output monitoring circuit (current re-copy) makes available ground referenced load current feedback for implementation of closed-loop control of output current.

A Fault Status output reports under voltage, over current, and over temperature conditions. Two independent inputs control the two half-bridge totem-pole outputs making possible forward, reverse, freewheeling low, and freewheeling high active output states. Two complementary disable inputs are provided, the either of which can place the outputs in a high impedance "OFF" state.

The 33887 is operational over a wide range of conditions and is available in an economical surface mount package.

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 Totem-Pole output is independently controlled)
- 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 – 30 V
Peak Current	8.0 A each output
Switching Time	5.0 μs
ESD	± 2000 V
Operating Temp	-40°C ≤ T <sub>A</sub> ≤ 125°C
Junction Operating Temp	-40°C ≤ T <sub>J</sub> ≤ 150°C

## FEATURES

- Withstands 40 V  $V_{BAT}$  transients
- 120 m $\Omega$   $R_{DS(ON)}$
- Logic inputs TTL/CMOS compatible
- 10 kHz typical PWM frequency
- Power-saving sleep mode
- Diagnostic status flag output, current mirror output
- Additional devices available for comparison in Analog Selector Guide SG1002/D

Protection	Detect	Limiting	Shut Down	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
	54 SOICW	Rail T/R	**33887DWB **33887DWBR2
	44 QFN	Rail T/R	**33887FC **33887FCR2
	20 HSOP	Rail T/R	**33887DH **33887DHR2
Data Sheet Order Number			MC33887/D
Contact Sales for Evaluation Kit Availability			
**Prefix Index: PC = Eng Samples; XC = In Qual; MC = Production			

## 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 30 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:

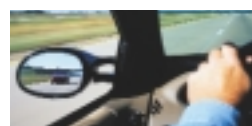
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