

## A look back at Lightfair 2013

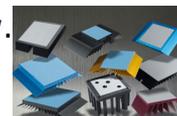
Chris Warner, Executive Editor



Cold weather has been hanging on well into April here in the northeast. But if you were in Philadelphia this week, you would



be forgiven for walking around wearing sunglasses – especially indoors at the Pennsylvania Convention Center – a sure sign that Lightfair is in town. As always, it was a feast for the eyes and I wish I could have stayed for more courses. Here's a small sample of some of the cool products and technology from the show.



### LEDs earn their stripes

One of the luminaries scheduled to appear at the show was a former ballplayer known as “The Big Cat”. But Anders Galarraga wasn't the only “big cat” people came to see. When Sharp launched its Tiger Zenigata LEDs, they were presented as the world's first single point light source with variable color temperature on a substrate. I had the chance to see these LEDs in action at Avnet's booth. Looking inside the spotlight, I could indeed see the tiger stripe pattern that result because of the combination of the warm white and cool white multi-chip LEDs within a single COB package. The solution was driven by a Texas Instruments TPS92660 two-string LED driver (<http://bit.ly/15SvLzq>) which enables manufacturers to precisely tune the white correlated color temperature (CCT) and brightness of the luminaire during production. Variations of the LED's relative drive current enabled very smooth tuning as I controlled the light with simply by hand motion.



Sharp's Tiger Zenigata 15-W LED was also an integral part of a Smart Digital Lighting System using a down light luminaire designed with Orama Inc.'s Smart LED drivers and digital controller, which is based on Marvell's advanced LED driver ICs and control ICs. The system is "designed to allow wired and wireless network control, which includes lumens, brightness, CRI and CCT creating a Full Semblance White Light System." The Smart Digital Lighting System promises a full range of "the light from nature" – the exact light for each respective task, regardless of the time of day. Marvell, meanwhile, demonstrated its Smart Bulb Residential Platform which targets smart lighting manufacturers looking for an open, end-to-end SoC environment that will help them meet Energy Star requirements while keeping the IC count low. The platform is comprised of its 88EM8511 low-power AC/DC controller and wireless MCU embedded inside a smart LED bulb.

### **Chips add color to the mix**

Osram Opto Semiconductors made some additions to its Duris product family. Its Duris P5 LEDs, are now available in four colors: "deep blue" (450 nm), "blue" (470 nm), "true green" (528 nm), "yellow" (590 nm) and "red" (615 to 625 nm). Osram notes that the LEDs' low forward voltages and optimized light extraction result in high luminous efficacies. These 2.0 mm x 2.3 mm devices feature a silicon-based package and corrosion resistance for use in harsh environments. The company also launched the Duris S 5 LED series for low- to medium-power applications. Featuring a compact, 3-mm x 3-mm packages and desirable lifetimes, three versions offer designers flexibility in luminous flux choices, and a minimum 80 CRI. These LEDs are especially suited for hot environments.



Prior to the show, Cree announced XQ LEDs are its smallest lighting-class LEDs at 1.6 mm x 1.6 mm. The unique light emitting pattern of these LEDs is designed to emit more light towards the edge instead of the center of the package. Compared to existing LEDs, the company asserts these LEDs allow fewer packages to achieve a wide, distributed light pattern so manufacturers can increase the light output, expected lifetime and omnidirectionality of their designs.

### **Driver offerings tout customization, flexibility and easy installation**

High-end architectural and retail applications that need a very slim form factor driver can find 17.36" x 1.33" x 1.25" units as part of ERG Lighting's ArchiLume Series (<http://bit.ly/1825xKz>). These American-made drivers (E100W24V and E100W24V-D) feature a constant voltage output of up to 100 W with very low ripple and flicker-free dimming. ERG notes the drivers are particularly suitable for linear lighting applications where driving multiple strings of LEDs from a single output is required, and they are highly customizable. The company also showcased its GenLume Series (<http://bit.ly/182ID2K>) of drivers with output power of 18 W to 200 W and easy-to-install wiring compartments that eliminate the need for a junction box. These UL listed, stand-alone devices are appropriate for signs, outdoor, strip lighting, and industrial applications.

Thomas Research Products expanded its standard LED Series with 35-W LED drivers for T5 fluorescent ballasts. They can be used in new or existing designs, offering flexibility to OEMs. Specs include input voltage ranges from 120 VAC to 277 VAC, and they offer over-voltage, over-current and short circuit protection with automatic recovery.

### **An array of new LED products**

Representatives from both Avnet and Digikey were talking about Seoul Semiconductor. Their Acrich2 LED modules are suitable for downlight applications and can directly connect to line power, eliminating the need for a driver. Since they come preconfigured, there is no design complexity, and they lead to faster time to

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market. The modules are available in 4-W, 8-W, 12-W and 16-W versions. The company also touted its MJT mid-power, single-chip LEDs. Suitable for a wide range of applications and available with power handling levels from 0.25 W to 1 W, these LEDs feature a small footprint, and high forward voltage levels, and high reliability since they rely on less wire-bond interconnects.

Targeting companies looking to save driver and optics inventory costs, Bridgelux announced commercial availability of its VERO LED arrays (<http://bit.ly/ZMSGbp>). These arrays are notable for their onboard connector port which interfaces with the Molex Pico-EZmate connector. Interconnectivity does not require soldering, and it eases field upgrading. The company notes these arrays increase lumen output by 20 percent over their existing arrays, and they provide 110 lumens per Watt in typical efficacy.

Philips Lumileds announced a portfolio of four different chip-on-board arrays featuring a very tight 22-degree uniform beam angle and efficacies up to 120 lm/W. They provide up to 6000, and their reduced light emitting surface make them especially suited for down lights, directional lamps and street lights.



### Thermal pads put

#### manufacturers in control

LED lighting manufacturers are always looking to add ease and flexibility to their processes, not to mention reducing costs and managing heat within their products. Dow Corning showed off its disposable thermal pads (<http://bit.ly/1825DBG>). Manufacturers can print a layer of thermally conductive compound in controllable thicknesses on complex substrate shapes. The company asserts this technology can reduce material costs by 30 to 60 percent versus more conventional fabricated thermal pads.

EnOcean Alliance was at the show to discuss the benefits of the license-free 902 MHz frequency for energy harvesting wireless technology in buildings, home and industrial automation. Since it resides in the less crowded sub 1 GHz frequency band, it offers long range, reliability, and it can accommodate many applications. The Alliance also notes that the frequency meets legal regulation requirements as

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well as forecasted trends over the coming years. Meanwhile, EnOcean announced 902 MHz module series that includes a powered wireless switch module, a solar powered wireless sensor module, and transceiver modules for controllers and gateways.

Lightfair returns to Las Vegas in 2014. Hope to see you there!

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