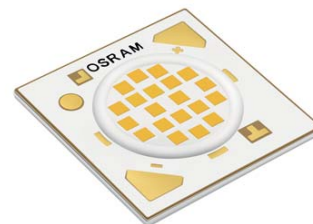


GW MAFJB1.CM



To make system designs easy, the SOLERIQ® P 9 has only a single flux and color bin and is specified at 85 °C to mimic the temperatures typically found in directional applications. The small light emitting surface of only 9 mm diameter enables system designs with very small optics and world class center beam candlepower (CBCP). Hence only one SOLERIQ® P 9 can replace a traditional 35 W HID lamp while maintaining a compact form factor.

Features:

- **Package:** Chip-on-Board
- **Viewing angle at 50 % I_v:** 120°
- **Color:** 2700 K - 4000 K (white)
- **CRI:** min. 90 (typ. 95)
- **Luminous Flux:** typ. 1600 lm @ 3000 K, 85 °C
- **Luminous efficacy:** typ. 80 lm/W @ 3000 K, 85 °C

Applications

- Spot lights
- Shop lighting
- Museum lighting

为了使系统设计更加简单，SOLERIQ® P 9 只有单一的光通量分组和颜色分组，测试的温度为实际应用中较常见的 85 °C。只有 9 毫米直径的发光面使得在系统设计时可以实现非常小巧的光学器件和世界一流的中心光强 (CBCP)。因此只需用一颗 SOLERIQ® P 9 就可以取代传统的 35 W 高强度气体放电灯 (HID)，同时保持一个紧凑的外形。

性能：

- **封装：**集成封装
- **视角 at 50 % I_v:** 120°
- **色温：**2700 K - 4000 K (白色)
- **显色指数：**min. 90 (typ. 95)
- **典型光通量：**typ. 1600 lm @ 3000 K, 85 °C
- **发光效率：**typ. 80 lm/W @ 3000 K, 85 °C

应用

- 射灯
- 商场照明
- 博物馆照明

Ordering Information

订购信息

Type: 类型 :	Color Temperature 色温 [K]	Luminous Flux 1) page 18 光通量 1) 第 18 $I_F = 700 \text{ mA}$, $T_S = 85 \text{ }^\circ\text{C}$ $\Phi_V \text{ [lm]}$	Ordering Code 订购代码
GW MAFJB1.CM-RSSP-27S3	2700	1400 ... 1940	Q65111A5057
GW MAFJB1.CM-RTSQ-30S3	3000	1500 ... 2100	Q65111A5054
GW MAFJB1.CM-RTSR-35S3	3500	1500 ... 2240	Q65111A5055
GW MAFJB1.CM-RUSS-40S3	4000	1640 ... 2400	Q65111A5056

Note: The above Type Numbers represent the order groups which include only a few brightness groups (see page). Only one group will be shipped on each packing unit (there will be no mixing of two groups on each packing unit). E. g. GW MAFJB1.CM-RTSR-35S3 means that only one group RTSR will be shippable for any packing unit. In order to ensure availability, single brightness groups will not be orderable.

注释： 上述类型编号代表仅包含几个亮度组的订购组（参见第 页）。每个卷盘上仅装运一个亮度组（一个卷盘上不会混装两个亮度组）。例如，GW MAFJB1.CM-RTSR-35S3 表示任何一个卷盘上仅可装运一个亮度组：RTSR。为了确保可用性，单个亮度组将不接受订购。

Maximum Ratings

最大额定值

Parameter 参数	Symbol 符号	Values 值	Unit 单位
Operating temperature range 工作温度范围	T_{op}	-40 ... 85	°C
Storage temperature range 储存温度范围	T_{stg}	-40 ... 100	°C
Junction temperature 结点温度	T_j	125	°C
Forward current 正向电流 ($T_S = 85\text{ °C}$)	I_F	200 ... 1400	mA
Surge current 冲击电流 ($t \leq 10\text{ }\mu\text{s}$; $D = 0.005$; $T_S = 85\text{ °C}$)	I_{FM}	4000	mA
Reverse current 反向电流	I_R	20	mA
ESD withstand voltage ESD 耐压 (acc. to ANSI/ESDA/JEDEC JS-001 - HBM, Class 2)	V_{ESD}	2	kV

Characteristics ($T_S = 85\text{ }^{\circ}\text{C}$; $I_F = 700\text{ mA}$)**特性**

Parameter 参数		Symbol 符号	Values 值	Unit 单位
Viewing angle at 50 % I_V 50 % I_V 时的全视角	(typ.)	2ϕ	120	$^{\circ}$
Forward voltage ^{2) page 18} 正向电压 ^{2) 第 18}	(min.) (typ.) (max.)	V_F V_F V_F	26 29 32	V V V
Reverse voltage 反向电压 ($I_R = 20\text{ mA}$)	(max.)	V_R	1.2	V
Color reproduction index ^{3) page 18} 显色指数 ^{3) 第 18}	(typ.) (min.)	R_a R_a	95 90	- -
Real thermal resistance junction / solder point 结点 - 焊点热阻	(typ.) (max.)	$R_{th\text{ JS real}}$ $R_{th\text{ JS real}}$	1.4 1.7	K/W K/W
"Electrical" thermal resistance junction / solder point “电学”热阻 (结点 / 焊点) (with efficiency $\eta_e = 30\%$)	(typ.) (max.)	$R_{th\text{ JS el}}$ $R_{th\text{ JS el}}$	1.0 1.2	K/W K/W

Brightness Groups

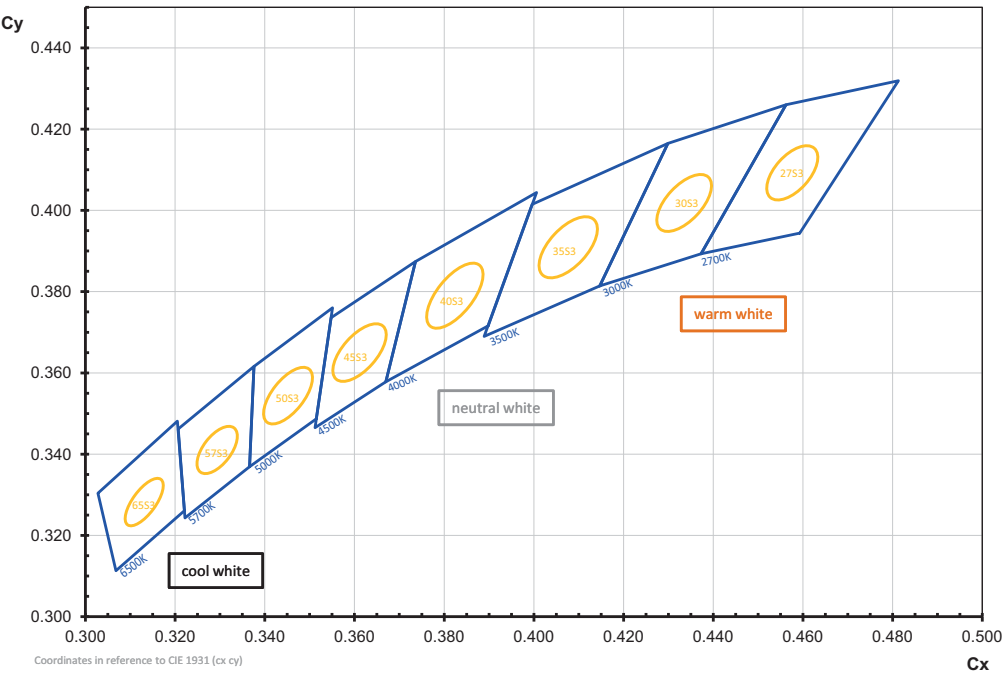
亮度组

Group 组	Luminous Flux 1) page 18 光通量 ^{1) 第 18} $T_s = 85\text{ °C}$ (min.) Φ_V [lm]	Luminous Flux 1) page 18 光通量 ^{1) 第 18} $T_s = 85\text{ °C}$ (max.) Φ_V [lm]	Luminous Flux 4) page 18 光通量 ^{4) 第 18} $T_s = 25\text{ °C}$ (extrapolated min.) Φ_V [lm]	Luminous Flux 4) page 18 光通量 ^{4) 第 18} $T_s = 25\text{ °C}$ (extrapolated max.) Φ_V [lm]
RSSP	1400	1940	1480	2060
RTSQ	1500	2100	1590	2230
RTSR	1500	2240	1590	2370
RUSS	1640	2400	1740	2540

Note: The standard shipping format for serial types includes either a lower family group, an upper family group or a grouping of all individual brightness groups of only a few brightness groups. Individual brightness groups cannot be ordered.

注释: 标准的连续类型的运输形式包括以下几种可能, 1) 一部分低亮度等级 2) 一部分高亮度等级 3) 一些混合了两至三个亮度等级。单一的亮度等级是不可以在大批量生产是订购的。

Chromaticity Coordinate Groups ⁵⁾ page 18
色坐标分组 ⁵⁾ 第 18



Color Chromaticity Groups ⁵⁾ page 18
色度坐标组 ⁵⁾ 第 18

Group	Cx	Cy	a	b	Θ
40S3	0.3823	0.3790	0.0094	0.0040	53
35S3	0.4077	0.3908	0.0093	0.0041	53
30S3	0.4339	0.4020	0.0085	0.0041	53
27S3	0.4578	0.4092	0.0079	0.0041	54

Note: Cx and Cy are the center coordinates of the ellipse, a the length of the major axis, b the length of the minor axis and Θ the angle of the major axis as defined in IEC 68001.

注释：Cx 和 Cy 是椭圆的中心坐标，a 是长轴的长度，b 是短轴的长度，Θ 是根据 IEC68001 定义的长轴的角度。

Group Name on Label

标签上的组名

Example: RSSP-35S3

示例：RSSP-35S3

Brightness 亮度组	Chromaticity Coordinate 色度坐标组
RSSP	35S3

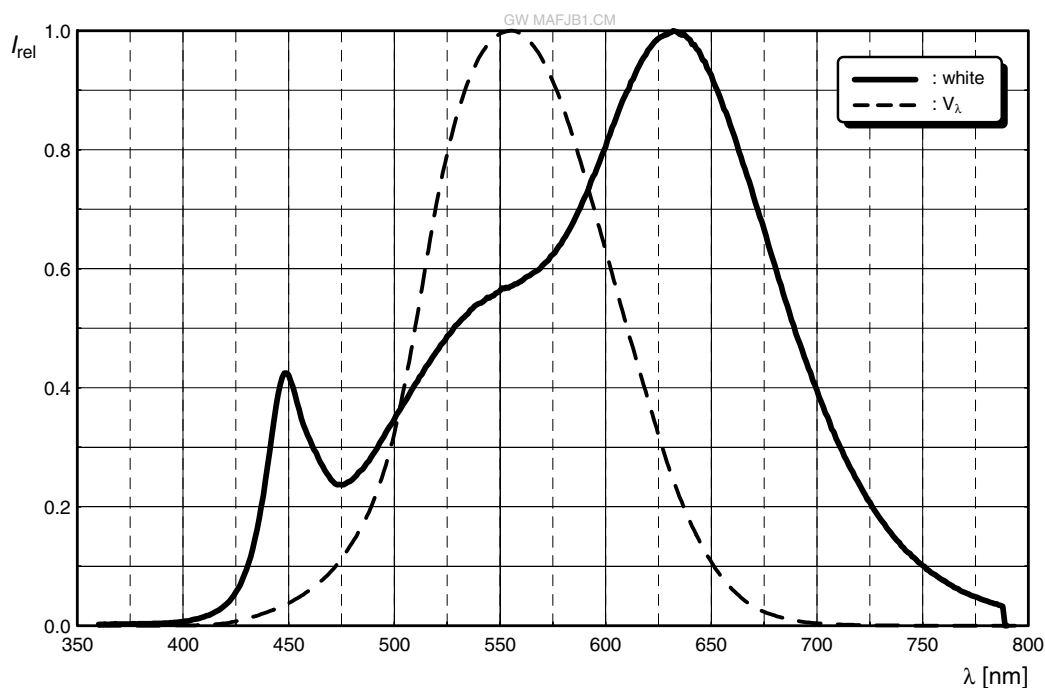
Note: No packing unit / tape ever contains more than one group for each selection.

注释： 任何一个单独包装都只包括一个亮度和颜色的分组

Relative Spectral Emission - $V(\lambda)$ = Standard eye response curve ^{6) page 18}

相对辐射光谱 - $V(\lambda)$ = 标准的人眼灵敏度曲线 ^{6) 第 18}

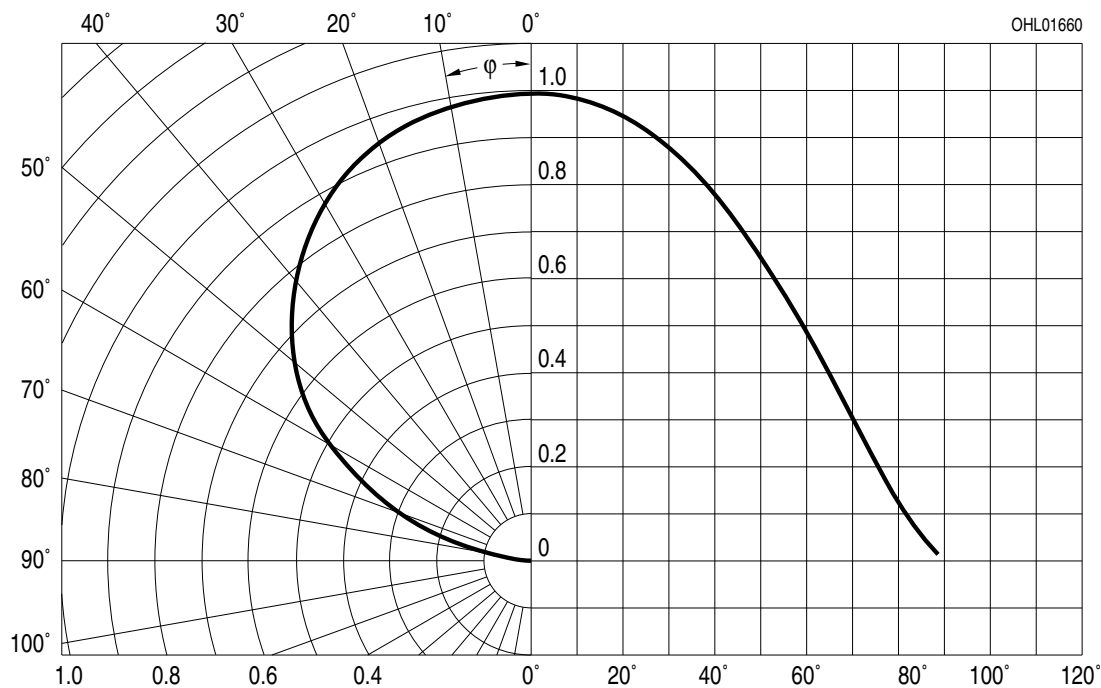
$\Phi_{\text{rel}} = f(\lambda)$; $T_S = 85^\circ\text{C}$; $I_F = 700\text{ mA}$



Radiation Characteristics ^{6) page 18}

配光曲线 ^{6) 第 18}

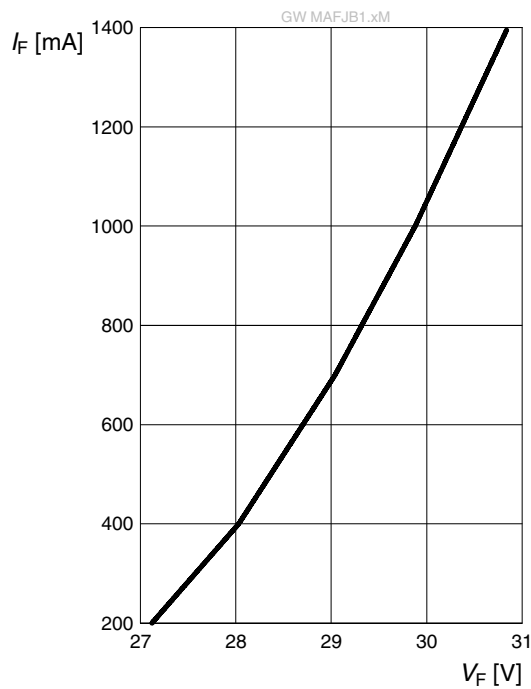
$I_{\text{rel}} = f(\phi)$; $T_S = 85^\circ\text{C}$



Forward Current ^{6) page 18}

正向电流 ^{6) 第 18}

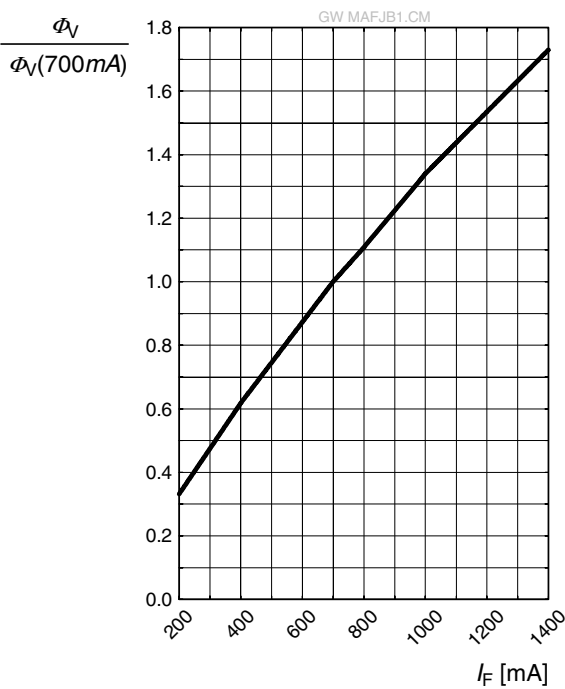
$I_F = f(V_F); T_S = 85\text{ }^{\circ}\text{C}$



Relative Luminous Flux ^{6) page 18, 7) page 18}

相对光通量 ^{6) 第 18, 7) 第 18}

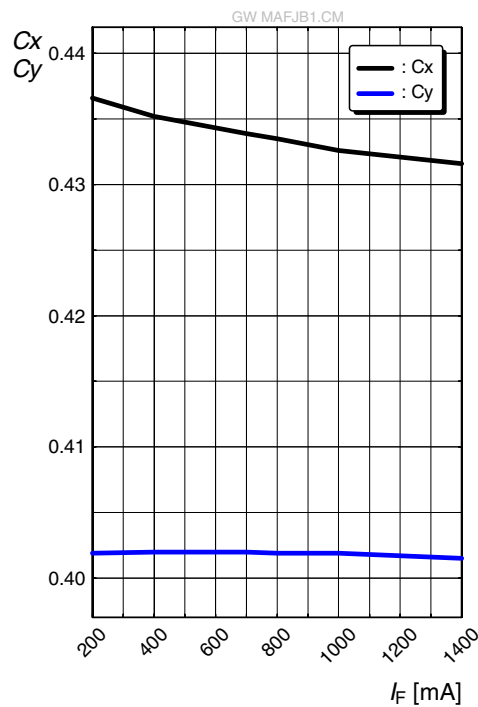
$\Phi_V/\Phi_V(700\text{ mA}) = f(I_F); T_S = 85\text{ }^{\circ}\text{C}$



Chromaticity Coordinate Shift ^{6) page 18}

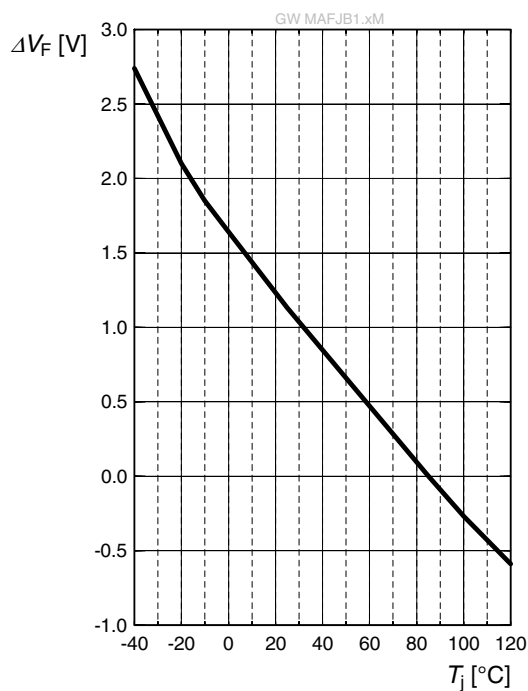
色度坐标偏移 ^{6) 第 18}

$C_x, C_y = f(I_F); T_S = 85\text{ }^{\circ}\text{C}$

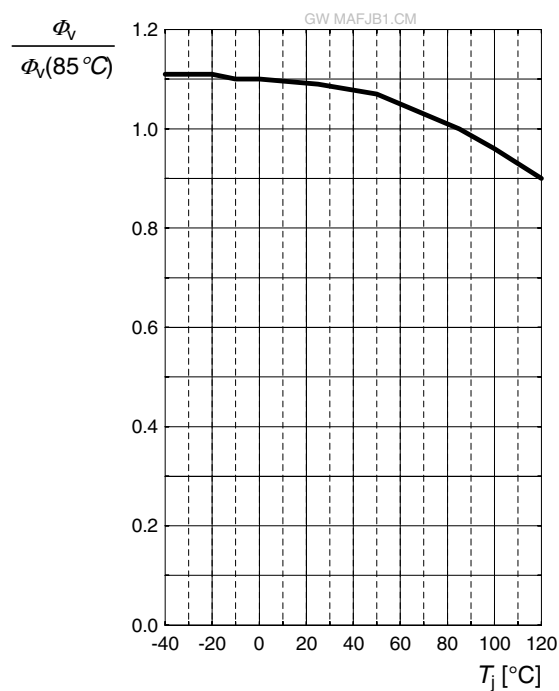


Relative Forward Voltage ^{6) page 18}相对正向电压 ^{6) 第 18}

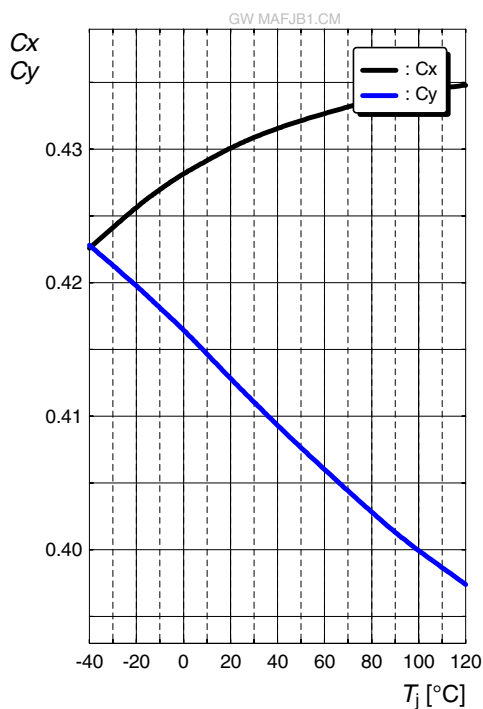
$$\Delta V_F = V_F - V_F(85^\circ\text{C}) = f(T_j); I_F = 700 \text{ mA}$$

**Relative Luminous Flux** ^{6) page 18}相对光通量 ^{6) 第 18}

$$\Phi_V / \Phi_V(85^\circ\text{C}) = f(T_j); I_F = 700 \text{ mA}$$

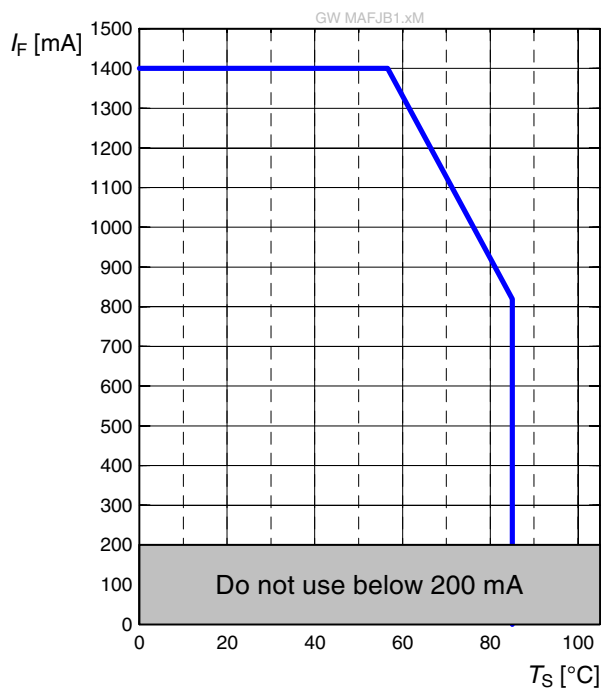
**Chromaticity Coordinate Shift** ^{6) page 18}色度坐标偏移 ^{6) 第 18}

$$C_x, C_y = f(T_j); I_F = 700 \text{ mA}$$

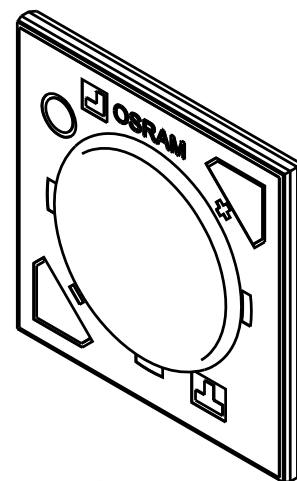
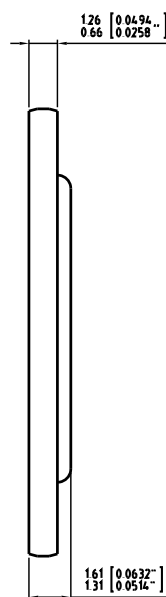


Max. Permissible Forward Current**最大允许正向电流**

$$I_F = f(T)$$



封装轮廓 8) 第 18



Isometric view

C67062-A0101-A1-03

0.6 g

0.6 g

LED is protected by ESD device which is connected in parallel to LED-Chip.

LED 由并联的 ESD 器件（齐纳二极管）所保护。

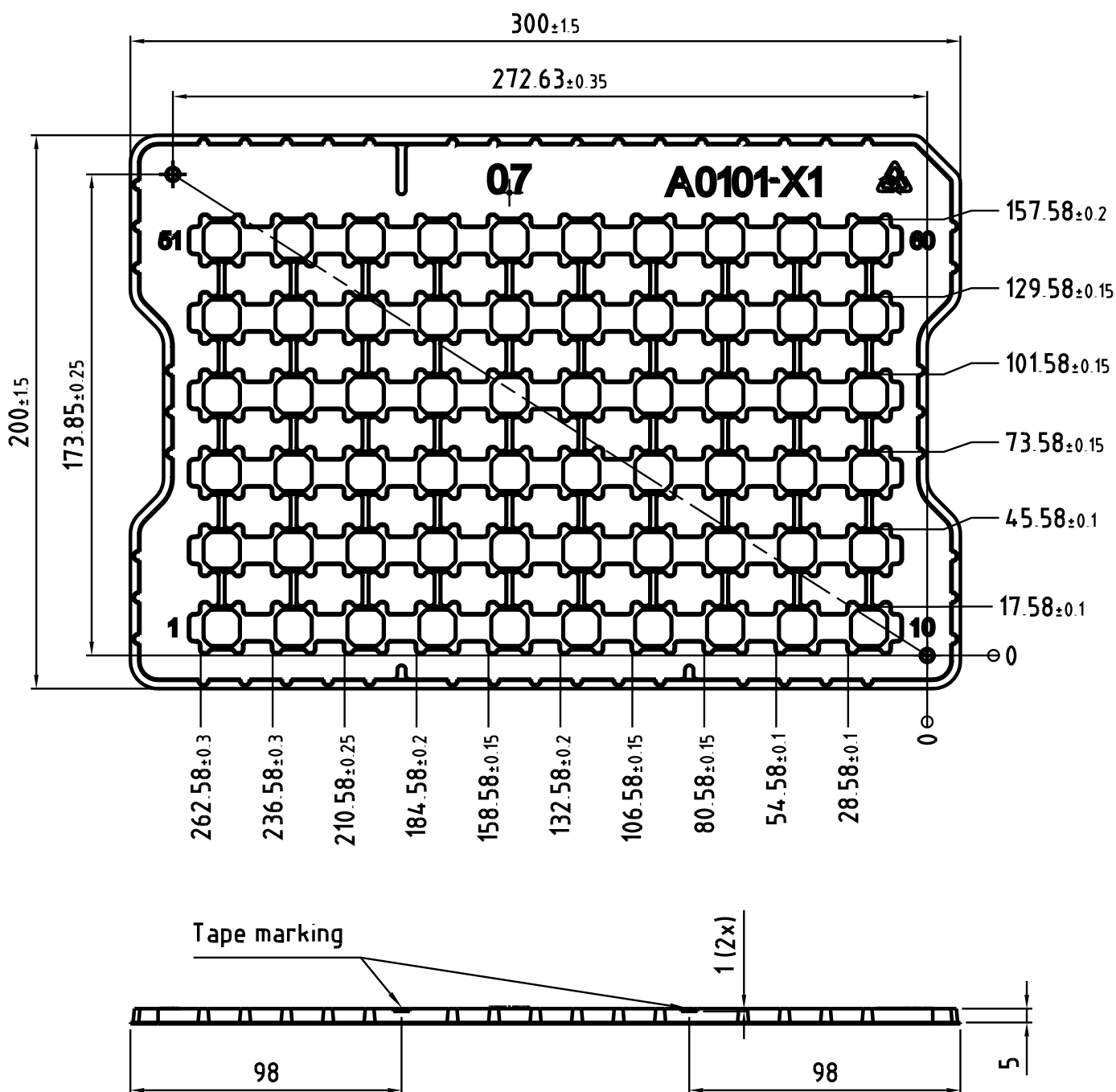
Package not suitable for ultra sonic cleaning.

封装不适合超声波清洗。

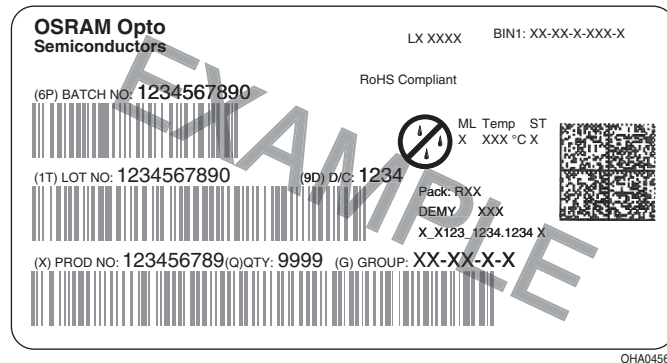
Tray

托盘

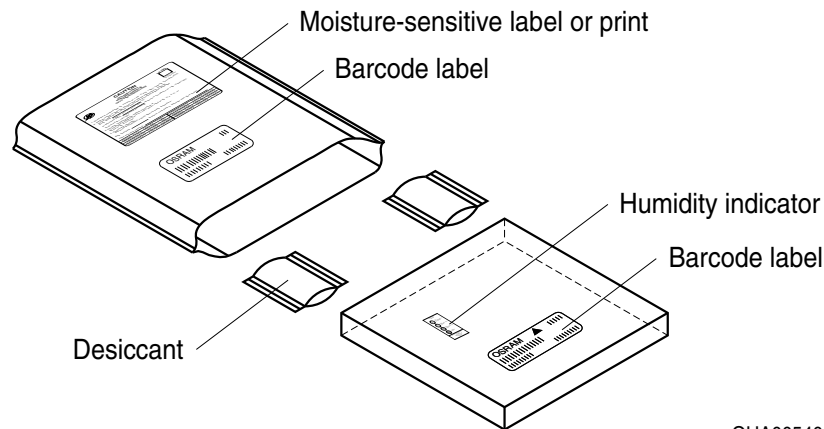
Min. 120 pcs. per packing unit (60 units per tray, min. 2 trays per vacuum bag) / 每托盘 60 颗，每真空袋有 2 个托盘



C67062-A0101-X1-02

Barcode-Product-Label (BPL)**条码 - 产品 - 标签 (BPL)**

OHA04563

Dry Packing Process and Materials**干燥封装过程和材料**

OHA00540

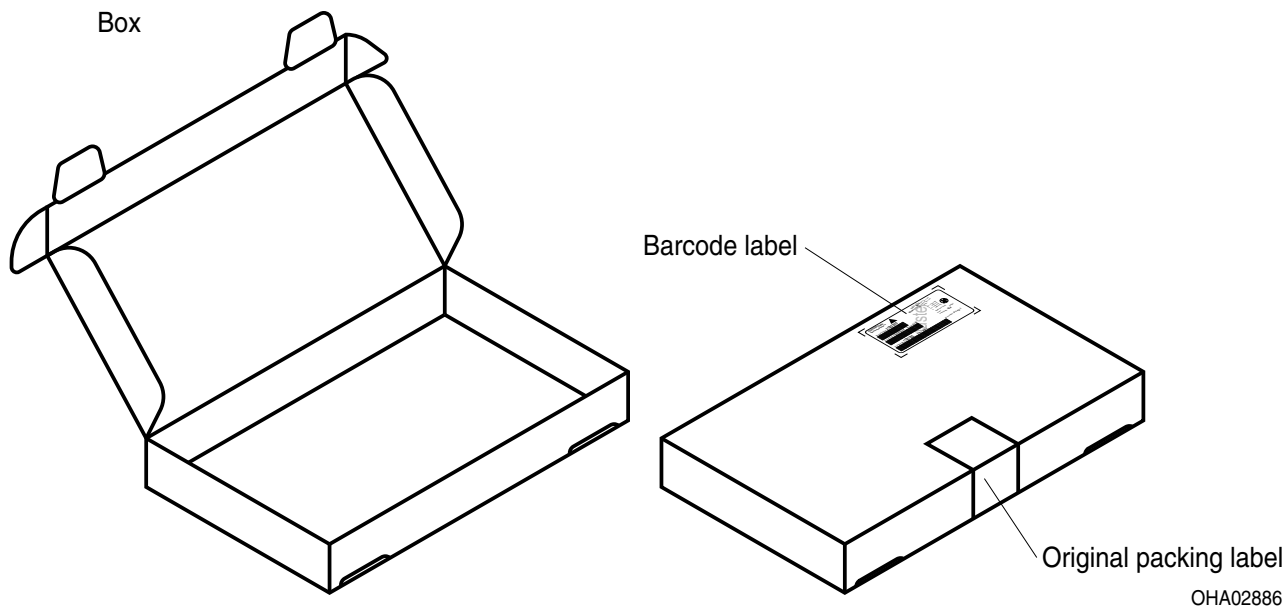
Note: Moisture-sensitive product is packed in a dry bag containing desiccant and a humidity card. Regarding dry pack you will find further information in the internet and in the Short Form Catalog in chapter "Tape and Reel" under the topic "Dry Pack". Here you will also find the normative references like JEDEC.

注释： 湿敏产品包装在装有干燥剂和湿度卡的干燥袋子中。关于干式填充的详细信息，请参阅网站资料和简明版产品目录中“干式填充”标题下的“卷带和卷盘”章节。您还可以找到 JEDEC 等规范性参考。

Transportation Packing and Materials

运输 包装 和 材料

Box



Dimensions of transportation box in mm (inch): / 运输包装的尺寸单位 mm (英寸)

Width / 宽度	Length / 长度	Height / 高度
333 ± 5 (13.110 ± 0.197)	218 ± 5 (8.583 ± 0.197)	28 ± 5 (1.102 ± 0.197)

Notes

The evaluation of eye safety occurs according to the standard IEC 62471:2008 ("photobiological safety of lamps and lamp systems"). Within the risk grouping system of this CIE standard, the LED specified in this data sheet fall into the class Moderate risk (exposure time 0.25 s). Under real circumstances (for exposure time, eye pupils, observation distance), it is assumed that no endangerment to the eye exists from these devices. As a matter of principle, however, it should be mentioned that intense light sources have a high secondary exposure potential due to their blinding effect. As is also true when viewing other bright light sources (e.g. headlights), temporary reduction in visual acuity and afterimages can occur, leading to irritation, annoyance, visual impairment, and even accidents, depending on the situation.

For further application related informations please visit www.osram-os.com/appnotes

Change management for this component is aligned with the requirements of the lighting market.

注释

本产品根据 IEC 62471:2008 标准 (“灯和灯系统的光生物安全性”) 进行眼睛安全评估。在该 CIE 标准的风险分组系统中, 本数据表中指定的 LED 属于 “中风险” 组 (接触时间为 0.25 秒)。在实际环境 (包括接触时间、瞳孔、观察距离) 中, 认为这些装置对人眼没有危害。但是, 作为原则问题, 必须提及强烈光源具有致盲效应, 因此很可能发生二次曝光。直视其他明亮光源 (如车前灯) 时也是如此, 视敏度可能会暂时下降, 也可能出现余像, 从而导致困扰、烦恼、视障甚至意外事故, 具体取决于当时的情况。

**更多应用相关的信息, 请访问
www.osram-os.com/appnotes**

该组件的变更管理是与照明市场的要求相一致的。

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Attention please!

The information describes the type of component and shall not be considered as assured characteristics. Terms of delivery and rights to change design reserved. Due to technical requirements components may contain dangerous substances.

For information on the types in question please contact our Sales Organization.

If printed or downloaded, please find the latest version in the Internet.

Packing

Please use the recycling operators known to you. We can also help you – get in touch with your nearest sales office.

By agreement we will take packing material back, if it is sorted. You must bear the costs of transport. For packing material that is returned to us unsorted or which we are not obliged to accept, we shall have to invoice you for any costs incurred.

Components used in life-support devices or systems must be expressly authorized for such purpose!

Critical components* may only be used in life-support devices** or systems with the express written approval of OSRAM OS.

*) A critical component is a component used in a life-support device or system whose failure can reasonably be expected to cause the failure of that life-support device or system, or to affect its safety or the effectiveness of that device or system.

**) Life support devices or systems are intended (a) to be implanted in the human body, or (b) to support and/or maintain and sustain human life. If they fail, it is reasonable to assume that the health and the life of the user may be endangered.

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如果对类型信息有疑问，请联系我们的销售部门。

如需打印或下载，请到公司网站寻找最新版本。

封装

请联系您所熟悉的物资回收公司。我们也可以帮助您联系最近的销售办事处。

如果您已对包装材料进行了分类，我们将根据协议进行回收，所产生的运输费用须由您承担。对于未经分类即退回本公司或我们没有责任接受的包装材料，我们将开具发票由您支付因此产生的一切费用。

生命支持装置或系统所采用的元件必须获取该目的明确授权！

仅当获得欧司朗公司的明确书面许可时，方可将关键元件 * 用于生命支持装置或系统 **。

*) 关键元件指用在生命支持装置或系统中、一旦发生故障即会引起装置或系统故障或影响其安全性或有效性的元件。

**) 生命支持装置或系统拟用于 (a) 植入人体或 (b) 支持和 / 或维持人的生命。如果发生故障，即会威胁使用者的健康和生命。

Glossary

- 1) **Brightness:** Brightness values are measured during a current pulse of typically 25 ms, with an internal reproducibility of $\pm 8\%$ and an expanded uncertainty of $\pm 11\%$ (acc. to GUM with a coverage factor of $k = 3$).
- 2) **Forward Voltage:** The forward voltage is measured during a current pulse of typically 8 ms, with an internal reproducibility of $\pm 0.05\text{ V}$ and an expanded uncertainty of $\pm 0.1\text{ V}$ (acc. to GUM with a coverage factor of $k = 3$).
- 3) **Color reproduction index:** Color reproduction index values (CRI-RA) are measured during a current pulse of typically 25 ms, with an internal reproducibility of ± 2 and an expanded uncertainty of ± 3 (acc. to GUM with a coverage factor of $k = 3$).
- 4) **Extrapolated Values:** The stated values are extrapolated data. These values are based on the devices testing limits. The extrapolation is based on the typical temperature and forward current characteristics of the device.
- 5) **Chromaticity coordinate groups:** Chromaticity coordinates are measured during a current pulse of typically 25 ms, with an internal reproducibility of ± 0.005 and an expanded uncertainty of ± 0.01 (acc. to GUM with a coverage factor of $k = 3$). For testing the chromaticity coordinate ellipses are approximated with polygons.
- 6) **Typical Values:** Due to the special conditions of the manufacturing processes of LED, the typical data or calculated correlations of technical parameters can only reflect statistical figures. These do not necessarily correspond to the actual parameters of each single product, which could differ from the typical data and calculated correlations or the typical characteristic line. If requested, e.g. because of technical improvements, these typ. data will be changed without any further notice.
- 7) **Relative Brightness Curve:** In the range where the line of the graph is broken, you must expect higher brightness differences between single LEDs within one packing unit.
- 8) **Tolerance of Measure:** Unless otherwise noted in drawing, tolerances are specified with ± 0.1 and dimensions are specified in mm.

词汇表

- 1) **亮度:** 亮度值的测量电流脉冲时长为 25 ms (典型值), 内部重现性为 $\pm 8\%$, 扩展不确定度为 $\pm 11\%$ (依据 GUM, 扩展系数 $k = 3$)。
- 2) **正向电压:** 正向电压的测量电流脉冲时长为 8 ms (典型值), 内部重现性为 $\pm 0.05\text{ V}$, 可扩展不确定度为 $\pm 0.1\text{ V}$ (依据 GUM, 扩展系数 $k = 3$)。
- 3) **显色指数:** 显色指数 (CRI-RA) 是在电流脉冲为 25 毫秒的条件下测试, 内部再现性为 ± 2 , 扩展不确定度为 ± 3 。(依据 GUM 在覆盖系数为 $k = 3$)。
- 4) **推算值:** 该数值是推算的数据, 这些值是基于器件的检测限制。推算的方法是基于器件典型的温度和电流特性。
- 5) **色度坐标组:** 色度坐标的测量电流脉冲时长为 25 ms (典型值), 内部重现性为 ± 0.005 , 可扩展不确定度为 ± 0.01 (依据 GUM, 扩展系数 $k = 3$)。为了测试色度坐标, 椭圆被近似为多边形。
- 6) **典型值:** 由于 LED 制造工艺的条件特殊, 典型或计算得出的技术参数数据仅能反映统计数据, 而不等同于各产品的实际参数, 它们可能与典型或计算得出的典型特征线数据不同。如果需要 (如由于技术改进), 这些典型数据将有所变更, 恕不另行通知。
- 7) **相对亮度曲线:** 在图中的虚线区域, 你需要考虑到一个包装单位内的不同颗 LED 之间可能存在亮度差异。
- 8) **测量容差:** 除非图纸另有说明, 通常公差为 ± 0.1 , 尺寸的单位是 mm。

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