



厦 门 华 联 电 子 有 限 公 司

Xiamen Hualian Electronics Co., Ltd.

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# 产品规格书

## SPECIFICATION

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产品名称: 特种显示器  
DESCRIPTION: LED DISPLAY  
产品型号: HTKES01  
PART NO.: HTKES01

|                |                |                |
|----------------|----------------|----------------|
| 拟制<br>Prepared | 审核<br>Verified | 批准<br>Approved |
| 张 晗            | 技术交流用规格书       |                |

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## 1. 概述 (GENERAL)

特种显示器是一种显示特定数码、字符、图形的半导体 LED 显示器件，可根据客户要求设计外形和显示图案。它是以 LED 芯片为光源，通过设计不同的反射罩进行导光来显示面板图案。与其他显示器件相比，具有工作电压低、功耗低、多色彩、高可靠性、高稳定性、长寿命等特点，广泛应用于空调、冰箱、微波炉、洗衣机等各种显示系统。

LED Display is a semiconductor LED display showing specific digital, characters and graphics. The profile and pattern are designed according to customer's requirement. Based on LED chip as light source and shows patterns on the panel through the design of reflector which guides the light to the surface. Comparing with other displays, it has characteristics with low voltage, low power consumption, multi-color, high reliability, high stability and long-life. It is widely used in room air conditioner, refrigerator, electric stove, washing machine and other display systems.

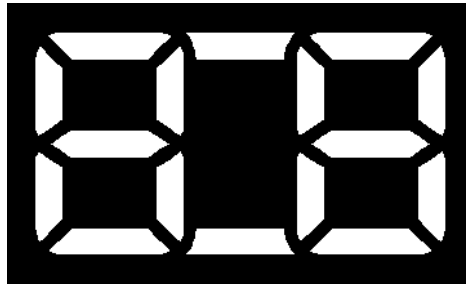


图 1 产品照片

Fig.1 Photo of Product

## 2. 特性 (FEATURES)

- 高可靠性 High reliability
- 响应快 Fast Response time
- 低电流驱动 Low drive current
- 低功耗 Low power requirement
- 符合 RoHS 要求 RoHS compliant
- ESD 敏感器件，静电放电敏感值：200V（人体模式）/ 100V（机器模式）  
Electrostatic sensitive device, ESDS: 200V（Human body mode）/ 100V（Machine mode）

## 3. 特征 (DESCRIPTION)

- 外形尺寸 Package dimensions: 25mm×14mm×10mm
- 空封，表面贴黑色面膜 Vacant package with a black film on the surface
- Chip LED 芯片材料 LED chip material:

表 1 LED 芯片材料

Table1 LED chip material

| 芯片材料<br>Die Material                 | 发光颜色<br>Emitted color |
|--------------------------------------|-----------------------|
| InGaN/Al <sub>2</sub> O <sub>3</sub> | 白色 White              |

#### 4. 外形尺寸和电原理图(PACKAGE DIMENSIONS and CIRCUIT DIAGRAM)

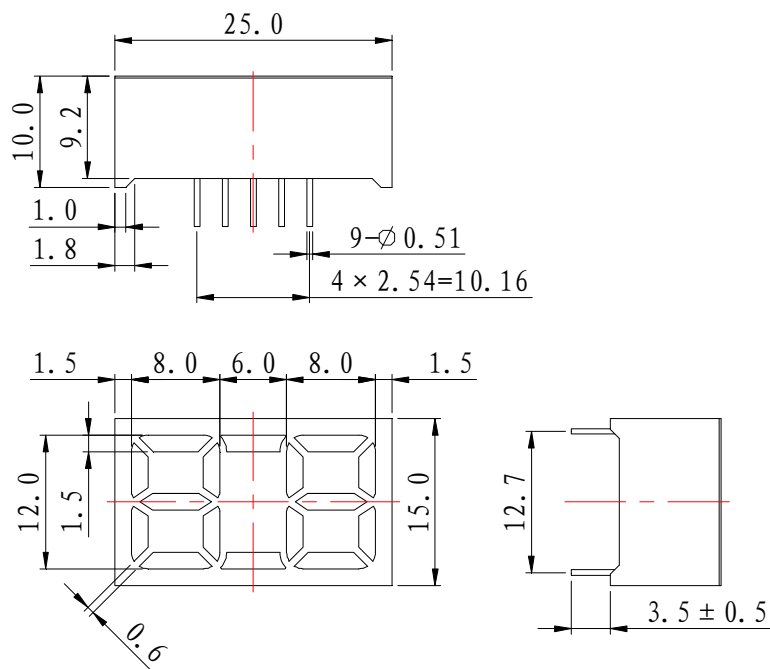


图 2 产品外形图

Fig.2 Package Dimensions of Product

注：未注公差：±0.2。

Notes: All dimensions are in millimeters. Tolerances are ±0.2mm unless otherwise noted.

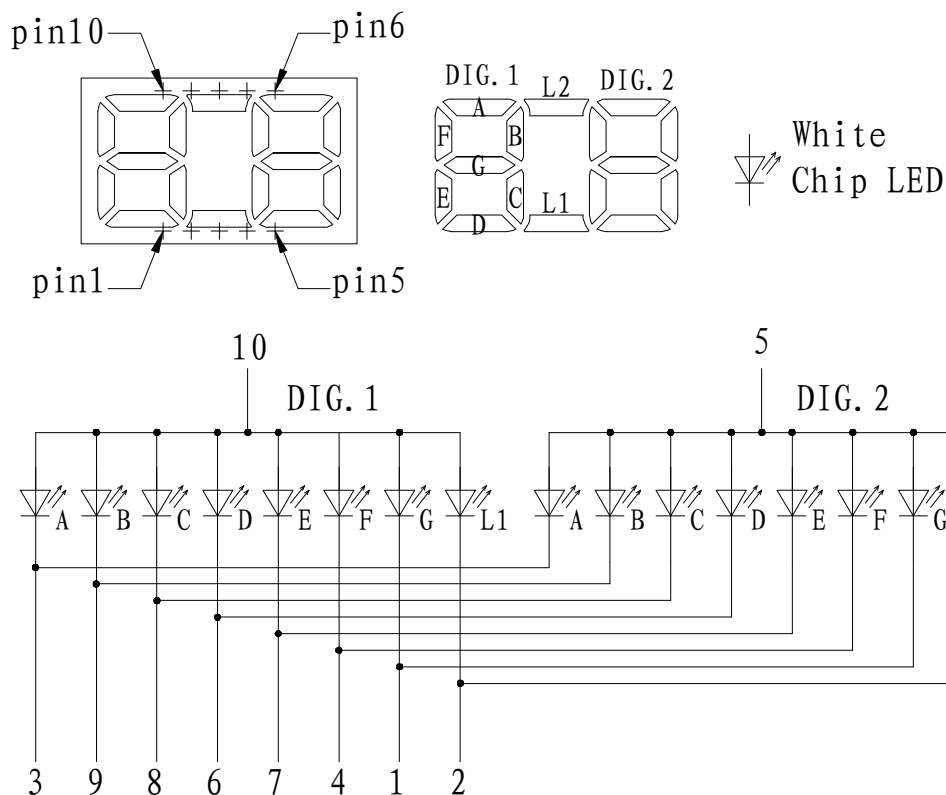


图 3 产品电原理图

Fig.3 Circuit Diagram of Product

## 5. 极限参数 (ABSOLUTE MAXIMUM RATINGS) (Ta=25℃)

表 2 极限参数  
Table2 Absolute Maximum Ratings

| 参 数<br>PARAMETER  | 符号<br>SYMBOL                  | 额定值<br>MAXIMUM RATING   |   | 单位<br>UNIT |
|---|-------------------------------|-------------------------|---|------------|
| 最大正向脉冲电流/LED <sup>a</sup><br>Maximum Peak Forward Current Per   | I <sub>FPM</sub>              | 80                      |   | mA         |
| 最大正向电流/LED<br>Maximum Forward Current Per LED LED   | I <sub>FM</sub>               | 20                      |   | mA         |
| 反向电压/LED<br>Reverse Voltage Per LED   | V <sub>R</sub>                | 5                       |   | V          |
| 耗散功率/LED<br>Power Dissipation Per LED   | P <sub>D</sub>                | White LED               | 72  | mW         |
| 工作温度<br>Operating Temperature   | T <sub>aop</sub> <sup>c</sup> | -25~+85                 |   | ℃          |
| 贮存温度<br>Storage Temperature   | T <sub>stg</sub>              | -30~+85                 |   | ℃          |
| 焊接温度 <sup>b</sup><br>Soldering Heat   | T <sub>slid</sub>             | 波峰焊<br>Wave soldering   | 270℃/10 秒<br>270℃/10s   | ℃          |
|   |                               | 手工焊<br>Manual soldering | 350℃/3 秒/3 次<br>350℃/3s/3 times<br>(再焊接间隔<br>时间 10 秒以上<br>Soldering interval time of 10s) |            |
| <sup>a</sup> 占空比 Duty: 1/10, 频率 Frequency: 1kHz。<br><sup>b</sup> 离器件本体 1/16 英寸以上。 Up to 1/16 Inch from the body.<br><sup>c</sup> 工作环境温度参数符号只在极限参数表中用 Taop 表示, 其他地方用 Ta 表示。<br>Parameter symbol of Operating Ambiance Temperature uses Taop only in table 1 Absolute Maximum Ratings, and uses Ta at other places.   |                               |                         |   |            |
| 备注: 当工作环境温度超过 25℃时, IFM, IFPM & PD 需相应降低, 产品的推荐工作电流 IFM or IFPM 不超过在工作温度下其极限值的 1/4; 工作电流越大, 产品的寿命越短; 过度超出推荐电流将加速寿命的缩短。<br>Notes : For operation above 25℃,the IFM, IFPM & PD must be derated.The product recommended working current must not more than the 25% of the IFM or IFPM according to the working temperature, The higher the working current, the shorter the working life of the products; A substantial increase in the remcommended working current can be achieved by accelerating the loss of the working life. |                               |                         |   |            |

## 6. 光电参数 (ELECTRICAL/OPTICAL CHARACTERISTICS) (Ta=25℃)

表 3 光电参数  
Table3 Opto-Electrical Characteristics

| 参数<br>PARAMETER                        | 符号<br>SYMBOL   | 测试条件<br>TEST CONTION       |       | MIN. | TYP  | MAX. | 单位<br>UNIT |
|--|----------------|----------------------------|-------|------|------|------|------------|
| 正向电压/LED<br>Forward Voltage Per LED    | V <sub>F</sub> | I <sub>F</sub> =20mA / LED | White | 2.0  | 3.0  | 3.6  | V          |
| 发光强度/LED<br>Luminous Intensity Per LED | I <sub>V</sub> | I <sub>F</sub> =5mA / LED  | White | 112  | 225  | --   | mcd        |
| 反向电流/LED<br>Reverse Current Per LED    | I <sub>R</sub> | V <sub>R</sub> =5V / LED   |       | --   | --   | 10   | μ A        |
| 色度坐标<br>Chromaticity Coordinates       | X              | I <sub>F</sub> =20mA / LED |       | --   | 0.23 | --   |            |
|  | Y              |                            |       | --   | 0.20 | --   |            |

注 Notes:

1. 漏光程度≤5%; The case light leakage rate≤5%;

2. 亮度不均程度≤35%; Luminous intensity matching ratio ≤35%;

3. 单个产品色差≤5nm; color difference of single product≤5nm.

## 7. 使用注意事项（PRECAUTIONS FOR USE）

当使用此产品时，请遵从规格书中给出的极限参数值的要求和指示。客户使用时因超出极限参数要求而造成的损失，我司不承担任何责任。When using this product, please observe the absolute maximum ratings and the instructions for using outlined in these specification sheets. We assume no responsibility for any damage resulting from use of the product, which does not comply with the absolute maximum ratings and the instructions included in these specification sheets.

更改记录表  
UPDATE RECORD TABLE

| 版次<br>EDITION | 制定或更改日期<br>DATE | 主要更改内容<br>MAIN CONTENT | 拟 制<br>PREPARED  | 确 认<br>CHECKED |
|---------------|-----------------|------------------------|------------------|----------------|
| 1.0           | 2015-2-10       | 新版发布<br>New release    | 张 晗<br>Zhang Han |                |
|               |                 |                        |                  |                |
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|               |                 |                        |                  |                |