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# Lumissil Microsystems Introduces 24xn (n=2~12) Configurable Matrix LED Driver for Consumer IoT and Gaming Applications

*IS31FL3762: Advanced Matrix LED Driver enhances Display Clarity and Power Efficiency*

**MILPITAS, Calif., February 10, 2025** – Lumissil Microsystems introduces the latest addition to the IS31FL376x family, the IS31FL3762, a configurable 24×n (n=2~12) matrix LED driver designed to support up to 288 LEDs. Targeting IoT applications that require a visible color indicator or an alphanumeric LED display, this device addresses the unique technical challenges in high-resolution lighting applications.

## Advanced PWM Control for Precise Color Rendering

The IS31FL3762 integrates advanced 12-bit PWM control, enabling smooth and precise dimming across individual LEDs. This feature, complemented by an adjustable PWM frequency up to 312 kHz, eliminates visual artifacts such as flickering, which is critical for gaming applications. By supporting multiple configurations, including 6+2-bit and 8+4-bit PWM dithering modes; an advanced PWM modulation technique designed to achieve higher resolution and increased switching frequency while operating at lower clock speeds, thereby preserving the remaining clock cycles for other processing tasks. This approach provides designers with the flexibility to configure conditions for various lighting scenarios.

## Improved LED Matrix Operation

To enhance display clarity and ensure optimal power distribution, the IS31FL3762 employs built-in de-ghosting circuitry. This prevents undesired light emissions from inactive LEDs in the matrix, a common challenge in high-density LED arrays. Additionally, the device offers open and short detection for individual LEDs, which is necessary for maintenance and ensuring the long-term reliability of complex designs.

## Power Optimization and Configurability

Operating within a wide supply voltage range (2.7V to 5.5V) and featuring an ultra-low typical quiescent current, the IS31FL3762 minimizes energy consumption without compromising performance. Additionally, the driver offers both Hardware and Software shutdown modes, allowing the outputs to be turned off either by pulling the SDB pin low or sending a command from the MCU to the Software Shutdown register. The driver's current sinks are individually programmable with 8-bit resolution and include up to 12-bit configurable PWM generators to enable smooth digital dimming. Turning the LEDs ON/OFF with a varying duty cycle provides the capability for dimming and blending RGB LED colors. During operation, these PWM generators can produce electromagnetic interference (EMI) and audible noise. To address this, the IS31FL3762 incorporates spread spectrum and group phase shifting to reduce EMI, audible noise, and power supply ripple, enabling precise brightness control across the matrix. This makes the device ideal for display applications where local dimming is needed for achieving high contrast ratios.

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"Lumissil has set the standard as the go-to supplier of matrix LED drivers for the gaming and consumer electronic markets," said Ven Shan, VP of Lumissil Marketing. “Our expertise in these markets enables us to design Matrix LED drivers that not only deliver spectacular colors, but also pack in the features that our customers rely on, for this reason we designed-in with built-in noise reduction, ultra-low operating current, enhanced matrix de-ghosting, and the flexibility to choose between SPI and I2C interfaces, these drivers are designed to exceed expectations.

**Communication Interfaces**

The I2C bus interface has long been the standard for LED drivers, and the IS31FL3762 device takes it a step further by supporting the Fast mode Plus (FM+) specification for 1MHz operation. To achieve this speed, the bus drivers are optimized to handle faster rise and fall times. For even higher speeds, the SPI bus is also supported, offering up to 12MHz operation, full-duplex communication, and, in some cases, better performance over longer distances. The IS31FL3762 is designed to easily switch between I2C and SPI bus operation, giving designers the flexibility to choose the best option for their application.

**Availability and Pricing**

The IS31FL3762 is now available for production in a small QFN-48 package. Pricing starts at $1.17 per unit for orders of 1,000 pieces. For further information, please visit Lumissil Microsystems or contact our sales team.

**About Lumissil Microsystems**

Lumissil Microsystems specializing in analog/mixed-signal products for automotive, communications, industrial, and consumer markets. Lumissil’s primary products are LED drivers for low to mid-power RGB color mixing and high-power lighting applications. Other products include audio, sensors, high-speed wire communications, optical networking, and application specific microcontrollers. Lumissil Microsystems has worldwide offices in the US, Taiwan, Japan, Singapore, mainland China, Europe, Hong Kong, India, and Korea. Website: https://www.lumissil.com

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