# 中山市晶明光电科技有限公司
**ZHONGSHAN SILSMART OPTOELECTRONICS CO.,LTD**

# 样 品 规 格 书
# SPECIFICATION

| | | |
|---|---|---|
| 产品型号:JMF-4473BZ3-059-P6.8<br>Product No: | 极性：共阳<br>Polarity：Common anode | 产品编码:<br>Product Code: |
| 样品单号:<br>Sample NO: | 面色：黑面橙胶<br>Surface color: Black Surface orange Segment | |
| 注：所有材料均符合 ROHS 要求<br>All materials are RoHS compliant! | | |

| | |
|---|---|
| 制作:何宗儒<br>Author: | 审核:叶开波<br>Auditor: |

## 客户确认 Confirmation approved

| | |
|---|---|
| 客户:<br>Customer: | 签名:<br>Signature: |
| 机型:<br>Model No: | 日期:<br>Date: |
| 料号:<br>Part No: | |
| 结论:<br>Conclusion: | |

确认后请回传 PLEASE RETURN BY A COPY

公司 Co.：中山市晶明光电科技有限公司 ZHONGSHAN SILSMART OPTOELECTRONICS CO.LTD
地址 Add：广东省中山市横栏镇永兴北路一号五楼
5th, the 1st North Yongxing Road, Henglan Town, Zhongshan, Guangdong, China, 528478
传真 Fax：0760-88235010
官网网址 Web：http://www.silsmart.com

| 版本 Version | 版本说明 Notes | 变更人 Author | 变更时间 Updated date |
|---|---|---|---|
| A/1 | 新建 New Version | 何宗儒 | 2022/9/22 |
| | | | |
| | | | |
| | | | |

# 产品说明书(Product Specification)

## 1. 极限参数（Absolute Maximum Ratings）

（1）紫色(Purple)

| 参数（Parameter） | 符号（Symbol） | 极限值（Maximum Rating） | 单位（Unit） |
|---|---|---|---|
| 功耗（Power Dissipation） | Pd | 70 | mW |
| 直流电流（Continuous Forward Current） | Ifm | 20 | mA |
| 反向电压（Reverse Voltage） | VR | 6 | V |
| 工作温度（Operating Temperature Range） | Topr | -30 → +85 | ℃ |
| 储藏温度（Storage Temperature Range） | Tstg | -30 → +85 | ℃ |
| 抗静电电压（Static Voltage） | Var | 2000 | V |

## 2. 光电特性（Optical-Electrical Characteristic）

（1）紫色(Purple)

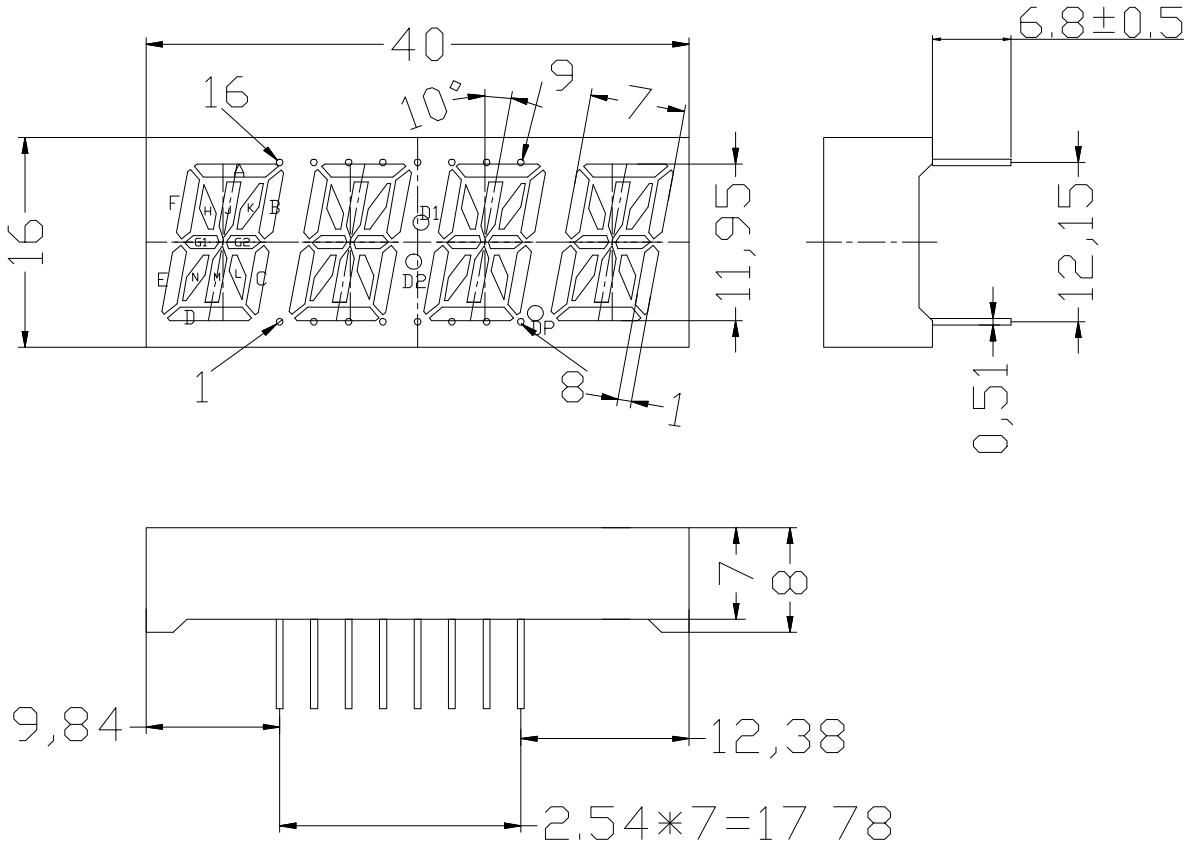
| 参数（Parameter） | 测试条件（Test Condition） | 符号（Symbol） | 极限值（Maximum Rating） | 单位（Unit） |
|---|---|---|---|---|
| 发光强度（Luminous Intensity） | IF=20mA | Iv | 65-70 | mcd |
| 正向电压（Forward Voltage） | IF=20mA | VF | 2.7-3.6 | V |
| 反向电流（REVERSE Current） | VR = 5V | IR | ≤1 | uA |
| 波长（Peak Wavelength） | IF=20mA | TC | 395-400 | nm |

*正向电压 VF：在常温（25±3℃）下，数码屏的每一段通以规定的正向直流电流 IF，然后用相应精度的万用表测出 VF。 Under normal temperature (25±3℃), each segment of the led display is passed through the specified forward DC current, which is measured with a corresponding precision multimeter.

*反向电流 IR：在常温（25±3℃）下，数码屏的每一段施加规定的反向直流电压 VR，然后用相应精度的电流表测出 IR。 Under normal temperature (25±3℃), apply a specified reverse DC voltage to each segment of the led display, and then measure IR with a corresponding precision ammeter.

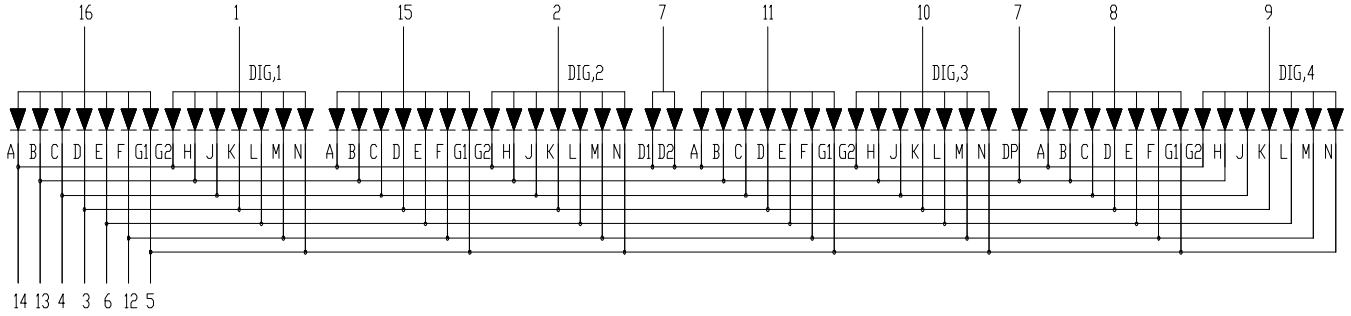
| 发光颜色 Emitting color | 极性 Polarity | 芯片数量 QTY of chips | 外观 Surface | 是否封胶 Resin |
|---|---|---|---|---|
| 紫色 Purple | 共阳 Common anode | 59 | 黑面橙胶橙字 Black Surface orange Segment orange characte | 封橙胶 Emulsion orang glue |

3. 结构尺寸（Mechanical Dimension）：




备注：①未注尺寸公差 （Unspecified Tolerances）： X±0.2mm。

4. 产品线路图（INTERNAL CIRCUIT DIAGRAM）：



5. 面膜效果图：

不贴膜！

6. 注意事项（ Precautions ):

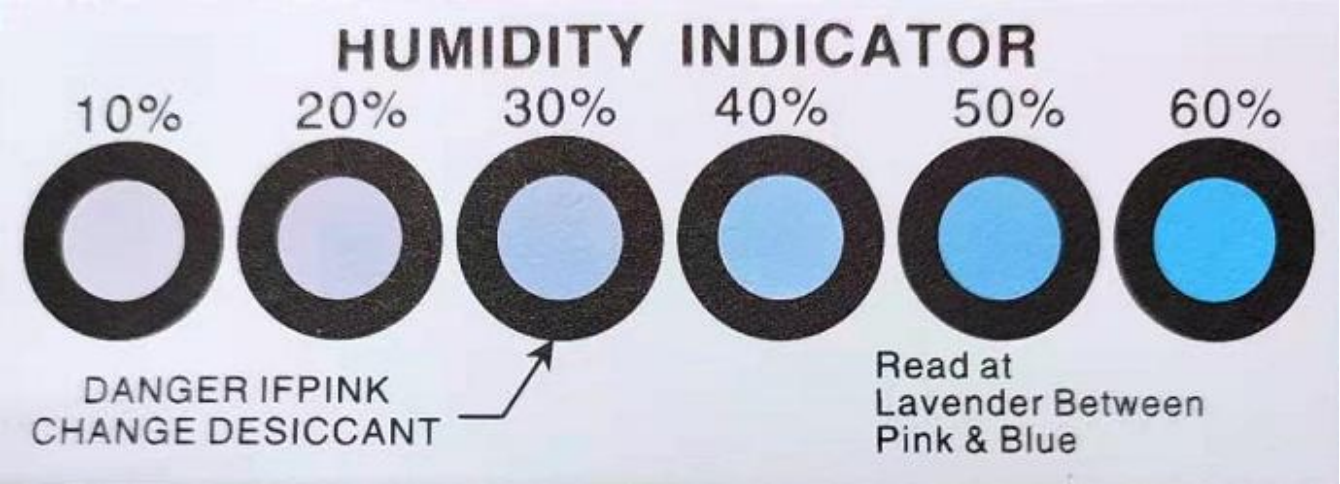
6.1 储存（ Storage )

数码管为湿敏元器件，电子产品需要注意对产品使用和储存的湿度管控，数码管最佳储存温度为5—30℃，湿度 40%—70%，所有数码管库存需要密封包装，且超过三个月需要重新测试后才能使用，超过六个月后则要 85℃除湿 6 小时后，再重新测试，OK 后才能上线生产。数码管组装后库存不得超过 6 个月，如超出期限出现的品质异常，我司概不负责。

The LED Display is a humidity-sensitive component. The users need to pay attention to the humidity control in the use and storage of it. The best storage temperature for it is 5-30℃, and the humidity is 40%-70%.What's more, all of LED Display inventory needs to be sealed and packaged. It can only be used after three months of re-testing, and after six months, it must be dehumidified at 85°C for 6 hours, and then re-tested. If no problem, it can be put into production. After the LED Display are assembled in your machines, the inventory for your whole machine shall not exceed 6 months. If the quality is abnormal after the deadline, we're not responsible for it.

每个数码管产品包装箱里面都放置无钴 6 度湿度卡，湿度卡变化超标，要及时除湿或通知我司给予处理方案，除湿条件 65 度 4 小时。湿度卡 30%此处颜色变化成粉红色时说明湿度已经超标。

There are HUMIDITY INDICATOR cards in each LED Display packaged box. When 30% of the color on the humidity card changes to pink, the humidity has exceeded the standard(as shown below). Please dehumidify in time or inform us for the processing scheme,and the dehumidification condition is 65 degrees for 4 hours.



6.2 焊接( Welding )

产品在过波峰焊时，温度不得超过 260℃，时间不得超过 5 秒，波峰焊温度时间曲线如下图 1。

During the wave-soldering, the temperature shall not exceed 260℃, and the time need to be under 5 seconds. The wave soldering temperature time curve is shown as follow:

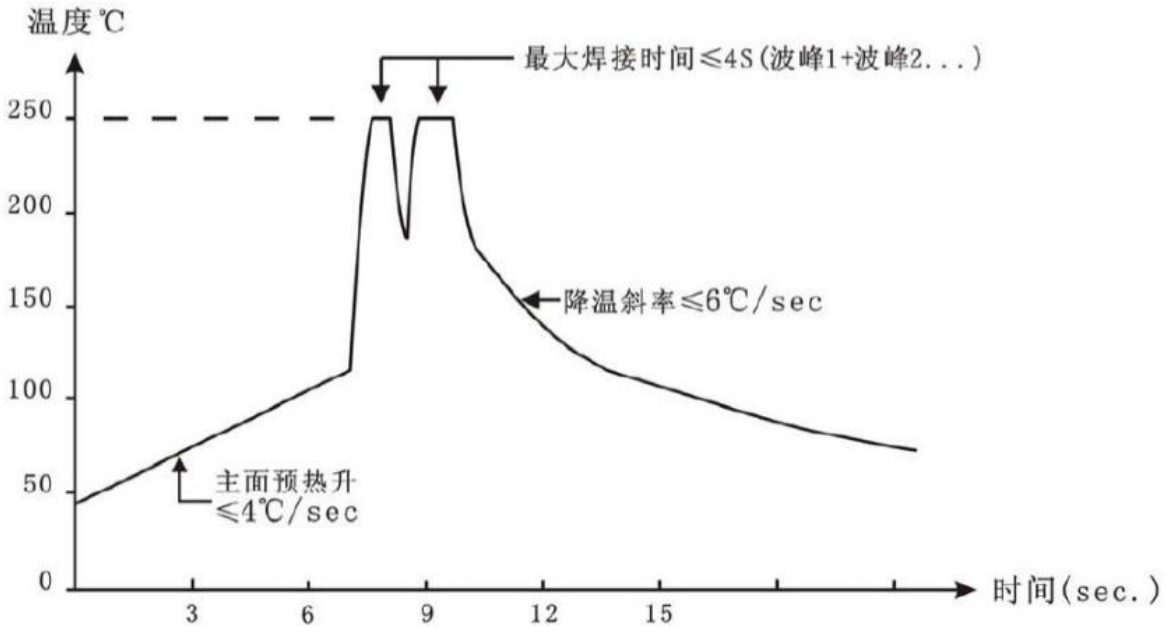



图 1

手动焊接产品焊接点至少要距离产品实体 1.6mm 以上，烙铁需在 30W 以下，温度不得超过 300℃，时间不得超过 3 秒

The soldering point wielded by hand should be at least 1.6mm away from the product.The soldering iron power should be less than 30W, soldering Temperature must be under 300℃, and soldering time should be less than 3 seconds.

6.3 防静电 ( Anti-static )

客户在使用时需要注意做好防静电处理，晶片承受静电为 2000V，如客户对静电有特殊要求，需要开发时提出，并联齐纳二极管。因晶片的反向电压承受能力较弱，所以产品在使用过程中不得施加反向电压。

Please pay attention to anti-static treatment when using the LED Display. The anti-static voltage of the chips is 2000V. If you have special requirements for static electricity, please inform us during development, then we will connect Zener diodes in parallel. Please note that the chip's reverse voltage withstand capability is weak, so reverse voltage must not be applied to the product during use.

6.4 颜色一致性( Color consistency )

客户在实际使用时，如有多个产品共用一块板或者不同产品配套使用时，请开发时通知我司且注意不同产品的颜色是否一致。

In actual use, if there are multiple products sharing a PCB board or when different products are used together, please notify us during development and pay attention to whether the colors of different products are consistent.

## 7. 外观要求（Appearance requirements）

| 序号 | 项目 Items | 允收标准（ Acceptability criterion ) |
|---|---|---|
| 1 | 针孔、汽泡<br>Pinholes, bubbles | ≤0.3mm 同一字节内只允许有 1 个。<br>Only 1 is allowed in same segment. |
| 2 | 杂物/刮伤<br>Scratch/other things | 1. 发光区内≤0.2 mm 同一字节内只允许有 1 个。<br>It must be ≤0.2 mm in emitting area,only one is allowed in same segment.<br>2. 条状：长 2.55mm 以下、宽 0.015-0.025mm 允收，长 1.55mm 以下、宽 0.025-0.1 允收，宽在 0.1 以上不可过（同字节内只允许有一条丝状杂物）。<br>Strip: length ≤2.55mm, width is 0.015 to 0.025mm are allowable acceptance; length ≤1.55mm, width is 0.025 to 0.1 are allowable acceptance; width above 0.1 can not be exceeded (only one other thing is allowed in the same segment). |
| 3 | 变形<br>Out of shape | 1. 成品总长≤80mm，弯曲度≤成品对角线总长的 0.5%。<br>The total length of the LED Display≤80mm, and the curvature≤0.5% of the total diagonal length of it.<br>2. 成品总长 80-120mm，弯曲度≤成品对角线总长的 0.55%。<br>The total length of the LED Display is 80-120mm, and the curvature is less than 0.55% of the total diagonal length of the LED Display.<br>3. 成品总长≥120mm，弯曲度≤成品对角线总长的 0.65%（客户有特殊要求时，标准另定）。<br>The total length of the LED Display is ≥120mm, and the curvature is less than or equal to 0.65% of the total diagonal length of it (if you has special requirements, the standard would be determined alone). |
| 4 | 印章不良<br>Bad print code | 1. 30cm 内目视不能视辨。 Cannot be recognized within 30cm.<br>2. 盖印位置倾斜 15 度。 The printed code is tilted 15 degrees. |
| 5 | PIN 排距<br>Row pitch for pins | 两排 PIN 排距±0.50mm。<br>The rows pitch for two rows is ±0.50mm. |
| 6 | 脚露铜 Copper is revealed in pins | PIN 脚因电镀不良或刮伤造成露铜≤15mm。<br>The pins exposed to copper due to poor electroplating or scratches≤15mm. |
| 7 | 脚倾斜 Pins tilt | PIN 脚不可相交。 Pins cannot intersect. |
| 8 | PIN 氧化/发黑<br>Pins Oxidation or blackening | PIN 污染、氧化导致无法上锡。<br>The PINs is contaminated or oxidized and can not be tinned. |
| 9 | REF 沾胶<br>Epoxy on Housing | ≤0.3mm²，只允许有一项。<br>≤0.3mm², only one is allowed. |
| 10 | 胶过多<br>too much Epoxy | 胶超出 REF 平面或外围。<br>Epoxy Glue exceeds the housing plane or periphery. |
| 11 | 胶过少<br>too little Epoxy | 胶未能完全覆盖 PCB 表层。<br>The Epoxy glue does not completely cover the surface of the PCB. |
| 12 | 正面残胶 Epoxy on the front | 以肉眼 30cm 视距可看到胶残留于 REF 上≤0.5mm。 With the naked eye at a viewing distance of 30cm, the glue residue on the shell can be seen ≤0.5mm. |

## 8. 发光效果要求（Luminous effect requirements）

| 序号 | 项目 Items | 允收标准（ Acceptability criterion ） |
|---|---|---|
| 1 | 发光颜色<br>Emitting color | 符合规格书要求。<br>As the requirements of Data sheet. |
| 2 | 色差<br>Chromatic aberration | 1. 白光色温控制在正负 800k 之间。<br>The color temperature of the white color is controlled between ± 800K.<br>2. 其他颜色控制在正负 5nm 之间。<br>The wavelength of the other colors are controlled between ± 5nm. |
| 3 | 发光不均<br>Uneven luminance | 20mA 点亮，每笔发光要均匀。<br>Light up at 20mA, every segment need to light evenly. |
| 4 | 膜纸漏光<br>Film light-leaking | 膜纸漏光直径≦0.25。<br>Film light-leaking diameter need to be ≦0.25. |