



Analog, Mixed Signal, and Power Management

MC06XS3517

Smart High Side Switch Module (Triple 6.0 mΩ and Dual 17 mΩ)

Overview

The MC06XS3517 is designed for low-voltage automotive and industrial lighting applications. Its five low $R_{DS(ON)}$ MOSFETs (three 6.0 mΩ, two 17 mΩ) can control the high sides of five separate resistive loads (bulbs, Xenon-HID modules and LEDs).

Programming, control and diagnostics are accomplished using a 16-bit SPI interface (3.3 or 5.0 V). Each output has its own PWM control via the SPI. The 06XS3517 has highly sophisticated failure mode handling to provide high availability of the outputs. Its multiphase control and output edge shaping

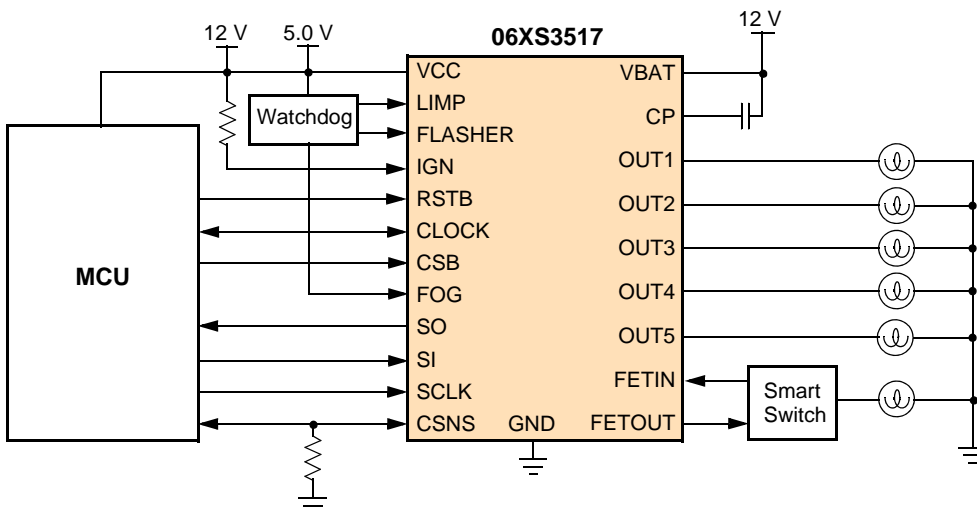
improves electromagnetic compatibility (EMC) behavior.

The MC06XS3517 is packaged in a power-enhanced 12 x 12 nonleaded Power QFN package with exposed tabs.

Applications

- Low-voltage automotive lighting
- Halogen bulbs
- Light-emitting diodes (LEDs)
- High beam
- Low beam
- Flashers
- Low-voltage industrial lighting

MC06XS3517 Simplified Application Diagram



Product Features

- Triple 6.0 mΩ and Dual 17 mΩ high side switches
- 16-bit SPI communication interface with daisy chain capability
- Current sense output with SPI-programmable multiplex switch and Board Temperature Feedback
- Digital diagnosis feature
- PWM module with multiphase feature including prescaler
- LEDs control including accurate current sensing and low duty cycle capability
- Fully-protected switches
- Over-current shutdown detection compliant to severe inrush currents
- Power net and reverse polarity protection
- Low-power mode
- Fail mode functions including current recopy
- Lead-free packaging

Performance	Typical Values
# of Outputs	5
R _{DS(ON)} @ 25 °C	3 x 6 mOhms 2 x 17mOhms
Operating Voltage	nominal range: 7V to 20V extended range: 6V to 28V
Peak Current	96 A for 6mΩ 48 A for 17mΩ
ESD	± 8.0 kV power I/Os ± 2.0 kV digital I/Os
Ambient Operating Temperature	-40 < T _A < 125 °C
Junction Operating Temperature	-40 < T _J < 150 °C

Ordering Information

Part Number	Temp. Ranges	Features	Package
MC06XS3517AFK	- 40 to + 125 °C	Triple - 6 mΩ Dual - 17 mΩ High Side Switches	24 PQFN-EP

Development Tools

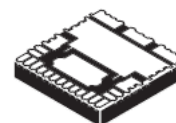
Part Number	Description
KIT06XS3517EVBE	Evaluation Board - Contact Freescale Sales

Documentation

Document Number	Title	Description
MC06XS3517	Smart Front CornerLight Switch (Triple 6.0 mΩ and Dual 17 mΩ)	Data Sheet
SG1002	Analog, Mixed Signal and Power Management	Selector Guide
SG187	Automotive	Selector Guide
AN2467	Power Quad Flat No-Lead (PQFN) Package	Appnote

Protection

Protection	Detect	Shut Down	Auto Retry	Status Reporting
Short-circuit	•	•		•
Over-temperature	•	•	•	•
Over-current	•	•	•	•
Over-voltage	•	•		•
Under-voltage	•	•	•	•
Open Load Detect	•			•
Output Shorted to Battery	•			•



Bottom-View
FK SUFFIX
98ART10511D
24-PIN PQFN
PB FREE

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