Light is entertainment

High performance opto components

Light is OSRAM

OSRAM
Opto Semiconductors

Introducing state-of-the-art technology, brilliant performance and a highly versatile program, OSRAM Opto Semiconductors light and sensing components for infotainment and entertainment applications present our customers with new inspiring opportunities.

Content

Preparing the stage for a new world of applications

OSRAM Opto Semiconductors' opto components are perfect for innovative entertainment and information solutions, inspiring designers and manufacturers to create new spectacular visions and exciting applications that will move people all over the world.

OSRAM Opto Semiconductors delivers a broad portfolio of state-of-the-art LEDs, laser diodes and infrared components, ready to use, designed for your special needs and requirements. All our products offer superior color consistency throughout the whole viewing angle and fully comply with, and in most cases surpass the strictest international standards.

Thanks to our extremely reliable 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.

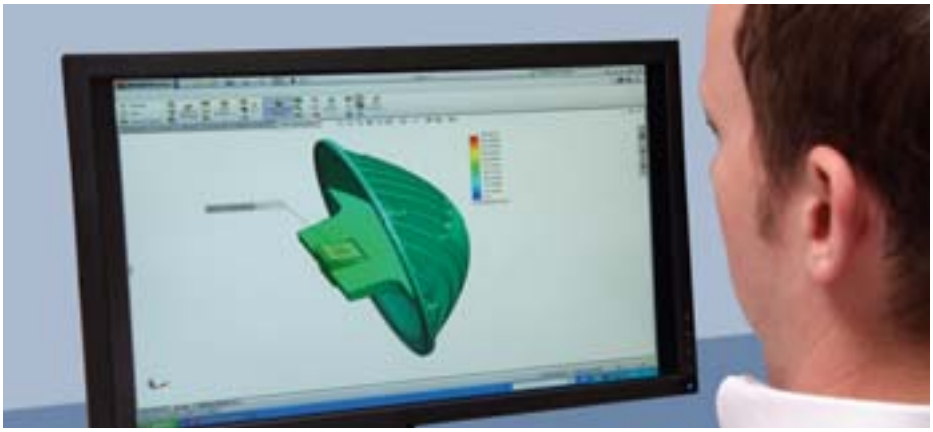
Whether stage lighting, show laser, moving heads, see-through or video walls, gaming, gesture recognition, or eyetracking, billboards or touch-screens – whether high contrast or high efficiency, indoor or outdoor environment, small size or large scale, OSRAM Opto Semiconductors has the perfect solution for the most diversified entertainment, home entertainment and infotainment applications.

Your PASS to the future

With PASS, you'll get access to OSRAM Opto Semiconductors' application engineering expertise and lab services through a lean, affordable, á la carte program. PASS is an open, collaborative design and testing process that keeps you involved, allowing flexibility along the way.

Make it good, make it fast and make it easy – with PASS you'll access our Premium Application Support Services through a dedicated web page, where you can request services through a dynamic menu featuring simulation, prototype, LED data and system metrology services. Our qualification process determines if your business is a good fit for PASS services. And, if we can't provide everything you need, we'll help you to find the right solution through our LED Light for you program, the premier lighting solutions network of certified industry partners.

pass
Premium Application Support Services
Solid State Lighting



Simulation

Simulate your system to study illumination and thermal performance before hardware is realized.

- Simulate your optical system
- Model your illumination environment
- Simulate your thermal system
- Optics and thermal design support

Prototype

Choose from a list of standard printed circuit boards (PCBs), specify a custom PCB or work with engineering to realize an entire system mockup for proof of concept.

- Standard PCBs
- Custom PCBs
- System mockups

LED data

LED characterization and lifetime estimation based on your specified parts and drive current.

- LED measurements
- Lumen maintenance estimation
- LM-80/TM-21 reports

System metrology

Get photometric and thermal measurements for your solution.

- Integrating sphere measurement
- Goniophotometer measurement
- Thermal spot & area measurement
- System luminance

LEDs and laser diodes for concert halls

Our LEDs and laser diodes offer new opportunities and freedom of design for all kinds of stage lighting, show laser, moving head, see-through and video wall applications. With perfect products in every performance class from OSRAM Opto Semiconductors, the stage no longer has to be simply a means to an end, but can evolve into a spectacle of its own. Important requirements for concert hall illumination and imaging applications are individual addressability of each color, high contrast, high fill factor and high luminance.

MULTILED® Black and Black Surface

Individual addressability of each color, high contrast thanks to small reflector size, premium contrast thanks to completely black housing and premium intensity thanks to classic black surface.

DISPLIX® Black and Blackprint

Individual addressability of each color, improved fill factor thanks to optimized reflector surface, premium contrast thanks to completely black housing and premium intensity thanks to classic black surface.

Multi CERAMOS®

Higher power handling capability for creative imaging applications, crossover between imaging and lighting.

OSRAM OSTAR® Stage

With their much flatter profile the new OSRAM OSTAR® Stage LED provide the basis for compact spotlights with an extremely narrow beam and high luminance. These LEDs are ideal for moveable stage lights, known as moving heads, which provide powerful light beams for rock concerts and other impressive lighting arrangements.

Visible laser

Their high beam quality, high modulation capability and small form factor make OSRAM blue and green diode lasers ideal as light sources for compact and highly efficient laser systems for stage lighting.

MULTILED® Black and Black Surface

	LRTB GVTG	LRTB GFUG
Wavelength (nm; typ.)	R: 625 T: 528 B: 470	R: 625 T: 528 B: 470
Intensity in mcd @20 mA (typ.)	R: 650 T: 1700 B: 300	R: 400 T: 750 B: 200
LED package size in mm	3.3 × 3.4 × 1.8	3.3 × 3.4 × 1.8
Viewing angle	120°	120°
Package type	white PLCC-6 package, black surface	black PLCC-6 package

DISPLIX® Black and Blackprint

	Black LRTB GRUG	Blackprint LRTB GRTG
Wavelength (nm; typ.)	R: 625 T: 528 B: 470	R: 625 T: 528 B: 470
Intensity in mcd @20 mA (typ.)	R: 350 T: 900 B: 180	R: 850 T: 1850 B: 350
LED package size in mm	4.5 × 4.5 × 2.1	4.5 × 4.5 × 2.1
Viewing angle	120°	120°
Package type	black PLCC-6 package	white PLCC-6 package, black surface

Multi CERAMOS®

	LRTB C9TP
Wavelength (nm; typ.)	R: 625 T: 528 B: 470
Intensity in mcd @20 mA (typ.)	R: 4000 T: 6800 B: 2000
LED package size in mm	4.5 × 3.1 × 0.95
Viewing angle	120°
Package type	ceramic package, black surface

OSRAM OSTAR® Stage

	LE RTDUW S2W
Wavelength/Color coordinates (nm; CxCy; typ.)	R: 625 T: 527 D: 453 UW: x = 0.31, y = 0.32
Flux in lm/mW @700 mA (typ.)	R: 71 T: 120 D: 700mW UW: 140
LED package size in mm	4.68 × 5.55 × 1.1
Viewing angle	120°
Package type	compact lightsource in SMT

Visible laser

@25 °C	PL 450B	PLTB450	PL 520	PL 515
Output power	80 mW	1.4 W	50 mW	30 mW
Emission wavelength typ.	450 nm	450 nm	520 nm	515 nm
Threshold current typ.	30 mA	0.2 A	45 mA	50 mA
Operating current typ.	100 mA	1.2 A	150 mA	120 mA
Wall plug efficiency	14 %	27 %	5–6 %	5–6 %
Package type	TO38 icut	TO56	TO38 icut	TO38 icut

LEDs for public areas

Main screens and perimeter displays in arenas and stadiums, larger LED TVs for example in VIP areas, Sports Bars, shopping malls or airports are essential applications for arena and stadium information and imaging with different package sizes and high picture quality for different viewing distances, for example in VIP or inner areas, being the most crucial factors for perfect implementation. In addition to individual addressability of each color, high contrast and high fill factor, here the LEDs also have to be weather-resistant when used outdoors.

MULTILED® Black and Black Surface
Individual addressability of each color, high contrast thanks to small reflector size, premium contrast thanks to completely black housing and premium intensity thanks to classic black surface.

DISPLIX® Black and Blackprint
Individual addressability of each color, improved fill factor thanks to optimized reflector surface, premium contrast thanks to completely black housing, premium intensity thanks to classic black surface and optimized outdoor stability.

DISPLIX® Oval
Matched radiation characteristics of all colours, optimized smooth radiation, premium contrast due to complete black package, superior degradation behavior, high intensity.

MULTILED® Black and Black Surface



	LRTB GVTG	LRTB GFUG	LRT GFTM
Wavelength (nm; typ.)	R: 625 T: 528 B: 470	R: 625 T: 528 B: 470	R: 625 T: 528 –
Intensity in mcd @20 mA (typ.)	R: 650 T: 1700 B: 300	R: 400 T: 750 B: 200	R: 350 at 10 mA T: 1200 at 20 mA
LED package size in mm	3.3 × 3.4 × 1.8	3.3 × 3.4 × 1.8	3.3 × 3.4 × 1.8
Viewing angle	120°	120°	120°
Package type	white PLCC-6 package, black surface	black PLCC-6 package	white PLCC-6 package, black surface

Multi CHIPLED®

Miniature package design for highest pixel density, perfect for applications with short viewing distances, e. g. VIP areas. Premium contrast thanks to black package design.

TOPLED® Black Surface

Classic TOPLED® package with black surface for best message and score readability.

Multi CHIPLED®


	LRTB R98G	LRTB R48G
Wavelength (nm; typ.)	R: 625 T: 528 B: 470	R: 623 T: 530 B: 471
Intensity in mcd @20 mA (typ.)	R: 280 T: 350 B: 70	R: 80 T: 180 B: 40
LED package size in mm	1.6 × 1.6 × 0.9	1.1 × 1.1 × 0.65
Viewing angle	120°	120°
Package type	black SMT package	SMT package, epoxy resin

TOPLED® Black Surface


	LY T68F	LR T68F
Wavelength (nm; typ.)	589	625
Intensity in mcd @20 mA (typ.)	700	700
LED package size in mm	3.5 × 2.8 × 1.7	3.5 × 2.8 × 1.7
Viewing angle	120°	120°
Package type	white PLCC-2 package, black surface	white PLCC-2 package, black surface

DISPLIX®






	Black LRTB GRUG	Blackprint LRTB GRTG	Oval KY HAVPA1.22 yellow	Oval KR HAVPA1.22 red	Oval KT HAVPA1.12 true green	Oval KB HAVPA1.12 blue
Wavelength (nm; typ.)	R: 625 T: 528 B: 470	R: 625 T: 528 B: 470	590	620	528	466
Intensity in mcd @20 mA (typ.)	R: 350 T: 900 B: 180	R: 850 T: 1850 B: 350	1000	1000	2600	600
LED package size in mm	4.5 × 4.5 × 2.1	4.5 × 4.5 × 2.1	2.7 × 2.1 × 1.5	2.7 × 2.1 × 1.5	2.7 × 2.1 × 1.5	2.7 × 2.1 × 1.5
Viewing angle	120°	120°	110° horizontal, 60° vertical	110° horizontal, 60° vertical	110° horizontal, 60° vertical	110° horizontal, 60° vertical
Package Type	black PLCC-6 package	white PLCC-6 package, black surface	SMD epoxy package with silicone lens	SMD epoxy package with silicone lens	SMD epoxy package with silicone lens	SMD epoxy package with silicone lens


AIN T
APRIL 5TH
SONY
STARBUCKS
COFFEE

LEDs for billboards

As LEDs in billboard applications are exposed to very different weather conditions. Their outdoor stability and long lifetime in particular are of fundamental importance. Using appropriate products from OSRAM Opto Semiconductors, you can count on both strengths, along with individual addressability of each color and high fill factor.

DISPLIX® Black and Blackprint
Individual addressability of each color, improved fill factor thanks to optimized reflector surface, premium contrast thanks to completely black housing, premium intensity thanks to classic black surface and optimized outdoor stability.

DISPLIX® Oval
Matched radiation characteristics of all colours, optimized smooth radiation, premium contrast due to complete black package, superior degradation behavior, high intensity.

DISPLIX®

	Black LRTB GRUG	Blackprint LRTB GRTG	Oval KY HAVPA1.22 yellow	Oval KR HAVPA1.22 red	Oval KT HAVPA1.12 true green	Oval KB HAVPA1.12 blue
Wavelength (nm; typ.)	R: 625 T: 528 B: 470	R: 625 T: 528 B: 470	590	620	528	466
Intensity in mcd @20 mA (typ.)	R: 350 T: 900 B: 180	R: 850 T: 1850 B: 350	1000	1000	2600	600
LED package size in mm	4.5 × 4.5 × 2.1	4.5 × 4.5 × 2.1	2.7 × 2.1 × 1.5	2.7 × 2.1 × 1.5	2.7 × 2.1 × 1.5	2.7 × 2.1 × 1.5
Viewing angle	120°	120°	110° horizontal, 60° vertical	110° horizontal, 60° vertical	110° horizontal, 60° vertical	110° horizontal, 60° vertical
Package Type	black PLCC-6 package	white PLCC-6 package, black surface	SMD epoxy package with silicone lens	SMD epoxy package with silicone lens	SMD epoxy package with silicone lens	SMD epoxy package with silicone lens

Infrared emitters and detectors for touch screens

Touch screens are well established in many consumer applications, which are based on different technologies e.g.: “resistive”, “capacitive” and “projected capacitive”. Naturally OSRAM Opto Semiconductors’ focus is on “optical” touch applications, especially as the advantages of an optical system are more than evident. With larger screens the cost scales up only with the outline (a + b), whereas most other systems scale up with the area (a × b). This is true for example for capacitive systems. And, as no additional layer inside the glass is needed, the result is a clearer display and hence a clearer picture. Also optical systems have the advantage to be “used” not only with bare fingers, but also with any stylus, glove, brush, etc. Currently there are three main types of optical touch technology on the market and OSRAM Opto Semiconductors offers you the right infrared components for each of them.

Matrix type touch
IR emitters and detectors are placed opposite of each other in the x and y planes to create a grid. The IR light “flows” above the surface of the display. Products: SFH 4655, SFH 3605, SFH 4045N, SFH 3015 FA

Camera type touch
An IRED and a camera are mounted in each of the upper corners so only a few higher power components are needed. The IR light “flows” above the surface of the display. For larger screens scaling is achieved with higher power devices. Products: SFH 4050, SFH 4655, SFH 4451

FTIR
(frustrated total internal reflection)
The IR light “flows” inside the glass of the display so a bezel free design can be achieved. Products: SFH 4053, SFH 3010

Emitters





	SFH 4655	SFH 4451	SFH 4045N	SFH 4053	SFH 4050
Package type	MIDLED® Sidelooker	Mini MIDLED®	CHIPLED® Sidelooker	CHIPLED®	SMARTLED®
Package size in mm	3.1 × 2.25 × 1.6	2.3 × 1.95 × 0.9	3.05 × 2.65 × 1.2	1 × 0.5 × 0.45	1.7 × 0.8 × 0.65
Wavelength (nm; typ.)	850	850	850	850	850
Typ. radiant intensitiy, Ie	80 mW/sr @100 mA	70 mW/sr @100 mA	90 mW/sr @70 mA	6 mW/sr @70 mA	7 mW/sr @100 mA
Total radiant flux, Φe	60 mW @100 mA	55 mW @100 mA	40 mW @70 mA	40 mW @70 mA	50 mW @100 mA
Viewing angle	±15°	±17°	±9°	±70°	±80°

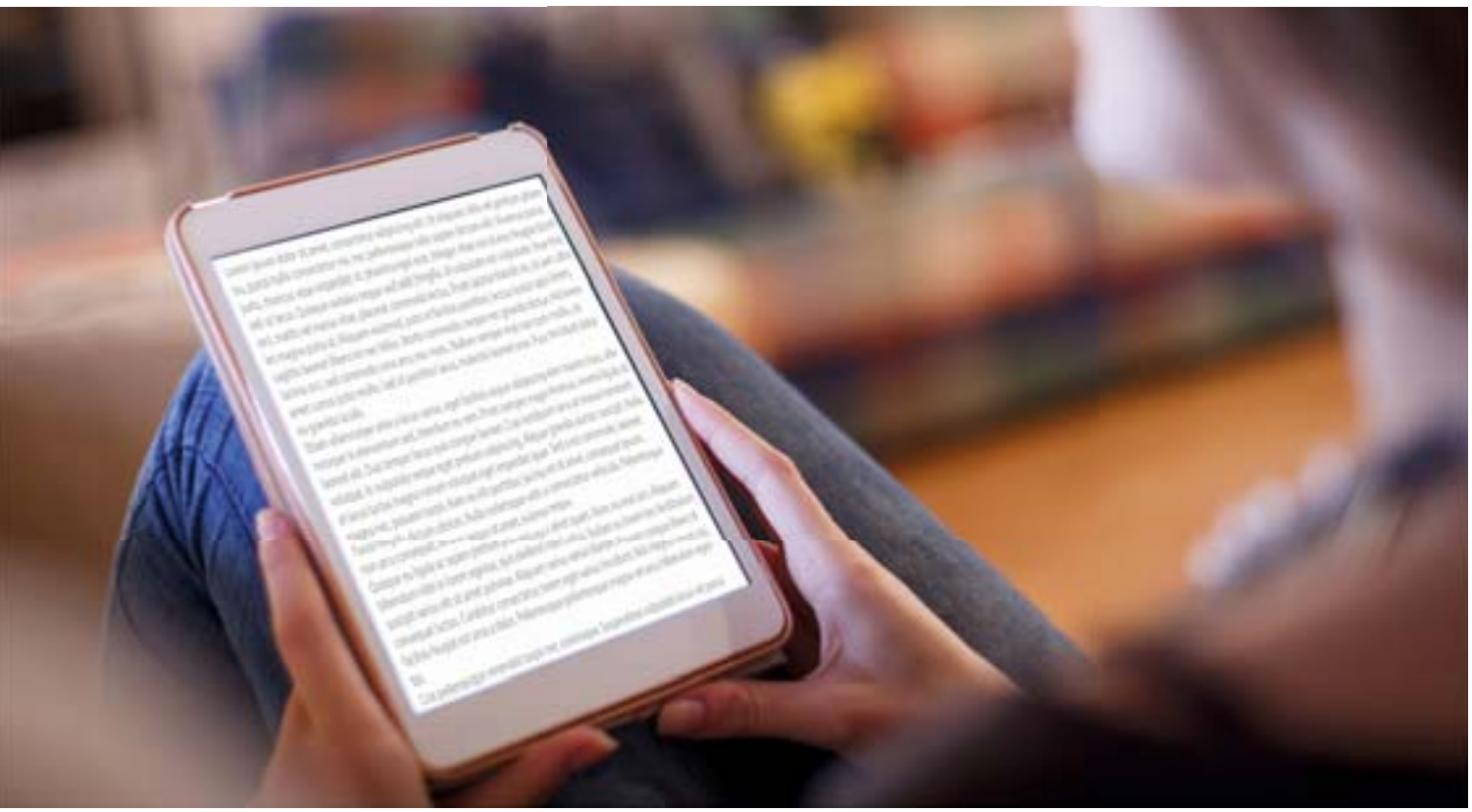
Detectors



	SFH 3605	SFH 3015 FA	SFH 3010
Package type	MIDLED® Sidelooker	CHIPLED® Sidelooker	SMARTLED®
Package size in mm	3.1 × 2.25 × 1.6	3.2 × 2.51 × 1.6	1.7 × 0.8 × 0.65
Wavelength of max. sensitivity (nm; typ.)	990	870	860
Photocurrent ipce	100–500 µA	100–800 µA	> 25 µA
Viewing angle	±20°	±13°	±80°

IREDs and laser for gaming and gesture recognition

Gesture recognition, for example for doctors during surgery, based on time of flight and light grid projection technologies, are some of the most up to date and imminent applications. Time of flight systems use infrared laser diodes or high power infrared emitters as a source; light grid projection systems, such as “Kinect”, need an infrared laser source. Providing solutions for all these technologies, OSRAM Opto Semiconductors is open for discussions to find out your specific demands and develop customized products. The most important requirements here are lifetime and efficiency, both of which we are able to meet perfectly with our ThinFilm technology chips and 30 years of experience in high power laser products.



Gesture recognition for short distances, such as paging forward while reading a book on your handheld device has one big advantage: You don´t have to touch your display all the time. The result is a sparkling clean screen from the first page until the last.

The realisation is possible due to the latest ThinFilm based IR emitters from OSRAM Opto Semiconductors combined with the Sensor SFH 7770 E6 which is capable to drive up to 3 of them.

IREDs for Gaming and Gesture Recognition

	SFH 4715S	SFH 4235
Package type	IR OSLON® Black Series	IR Platinum DRAGON®
Package size in mm	3.85 × 3.85 × 2.29	11 × 6 × 1.8
Wavelength (nm; typ.)	850	850
Typ. radiant intensitiy, Ie	440 mW/sr @1 A	320 mW/sr @1 A
Total radiant flux, Φe	1030 mW @1 A	950 mW @1 A
Viewing angle	±45°	±60°

Laser for Gaming and Gesture Recognition

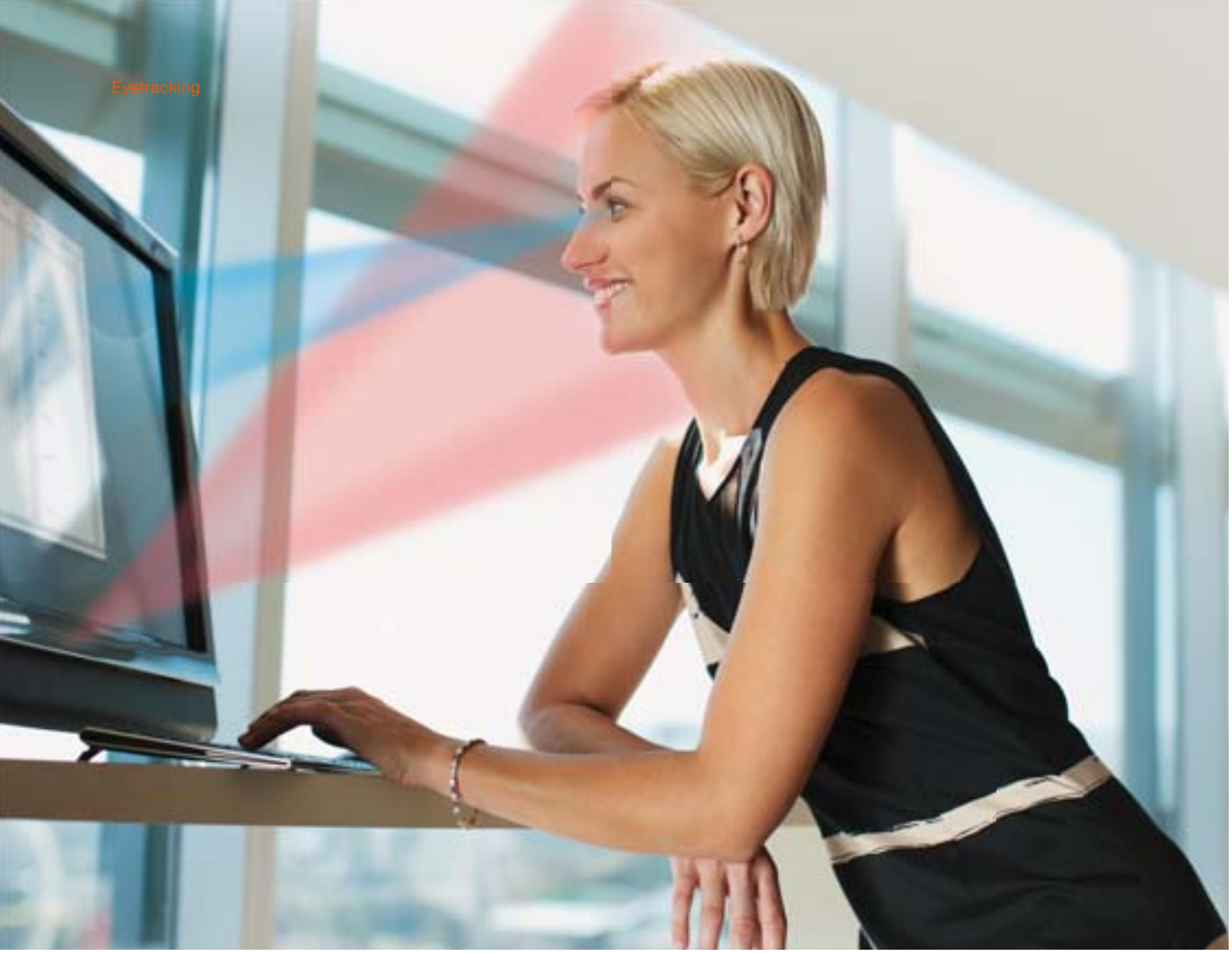
	SPL LL90 3	SPL PL90 3
Type	Pulse laser	Pulse Laser
Package size in mm	4.9 × 2.4 × 12.2	5.7 × 5.7 × 4.6
Wavelength (nm; typ.)	905	905
Opt. peak power	70 W	75 W
Beam divergence	30° × 15°	25° × 9°

IREDs for short range Gesture Recognition

	SFH 4451	SFH 4059S	SFH 4710
Package type	Mini MIDLED®	CHIPLED® with lens	IR OSLON® Compact
Package size in mm	2.3 × 1.95 × 0.9	3.2 × 1.6 × 1.85	1.6 × 1.2 × 0.8
Wavelength (nm; typ.)	850	850	850
Typ. radiant intensitiy, Ie	70 mW/sr @100 mA	130 mW/sr @70 mA	63 mW/sr @500 mA
Total radiant flux, Φe	55 mW @100 mA	70 mW @70 mA	270 mW @500 mA
Viewing angle	+/- 17°	±15°	±65°

Sensor for Gaming and Gesture Recognition

	SFH 7770 E6
Package type	COB
Package size in mm	2.8 × 2.8 × 0.9
Detection range	up to 200 mm
Driving current	5 – 200 mA
Wavelength of max. sensitivity	850 nm
Driver capability	up to 3 external LEDs/IREDs



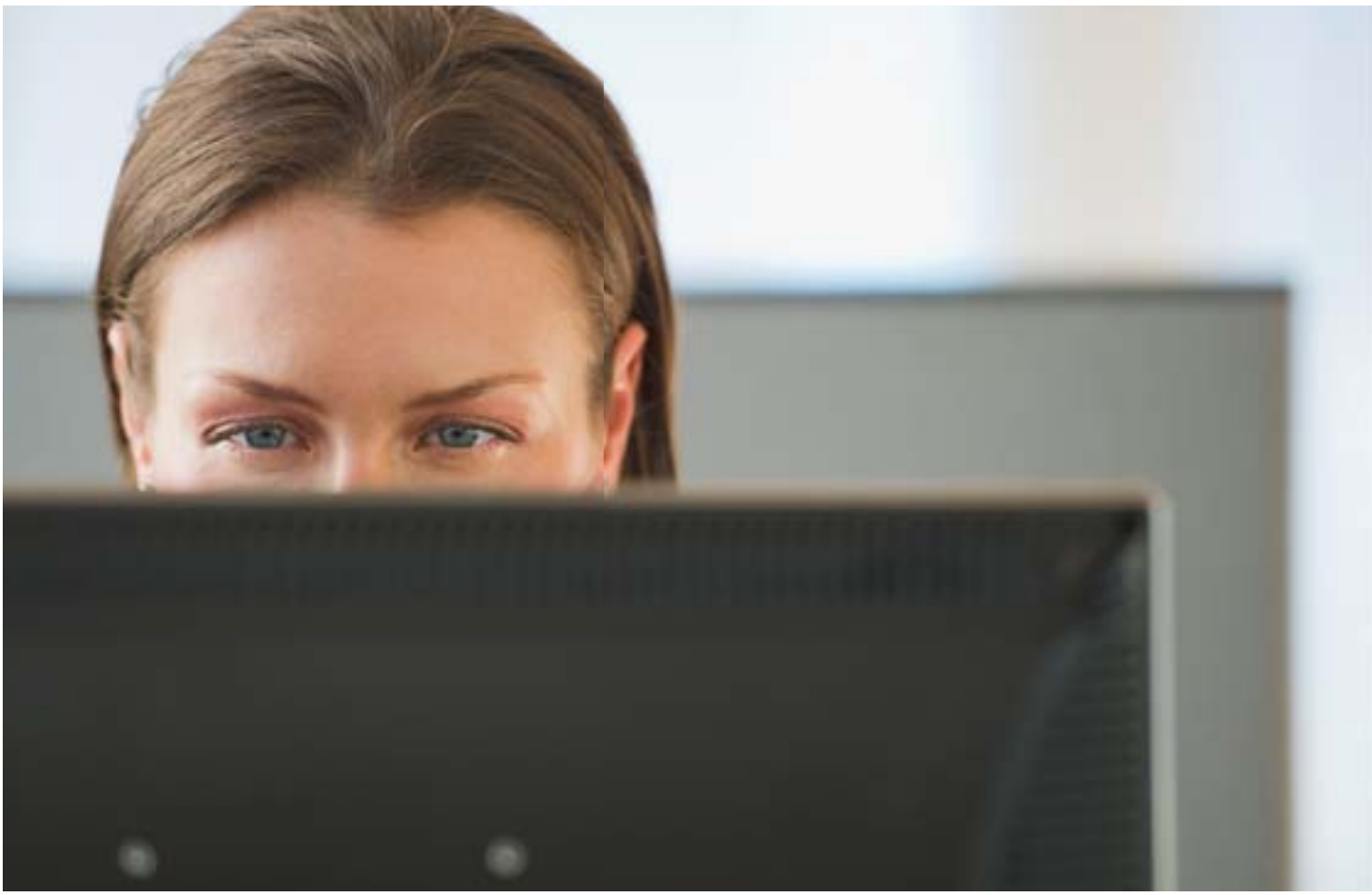
Infrared emitters for eyetracking

Eyetracking is a new and promising feature for consumer applications. It is already being used in niche markets for instance to enable handicapped people to work with a computer. Another current application is to track the eyes of a single viewer to develop glass free 3D laptops, or to control a TV with the eyes.

Many more applications will be realizable in the future, such as interactive point of sale displays or laptop screens, automatically switching to special offers or ads, based on where the viewer is looking – or special study and research devices able to examine which points of a picture are most attractive by capturing what most people focus on at first or for the longest time.

Emitters

	SFH 4259S	SFH 4259	SFH 4650	SFH 4451	SFH 4059S	SFH 4056
Package type	Power TOPLED® with lens	Power TOPLED® with lens	MIDLED® Toplooker	Mini MIDLED®	CHIPLED® with lens	CHIPLED® with lens
Package size in mm	3.5 × 2.8 × 3.5	3.5 × 2.8 × 3.5	3.1 × 2.25 × 1.6	2.3 × 1.95 × 0.9	3.2 × 1.6 × 1.85	3.2 × 1.6 × 1
Wavelength (nm; typ.)	850	850	850	850	850	850
Typ. radiant intensitiy, Ie	60 mW/sr @70 mA	55 mW/sr @100 mA	80 mW/sr @100 mA	70 mW/sr @100 mA	95 mW/sr @50 mA	35 mW/sr @70 mA
Total radiant flux, Φe	80 mW @70 mA	70 mW @100 mA	60 mW @100 mA	55 mW @100 mA	50 mW @50 mA	40 mW @70 mA
Viewing angle	±25°	±25°	±15°	±17°	±15°	±22°



Choose perfection – easily

VIS ✓ recommendation

	MULTILED® Black Surface LRTB GVTG	MULTILED® Black LRTB GFUG	MULTILED® Black Surface LRT GFTM	TOPLED® Black Surface LY T68F	TOPLED® Black Surface LR T68F	OSRAM OSTAR® Stage LE RTDUW S2W	DISPLIX® Blackprint LRTB GRTG	DISPLIX® Black LRTB GRUG	DISPLIX® Oval KY HAVPA1.22 KR HAVPA1.22 KT HAVPA1.12 KB HAVPA1.12	Multi CHIPLED® LRTB R98G	Multi CHIPLED® LRTB R48G	Multi CERAMOS® LRTB C9TP
Concert halls												
Moving heads						✓						
Seethrough	✓	✓					✓	✓	✓			✓
Video walls	✓	✓										
Public areas						✓						
Main screen	✓	✓					✓	✓	✓			
Perimeter display	✓						✓	✓	✓	✓		
LED TV												
Scoreboard			✓	✓	✓							
Billboards							✓	✓	✓			
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IR ✓ recommendation

	High Power Device or Laser	Power TOPLED® family	MIDLED®	Mini MIDLED®	CHIPLED®	OSLON® Compact	OSLON® Black Series	Platinum DRAGON®	Miniature Emitter	Miniature Detector
Applications										
Optical touch screen Matrix type			✓						✓	✓
Optical touch screen Camera type			✓	✓					✓	
Optical touch screen FTIR type									✓	✓
Gesture recognition	✓		✓				✓	✓		
Short range Gesture recognition			✓		✓	✓				
Eyetracking		✓	✓	✓						
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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
Our complete product catalog with all available products

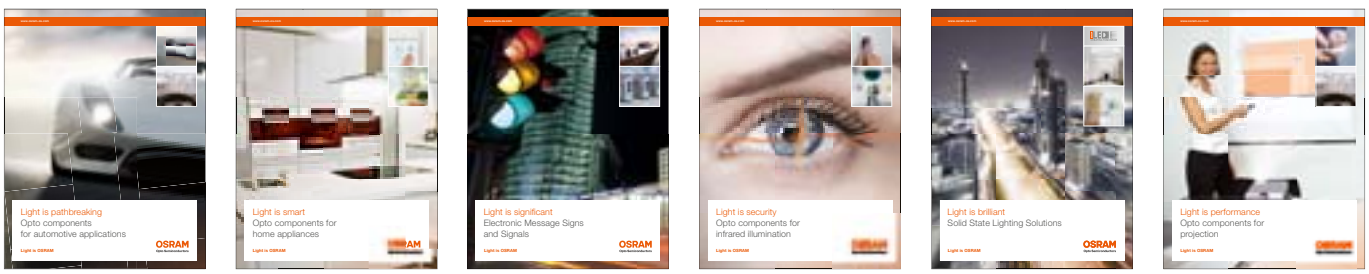
www.osram-os.com/solid-state-lighting
Products and solutions for general lighting/solid state lighting

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
The network for LED lighting technology – powered by OSRAM

LED Light for you
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.



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 products 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.

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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