

LINEARlight FLEX SIDELED

Flexible LED Strip



The OSRAM SYLVANIA LINEARlight FLEX provides new dimensions for innovative lighting.

LINEARlight FLEX modules offer exciting new possibilities for general illumination applications. They provide an alternative choice for linear applications such as cove lighting, refrigeration cases and pathway marking.

LINEARlight FLEX modules are ideal for edge lighting transparent and diffuse materials. They provide an optimal solution for precise backlighting of complex contours. They can also be used for lifesaving/rescue sign lights and commercial signs and for marking contours like escape routes, borders and stairs. They are mounted on self-adhesive tape and can be conveniently field-cut.

OPTOTRONIC® power supplies from OSRAM SYLVANIA are specially designed to operate the LINEARlight FLEX modules. A wide range of 10.5V power supplies are available.

Application Information

Applications

- Cove lighting
- Edge lighting transparent/diffuse materials
- Border marking
- Commercial signs
- Emergency/Rescue signs
- Path & contour marking
- Backlighting complex contours
- Refrigeration cases
- Display shelves
- Recessed lighting

- Unique solution based on side emitting LEDs
- Long life: Up to 100,000 hours
- OSRAM Hyper SIDELED® allows high luminous flux
- 120° viewing angle per LED
- Entire strip consists of 300 LEDs
- Conveniently field cut with regular scissors (smallest unit – 4 pcs/module)
- Size of smallest unit (L x W): 2.2 in. x 0.4 in. (56mm x 10mm)
- Linear LED strip on flexible printed circuit board with self-adhesive back – easy installation!
- Flexible three-dimensional assembly possible
- Available in various colors: red (amber), true green, blue, yellow and white
- Optimal operation with OPTOTRONIC – OT 10.5V power supplies (Literature code ECS049)
- Minimal heat generation
- Size of entire module (L x W x H): 13.8 ft. x 0.4 in. x 0.19 in. (4.2mm x 10mm x 5mm)

Product Availability

Product	Color
LINEARFLEXSIDE/615/OS/LM11A/A	Red (Amber)
LINEARFLEXSIDE/587/OS/LM11A/Y1	Yellow
LINEARFLEXSIDE/525/OS/LM11A/T	True Green
LINEARFLEXSIDE/470/OS/LM11A/B	Blue
LINEARFLEXSIDE/OS/LM11A/W	White

Application Notes

1. Flexible
2. Small dimensions
3. Shock resistance
4. High color efficiency
5. Directional radiation characteristics
6. No UV or IR radiation
7. Power supplies for operation

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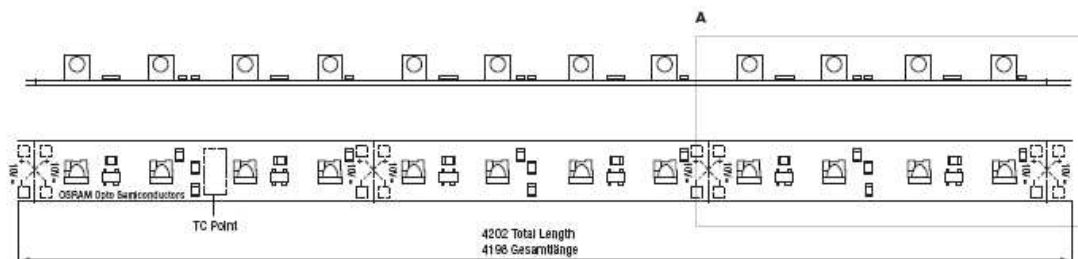
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Maximum Ratings

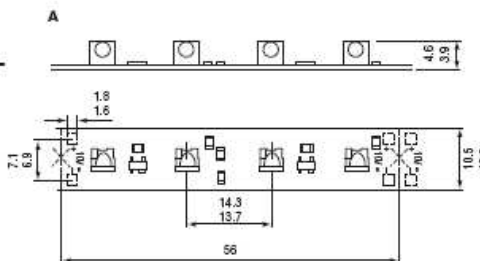
Parameter	Symbol	Values
Operating Temperature*	T_{op}	-30... +70°C (-22...+158°F)
Storage Temperature Range	T_{stg}	-40... +85°C (-40...+185°F)
Voltage Range	V_{max}	10 – 11 V _{dc}
Reverse Voltage	V_R	11 V _{dc}

* Temperature should be measured at the Tc point on the module. Operating temperature range for red and yellow modules is -30°C to +80°C.

Dimensions



	Length in. (mm)	Width in. (mm)
Entire PCB	165.35 (4200)	0.4 (10)
Smallest Unit	2.20 (56)	0.4 (10)
LED Spacing	0.55 (14)	



Safety Information

1. The LED module itself and all its components may not be mechanically stressed.
2. Assembly must not damage or destroy conducting paths on the circuit board.

The LED Module incorporates no protection against short circuits, overload or overheating. Therefore it is necessary to operate the modules with an electronically stabilized power supply offering protection against the above mentioned safety risks.

OSRAM OPTOTRONIC power supplies are specifically designed with protection features for safe operation.

When using power supplies other than OPTOTRONIC the following basic safety features should be verified in addition to any other application specific concerns and local safety codes:

- Short circuit protection
- Overload protection
- Overheat protection
- Correct output voltage, including consideration for ripple and spikes.

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Safety Information

- Installation of LED modules (with power supplies) needs to be made with regard to all applicable electrical and safety standards. Only qualified personnel should be allowed to perform installations.
 - Correct electrical polarity needs to be observed. Wrong polarity will result in no light emission and may destroy the module.
 - Please ensure that the power supply is of adequate power rating to operate the total load. Follow appropriate NEC requirements.
 - When mounting on metallic or otherwise conductive surfaces, an electrical isolation is required at soldering points between the module and the mounting surface.
 - The maximum length of LINEARlight Flex OS-LM11 is 6.8 ft. for green, blue, white and yellow and 13.8 ft. for red with a power feed at one end. The complete module (13.8 ft.) can be operated with a power feed in the middle of the module or from both ends.
 - Pay attention to standard ESD precautions when installing the module.
 - The module, as manufactured, has no conformal coating and therefore offers no inherent protection against corrosion. The ability to customize the length of the module by cutting at specifically marked points is a key feature of the product and hence the reason for no factory installed conformal coating. For these reasons, it is recommended that the user complete all module modifications first (cutting, wiring) and then apply a conformal coating in the final stages of installation.
 - Damage by corrosion will not be honored as a materials defect claim. It is the user's responsibility to provide suitable protection against corrosive agents such as moisture and condensation and other harmful elements.
 - For applications involving exposure to humidity and dust the module must be protected by a fixture or housing with a suitable protection glass. The module can be protected against condensation water by treatment with an appropriate circuit board grade conformal coating. The conformal coating should have the following features:
 - Optical transparency
 - UV-resistance
 - thermal expansion matching the thermal expansion of the module $15-30 \times 10^{-6} \text{ cm/cm/K}$
 - low permeability of steam for all climatic conditions
 - resistance against corrosive environment
- Note: The "APL" grade conformal coating from Electrolube, Inc. (www.electrolube.com) has met the conditions for the LINEARlight Colormix in our tests.
- Parallel connection is highly recommended as safe electrical operation mode. Serial connection is not recommended. Unbalanced voltage drop can cause hazardous overload and damage the LED module.

Assembly Information

- Solder connections should only be performed on designated solder pads (marked "10V +/-"). During soldering, do not exceed the maximum soldering time of 10 seconds and the maximum soldering temperature of 260°C.
- The smallest unit (2.2" – 4 LEDs) can be removed by cutting with scissors between the designated solder pads.
- The mounting of the module is facilitated by means of the double-sided adhesive on the back-surface of the module. Care must be taken to provide a clean and dry mounting surface, free of oils or silicone coatings as well as dirt particles. The mounting substrate must have sufficient structural integrity. Take care to completely remove the adhesive backing. Once the module is appropriately positioned, press on the module with about 20N/cm² (refer to application techniques of 3M adhesive transfer tapes).
- The minimum bending radius is 2 cm. The module may be bent over a smaller radius but only in regions of the circuit board containing no electronic components. Such bends should be made only once and fixed in position to avoid cyclic fatigue.
- The thermal expansion coefficient along the length of the module is $17 \times 10^{-6} \text{ cm/cm/K}$. When installing in environments with large variations in temperature (e.g. outdoor applications) and operating length of more than 2 m, the use of metallic mounting surfaces is necessary. Otherwise it is advisable to use an additional thicker adhesive tape to absorb the stress of any mismatch in expansion coefficients.

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Ordering and Specification Information*

Item Number	Ordering Abbreviation	Color	Watts	Volts (V DC)	Current (Amps)	Viewing Angle (°)	Number of LEDs	Wave Length (nm)	Luminous FLUX (lm)
70066	LINEARFLEXSIDE/615/OS/LM11A/A	Red	15.75	10.5	1.5	120	300	615nm	117
70067	LINEARFLEXSIDE/587/OS/LM11A/Y1	Yellow	23.63	10.5	2.25	120	300	587nm	405
70068	LINEARFLEXSIDE/525/OS/LM11A/T	True Green	31.5	10.5	3.0	120	300	528nm	147
70069	LINEARFLEXSIDE/470/OS/LM11A/B	Blue	31.5	10.5	3.0	120	300	470nm	37
70070	LINEARFLEXSIDE/OS/LM11A/W	White	31.5	10.5	3.0	120	300	x=0.32, y=0.31	405

*All information relates to entire module with 300 LEDs. Modules may be subdivided into 75 coupons of 4 LEDs each. Data reflects statistical mean values. Actual data may differ depending on variances in the manufacturing process.

Power Supply Ordering Information

LED Item Number	Color	OPTOTRONIC® 6W (51500)		OPTOTRONIC 25W (51505)		OPTOTRONIC 50W (51508, 51509)	
		No. of Coupons*	Max. Length (ft)	No. of Coupons*	Max. Length (ft)	No. of reels**	Max. Length (ft)*
70066	Red	28	5.1	119	21.9	3.2	43.7
70067	Yellow	19	3.5	79	14.5	2.1	29.0
70068	True Green	14	2.6	59	10.8	1.6	21.9
70069	Blue	14	2.6	59	10.8	1.6	21.9
70070	White	14	2.6	59	10.8	1.6	21.9

* A coupon is a sub-section of 4 LINEARlight FLEX SIDELEDs with a length of 2.2".

** For dimming LINEARlight FLEX SIDELEDs with OT DIM or OT RGB 1CH DIM, allow for an additional power consumption of 3 watts for a 50 watt LED load.

Ordering Guide

LINEAR FLEXSIDE	/	615	/	OS	/	LM11A	/	A
LINEAR FLEXSIDE Module		Wavelength 615nm		OSRAM		ID No.		Color Code A = Red (Amber)