

# MC33883

## H-Bridge Gate Driver IC

### Applications

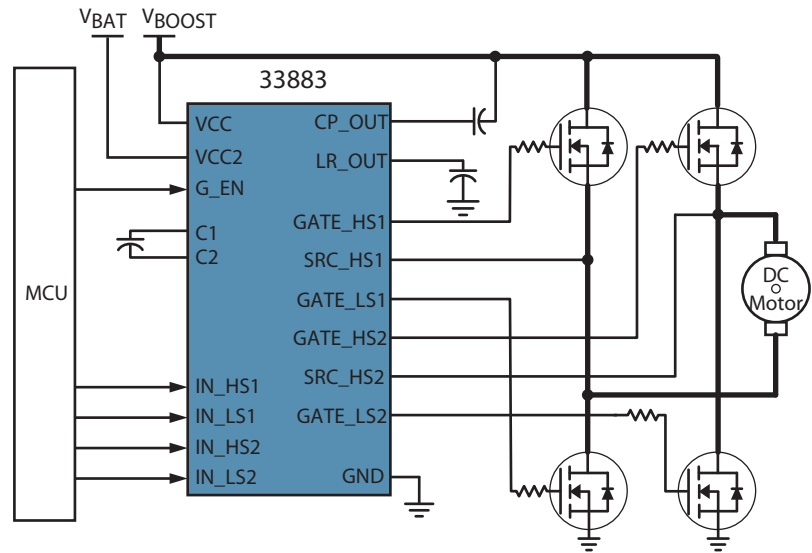
- Aircraft systems
- Automotive systems
- Robotics systems
- Farm equipment
- Actuator control
- Fractional horsepower DC motor control
- Marine applications
- Applications requiring external N-channel high side and/or low side control

### Overview

The 33883 is an H-Bridge gate driver (also known as a full-bridge pre-driver) IC with integrated charge pump and independent high and low side gate driver channels. The gate driver channels are independently controlled by four separate input terminals, thus allowing the device to be optionally configured as two independent high side gate drivers and two independent low side gate drivers. The low side channels are referenced to ground. The high side channels are floating.

The gate driver outputs can source and sink up to 1.0 A peak current pulses, permitting large gate-charge MOSFETs to be driven and/or high pulse-width modulation (PWM) frequencies to be utilized. A linear regulator is incorporated, providing a 15 V typical gate supply to the low side gate drivers.

MC33883 Simplified Application Diagram



Performance	Typical Values
Inputs	4
Outputs	4 (2 HS, 2 LS)
Operating Voltage	5.5 V to 55 V
• V <sub>CC</sub>	5.5 V to 28 V
• V <sub>CC2</sub>	
Gate Drive Current	1.0 A
PWM Capability	100 kHz
ESD	± 5000V
Ambient Operating Temperature	-40 °C ≤ T <sub>A</sub> ≤ 125 °C
Junction Operating Temperature	-40 °C ≤ T <sub>J</sub> ≤ 125 °C

**Features**

- $V_{CC}$  operating voltage range from 5.5 V to 55 V
- $V_{CC2}$  operating voltage range from 5.5 V to 28 V
- CMOS/LSTTL compatible I/O
- 1.0 A peak gate driver current
- Built-in high side charge pump
- Undervoltage lockout (UVLO)
- Overvoltage lockout (OVLO)
- Global enable with <math>10 \mu A</math> Sleep mode
- Supports PWM up to 100 kHz
- Additional devices available for comparison in Analog Product Selector Guide SG1002 and Automotive Product Selector Guide SG187

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Freescale's analog and power ICs complement our broad portfolio of microcontrollers, microprocessors, ZigBee® technology, digital signal processors, sensors and development tools. Freescale offers superior support for system solutions to help customers.

**Ordering Information**

Device (add R2 suffix for tape and reel)	Temperature Range	Package
MC33883HEG	-40 to 125 °C	20 SOICW
Documentation	Description	
MC33883	H-Bridge Gate Driver IC	
SG1002	Analog Product Selector Guide	
SG187	Automotive Product Selector Guide	

PROTECTION	DETECT	SHUT DOWN	LIMITING
Driver Undervoltage	●	●	
Driver Overvoltage	●	●	
Gate Driver Overtemperature	●	●	
$V_{OS}$ Voltage			●

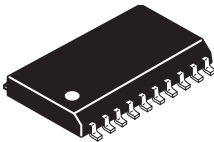
**Customer Benefits**

- Economical H-Bridge pre-driver uses few external parts and simple circuit hook-up
- For use with various microprocessors or manual input controlled high side and/or low side switching applications
- Built-in charge pump for high side N-channel power MOSFETs turn-on enhancement
- Reduced PC board space resulting in enhanced reliability and lower costs
- Internal protection features for both IC and external MOSFETs

**Questions**

- Do you need a pre-driver to high and/or low side switch loads using N-Channel power MOSFETs (two HSS and two LSS, or two half-bridges, or one H-Bridge)?
- Do you have only a little PC board space available for load control?
- Are you looking for an easy-to-design four output pre-driver (two HSS and two LSS) with internal charge pump, capable of high-speed PWM switching?

20 SOICW



98ASB42343B  
20-PIN SOICW

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