



## Chip on Board LEDs

High performance  
solutions that optimize  
system design

# LUXEON Chip on Board LEDs

## Optimize your system for flux density and ease of design

LUXEON Chip on Board (CoB) LEDs from Lumileds provide luminaire manufacturers with the twin benefits of high performance and ease of design. These multi-die products provide a complete, high flux-density light source supplied in a robust, thermally efficient package.

### These CoB LEDs are well suited to many lighting applications.

- Application-specific LUXEON CoB LEDs provide enhanced color effects for **retail and hospitality** settings. Lighting powered by LUXEON CoB LEDs can play a critical role in branding, highlighting merchandise and creating a mood which makes people want to remain in a space longer. Spotlights based on LUXEON CoB LEDs produce a high lumen output from a compact source with a tightly controlled beam angle.
- **Outdoors**, high flux density and color consistency improve safety and visibility in **applications such as streetlighting**, where LUXEON CoB LEDs produce the right light profile to keep the roads clear and safe.
- Everywhere, **energy efficiency** is an important factor in new lighting schemes as much as in upgrades. High-efficacy LUXEON CoB LEDs are the light source for many of the industry's most efficient luminaires.

This brochure shows that LUXEON CoB products provide luminaire manufacturers with a versatile set of options for luminous flux, color and much else. Rendering colors well, they provide an energy-efficient alternative to traditional lighting.



# Lumileds LUXEON CoB Family

The broad range of LUXEON CoB LEDs includes general-purpose products offering performance and value, and specialist products optimized for specific applications.



## LUXEON CoB Core Range

For general lighting in outdoor and industrial applications, and in retrofit lamps, spotlights and downlights. Flux options from 1,000 to 15,000 lumens and a small LES.

## LUXEON CoB Core Pro

For retail and hospitality lighting, the LUXEON CoB Core Pro LEDs offer long lifetime, high quality of light and excellent color stability in spotlights, tracklights, downlights, and low-bay lights.

## LUXEON CX Plus CoB (Gen 2)

Ultra-high thermal efficiency and standard square footprints mean that these LEDs can provide an immediate efficiency upgrade to existing luminaire designs.

## LUXEON CoB Core Range – High Density

For the highest Center Beam Candle Power (CBCP) in spotlights, lamps and downlights. Available with an LES of 6, 9 and 11 mm, these CoB LEDs produce up to 8,000 lumens.

## LUXEON CoB Core Range PW

LUXEON CoB Core Range PW combines high quality of light with high luminous flux and efficacy.

## LUXEON CoB with CrispColor Technology

Makes colors pop and fabrics come to life for a vivid retail experience. Special phosphor technology gives superior color rendering and an optimized color point.

## LUXEON CoB with CrispWhite Technology

The second generation of LUXEON CoB with CrispWhite Technology delivers a natural crisp whiteness by activating fluorescent whitening agents in paints and fabrics. Ideal for CDM/CMH replacement in shops.

## LUXEON CoB with FreshFocus Technology

Accentuates the freshness and visual appeal of fresh foods in supermarkets, delis, butcher shops and bakeries. For indoor area lighting, downlights, spotlights and lamps.

## LUXEON CX Plus CoB – High Density

For high flux of up to 5600 lumens in an industry-standard footprint of 13.35mm x 13.35mm, to enable an immediate and effortless upgrade to higher-flux designs in existing ecosystems.

## LUXEON CX Plus CoB – High Density (Below BBL)

For high flux from a small light emitting surface combined with excellent color rendering and white color output below the black body line.

## LUXEON CoB CORE RANGE PRODUCT PERFORMANCE

	HIGH EFFICACY	EASY TO DESIGN IN	OPTIMIZED FOR RETAIL	ULTRA-HIGH FLUX DENSITY	ULTRA-HIGH QUALITY OF LIGHT
LUXEON CoB Core Range	•	•			
LUXEON CoB Core Pro	•	•			•
LUXEON CX Plus CoB (Gen 2)	•	•			
LUXEON CoB Core Range – High Density		•		•	
LUXEON CoB Core Range PW	•	•			•
LUXEON CoB with CrispColor Technology	•	•	•		
LUXEON CoB with CrispWhite Technology	•	•	•		
LUXEON CoB with FreshFocus Technology	•	•	•		
LUXEON CX Plus CoB – High Density		•		•	
LUXEON CX Plus CoB – High Density (Below BBL)		•		•	•

# LUXEON CoB Core Range

## Uniform, high-efficacy and easy-to-design

This broad family provides a wide range of options for meeting the design requirements of applications such as downlights, spotlights, high-bay lighting and streetlights.

The LEDs' robust metal-core PCB package makes them ideal for the replacement of traditional lamp technologies such as CDM/CHM or HID. Superior thermal resistance enables the use of smaller heat sinks while supporting higher flux output.

### FEATURES AND BENEFITS

High flux density and small LES options

3-step MacAdam ellipse color definition: *Freedom from Binning* for color consistency from luminaire to luminaire

Up to 4x lower thermal resistance than competition, enabling smaller heatsinks and higher lumens

Supported by a comprehensive optical, mechanical and electrical ecosystem

### PRIMARY APPLICATIONS

Architectural

Downlights

High Bay & Low Bay

Lamps

Outdoor

Specialty Lighting

Spotlights



### TECHNICAL SPECIFICATIONS

CCT options: 2200K, 2700K, 3000K, 3500K, 4000K, 5000K, 5700K, 6500K

Minimum CRI options: 70, 80, 90, 95

LES diameter options: 6mm, 9mm, 13mm, 15mm, 19mm, 23mm, 29mm, 32mm

Typical luminous efficacy up to 177lm/W



[Click here for the latest technical specifications and part numbers](#)



# LUXEON CoB Core Pro

## High efficacy and quality of light for retail and hospitality lighting

The LUXEON CoB Core Pro LEDs combine very high efficacy with an excellent quality of light which makes colors pop. Ideal for retail and hospitality lighting, the CoB Core Pro LEDs encourage customers to engage with displays and products.

In high-value installations, the CoB Core Pro's long life and color stability provide assurance that the light source will maintain high performance over the lifetime of the scheme.

### FEATURES AND BENEFITS

Best in class efficacy and superior color quality

Multiple LES sizes and flux outputs to fit different applications and requirements

Superior thermal resistance enables the use of smaller heatsinks and prolongs product life span

Supported by a comprehensive optical, mechanical, and electrical ecosystem

### PRIMARY APPLICATIONS

Spotlights

Track lights

Downlights


Low-bay lighting



### TECHNICAL SPECIFICATIONS

LES (mm)	NOMINAL CCT	MINIMUM CRI	LUMINOUS FLUX (lm)		TYPICAL LUMINOUS EFFICACY (lm/W)	TEST CURRENT (mA)	ENERGY EFFICIENCY CLASS
			MINIMUM	TYPICAL			
9	3000K	90	729	810	117	200	F
9	3000K	90	1210	1344	130	300	E
13	3000K	90	2462	2735	130	600	E
15	3000K	90	3676	4084	130	900	E
15	3000K	90	3780	4200	134	900	E
15	3000K	90	3879	4310	141	900	E
19	3000K	90	4959	5510	132	1200	E

LEDs hot-tested at  $T_j = 85^{\circ}\text{C}$

 [Click here for the latest technical specifications and part numbers](#)

# LUXEON CX Plus CoB (Gen 2)

## Thermally efficient alternative to LEDs in industry-standard footprints

The LUXEON CX Plus CoB (Gen 2) products offer a new breakthrough in efficacy for arrays thanks to their MCPCB substrate, which is more thermally efficient and robust than a ceramic substrate.

Available in versions with a CRI of 80 or 90 across multiple electrical configurations, the LUXEON CX Plus CoB (Gen 2) LEDs are supplied in packages with industry-standard footprints. This means they can replace legacy CoB LEDs to upgrade a luminaire design, and enable fast design-in because the manufacturer can retain existing optics, clamps, and documentation.

### FEATURES AND BENEFITS

High efficacy

2- and 3-step MacAdam ellipse ensuring color consistency from luminaire to luminaire

Standard square footprints for easy upgrade of existing designs

### PRIMARY APPLICATIONS

Spotlights

Track lights

Downlights



### TECHNICAL SPECIFICATIONS

CCT options: 2700K, 3000K, 3500K, 4000K, 5000K

Minimum CRI options: 80, 90

LES diameter options: 6mm, 9mm, 12mm, 14mm

Industry-standard footprints: 13.35mm x 13.35mm, 15.85mm x 15.85mm, 17.85mm x 17.85mm



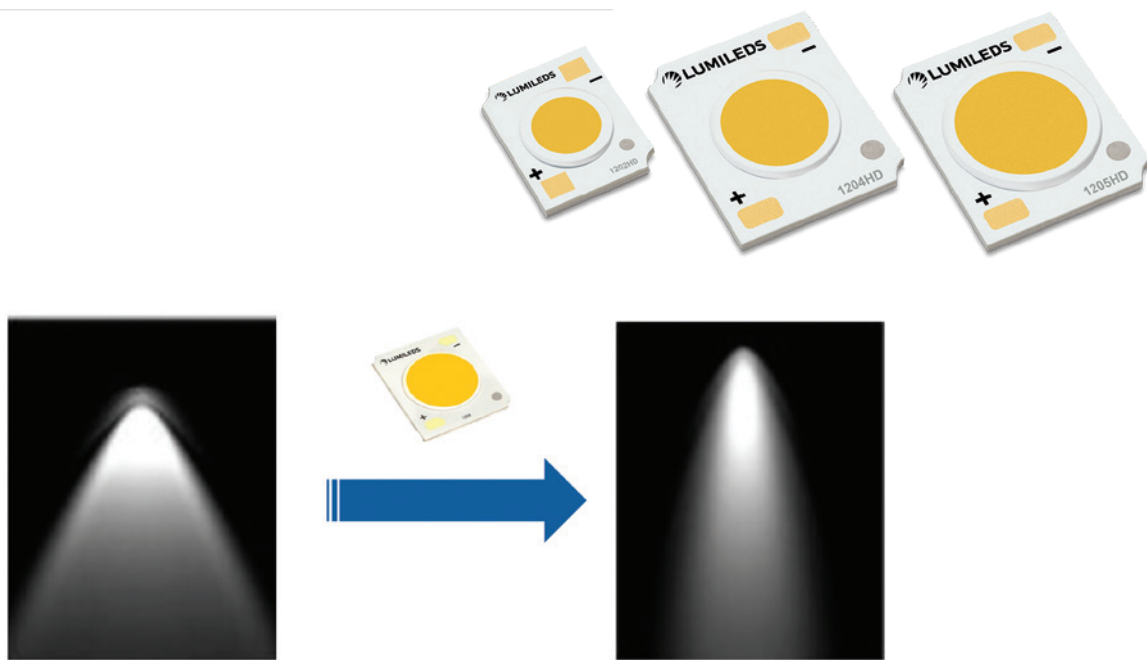
[Click here for the latest technical specifications and part numbers](#)

# LUXEON CoB Core Range – High Density

Double the flux in the same form factor


LUXEON CoB Core Range – High Density LEDs produce very high Center Beam Candle Power (CBCP). Available in versions with a light emitting surface of 6mm, 9mm or 11mm, these LEDs produce flux as high as 8,000 lumens. Sharing the mechanical dimensions of our LUXEON CoB Core Range, the High Density range will also benefit from the ability to use the same ecosystem of holders, optics and drivers.

FEATURES AND BENEFITS	PRIMARY APPLICATION
Highest flux densities with industry's smallest LES	Outdoor
3-step MacAdam ellipse color definition: <i>Freedom from Binning</i> for color consistency from luminaire to luminaire	Spotlights
Up to 4x lower thermal resistance than competitors, enabling the use of a smaller heatsink while producing higher luminous flux	
Supported by a comprehensive optical, mechanical and electrical ecosystem	



## TECHNICAL SPECIFICATIONS

	6mm	9mm	11mm
Maximum Flux (HD)	2,500lm	5,000lm	6,500lm
Dimensions	12mm x 15mm	16mm x 19mm	

 [Click here for the latest technical specifications and part numbers](#)

# LUXEON CoB Core Range PW

## High performance with high quality of light

LUXEON CoB Core Range PW combines high quality of light with high luminous flux and efficacy. In addition, LUXEON CoB Core Range PW LEDs feature very low thermal resistance, enabling the use of smaller heatsinks and giving a longer life span.

### FEATURES AND BENEFITS

Superior color quality with lower energy consumption

Various LES sizes and flux output options to fit different applications and requirements

Supported by a comprehensive optical, mechanical, and electrical ecosystem

### PRIMARY APPLICATIONS

Spotlights

Track lights

Downlights

Low-bay lighting



### TECHNICAL SPECIFICATIONS

LES (mm)	MINIMUM CRI	LUMINOUS FLUX (lm)		TYPICAL LUMINOUS EFFICACY (lm/W)	TEST CURRENT (mA)
		MINIMUM	TYPICAL		
9	80	1351	1501	145	300
9	90	1191	1324	128	300
9	90	1246	1384	134	300
9	90	1250	1389	134	300
13	80	2739	3043	145	600
13	90	2413	2681	128	600
13	90	2509	2788	133	600
13	90	2595	2884	137	600
15	80	4159	4621	148	900
15	90	3566	3962	127	900
15	90	3747	4163	133	900
15	90	3854	4283	137	900
19	80	5559	6177	148	1200
19	90	4836	5373	129	1200
19	90	5068	5631	135	1200
19	90	5203	5782	138	1200

Performance of LUXEON Cob Core Range PW at specified test current; T<sub>j</sub>=85°C.



[Click here for the latest technical specifications and part numbers](#)



# LUXEON CoB with CrispColor Technology

## Lighting for fashion retail highlights rich colors and emphasizes contrasts

The LUXEON CoB with CrispColor Technology LEDs make colors pop and fabrics burst into life. The contrast of colors has never been so vivid. The special CrispColor Technology phosphor creates a higher gamut color rendering than existing solutions, with a color point below the Black Body Line to allow for Class A products.

Offering excellent flux performance and efficacy, the LUXEON CoB with CrispColor Technology LEDs produce a strong impact in retail settings.

### FEATURES AND BENEFITS

High flux density

Minimum 90 CRI

3-step MacAdam ellipse color definition hot-tested at 85°C

4x lower thermal resistance than competition, enabling the use of a smaller heatsink while producing higher luminous flux

Supported by a comprehensive optical, mechanical, and electrical ecosystem

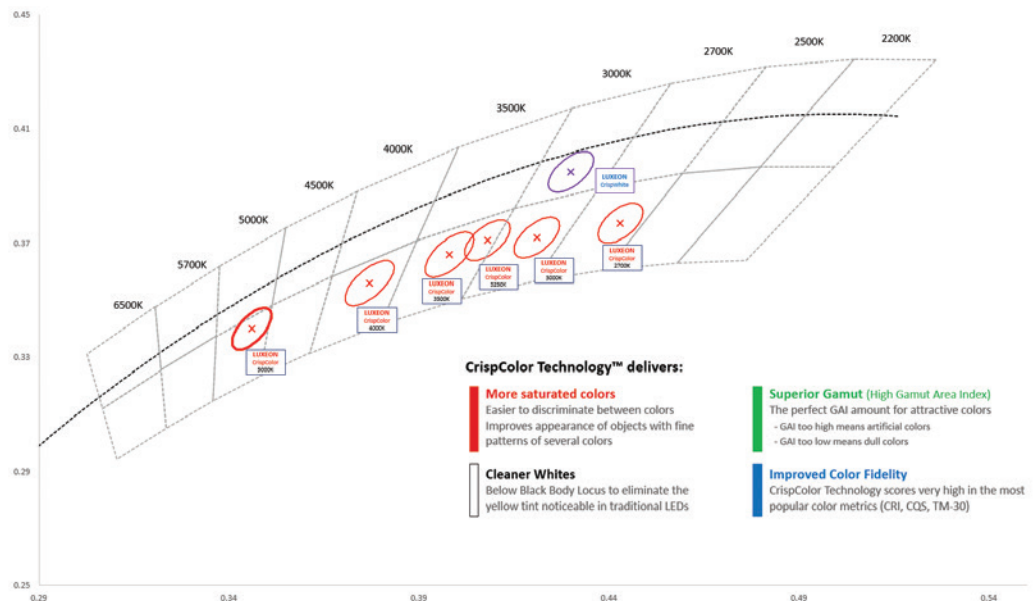
### PRIMARY APPLICATIONS

Indoor Area Lighting

Lamps

Downlights

Spotlights



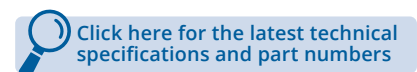
### TECHNICAL SPECIFICATIONS

CCT options: 2700K, 3000K, 3500K, 4000K, 5000K

Minimum CRI options: 80, 90

LES diameter options: 6mm, 9mm, 12mm, 14mm

Industry-standard footprints: 13.35mm x 13.35mm, 15.85mm x 15.85mm, 17.85mm x 17.85mm



# LUXEON CoB with CrispWhite Technology

## The whitest whites bring merchandise to life

Now in its second generation, the LUXEON CoB with CrispWhite Technology family renders the whitest whites to produce a powerful effect in retail lighting applications. LUXEON CoB with CrispWhite Technology creates the effect of a natural crisp whiteness by activating Fluorescent Whitening Agents (FWAs) in paints and fabrics without the use of ultraviolet LEDs.

### FEATURES AND BENEFITS

Ideal for CDM/CMH replacement in shop lighting, causing minimal damage to fabrics

Excellent color rendering – CRI higher than 90 combined with R9 above 50 for rich red and warm colors

High flux density

### PRIMARY APPLICATIONS

Retrofit lamps

Downlights

Spotlights

Track lights



### TECHNICAL SPECIFICATIONS

LES (mm)	NOMINAL CCT	MINIMUM CRI	LUMINOUS FLUX (lm)		TYPICAL LUMINOUS EFFICACY (lm/W)	TEST CURRENT (mA)
			MINIMUM	TYPICAL		
6	3000K	90	586	651	93	200
9	3000K	90	611	679	97	200
9	3000K	90	905	1006	96	300
		95	896	996	95	300
13	3000K	90	1421	1579	99	450
13	3000K	90	1941	2157	102	600
		95	1930	2144	101	600
15	3000K	90	2750	3056	97	900
		95	2783	3092	98	900
15	3000K	90	3794	4215	100	1200
		95	3756	4173	99	1200

This light source is intended only for use in retail lighting and other lighting applications that require excitation of optical brighteners with UV or violet light.



[Click here for the latest technical specifications and part numbers](#)

# LUXEON CoB with FreshFocus Technology™

Accentuating freshness and overall visual appeal, making food irresistible

LUXEON CoB with FreshFocus Technology LEDs create the most striking possible effect in the fresh food areas of supermarkets, hypermarkets, delis, butcher shops and bakeries. These LEDs accentuate the freshness and visual appeal of a variety of fresh foods. These LEDs:

- Emphasize the reds in meat for greater visual appeal
- Stimulate the appetite for bread and pastries
- Give fish displays a natural and attractive look
- Produce a just-picked appearance in fruits and vegetables

## FEATURES AND BENEFITS

Spectrum-engineered products with selected color points which are ideal for lighting specific types of merchandise and produce

IR- and UV-free lighting for fresher merchandise, and to avoid meat discoloration

Up to 4x lower thermal resistance than competition, enabling the use of a smaller heatsink while producing higher luminous flux

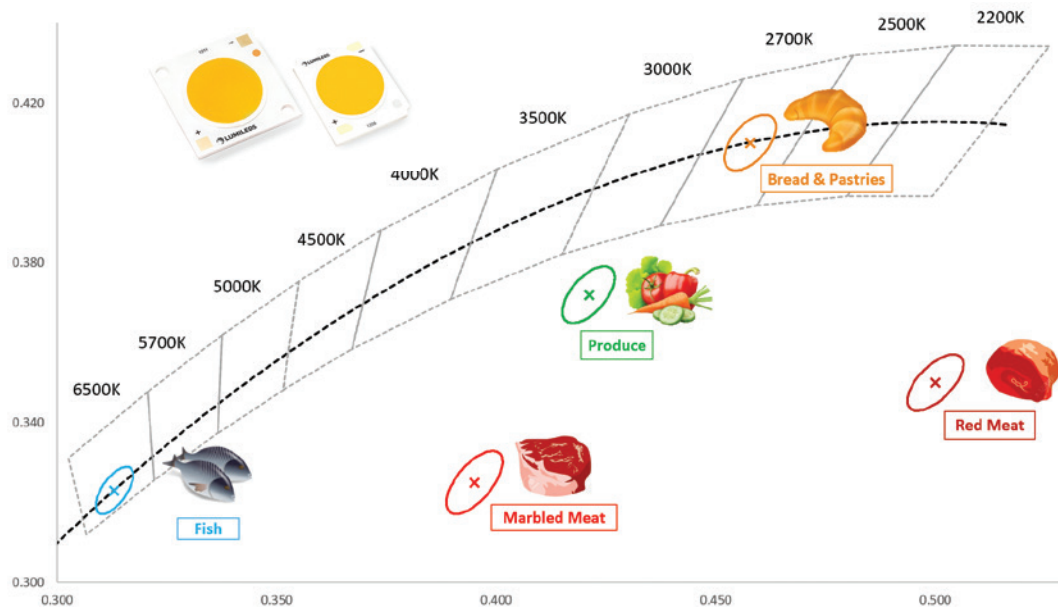
## PRIMARY APPLICATIONS

Downlights

Indoor Area Lighting

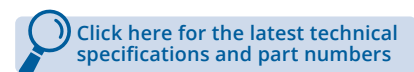
Lamps

Spotlights



APPLICATION	LUMINOUS FLUX (lm)		TYPICAL LUMINOUS EFFICACY (lm/W)	TEST CURRENT (mA)	LES (mm)
	MINIMUM	TYPICAL			
Produce	3056	3396	108	900	15
	4032	4480	107	1200	19
Red Meat	2196	2440	78	900	15
	2920	3244	78	1200	19
Marbled Meat	2905	2328	74	900	15
	2803	3114	75	1200	19
Fish	3519	3910	125	900	15
	4847	5386	129	1200	19
Bread & Pastries	3337	3708	118	900	15
	4481	4979	119	1200	19

LUXEON CoB with FreshFocus Technology product performance at specified test current, Tj=85°C.



# LUXEON CX Plus CoB – High Density

## Ultra-high flux density from small light emitting surface

LUXEON CX Plus CoB – High Density LEDs produce very high flux of up to 5600 lumens and are available with a light emitting surface of 4.5mm, 6mm, or 9mm.

Supplied in an industry-standard square footprint of 13.35mm x 13.35mm, the LUXEON CX Plus CoB – High Density LEDs enable manufacturers to take advantage of an existing optical and mechanical ecosystem, allowing for immediate and effortless upgrades to a higher-flux luminaire design.

### FEATURES AND BENEFITS

Industry's highest lumen densities

An immediate, easy upgrade to existing designs which use legacy CoBs with a square footprint

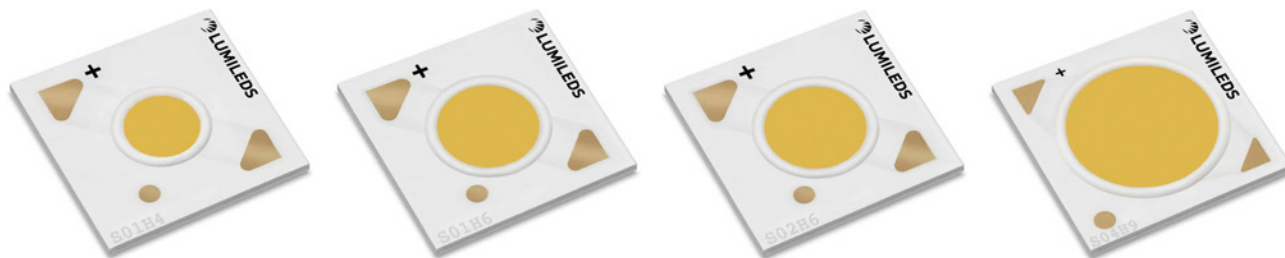
2- and 3-step MacAdam ellipse ensuring color consistency from luminaire to luminaire

### PRIMARY APPLICATIONS

Spotlights

Track lights

Downlights



### TECHNICAL SPECIFICATIONS

CCT options: 2700K, 3000K, 3500K, 4000K, 5000K

Minimum CRI options: 80, 90

LES diameter options: 4.5mm, 6mm, 9mm

Typical luminous efficacy up to 126lm/W



[Click here for the latest technical specifications and part numbers](#)

# LUXEON CX Plus CoB – High Density (Below BBL)

## Ultra-high flux density and quality of light

LUXEON CX Plus CoB – High Density (Below BBL) LEDs provide high flux from a small light emitting surface of 4.5mm, 6mm or 9mm. The impressive white color output achieves a minimum CRI of 95 at hues which are a 2- or 3-step Macadam ellipse below the black body line.

Supplied in an industry-standard square footprint of 13.35mm x 13.35mm, the LUXEON CX Plus CoB – High Density LEDs enable the luminaire to take advantage of an existing optical and mechanical ecosystem, allowing for immediate and effortless upgrades to a premium luminaire design.

### FEATURES AND BENEFITS

Industry's highest lumen densities at 95 CRI

An immediate, easy upgrade to existing designs which use legacy CoBs with a square footprint

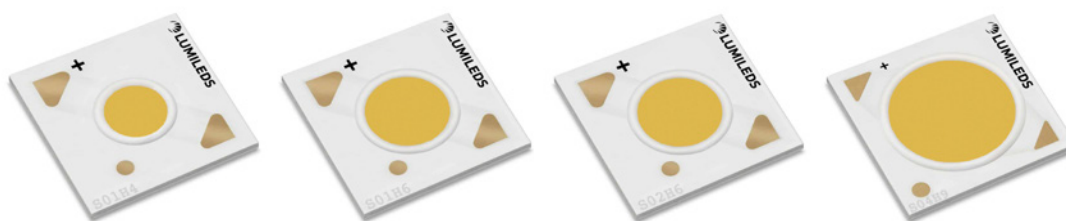
2- and 3-step MacAdam ellipse ensuring color consistency from luminaire to luminaire

### PRIMARY APPLICATIONS

Spotlights

Track lights

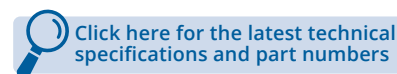
Downlights



### TECHNICAL SPECIFICATIONS

LES (mm)	NOMINAL CCT	MINIMUM CRI	LUMINOUS FLUX (lm)		TYPICAL LUMINOUS EFFICACY (lm/W)	TEST CURRENT (mA)
			MINIMUM	TYPICAL		
4.5	2700K	95	508	552	89	175
4.5	3000K	95	540	587	94	175
4.5	3500K	95	558	606	98	175
4.5	4000K	95	578	628	101	175
6.0	2700K	95	532	578	93	175
6.0	3000K	95	564	613	99	175
6.0	3500K	95	588	639	103	175
6.0	4000K	95	609	662	107	175
6.0	2700K	95	1053	1145	87	350
6.0	3000K	95	1104	1200	91	350
6.0	3500K	95	1141	1240	94	350
6.0	4000K	95	1182	1285	98	350
9.0	2700K	95	2171	2360	90	700
9.0	3000K	95	2309	2510	96	700
9.0	3500K	95	2392	2600	99	700
9.0	4000K	95	2484	2700	103	700

Performance of LUXEON CX Plus CoB – High Density (Below BBL) at specified test current, T<sub>J</sub>=85°C..



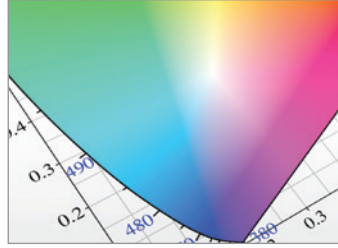


#### ECOSYSTEM



Select pre-qualified, off-the-shelf components to aid in complete system design.

#### LED SPECTRUM MIXER



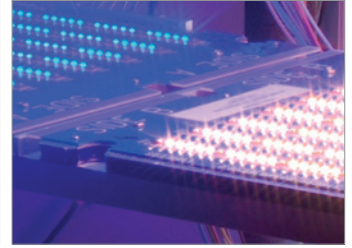
Calculate the color (white or color) that will be achieved by combining different LEDs into one application

#### SYSTEM CALCULATOR



Calculate the overall system performance based on design inputs.

#### LM-80 REPORTS



Generate LM-80 reports for specific Lumileds LEDs.

Please check out our ecosystem support at [lumileds.com/designtools](https://lumileds.com/designtools).

## About Lumileds

Lumileds is the global leader in light engine technology. The company develops, manufactures and distributes groundbreaking LEDs and automotive lighting products that shatter the status quo and help customers gain and maintain a competitive edge.

With a rich history of industry “firsts,” Lumileds is uniquely positioned to deliver lighting advancements well into the future by maintaining an unwavering focus on quality, innovation and reliability.

To learn more about our portfolio of light engines visit [lumileds.com](https://lumileds.com).



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