Marvell Introduces Industry's First Single Chip Dual-String Dimmable LED Lighting Controller Family

The 88EM8801 is the first chip in the new 8800 family, which brings high-level functionality at a lower cost and reduced design complexity for use in professional and consumer lighting

SANTA CLARA, Calif., May 16, 2011 /PRNewswire/ -- Marvell (Nasdaq: MRVL), a worldwide leader in integrated silicon solutions, today announced the world's first dual-string smart LED controller chip, the 88EM8801, which uses the company's unique power technology to enable superior lighting performance. Using high-levels of integration and advanced mixed-signal technology, Marvell is able to pack high-end lighting features into a single chip that would otherwise require multiple driver chips, a micro-controller and many discrete components to implement. The on-chip intelligent digital controls and ultra-small form factor of the Marvell® new 88EM8801 chip enables customers to introduce superior lighting features and controls into mainstream professional and consumer lighting products, such as down lights, Zhaga-compliant LED modules, PAR lamps, AR lamps, A19 lamps and MR bulbs.

(Logo: https://investor.marvell.com/image/Marvell_logo.jpg)

The 88EM8801 is the first offering in the new Marvell 8800 LED lighting controller family, which offers intelligent digital controls to drastically reduce system design complexity and the engineering effort required to implement high-end lighting features. The unique current tuning capability of the new 8800 series enables the use of loosely binned, lower-cost LEDs to deliver uniform light output and constant color temperature during the manufacturing process and throughout the long lifespan of the LED lamps themselves. Additionally, the 8800 family leverages intelligent pulse width modulation (PWM) dimming controller circuitry and other digital controls to achieve deep dimming levels up to 0.1 percent.

In addition to reducing the size, design complexity and cost of LED power electronics, the intelligence of the 88EM8801 chip significantly enhances light quality while reducing LED component expenses, which accounts for up to 60 percent of the total cost of typical LED light bulbs. Leveraging Marvell's dual-string driver technology, the 88EM8801 offers an unparalleled solution for mixing and controlling different color LED strings to achieve high color rendering index (CRI) and high lumens per watt. Lastly, the 8801 solution delivers up to 95 percent efficiency while providing an on-chip communication interface for wireless lighting controls.

Marvell is currently sampling the 88EM8801 and the evaluation boards to key OEMs. The 88EM8801 chip and the reference LED bulb using 88EM8801 will be shown at LIGHTFAIR International from May 17-19 in Philadelphia.

Supporting Quotes:

"Marvell's new 8800 LED driver family will significantly diminish the cost of implementing high-quality LED technology in professional and consumer lighting, accelerating the mass market adoption of sustainable LED solutions," said Kishore Manghnani, vice president of Green Technology Products Group at Marvell Semiconductor, Inc. "The 88EM8801 is the first LED driver chip of its kind to handle dual-string LEDs with unique differentiating features, enabling superior lighting products that are currently unaffordable for the general consumer market."

Product Overview:

Integrated with four high-power metal-oxide-semiconductor field-effect transistors (MOSFETs), an I2C interface and a One-Time Programmable (OTP) memory block, Marvell's 88EM8801 allows precise and efficient current control for each LED string. This is made possible by pre-programming calibration and compensation data in the OTP memory or by dimming control signals via PWM and I2C interfaces which achieves targeted light specification. Due to the high integration, 88EM8801 eliminates most external components, such as MOSFETs and rectifying diodes, significantly reducing modular bill of materials (BOM) cost and board space. Moreover, the 88EM8801 deploys two-channel buck topology with synchronous rectification, which delivers up to 95 percent efficiency.

Details include:

- Independent control of two LED strings, which allows the mixing of red LEDs with cool white or bluish green LEDs to achieve warmer color and better CRI
- Up to 40 volts DC input
- Up to 1000 mA LED current for first string and 500 mA for second string
- Dual channel DC/DC synchronous Buck with integrated MOSFETs

- High-switching frequency up to 800 KHz for reduced component size
- On-chip OTP memory block for compensations and calibrations data
- 0.1 percent deep dimming with 10-bit PWM control resolution
- I2C interface for OTP memory programming and communication protocol support, such as ZigBee, Wi-Fi and power line communication (PLC)
- PWM dimming input control
- Input ripple cancellation
- Soft startup
- Over-current and over-temperature protection
- Under-voltage lockout

Related Links:

- Product information: http://www.marvell.com/green-technology/led/led-driver.html
- Marvell media materials: http://www.marvell.com/company/press_kit/

About Marvell

Marvell (NASDAQ: MRVL) is a world leader in the development of storage, communications and consumer silicon solutions. Marvell's diverse product portfolio includes switching, transceiver, communications controller, wireless and storage solutions that power the entire communications infrastructure, including enterprise, metro, home and storage networking. As used in this release, the term "Marvell" refers to Marvell Technology Group Ltd. and its subsidiaries. For more information, visit Marvell.com.

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