

# LINEAR COB LED MODULES

T5/T8 REPLACEMENT



## LED MODULES FOR LINEAR LIGHTING

**DML62EL30/L**  
**DML62EW/L**

### Typical Applications

Built-in luminaires/general illumination

- Office lighting
- Retail lighting
- T5/T8 replacement as built-in module
- Furniture lighting

### Linear COB LED modules

- **LONG SERVICE LIFETIME: 50,000 H (L90, B10)**
- **NARROW COLOUR TOLERANCE: 3 McAdams**
- **HIGHLY EFFICIENT: 86 LM/W AT  $T_J = 80^\circ\text{C}$**
- **VERY LOW THERMAL RESISTANCE: CERAMIC PCB**
- **COB TECHNOLOGY (CHIP-ON-BOARD)  
BY PANASONIC**

homogeneous light field (no individual light points visible),  
perfect for use with reflectors

## Linear COB LED modules

### Technical Notes

- Dimensions: 280x15 mm
- Power consumption: typ. 6.93 W
- Driving current: 350 mA DC
- Colour accuracy initially: 3 SDCM per BIN;  
after 50,000 hrs. operating time: 4 SDCM per BIN



### Electrical Characteristics

at junction temperature  $t_j = 80\text{ °C}$  and PCB temperature  $t_c = 65\text{ °C}$

Type	Current mA	Voltage DC [V]			Power consumption [W]		
		min.	typ.	max.	min.	typ.	max.
All types	350	18.6	19.8	21	6.51	6.93	7.35

**Use of external LED constant current driver with max. 350 mA required.**

### Maximum Ratings

Exceeding the maximum ratings can lead to reduction of lifetime or destruction of the module.

Type	Operation temperature range		Storage temperature range		Max. current mA	Max. junction temperature °C
	°C min.	°C max.	°C min.	°C max.		
All types	-20	+80	-20	+100	480	125

### Optical Characteristics

at junction temperature  $t_j = 80\text{ °C}$  and PCB temperature  $t_c = 65\text{ °C}$

Type	Ref. No.	Colour	Correlated colour temperature (K)	Radiation angle (°)			Luminous flux (lm)		Colour rendering index $R_a$	
				min.	typ.	max.	min.	typ.	min.	typ.
DML62EL30/L	<b>548135</b>	Warm white	3000 (-150/+80)	110	120	130	500	550	80	84
DML62EW/L	<b>548136</b>	Neutral white	4000 (-230/+130)	110	120	130	540	600	80	84

**Minimum order quantity (packing unit): 60 pcs.**

### Thermal Characteristics

Type	Thermal resistance $t_c$ point to $t_j$ K/W
All types	2.2

For improved thermal management VS recommends an additional cooling element, which is suitable for the application.

### Operating Life

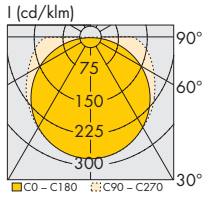
50,000 hrs. (L90/B10)

( $t_j = 80\text{ °C}$ ;  $t_c = 65\text{ °C}$ ;  $I_F = 350\text{ mA}$ )

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification. Please find further detailed information at [www.vs-optoelectronic.com](http://www.vs-optoelectronic.com).

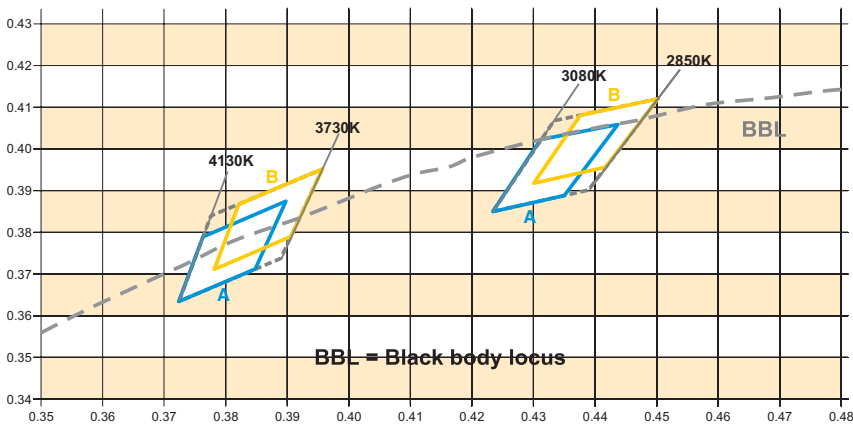
## Linear COB LED modules

### Typical Light Distribution Curves

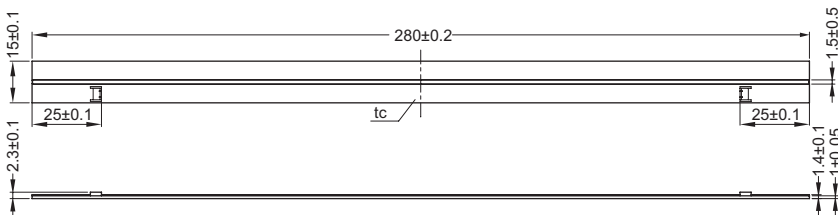


### Bins

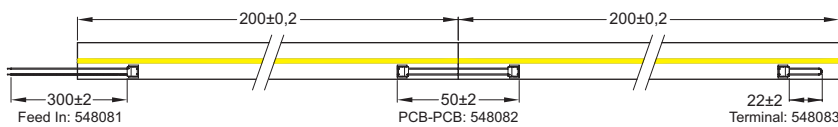
The standard shipping format regarding the reference numbers includes all chromaticity coordinate groups. The concrete delivered group is marked on each product. Reduction of orderable groups is possible only project-based.



### Mechanical Dimensions



### Connection Example



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## Accessories for Linear COB LED modules

### Feed In Connector

Feed in connector for power supply

Colour: - black  
+ white

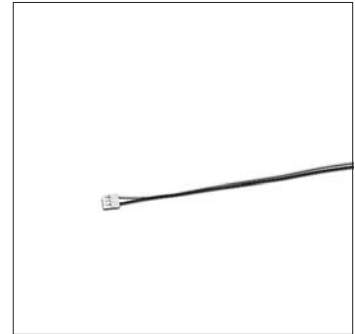
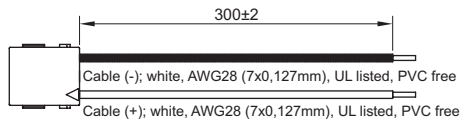
Max. permissible current: 1.5 A

Number of strands: 2

(Strand diameter: 0.09 mm<sup>2</sup>/AWG28)

Type: WU-VB-010

Ref. No.: 548081

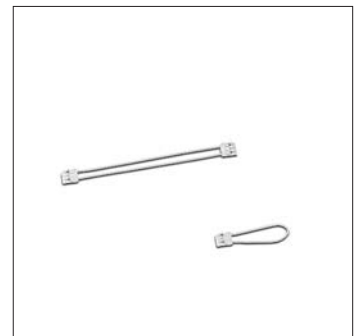
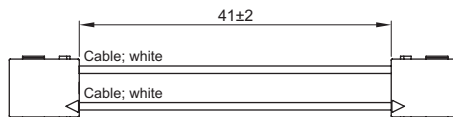


### PCB-PCB Connector

Max. permissible current: 1.5 A

Type: WU-VB-011

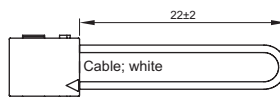
Ref. No.: 548082



### End Terminal

Type: WU-VB-012

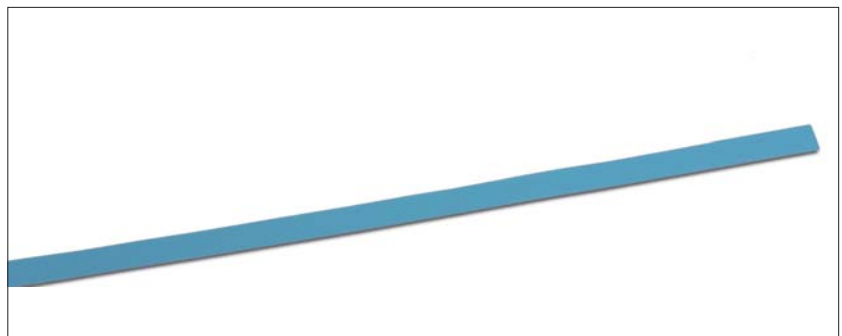
Ref. No.: 548083



### Thermally Conductive Adhesive Transfer Tapes

Dimension: 278x13 mm

Ref. No.: 548179



## Assembly and Safety Information

Installation must be carried out under observation of the relevant regulations and standards. The LED modules are designed for operation within a casing or luminaire. Installation must be carried out in a voltage-free state (i.e. disconnection from the mains). The following advice must be observed; non-observance can result in the destruction of the LED assembly modules, fire and/or other hazards.

- ESD (electrostatic discharge) protection measures must be observed when handling and installing the LED modules. See VS's application notes on ESD protection.
- Adequate anti-static electricity measures, including the use of conductive shoes, ionizers, work bench grounding, wrist straps, flooring and stools should be used.
- LED assembly modules must not be subjected to any undue mechanical stress, e. g.:
  - do not treat as bulk cargo
  - avoid shear and compressive forces during handling and installation
  - do not damage circuit paths
  - avoid any pressure on the light emitting surface
- Safe operation only possible by the use of external constant current sources ( $I_{max}$ , see table "Electrical Characteristics").
- Power supply units must be used for operation, in which the following protective measures are ensured:
  - Short-circuit protection
  - Overload protection
  - Overheating protection
- Please ensure the correct polarity of the leads prior to commissioning. Reversed polarity can destroy the modules.
- For interconnection of the LED modules three different connectors are available:
  - Feed-in cable (Ref. No. 548081)
  - PCB-PCB-connector (Ref. No. 548082)
  - End-connector (Ref. No. 548083)
- Safety regulations acc. to EN 60598 (or further standards) has to be observed if the maximum output voltage exceed the permitted touchable value.
- The following points must be observed when connecting LED modules in parallel:
  - All LED strings that are wired in parallel must contain the same number of LEDs (symmetrical loading).
  - Owing to differing forward biases, there can be a difference of up to 10% in brightness between modules connected in parallel.
  - All modules that are wired in parallel must be thermally connected (same temperatures at all LED modules).
- To ensure problem-free operation, the specified maximum temperature at the  $t_c$  point (see "Operating Life") must be observed (and measured in accordance with EN 60598-1). To satisfy this point, it may be necessary to put measures in place to ensure any heat is dissipated from the PCB to the environment.
- LED modules must be attached in such a way as to ensure that any temperature-related material tension between the (ceramic) LED module and the substrate of the luminaire (e.g. aluminium) can be balanced out. VS recommends using (non-adhesive) thermally conductive paste in combination with mechanical fixing clips, which must allow the module to expand in a lateral direction on the substrate surface.

In addition, Vossloh-Schwabe provides a thermally conductive adhesive transfer pad (Ref. No. 548179) that can also balance out any material stresses. Care must be taken to check whether the luminaire/application is suitable for use with adhesive transfer pads given the respective material and ambient conditions. A space of at least 0.5 mm must be left between any two modules.
- Products equipped with adhesive transfer tape must only be applied to dry and clean surfaces that are free from grease, oil, silicone or other soiling. It is therefore recommended to clean the substrate with isopropyl alcohol (IPA). Please ensure a full-surface bond over the entire contact area when sticking the module to the substrate. The following substances are regarded as critical for creating an adhesive bond:
  - Polyefins (polyethylene, polypropylene)
  - Rubber
  - Powder-coated materials
  - Silicone rubber
  - Teflon
- Owing to the varying application options and different types of surface as well as ambient conditions, VS accepts no liability for the quality of the adhesive bond achieved when mounting these products. Prior to sticking a VS product care must be taken to check whether the material in question is actually suitable for the intended purpose under consideration of all possible application-relevant influences. Supplementary holders must be used if necessary.
- In the event of outdoor applications or applications in damp locations, care must be taken to protect LED assembly modules against humidity, splashes and jets of water. Any corrosion damage resulting from humidity or contact with condensation will not be recognised as a defect or manufacturing fault. LED assembly modules are not specially protected against foreign bodies or dust. Depending on the type of application, further protection must be ensured to prevent dust and foreign bodies from entering.
- Due to the manufacturing process, the PCBs of the LED assembly modules can have sharp edges and corners. Care must therefore be taken during handling and installation to avoid injury.
- For optimal load of used constant current driver the modules can only be connected in series. The quantity of LED modules is limited by the sum of forward voltage and the capacity of used constant current driver. Safety regulations acc. to EN 60598 has to be observed if the sum of forward voltage exceed the permitted touchable value.
- The photobiological safety of the LED modules must be classified into risk groups in accordance with EN 62471: 2008.
  - general lighting exempt group
  - other applications exempt group

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