CAN Newsletter Online

MULTI-CHANNEL RGB-LED DRIVER

Light animations in cars with CAN FD

Melexis has introduced the MLX81117, its latest multi-channel RGB-LED driver used for light animations in cars. It is the next member of the lighting integrated circuit (IC) series to support the CAN FD based Melibu communication system.

The MLX81117 enables light animations, extending the Melibu product family with a higher number of integrated LED drivers; It is ISO 11898 compatible (Source: Melexis)

The product is an integrated automotive LED driver with communication (Melibu) between multiple LED drivers to enable applications with RGB-LED counts for light animations within cars. All necessary components needed for LED driving as well as communication are integrated and allow to develop animated light systems. The embedded intelligence allows RGB color mixing as well as the support of Asil B grade applications due to the Melibu communication system. The MLX81117 MCU (micro-control unit) extends the Melibu product family with a higher number of integrated LED drivers, explained the company.

Acoording to the company, the technology is already being leveraged by global car manufacturers to enhance the safety features of their latest models. The MCU extends the Melibu product family with color-mixing accuracy of delta UV of <0,01.

Car manufacturers continue to adopt animated lighting in the cabin, to provide important information such as driver-assistance prompts, vehicle status updates, or advanced comfort functions like adaptive roof light. It is becoming increasingly mainstream to use RGB-LED lightbars to communicate with the driver through color-coded, color-changing, and blinking sequences. However, this presents engineering challenges, such as maintaining consistent color across all of the LEDs in the lightbar and implementing simultaneous light changes.

The MCU addresses this by integrating the Melibu communication interface IP. The interface controls individual LEDs to implement the lighting effects defined by the vehicle's systems. The RGB-LED controller also provides real-time compensation of any color drift caused by environmental changes, and color-mixing accuracy with a delta UV of <0,01 % to eliminate any distinguishable differences between LEDs.

The communication interface uses a CAN FD physical layer to deliver data-phase bit-rates up to 2 Mbit/s. The system also delivers operation to mitigate temperature-related color drift, to maintain a consistent, and non-distracting user experience under operating conditions.

The LED driver IC's additional features include brightness control across a dimming range, which allows adjustments for natural light levels. The MCU is based on the CAN FD physical layer and UART (universal asynchronous receiver transmitter) communication with self-synchronization. The CAN FD interface complies with the Asil B (automotive safety integrity level) according to ISO 26262.

"The MLX81117 is the second product (the CAN Newsletter reported) offering from Melexis to integrate its Melibu technology, which enables a scalability approach of the lighting system as well as new application functions," said Michael Bender, Product Line Manager Embedded Lighting, Melexis. "It extends our support for advanced light functionality and we are excited to see leading automotive manufacturers already include it in their new models to deliver a safer driving experience."

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