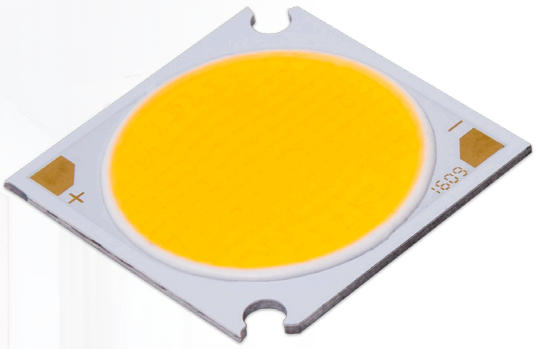
COB-40

freedom in lighting **Helvar**

Chip on Board (COB) **LED Package**, 40 W Series

- New generation COB, high efficacy up to 180 lm/W at Tc = 85 °C
- Lumen output up to 6175 lm in a single LED package
- Accurate initial colour consistency of MacAdam (SDCM) 3-step
- Small light-emitting surface (LES) of 22 mm & small footprint (28 x 28 mm) for design freedom
- Holders and reflectors available to suit your application

1080 mA, 34.6 V



LED provided by SAMSUNG

	Nominal colour temperature	Luminous flux (Φv)	Forward voltage			Luminous efficacy	Power consumption			CRI
		Tc = 85 °C	Tc = 85 °C			Tc = 85 °C	Tc = 85 °C			
	[K]	Typ. [lm]	Min. [V]	Typ. [V]	Max. [V]	Typ. [lm/W]	Min. [W]	Typ. [W]	Max. [W]	
Nominal @ 1080 mA										
COB-40-830 (SPHWHAHDNK25YZV3D2)	3000	5837	31.8	34.6	37.5	156	34.3	37.4	40.5	> 80
COB-40-840 (SPHWHAHDNK25YZT3D2)	4000	6146	31.8	34.6	37.5	164	34.3	37.4	40.5	> 80
COB-40-850 (SPHWHAHDNK25YZR3D2)	5000	6175	31.8	34.6	37.5	165	34.3	37.4	40.5	> 80

Measurement tolerance: Luminous flux ±7 %, CRI ±1, Voltage ±5 %

The stated COB specifications tested in pulsed condition at rated test current (10 ms pulse width) and rated temperature (Tj = Tc = 85 °C).

Electrical specifications

at Tc = 85 °C	COB-40		
	Min.	Nom.	Max
Operating Current [mA]	-	1080	*)
Operating Voltage [2] [V]	31.8	34.6	37.5

*) *Absolute maximum rated current 2760 mA, see the derating curve*

Thermal resistance (junction to case point)	0.32 °C/W
IP rating	IP00

Photometric specifications

Colour consistency at initial time	3 MacAdam steps
Colour Rendering Index	> 80
Beam angle	115°
Photobiological risk group	RG1 unlimited

Lifetime specifications

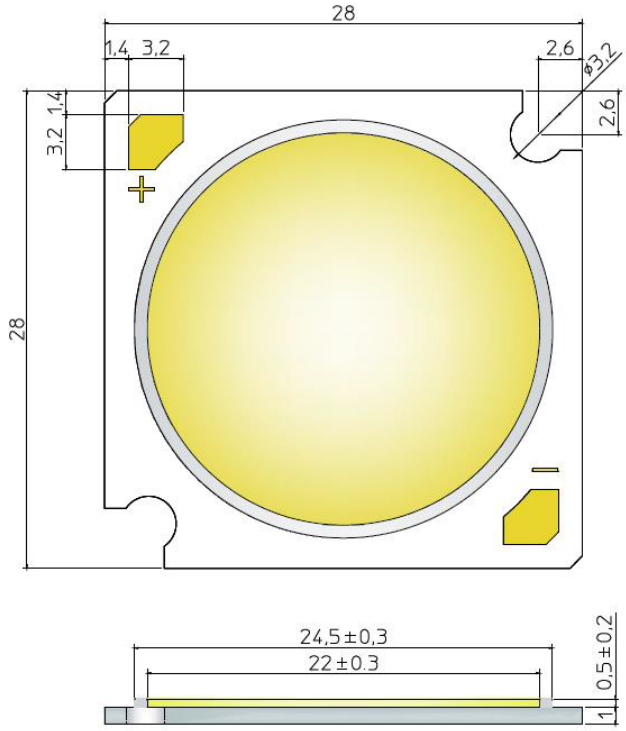
Operating current	Temperature	L70B50	L70B20	L70B10	L80B50
Nominal 1080 mA	Tc = 85 °C	> 50 000	> 50 000	> 50 000	> 50 000
	Tc = 105 °C	> 50 000	> 50 000	> 50 000	> 50 000
Maximum 2760 mA	Tc = 85 °C	> 50 000	> 50 000	> 50 000	> 50 000
	Tc =105 °C	> 50 000	> 50 000	> 50 000	> 50 000

Lumen depreciation estimations in hours

Operating Conditions and Characteristics

Tp point (performance measurements)	Tc = 85 °C
Max. temperature at Tc point	**115 °C**
Operating temperature range	-40...+105 °C
Storage temperature	-40...+120 °C
Humidity	No condensation

Dimensions



Length	28.0 ± 0.15 mm
Width	28.0 ± 0.15 mm
Thickness of PCB	1.0 ± 0.1 mm
Height	1.5 ± 0.3 mm
Light Emitting Surface (LES) diameter	22.0 ± 0.3 mm

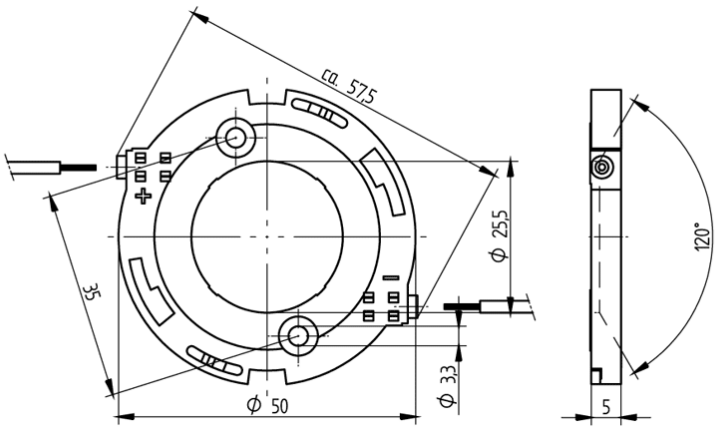
Packing details	1 Tray	1 Bag	1 Small box	1 Box
Num. of modules	16	80	160	320

ESD foam trays, antistatic bag and carton boxes

Compatible holders

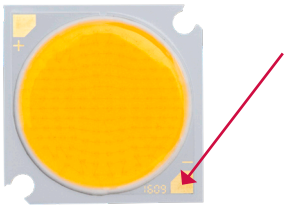
Following holders supplied by Helvar are compatible with COB-40 LED modules. In technical questions or availability requests, please contact Helvar. More detailed information as well as reflectors and other accessories can be found from BJB website www.bjb.com.

Manufacturer	Helvar order code	Manufacturer code	Dimensions		Beam opening	Wire thickness	Approvals
			Diameter [mm]	Height [mm]	[°]	[m²]	
BJB	5191000	47.319.2030.50	50	5.0	120	0.5	cULRus, cULus, VDE



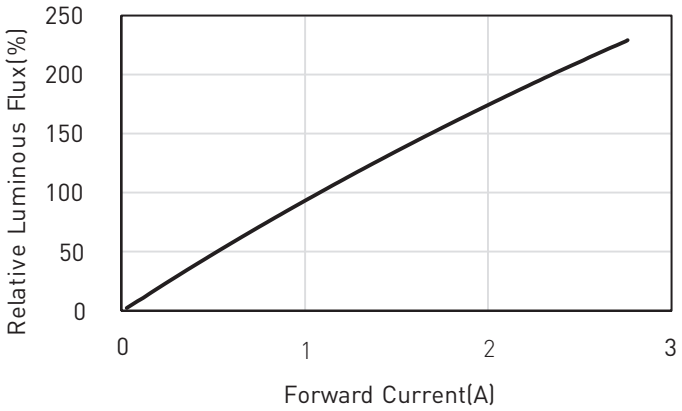
Thermal Management

Tc (Tp) Point : See the below red mark.

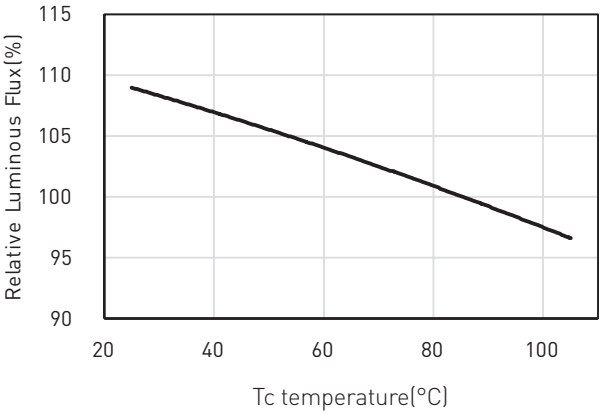


Specification diagrams

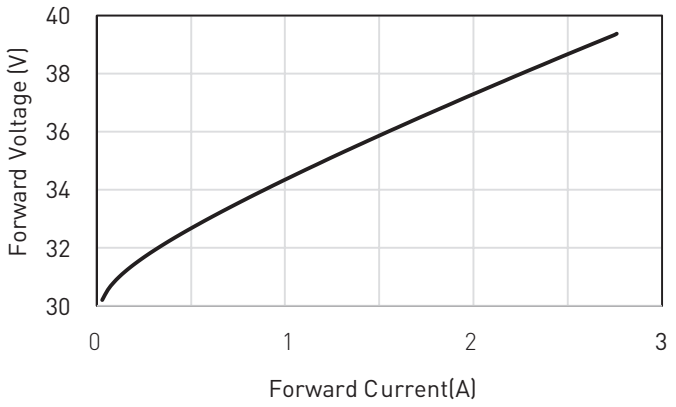
LUMINOUS FLUX VS FORWARD CURRENT



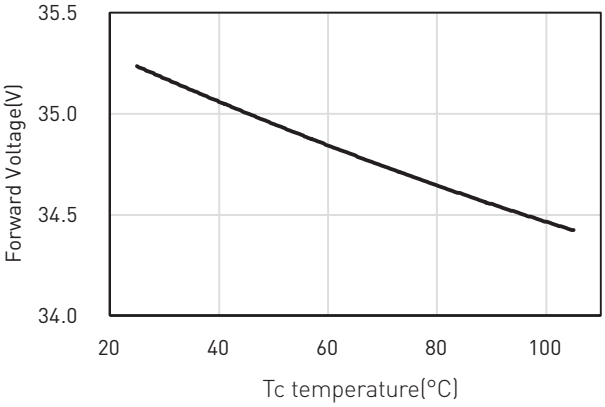
LUMINOUS FLUX VS TEMPERATURE



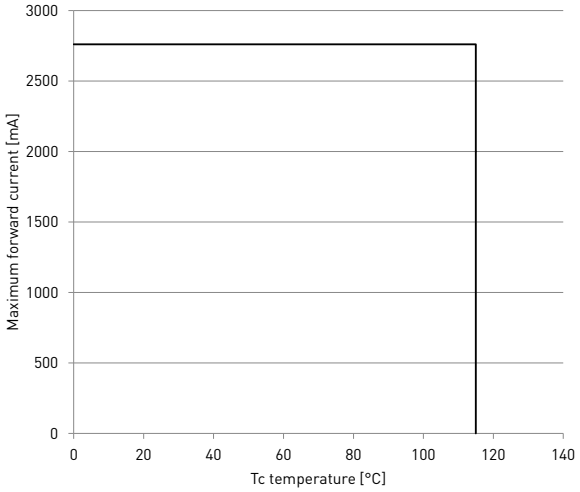
FORWARD VOLTAGE VS FORWARD CURRENT



FORWARD VOLTAGE VS TEMPERATURE



DERATING CURVE



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. Operating conditions of the LED modules may never exceed the specifications 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 during operation. 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: -40...+120 °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.
- After storage bag is opened, device subjected to soldering, solder reflow, or other high temperature processes must be:
  a. mounted within 672 hours (28 days) at an assembly line with a condition of no more than 30 °C / 60 % RH, or
  b. stored at <10 % RH.

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.

- IEC / 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. This device should not be used in any type of fluid such as water, oil, organic solvent, etc.
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.

ELECTRIC & THERMAL CONSIDERATIONS

Wiring insulation

- According to recommendations in IEC / 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 COB LED modules the LED driver must be provided with open and short circuit protection.
- COB LED 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.

ALWAYS CHECK AND FOLLOW EXACT REGULATIONS FROM LATEST RELEVANT IEC / EN STANDARDS.

Maximum operating and tc temperature

- The integrator must always ensure proper thermal management (i.e. mounting base of the module, possible heatsink, air flow etc.) so that the tc point does not exceed the tc max limit.
- Reliable operation and lifetime is only guaranteed if the maximum tc point temperature is not exceeded under the conditions of use.

Baking before mounting

- Devices require baking before mounting, if humidity card reading is >60 % at 23 ± 5 °C.
- Devices must be baked for 1 hour at 60 ± 5 °C, if baking is required.

MECHANICAL CONSIDERATIONS

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

INSTALLATION CONSIDERATIONS

The COB LED modules are basic isolated against ground and can be installed on properly insulated metal parts of the luminaire. We recommend using specific holders, listed on page 2, to install the COB modules into the luminaire.
Please follow regulations from IEC/EN 60598-1 for creepage and clearance requirements.

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

Conformity & standards

Led modules for general lighting - safety specifications	IEC / EN 62031
Photobiological safety of lamps and lamp systems	IEC / EN 62471 TR IEC / EN 62778
Compliant with relevant EU directives	
ENEC and CE marked	
RoHS / REACH compliant	