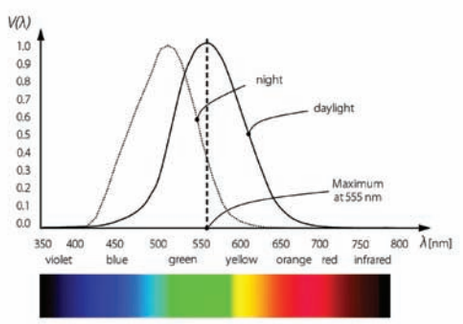

6 Let there be light

Physical fundamentals of light and lighting

The importance of light, both for the human eye as well as for a camera, is often underestimated. When dealing with lighting techniques, it's important to bear in mind that one does not directly perceive the topology and texture of an object, but its effect on incident light.

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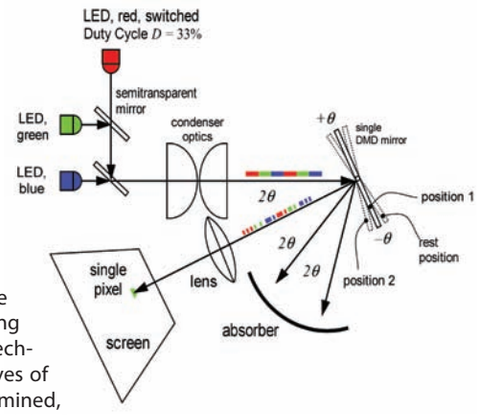
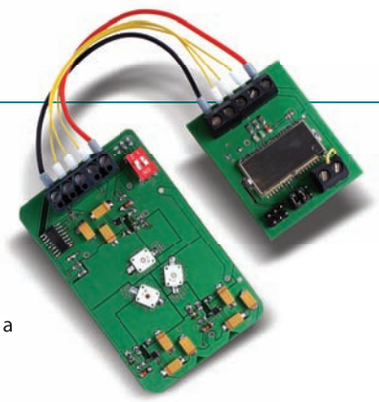
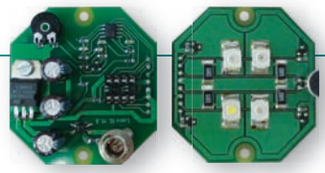




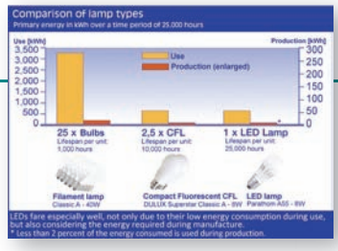


50 Spotlight
Driver electronics and heat management for LED-based lighting

Modern LED-based lighting, also known as Solid-State Lighting (SSL), scores well against all previous technologies through its combination of reliability, quality and effiency. When designing solid-state lighting, however, one needs to overcome certain technical challenges in the areas of heat management, driver electronics and optics. With a reference design based on an electronic driver board from National Semiconductor and a SynJet cooling module from Nuventix, one has a complete solution for both driver electronics and heat management for LED-based lighting.

58 LEDs for a new era in lighting
Light-emitting diodes and their possibilities – from a manufacturer's point of view

With the phasing out of light bulbs, which began in September 2009, a part of industry history that has lasted 120 years came to an end. The farewell wasn't easy – the hoarding of filament light bulbs was an indication of the consumers' insecurity. However, above all, LEDs stand ready in the starting blocks, as energy saving, environmentally-friendly, long-lived, compact and, ultimately, economical sources of light, to enable a complete new generation of lamps. With a lifespan of more than 40,000 hours and a light output of up to 105 lumens per watt, the new Sharp LEDs, in terms of efficiency and light output, are among the leading lamps on the market. For a soft landing in a new age, the so-called retrofit LED lamps with standard sockets can easily replace conventional lighting.



63 LED life-cycle assessment
Results of a life-cycle study on LED lamps

An LED life-cycle assessment, conducted by Osram, has shown that the newest generation of light sources already earns a high grade in terms of environmental-friendliness. In the study, the entire life cycle came under the magnifying glass - how much energy and raw materials are used during their manufacture, their use and their disposal, and what the ecological impact is. The result: Current LED lighting matches the environmental grade of compact fluorescents, and is far superior to that of conventional light bulbs.

Theory and applications

DIY projects

Info