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Lumissil Introduces IS32FL3776 Matrix LED Driver for Intelligent Signal Displays

Enables expressive and thermally efficient exterior lighting

MILPITAS, Calif., May 18, 2026 – Lumissil Microsystems today announced the IS32FL3776 matrix LED driver for software-defined exterior lighting module applications. These systems use matrix LED patterns to communicate vehicle intent, safety status, driver-assistance cues, and brand identity. The IS32FL3776 supports compact, individually addressable LED designs used in RGB Mini LED displays, full-width front light strips, grille lamps, automated-driving-system (ADS) marker lamps, and other expressive vehicle-lighting functions.

The IS32FL3776 integrates 36 constant-current sink channels and six scanning supply-switch controls to support a 36×6 matrix of up to 216 individually addressable LEDs. This dense matrix architecture helps lamp designers implement large, Intelligent Signal Display (ISD) lighting surfaces with fewer external components and a reduced bill of materials.

To support smooth, high-quality animations, the IS32FL3776 features high-resolution, high-frequency dithered PWM control for fine brightness adjustment and a reduction in visible flicker and camera banding. Integrated current adjustment, matrix de-ghosting, low-headroom operation, and synchronized scanning help maintain uniform, artifact-free illumination across dense LED arrays. High-speed SPI and LumiBus™ UART interfaces allow multiple driver ICs or distributed lamp PCBs to operate in synchronization for large-area displays and coordinated lighting animations. LumiBus™ uses UART-based communication that can be carried over CAN physical-layer signaling to support robust inter-board communication within the lamp assembly.

“Exterior automotive lighting is evolving from static illumination into a communication surface,” said Lyn Zastrow, Vice President of Sales and Marketing. “The IS32FL3776 gives lamp designers a dense matrix architecture, high-resolution dimming, scalable connectivity, and robust diagnostics so they can build animated signal displays and other advanced lighting modules with lower system complexity.”

For improved system efficiency and thermal performance, the IS32FL3776 uses DCFB adaptive control to optimize the LED supply rail while maintaining only the headroom needed for proper current regulation. An internal ADC and FBO feedback pin work with an external DC/DC converter to reduce driver power dissipation in large or high-brightness matrix displays.

The device also supports external PMOS operation for additional thermal optimization, allowing high-side switching dissipation to be shifted outside the IC package into external FETs and PCB copper. Spread-spectrum PWM clocking, phase-delay control, and staged switching further help

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reduce supply ripple, EMI emissions, and audible-noise risk in high-brightness or high-duty-cycle ISD lighting applications, supporting automotive EMC targets such as CISPR 25.

For automotive robustness, the IS32FL3776 integrates diagnostic, protection, and communication-integrity features including LED open/short detection, ADC-based monitoring, overcurrent protection, undervoltage lockout, thermal shutdown, and CRC error detection. The device is part of Lumissil's automotive lighting portfolio and is offered in a QFN-60 package.

Availability

The IS32FL3776 is now available for sampling and volume production. Evaluation hardware, reference designs, and technical documentation are available through Lumissil sales representatives and authorized distributors.

About Lumissil Microsystems

Lumissil Microsystems specializes 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, Israel, and Korea. Website: https://www.lumissil.com

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