

MC12XS6

12 V Automotive Lighting Multi-channel Scalable eXtreme Switch

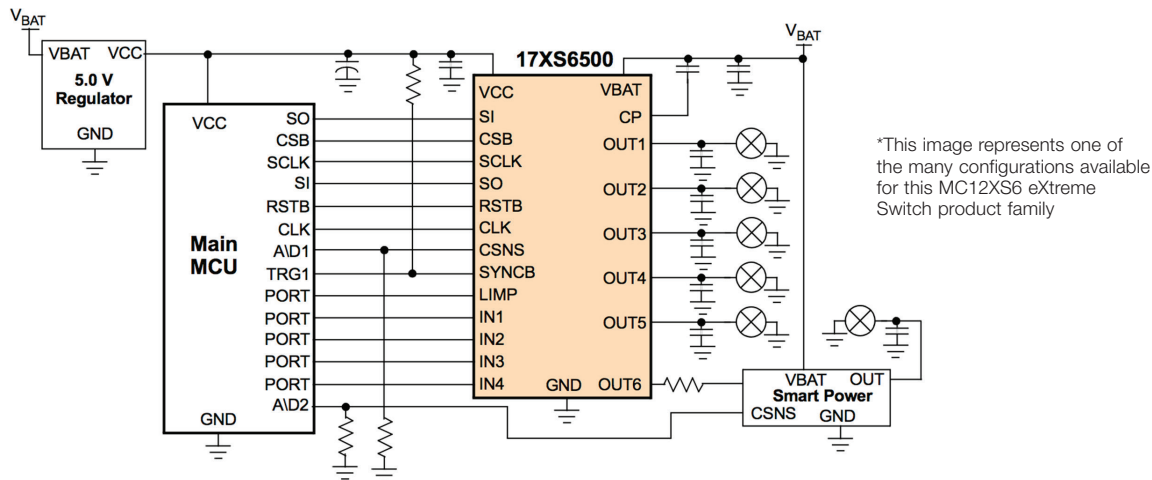
Overview

The fourth generation eXtreme Switch is the latest achievement in automotive lighting drivers. It belongs to an expanding family to control and diagnose bulbs and also light emitting diodes (LEDs) with enhanced diagnostic precision. This eXtreme Switch family combines flexibility through daisy chainable SPI at 5.0 MHz, extended digital and analog feedback, safety and robustness. Its low $R_{DS(on)}$ and high integration allows power and space saving at the module level. This family is packaged in a Pb-free power-enhanced SOIC package with exposed pad, which is ELV compliant.

Target Applications

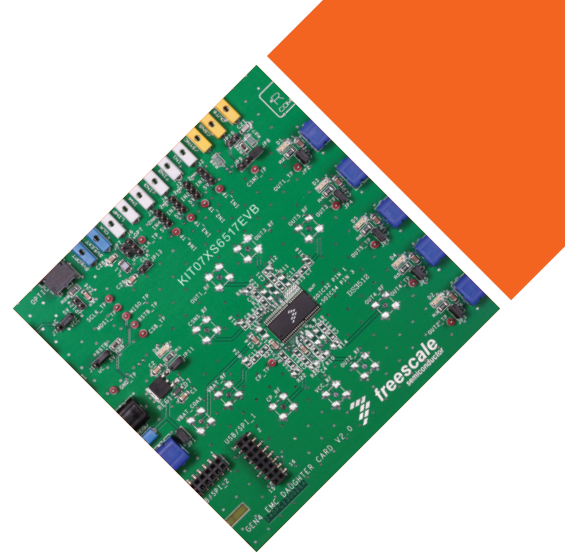
- Halogen lamps
- Incandescent lamps
- Light-emitting diodes (LEDs)
- HID Xenon ballasts

Penta Output Simplified Application Drawing



MC12XS6 eXtreme Switch Family

Product	# of outputs	$R_{DS(on)}$ (mOhm)	Package	Suggested tool
MC07XS6517	Penta	3 x 7.0 2 x 17.0	SOIC EP 54	KIT07XS6517EVB
MC08XS6421	Quad	2 x 8.0 2 x 21.0	SOIC EP 32	KIT08XS6421EKEVB
MC10XS6200	Dual	2 x 10.0	SOIC EP 32	KIT10XS6200EKEVB
MC10XS6225	Dual	1 x 10.0 1 x 25.0	SOIC EP 32	KIT10XS6225EKEVB
MC10XS6325	Triple	2 x 10.0 1 x 25.0	SOIC EP 32	KIT10XS6325EKEVB
MC17XS6400	Quad	4 x 17.0	SOIC EP 32	KIT17XS6400EKEVB
MC17XS6500	Penta	5 x 17.0	SOIC EP 32	KIT17XS6500EVB
MC25XS6300	Triple	3 x 25.0	SOIC EP 32	KIT25XS6300EKEVB
MC40XS6500	Penta	5 x 40.0	SOIC EP 32	KIT40XS6500EKEVB

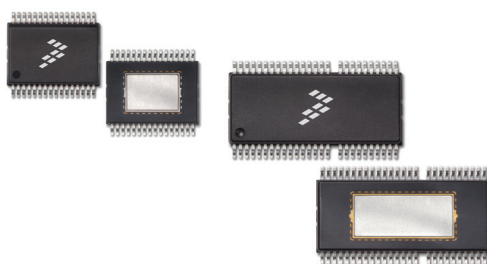


eXtreme Switch Product Family Differentiation

Features	Benefits
Low Rds(on) in thermally enhanced package	Excellent thermal efficiency
5.0 V compatible 16-bit Daisy chainable SPI control	BOM component and cost savings by eliminating series SPI resistors between microcontroller (MCU) and device
Embedded protection and diagnostic functions	30% module size reduction and module quality longevity. Allows a low power dissipation module design and very robust solution against repetitive overcurrent stress
Compatible devices and flexible load management	Hardware reuse across multiple applications and quick-turn flexibility for tuning designs with ambiguous load requirements
Programmable dynamic threshold over-current and over-temperature detection limits	Optimized fault protection
Full programmability and diagnostic capability through SPI	Offloads real-time interrupt fault management from MCU, simplifying system hardware and software
Accurate temperature ($\pm 5^{\circ}\text{C}$) and synchronous / asynchronous ($\pm 10\%$) current sensing	Advanced load diagnostics
Selectable slew rate	Optimize EMI vs. efficiency tradeoff
Individually programmable external PWM signals with 3 prescaler per output	Offloads MCU for software design simplicity
Scalable family	Allows last minute device choice in platforms for which the output load is not known or has to be flexible. Single hardware for multiple applications at a single engineering development cost
SPI Interface	Enables daisy-chaining without resistor between MCU and device for MCU I/O and number of discrete reduction. BOM cost saving
Analog diagnostics	Software simplification in case of many loads management <ul style="list-style-type: none"> • High precision current sensing (down to 19.5 mA) with calibration procedure allowing diagnostic of both high-current loads or LEDs • Temperature feedback of the IC • Supply voltage of the IC
Reverse battery	Protected against any mishandling without any external component

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Product Longevity Program

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