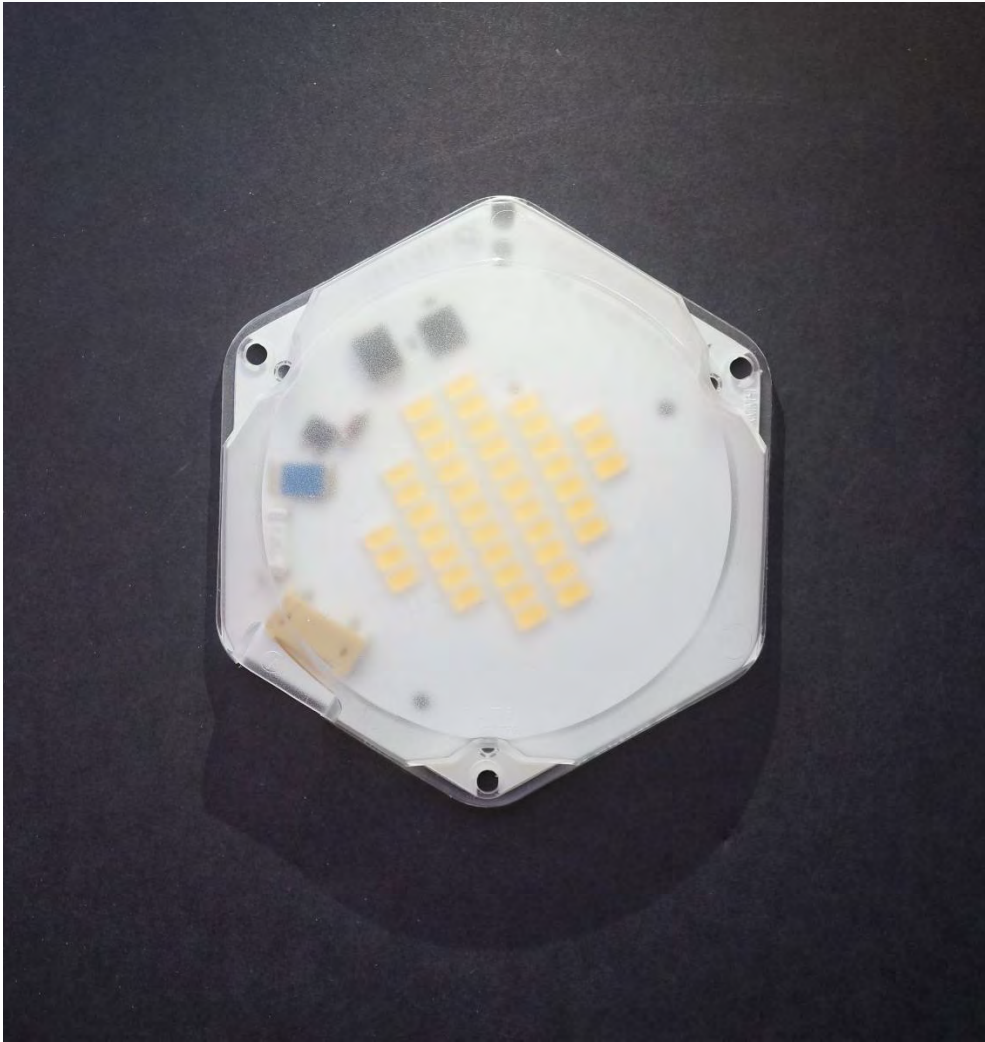




SVEA AC



SVEA AC 12W

Available
with
CRI 90

A qualified solution to replace and exceed CFL and CDM solutions in Downlights or ambient luminaires.

No driver is required!

optoGa



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Designed for retail stores, offices, hospitals and other places where the need is to create a good atmosphere for people to dwell in whether they take care of business or socialize.

These LED modules or Light engines for Downlights and ambient luminaires are designed with internal drivers and are therefore very easy to connect into applications with different dimming scenarios. The light output efficiency is the highest available on the market for these types of applications. Our latest design feature TOD (thin optical device) is integrated in the LED module for a bright and consistent light experience.



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Introduction

The LED module and light engine is named Svea and it is a design for light fittings and luminaires aiming for various areas. It has been designed in order to meet the demands on high performance optical solutions in both light emitting and in colour rendering. Mechanically it is constructed with our package design Svea (~90 mm) that has the same footprint as the others in the family both for external drivers as well as built-in drivers for 110/230VAC.

Svea package

The same package is used for Downlight, Spotlight, Tasklight and Medical light fittings etc. The solution is developed to make it easy for the designers and engineers to choose from low to high power, from AC to DC and choose between a variety of lenses in the same luminaire or in similar design. In the design concept there are standard dimmers with the same snap-in connector (that fits the whole Optodrive™ concept) as well as several heat sink designs with worldwide distribution.

AC design

All driver and dimmer components are built-in and operate at 110, 230 or 240 VAC depending on the version with efficiency above 90%. It has a standard plug-in connector that fits all the different AC designs.

Integrated driver

The advantage with an AC driver that has been built-in is:

- Lifetime – Connected to a heat sink and therefore has a controlled environment
- Dimming – Dimming via standard trailing edge dimmers
- Small – No extra boxes
- Simple – Easily adapted into to the production line

Light output

Colour stability is important to ensure that the installation has a uniform light output. Parameters such as binning, lifetime and thermal control are vital for good results.



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Technical attributes

- Energy saving and a very high lumen output
- High Colour Rendering
- Uniform Colour temperature
- Controlled lifetime
- Simple integration
- High Power Factor
- Low Total Harmonic Distortion



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Short form Characteristics

Mechanical	Ra 80	Ra 90
Board dimensions:	Hexagonal 83 / 95.7 mm diameter	
Wire Connector:	CviLux CP04-03S0 or JST BH	
Assembly holes:	3 x 3.42 mm	
Lens diameter		
Lens height:	See specific drawing	

Electrical	Ra 80	Ra 90
Number of LED's:	42	
Power supply:		
LED current:		
Input Voltage:	230VAC	
Power:	12W +/-10% ea.	
Input Current:	55 mA +/-10% ea.	
Module current:		
Power factor:	PFC 0.98	
Total Harmonic Distortion:	< 15% THD	
Over temp protection:	150°C	
Efficiency		

Light	Ra 80	Ra 90
CCT:	2700K, 3000K, 4000K	
CRI:	>80 Ra	>90 Ra
Light output:	1100 lm	900 lm
SDCM (Mac Adam)	4	4

Environmental operation conditions:	Ra 80	Ra 90
Temperature range:	From -40° to +65°	
Relative Humidity:		
Ambient air pressure:		





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Dimming

Use a trailing edge dimmer (TRIAC) and make sure that the dimmer has the capacity to manage the low load of a LEDs power consumption. In some cases the dimmer requires more than one LED module connected in order to work as expected due to the minimum load required for the dimmer to function properly.



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Wiring diagram:

See separate wiring diagram documentation.

Article number	Article name	Length
102877	Wire AC 100	100 mm*
103527	Wire AC 220	220 mm*
101913	Wire AC 450	450 mm
103222	Wire AC 600	600 mm*

*Available on request



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Article number structure

Optodrive™ Article Number consists of two parts:

- 1st part: Module Number
- 2nd part: Bin Code or Rank

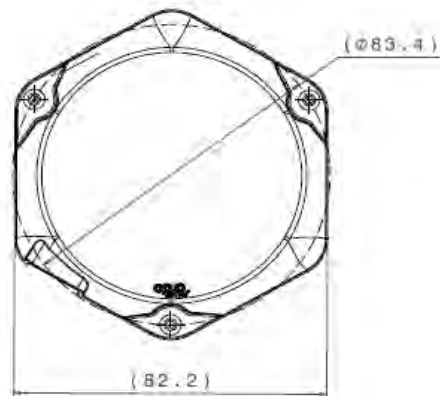
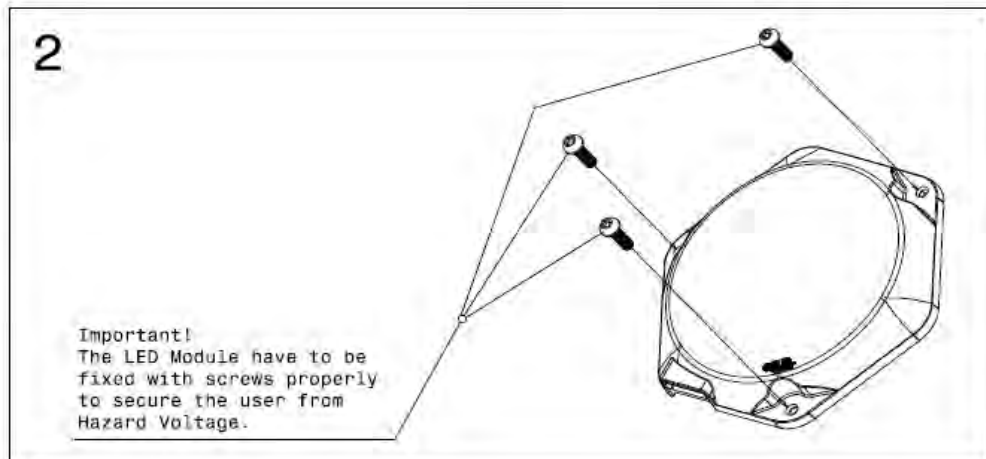
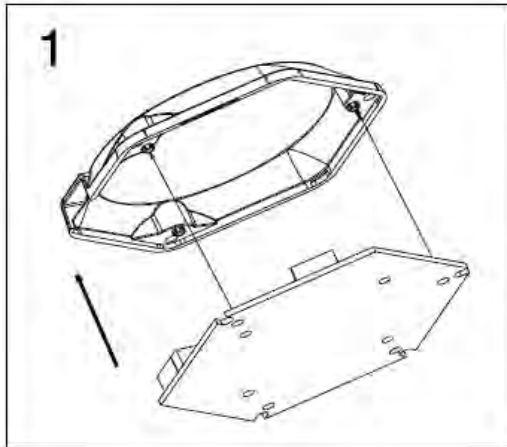
Article number: Svea AC.12.230.42.xyy-130	
Svea:	Module name
AC:	No driver required just AC
P:	Power (Watt)
V:	Voltage (230VAC)
42:	Amount of LEDs
x:	CRI
yy:	Kelvin 27 =2700K, 30 =3000K, 40 =4000K
NN:	Viewing angle code. 130°

Article name	Module name	P. supply	Power	Voltage	LED	CRI	CCT	Lens	Lumen min
Svea AC.12.230.42.827-130	Svea	AC	12	230	42	>80	2700	130°	1100lm
Svea AC.12.230.42.830-130	Svea	AC	12	230	42	>80	3000	130°	1100lm
Svea AC.12.230.42.840-130	Svea	AC	12	230	42	>80	4000	130°	1100lm

Article name	Module name	P. supply	Power	Voltage	LED	CRI	CCT	Lens	Lumen min
Svea AC.12.230.42.927-130	Svea	AC	12	230	42	>90	2700	130°	900lm
Svea AC.12.230.42.930-130	Svea	AC	12	230	42	>90	3000	130°	900lm
Svea AC.12.230.42.940-130	Svea	AC	12	230	42	>90	4000	130°	900lm



Dimensions LED Module:





Parameters of the Lens system

The lens system is mounted and fixated onto the PCB with a double press-fit. The light parameters are according to the following:

Version	Viewing Angle	FWHM Angle
Svea TOD	85°	±40°
Svea Cover	130°	±65°

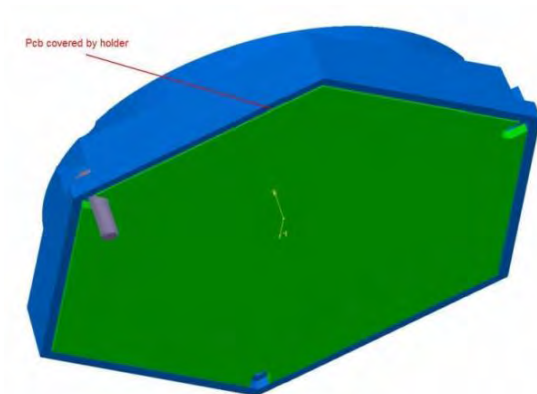
Versions that are under development

Thermal information

The thermal area (green) should be properly connected to an even and fine surface of a heat sink. Without this arrangement the unit will be overheated and will not be able to survive.

Maximum Temperature

Secure the temperature in your application not to exceed 65°C. Read more in the section “Measurement control”.





Parameters of the light output

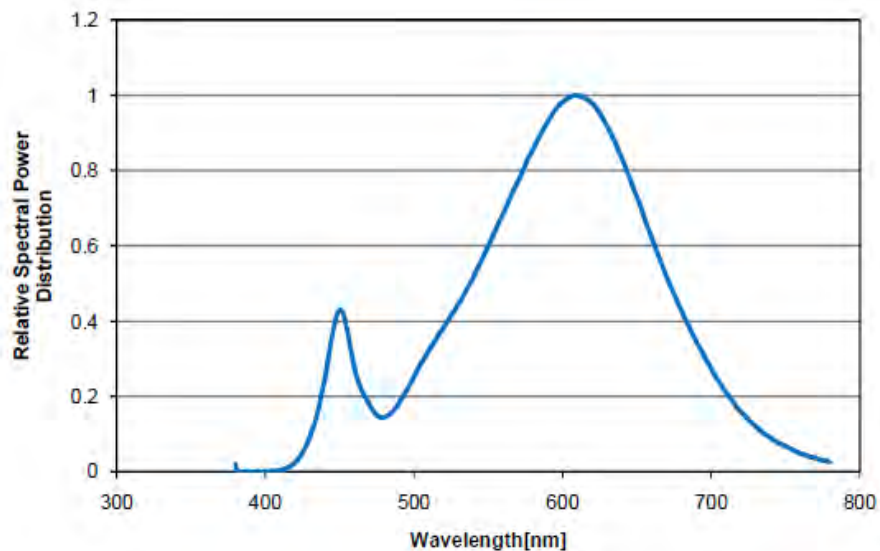
Warm White

Electro-Optical characteristics LED module at $I_F=55mA$, 230VAC, $T_A=25^\circ C$

Parameter	Symbol	Value			Unit
		Min	Typ	Max	
Luminous Flux	Φ_V	1100			lm
Correlated Colour Temperature	27*(2)	CCT	2700		K
	30*(2)	CCT	3000		K
	40*(2)	CCT	4000		K
CRI	R_a	80	84	-	-
Power	P_o	10.8	12	13.2	W

(2)See detailed information in chapter "Binning structure graphical representation"

Colour Spectrum Warm White

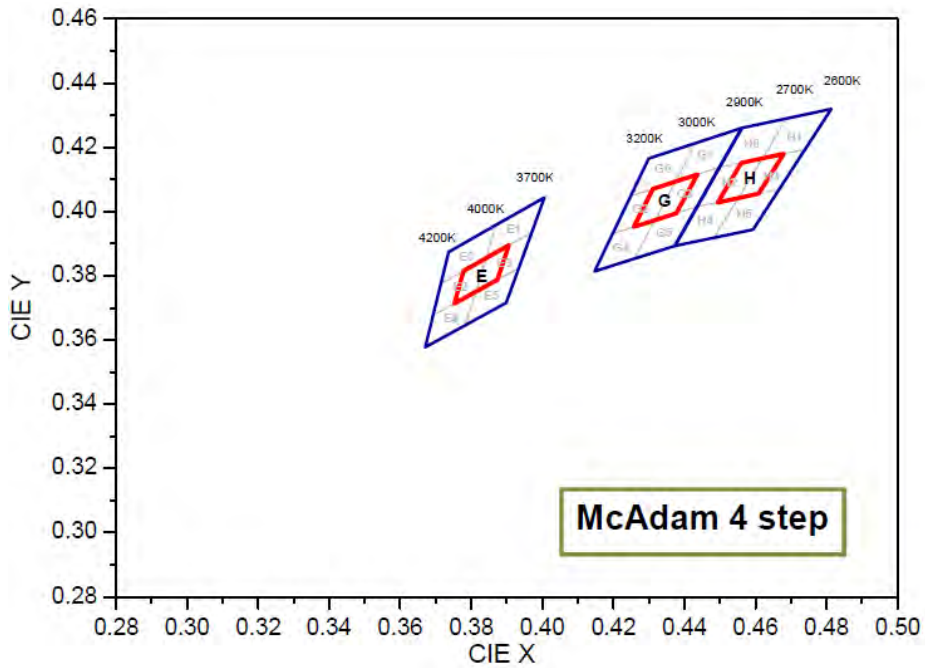




Binning structure graphical representation

Binning structure graphical representation IEC 1976

Note the availability and representation on the IEC 1976 graph shown below.



* Note that the Blue boxes represent Energy Star Rank

Short form in diagram	Colour Code	CCT
H	27	2700K
G	30	3000K
E	40	4000K



Binning and Labelling

Colour Rendering Index (CRI)

CRI code	CRI (min) Ra
8	80
9	90

Short form letters for CCT (K)

Colour Code	CCT
27	2700K
30	3000K
40	4000K

Luminous Flux Bins pro LED (lm)

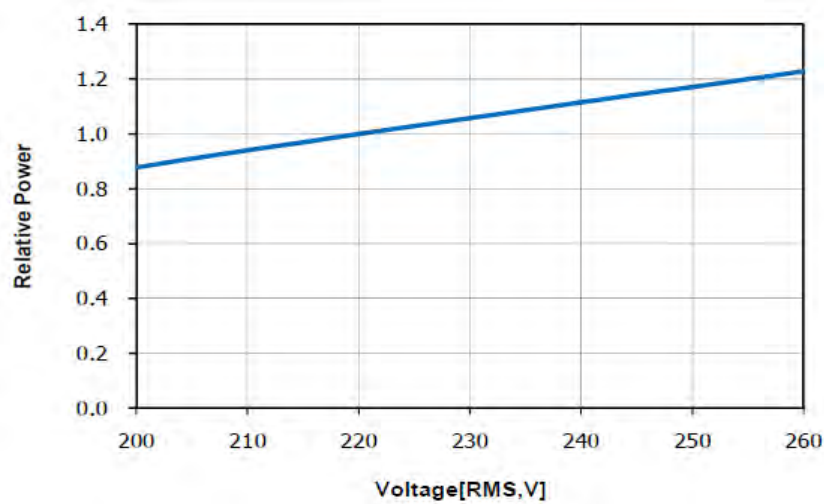
Intensity Code	Lumen output (lm) Internal use
3	>1100
4	>1100
5	>1100
6	>1100
7	>1100
8	>1100



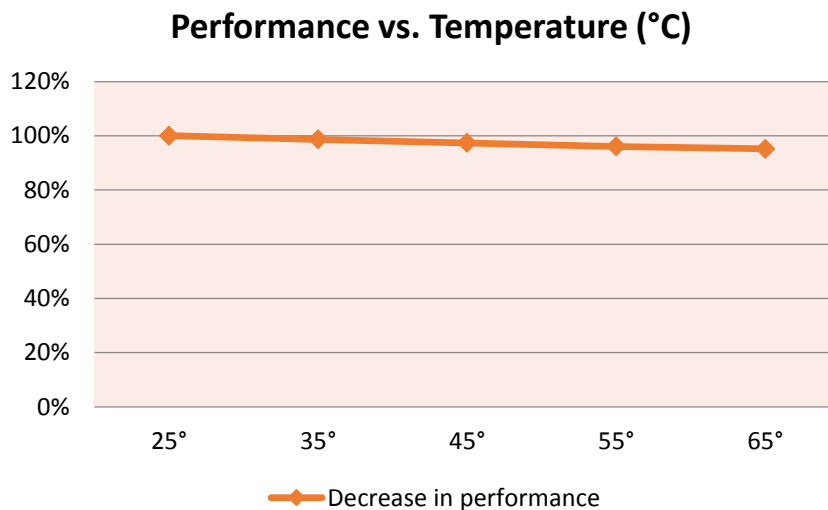
Electro Optical data

Current vs. Voltage

With increasing voltage the light output and the heat increases.



Temperature Characteristics



Consider the thermal capabilities of where the LED module is to be fitted. The temperature is an important factor for light output as well as for long time light output degradation.



Measurement Control

The recommended maximum value is 65°C on Tc or measuring point. If this value is exceeded we cannot guarantee the function and the lifetime of the product. The purpose of the measurement is to control the Junction (Tj) temperature of the LED and also in order to control the performance on the complete setup. By measuring the junction temperature (Tj) the average lifetime of the product is known.

The thermal connection is measured in temperature vs. Power.

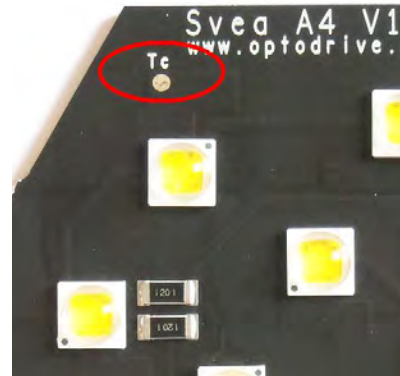
Measurement points

When the measurement takes place you verify that the temperature on the marked measurement points is satisfying. Pending on the result you know what lifetime to expect from the module.

Measurement points

- Tc

This step will be implemented after the heat sink has been connected properly!





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Lifetime (Calculated)

The lifetime is calculated at the maximum temperature recommended at the T_c (measuring point). It is important not to exceed this recommendation; you find more information under the chapter “measurement control”.

T _c (Surface temperature)	Time for 70% light-output
25°C	55000Hr
65°C	40000Hr



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Verification of Conformity

All our modules are controled and verified by Intertek and this is under process for IEC 62031 aprovel.



Precautions for use

- This device should not be used in any type of fluids such as water, oil, organic solvent etc.
- When cleaning is required, use only water together with mild soap on the outside of the lens. Cleaning inside of the LED module is strictly prohibited.
- The appearance and specifications of the product may be modified for improvement without notice.
- Long time exposure of sunlight or occasional UV exposure will cause lens discoloration.
- Opening of the LED module is prohibited due to risk of EMC, dust, grease and other exposures that will damage it.
- The LED Module should always be mounted to a proper heat sink before it's connected with its proper leads.

Handling in regards to static electricity

- The Optodrive products have integrated circuits (IC) on board that may be damaged if exposed to static electricity. Please handle the products only while using equipment that prevents static electricity. Do not handle them without having ESD protection.
- The Optodrive products are not be installed into the end product without proper ESD protection.

Storage before use

- Use only properly rated test equipment and tools for the rated voltage and current of the product being tested.
- It is strongly suggested to wear rubber insulated gloves and rubber bottom shoes while handling the product.
- Do not wear any conductive items (such as jewelry) which could accidentally contact electric circuits.
- Faults, lightning, or switching transients can cause voltage surges in excess of the normal ratings.
- Internal component failure can cause excessive voltages.
- Stored or residual electricity in long wire could be hazardous.



ROHS Compliant

All our LED modules meet the Restrictions of Hazardous Substances (RoHS)!

There has been a growing consensus that Lead Free Systems should increase for the safety of our environment. It is a very serious problem that lead and other harmful materials are being used in commercial and industrial products, causing more and more environmental problems. This has led to regulations such as RoHS (Restriction of the use of certain Hazardous Substances) from the EU and the Japan Ministry of Trade and Industry (MITI). All LED module makers providing products to these countries should comply with these restrictions. In order to meet the RoHS regulation, Optoga is strictly implementing a ban on lead and other hazardous materials in its products. This is in compliance with our responsibilities as good corporate citizens.

Design for Environment:

According to the EU-directive 2002/95/EC (RoHS) the following substances must not be used in this product

- Lead (Pb) alloys
- Mercury (Hg)
- Cadmium (Cd)
- Chromium (6+) compounds



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Do you want to know more about the benefits of OptoDrive™ LED?

Read more about OptoDrive™ at www.optodrive.se. You can also register your interest via info@optoga.se.

Obviously, you can also call us on +46 (0)589 490 950.

Optoga AB

Founded in November 2004, Optoga has over 30 years of experience in electronic components. The company develops and supplies LEDs, LED drivers, LED modules and software solutions for the lighting industry, vehicle manufacturers and electronics companies.

By developing products with integrated LED and driver electronics, Optoga has taken the initiative to replace strip lights, incandescent and halogen bulbs with LED-based light sources.

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