

LED LINE SMD W2 LIGHT&DARK MINI



LED LINE SMD W2 LIGHT&DARK MINI

MLC SC W2 L&D Mini G1

MLC SC W2 L&D Mini LV G1

Typical Applications

Built-in luminaires/general illumination

- Office lighting
- Retail, corridor and shelf lighting
- Residential lighting

LED Line SMD W2 Light&Dark Mini

■ **LONG SERVICE LIFE TIME: 93.000 H (L80, B10)**

■ **HIGHLY EFFICIENT: UP TO 209 LM/W
AT T_p = 50 °C**

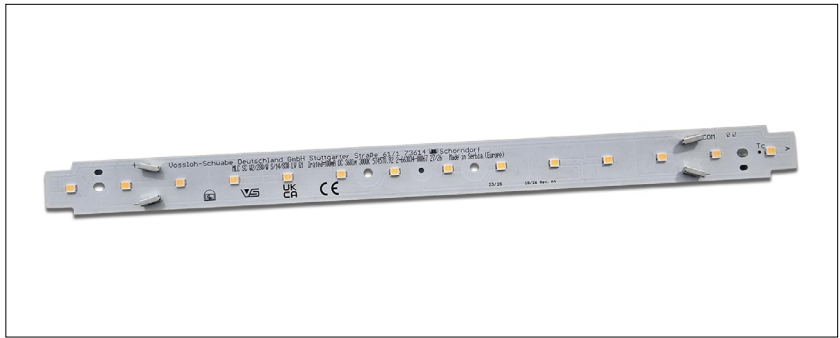
■ **1 LENGTH AVAILABLE: 280 MM**

■ **1 PCBS COLOR AVAILABLE: WHITE**

LED Line SMD W2 Light&Dark Mini

Technical Notes

- LED built-in module for integration into luminaires
- Dimensions
MLC SC W2/280: 280x20 mm
- Driving current:
100 mA / 150 mA / 200 mA / 250 mA /
350 mA / 400 mA
- On-board push-in terminals
- Beam angle: 120°



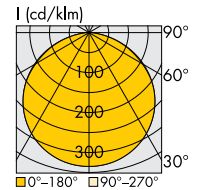
Typical Light Distribution Curve

Data are available in .ldt format for download
under www.vossloh-schwabe.com.

Covers and optics

Please visit our homepage for details for suitable optics:

- www.vossloh-schwabe.com/en/products/optics-reflectors/linear-optics



Non-SELV variants

Electrical Characteristics

at $t_p = 50^\circ\text{C}$

Type	No. of SMDs	Typ. voltage DC						Temp. coeff. mV/K	Typ. power consumption					
		100 mA	150 mA	200 mA	250 mA	350 mA	400 mA		100 mA	150 mA	200 mA	250 mA	350 mA	400 mA
		V	V	V	V	V	V		W	W	W	W	W	W
LED Line SMD W2 Light&Dark Mini														
MLC SC W2/280/W S/14/yzz G1	14	18.3	18.6	18.8	19.1	19.5	19.7	-12.10	1.8	2.8	3.8	4.8	6.8	7.9

Voltage and power consumption tolerance: $\pm 10\%$ | **Use of external LED constant current driver required.**

Maximum Ratings

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

Type	Operating current (mA)	Operation temperature range at t_c point		Storage temperature range		Max. allowed repetitive peak current for frequencies ≥ 100 Hz (mA)
		$^\circ\text{C min.}$	$^\circ\text{C max.}$	$^\circ\text{C min.}$	$^\circ\text{C max.}$	
MLC SC W2/280/W S/14/yzz G1	400	-20	+80	-20	+70	960

Operating Life

in hours at measured temperature at t_p point

Type	100 mA			150 mA			200 mA			250 mA		
	40 $^\circ\text{C}$	50 $^\circ\text{C}$	80 $^\circ\text{C}$	40 $^\circ\text{C}$	50 $^\circ\text{C}$	80 $^\circ\text{C}$	40 $^\circ\text{C}$	50 $^\circ\text{C}$	80 $^\circ\text{C}$	40 $^\circ\text{C}$	50 $^\circ\text{C}$	80 $^\circ\text{C}$
All types	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000

Type	350 mA			400 mA		
	40 $^\circ\text{C}$	50 $^\circ\text{C}$	80 $^\circ\text{C}$	40 $^\circ\text{C}$	50 $^\circ\text{C}$	80 $^\circ\text{C}$
All types	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000

The values contained in this data sheet can change due to technical innovations. Any such changes will be made without separate notification.

LED Line SMD W2 Light&Dark Mini

Optical Characteristics – CRI > 80

at $t_p = 50^\circ\text{C}$, without secondary optics

Type	Ref. No.	Colour	Correlated colour temp.* K	Typ. luminous flux** and typ. efficiency** at												Photometric code	
				100 mA		150 mA		200 mA		250 mA		350 mA		400 mA			
				lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W		
LED Line SMD W2 Light&Dark Mini																	
MLC SC W2/280/W S/14/827 G1	574563	WW	2700	360	196	530	190	695	184	855	179	1165	171	1315	167	827/359	
MLC SC W2/280/W S/14/830 G1	574564	WW	3000	360	196	530	190	695	184	855	179	1165	171	1315	167	830/359	
MLC SC W2/280/W S/14/835 G1	574565	NW	3500	385	209	565	203	740	197	915	192	1245	183	1410	179	835/359	
MLC SC W2/280/W S/14/840 G1	574566	NW	4000	385	209	565	203	740	197	915	192	1245	183	1410	179	840/359	
MLC SC W2/280/W S/14/850 G1	574567	CW	5000	385	209	565	203	740	197	915	192	1245	183	1410	179	850/359	
MLC SC W2/280/W S/14/865 G1	574568	CW	6500	385	209	565	203	740	197	915	192	1245	183	1410	179	865/359	

2700 and 3000 K = warm white (WW), 3500 and 4000 K = neutral white (NW), 5000 and 6500 K = cool white (CW)

* Colour tolerance: 3 MacAdam | ** Production tolerance of luminous flux and efficiency: $\pm 10\%$

Optical Characteristics – CRI > 90

at $t_p = 50^\circ\text{C}$, without secondary optics

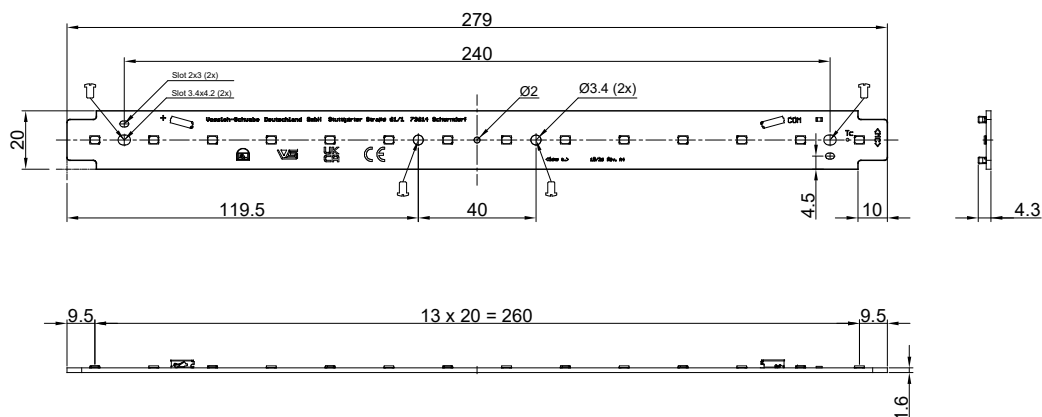
Type	Ref. No.	Colour	Correlated colour temp.* K	Typ. luminous flux** and typ. efficiency** at												Photometric code	
				100 mA		150 mA		200 mA		250 mA		350 mA		400 mA			
				lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W		
LED Line SMD W2 Light&Dark Mini																	
MLC SC W2/280/W S/14/927 G1	574575	WW	2700	285	155	420	150	550	146	675	142	925	136	1045	133	927/359	
MLC SC W2/280/W S/14/930 G1	574576	WW	3000	310	169	455	164	595	159	735	155	1005	147	1135	144	930/359	
MLC SC W2/280/W S/14/935 G1	574577	NW	3500	310	169	455	164	595	159	735	155	1005	147	1135	144	935/359	
MLC SC W2/280/W S/14/940 G1	574578	NW	4000	335	182	490	177	645	171	795	167	1085	159	1225	156	940/359	
MLC SC W2/280/W S/14/950 G1	574579	CW	5000	335	182	490	177	645	171	795	167	1085	159	1225	156	950/359	
MLC SC W2/280/W S/14/965 G1	574580	CW	6500	335	182	490	177	645	171	795	167	1085	159	1225	156	965/359	

2700 and 3000 K = warm white (WW), 3500 and 4000 K = neutral white (NW), 5000 and 6500 K = cool white (CW)

* Colour tolerance: 3 MacAdam | ** Production tolerance of luminous flux and efficiency: $\pm 10\%$

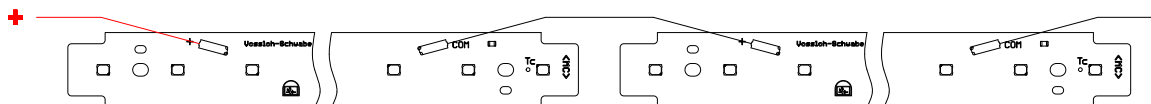
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Mechanical dimensions



Connection Example

- The maximum number of modules that can be connected in one line (parallel connection of all boards) depends on the chosen operating current. The max. allowed current load on tracks and connectors is 1.8 A.
 $I_{\text{Driver}} = I_{\text{Module}} \times n$ (the number of modules)
- The clearance and creepage distances are designed for working voltages up to 250 V DC (basic insulation) and 150 V DC (reinforced insulation).
- In case of assembly of the LED modules in profiles (e.g. aluminium) where the profile touches the top edge of the PCB the clearance and creepage distances are reduced to 150 V DC (basic insulation).
- Only the marked holes  are fixing holes for screws M3. Please do not use other holes for fixation!



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SELV variants

Electrical Characteristics

at $t_p = 50\text{ }^{\circ}\text{C}$

Type	No. of SMDs	Typ. voltage DC						Temp. coeff. mV/K	Typ. power consumption					
		100 mA	150 mA	200 mA	250 mA	350 mA	400 mA		100 mA	150 mA	200 mA	250 mA	350 mA	400 mA
		V	V	V	V	V	V		W	W	W	W	W	W

LED Line SMD W2 Light&Dark Mini

MLC SC W2/280/W S/14/yz LV G1	14	18.3	18.6	18.8	19.1	19.5	19.7	-12.10	1.8	2.8	3.8	4.8	6.8	7.9
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Voltage and power consumption tolerance: $\pm 10\%$ | **Use of external LED constant current driver required.**

Maximum Ratings

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

Type	Operating current (mA)	Operation temperature range at t_c point		Storage temperature range		Max. allowed repetitive peak current for frequencies $\geq 100\text{ Hz}$ (mA)
		$^{\circ}\text{C min.}$	$^{\circ}\text{C max.}$	$^{\circ}\text{C min.}$	$^{\circ}\text{C max.}$	
MLC SC W2/280/W S/14/yz LV G1	400	-20	+80	-20	+70	960

Operating Life

in hours at measured temperature at t_p point

Type	100 mA			150 mA			200 mA			250 mA		
	40 $^{\circ}\text{C}$	50 $^{\circ}\text{C}$	80 $^{\circ}\text{C}$	40 $^{\circ}\text{C}$	50 $^{\circ}\text{C}$	80 $^{\circ}\text{C}$	40 $^{\circ}\text{C}$	50 $^{\circ}\text{C}$	80 $^{\circ}\text{C}$	40 $^{\circ}\text{C}$	50 $^{\circ}\text{C}$	80 $^{\circ}\text{C}$
All types	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000

Type	350 mA			400 mA		
	40 $^{\circ}\text{C}$	50 $^{\circ}\text{C}$	80 $^{\circ}\text{C}$	40 $^{\circ}\text{C}$	50 $^{\circ}\text{C}$	80 $^{\circ}\text{C}$
All types	>93.000	>93.000	>93.000	>93.000	>93.000	>93.000

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LED Line SMD W2 Light&Dark Mini

Optical Characteristics – CRI > 80

at $T_p = 50^\circ\text{C}$, without secondary optics

Type	Ref. No.	Colour	Correlated colour temp.* K	Typ. luminous flux** and typ. efficiency** at												Photometric code	
				100 mA		150 mA		200 mA		250 mA		350 mA		400 mA			
				lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W		
LED Line SMD W2 Light&Dark Mini																	
MLC SC W2/280/W S/14/827 LV G1	574569	WW	2700	360	196	530	190	695	184	855	179	1165	171	1315	167	827/359	
MLC SC W2/280/W S/14/830 LV G1	574570	WW	3000	360	196	530	190	695	184	855	179	1165	171	1315	167	830/359	
MLC SC W2/280/W S/14/835 LV G1	574571	NW	3500	385	209	565	203	740	197	915	192	1245	183	1410	179	835/359	
MLC SC W2/280/W S/14/840 LV G1	574572	NW	4000	385	209	565	203	740	197	915	192	1245	183	1410	179	840/359	
MLC SC W2/280/W S/14/850 LV G1	574573	CW	5000	385	209	565	203	740	197	915	192	1245	183	1410	179	850/359	
MLC SC W2/280/W S/14/865 LV G1	574574	CW	6500	385	209	565	203	740	197	915	192	1245	183	1410	179	865/359	

2700 and 3000 K = warm white (WW), 3500 and 4000 K = neutral white (NW), 5000 and 6500 K = cool white (CW)

* Colour tolerance: 3 MacAdam | ** Production tolerance of luminous flux and efficiency: $\pm 10\%$

Optical Characteristics – CRI > 90

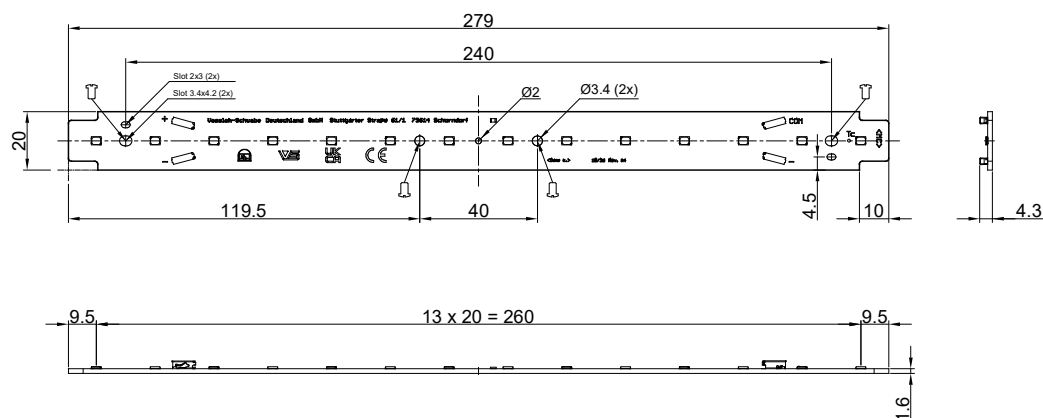
at $T_p = 50^\circ\text{C}$, without secondary optics

Type	Ref. No.	Colour	Correlated colour temp.* K	Typ. luminous flux** and typ. efficiency** at												Photometric code	
				100 mA		150 mA		200 mA		250 mA		350 mA		400 mA			
				lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W	lm	lm/W		
LED Line SMD W2 Light&Dark Mini																	
MLC SC W2/280/W S/14/927 LV G1	574581	WW	2700	285	155	420	150	550	146	675	142	925	136	1045	133	927/359	
MLC SC W2/280/W S/14/930 LV G1	574582	WW	3000	310	169	455	164	595	159	735	155	1005	147	1135	144	930/359	
MLC SC W2/280/W S/14/935 LV G1	574583	NW	3500	310	169	455	164	595	159	735	155	1005	147	1135	144	935/359	
MLC SC W2/280/W S/14/940 LV G1	574584	NW	4000	335	182	490	177	645	171	795	167	1085	159	1225	156	940/359	
MLC SC W2/280/W S/14/950 LV G1	574585	CW	5000	335	182	490	177	645	171	795	167	1085	159	1225	156	950/359	
MLC SC W2/280/W S/14/965 LV G1	574586	CW	6500	335	182	490	177	645	171	795	167	1085	159	1225	156	965/359	

2700 and 3000 K = warm white (WW), 3500 and 4000 K = neutral white (NW), 5000 and 6500 K = cool white (CW)

* Colour tolerance: 3 MacAdam | ** Production tolerance of luminous flux and efficiency: $\pm 10\%$

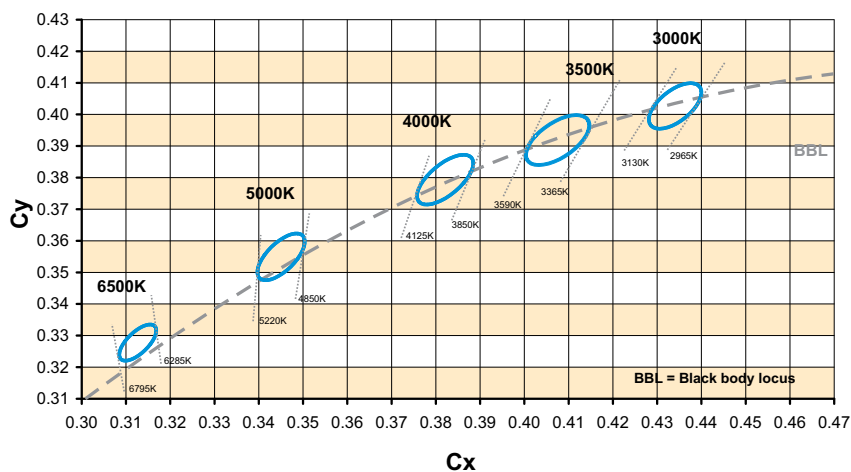
Mechanical dimensions



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- The maximum number of modules that can be connected in one line (parallel connection of all boards) depends on the chosen operating current. The max. allowed current load on tracks and connectors is 1.8 A.
 $I_{\text{Driver}} = I_{\text{Module}} \times n$ (the number of modules)
- The clearance and creepage distances are designed for working voltages up to 250 V DC (basic insulation) and 150 V DC (reinforced insulation).

- In case of assembly of the LED modules in profiles (e.g. aluminium) where the profile touches the top edge of the PCB the clearance and creepage distances are reduced to 150 V DC (basic insulation).
- Only the marked holes  are fixing holes for screws M3. Please do not use other holes for fixation!



Please visit our homepage for details for suitable LED constant current drivers: www.vossloh-schwabe.com

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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.

- Consider safety regulations acc. EN 60598 in the luminaire design, especially when the operating LED driver is not galvanic isolated.
 - In mode of operation regard to sufficient isolation.
 - Live parts must not be touched in operation mode.
- Danger in life!!! 
- 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").
- Operation only with power supply units that feature the following protection:
 - Short-circuit protection
 - Overload protection
 - Overheating protection
- The module can be fixed with M3 screws. Fixation only with flat or cylinder head screws (M3) (no countersunk screws)
Max. torque: 1.2 Nm (M3)
- Please ensure the correct polarity of the leads prior to commissioning. Reversed polarity can destroy the modules.
- For interconnection the LED modules is equipped with push-in terminals (WAGO 2065).
- Safety regulations acc. to EN 60598 (or further standards) has to be observed if the maximum output voltage exceed the permitted touchable value.
- Measurement tolerances:
 - luminous flux: $\pm 7\%$
 - voltage: $\pm 3\%$
 - CRI: ± 1
- 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.
- To ensure problem-free operation, the specified maximum temperature at the t_p 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.

- 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.
- Operating LED modules in the presence of certain chemical substances or in chemically enriched (aggressive) environments can impair module functionality or even cause total module failure. Detailed information can be found in our "Chemical Incompatibility" PDF on our website www.vossloh-schwabe.com
- The photobiological safety of the LED modules must be classified into risk groups in accordance with EN 62471: 2008.
Rating in accordance with IEC / TR 62778: risk group 1 unlimited

Applied Standards

EN 62031

LED modules for general lighting – Safety specifications

EN 62471

Photobiological safety of lamps and lamp systems

Product Guarantee

- 5 years
- The conditions for the Product Guarantee of the Vossloh-Schwabe Group shall apply as published on our homepage (www.vossloh-schwabe.com). We will be happy to send you these conditions upon request.

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