



YJ-BC-MOD-3032-1CC

LED Module



Applications

- High-end architectural/residential lighting
- Photographic/broadcast lighting
- Human-centric lighting
- Photoelectric device and relevant research

Features

- Industrial grade high CRI performance, TLCI & TM-30 specified
- Dotless bicolor design
- Ultra consistent and precise color with Yujileds® SimpleBinning technology (equal to <3-step MacAdam)
- 280mm (length) × 20mm (width), 48 2-in-1 LEDs
- Typical 600mA, 36V DC (per color)
- Aluminum substrate for excellent thermal dissipation
- Slim width, easy assembly

[About Yujileds®](#)

Rev Version: 2.0

B3210010.00

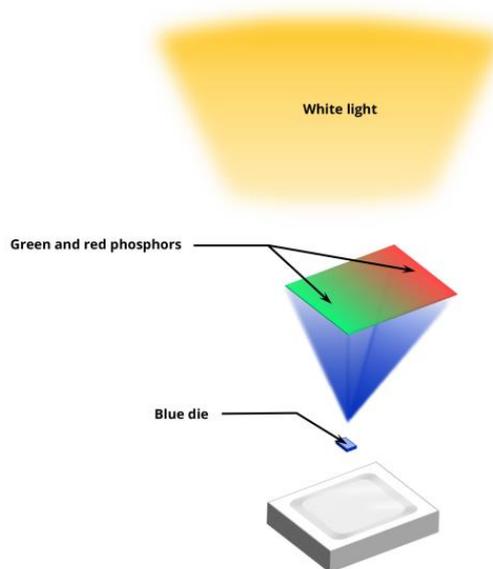
Table of Contents

General description	3
Ordering information	8
Characteristic	9
Characteristic	10
Chromaticity group and diagram	11
PCB characteristics	11
Dimensions	11
Characteristic graph	12
Packaging	13
About Yujileds	14

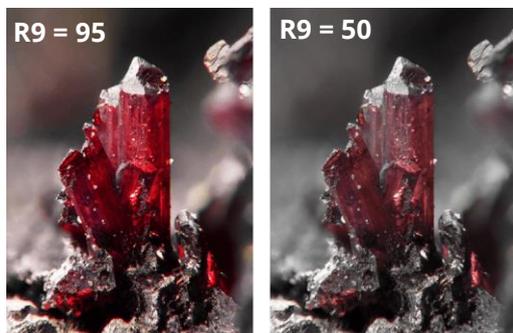
General description

Industrial-leading high CRI technology

Yujileds® BC series LED is based on the efficient blue (typical 450nm) die, mixing with Yuji advanced phosphors and specifically designed spectral recipes. Although there are more and more nominal “high CRI LED” manufacturers on the market, after relevant test and analysis, it is proud to say that Yujileds® BC series LED is still one of the top performance product on the global markets. Achieving typical Ra 97 and minimum Ra 95, the stability and consistent quality in mass production are verified by statistical identification.

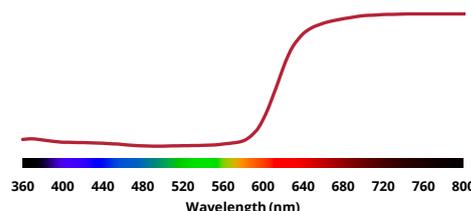


Enhanced CRI R9 technology



The standard CRI Ra is the average score of the first eight Test Color Samples (TCS), where the 9th for saturated red color is missed. However R9 is significantly different for different light sources. In spectral analysis and CRI arithmetic, the integral area between the spectrum and the spectral reflectance response of TCS-9 decides the R9 to a large extent – in other words, how much of TCS-9 spectra reflectance is overlaid in the light source spectrum, that is a key factor.

Light source	R9
Halogen (2865K)	99
Fluorescent (3000K)	-27
Standard LED (3000K)	13
Yujileds® BC series LED (3000K)	96

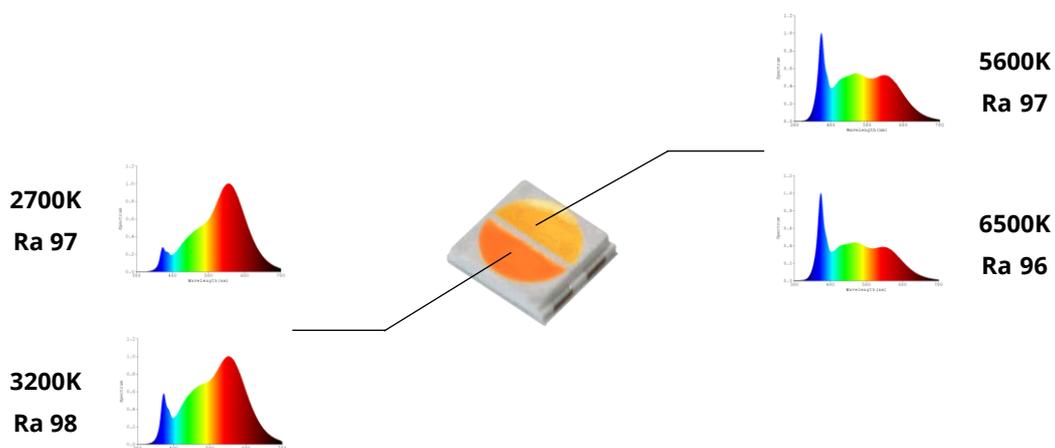


It is obvious to see from 600nm, which is just the start of red color in the visible spectrum, the TCS-9 spectral reflectance raises sharply, in consequence, if the light source does not have sufficient spectral power distribution in 600nm-800nm, it will be difficult to get a high R9. The capability of rendering the red color cannot be promised if the red spectrum is missed or not sufficient in the original light. In the comparison of fluorescent and halogen, apparently, halogen offers the richest 600+nm power, while the discrete fluorescent spectrum has limited energy there. Then in this comparison, halogen R9 = 99 but the fluorescent is R9 = -27. Comparing a standard LED to Yujileds® BC series LED at 3000K, although the emission principle is the same, the results present different R9 significantly where the standard LED is R9 = 13 and Yujileds® BC series LED is R9 = 96.

The design for tunable white

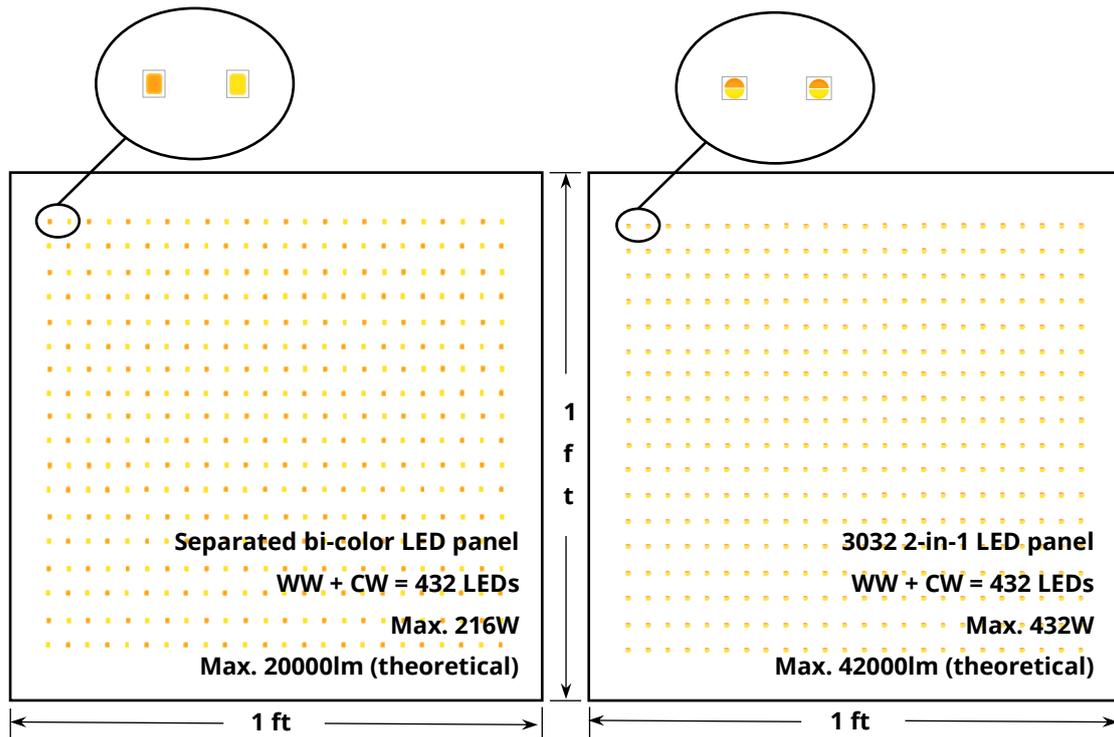
Tunable white, or saying bi-color LED, is not a novel concept on the market. For human-centric lighting or cinematography lighting which requires a tunable spectrum, bi-color LED is already widely applied in many products. So far, most tunable white LEDs on the market are separated single-white colors, however, considering some special projects which desire not only bi-color effect but also limited space of illumination, or high illuminating density, YUJILEDS® BC series 3032 LED will be a preferable option.

YUJILEDS® BC series 3032 SMD provides a high CRI and high efficacy solution with the specific design of 2-in-1. This compact layout offers easier diffusion capability because of the feature of closing to a spot source.



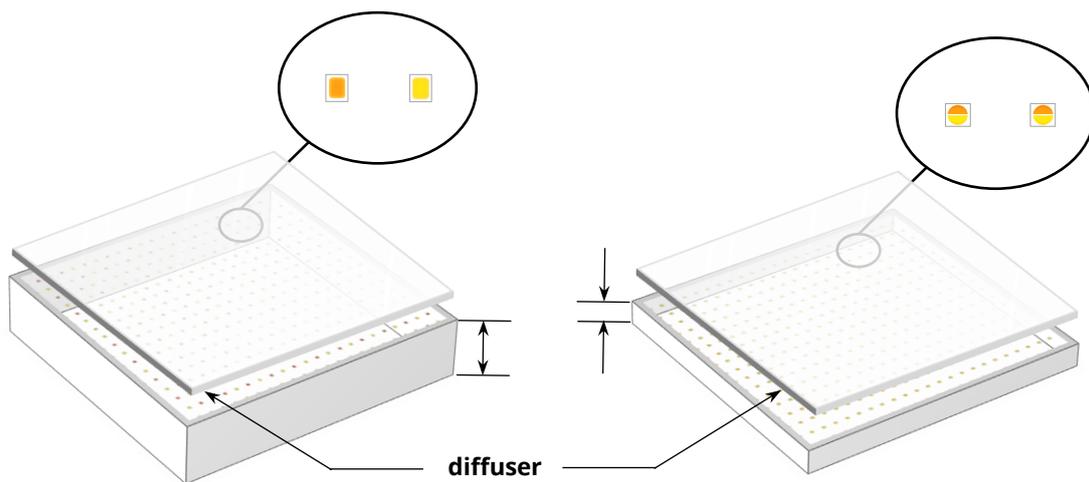
The design for high power density

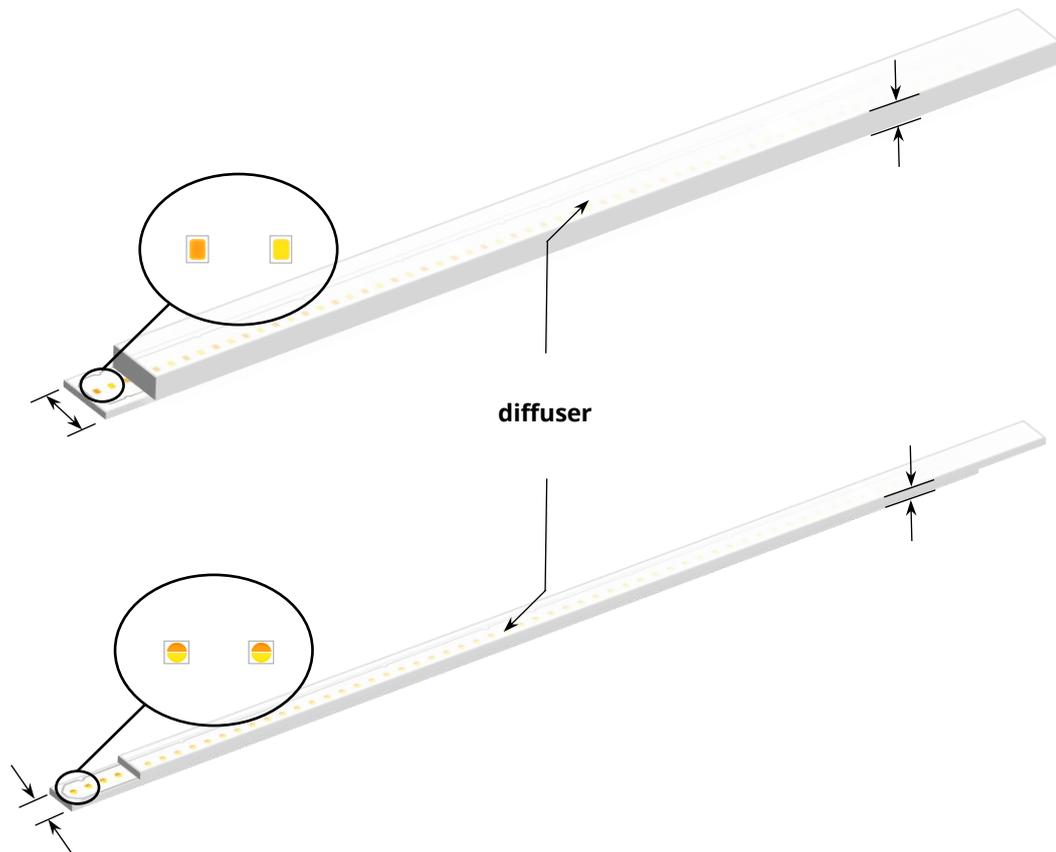
Compared with the designs of a PCB with standard bi-color LEDs and the 3032 LED, when assembling the LEDs as a high-density matrix, there will be a significant difference. For example of a 1 ft x 1ft panel with separated bi-color LEDs to achieve high density compared to the solution with 3032 LED. Apparently, the 3032 LED can not only achieve twice the power within the same limitation of size but provide easier electrical design.



The design for easier diffusion

The BC series 3032 LED offers easier diffusion capability as well because of the feature of closing to a spot source, and it is friendly to design linear lighting fixtures because of the compact structure. A direct advantage is to reduce the PCB width for thinner or narrower side-emitting lights, with the same diffused effect compared to standard bi-color LEDs.





The Yujileds® module and customization service

The Yujileds® module and customized service are for professional customers who care about the color accuracy, spectral consistency and other optical parameters besides the PCBA quality, therefore, we treat our LED module as an integral light source and control the specifications accordingly rather than a simple engineering procedure of SMT. The Yujileds® customized module is tailor-made for the customers who may have the requirement or difficulty solving the following:

Individual LED vs LED module	Know well or don't understand the features and discrepancy between the individual LED and integrated LED module, but it is challenging to solve and control the consistency issues with balanced cost performance for yourself.
Rigorous datasheet and test report	The LED module plays a crucial role for your light, and you need serious specifications for exact calculation to create the maximum values to the products for your customer. Need professional test report, control and analysis for every batch of the LED module.
Performance upgrade	Focus on your product's duration, plan to upgrade timely, and need to track the historical data as references.
Confidential promise	Plan to run the confidential projects without disclosing any key information of know-how to the markets.
Crossover consultancy	Need professional consultancy in both technical and industrial

ways, especially regarding the interaction between optics and electronics and precise control.

Duration

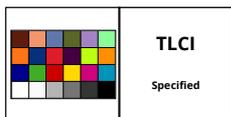
Need stable supplied materials up to 10 years no-change.

The module also supports the unique service/certification by Yujileads® as described below.



TM-30 specification

The most advanced colorimetric for color rendition, widely recognized as the successor of CRI.



TLCI specification

Based on the Macbeth ColorChecker, for evaluating the colorimetric quality of the broadcast lighting.



SimpleBinning specification

Simplify the chromaticity binning with TrueChroma data support to provide the most economical, simple, and practical solution to customers.

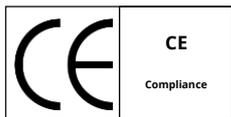


Photometric data

Luminous intensity distribution and illuminance data for simplifying the lighting design.



RoHS 2011/65/EU compliance



CE compliance



REACH compliance (Phosphor)

Ordering information

PART NUMBER	PRODUCT CODE	RATED CURRENT	CCT
YJ-BC-MOD-3032-1CC-2765	B3210010.26	600mA (per color)	2700K – 6500K
YJ-BC-MOD-3032-1CC-3256	B3210010.35	600mA (per color)	3200K – 5600K

Characteristic

Electrical-optical characteristics ($T_A = 25^\circ\text{C}$, $600\text{mA}^{(1)}$ per color)

PARAMETER	SYMBOL	VALUE			UNIT
		MIN.	TYP.	MAX.	
Power	P	-	21.6	-	W
Voltage	U	-	36	-	V
Luminous flux⁽²⁾	$\Phi_{2700\text{K}}$	-	2000	-	lm
	$\Phi_{3200\text{K}}$	-	2200	-	
	$\Phi_{5600\text{K}}$	-	2400	-	
	$\Phi_{6500\text{K}}$	-	2400	-	
Color rendering index	Ra	95 ⁽³⁾	-	-	-
TCS R9 (CRI red)	R9	-	90	-	-
Fidelity index⁽⁴⁾	Rf	-	92	-	-
Gamut index⁽⁴⁾	Rg	-	100	-	-
TLCI 2012⁽⁵⁾	-	-	97	-	-
View angle	$2\theta_{1/2}$	-	120	-	Deg

- (1). A heat dissipation device is necessary for the typical current driving.
- (2). Tested by goniophotometer.
- (3). Ra typical 95 at 6500K.
- (4). Defined by the IES TM-30-18 method, this data is for trial.
- (5). Defined by the EBU, TLCI is the abbreviation of Television Lighting Consistency Index, this data is for trial.

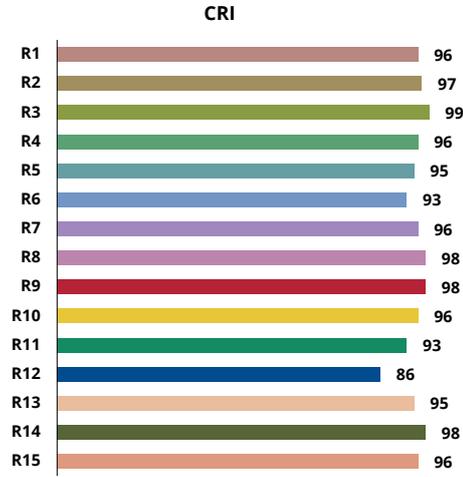
Luminous intensity distribution and illuminance⁽¹⁾ ($T_A = 25^\circ\text{C}$, 600mA)

CCT	HEIGHT	DIAMETER	AVG. ILLUMINATION	MAX. ILLUMINATION
2700K	1m	301.16cm	190.9 lx	661.8 lx
3200K		306.01cm	212.6 lx	730.4 lx
5600K		313.60cm	227.7 lx	821.2 lx
6500K		312.04cm	223.6 lx	807.6 lx

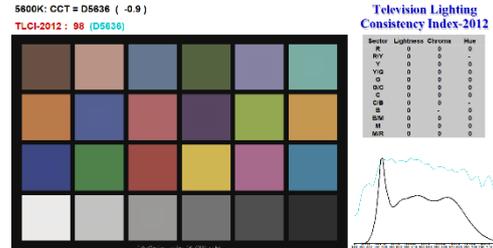
- (1). The full luminaire photometric test report (IES/LDT file) can be downloaded from www.yujiintl.com.

Characteristic

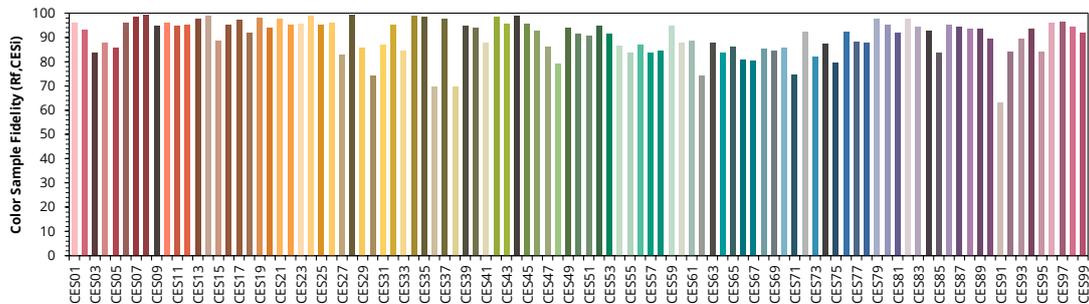
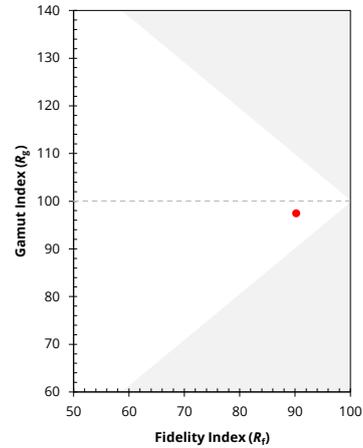
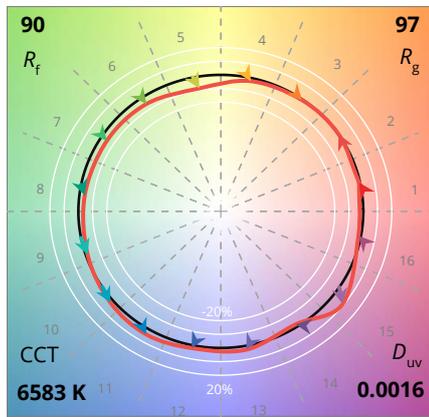
CRI graph (2700K)



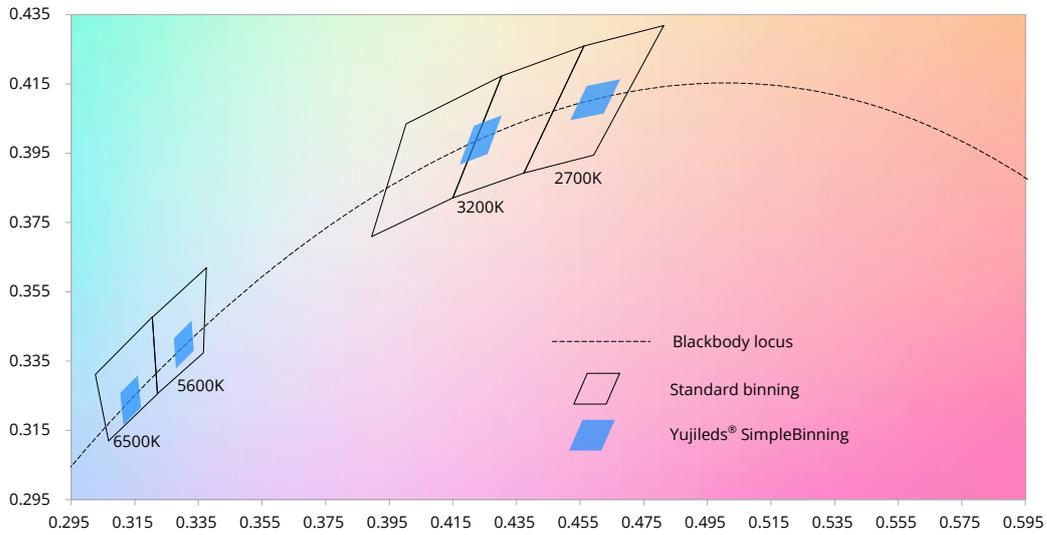
TLCI (5600K)



TM-30 graph (6500K)



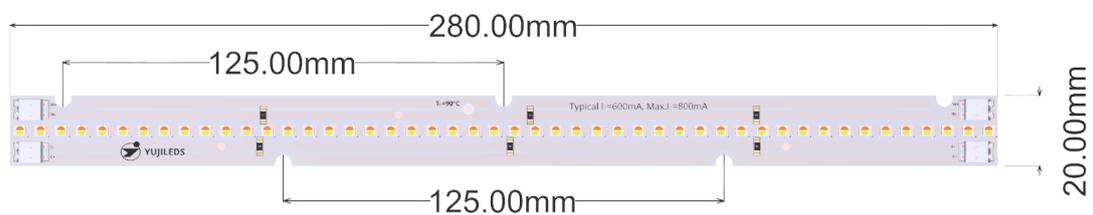
Chromaticity group and diagram



PCB characteristics

Property	Parameter
Material	Aluminum
Thickness	2.0 mm
Thermal conductivity	2.0 W/m•K
Copper thickness	1 Oz
Front side solder mask	White
Silkscreen color	Black
Solder	Pb-Free HASL

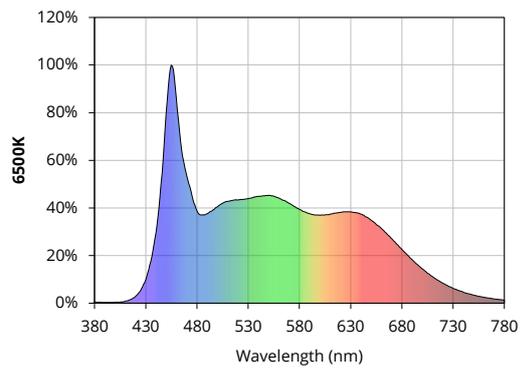
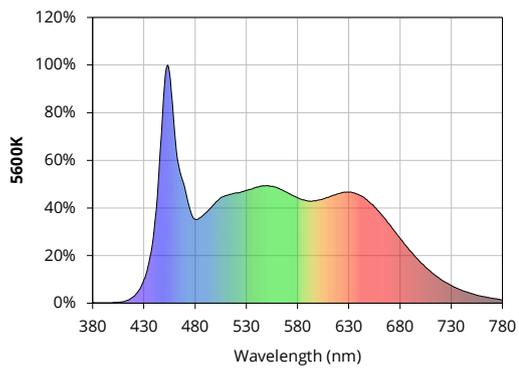
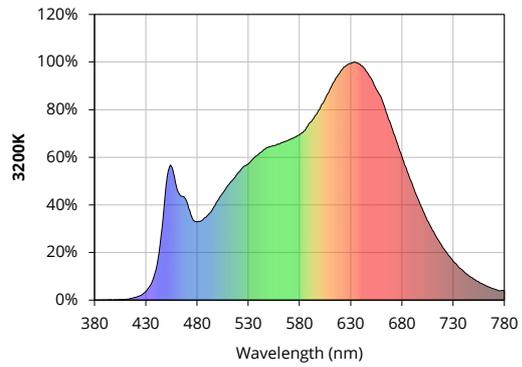
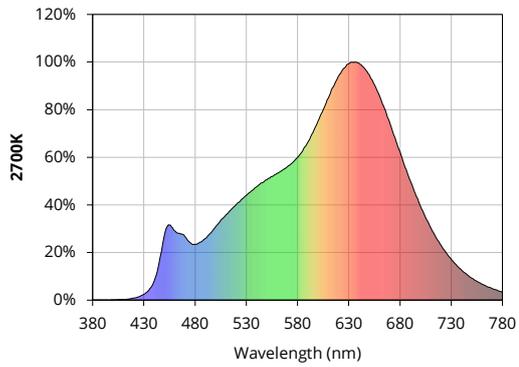
Dimensions



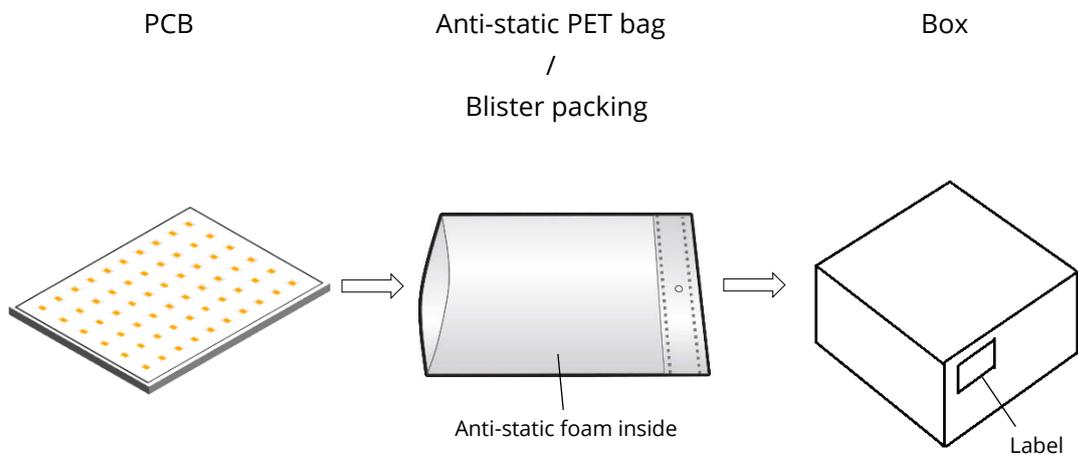
Characteristic graph

Typical spectral power distribution (normalized)

All characteristic curves are for reference only and not guaranteed.



Packaging



The size of box depends on the quantity.

About Yujileads



Our story - Start from the superior stable red LED phosphor.

We started to make LED phosphor materials in 2006. White LEDs were still in very early stage, the industry focused on improving device brightness and efficiency via yellow phosphor very much. No one cared about the light quality. Based on this situation, we took a different approach and focused on red phosphor technology, which is the most important phosphor recipe for high CRI and/or low CCT LEDs, and it made Yuji become a JV partner with Mitsubishi Chemical from 2012.

Today, we are well known for our comprehensive research and full line-up production of LED phosphor from ultra-violet to near-infrared, and we are proud to commit to providing superior stable and efficient phosphors to the worldwide markets.

Our technology - Focus on LED spectrum innovation.

The industrial structure of both phosphor and LED gives us a unique view to develop our spectrum recipes. Compared to the general LED manufacturers, we have comprehensive information in evaluating the feasibility for both technical and commercial aspects. LED spectrum technology is not only about the quality of white LEDs, but also for different applications which have specialized requirements in lighting.

Yuji is one of the few companies that provide the service of designing or customizing a specific spectrum for clients, our confidence comes from the years of accumulation in focusing on the spectrum technologies and the control of LED phosphor and LED die supply-chain with thousands of successful cases in the past years. Innovating LED technologies and giving them commercial values are our eternal driving forces.

Our product - Yujileads®, stands for high-performance LED.

The trademark of Yujileads® is the identification of the LED products developed and manufactured by Yuji. We put our understanding of the LED technologies and the standard of our quality control into every LED we make. Regardless of any product series, we pay attention to expressing the high-performance feature and achieving the product value for clients and never compromise in pursuing the true performance.

Furthermore, we also care about every detail of any documentation we prepare for the product because we understand the importance to transmit accurate information to clients. It is even more critical for clients to obtain

the truth to decide the solution, rather than just a nominal high-performance.

Our client - Outstanding game players in different fields.

Clients are our proudest achievements, now over 200 of our clients are the best game players in their fields in more than 33 countries. We regard the clients' successes as our biggest accomplishments and appreciate their contribution in different fields, clients use our LEDs not just for simple lighting, but to design the lighting for plants, cameras, sensors, health, circadian rhythm, animals, and other industries that we have never imagined that our technologies can be utilized, that makes our work so meaningful.

Our service - Professional supporting team.

There is a group of people in Yuji passionate about creating maximum value for our clients. We have accumulated experience in different projects. Currently, the company gathers more than 30 experts from various fields of semiconductor, chemistry, optics, photoelectricity, circuitry, materials and color science.

Our sales team is well trained in deep LED technologies and has skilled global communication experience. Not just for sales, our team is more like a specialized consultancy to help every client succeed in different projects, and we do not only provide professional business service, but also support in the supply chain, logistics, marketing and technical discussions.

Contact us - We look forward to providing our efficient service for you.

LED website: www.yujiintl.com

Find Yujileds® high-performance LEDs, read our insights into a variety of advanced technologies and applications.

Contact: info@yujigroup.com

LED lighting website: www.yujilighting.com

Find our state-of-art LED lamps and luminaires designed for improving the lighting experience with the vision of illuminating the future.

Contact: lighting@yujigroup.com

Online shop: store.yujiintl.com

Shop your favorite Yuji Lighting product with rapid and professional service.

Contact: webstore@yujigroup.com