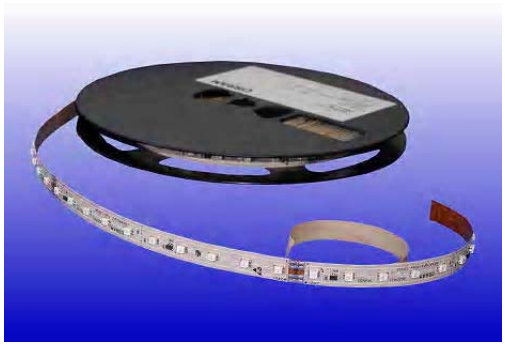
Data Sheet

LINEARlight Flex

LM10A



Benefits

- Linear separable LED strip on flexible printed circuit board with self-adhesive back
- Low profile
- Available in various colors
- Minimal heat generation

Applications

- Edge-lighting of transparent or diffused materials
- Path & contour marking
- Illuminated signs

Technical Operating Data

Product	Color	Number of LEDs	Voltage [V DC]*	Power [W]*	Current [A]*	Radiance Angle [°]*	Wavelength [nm] Color Temp [K]*	Lum. Flux [lm]*
LM10A-W2-865	white	600	24	86,4	3,6	120	6500 K	1290
LM10A-W1-865	white	600	24	57,6	2,4	120	6500 K	540
LM10A-W2-854	white	600	24	86,4	3,6	120	5400 K	1290
LM10A-W1-854	white	600	24	57,6	2,4	120	5400 K	540
LM10A-W2-847	white	600	24	86,4	3,6	120	4700 K	1290
LM10A-W1-847	white	600	24	57,6	2,4	120	4700 K	540
LM10A-W3-727	white	600	24	86,4	3,6	120	2700 K	1440
LM10A-A1	red	600	24	72,0	3	120	617 nm	1620
LM10A-Y1	yellow	600	24	72,0	3	120	587 nm	1290
LM10A-T2	green	600	24	72,0	3	120	525 nm	1200
LM10A-B1	blue	600	24	72,0	3	120	470 nm	170

*) All Data are related to the entire module
Due to the special conditions of the manufacturing processes of LED the typical data of technical parameters can only reflect statistical figures and do not necessarily correspond to the actual parameters of each single product which could differ from the typical data.

+) Preliminary Data

Technical Features

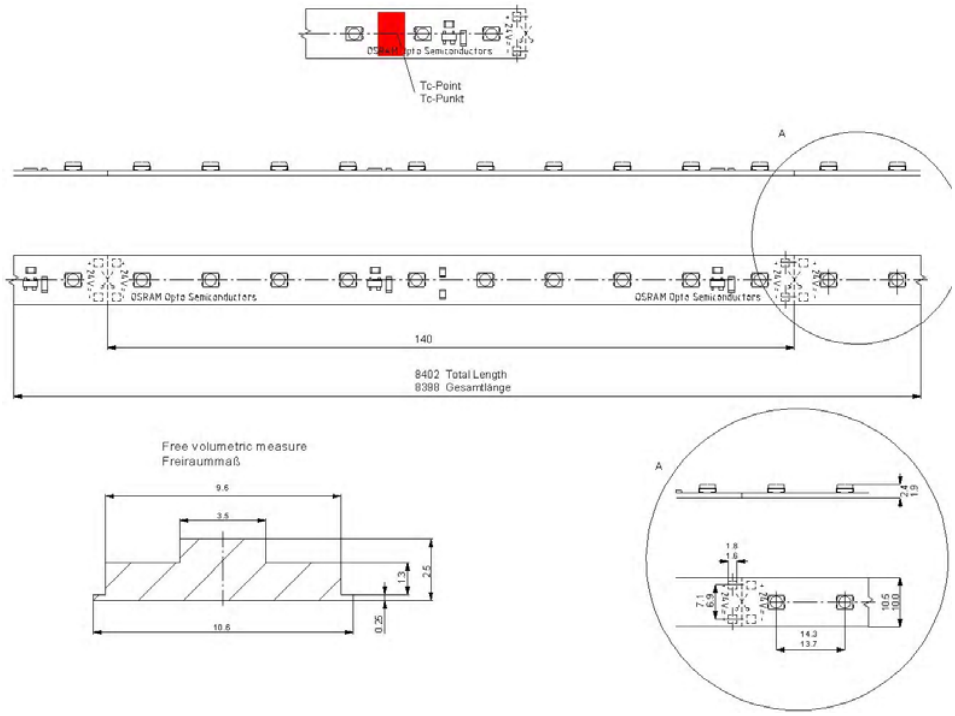
- One reel comes with one LED-band
- Light emission vertical to the mounting surface
- Entire Module consists of 600 LEDs
- Size of printed circuit board (L x W x H): 8400 mm x 10 mm x 3 mm
- Size of smallest unit 10 LED (L x W): 140 mm x 10 mm
- Smallest unit of 10 LEDs can be cut out at regular intervals without damaging the rest of the module
- Adhesive tape on backside
- Easy connection with CONNECTsystem LM-xx Flex: Feeder LM-2PIN Flex and Connector LM-CONN-10 Flex
- Dimmable by pulse width modulation (PWM) with the electronic controller OT DIM
- Only parallel connection allowed
- Modules optimized for use with OSRAM OPTOTRONIC® power supplies.

Minimum and Maximum Ratings

Product	Operating Temperature at Tc-Point [°C] *	Storage Temperature [°C] *	Voltage Range [V dc] *	Reverse Voltage [V dc] *
LM10A-W2-865	-30 ... 75	-40 ... 85	23 ... 25	25
LM10A-W1-865	-30 ... 75	-40 ... 85	23 ... 25	25
LM10A-W2-854	-30 ... 75	-40 ... 85	23 ... 25	25
LM10A-W1-854	-30 ... 75	-40 ... 85	23 ... 25	25
LM10A-W2-847	-30 ... 75	-40 ... 85	23 ... 25	25
LM10A-W1-847	-30 ... 75	-40 ... 85	23 ... 25	25
LM10A-W3-727	-30 ... 75	-40 ... 85	23 ... 25	25
LM10A-A1	-30 ... 85	-40 ... 85	23 ... 25	25
LM10A-Y1	-30 ... 85	-40 ... 85	23 ... 25	25
LM10A-T2	-30 ... 75	-40 ... 85	23 ... 25	25
LM10A-B1	-30 ... 75	-40 ... 85	23 ... 25	25

*) Exceeding maximum ratings for operating and storage temperature will reduce expected life time or destroy the LED Module.
Exceeding maximum ratings for operating voltage will cause hazardous overload and will likely destroy the LED Module.
The temperature of the LED module must be measured at the Tc-point according to EN60598-1 in a thermally constant status with a temperature sensor or a temperature sensitive label. For exact location of the Tc-point see drawing below.

Drawing



Safety Information

- The LED module itself and all its components must not be mechanically stressed.
- 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 absolutely necessary to operate the modules with a electronically stabilised power supply offering protection against the above mentioned safety risks.
For dimming applications attention should be paid to specific references in "OPTOTRONIC ® Technical Guide".

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 are required, in addition to any other application specific concerns and local safety codes:

- Short circuit protection
- Overload protection
- Overheat protection

- 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.
- 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.
- Please ensure that the power supply is of adequate power to operate the total load. The maximum current of 3 A for the module or its subunits is not be exeeded.
- When mounting on metallic or otherwise conductive surfaces, there needs to be a electrical isolation at soldering points between module and the mounting surface.
- The maximum length of LINEARlight Flex LM10A is 4200 mm (3500 mm for "W2" and "W3") with power feed at one end. The complete module 8400 mm can be operated with a two pole power feed in the middle of the module or from both ends, when only one power supply is used ("W2" / "W3" are limited to 7000 mm).
- 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 class. 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*10^-6 cm/cm/K
  - low permeability of steam for all climatic conditions
  - resistance against corrosive environment

  The lacquer APL of the company Electrolube http://www.electrolube.com met the conditions for the LINEARlight Flex in our tests.

Assembly Information

- Connection with soldering wires on unmounted module: Do not pretin the solderpads but pretin the wires and solder for max 4 s at 300 °C. Allow solderpoints to completely cool down before the next soldering. Prevent shear- or peel forces.
- Soldering of wires with the module mounted on a heatsink: Pretin solderpads and wires and solder for max 3 s at 350 °C. Allow solderpoints to completely cool down before the next soldering. Prevent shear- or peel forces.
- The smallest unit (140 mm- 10 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 particle. The mounting substrate must have sufficient structural integrity. Take care to completely remove the protective backing. Once the module is appropriately positioned, press on the module with about 20N/cm² (refer to application techniques of 3M adhesive transfer tapes). In difficult cases the use of a primer may help.
- 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 and such bends should be made once and fixed in position to avoid cyclic fatigue.
- The thermal length expansion coefficient of the modul is 17*10^-6cm/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.

Ordering Guide

Productgroup	Productname	EAN *	S-Unit *
LINEARlight Flex	LM10A-W2-865	4050300887265	8
LINEARlight Flex	LM10A-W1-865	4050300873817	8
LINEARlight Flex	LM10A-W2-854	4050300887289	8
LINEARlight Flex	LM10A-W1-854	4050300817170	8
LINEARlight Flex	LM10A-W2-847	4008321040145	8
LINEARlight Flex	LM10A-W1-847	4050300817156	8
LINEARlight Flex	LM10A-W3-727	4008321186171	8
LINEARlight Flex	LM10A-A1	4008321040060	8
LINEARlight Flex	LM10A-Y1	4050300946030	8
LINEARlight Flex	LM10A-T2	4008321168832	8
LINEARlight Flex	LM10A-B1	4050300945491	8

*) EAN: Ordering number per single module
S-Unit: Modules per shipping unit

Note: Typical performance data are subject to change without any further notice, particularly as LED technology evolves.

Sales and Technical Support

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Sales and technical support is given by the local OSRAM subsidiaries.
On our world wide homepage all OSRAM subsidiaries are listed with complete address and phone numbers.

Related and Further Information

The new dimension of light	153 S006 GB
New creativity in lighting design LED Modules for illuminated signs	138 W002 GB
OPTOTRONIC® Technical Guide	130 T008 GB
OPTOTRONIC® Data Sheets	http://catalog.myosram.com
OSRAM LED systems	www.osram.com/led-systems
Datasheet CONNECTsystem LM-xx Flex	www.osram.com/led-systems-downloads