LUMISSIL Microsystems
A Division of ISSI

Functional Safety Compliant 12-Channel LED Driver with a Selectable Bus Interface and CRC

UART, I2C or SPI Bus with Cyclic redundancy check (CRC) error detection to insure robust communication.

MILPITAS, Calif., December 11, 2023 -- Lumissil Microsystems, a division of Integrated Silicon Solution, Inc. (ISSI), announces the release of the IS32LT3131 its latest LED driver IC for automotive rear light animation effects. It is designed to meet the needs of complex LED lamp systems that utilize hundreds of LEDs to achieve vivid and vibrant animations as found in rear lamps spanning the entire width of a vehicle.

The IS32LT3131 is an automotive grade linear LED driver that is available in one of three bus interface options. The lamp designer has the option to choose either IS32LT3131A (UART), IS32LT3131B (CANLITE), or IS32LT3131C (SPI) for communication with the host microcontroller (MCU) and other IS32LT3131 devices employing the same bus type. The MCU relies on the bus interface to transmit control data to the IS32LT3131 devices and receive their fault status. Additionally, a configurable watchdog timer will automatically trigger fail-safe modes if there is a communication loss on the bus interface.

The UART interface, coupled with an industry-standard CAN transceiver, enables long-distance off-board communication with a host MCU situated outside the lamp module. The CANLITE interface allows extended off-board communication over long distances between boards within the same lamp module. The SPI interface is a standard synchronous serial bus for direct interface to a local MCU. The communication buses incorporate built-in CRC correction circuitry, ensuring resilient communication even in challenging automotive environments. To further enhance robustness, the IS32LT3131 will automatically transition to a fail-safe state in the event of a communication loss caused by a failure in the host MCU or a malfunctioning of the bus interface. The device supports various fail-safe modes, enabled by a resistor setting on the FSMD pin.

“Automotive engineers who undertake the design of animated or dynamic lighting face challenges in synchronizing and controlling a large number of LEDs” said Ven Shan VP of Lumissil Marketing. “Lumissil is committed to providing engineers with innovative LED drivers that address their design challenges. The IS32LT3131 with its selection of bus interface options and features enable the quick and precise control of many individual LEDs within an LED lighting system.”

The IS32LT3131 is a 12-channel current source LED driver. Each channel is rated for 40V and can source up to 75 mA of current. It employs a 31.25kHz, 10-bit pulse-width modulation dimming, 8-bit current adjustment per channel, and 5-bit global current adjustment. The device features various fault protections, including LED string open/short, single LED short, overvoltage, overcurrent, over temperature, CRC error and watchdog timeout (fail-safe modes) along with functional safety documentation for achieving ASIL-B at the system level. In the event of a fault, the fault reporting pin (FAULTB) is pulled low, and the fault condition is set in corresponding registers which can be read back through the bus interface. It is designed with other advanced features such as slew rate control to optimize LED current ramp rate, clock spread spectrum and programmable phase delay to mitigate EMI and power supply inrush current.

Availability

The IS32LT3131 is available now in production quantities and is orderable in three bus interface types each housed in a 28 pin eTSSOP package. They operate from 4.5V to 40V over the temperature range of -40°C to +150°C.

About Lumissil Microsystems

Lumissil Microsystems is a division of ISSI 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. ISSI and Lumissil Microsystems have worldwide offices in the US, Taiwan, Japan, and Singapore, mainland China, Europe, Hong Kong, India, and Korea. Website: http://www.lumissil.com

About Integrated Silicon Solution, Inc. (ISSI)

ISSI is a fabless semiconductor company that designs, develops and markets high performance SRAM, DRAM, Flash memory (including NOR flash, NAND flash and managed NAND solutions (eMMC)), and Analog/Mixed-signal integrated circuits. ISSI provides high-quality semiconductor products and has been a committed long-term supplier to its customers. ISSI has worldwide offices in the US, Taiwan, Japan, Singapore, mainland China, Europe, Hong Kong, India, and Korea. Visit our website at http://www.issi.com/

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