



## Focus on greater brilliance

High-level opto components for projection

**OSRAM**  
Opto Semiconductors



OSRAM Opto Semiconductors LED and laser projection light sources are designed to fit perfectly into your applications.

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## Your first choice for all projection applications

Imagine a portfolio of LED and laser components that makes the most challenging projection installations possible. That's precisely what you get from OSRAM Opto Semiconductors.

We deliver a broad portfolio of low-, mid- and high-power LEDs and laser diodes that can be mixed and matched in endless combinations. Thanks to our extremely miniaturized components and the energy efficiency inherent in LED technology, the once unimaginable has become today's reality. Our products combine the competence of nearly 40 years of expertise in the semiconductor industry with 100 years of experience in lighting technology from OSRAM GmbH. We concentrate all opto semiconductor processes under one roof – from chip development, packages and phosphors to finalized components.

Whether you need high power solutions for professional applications, power solutions for business applications, compact solutions for home and gaming applications or miniature solutions for mobile devices – OSRAM Opto Semiconductors has the right LED and laser diodes in every performance class for every application.

**Compact solutions**

Looking for high power in a small form factor? Looking to stay mobile and small, but with a big screen and good picture quality from your companion projector? Then our products, whether LEDs or lasers, are perfect for you.

**Embedded solutions**

Thinking of mobile phones, still and video cameras? Looking for low power consumption, small footprints and high efficiency? With our LEDs and lasers for Embedded Projection Applications we offer you the perfect results.

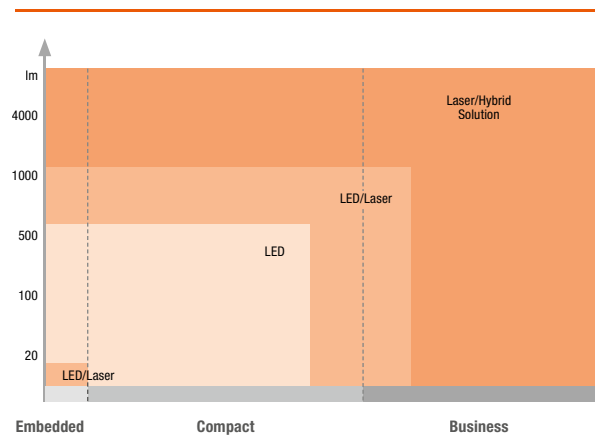


**PROJECTION SOLUTIONS**



**Business solutions**

Developing business solutions, from control room to professional cinema applications? Want to impress with high power, long lifetime, high efficiency and wide color gamut? Our laser and LED products will manage all your tasks perfectly.



The diagram shows which product types and performance classes are specifically suitable and recommended for embedded, compact or business projection solutions/applications at present.

# Stay mobile: brilliant embedded solutions

## OSRAM OSTAR® Projection Compact and Cube

For a pico projector embedded in a mobile device the available electrical power is limited to a fixed value to ensure that the expected battery operation time is met. Therefore the figure of merit is the projector efficacy (lm/W), i. e. the white screen lumens per electrical LED power.

The goal for embedded pico projection is to get at least 15 screen lumens at 1 W LED power. For this the LED source has to be optimized in respect to the chip and package efficiency and to the etendue match for the projector optical system. These requirements are met by the OSRAM OSTAR® Projection Compact and Cube series LED.

In addition to single chip devices this package platform also allows multiple chips and colors to be combined within one package. This enables projection engine makers to design 2- and 1-channel engines with only two LEDs (G+RB) or even a single (RGB) LED component.

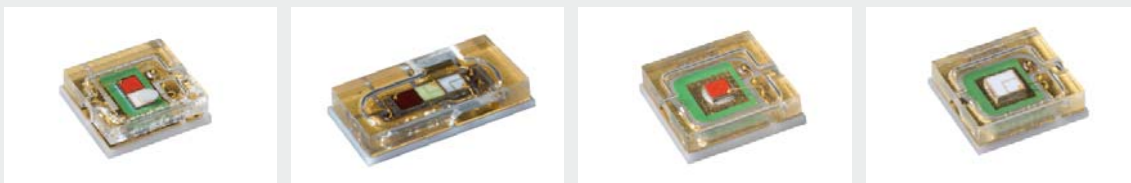
### Features:

- SMD package
- ThinFilm and ThinGaN® chip technology
- Small form factor
- High luminance
- Etendue matched to pico projection systems

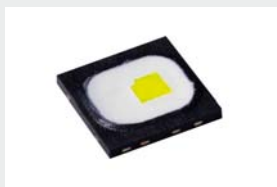
### Applications:

- Embedded solutions
- Camera (still/video)
- Smartphones
- Tablets

### OSRAM OSTAR® Projection Compact



	LE BA Q6WM	LE ATB N7WM	LE x Q9WM	LE x Q9WN
Top emitting area in mm	1.4 × 0.65	2.15 × 0.65	0.65 × 0.65	0.9 × 0.9
LED package size in mm	3.9 × 3.7 × 1.2	5.3 × 2.7 × 1.2	3.9 × 3.7 × 1.2	3.9 × 3.7 × 1.2
Thermal resistance R <sub>th,JS</sub>	18 K/W per chip	18 K/W per chip	20 K/W	15 K/W
Typ. dominant wavelength @25 °C	A: 617 nm B: 460 nm @350 mA per chip	A: 617 nm T: 525 nm B: 460 nm @350 mA per chip	A: 617 nm T: 525 nm B: 460 nm @350 mA	A: 617 nm T: 525 nm B: 460 nm @700 mA
Typ. forward voltage per chip @25 °C	A: 2.2V B: 3.4V @350 mA per chip	A: 2.2V T: 3.5V B: 3.4V @350 mA per chip	A: 2.2V T: 3.5V B: 3.4V @350 mA	A: 2.5V T: 3.6V B: 3.6V @700 mA
Typ. brightness @25 °C	A: 42 lm B: 350 mW @350 mA per chip	A: 42 lm T: 71 lm B: 350 mW @350 mA per chip	A: 42 lm T: 71 lm B: 350 mW @350 mA	A: 85 lm T: 130 lm B: 740 mW @700 mA


**OSRAM OSTAR®  
Projection Cube**
**LCG H9RN****LCG H9RM**

Chip size	1 mm <sup>2</sup>	750 μm
Top emitting area in mm	0.98 × 0.98	0.72 × 0.72
LED package size in mm	3.8 × 3.8 × 0.5	3.8 × 3.8 × 0.5
Thermal resistance R <sub>th JS</sub>	9 K/W	20 K/W
Typ. color coordinate Cx/Cy within 500...60 nm @25 °C	0.32/0.64	0.32/0.64
Typ. forward voltage per chip @25 °C	3.3V@700 mA	3.3V@350 mA
Typ. brightness @25 °C	280 lm@700 mA	140 lm@700 mA



Single-mode laser



@25 °C

	PL 450B	PL 520
Output power	80 mW	50 mW
Emission wavelength typ.	450 nm	520 nm
Threshold current typ.	30 mA	45 mA
Operating current typ.	100 mA	150 mA
Wall plug efficiency	14%	5–6%
Package type	T038 icut	T038 icut



# Low space, high efficiency: intelligent embedded solutions

## Single-mode laser PL 450B & PL 520

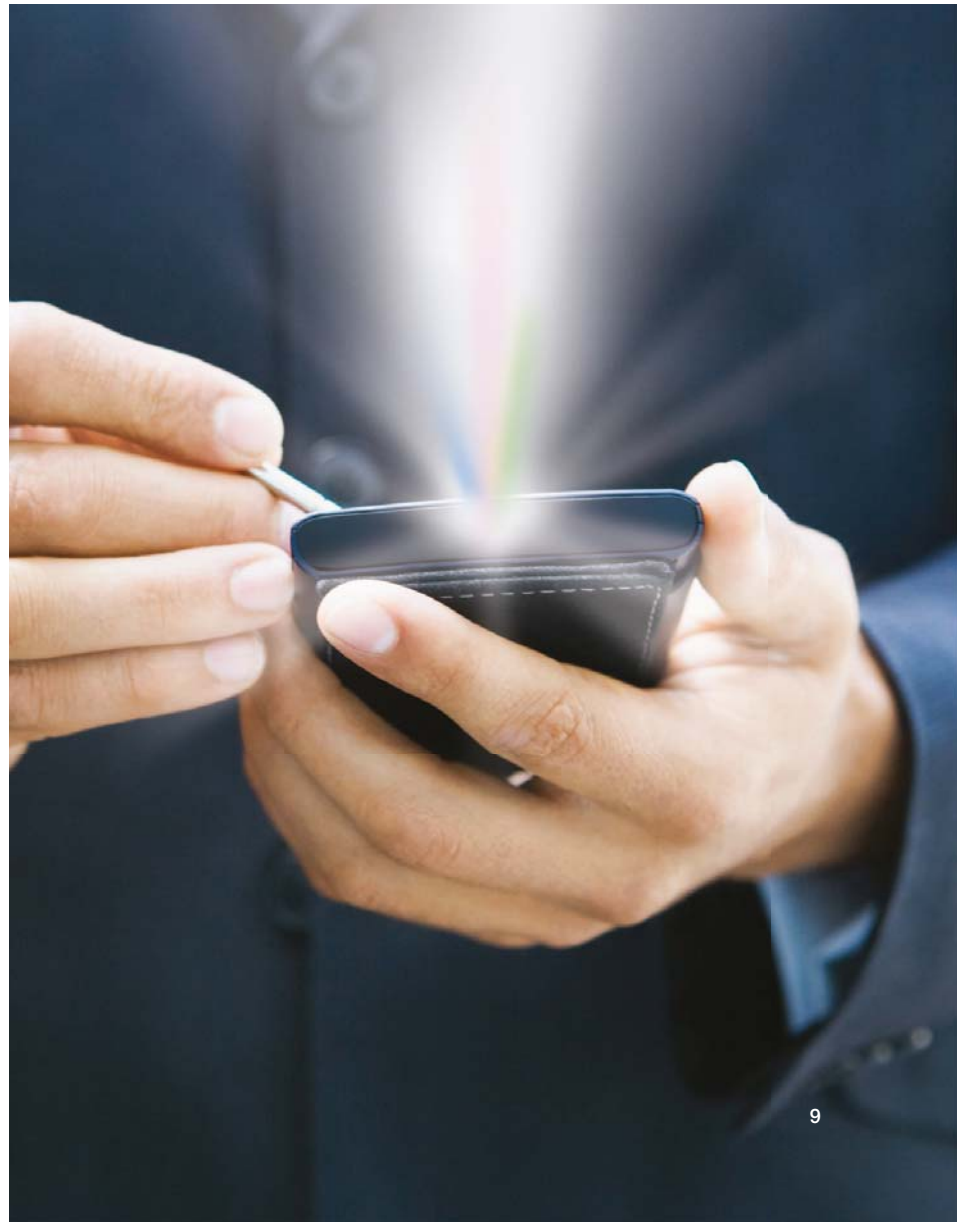
The blue and green single-mode laser diodes from OSRAM Opto Semiconductors are designed to meet the needs of laser projection applications and are perfectly suitable for systems which use a MEMS scanner as the imager. The laser diodes combine an unbeatable form factor with an excellent beam quality and high efficiencies while fulfilling all essential requirements to turn the vision of mobile projection into reality.

### Features:

- Single transverse mode laser
- Perfect beam quality
- Miniaturized TO38 ICut package
- High modulation capability

### Applications:

- Embedded solutions
- Camera (still/video)
- Smartphones
- Tablets
- Head-up displays



# Economy size: powerful compact solutions

## OSRAM OSTAR® Projection Compact

These LEDs use the 2 mm<sup>2</sup> chip suited for high power operation. The OSRAM OSTAR® Q9WP contains one chip and the Q6WP solution has two chips side by side. These LEDs can be operated up to 6 A in pulsed mode and provide the basis for compact and bright projectors ranging from 100 lm up to 500 lm.



### Features:

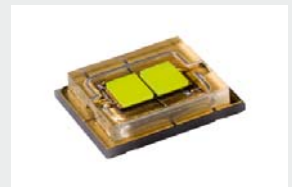
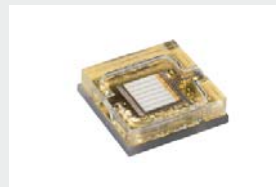
- SMD package
- ThinFilm and ThinGaN® chip technology
- Small form factor
- High luminance due to “chip on air”

### Applications:

- Compact solutions
- Home cinema
- Gaming
- Notebook accessory
- Head-up display



### OSRAM OSTAR® Projection Compact



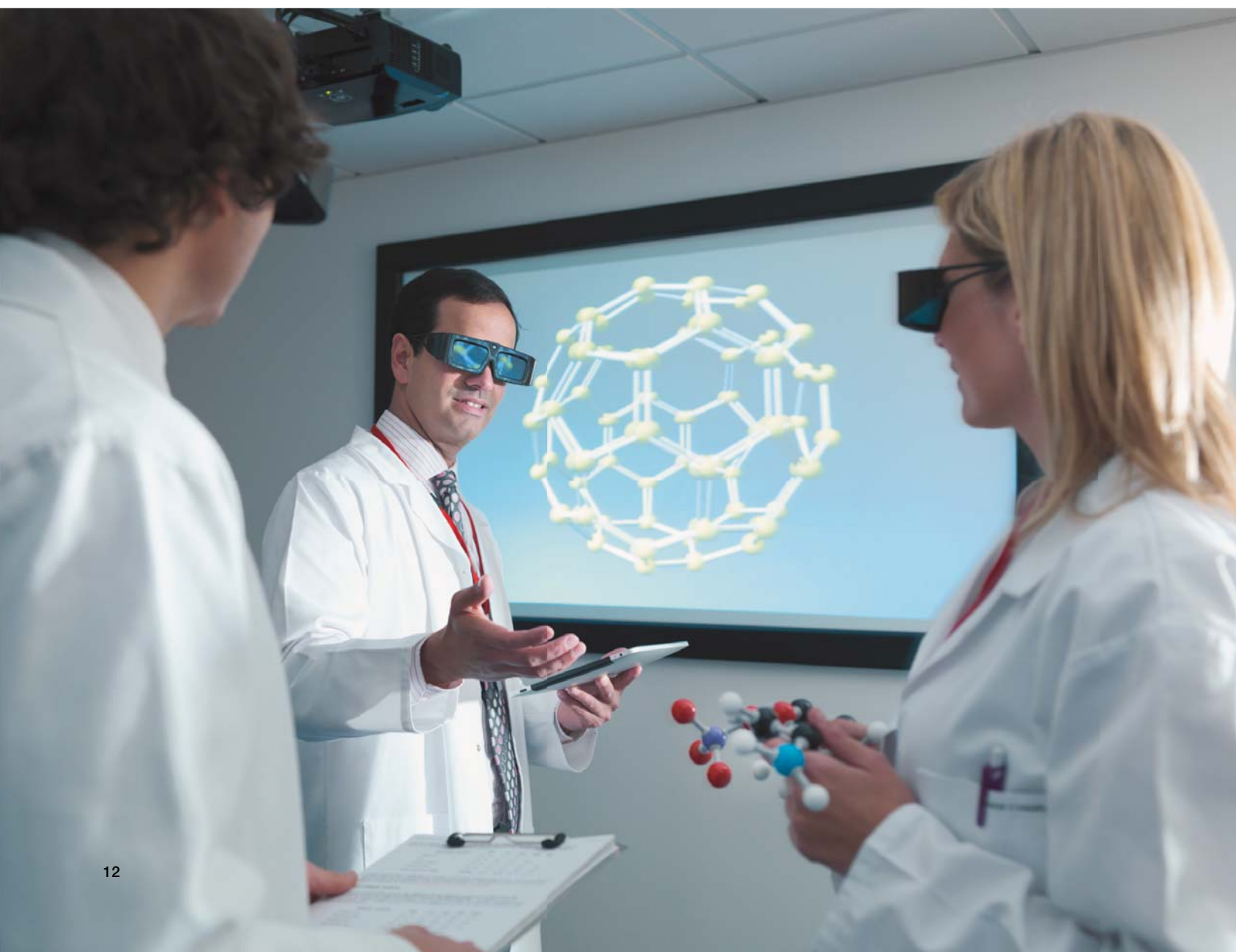
	LE x Q9WP	LE x Q6WP
Top emitting area in mm	1.5 × 1.2	2.6 × 1.5
LED package size in mm	3.9 × 3.7 × 1.2	5.8 × 4.7 × 1.2
Thermal resistance R <sub>th JS</sub>	3 K/W	1.5 K/W
Typ. dominant wavelength @25 °C	A: 617 nm T: 536 nm CG: 0.32/0.64 B: 459 nm @1.4 A	A: 617 nm CG: 0.32/0.64 B: 459nm @1.4 A
Typ. forward voltage per chip @25 °C	A: 2.3V T: 3.6V CG: 3.45V B: 3.45V @1.4 A	A: 2.3V CG: 3.45V B: 3.45V @1.4 A
Typ. brightness @25 °C	A: 160 lm T: 250 lm CG: 420 lm B: 1.36W @1.4 A	A: 320 lm CG: 900 lm B: 2.7W @1.4 A



# Bigger and brighter: impressive business solutions

## OSRAM OSTAR® Projection Power

OSRAM OSTAR® Projection Power is among the greats in terms of its performance and its dimensions. It can be operated with a maximum of 36A and produces light of impressive brightness. Typical values are 3400 lm in red, 7500 lm in green and an optical output of 25W in blue. While the dimensions of 45 mm × 25 mm seem large for a standard LED the thermal resistance is only 0.5 K/W. The LED is suitable for all types of cooling, including water cooling.





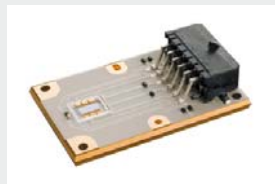
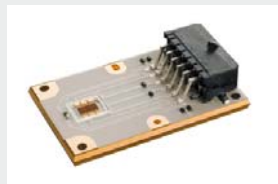
**Features:**

- Copper metal board with connector
- ThinFilm and ThinGaN® chip technology
- Low thermal resistance
- Capable for direct water cooling
- Operation up to 36 A pulsed
- Improved 50,000 h lifetime (L50B50)

**Applications:**

- Business solutions
- Office
- Education
- Professional (simulation, control rooms)

**OSRAM OSTAR®  
Projection Power**



**LE A P3W**

**LE B P3W**

**LE CG P3W**

Top emitting area in mm	4.7 × 2.5	4.7 × 2.5	4.7 × 2.5
LED package size in mm	46 × 29 × 12	46 × 29 × 12	46 × 29 × 12
Thermal resistance R <sub>th JS</sub>	0.5 K/W	0.5 K/W	0.5 K/W
Typ. dominant wavelength @36 A, 25 °C	617 nm	459 nm	Cx/Cy=0.32/0.64
Typ. forward voltage per chip @36 A, 25 °C	3.2V	4.4V	4.4V
Typ. brightness @36 A, 25 °C	3400 lm	25W	7500 lm



**Multi-mode laser**



@25 °C

**PLTB450**

Output power	1.4W
Emission wavelength typ.	450 nm
Threshold current typ.	0.2A
Operating current typ.	1.2A
Efficiency typ.	27 %
Package type	T056

# Professional power: successful business solutions

## Multi-mode laser PLTB450

Professional projectors are the main area of application for laser diode PLTB450. With its wavelength of 450 nanometer (nm) and output power above the 1 W range, this laser diode produces the exact blue desired and the high optical output required for most projection application. The long lifetime of the laser diode allows for maintenance free operation of projectors and low energy consumption. The small package also enables projectors with small form factors to be produced.



### Features:

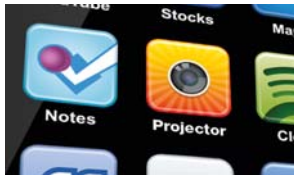
- High optical output power in the blue spectral range
- Multi transverse mode laser
- High beam quality in a small TO56 package
- High efficiency

### Applications:

- Home cinema
- Notebook accessory
- Business solutions
- Office
- Education
- Professional cinema

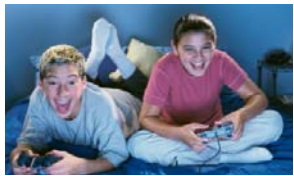
# Choose perfection – easily

✓ recommendation • alternative recommendation



**Embedded solutions**

	OSRAM OSTAR® Projection Cube	OSRAM OSTAR® Projection Compact	OSRAM OSTAR® Projection Power	Single-mode laser	Multi-mode laser
Camera (still/video)	✓	✓		✓	
Smartphones	✓	✓		✓	
Tablets	✓	✓		✓	



**Compact solutions**

Home cinema		✓			✓
Gaming		✓		•	•
Notebook accessory		✓		•	•
Control room		✓			•
Head-up display		✓		✓	



**Business solutions**

Office			✓		✓
Education			✓		✓
Professional			✓		✓
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# Be informed – completely

Looking for more information and data on our products for LEDs in general lighting or LEDs in general? All you need to know about our state-of-the-art products, modern LED technology and the latest LED trends can be found on our website along with other related links.

**[catalog.osram-os.com](http://catalog.osram-os.com)**

Our complete product catalog with all available products

**[www.osram-os.com/solid-state-lighting](http://www.osram-os.com/solid-state-lighting)**

Products and solutions for general lighting/solid state lighting

**[ledlight.osram-os.com](http://ledlight.osram-os.com)**

The leading source of LED information, resources, tools, technology & LED lighting solutions for the solid state lighting and general illumination sectors

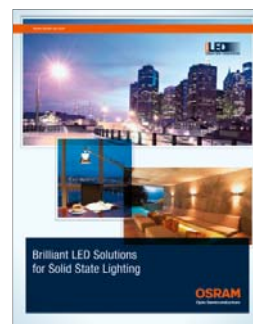
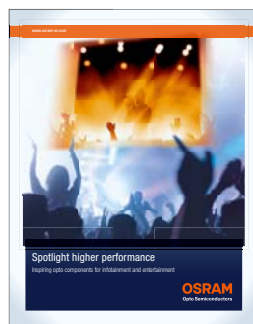
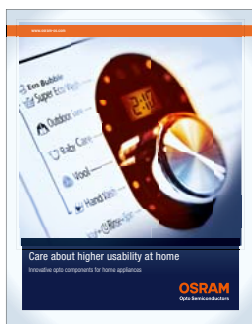
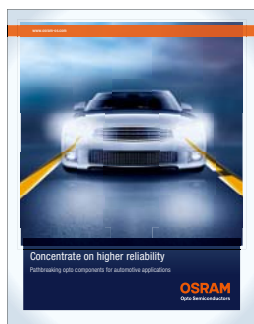
**[www.ledlightforyou.com](http://www.ledlightforyou.com)**

The network for LED lighting technology – powered by OSRAM



**Application brochures available from OSRAM Opto Semiconductors**

Our innovative products open up a wide variety of applications. Just contact us for assistance with your specific design (for contact information see last page) or order our application brochures: [www.osram-os.com/downloads](http://www.osram-os.com/downloads).



# Bringing your visions to life

OSRAM Opto Semiconductors is one of the world's leading manufacturers of optoelectronic semiconductors and is considered an authority on innovative light technologies. With numerous patented technologies, a deep understanding of customer needs, close customer relations and highly committed employees, we take an active part in shaping the future of light.

## Leader in technology

Because for decades we have been investing in technology and quality, steadily expanding our competencies, OSRAM Opto Semiconductors today sets the highest international standards in the fields of illumination, visualization and sensor technology. Our product range from high-performance light-emitting diodes (LEDs) and infrared diodes (IREDs) to detectors.



### Your partner of choice

OSRAM Opto Semiconductors' close cooperation with our customers and partners generates new ideas for products and light solutions. Not least, these joint efforts have also resulted in an application-specific portfolio for a variety of applications: our semiconductors are used, for instance, in light solutions for automotive, white goods, entertainment and infotainment, projection and general lighting as well as numerous infrared and laser solutions.

### Driver for innovation

Continuous commitment to research and development have established a solid foundation at OSRAM Opto Semiconductors for product development and manufacturing at a consistently high level. We have, for example, turned out pioneering technologies for almost 40 years and hold thousands of patents. Milestones reached in setting numerous standards in LED light technologies include the development of the first surface-mountable LED (TOPLED®), the first LED with white light and the OSRAM OSTAR® product platform with its versatile package design.

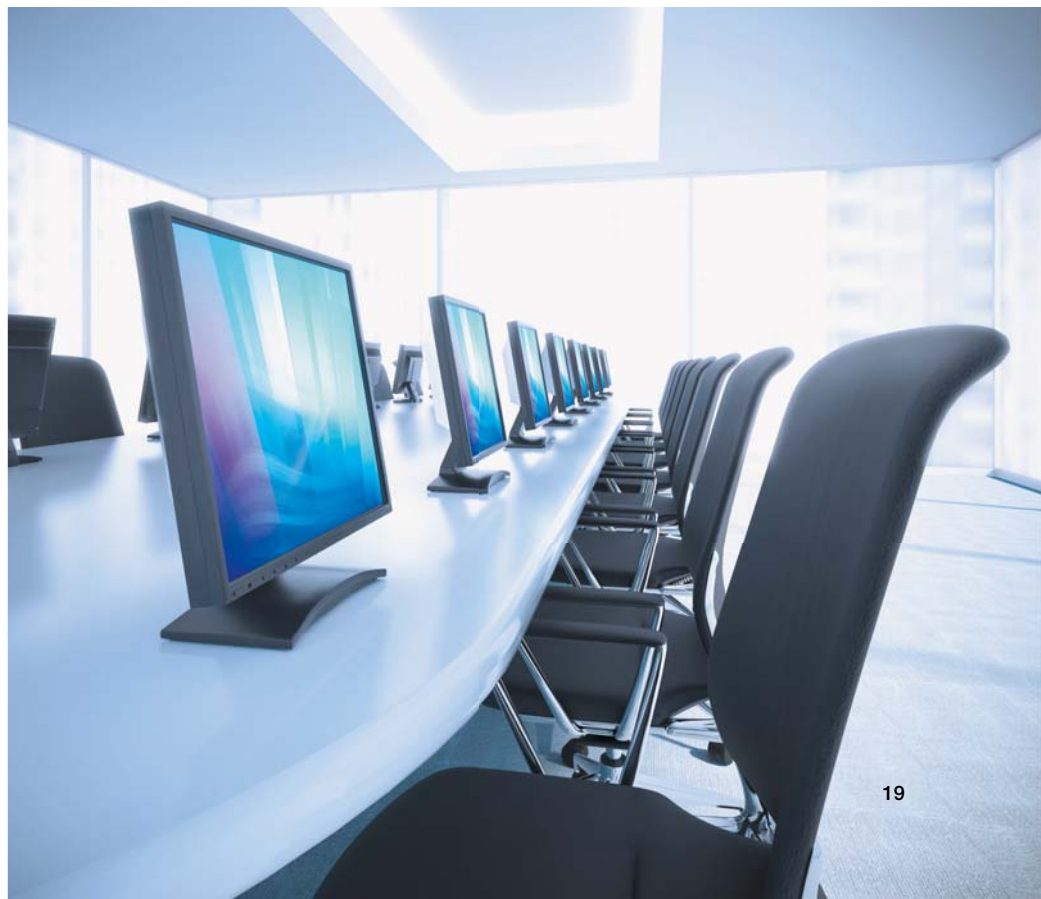



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### Competent light solutions around the globe

By engineering and manufacturing highly complex semiconductor chips and consistently developing new products for new applications, OSRAM Opto Semiconductors is able to satisfy the needs and requirements of customers around the world. With our headquarters in Regensburg (Germany), Sunnyvale (USA) for North America and Hong Kong for Asia, production sites in Regensburg, Penang (Malaysia) and soon in Wuxi (China), some of the most modern LED chip manufacturing facilities in the world, and a global network of sales and marketing centers, we and you are in an excellent position to meet the challenges of today and tomorrow.

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## Sales contacts

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