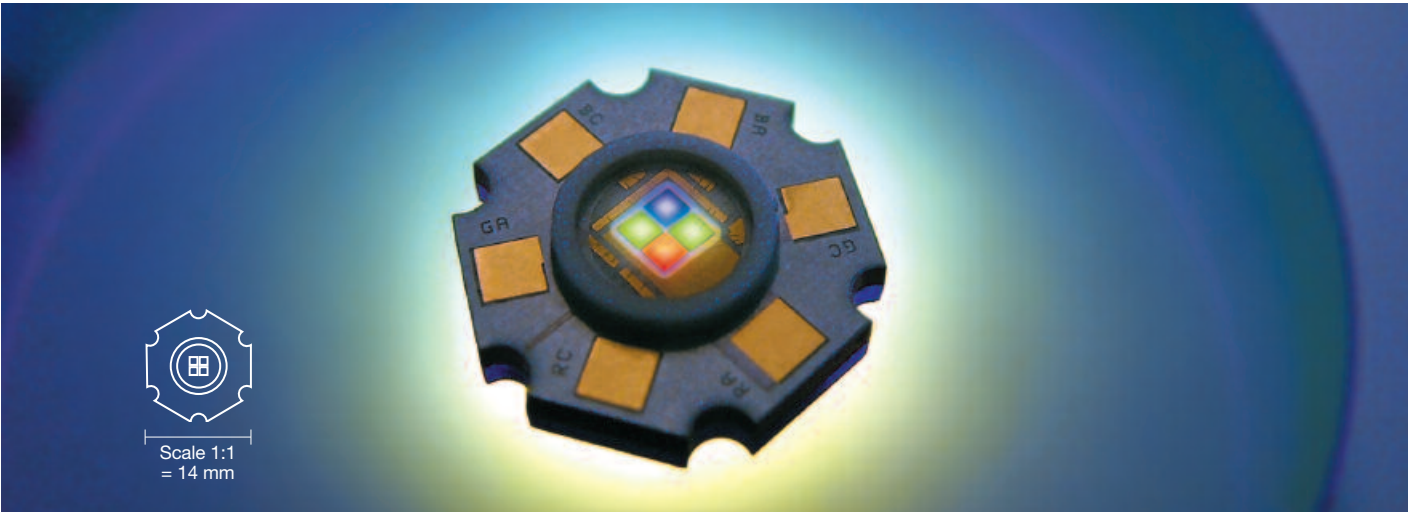


ACULED™

Setting the Mood™



Superior brightness and excellent color mixing in a compact size, ACULED is truly “setting the mood” with illumination. Test it out with our Evaluation Kit.

Overview

PerkinElmer's ACULED™ – or All Color Ultrabright LED – is a multi-use, compact LED designed for operation in specialty lighting applications. Typical applications include mood lighting, indoor/outdoor illumination, architectural or stage lighting, automotive interior lighting and much more.

The ACULED is a high-power light source utilizing multi chip-on-board (COB) technology. The close chip placement achieves an exquisite white color mix. Excellent multi-color mixing is also achievable by driving each chip individually using one blue, one red, and two green power

chips. Each color has a separate anode and cathode. The two green chips are serially connected; additional optics can be easily attached.

The PerkinElmer ACULED boasts a compact size and superior optical design. In addition, the copper board provides for superior thermal conductivity. An Evaluation Kit is also available for testing. With global resources and manufacturing capabilities, PerkinElmer Elcos customers continue to benefit from the company's years of experience and expertise in LED technology and specialty lighting applications.

Features and Benefits

- ▶ High-power light source utilizing multi chip-on-board (COB) technology
- ▶ Superior brightness resulting from excellent quality LED chips and superior thermal management
- ▶ Compact size
- ▶ Excellent color mixing achieved by a separate anode and cathode for each color (red, green, blue)
- ▶ Close individual chip placement to produce an exquisite white color mix
- ▶ One blue, one red and two green chips (green connected serially)
- ▶ Lambertian emitter with 120° aperture
- ▶ Up to 4.5 W electrical power

Applications

- ▶ High-power light source for general illumination
- ▶ Vision systems
- ▶ Architectural lighting
- ▶ Mood lighting
- ▶ Medical lighting
- ▶ Backlighting
- ▶ Displays and signs

Technical Data

Optical and electrical characteristics ambient temperature = 25° C

Parameter		Symbol	RED	GREEN	BLUE	Unit
Luminous flux**	@350mA	typ. ϕ_V	16	26	2.7	lm
Luminous flux***	@350mA	typ. ϕ_V	27	41	4	lm
Dominant wavelength*	@350mA	λ_{dom}	(0) 620–630 (1) 620–630	(0) 515–530 (1) 520–525 (2) 515–520 (3) 525–530	(0) 455–465 (1) 460–465 (2) 455–460	nm nm nm nm
Spectral bandwidth	@350mA	typ. $\Delta\lambda$	30	45	30	nm
Forward voltage	@350mA	typ. V_F max. V_F	2.5 3.0	7.0 8.0	3.6 4.0	V V
Optical efficiency**	@350mA	typ. η_{opt}	18	11	2	lm/W
Optical efficiency**	@ 50mA	typ. η_{opt}	33	23	5	lm/W
Optical efficiency***	@350mA	typ. η_{opt}	31	17	3	lm/W
Viewing angle at 50%		typ. 2ψ	120	120	120	degree
Radiating surface		typ. A_{rad}	1.0	2x1.0	1.0	mm ²
Thermal resistance			assembly: 10			K/W

* binning: (0) = standard, (1) = main binning

Adequate heat sink is required. Derating must be observed to maintain junction temperature below maximum.

** Please note: These values are measured at realistic working conditions for thermal equilibrium with a small heat sink.

Attention: Some suppliers present only optimized laboratory conditions.

*** Values for board-temperature of 25° C

Maximum Ratings @25° C

	Symbol	Values	Unit
Operating temperature range	T_{op}	-40 to 100	°C
Storage temperature	T_{st}	-40 to 100	°C
Junction temperature	T_J	120	°C
Forward current per color	I_p	350	mA
Surge current per color	T_{op}	700	mA
Forward voltage	RED BLUE GREEN	V_R V_R	5 10 V V
Power consumption	RED GREEN BLUE	P_{tot} P_{tot} P_{tot}	1.05 3.2 1.8 W W W

Figure 1 Mechanical and Electrical Specifications

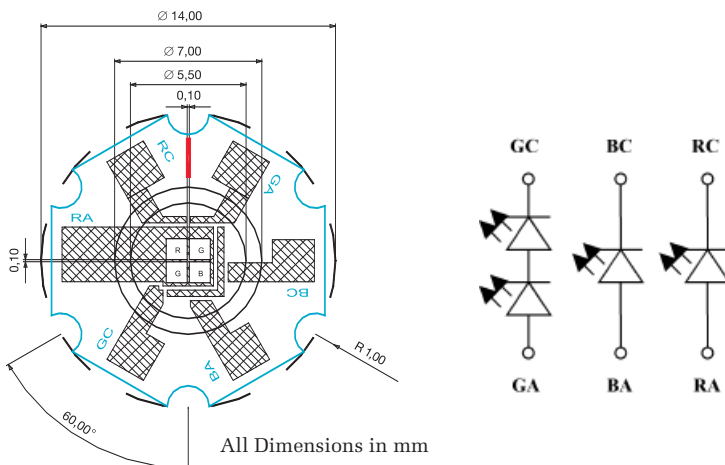


Figure 2 Spectral Distribution, Typical Values (350mA)

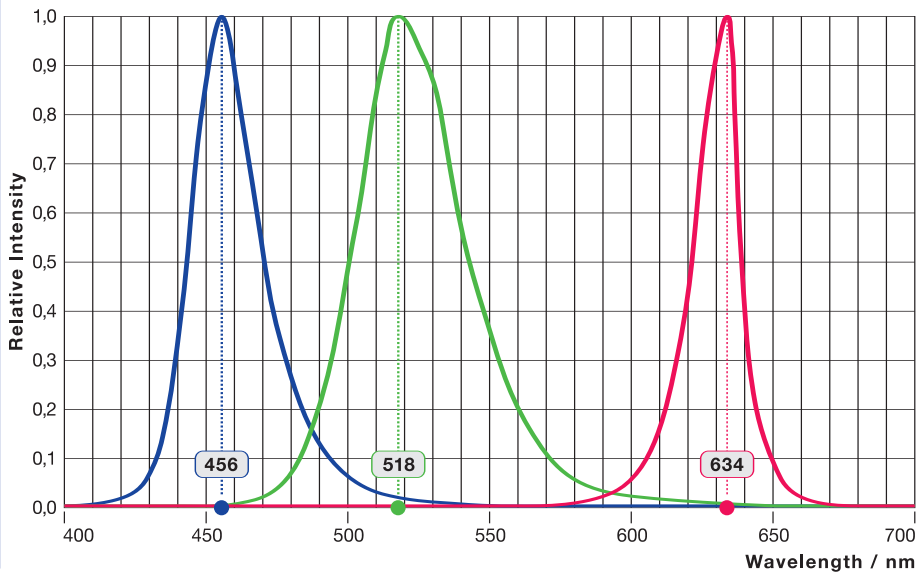


Figure 3 Color Coordinates ACULED™ (CIE 1931)

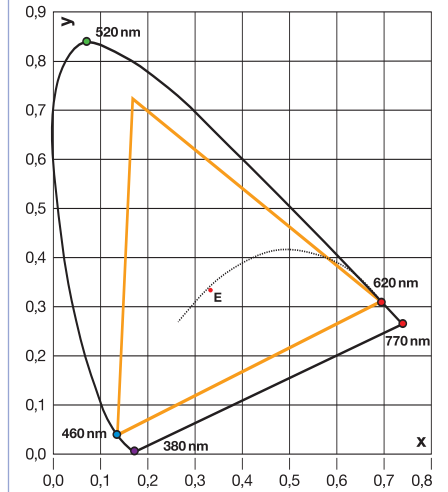


Figure 4 Typical Beam Pattern

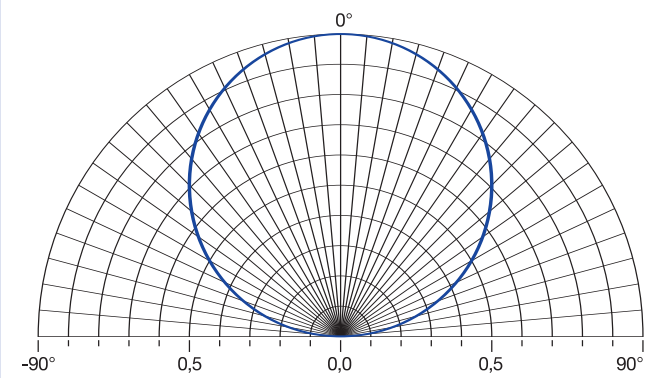


Figure 5 Relative Intensity

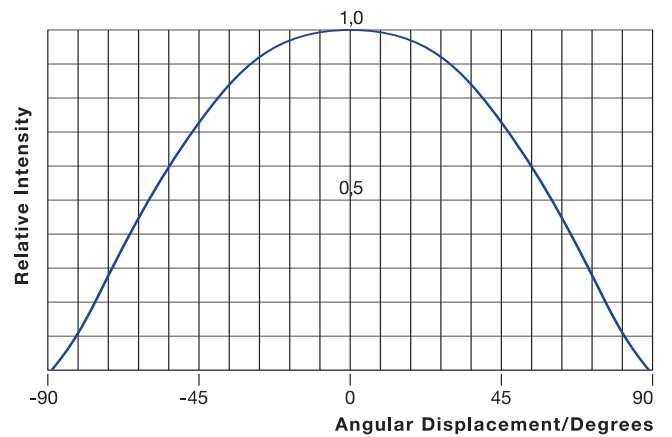
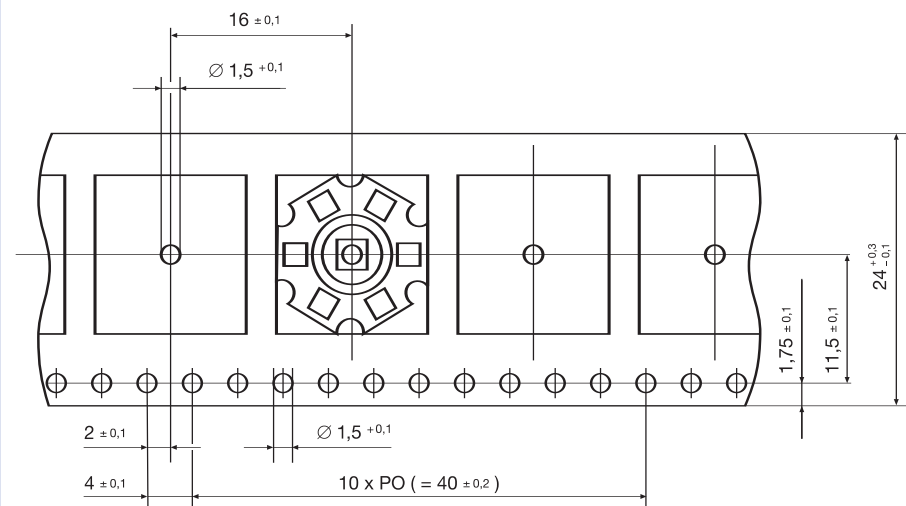
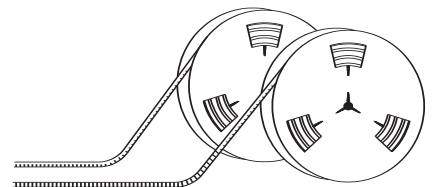


Figure 6 Special Packaging* : Blister Tape



Standard 24 mm Blister Tape



*Available upon request

Optics

Currently, the ACULED™ lens holder system offers two different collimating optics. With an opening angle of approximately 32°, the ACULED LHS-AL25-L32 provides a medium opening, whereas the LHS-AL25-L22 has a tight collimating optic with an aperture angle of approximately 22°. Due to their superior optical quality, both optics increase luminous intensity and thereby enable new application fields for the ACULED™. Please contact us for further information or to receive the datasheet ACULED™ LHS-AL25.

Heat Sink Recommendations

The maximum junction temperature of the ACULED™ should not exceed 120° C. Therefore, an adequate heat sink is required for operating the LED with currents between 50mA and 350mA. Due to the ACULED's superior thermal management, heat dissipation is optimized when the LED is screwed down with thermal grease onto a planar substrate.



ACULED Evaluation Kit

PerkinElmer Elcos has designed an Evaluation Kit to run and test the ACULED in your application. It is easy to use and does not require specialized technical know how. Please contact us to receive a product description and additional information on how to obtain the Evaluation Kit.

Note

According to IEC 60825-1 (EN 60825-1):

LED Radiation.

Do not view directly with optical instruments.

Class 1M LED product for red and green chip.

Do not look into the beam.

Class 2 LED product for blue chip.

Each color is individually addressable, resulting in substantial flexibility to generate superior color mixing.

Soldering is recommended to be done manually, since testing of reflow capabilities has not been finalized yet and therefore reflow capabilities cannot be guaranteed at the moment.

Ordering Information:

Please contact your Customer Support team and refer to the part number ACULED.

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