

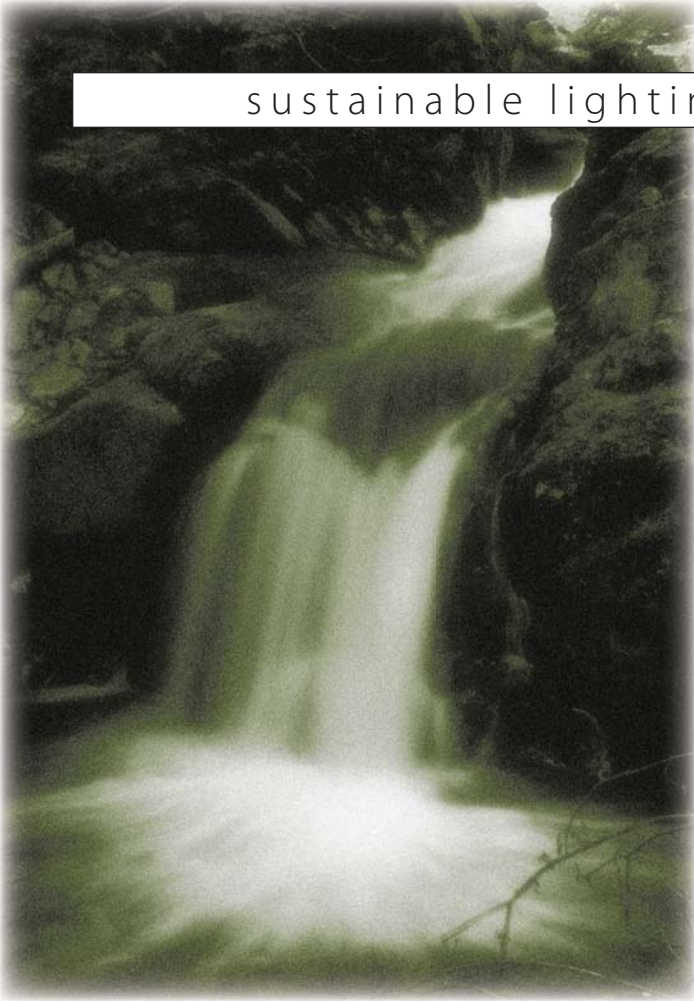


LED Pendants:
The Back Story



Sensibly Contemporary...

sustainable lighting to illuminate your life



Light is for seeing. Illumination enriches your life.
With beauty. With wisdom. With people.

Besa Lighting is committed to providing environmentally-friendly and energy-efficient lighting fixtures, while maintaining the highest level of aesthetic design possible.



Incandescent lamps may be easy to understand, but are far from efficient. When producing light by heating the filament inside the bulb, about 90% of the energy used is lost as heat.

Fortunately, energy-efficient options like **Compact Fluorescent (CFL)** and **Solid-State (LED)** lightsources, are improving in quality and are gaining more mainstream acceptance. For years, Besa has offered lamping options that can reduce your energy needs. Without fanfare, we've been expanding our sensible alternative offerings. It's not just being responsible, it's being an active part of our community.

With these alternative technologies, better understanding the differences in light quality, benefits and cost play a much larger role in selecting the appropriate light source for your lighting application.

Goodness happens when you sweat the details.

LED solid-state lighting

Solid-state lighting is rapidly becoming the most environmentally responsible light source type available. The LED chip offers a combination of energy-efficiency, long life, and excellent color, setting it apart from other lightsources. Until recently, the major drawback for solid state lighting has been its visual integrity, but that is quickly changing.

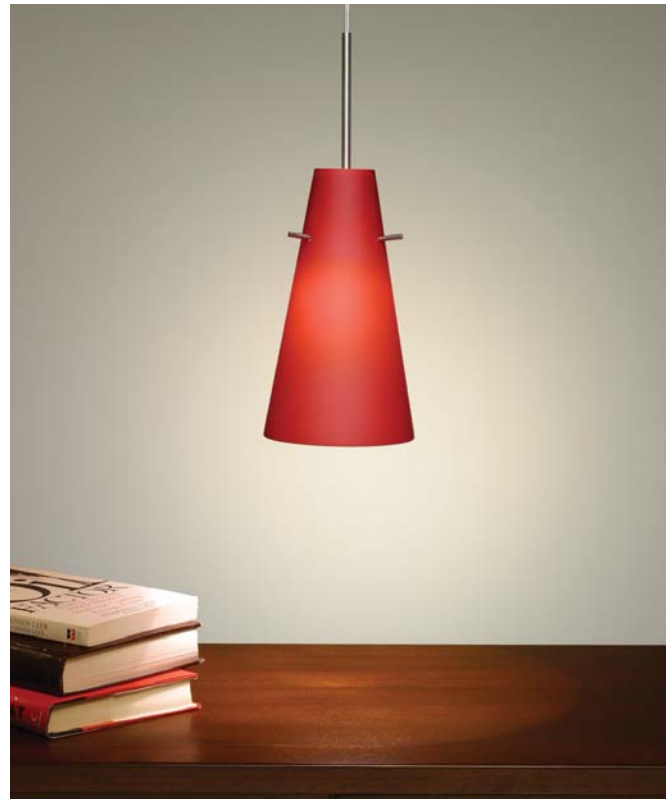
We're Very Particular, For You

You purchase Besa Lighting decorative luminaires for their appearance, and that should not be sacrificed when using an energy-efficient light source. So we have approached solid-state lighting with a distinct purpose in mind... never compromising on appearance.

We have offered energy-efficient CFL options for several years, but had postponed offering an LED alternative until it could meet our high standards. Only now are we able to offer you LED products that we feel confident will offer proper light output and design, along with energy savings and long life.

Our LED lightsource provides:

- **360° illumination** for optimal appearance and downlighting
- Seamless integration with our pendant designs
- Design that properly manages heat at the lightsource, maximizing the long life potential of the LEDs



360° illumination makes a Besa luminaire productive as well as beautiful

XL Series LED mini pendants



Design Benefit: Quick-Connect flexibility

Selected Besa 12V mini- pendant luminaires, supplied with LED lightsource, offer the benefit of Quick-Connect mounting, for use with our 12V Monorail system.

- Designed for use with all Besa Quick-Connect canopies equipped with no-load 12V electronic transformers
- Operates on Besa Monorail, with 120V magnetic power supplies
- Integral LED driver is built into heat-sink
- Total power of 4.7 watts
- Full range dimmable. When using an electronic transformer, an electronic low-voltage dimmers (ELV) is required. If a magnetic transformer is employed (on Besa monorail), a magnetic low voltage dimmer must be used.*
- Frosted acrylic diffuser encloses LED lightsource

* Consult factory for compatible dimmer information.

Find these Pendants in Besa's website or catalog



Pahu 4



Stilo 7



Pera 6

JL Series LED pendants



Design Benefit: Monopoint pendant, Long life

Selected Besa 120V pendant luminaires, supplied with LED lightsource, are designed as stand-alone Monopoint fixtures.

- External constant-current LED driver is housed in the dome canopy
- LED lightsource is removable at the heat-sink, for easy replacement
- Total power of 4.7 watts
- Dimmable with electronic low-voltage dimmers (ELV)*
- Frosted acrylic diffuser encloses LED lightsource
- Contact factory for 277V options

* Consult factory for compatible dimmer information.

Find these Pendants in Besa's website or catalog



Cierro



Pera 9



Stilo 10



Tao 10

LED performance

Besa's LED Lightsource

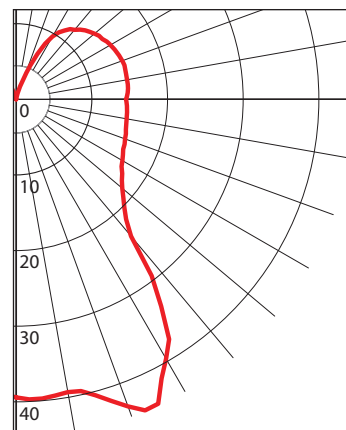
- Total power of 4.7W
- Total Lumen Output: 320*
- Lumens Per Watt (LPW): 68*
- CCT: 2800° Kelvin
- CRI: >85
- R9 Red Color Value of 50
- Rated Life: 50,000 hours, based on LM70
- For LED Lightsource and Driver warranty, contact factory.

* Average Lumens. Measured with frosted acrylic diffuser in place.

Besa LED Pendant Photometrics

- The candela distribution shown here is for Besa pendant 1JL-412407-SN Cierro, Opal Matte.
- Slight variation will occur dependant upon the specific diffuser (glass shade) that is utilized.
- IES Report # B5150L
- Lumen Output: 190*

* Measured with glass shade installed.



solid-state lighting glossary

With the emergence of these new energy-efficient light sources, an entirely new criteria has been developed to characterize the quality and type of lighting. Below is a quick glossary to better understand solid-state lighting:

Binning:

Process of sorting LEDs into groups according to a given performance measurement, typically lumen output or forward voltage.

Chromaticity:

The aspect of color that includes consideration of its dominant wavelength and purity.

Color Rendering Index (CRI):

Rating of a lamp's ability to render colors, the higher the rating, the better colors will appear. Based on a scale of 0-100, CRI differences are generally noticeable to the human eye when they exceed 5 points.

Correlated Color Temperature (CCT):

Color temperature defines the color appearance of the lamp, expressed in Kelvins (K). A higher color temperature has a bluer appearance. For example, incandescent light is 2800K and cool white is 4100K.

Die:

Fragment of semiconductor material cut out of a larger wafer, resulting in a single device.

Driver:

Self-contained power supply that has outputs matched to the LED array. For proper LED operation, matching the electrical characteristics of the LED and driver are critical.

Efficacy:

The rate at which a lamp or lightsource is able to convert power (watts) into light (lumens), expressed in Lumens Per Watt (LPW).

Energy Policy Act (EPACT):

Comprehensive energy legislation, the Energy Policy Act of 2005 represents the most significant overhaul of US energy policy since EPACT 1992.

Junction Temperature:

LED products will typically have an associated maximum junction temperature (T_j). It is critical that appropriate heat sinking is employed, so that the LED products are not operated in conditions that violate the maximum junction temperature specified by the LED manufacturer. Overheating can shorten LED life.

Light Emitting Diodes (LED):

An LED is a semiconductor encapsulated in epoxy, which illuminates when electrically biased in the forward direction. Typically the LEDs are clustered onto a Printed Circuit Board (PCB) and then incorporated into a light fixture.

Leadership in Energy and Environmental Design (LEED):

Developed by the US Green Building Council, LEED provides owners and operators a concise framework for identifying and implementing green building design, construction and operations solutions

LED Package:

Assembly that houses and protects the LED die, containing an optical system to direct the light out of the device.

Lumens:

The international unit of luminous flux, or quantity of light. Not to be confused with footcandles, which is a measure of lumens per square foot.

Lumen Maintenance (lm):

A measure of light output over time. For example, LM 70 defines the time that a light source reaches 70% of it's initial output.

R9 Value:

This is the Red Color Value (CRI #9), and indicates the color representation in the red region of the spectrum. Typically the amount of luminescence in the red region has been deficient in White LEDs, so the R9 value is an important index.

Solid-State Lighting (SSL):

Refers to lighting that utilizes semiconductor light-emitting diodes (LED), organic light-emitting diodes (OLED) or polymer light-emitting diodes (PLED) as sources of illumination.

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