Sense the power of light

Next generation IR OSLON® P1616 with new IR:6 Thinfilm Chip technology

SFH 4171B; SFH 4172B

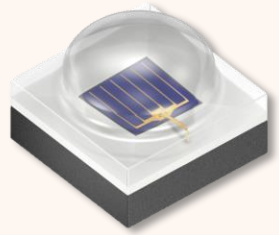
January 2025

Public use

OSLON® P1616 – SFH 4171B, SFH 4172B

Now with new IR:6 Thinfilm Chip technology

OSLON® P1616
SFH 4171B



OSLON® P1616
SFH 4172B

Description

With the development of the new Thinfilm IR:6 Chip technology ams OSRAM increases the value of IR-based applications such as biometric authentication and security cameras, producing **brighter IR illumination and image quality while extending battery run-time.**

The OSLON® P1616 offers an **outstanding power / size ratio** combined with different half angles which enable an adaption to the needs of the application.

Size: Very compact IR high power emitter with 1.6 x 1.6 mm
Wavelength: 850nm for high camera sensitivity[1] (35%)
Field of illumination: 70° / 120°

Applications

In public or at home, infrared illumination is the perfect solution for security applications

Our infrared LEDs offer the highest reliability to ensure precise biometric identification, especially where space is limited

Perfect solution for industry, where automation drastically continues to increase

750 µm
New IR:6 Thinfilm Chip technology

Up to 20%
Brightness increase

Up to 30%
Efficiency increase

Product Info Page: SFH 4171S: https://ams-osram.com/products/leds/ir-leds/osram-oslon-p1616-lens-sfh-4171B *
Product Info Page: SFH 4172B: https://ams-osram.com/products/leds/ir-leds/osram-oslon-p1616-lens-sfh-4172B *

*Go live @official release (18.02.2025)

1) highest sensitivity @ 550nm 100 %

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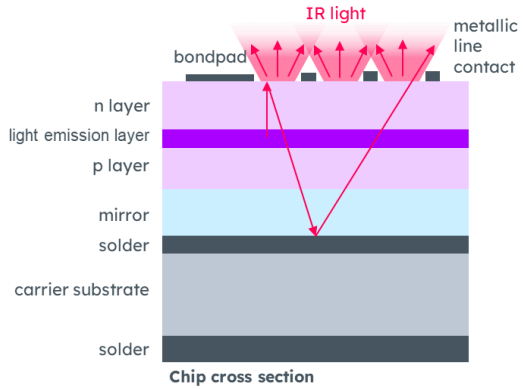
The new IR:6 Thinfilm Chip technology

What's new?

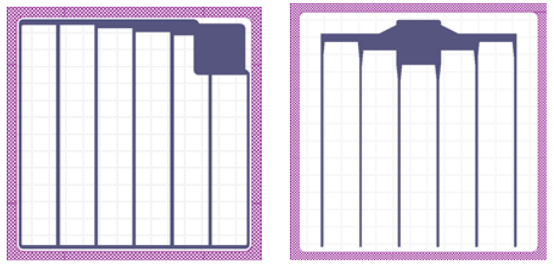
35 % brightness increase

- Adjustments on chip surface for better light outcoupling
- Improvement on internal chip reflectivity and chip mirror design



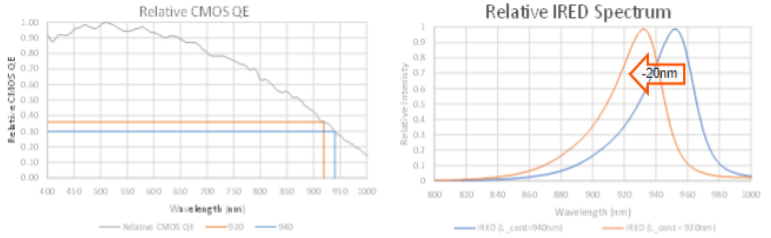
42 % efficiency increase

- Improved n-contact (bond pad) design
- Improved current spreading across the device and lower forward-voltage



New 920 nm version

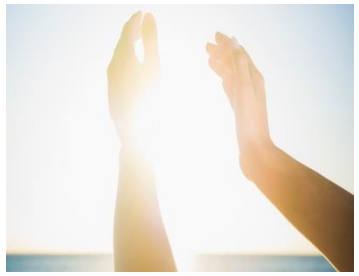
- Improved WL steering to offer 920nm in addition to 850, 940nm
- Higher sensibility of typically used image sensor



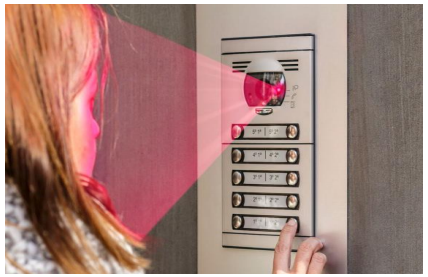
OSLON® P1616 – The new generation

Different power and wavelengths options to address respective applications

Health and Wellbeing | **Medical** | **Oral Scanning**



Smart Doorbell & Babycams



2D Face Authentification

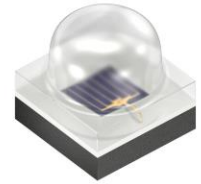
	Camera sensitivity 35%*	Camera sensitivity 20%*	Camera sensitivity 15%*
	Red glow**	Perfect trade off sensitivity & red glow	Reduced red glow**
	850 nm	**920 nm**	**940 nm**
Distance to target	< 1 m	1 - 3 m	< 1 m
Total infrared Power by light source	~ 100 mW - 1650 mW	~ 100 mW - 1650 mW	~ 100 mW – 1650 mW
Proper Beam-Shape by IRED or secondary optic lens	Circular 66 – Tophat 130°	Tophat 130° Rectangular 90° x 140°	Tophat 130° Circular 66°

* highest sensitivity @ 550nm 100% ** based on human eye sensitivity

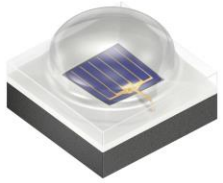
The new IR OSLON® P1616

What's new?

Key Feature	Benefit
1 **Higher optical power, up to 20 %**	Brighter image Better image quality for camera algorithm software
2 **Higher WPE, up to 30 %**	System energy saving for cameras Longer standby time for battery
3 **Smallest package size of 1.6 x 1.6 mm**	Smallest and most powerful product on the market Perfect for narrow space application requirements
4 **High robustness**	Long lifetime Less risk for customer's product quality issue
5 **All in-house: from chip to package**	Clear traceability of all production steps Better cost control for most cost-effective solution



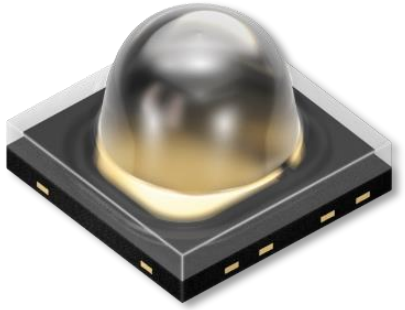
OSLON® P1616
SFH 4171B



OSLON® P1616
SFH 4172B

OSLON® P1616 – High power & brightness at smallest size

Not even half as wide as a match head

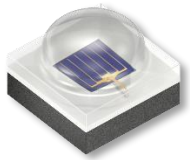


OSLON®
Black

100 %
3.75 x 3.75 mm²

SYNIOS®
P2720

39 %
2.75 x 2.0 mm²



OSLON®
P1616

18 %
1.6 x 1.6 mm²

Why to chose ams OSRAM?

Thriving on innovation to improve people's lives by leveraging our technology strengths, experience and innovation

- **Only supplier** on the whole market **to offer all Infrared technologies** – IRED, EEL*, VCSEL** (Dot and Flood)
- **110+ years** of design and manufacturing experience with 3 focus area: **sensing, illumination, visualization**
- **Technological** leading **expertise** in epi, chip and package technology, with **15,000 patents** and patent applications
- **Quality** and **system** solution **support** from product design till end-user application
- **Co-branding** program: ams OSRAM is strong brand in several industries and will boost your business

*Edge Emitter Laser ** Vertical Cavity Surface Emitting Laser

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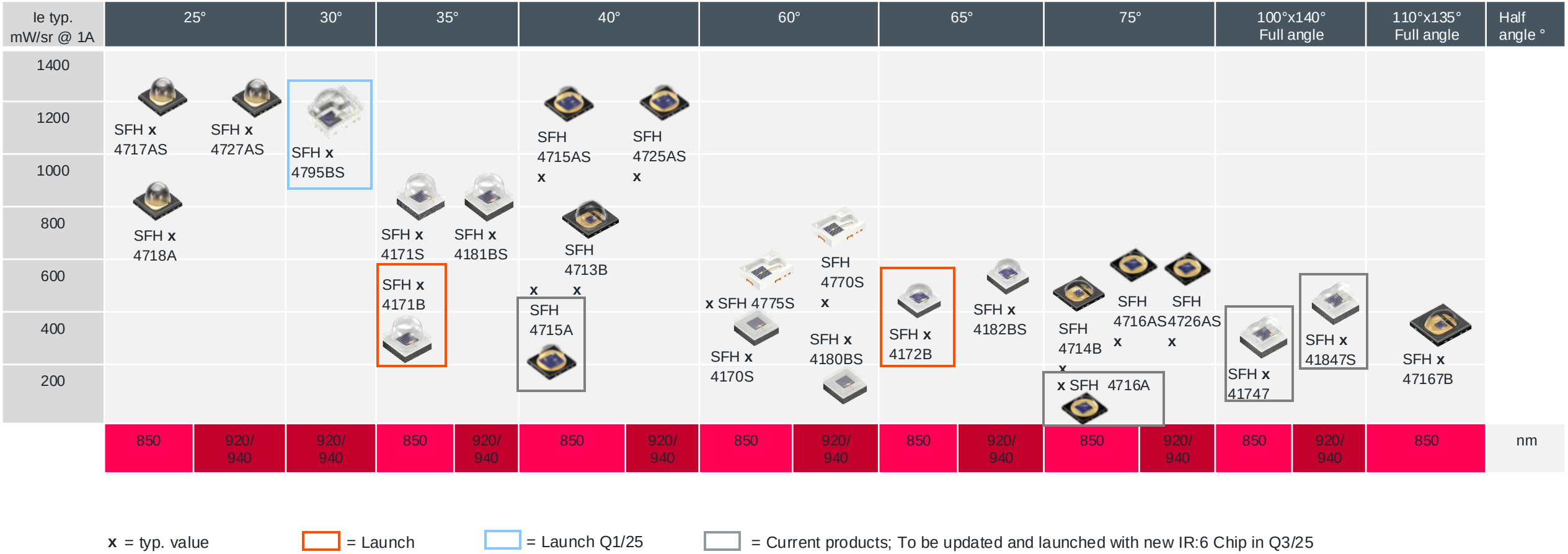
IR High Power – The most comprehensive portfolio

One partner to cover all needs



x = typ. value = Launch = Launch Q1/25 = Current products; To be updated and launched with new IR:6 Chip in Q3/25

ams OSRAM

OSLON® P1616 with new IR:6 Thinfilm Chip technology

Strongly increased brightness and efficiency

+20% **+30%**

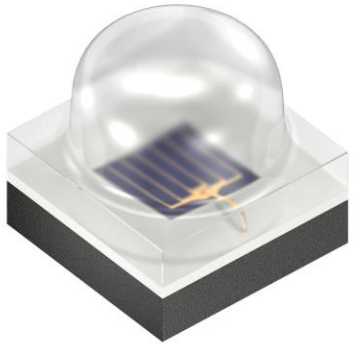
	Wavelength [nm]	Radiant int. [mW/sr]	Radiant Flux. [mW]	WPE [%]	Current [mA]	Max. current [mA]	Voltage typ. [V]	Radiation [°]	Operating [°C]
Oslon® P1616 SFH 4171B	850	480	940	57	1000	1000	1.63	70°	-40 - 105
Oslon® P1616 SFH 4172B	850	300	975	60	1000	1000	1.63	120°	-40 - 105

Note: typical values at binning condition

OSLON® P1616 – SFH 4171B

Fact sheet

Product	**SFH 4171B**
Brand	**OSLON® P1616**
Status	**PROD**



Characteristics (typ.)

	SFH 4171B
Application	Access control, Industrial Security and Medical
Power class	High power
Centroid Wavelength [nm]	850
Radiant intensity typ. [mW/sr]	480
Radiant flux typ. [mW]	940
WPE [%]	57
Binning current I_F [mA]	1000
Forward Voltage typ. [V]	1.63
Radiation [°]	70
Real thermal resistance junction/solder point typ.[K/W]	5.0

Maximum ratings

	SFH 4171B
Operating Temperature [°]	-40 – 105
Storage Temperature [°]	-40 – 105
Junction Temperature [°]	145
Forward Current [mA]	1000
Surge Current [mA]	2000
ESD (HBM) [kV]	2

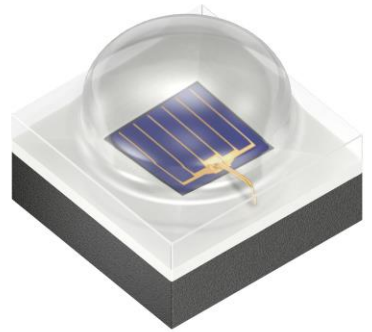
Mechanical and other data

	SFH 4171B
Footprint [mm]	1.6 x 1.6 x 1.72
Package	ceramic
Chip Technology	IR:6 Thinfilm
Packing unit [pcs]	2000
Reel size	R18
ESD diode	no

OSLON® P1616 – SFH 4172B

Fact sheet

Product	**SFH 4172B**
Brand	**OSLON® P1616**
Status	**PROD**



Characteristics (typ.)

	SFH 4172B
Application	Access control, Industrial Security and Medical
Power class	High power
Centroid Wavelength [nm]	850
Radiant intensity typ. [mW/sr]	300
Radiant flux typ. [mW]	975
WPE [%]	60
Binning current I_F [mA]	1000
Forward Voltage typ. [V]	1.63
Radiation [°]	120
Real thermal resistance junction/solder point typ.[K/W]	5.2

Maximum ratings

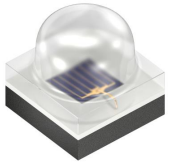
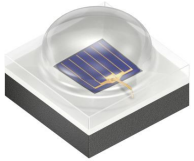
	SFH 4172B
Operating Temperature [°]	-40 – 105
Storage Temperature [°]	-40 – 105
Junction Temperature [°]	145
Forward Current [mA]	1000
Surge Current [mA]	2000
ESD (HBM) [kV]	2

Mechanical and other data

	SFH 4172B
Footprint [mm]	1.6 x 1.6 x 1.33
Package	ceramic
Chip Technology	IR:6 Thinfilm
Packing unit [pcs]	3000
Reel size	R18
ESD diode	no

OSLON® P1616 – Details for samples orders

Available as of 18.02.2025

		Q-Number	Manufacturer part number - long version
Oslon® P1616 SFH 4171B		Q65113A4985	SFH 4171B-CB2DB1
Oslon® P1616 SFH 4172B		Q65113A6122	SFH 4172B-BA2CA1

Note: Samples are only available for order as of 18.02.2025

OSLON® P1616 – Use Cases

SFH 4171B; SFH 4172B

January 2025

Medical

IR light leads to a deeper and more detailed result

Use case: Oral Scanning

Background of the application

- Replace conventional plaster cast with new technology
- Create more and helpful data during the scanning session (IR light in combination with Laser scanning)
- IR Light supports to gather information like: Interdental space analysis, Caries analysis, Inside teeth analysis

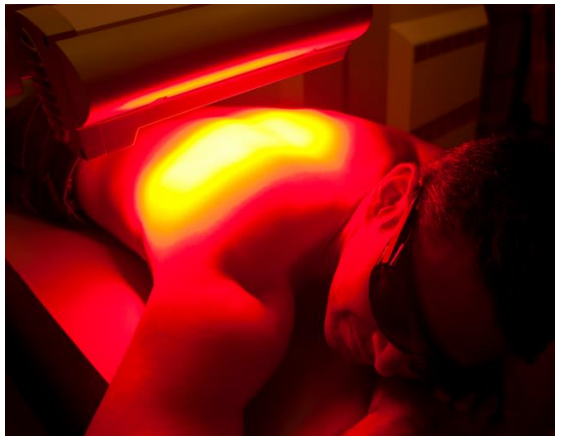
What are the requirements for this use case?

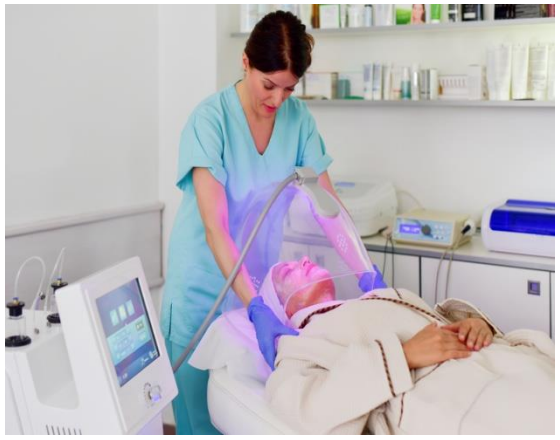
- High quality standards for medial qualification purposes
- LTA availability of components due to market requirements
- High radiant intensity on device level for good picture quality
- Compact package size with perfect power/size ration

Medical

IR light is beneficial for various applications in the medical area

Use case: IR to support various body healing processes





Background of the application

- IR light is beneficial to support cellular functions and is increasing the natural healing processes of the body
- Non-invasive treatment is used in a variety of therapeutic applications (e.g. pain / skin treatment)
- IR light is not damaging the skin or tissues and can reach depths up to several centimeters
- Increase the availability of the IR health approach for home usage applications and clinical setups

What are the requirements for this use case?

- High quality standards for medial qualification purposes
- LTA availability of components due to market requirements
- Good pulse handling capabilities per device

Proven Health benefits

Boost wellbeing with the help of Infrared Light

Use case: Health & Wellbeing

Background of the application

- Bring sunlight indoors and make it available during people's daily life
- Staying healthy in an urbanizing and busy world is a challenge
- Implement the application in daily routines of the user

What are the requirements for this use case?

- High efficiency parts needed due to specific algorithm and component driving
- Good pulse handling capabilities per device
- High-quality components for various operating conditions

Biometric Authentication

Unlocking your device by 2D face recognition

Use case: 2D authentication

Background of the application

- Infrared LED to illuminate and light up the target area
- LED size needs to fit the trend of smaller bezel sizes (~ 2.5 mm)
- Distance to target ~ 75 – 100 cm

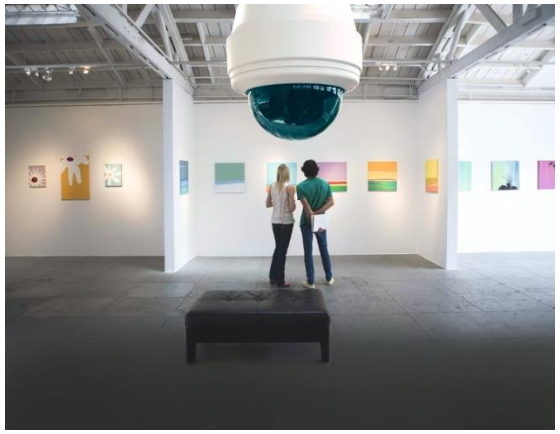
What are the requirements for this use case?

- High radiant intensity on device level for good picture quality
- Wide or rectangular FoI for homogeneous lighting inside target area
- High WPE for system energy saving
- Super small and powerful package to address narrow space applications

Industrial and consumer security

Make your home and public places safer with Infrared High Power LEDs

Use case: Smart Doorbell and Babycams



Background of the application

- High Power Infrared LED to illuminate the target area of the camera for day and night usage of the application
- 850nm for high camera sensitivity
- Increase the security and safety feeling of people during their daily life

What are the requirements for this use case?

- High radiant intensity on device level for good picture quality
- Various field of illumination options for different distances
- High efficiency for system energy saving
- Reliable and high-quality components due to security critical end applications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