

GO Lighting Technologies Inc.

About Light Emitting Diodes (LED)

Light emitting diodes (LED) are PN junction devices that give off light radiation when biased in the forward direction. Most light emitting diodes function in the near infrared and visible ranges, though there are now UV LEDs. Light emitting diodes are a reliable means of indication compared to light sources such as incandescent and neon lamps. LEDs are solid-state devices requiring little power and generating little heat. Because their heat generation is low and because they do not rely on a deteriorating material to generate light, LEDs have long operating lifetimes. One of the alternatives, incandescent bulbs, consumes much more power, generate a great deal of heat, and rely on a filament that deteriorates with use. Neon bulbs, on the other hand, rely on excited plasma, which, along with its electrodes, can deteriorate over time.

Light emitting diodes can be edge emitting, surface emitting, and super luminescent. An edge emitting LED is a light emitting diode (LED) with output that emanates from between the heterogeneous layers. It has greater radiance and coupling efficiency to an optical fibre or integrated optical circuit than a surface-emitting LED, but not as great as the injection laser. A surface emitting LED is a light emitting diode (LED) that emits light perpendicular to the active region. Super luminescent LEDs are based on stimulated emission with amplification but insufficient feedback for oscillation to build up.

Important performance specifications to consider when searching for light emitting diodes (LED) include LED type, peak wavelength, viewing angle, optical power output, luminous intensity, forward current and forward voltage. LED types include infrared, red, orange, yellow, green, blue, white, and ultraviolet. Peak wavelength is the desired output wavelength of LED. Dependent upon diffusion from the lens, usually the larger the viewing angle, the less bright the LED.

Diffused types generally have larger viewing angles and non-diffused types have smaller viewing angles. The optical power output of the LED is expressed in mW. The luminous intensity of the LED is expressed in mcd. The candela (cd) is the luminous intensity of a light source producing light at a wavelength of 555.17 nm with a power of 1/683 watt per steradian, or 18.3988 milliwatts over a complete sphere centered at the light source.

Common features of light emitting diodes include lens type choices, bipolar construction, dual LEDs, and arrays. Lens type choices include flat lenses and domed lenses. Bipolar LEDs work even if voltage is reversed. Select models change color on reverse voltage. Dual LEDs are two LED lamps in the same housing. In an LED array the LEDs are packaged as multiples. LED arrays will contain a certain number of elements (LEDs).

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Contacts:

Ronald Content, President
GO Lighting Technologies Inc.
258 Galaxy Blvd., Toronto ON M9W 5R8
Tel: (866) 679-9452
Toll Free: 866-571-7036
Fax: (416) 679-9452
Email: r.content@goenergyeffective.com
Web Site: www.goenergyeffective.com

Leonard (Len) Knott
MCAN Communications
416-488-1277 ext 2
Email: lnott@mcancommunications.com