Lighting

Awarded rear lights

The rear lights of the Audi Q6 e-tron car have received the 2025 PACE award, the annual award recognized by the "Automotive News" publication. The rear light is based on a CAN FD light prototype protocol and has been developed jointly by Marelli and OLEDWorks in close co-operation with the automaker. The digital OLED taillamp relies on 60-segment OLED light panels.

Due to the strong contrast, the taillamps are gradually turning into exterior displays, making them an enabler of communication with the car's surroundings. This, in turn, improves road safety, as demonstrated by the communication light in the digital OLED rear lights. With a total of eight optional digital light signatures of the digital OLED rear lights 2.0, Audi customers can design the look of their vehicle.

Historically, OLED panels had a maximum of 10 segments per panel and each light component within the vehicle's architecture was controlled by an individual electronic control unit (ECU) physically residing within the component. The new configuration reduces mechanical parts and space requirements and improves energy efficiency through fewer connections. Moreover, it offers flexible styling, as the direct light source control allows the creation of more animations and signatures in an easy, centralized way.

The individual control of each OLED segment is performed via a CAN FD light network that connects the domain controller to the rear-lamp gateway. The used responder nodes by STMicroelectronics comply with an early version of the CAN FD light specification. The applied commander node is a regular CAN FD node. The bit rate is 1 Mbit/s. It is the first time that this kind of communication protocol has been used in a rear-lamp application. The

(Source: Marelli/Audi)

electronic architecture of the system enables refreshing of each image on the OLED panel every 10 ms respectively 100 Hz. This refresh rate is even higher than compared with a usual monitor screen, which refreshes at 60 Hz.

The implemented refresh algorithm lets the active digital light signature demonstrate the car's vibrancy and ability to interact personally by making the Q6 e-tron's "brain activity" visible through constant movement. Drivers can select the digital light signature directly on the vehicle's HMI (human machine interface) or by means of the myAudi app.

Moreover, the digital OLED 2.0 taillight introduces the capability to communicate with the surrounding environment (V2X – Vehicle to Everything). Proximity indication, a feature familiar to other Audi models, is expanded in the Q6 e-tron to include a communication light. Integrated with the digital OLED rear lights, it warns other road users foresighted of accidents and breakdowns by displaying a specific static rear light signature with integrated warning symbols and the regular rear light graphic in critical road situations. The assistance system thus provides proactive support to Audi drivers and all other road users.   *hz*

LED driver IC with CAN FD

Elmos has launched the E522.95 multi-channel PWM (pulse-width modulation) driver chip connectable to 2-Mbit/s CAN FD networks. This interface enables light animation sequences remotely controlled by a body controller or a light control unit. The IC (integrated circuit) provides 16 digitally configurable current sinks up to 100 mA

with an independent 10-bit PWM generator for each channel. For fail-safe operation, the chip features an internal nonvolatile memory to store channel-individual parameters. The embedded power management allows an LED channel bundling with automatic current balancing to external resistors, resulting in a reduced power dissipation.   *hz*

Semiconductors