



Challenge

Improve the color consistency and battery life of 6x2 inch and 12x2 inch under-cabinet LED fixtures and an LED puck light while slimming down their overall design.

Solution

Implemented 4 LUXEON 4014 low-power LEDs per fixture, which reduced fixture size and improved performance.

Benefits

A 20% improvement in color consistency and a 15% extension of battery life. The materials of construction were reduced and automation of operations using SMT improved manufacturing efficiency.

Results

Slim and compact under-cabinet and puck fixtures nearly as thin as an AA battery were produced. The targets of color consistency and battery life were met while long-term goals of improving manufacturing efficiency and reducing environment impact were also achieved.

Fixtures Slim Down with Low-Power LEDs

Driven by the need to deliver more consistent light output in very slim fixtures, under-cabinet and puck lights benefit from the latest low-power LEDs.

Jasco Products has introduced under-cabinet and puck lights that are 60% smaller than previous generation fixtures using through-hole LED. This feat was accomplished using the highly efficient LUXEON 4014 low-power LED.

Challenge

“Slim is in” when it comes to under-cabinet lighting and puck lights. Jasco Products, a leading home electrical product developer, is continually driven to improve the performance of its battery operated LED light fixtures. The redesign of three fixtures targeted more consistent light output and more efficient battery usage for a longer life. At the same time, Jasco works to continually improve its manufacturing efficiency and reduce its environmental impact.

It was these drivers that motivated the redesign of Jasco’s 6x2 inch and 12x2 inch light bars and one puck light for residential and commercial applications. Outlets such as Home Depot and Walmart sell approximately 500,000 of these fixtures annually.

“The change to a surface-mount LEDs, combined with other design changes, ended up reducing our fixture size by 60%.”

— Eric Koboldt
Product Manager LED Lighting, Jasco
Products



Four LUXEON 4014 LEDs on PCB



Jasco 12 inch Lightbar for under cabinet lighting — transitioned from 6 to 4 LUXEON 4014 LEDs

Solution

Jasco partnered with Lumileds to redesign two flush-mount light bars and one puck light. With the incorporation of LUXEON 4014 low-power LEDs, which feature an efficacy of up to 150 lm/W at 30mA, battery life was extended by 15%. The LUXEON 4014 offers an ideal solution when uniformity and a smooth lighting appearance are critical in fixture designs. “We were able to boost color consistency throughout the bin line by 20% at 4000K color temperature and 80CRI,” explained Eric Koboldt.

Several changes were made to the fixture to create a slimmer overall design compared to that of previous generations, which had relied on through-hole LEDs. The LUXEON 4014 utilizes surface mount technology (SMT), which allows for a smaller overall footprint, while also improving packaging reliability. The LED’s rectangular package (4.0x1.4x0.7 mm) also increases light uniformity.

Benefits

The change to the LUXEON 4014 enabled a 15% improvement in battery life and a 20% boost in color consistency from the fixtures. Superior heat dissipation from the LEDs enables a cost effective thermal design of the fixtures. In addition, the transition to SMT from through-hole technology improved manufacturing efficiency by replacing a hands-on operator task with an automated pick-and-place operation. Other design changes to the PCB housing enabled a significant reduction in the amount of material used in each fixture, thereby reducing material cost, scrap and environmental impact.

Results

The 6x2 inch and 12x2 inch under-cabinet lights are nearly as thin as an AA battery and along with the puck light lasting 15% longer than previous generation products. Due to the specific form factor of the LUXEON 4014 lending itself to optimized spacing within the fixture, color consistency is 20% improved over the previous generation product as well. Providing high efficacy and just the right amount of light, the LUXEON 4014 low-power LED was ideal for these indoor area lighting applications, served as a natural replacement to traditional lighting (such as fluorescents) and simplified the overall manufacturing process.

“By using low power LEDs, less plastic and fewer overall parts, not only was overall manufacturing cost reduced but the environmental impact was also mitigated.”

— Eric Koboldt
Product Manager LED Lighting, Jasco Products

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For 100 years, Lumileds commitment to innovation has helped customers pioneer breakthrough products in the automotive, consumer and illumination markets.

Lumileds is shaping the future of light with our LEDs and automotive lamps, and helping our customers illuminate how people see the world around them.

To learn more about our portfolio of light engines visit lumileds.com.

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