

# MC33882

## Six Output Low Side Switch with SPI and Parallel Input Control

### Applications

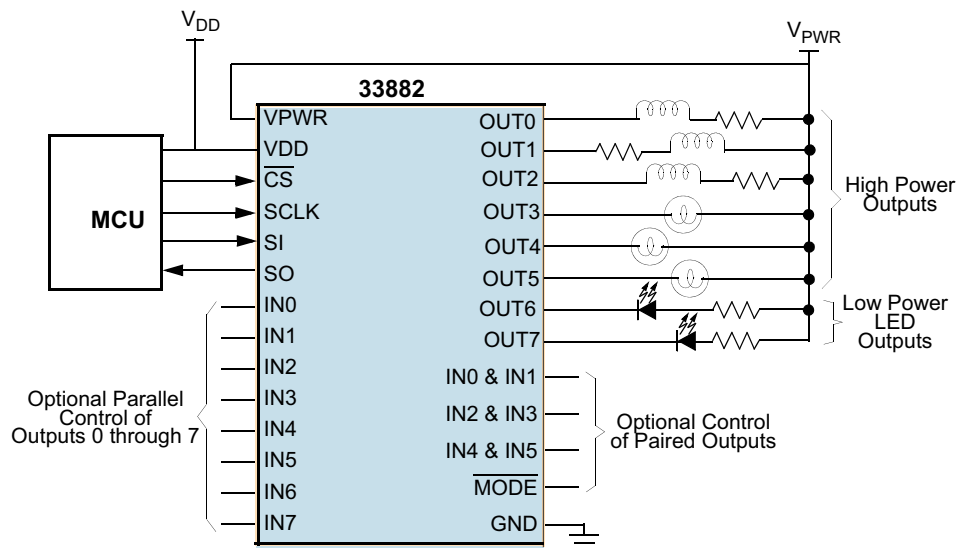
- Farm Equipment
- Industrial Equipment
- Fractional Horsepower DC Motor Controls
- Marine Systems
- Incandescent Lamp Control in Control Panels
- Robotic Systems
- Automotive Injectors

### Overview

The MC33882 is a smart six output low side switch able to control system loads up to 1.0 A. The six outputs can be controlled via both serial peripheral interface (SPI) and parallel input control, making the device attractive for fault tolerant system applications. There are two additional 30 mA low side switches with SPI diagnostic reporting (with parallel input control only).

The MC33882 is designed to interface directly with industry standard microcontrollers via SPI to control both inductive and incandescent loads. Outputs are configured as open-drain power MOSFETs incorporating internal dynamic clamping and current limiting. The device has multiple monitoring and protection features, including low standby current, fault status reporting, internal 52 V clamp on each output, output-specific diagnostics, and protective shutdown. In addition, it has a mode select terminal affording a dual means of input control.

MC33882 Simplified Application Diagram



Performance	Typical Values
Outputs	6
$R_{DS(ON)}$ @ 25 °C	0.4 $\Omega$
Operating Voltage	5.5 to 25 V
Peak Current	3.0 A each output
Control	SPI & Parallel
ESD (HBM)	$\pm 2000$ V
Ambient Operating Temperature	$-40\text{ }^{\circ}\text{C} \leq T_A \leq 125\text{ }^{\circ}\text{C}$
Junction Operating Temperature	$-40\text{ }^{\circ}\text{C} \leq T_J \leq 150\text{ }^{\circ}\text{C}$

## Features

- Outputs clamped for switching inductive loads
- Very low operational bias currents (< 2.0 mA)
- CMOS input logic compatible with 5.0 V logic levels
- Load dump robust (60 V transient at  $V_{PWR}$  on OUT0–OUT5)
- Daisy chain operation of multiple devices possible
- Switch outputs can be paralleled for higher currents
- $R_{DS(ON)}$  of 0.4 W per output (25 °C) at 13 V  $V_{PWR}$
- SPI operation guaranteed to 2.0 MHz
- Devices available for comparison are in the Analog Product Selector Guide - SG1002, and Automotive Product Selector Guide - SG187

## Customer Benefits

- Reduced part count and simplified circuitry
- Simple interfacing to industry standard 5.0 V microprocessors having SPI
- Simple means of getting diagnostic fault status
- Built-in device protection features
- Efficient control of up to six 1.0 A and two low current loads (30 mA) using a single IC

## Questions

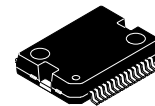
- Are you looking for an easy-to-design-in device capable of controlling up to six 1.0 A and two 30 mA low side loads?
- Do you need to switch multiple loads in a harsh environment?
- Do you need a multiple output low side switch device controlled by a microcontroller?
- Do you need a device to control multiple outputs with a dual means of input control (SPI and parallel) to implement a fault tolerant system?
- Do you need a device that incorporates Sleep mode for power conservation and has diagnostic status reporting?

### Protection

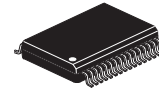
Protection	Detect	Limiting	Shut Down	Auto Retry	Status Reporting
Over-voltage	•		•		•
Over-current/SC	•	•	•	•	•
Over-temperature	•		•	•	
Open Load	•				•

### Ordering Information

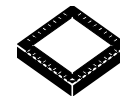
Part Number (for Tape and Reel, add an R2 suffix)	Temperature range ( $T_A$ )	Package
MC33882PVW	-40 to 125°C	30 HSOP
MC33882PEP	-40 to 125°C	32 QFN
MC33882PEK	-40 to 125°C	32 SOICW-EP



98ASH70693A  
30-PIN HSOP



98ARL10543D  
32-PIN SOICW-EP



98ARH99032A  
32-PIN QFN

### Documentation

Document Number	Title	Description
MC33882	Data Sheet	Six Output Low Side Switch with SPI and Parallel Input Control
SG1002	Selector Guide	Analog Product Selector Guide
SG187	Selector Guide	Automotive Product Selector Guide

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