

HLMA-Kx00
T-1 (3 mm), High Performance
AlInGaP LED Lamps

Avago
TECHNOLOGIES

Data Sheet

SunPower Series
HLMA-KL00 Series, HLMA-KH00 Series



Description

These untinted, non-diffused, solid state lamps utilize the latest absorbing/transparent substrate aluminum indium gallium phosphide (AlInGaP) LED technology. These materials have a very high luminous efficiency, capable of producing high light output over a wide range of drive currents. In addition, these LED lamps are at wavelengths ranging from amber to reddish orange.

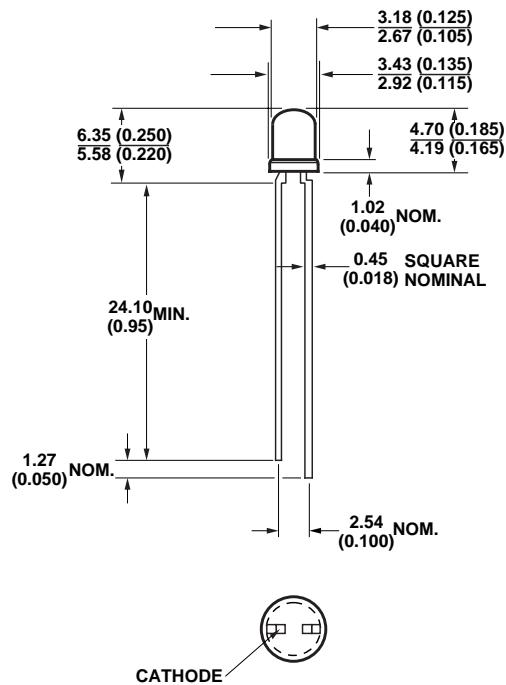
Features

- Outstanding LED material efficiency
- High light output over a wide range of currents
- Low electrical power dissipation
- Colors: 590/592 nm Amber, 615/617 nm Reddish-Orange

Applications

- Outdoor message boards
- Safety lighting equipment
- Signaling applications
- Emitter for emitter/detector applications
- Changeable message signs
- Portable equipment
- Medical equipment
- Automotive lighting
- Alternative to incandescent lamps

Package Dimensions



NOTES:

- ALL DIMENSIONS ARE IN MILLIMETERS (INCHES).
- THE LEADS ARE MILD STEEL, SOLDER DIPPED.
- AN EPOXY MENISCUS MAY EXTEND ABOUT 1 MM (0.040") DOWN THE LEADS, UNLESS OTHERWISE NOTED.

Absolute Maximum Ratings at $T_A = 25^\circ\text{C}$

| | |
|---|---------------------|
| DC Forward Current ^[1,4,5] | 50 mA |
| Peak Forward Current ^[2] | 200 mA |
| Time Average Input Power ^[2] | 103 mW |
| Transient Forward Current ^[3] (10 μs Pulse) | 500 mA |
| Reverse Voltage ($I_R = 100 \mu\text{A}$) | 5 V |
| Operating Temperature Range | -40 to 100°C |
| Storage Temperature | -40 to 100°C |
| Junction Temperature | 110°C |
| Wave Soldering Temperature [1.59 mm (0.063 in.) from Body] | 250°C for 3 seconds |
| Solder Dipping Temperature [1.59 mm (0.063 in.) from Body] | 260°C for 5 seconds |

Notes:

- Derate linearly as shown in Figure 4.
- Any pulsed operation cannot exceed the Absolute Max Peak Forward Current or the Max Allowable Time Average Power as specified in Figure 5.
- The transient peak current is the maximum nonrecurring peak current the device can withstand without damaging the LED die and wire bonds.
- Drive Currents between 10 mA and 30 mA are recommended for best long term performance.
- Operation at currents below 10 mA is not recommended, please contact your Avago sales representative.

Optical Characteristics at $T_A = 25^\circ\text{C}$

| Part Number | Luminous Intensity I_v (mcd) @ 20 mA ^[1] | | Peak Wavelength λ_{peak} (nm) | Color, Dominant Wavelength λ_d ^[2] (nm) | Viewing Angle $2\theta_{1/2}$ Degrees ^[3] | Luminous Efficacy η_v (lm/w) |
|-------------|---|------|--|--|--|-----------------------------------|
| HLMA- | Min. | Typ. | Typ. | Typ. | Typ. | |
| KL00 | 35 | 200 | 592 | 590 | 45 | 480 |
| KH00 | 35 | 200 | 621 | 615 | 45 | 263 |

Notes:

1. The luminous intensity, I_v , is measured at the mechanical axis of the lamp package. The actual peak of the spatial radiation pattern may not be aligned with this axis.
2. The dominant wavelength, λ_d , is derived from the CIE Chromaticity Diagram and represents the color of the device.
3. $\theta_{1/2}$ is the off-axis angle where the luminous intensity is 1/2 the peak intensity.

Electrical Characteristics at $T_A = 25^\circ\text{C}$

| Part Number | Forward Voltage V_F (Volts) @ $I_F = 20 \text{ mA}$ | | Reverse Breakdown V_R (Volts) @ $I_R = 100 \mu\text{A}$ | | Capacitance C (pF) $V_F = 0, f = 1 \text{ MHz}$ | Thermal Resistance $R_{\theta J-PIN}$ ($^\circ\text{C}/\text{W}$) | Speed of Response τ_s (ns) Time Constant e^{-t/τ_s} |
|-------------|---|------|---|------|---|---|---|
| HLMA- | Typ. | Max. | Min. | Typ. | Typ. | Typ. | Typ. |
| KL00 | 1.9 | 2.4 | 5 | 25 | 40 | 290 | 13 |
| KH00 | 1.9 | 2.4 | 5 | 25 | 40 | 290 | 13 |

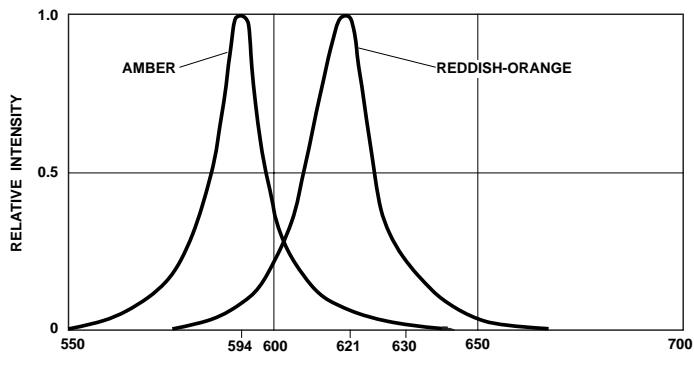


Figure 1. Relative intensity vs. wavelength.

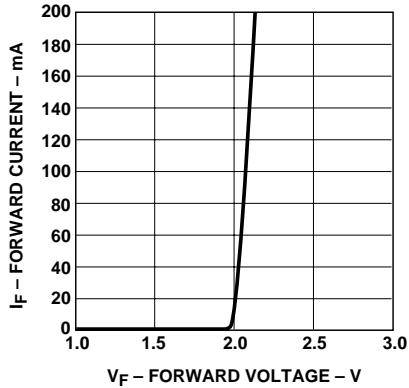


Figure 2. Forward current vs. forward voltage, AS-AlInGaP.

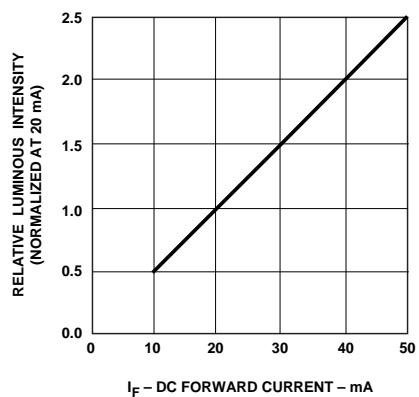


Figure 3. Relative luminous intensity vs. forward current. Derating based on $T_{J\text{MAX}}$.

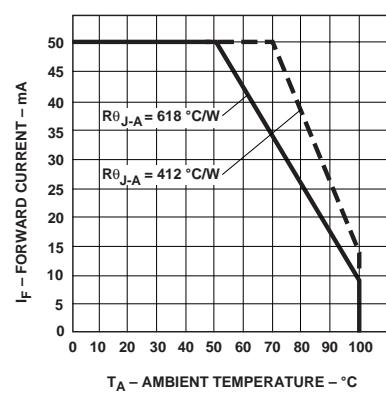


Figure 4. Maximum forward current vs. ambient temperature. Derating based on $T_{J\text{Max}} = 110$ °C.

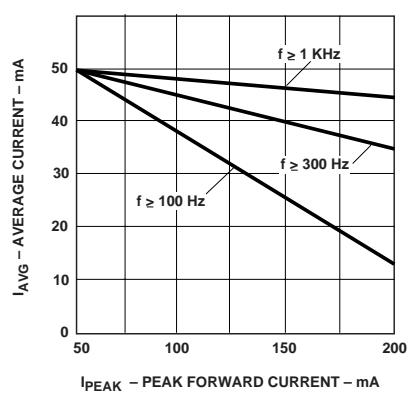


Figure 5. Maximum average current vs. peak forward current.

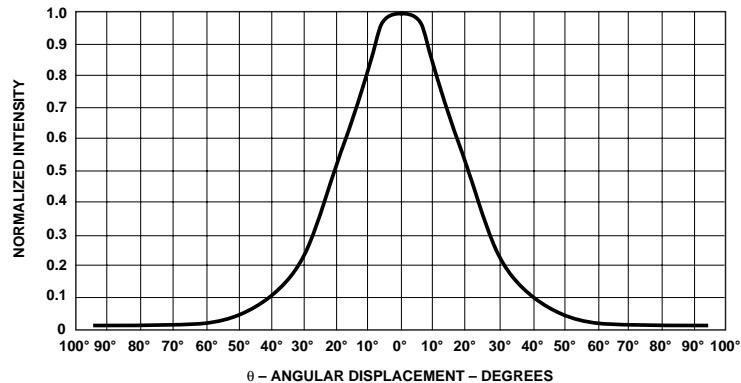


Figure 6. Normalized luminous intensity vs. angular displacement.

For product information and a complete list of distributors, please go to our website: www.avagotech.com

Avago, Avago Technologies, and the A logo are trademarks of Avago Technologies Limited in the United States and other countries.
Data subject to change. Copyright © 2006 Avago Technologies Limited. All rights reserved. Obsoletes 5968-1439E
5989-3271EN June 30, 2006

AVAGO
TECHNOLOGIES



**Стандарт
Электрон
Связь**

Мы молодая и активно развивающаяся компания в области поставок электронных компонентов. Мы поставляем электронные компоненты отечественного и импортного производства напрямую от производителей и с крупнейших складов мира.

Благодаря сотрудничеству с мировыми поставщиками мы осуществляем комплексные и плановые поставки широчайшего спектра электронных компонентов.

Собственная эффективная логистика и склад в обеспечивает надежную поставку продукции в точно указанные сроки по всей России.

Мы осуществляем техническую поддержку нашим клиентам и предпродажную проверку качества продукции. На все поставляемые продукты мы предоставляем гарантию .

Осуществляем поставки продукции под контролем ВП МО РФ на предприятия военно-промышленного комплекса России , а также работаем в рамках 275 ФЗ с открытием отдельных счетов в уполномоченном банке. Система менеджмента качества компании соответствует требованиям ГОСТ ISO 9001.

Минимальные сроки поставки, гибкие цены, неограниченный ассортимент и индивидуальный подход к клиентам являются основой для выстраивания долгосрочного и эффективного сотрудничества с предприятиями радиоэлектронной промышленности, предприятиями ВПК и научно-исследовательскими институтами России.

С нами вы становитесь еще успешнее!

Наши контакты:

Телефон: +7 812 627 14 35

Электронная почта: sales@st-electron.ru

Адрес: 198099, Санкт-Петербург,
Промышленная ул, дом № 19, литер Н,
помещение 100-Н Офис 331