High density LED array boards offers maximized heat and current spreading

Innovations in Optics, Inc. introduces a new product line; LumiBright BD Boards for high power LED applications. Offering maximized heat and current spreading, metal core LumiBright BD Boards are engineered to deliver high output optical power, large emitting area, superior thermal management, and open platform flexibility that provides for totally unique and compact LED design solutions.

The use of LEDs for high brightness applications has been enabled by the recent efficiency improvements from commercially available LED die. However, most die are sold for use as packaged LEDs which can impose design limitations for many potential LED applications. A packaged LED has convenient wire leads or solder pads for PCB mounting. However, most also include an optical lens, reflector or resin to encapsulate the LED die for protection which severely handicap optical system design optimization. Light sources built using packaged LEDs do not provide sufficient emitting area, output uniformity, or power for the most demanding technical applications.

Most LED die sizes are kept small to reduce photon losses from total internal reflection (TIR). Commercial “large-chip” LEDs using photonic lattice technology reduce TIR losses and increase light extraction. However, large-chip LEDs are rectangular as convenient for primary use in visible projector systems that produce four-sided images. Optical systems that require a circular aperture will have to “waste” a portion of the chip emission. Furthermore, large-chip LEDs are only

available in three primary colors (red, green and blue) or white. Small chip arrays can be sized for efficient coupling into round apertures and multiple wavelength arrays can be collected and mixed by a single primary optic.

Innovations in Optics, Inc.
781-933-4477
www.innovationsinoptics.com [1]

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