

The image shows the cover of the OSTAR Engineering Evaluation Kit. It features a dark blue rectangular area on the left side with white text. The background of the entire cover is a photograph of a modern building with large glass windows and a curved walkway. An orange horizontal bar is positioned at the top of the cover.

OSTAR® Engineering Evaluation Kit

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Agenda

1. Complete Portfolio
2. FAQ
3. Possible applications
4. Customer benefits
5. Features
6. Color portfolio
7. Available products
8. Product family
9. OSTAR® Engineering Evaluation Kit
10. Glossary



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Overview of SMT LED Packages

High-Power LED Packages

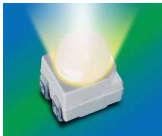
Dimensions: lengths x width x height

TOPLED®



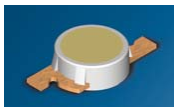
3.5 x 2.8 x 1.9 mm

Power TOPLED®



3.5 x 2.8 x 1.9 mm

PointLED®



3.4 x 2.5 x 0.725 mm

MultiLED®



Advanced Power TOPLED®



3.4 x 3.3 x 1.9 mm

Golden / Platinum DRAGON®



11.0 x 6.0 x 1.8 mm

Diamond DRAGON®



11.0 x 6.0 x 4.2 mm

OSTAR® Lighting



OSTAR® Headlamp



Focus Product Q2

Focus Product Q3

Mini TOPLED®



2.2 x 1.4 x 1.3 mm

Chipled



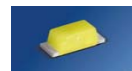
1.6 x 0.8 x 0.6 mm

Micro SIDELED® 1.0



3.0 x 1.2 x 1.0 mm

SmartLED®



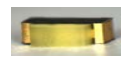
1.7 x 0.8 x 0.6 mm

Micro SIDELED® 0.8



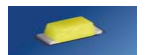
2.8 x 1.2 x 0.8 mm

FIREFLY®



1.8 x 1.2 x 0.5 mm

SmartLED®



1.7 x 0.8 x 0.35 mm

Miniature LED Packages

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FAQ

Questions Customers May Ask You

- **How are IR products measured?**
 - IR products are measured in radiant intensity (mW/sr)
- **How is brightness measured in LED products?**
 - Brightness is measured in lumens (lm) for visible LED products
- **When do we promote OSTAR® over DRAGON® solutions?**
 - The OSTAR® is a great solution in lumen dense applications where high-brightness is needed and space is limited
- **How does the OSTAR® family compare in price to discrete components, such as the DRAGON® family?**
 - The OSTAR® family of products fulfills different application requirements than discrete components, such as the DRAGON®, so a direct comparison of price is not applicable
- **Are there off-the-shelf lens solutions for OSTAR®?**
 - Yes. Our LED Light for You (LLFY) partners, such as LEDIL, offer off-the-shelf lens solutions for our high-power product families, including OSTAR® and DRAGON®. For more information on the LLFY program, please visit www.LEDLightforYou.com
- **How do I get more efficiency from the OSTAR®?**
 - Reducing the drive current of any LED will produce higher efficiency.

OSTAR® - Possible Applications



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OSTAR® - Possible Applications

- **General lighting**

- Retrofits, where space is limited
- Spot lights
- Recessed down lights
- Stage lighting
- Architectural illumination

- **Automotive exterior**

- Headlamps
- Active Night Vision
- Daytime running light

- **Industry**

- Machine Vision
- Emergency lights
- Warning lights i.e. light house, buoys
- Architainment,

- **Military / Security**

- Vehicle Mount NV (Humvee)
- Infrared Perimeter Security
- Tactical Flashlights
- Take Down Lights



OSTAR® - Customer Benefits

OSTAR® Lighting



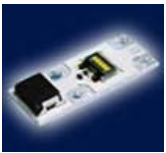
- High luminous intensity and the hexagonal shape enables tight packing density.
- Small dimensions and a low height of less than 7 mm.
- Pure surface emitter, characterized by true Lambertian radiation characteristics, allowing for effective light coupling into optics.
- Available with four or six chips, with or without a lens.
- Very reliable due to long product lifetime (up to 50,000 hours) and low thermal resistance.

OSTAR® Observation



- High optical IR output, even in continuous operation.
- Compact size, with easy-to-mount standard connector.
- Certified for automotive applications at temperatures up to 125 °C.
- Exceptionally low thermal resistance for optimum thermal management.

OSTAR® Headlamp



- Pure surface emitter that provides a uniform illumination of the target area.
- Chip level conversion enables optimized coupling into optics and light guides.
- Compliant with the SAE- and ECE standard and certified according to automotive standards and to AEC-Q101.
- Long lifetime of 7,000-10,000 hours, comparable with the lifetime of a car.

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OSTAR® - Features



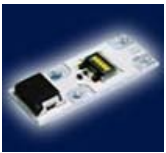
OSTAR® Lighting

- Hexagonal shape with holes for precise adjustment of external optics
- Pure white is achieved by chip level conversion, simplifying the use of optics and lenses.
- Integrated primary lens with Lambertian beam shape increases light output by 40 %.
- The OSTAR-Lighting is characterized by low thermal resistance $< 4 \text{ K/W}$ and high max. forward current.
- The package comes with high ESD protection $> 2 \text{ kV}$.
- Simple assembly with screws or springs using locating features



OSTAR® Observation (IR version)

- Wavelength suitable for CCD and CMOS cameras
- Package with standard connector - easy to mount
- Low thermal resistance
- Efficient Thinfilm technology offers continuous performance increases in the future
- Lambertian radiator - suitable for external optics



OSTAR® Headlamp

- Five white chips connected in line with a color temperature of 6000K
- Typical brightness of 550lm at 700mA, peak values of up to 650lm at 700mA
- Small dimensions: 33.0mm x 13.5mm x 4.55mm
- Excellent thermal management through metal core PCB
- High junction temperature of up to 150°

OSTAR® - Products

OSTAR	Description	Type	Color	Typ. Brightness	Max. Brightness	
Headlamp	Silicone Encapsulation	LEWD1A	SAE-/ECE-White	280 lm @ 700 mA	420 lm @ 700 mA	
Headlamp	Glass Window Cover	LE UW D1W	SAE-/ECE-White	550 lm @ 700 mA	650 lm @ 700 mA	
Observation	10 Chip Array (Black Frame)	SFH4730	850nm	1W/SR, 1A/20ms	na	
Observation	10 Chip Array (white frame)	SFH4740	850nm	1.2W/SR, 1A/20ms	na	
Lighting-6chip	Silicone lens	LE UW E3B	6500K	850 lm @ 700 mA	na	
Lighting-6chip	Silicone lens	LE W E3B	5700K	750 lm @ 700 mA	na	
Lighting-6chip	Silicone lens	LE CW E3B	3000K	540 lm @ 700 mA	na	
Lighting-6chip	Silicone Encapsulation	LE W E3A	5700K	520 lm @ 700 mA	na	
Lighting-6chip	Silicone Encapsulation	LE CW E3A	3000K	380 lm @ 700 mA	na	
Lighting-4chip	Silicone lens	LE W E3B	5700K	500 lm @ 700 mA	na	
Lighting-4chip	Silicone lens	LE CW E3B	3000K	360 lm @ 700 mA	na	
Lighting-4chip	Silicone Encapsulation	LE W E3A	5700K	350 lm @ 700 mA	na	
Lighting-4chip	Silicone Encapsulation	LE CW E3A	3000K	240 lm @ 700 mA	na	

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Target Customers for the OSTAR® Engineering Evaluation Kit

Target customer resides in the engineering & product development of these industries:

- EVL / Transportation
- Security and Surveillance
- Military
- IR Illumination
- General Illumination

Kit and product meets customer's demands in these areas:

- Technology
- Performance
- Integration
- Flexibility / versatility
- Quality
- Availability
- Price

Product Contents of the OSTAR® Engineering Evaluation Kit

Contents:

- (1) OSTAR® Lighting LED (LE W E3B), (1) OSTAR® Headlamp LED (LE W D1A) and (1) OSTAR® Observation IR (SFH 4730)
- (1) LEDIL narrow angle optic (LEDILSTAR)
- (1) Driver with integrated temperature display (OSRAM Intelligent Display SLR2016)
- (2) Heatsinks (Coolermaster ECB-00396-01-GP and Thermoaflo E3034) with mounted Light Engines
- (1) 18V DC Power Supply
- (1) DVD including kit instructions, product datasheets, application notes, mechanical CAD files, optical ray trace files and electrical PSpice models



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Enable Customers with a Limited Time Offer OSTAR® Engineering Evaluation Kit

- Engineers can review and test the OSTAR® portfolio in their own environment
- Complete a light engine design in record time

Kit Contents	Enables
Product Datasheets and Applications Notes	Product information and reference designs
Mechanical CAD files	Detailed dimensions and package specifications for mechanical and system design
Optical Ray Tracing files	Development of application specific optics
Electrical PSpice models	Circuit/ driver design

\$200 Kit for a limited time only
Suggested Resale **\$89.99**

Glossary

- **What is Thermal resistance and why it is important?**
 - Thermal resistance (K/W) is the measure of the heat transfer ability of an LED. The lower the thermal resistance, the greater the heat transfer out of the package.
- **What is Radiant Density? How is it measured?**
 - Radiant density is the radiant energy passing through a unit of volume from all directions. The units are joules per cubic meter (J m^3).
- **What is beam shaping and how does this affect designs?**
 - Beam shaping optics are used in various optical fields to change the luminous intensity distribution. This affects designs by transforming the intensity profile of the light beam into a desired profile. Either primary or secondary optics can be used in beam shaping. Secondary, or external, optics can be used to focus, direct & manipulate light beams in desired directions.
- **Optical Ray Tracing files**
 - Ray tracing, in general, is a method for calculating the path of particles or waves through a medium. Optical Ray Tracing files for a particular device enable the designer to simulate/ predict the behavior of the light beam in a complex system without having to build the system.

Call to Action

OSTAR® Engineering Evaluation Kit

Q3 Featured Product: OSTAR® and OSTAR® Engineering Evaluation Kit

- Identify target customers by market
- Identify required resources
- Schedule account visits

Q2 Featured Product: Diamond DRAGON® Follow-Up

- Share list of identified customers
- How many customers continued to have interest in this product after the discovery visit?
- What markets were you most successful in?
- Identify resources and timeline to close



Thank you for your attention.

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