Analog, Mixed-Signal and Power Management

MC07XSC200

Dual High-Side Switch (7.0 mOhm)

Target Applications

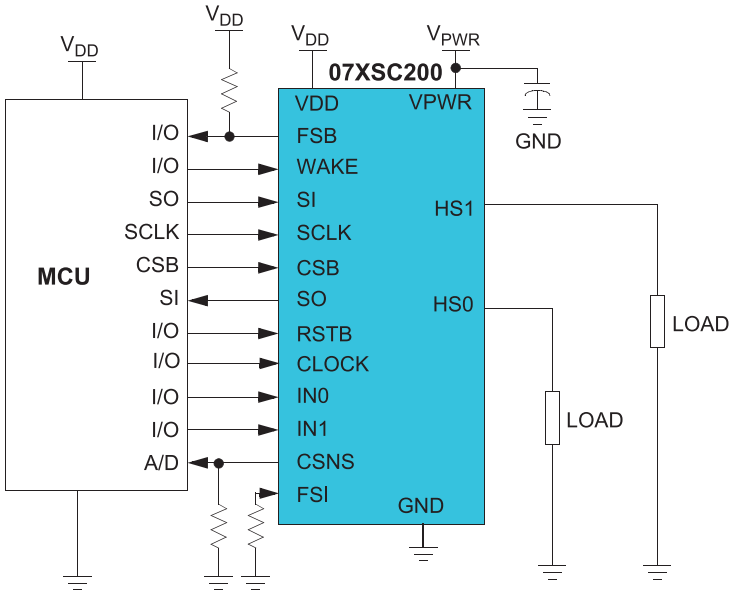
- Low-voltage lighting
- Halogen bulbs
- Light-emitting diodes (LEDs)
- Low-voltage industrial lighting
- Low-voltage automation systems
- Low-voltage DC motor

Overview

The MC07XSC200 is one in a family of devices designed for low-voltage lighting applications. Its two low $R_{DS(on)}$ MOSFETs (dual 7.0 mΩ) can control two separate 55 W/28 W bulbs or Xenon modules or LEDs.

Programming, control and diagnostics are accomplished using a 16-bit SPI port. Its output with selectable slew rate improves electromagnetic compatibility (EMC) behavior. Additionally, each output has its own parallel input or SPI control for pulse width modulation (PWM) control if desired. The MC07XSC200 allows the user to program via the SPI, the fault current trip levels and duration of acceptable lamp inrush current. The device has a fail-safe mode to provide fail-safe functionality of the outputs in case of MCU damage. The MC07XSC200 is packaged in a Pb-free power-enhanced 32 pins SOIC package with exposed pad.

Simplified Application Drawing



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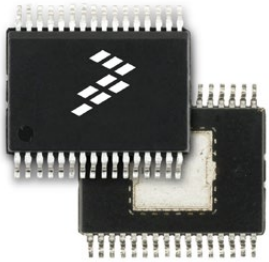

32-Pin Exposed Pad SOICW
98ASA00368D

Product Features and Benefits

Features	Function	Benefits
High-side switches	Dual 7.0 mΩ max high-side switches at 25 °C	Offers the possiblity to drive up to two different kinds of loads separately
Operating voltage range	6.0 V to 20 V with sleep current < 5.0 µA, extended mode from 4.0 to 28 V	Optimized consumption with its low-power mode
SPI control	8.0 MHz 16-bit 3.3 V and 5.0 V SPI control and status reporting with daisy chain capability	Easy interface to MCU for diagnostics and programming
PWM module	Uses external clock or calibratable internal oscillator with programmable outputs delay management	Programmable slew rate offers the possibility to optimize EMC performance and power loss during commutation
Circuit protection	Smart over-current shutdown compliant with huge inrush current, severe short-circuit, overtemperature protections with time-limited auto retry and fail-safe mode in case of MCU damage	Device is fully protected against unexpected external conditions
Open load detection	Output OFF or ON open-load detection compliant with bulbs or LEDs and short to battery detection. Analog current feedback with selectable ratio and board temperature feedback.	Analog diagnostics with highly precision for advanced monitoring

Performance

Performance	Typical values
Outputs	2
$R_{DS(on)}$ at 25 °C	2 x 7 mΩ
Operating Voltage	6 - 20 V
Peak Current	93.4 A
ESD	±8.0 kV power I/Os ±2.0 kV digital I/Os

Protection

Protection	Detect	Shut Down	Auto Retry	Status Reporting
Short-circuit	•	•		•
Overtemperature	•	•	•	•
Overcurrent	•	•	•	•
Overvoltage	•	•		•
Undervoltage	•	•	•	•
Open Load Detect	•			•
Short to V_{PWR}	•			•

Documentation

Freescale Document Number	Title	Description
MC07XSC200	Dual High-Side Switch (7.0 mΩ)	Data sheet
SG1002	Analog Product Selector Guide	Selector guide
SG200	Analog and Power Management Industrial Selector Guide	Selector guide

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