

Linear LED Module, M Series

- Gen 2, high typical efficacy up to 148 lm/W
- Initial colour consistency (SDCM) of MacAdam 4-step
- Simple mounting – Screw mounted on module edges
- Easy connection with end to end push-in connectors
- Slim form factor, 18mm width
- Long lifetime

450 mA, 12.4 V



LED provided by
SAMSUNG



	Nominal colour temp. [K]	Luminous flux (Φ_v)			Forward voltage			Luminous efficacy			CCT			CRI [Ra]
		T _c = 50 °C			T _c = 50 °C			T _c = 50 °C			T _c = 50 °C			
		Min. [lm]	Typ. [lm]	Max. [lm]	Min. [V]	Typ. [V]	Max. [V]	Min. [lm/W]	Typ. [lm/W]	Max. [lm/W]	Min. [K]	Typ. [K]	Max. [K]	
<i>Nominal @ 450 mA</i>														
SI-B8V052280WW	3000	710	790	880	11.16	12.4	13.64	127	142	158	2922	3038	3166	> 80
SI-B8U052280WW	3500	720	800	890	11.16	12.4	13.64	129	143	159	3307	3455	3621	> 80
SI-B8T052280WW	4000	745	825	920	11.16	12.4	13.64	134	148	165	3781	3975	4188	> 80
SI-B8R052280WW	5000	745	825	920	11.16	12.4	13.64	134	148	165	4789	5030	5302	> 80
<i>Maximum @ 540 mA</i>														

Measurement tolerance: Luminous flux $\pm 7\%$, CRI ± 3.0 , Voltage $\pm 0.3V$, Power consumption $\pm 0.3W$

Electrical specifications

at T _c = 50 °C	LT-M282A		
	Min.	Nom.	Max
Operating Current [mA]	-	450	540
Operating Voltage* [V]	11.16	12.4	13.64
Power Consumption* [W]	5.0	5.6	6.1

*] At I_f = 450 mA, direct current supply only

Max. permissible peak current 900 mA
(Duty 1/10 pulse width 10 ms)

IP rating IP00

Colour specification

Colour consistency at initial time 4 MacAdam steps

Colour Rendering Index > 80 Ra

Operating Conditions and Characteristics

T_p point (performance measurements) T_c = 50 °C

Max. temperature at T_c point 90 °C

Operating temperature range -20...+50 °C

Storage temperature -30...+80 °C

Life time (L70B50) >50 000 h, at T_c = 80 °C

Connections and Mechanical Data

Wire size 0.2 - 0.75 mm² (24 - 18 AWG)

Connector Reworkable poke-in connector

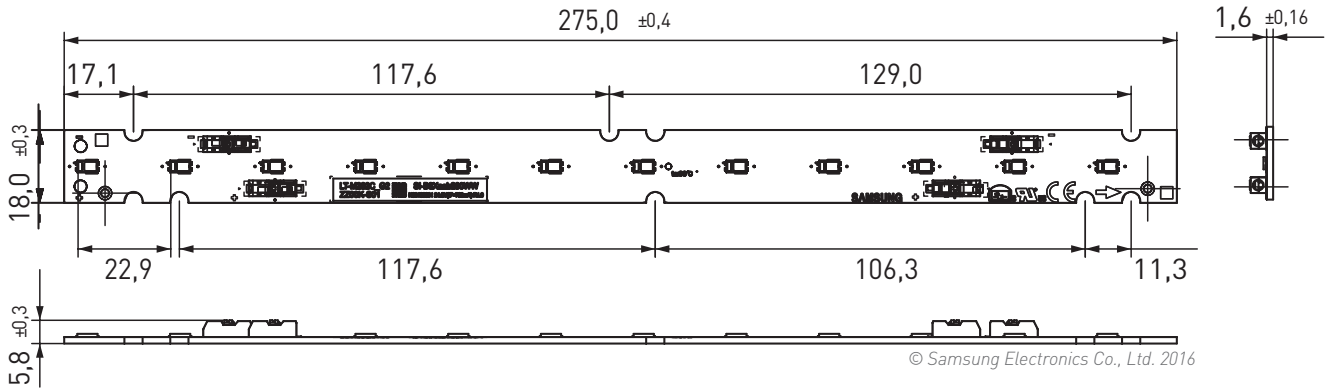
PCB material Copper, solder mask, epoxy

Conformity & Standards

Photobiological safety of lamps and lamp systems IEC/EN 62471, TR IEC/EN 62778

Led modules for general lighting - safety specifications IEC/EN 62031

Compliant with relevant EU directives, CE marked, RoHS/REACH compliant



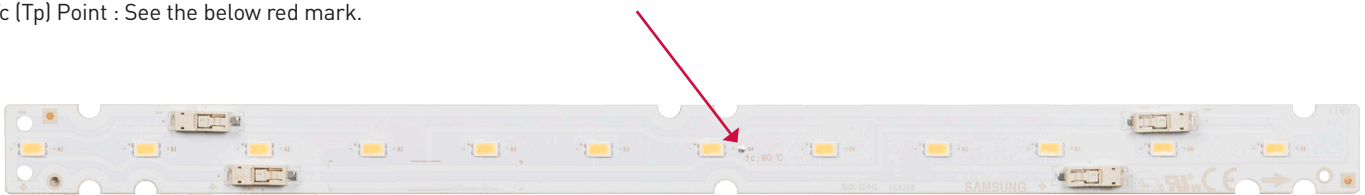
Length	275.0 mm
Width	18.0 mm
Thickness of PCB	1.6 mm
Height	5.8 mm
Weight	13.0 g

Packing details	1 Tray	1 Box	1 Pallet
Num. of modules	40	400	12800

ESD foam trays, antistatic bag and carton box

Thermal Management

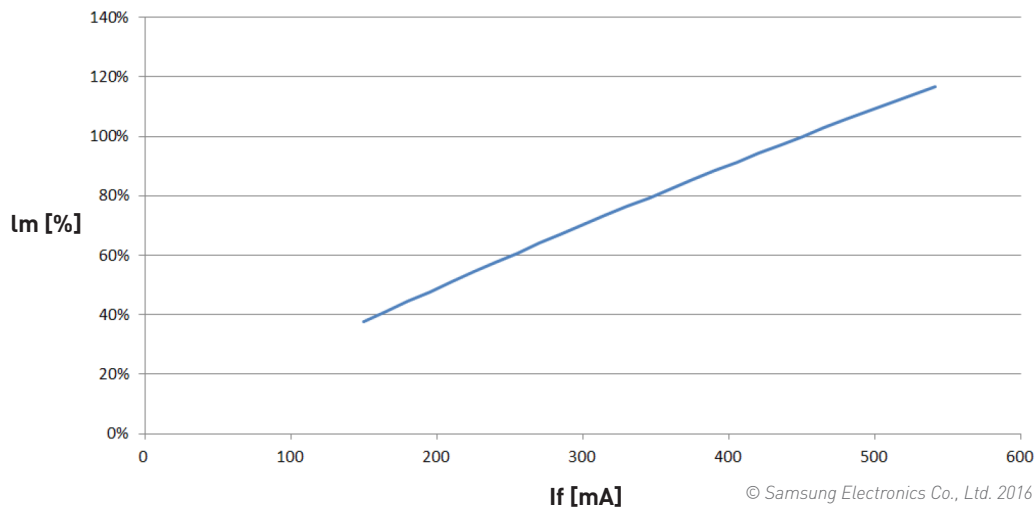
T_c (T_p) Point : See the below red mark.



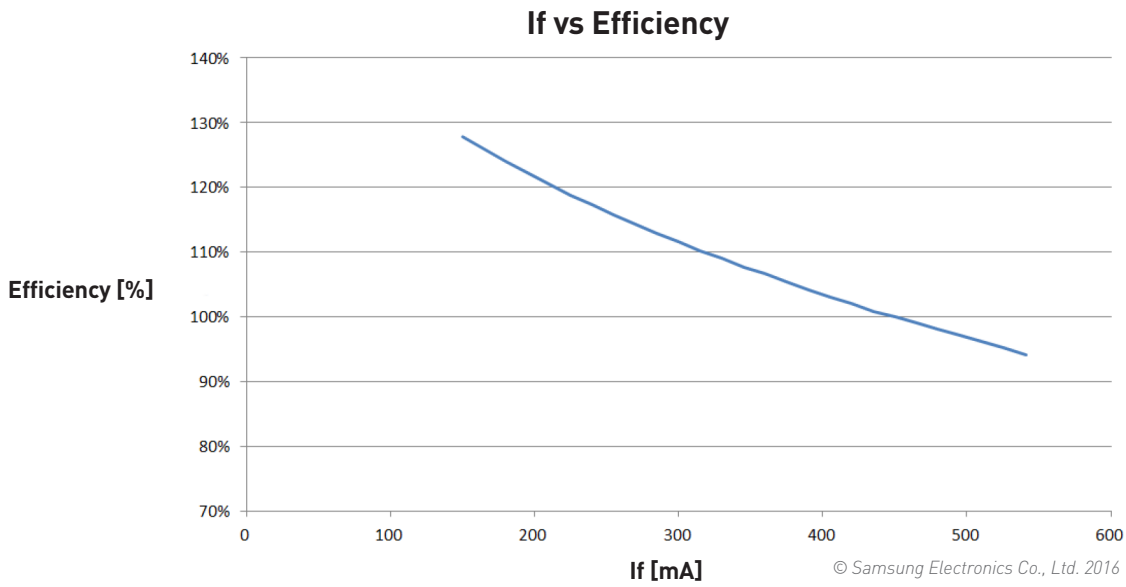
Relative specification curves

LUMINOUS FLUX

If vs Luminous Flux

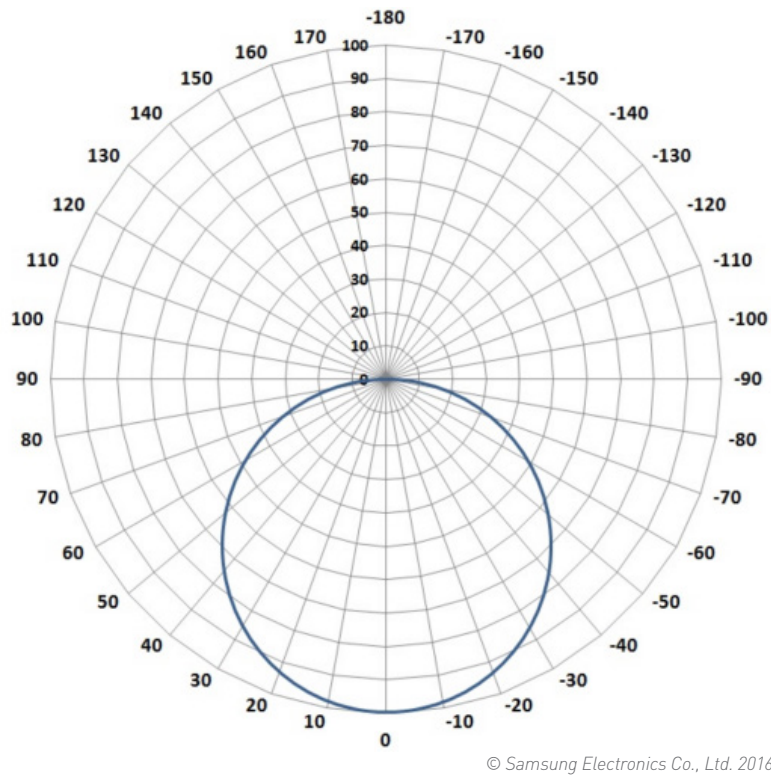


EFFICIENCY



Photometric characteristics

Polar Intensity Diagram: Beam Angle $115 \pm 5^\circ$



In order to have safe and reliable operation, the LED luminaires will need to comply with the relevant standards and regulations (e.g. IEC/EN 60598-1). The LED luminaire shall be designed to adequately protect the LED modules from dust, moisture and pollution. The luminaire manufacturer is responsible for the correct choice and installation of the LED module / LED driver combination according to the application and product datasheets. Specifications of the LED modules may never exceed the operating conditions as per the product datasheets.

HANDLING OF THE LED MODULES

LED modules contain components (LED packages, chips) that are sensitive for mechanical stress, electrostatic discharge (ESD) and chemical contaminants. Improper handling of the modules might cause damage or even destruction of the LED modules. Damaged LEDs may show some unusual characteristics such as increase in leakage current, lowered turn-on voltage, or abnormal lighting of LEDs at low current. Please follow following instructions and the precautions given in the product datasheets while handling and assembling Helvar LED modules.

Storage conditions

- Unused LED modules are recommended to stored carefully in an original sealed ESD package preventing moisture, pollutants or ESD to cause damage the module.
- Storage temperature range: -30...+80 °C

Opening the package / resealing

- LED modules are kept in stable protected environment in the packaging, open the package only when you are ready to use the LED modules. If resealing of the original package is required remove excess air from the packaging and place the moisture absorber (silica-gel bag) in to the packaging and seal the ESD back with adhesive tape.

ESD precautions at luminaire assembly site

The LEDs are sensitive to the electrostatic discharge (ESD) and surge current. If voltage exceeding the absolute maximum rating is applied to LEDs, it may cause damage or even destruction to LED devices.

- EN 61340-5-1: Protection of electronic devices from electrostatic phenomena – General Requirements describes procedures for protection for damage caused by electrostatic discharge while handling electronic devices, following list lists basic protective measures described in the standard.

ESD protection measures in handling and assembling LED modules

- Employee training for correct handling
- Personnel grounding via wrist band / footwear
- ESD protective clothing / shoes
- Handle LED modules only in ESD protected areas and workplaces

Chemical considerations

Chemical substances may cause damage the LED module by causing discoloration, loss of luminous flux or total failure of the module.

Avoid materials and substances containing:

- VOCs - Volatile Organic Compounds that may occur in adhesives, or sealings. Verify that the materials used in the luminaires are not causing VOCs.
- Halogen compounds
- Chlorine
- Acetates
- Sulphuric compounds

Never look directly into an operational LED module without suitable protective eye wear!

ELECTRIC & THERMAL CONSIDERATIONS

Wiring insulation

- According to recommendations in EN 60598

Wire connections

- Please refer to LED driver datasheets connections diagram
- Wrong polarity might damage the LED modules

Choosing the LED driver

- To guarantee the safe and reliable operation of the M series LED-modules the LED driver must be provided with open and short circuit protection.
- M series modules are designed to be used with constant current output type LED driver

Electrical design, electrical safety

During the design it is luminaire manufacturers responsibility to follow the international and national electric design regulations and recommendations for the electric safety and luminaire protection. Electric safety classification and protection class is depending on:

- Actual luminaire design and safety classification
 - LED driver insulation
 - LED driver output isolation (safety isolating, non-isolated)
- ALWAYS CHECK AND FOLLOW EXACT REGULATIONS FROM LATEST RELEVANT IEC/EN STANDARDS.**

Installation considerations

The M series modules are basic isolated against ground and can be installed on earthed metal parts of the luminaire. We recommend using plastic screws, clips or a combination of M4 metal screws and insulating plastic washers for safe operation.

Please follow regulations from IEC60598-1 for creepage and clearance requirements.

The use of TIM (thermal interface material) is generally not required if the maximum ambient temperature in the luminaire does not exceed 50 °C. If using TIM in the installation process, the user should give special attention not to contaminate the optical source or PCB.

Maximum tc & tp temperature

- Reliable operation is only guaranteed if the maximum tc point temperature is not exceeded under the conditions of use.
- Lifetime is only guaranteed if the maximum tp point temperature specified for lifetime is not exceeded under the conditions of use.

MECHANICAL CONSIDERATIONS

- While handling the modules avoid mechanical stress or pressure applied to light emitting surface.
- Avoid dropping of the LED modules
- Bending of the modules is not allowed
- Avoid touching the light emitting surface
- Mechanical modifications (drilling, milling, sawing and breaking of the module) are not permitted

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