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Sense the power of light

OSRAM SMARTLED® 0603 Gen 2 – Product Overview

Full- Color Low- Power Portfolio for status indicators and symbol backlights with higher requirements

Internal & Distributor use – Not for external distribution

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SMARTLED® 0603 Gen 2 – One Pager

Full- Color Low- Power Portfolio for status indicators and symbol backlights

White



KW EELP41.RU

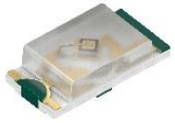
Blue, True Green



KB EELP41.12; KT EELP41.12

Yellow Green, Yellow, Orange, Red, Super Red

KG EELP41.22 / KY EELP41.22
KO EELP41.22
KR EELP41.22 / KS EELP41.22



General Description

- The SMARTLED® 0603 is the product of choice for status indication in electronics. The small package size enables compact designs for status indications and symbol backlighting applications in dashboards and switches.
- The product family offers a good balance between performance, cost, reliability and lifetime

SMARTLED® 0603 Gen 2

Applications

- Access Control & Security
- Appliances & Tools
- Digital Diagnostic Devices
- Display Backlighting
- Home & Building Automation
- Projection & Display
- Smart Surface
- Vital Sign Monitoring

Key Features

- Low power LED - available in all colors (blue, true green, yellow green, yellow, red and white)
- Epoxy resin and Au-lead frame finish for outstanding corrosion resistance
- ESD: InGaAlP ESD stable chips of min. 2kV HBM, additional ESD for 8kV HBM for InGaN versions
- Lifetime model available
- Max T_{op} = 105°C

Associated Benefits

- The color ranges are defined to best meet most signaling norms / standards
- Small PCB package with epoxy mold (1.6 mm x 0.8 mm x 0.4 mm) (L x W x H)
- Max. 25 mA (B, W); 30 mA (TG, G, Y, O, R, S) forward driving current
- High performance chips for best-in-class brightness
- Extended operating temperature range compared to chip LEDs

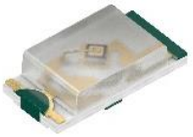
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SMARTLED® 0603 Gen 2 – Next generation of PCB 0603 package – Kx EELP41.yy

Full- Color Low- Power Portfolio for status indicators and symbol backlights

MOTIVATION – Product evolution with a focus on professional industrial products





The SMARTLED® 0603 Kx EELP41.yy family represents the next generation of low-power LEDs for the professional industrial and consumer sectors with increased corrosion resistance requirements

→ InGaN and InGaAlP chip technology for the entire color spectrum

→ Focus on increased corrosion resistance, increased operating temperature range and brightness

SMARTLED® 0603 Gen 2 Kx EELP41.yy

Key Features

- Full color range (B, TG, G, Y, O, R, S, W)
- Package dimensions: 1.60 mm x 0.8 mm x 0.4 mm (L x W x H)
- Max. forward current: 25 mA (B, W), else 30 mA
- PCB with Au finish lead frame
- Epoxy molding → outstanding corrosion robustness level 3B (15 ppm H_2S, 40°C/90% r.h., 336h, L70)
- Lifetime improved for Blue and White
- ESD: InGaAlP ESD stable chips of min. 2kV HBM, additional ESD for 8kV HBM for InGaN versions
- Max T_{op} = 105°C

Applications

- Access Control & Security
- Appliances & Tools
- Digital Diagnostic Devices
- Display Backlighting
- Home & Building Automation
- Projection & Display
- Smart Surface
- Vital Sign Monitoring









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SMARTLED® 0603 Gen 2

Full- Color Low- Power Portfolio for status indicators and symbol backlights

Key Sales Message

The SMARTLED® 0603 is the product of choice for status indication in electronics under harsher conditions for professional electronics.
The small package size is a global standard and enables compact designs for status indicators and symbol backlighting in dashboards and switches.
The product family offers highest level of improved corrosion robustness with good balance between performance, cost and lifetime.

Unique Selling Proposition

- Improved corrosion resistance at the highest level of class 3B (15 ppm H2S, 40°C/90% r.h., 336h, L70), using epoxy molding and gold finished lead-frame
- High brightness chips with wide I_f range allow maximum design freedom over the entire operating temperature range
- Complete color portfolio for all types of indicator applications
- Low height of only 0.4 mm for flat designs
- Improved max. T_{op} = 105°C, better than standard chip LEDs

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SMARTLED® 0603 Gen 2

Full- Color Low- Power Portfolio for status indicators and symbol backlights

Discovery Questions

Q1: What is the difference between the first generation of SMARTLED® and the new second generation?

A1: It is an update that reflects the market development of recent years.
The updates concern the chip, the packaging design and the epoxy molding materials.
A focus has been placed on the lifetime for the white and blue colors.
Great attention has also been paid to corrosion resistance.

Q2: Can you give further details on the lifetime subject?

A2: With the blue and white colors, the lifetime of the epoxy resin moldings is a challenge because many epoxy resin materials are not stable to blue and UV wavelengths.
In the new generation, a combination of chip size and epoxy selection has been made to significantly improve the lifetime for blue and white without compromising on brightness.

Q3: Where do you see the key applications of the SMARTLED® 0603 Gen 2 family?

A3: Status indication and symbol backlighting are widely used in many professional industrial applications worldwide, such as programmable logic controllers (PLCs).
These important information applications require a small, robust and easy to process LED.

Q4: Is the SMARTLED® 0603 Gen 2 Automotive qualified?

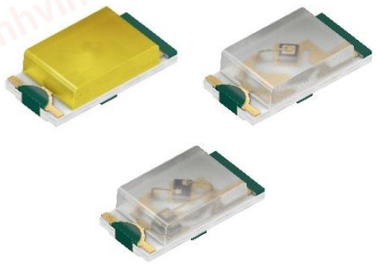
A4: The new SMARTLED® is as of today not qualified for the automotive sector.
Work on the potential AEC Q102 (the only actually valid automotive qualification) is currently under review.
Updates will follow accordingly.

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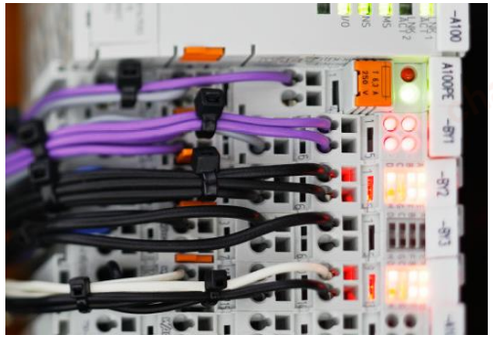
SMARTLED® 0603 Gen 2 – Product Overview

Full- Color Low- Power Portfolio for status indicators and symbol backlights



1.6 mm x 0.8 mm x 0.4 mm

- Full color spectrum for all major status indication and symbol backlighting applications
- Improved lifetime and robust for Blue and White
- Solder pad compatible with standard low power 0603 packages and SMARTLED® Gen 1
- ESD: 8kV (InGan) / 2kV (InGaAlP)
- Enhanced max. T_{op} = 105°C
- Enhanced corrosion robustness for outdoor applications





Type	Luminous Intensity [mcd]	Cx/Cy, Dominant Wavelength [nm]	Emission Angle [°]	Voltage [V]	Binning Current [mA]	Max. Current [mA]
Blue **KB EELP41.12**	95	470 nm	130	2.75	5	25
True Green **KT EELP41.12**	300	530 nm	130	2.50	5	30
Yellow Green **KG EELP41.22**	80	572 nm	130	2.08	20	30
Yellow **KY EELP41.22**	180	589 nm	130	2.03	20	30
Orange **KO EELP41.22**	130	605 nm	130	1.96	20	30
Red **KR EELP41.22**	140	624 nm	130	1.95	20	30
Super Red **KS EELP41.22**	80	633 nm	130	1.95	20	30
White **KW EELP41.RU**	290	0.30 / 0.29	130	2.75	5	25

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SMARTLED® 0603

Product Portfolio & Roadmap

Application/Segment
In production
High MM appeal – focus products
In development
Product

SMARTLED® 0603 Gen 1

PDN planned for Mid-2025

- **Yellow Green** LG Q396
- **Yellow** LY Q396
- **Orange** LO Q976
- **Super Red** LS Q976
- **Blue** LB Q39E/G
- **True Green** LT Q39E/G
- **White** LW Q38E/G

SMARTLED® 0603 Gen 2

- **Yellow Green** KG EELP41.22
- **Yellow** KY EELP41.22
- **Orange** KO EELP41.22
- **Red** KR EELP41.22
- **Super Red** KS EELP41.22
- **Blue** KB EELP41.12
- **True Green** KT EELP41.12
- **White** KW EELP41.RU

Status Indication/Symbol Backlighting

Subject to change without notice.

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SMARTLED Gen 2

Who to sell to…

	Industrial	
Example End Equipment	• Appliances & Tools	• Projection & Display
	• Display Backlighting	• Static Signaling
	• Factory Automation	• Transportation
	• Home & Building Automation	
Key Market Differentiators	• Low power class; up to 30mA maximum forward direct current	
	• Solder pad compatible to SMARTLED® 0603 Gen 1, Chip LED 0603 Gen 1/2 and other 0603 standard packages on the market	
	• Outstanding improved corrosion robustness due to epoxy molding and gold plated finished leadframe	
	• Full color spectrum available for a wide spectrum of indication applications	

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SMARTLED® 0603 Gen 2

Full Color Low Power Portfolio for Professional Status Indication and Symbol Backlighting

Web resources & Availability

Product Info Page (Go live @official release)		https://ams-osram.com/products/leds/white-leds/osram-smartled-0603-kw-eelp41-ru https://ams-osram.com/products/leds/color-leds/osram-smartled-0603-kb-eelp41-12 https://ams-osram.com/products/leds/color-leds/osram-smartled-0603-kt-eelp41-12 https://ams-osram.com/products/leds/color-leds/osram-smartled-0603-kg-eelp41-22 https://ams-osram.com/products/leds/color-leds/osram-smartled-0603-ky-eelp41-22 https://ams-osram.com/products/leds/color-leds/osram-smartled-0603-ko-eelp41-22 https://ams-osram.com/products/leds/color-leds/osram-smartled-0603-kr-eelp41-22 https://ams-osram.com/products/leds/color-leds/osram-smartled-0603-ks-eelp41-22
Availability	Product Release	**Disti NPI notification date:** 13.08.2024 **Planned official release date:** 03.09.2024
Additional resources	SMARTLED® Family page	https://ams-osram.com/products/product-families/smartled-0603

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Customer Invitation

Promotional Invite

Dear _____

The SMARTLED® 0603 Gen 2 was recently introduced by ams OSRAM. SMARTLED® 0603 Gen 2 is a low-power LED for industry applications and part of the broader ams OSRAM Low-power 0603 (1608) portfolio.

This innovative device is designed for the following applications, among others

- Status indication
- Backlighting of symbols

Key features and benefits include the following:

- Fully solder pad compatible with 1st generation SMARTLED® 0603 and global market standard 0603 packages
- Full color portfolio
- Maximum forward current: 25 mA InGaN, 30 mA InGaAlP
- Small 1.6 x 0.8 mm PCB housing with epoxy encapsulation for outstanding corrosion resistance with a low profile (height) of 0.4 mm
- 130° beam angle
- ESD: min. 8kV (InGaN) and min. 2kV (AlInGaP) on chip level

Further information can be found on the website here: https://ams-osram.com/products/product-families/smartled-0603

Thank you for your interest. Let me know if you would like to know more about SMARTLED® 0603 Gen 2.

Sincerely,

<Your name here>