

Lumissil Introduces IS32FL3105 LumiBus™ RGB Matrix LED Driver for Next-Generation Automotive Lighting Modules

*Family of MCU-less matrix LED drivers with 16-bit PWM dimming
designed to ISO 26262 process for ASIL-B applications*

MILPITAS, Calif., – March 9, 2026 – Lumissil Microsystems, a leader in LED driver semiconductor solutions, today announced the IS32FL3105 family of compact 18×2 matrix RGB LED drivers designed to help automotive lighting designers deliver best in class ambient, interior, cluster, and rear-light experiences with smooth animation capability, robust diagnostics, and scalable in-vehicle connectivity.

Automotive OEMs are rapidly expanding the use of RGB ambient and animated lighting to differentiate vehicle cabins, support driver-assistance prompts and vehicle status signaling, while enabling more expressive Human-Machine Interface (HMI) effects. Engineering teams simultaneously face challenges such as maintaining consistent color and brightness across many LEDs, executing simultaneous lighting changes, meeting EMC requirements, and building architectures that scale cleanly across multiple lighting nodes. The IS32FL3105 successfully addresses these needs by supporting 12 RGB “color dots” (18×2 channels) with up to 60mA per LED channel and individual LED dimming using 16-bit PWM dithering plus 6-bit DC scaling to enable fine granularity for color mixing, calibration, and smooth dimming transitions.

To support both today’s modular designs and emerging distributed lighting networks, the IS32FL3105 is programmed through Lumissil’s proprietary LumiBus™ (UART-over-CAN) protocol and is offered with either an integrated CAN physical interface (IS32FL3105A/B) or a UART interface (IS32FL3105C/D) for designs that interface with an external CAN transceiver. The family includes two scalable addressing approaches: direct address pin assignment supporting up to 25 devices (A/C) or LAA (Location Address Assignment) supporting up to 254 devices without address pins (B/D). These device addressing options help designers expand multi-node lighting systems without excessive pin count or wiring complexity.

The IS32FL3105 also integrates features intended to reduce system level EMI noise generation and improve power supply integrity during PWM operation. These programmable features include PWM spread spectrum with controlled output transition behavior and 180-degree PWM phase delay between odd/even channels to help cancel ripple and reduce instantaneous input current demand. For designs using an external LED DC/DC converter, the device provides DC feedback (FBO/DCFB) capability to enable automatic adjustment of the LED anode voltage (VLED) for improved efficiency by minimizing the IS32FL3105’s headroom voltage.

For production test and in-field robustness, the IS32FL3105 captures fault events into readable status registers and signals system-level faults through a shared, open-drain, active-low FAULTB output. Some of the detected and reported faults include LED open/short, CRC error, watchdog/fail-safe and thermal behavior. The device integrates a one-time-programmable (OTP) memory to store LED binning/calibration data, along with a state machine-based temperature compensation algorithm that helps keep LED luminance consistent across vehicle operating temperature conditions. The IS32FL3105 is developed according to ISO 26262 processes with ASIL-B and AEC-Q100 Grade 1 qualification.

The IS32FL3105 operates with a device voltage supply (VS) from 5V to 28V and supports a VLED from 3.0V to 12V. It comes in a compact WFQFN-32 (5×5mm) package to support space constrained automotive lighting modules for dense RGB implementations. Ordering options include IS32FL3105A/B/C/D-QWLCA3-TR (2,500 units per reel).

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, along with 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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IS32FL3105ABCD
Family of Automotive Matrix RGB LED Drivers

- ▲ ISO 26262 for ASIL-B applications
- ▲ CAN-PHY or UART interface device option
- ▲ MCU-less LED temperature compensation
- ▲ DC/DC converter adjust control