



## Analog and Mixed-Signal Fact Sheet

# MC33800

## Engine control integrated circuit (IC)

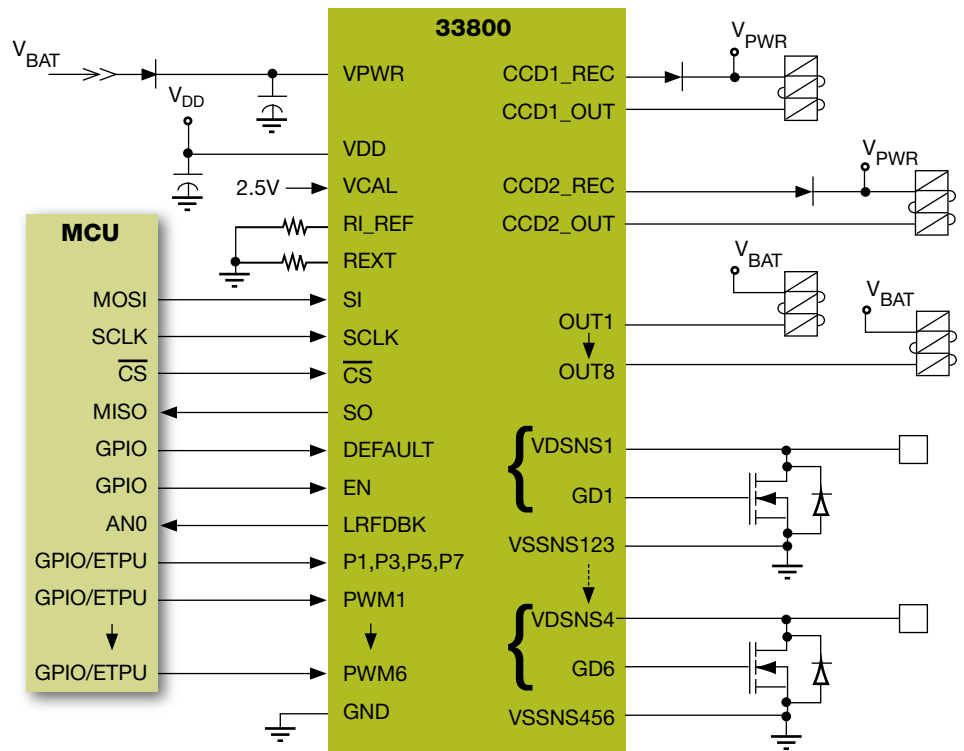
### Applications

- Engine control
  - Fuel injection
  - Heated exhaust gas sensor monitoring and control
  - Load switching functions
  - Positioning and dithering of transmission valves
  - Solenoid, relay and valve actuation
  - PWM for motor speed control
- Body Electronics
  - Relay drivers
  - Interior/exterior lighting
  - LED Lighting

### Overview

Powertrain system performance continues to increase significantly. Semiconductor components continue to meet this challenge for tighter combustion control, direct injection for diesel and gasoline and on chip knock detection. The MC33800 is a combination output switch and driver IC that may be used in numerous powertrain applications. The IC contains two programmable constant current drivers, an octal low-side serial switch and six external MOSFET gate pre-drivers. The IC has over voltage, under voltage and thermal protection. The drivers and switches, including the external MOSFETs, have over current

### MC33800 Simplified Application Drawing



protection, off-state open load detection, on-state shorted load detection and fault annunciation via the serial peripheral interface (SPI). These features, along with cost effective packaging, make the MC33800 ideal for powertrain engine control applications.

## Features

- Eight switches – 2 are high current (OUTx)
- Two constant current drivers with programmable dithering (CCDx)
- Six MOSFET pre-drivers (GDx)
- PWM generator for pre-drivers
- Ohmmeter function to measure HEGO resistance
- Power supply/oscillator/band gap reference/POR (power-on-reset)
- Low power sleep mode (~10µA)
- MCU SPI/parallel interface
- Diagnostic and error detection logic
- Over temperature, over voltage and over current protection

## Benefits

- High Integration – reduced parts count
- Low pin count SPI MCU interfacing
- Extensive diagnostic and fault reporting
- Lower power dissipation

Freescal Semiconductor is a leading provider for over 25 years of high-performance products that use SMARTMOS™ technology that combines digital, power and standard analog functions. The company supplies analog and power management ICs for the automotive, consumer, networking and industrial markets. Freescal's analog and power ICs complement our broad portfolio of microcontrollers, microprocessors, ZigBee® technology, digital signal processors, sensors, development tools and support to offer system solutions to customers.

## Parametric Table

Performance	Typical Values
Low Side Outputs	8
Low Side RDS(on) max	0.7Ω
Operating Voltage	5–36V
Control/Communication	SPI and Parallel

## Orderable Part

Part Number	Temp. Ranges (T <sub>A</sub> )	Package
MCZ33800EK/R2	-40°C to +125°C	54 SOICW-EP



EK SUFFIX  
(Pb-FREE)  
98ASA99334D  
54-Pin SOICW-EP

## Documentation

Document Number	Title	Description
MC33800	Data Sheet	Presents the specifications for this product
SG1002	Selector Guide	Analog and power management device comparison
SG187	Selector Guide	Analog and power management device comparison
AN2409	Application Note	Small outline integrated circuit (SOIC) fine pitch package

## Development Tools

Part Number	Description
KIT33800EKEVME	Evaluation board to demonstrate the key features of MC33800

## Learn More:

For more information about Freescal's Analog family products, please visit [www.freescale.com/analog](http://www.freescale.com/analog).