



# P3230004

## Surface Mount Device



### Applications

- Hyperspectral device
- Photoelectric device and relevant research
- Reference / Background light source
- Spectral tuning and calibration
- Visible and infrared optical analyzer



### Features

- Full-spectrum accurate simulation for CIE E / equal-energy radiator
- Homogeneous spectral power distribution
- 5.0mm × 5.0mm universal package
- Enhanced infrared radiance

### [About Yujileads<sup>®</sup>](#)

Rev Version: 2.0

P3230004.00

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## Table of Contents

General description .....	3
Ordering information .....	5
Characteristics .....	6
Package material and dimension.....	7
Characteristic graph .....	8
About Yujileds .....	14

## General description

### Yujileds® CIE Illuminant Technology: Accurate Simulation of CIE Illuminant with Only Single LED.

With the iteration of LED technology, especially the technological updating of Yujileds® phosphors. As a leader in LED spectroscopy engineering, we successfully simulated and commercialized CIE illuminators using a single LED for the first time in the world. Traditional light sources, such as fluorescent tubes, have not been able to achieve accurate simulation at the spectral level on simulating CIE illuminants, but Yujileds® has successfully achieved accurate simulation by using our precise control of the LED spectrum.

### Spectral accuracy index (SAI)

At present, most of the spectrum simulation products on the market are still in the stage of qualitative description of the degree of accuracy. There is a lack of a quantitative method for calculating spectral accuracy on the market. When Yujileds® developed the CIE illuminant series, we used the Spectral Accuracy Index (SAI) to describe simulation accuracy and control product quality. This ensures that CIE illuminant has accurate parameters from R&D to production.

To calculate the spectral accuracy index, we need use two spectral power distributions, one of the products and the other of reference. The formula is shown as follow:

$$SAI = 100 - \left( \frac{\sqrt{\sum_{Min}^{Max} (C_i - Ref_i)^2}}{\sqrt{\sum_{Min}^{Max} Ref_i^2}} \times 100 \right)$$

Among:

C = normalized measured spectrum

Ref = normalized reference spectrum

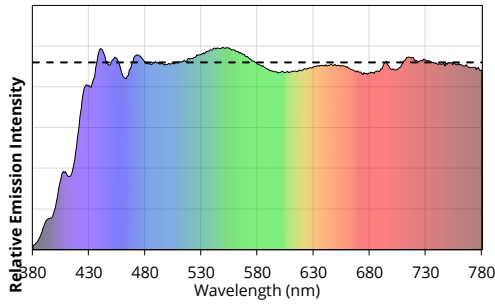
Max = maximum wavelength

Min = minimum wavelength

### CIE standard illuminant D50 simulation

Unlike other illuminants that are based on real or typical light sources, CIE illuminant E represents a perfectly uniform light source that emits equal energy at all wavelengths. Because of this property, no artificial light source could simulate illuminant E before.

Yujileds® realizes the simulation of illuminant E from 450nm to 780nm through the combination of chip and phosphor.

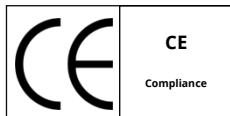


Light source	Spectral accuracy index (SAI, 450nm – 780nm)
<b>Yujileds® CIE E</b>	<b>95</b>

This LED also supports the unique service/certification by Yujileds® as described below.



**RoHS 2011/65/EU compliance**



**CE compliance**

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## Ordering information

PRODUCT CODE	CHROMATICITY BINS	VOLTAGE RANGE
P3230004.01	-	0.1V

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## Characteristics

Electrical-optical characteristics ( $T_A = 25^\circ\text{C}$ , 200mA)

PARAMETER	SYMBOL	VALUE			UNIT	TOLERANCE
		MIN.	TYP.	MAX.		
<b>Forward voltage</b>	$V_F$	-	18	-	V	$\pm 0.05$
<b>Luminous flux</b>	$\Phi_v$	-	105	-	lm	-
<b>Radiant flux</b>	$\Phi_e$	-	510	-	mW	-
<b>Spectral accuracy index (SAI, 450nm - 780nm)</b>	SAI	-	95	-	-	-
<b>Reverse current</b>	$I_r$	-	-	15	$\mu\text{A}$	$\pm 0.1 (V_r = 5\text{V})$
<b>View angle</b>	$2\theta_{1/2}$	-	120	-	Deg	$\pm 5$

Absolute maximum ratings ( $T_A = 25^\circ\text{C}$ )

PARAMETER	SYMBOL	LIMIT	UNIT
<b>Power Consumption</b>	$P_D$	5400	mW
<b>DC Forward Current (pulsed)<sup>(1)</sup></b>	$I_{FP}$	360 <sup>(2)</sup>	mA
<b>DC Forward Current</b>	$I_F$	300	mA
<b>Reverse Voltage</b>	$V_R$	30	V
<b>Junction Temperature<sup>(3)</sup></b>	$T_j$	105	$^\circ\text{C}$
<b>Solder Point Temperature<sup>3</sup></b>	$T_s$	60	$^\circ\text{C}$
<b>Operating Temperature</b>	$T_{opr}$	-25 ~ +60	$^\circ\text{C}$
<b>Storage Temperature</b>	$T_{stg}$	-30 ~ +85	$^\circ\text{C}$
<b>Soldering Temperature</b>	$T_{sol}$	260 $\pm$ 5	$^\circ\text{C}$
<b>Reflow Cycles Allowed</b>	-	2	-

(1). Pulse width  $\leq 0.1\text{ms}$ , duty  $\leq 1/10$ .

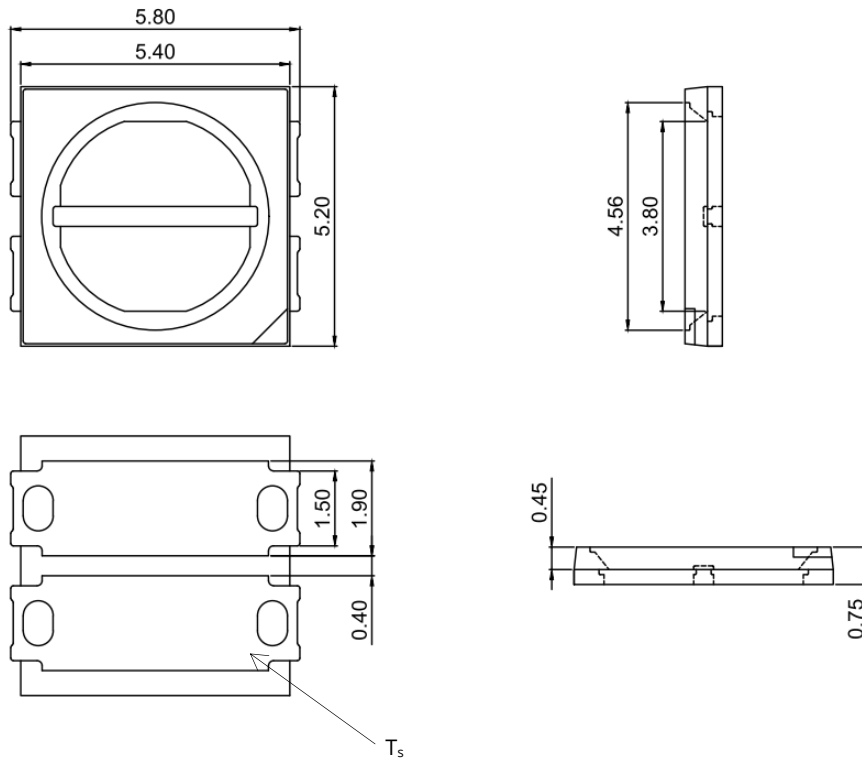
(2). Theoretical data.

(3). Recommend to control as lower as possible to  $25^\circ\text{C}$  to ensure the best optical performance in the long term, see page [Package material and dimension](#).

## Package material and dimension

### Package layout

All dimensions in mm, tolerance unless mentioned is  $\pm 0.1$ mm.



### Package materials

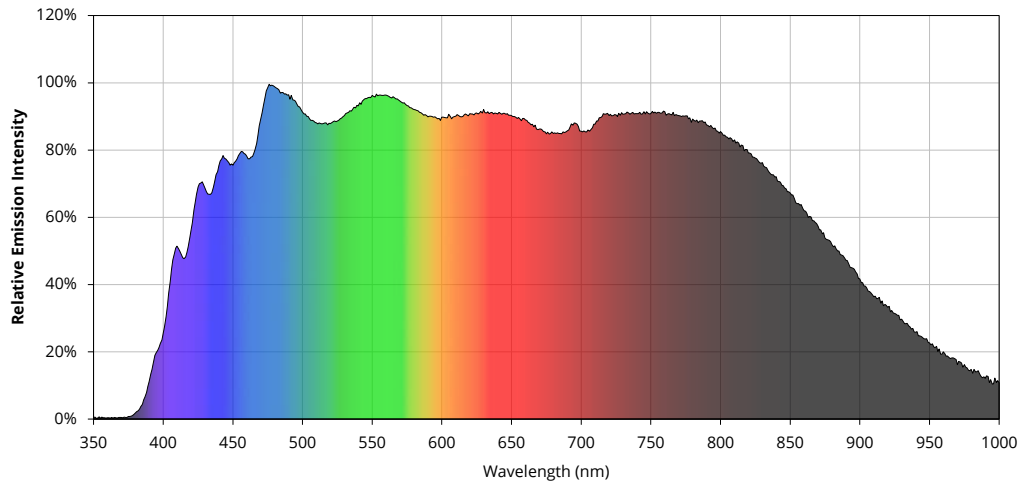
ITEM	DESCRIPTION
Die material	GaN
Lead frame material	EMC
Encapsulant resin material	Silicon + Phosphor
Electrodes material	Silver-plated copper

## Characteristic graph

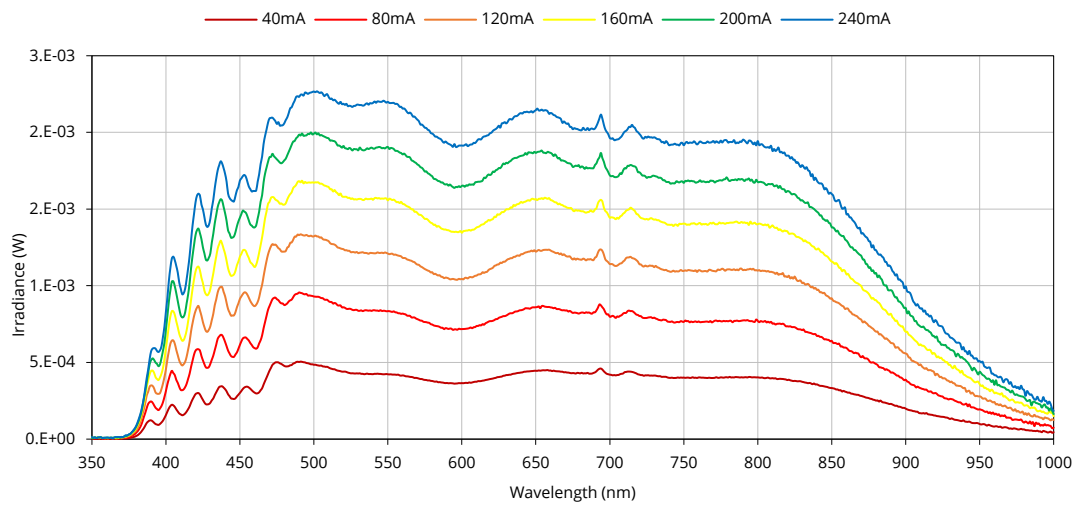
### Typical spectral power distribution

All characteristic curves are for reference only and not guaranteed.

Normalized



Absolute by different currents





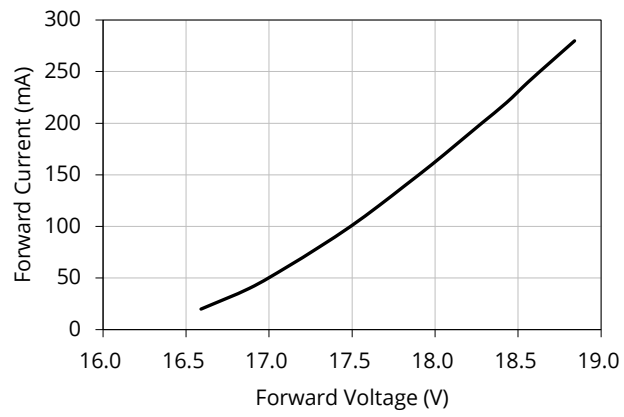
## Characteristic graph

### Forward current

All characteristic curves are for reference only and not guaranteed.

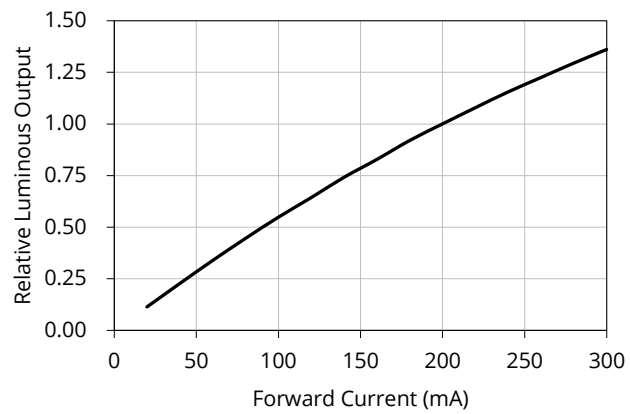
Vs. forward voltage

( $T_A = 25^\circ\text{C}$ )



Vs. relative luminous flux

( $T_A = 25^\circ\text{C}$ )



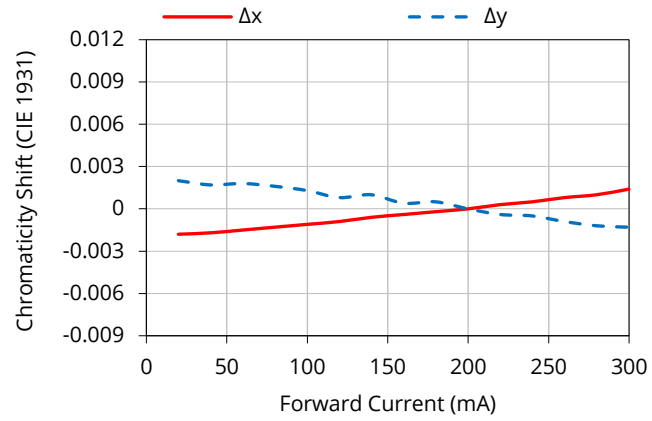
## Characteristic graph

### Forward current (continued)

All characteristic curves are for reference only and not guaranteed.

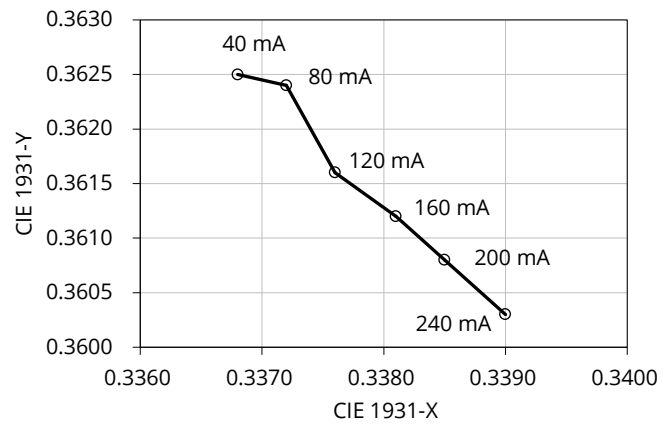
Vs. relative chromaticity shift

( $T_A = 25^\circ\text{C}$ )



Vs. absolute chromaticity shift

( $T_A = 25^\circ\text{C}$ )



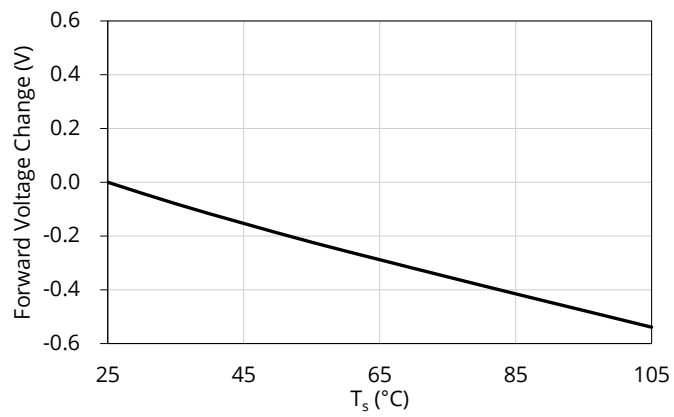
## Characteristic graph

### Solder point temperature ( $T_s$ )

All characteristic curves are for reference only and not guaranteed.

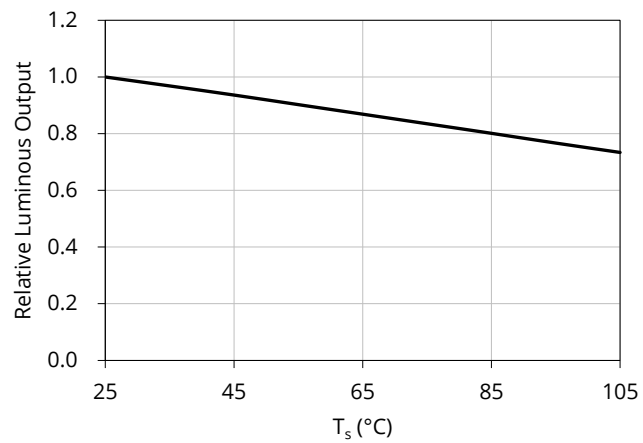
Vs. forward voltage

( $I_F = 200\text{mA}$ )



Vs. relative luminous flux

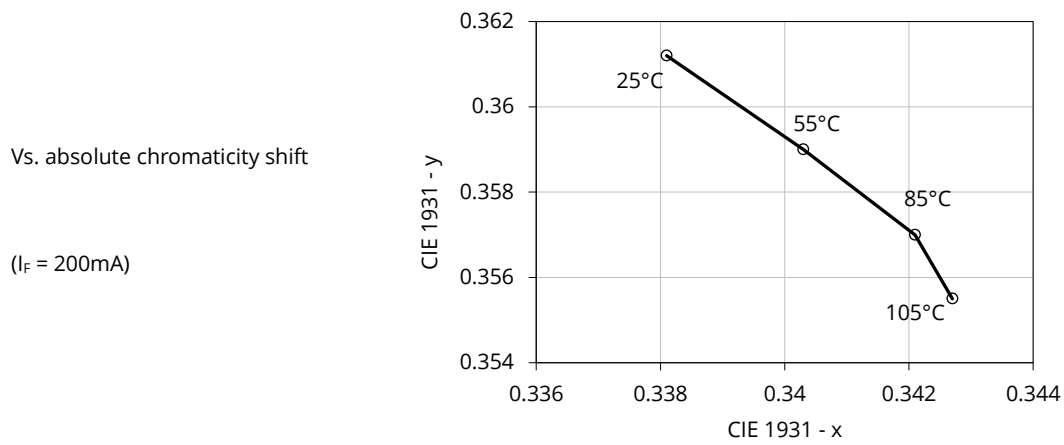
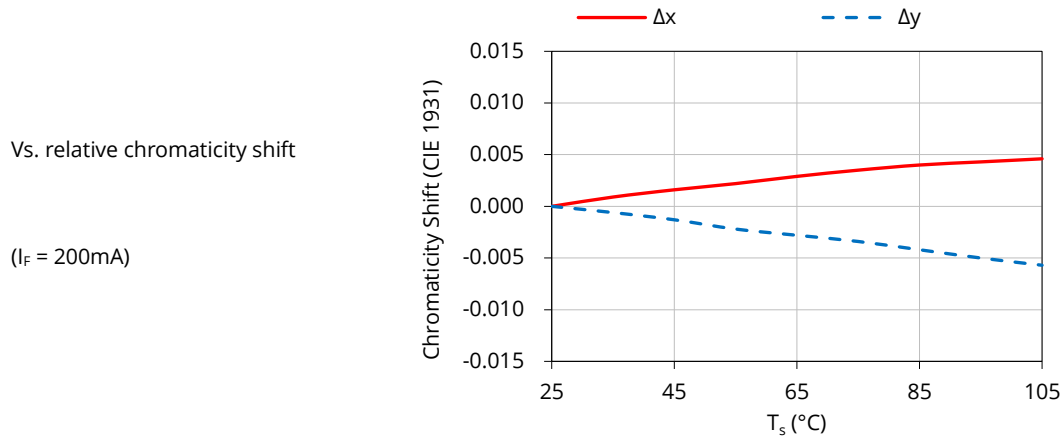
( $I_F = 200\text{mA}$ )



## Characteristic graph

### Solder point temperature ( $T_s$ ) (continued)

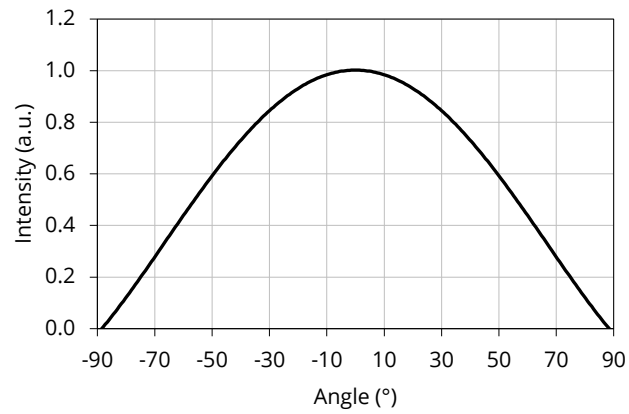
All characteristic curves are for reference only and not guaranteed.



## Characteristic graph

Spatial distribution ( $T_A = 25^\circ\text{C}$ ,  $I_F = 200\text{ mA}$ )

All characteristic curves are for reference only and not guaranteed.



## About Yujileds



**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** - Yujileds®, stands for high-performance LED.

The trademark of Yujileds® 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

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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](http://www.yujiintl.com)

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

Contact: [info@yujigroup.com](mailto:info@yujigroup.com)

**LED lighting website:** [www.yujilighting.com](http://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](mailto:lighting@yujigroup.com)

**Online shop:** [store.yujiintl.com](http://store.yujiintl.com)

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

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