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1、特点 Features

- ◆ 905nm Dtof 激光光源特性
Characteristics of 905nm Dtof laser projector
 - 波长@905nm
WaveLength@905nm
 - 典型光功率 4.8W (峰值功率@1.4A, 0.1%DC, DC=100ns)
Typical Optical Power 4.8W(Peak Power@1.4A, 0.1%DC, DC=100ns)
- ◆ 发光角度: 15~22°
Viewing Angle: 15~22°
- ◆ 尺寸: 3.20mm*3.0mm*0.6mm
Size: 3.20mm*3.0mm*0.6mm
- ◆ 适于 SMT 贴片
Compatible with SMT
- ◆ 包装: 最大 2000 颗/卷
Package : Max: 2000pcs /reel

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2、应用 Applications

用于户外辅助导航

Used for outdoor assisted navigation

AGV, 扫地机器人, 服务机器人

AGV, Sweeping robots, service robots

3、性能 Performance

a) 绝对最大额定值 Absolute Maximum Ratings

| 参数 Parameter | 符号 Symbol | 最大参数值 Maximum Rating | 单位 Unit |
|--------------------------------|--------------|-------------------------|------------|
| 峰值正向电流 Peak Forward Current | I_{op} | 3.5 | A |
| 反向电压 Reverse voltage | V_r | 50 | V |
| 工作温度 Operating Temperature | T_{opr} | -40~105 | °C |
| 工作湿度 Operating Humidity | H_{opr} | 85 | % |
| 存储温度 Storage Temperature | T_s | -40~100 | °C |
| 存储湿度 Storage Humidity | H_s | 85 | % |

b) 光电参数

Electro-Optical Characteristics ($T_A=25\text{ }^\circ\text{C}$, $I_F=1.4\text{A}$, 0.1%DC, DC=100ns)

| 项目 Item | 符号 Symbol | 最小值 Min. | 典型值 Typ. | 最大值 Max. | 单位 Unit |
|--------------------------------|------------------|-------------|-------------|-------------|------------|
| 中心波长 Wavelength | λ_{peak} | 899 | 905 | 911 | nm |
| 输出光功率 Optical output power | P_{opt} | 4.5 | 4.8 | ---- | W |
| 工作电压 Operating Voltage | V_{op} | 16 | 18 | 22 | V |
| 阈值电流 Threshold current | I_{th} | ---- | 0.02 | ---- | A |
| 发散角 Viewing Angle | Φ_{long} | 15 | 18 | 22 | ° |
| 温漂系数 Wavelength coefficient | $d\lambda/dT$ | ---- | 0.07 | ---- | nm/°C |

4、产品型号 Product Order Code

DRS905- 7000 - 10 -3030E

① ② ③ ④

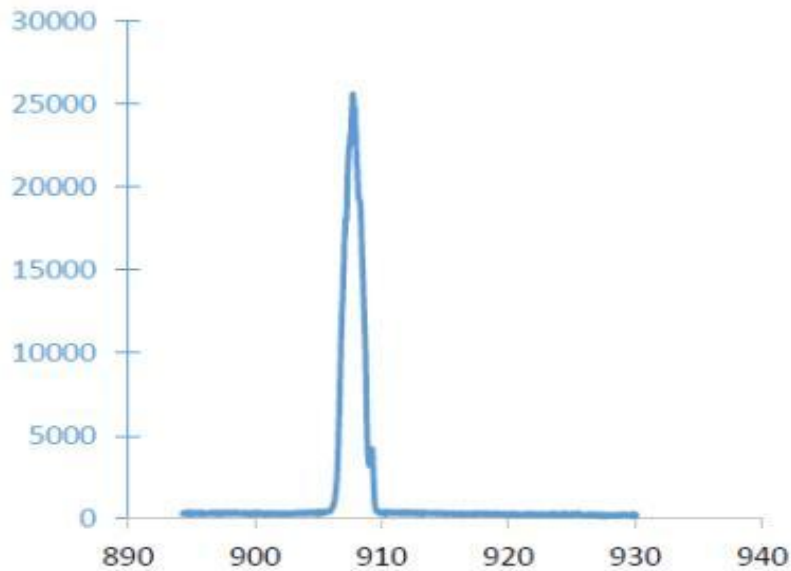
- ① 峰值波长 Wavelength
- ② 输出光功率 Optical Power output
- ③ 芯片尺寸 Chip Size
- ④ 封装尺寸 Device Size (E=齐纳管)

出货标签(例) Shipping label (e.g.)

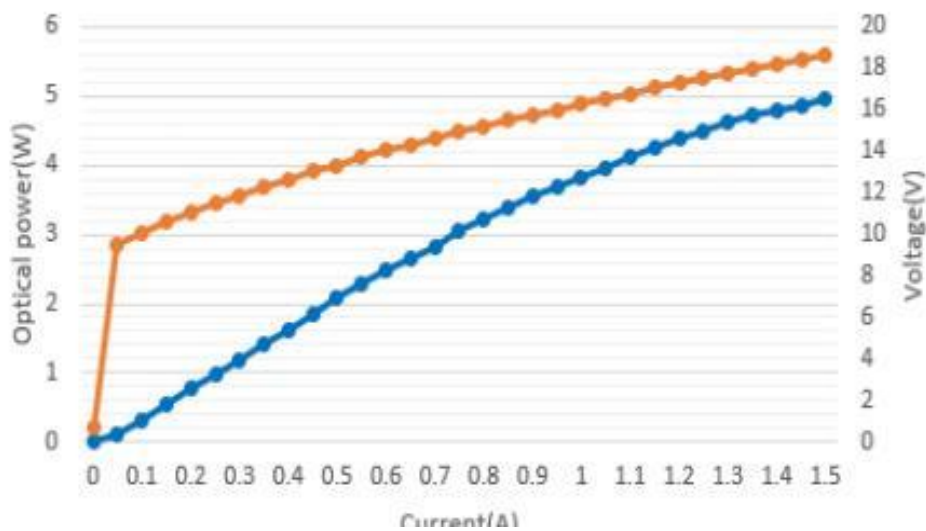
| | | | |
|--|------------|-----|--------|
|   | | | |
| 品名: | 半导体激光器件 | | |
| 型号: | | | |
| 批次号: | CP24010017 | | |
| 制造日期: | 2024/1/14 | 数量: | 500PCS |

5、光电特性图 The Photoelectric Characteristics Graph

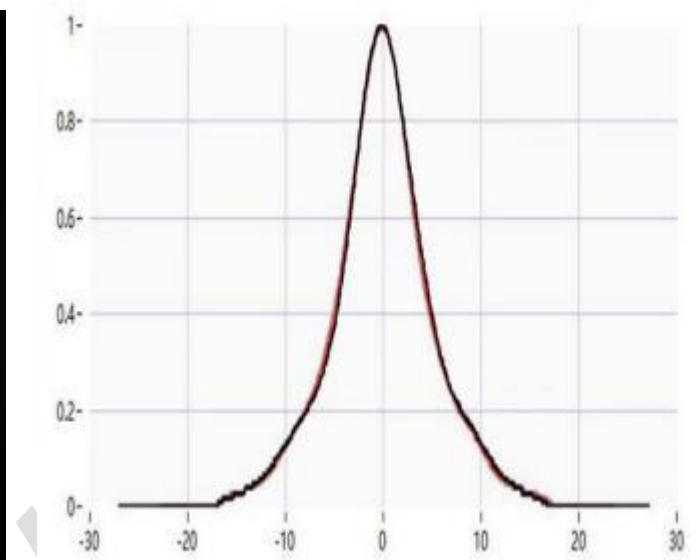
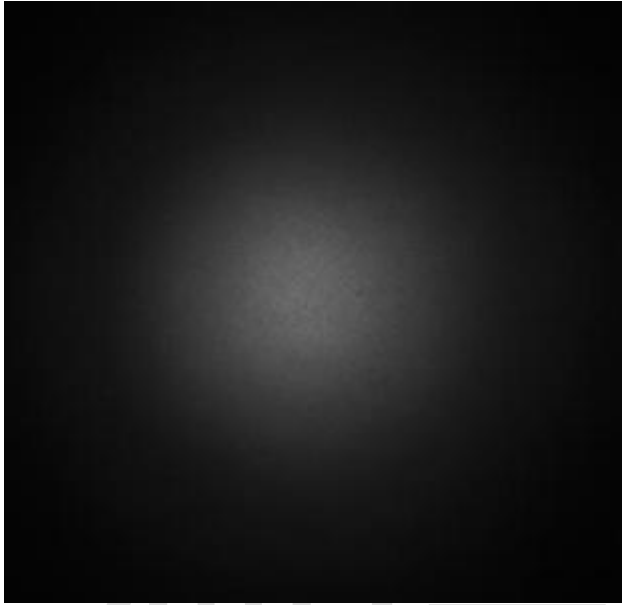
投射器发射光谱 Projector emission spectrum



光-电流-电压曲线 LIV curve



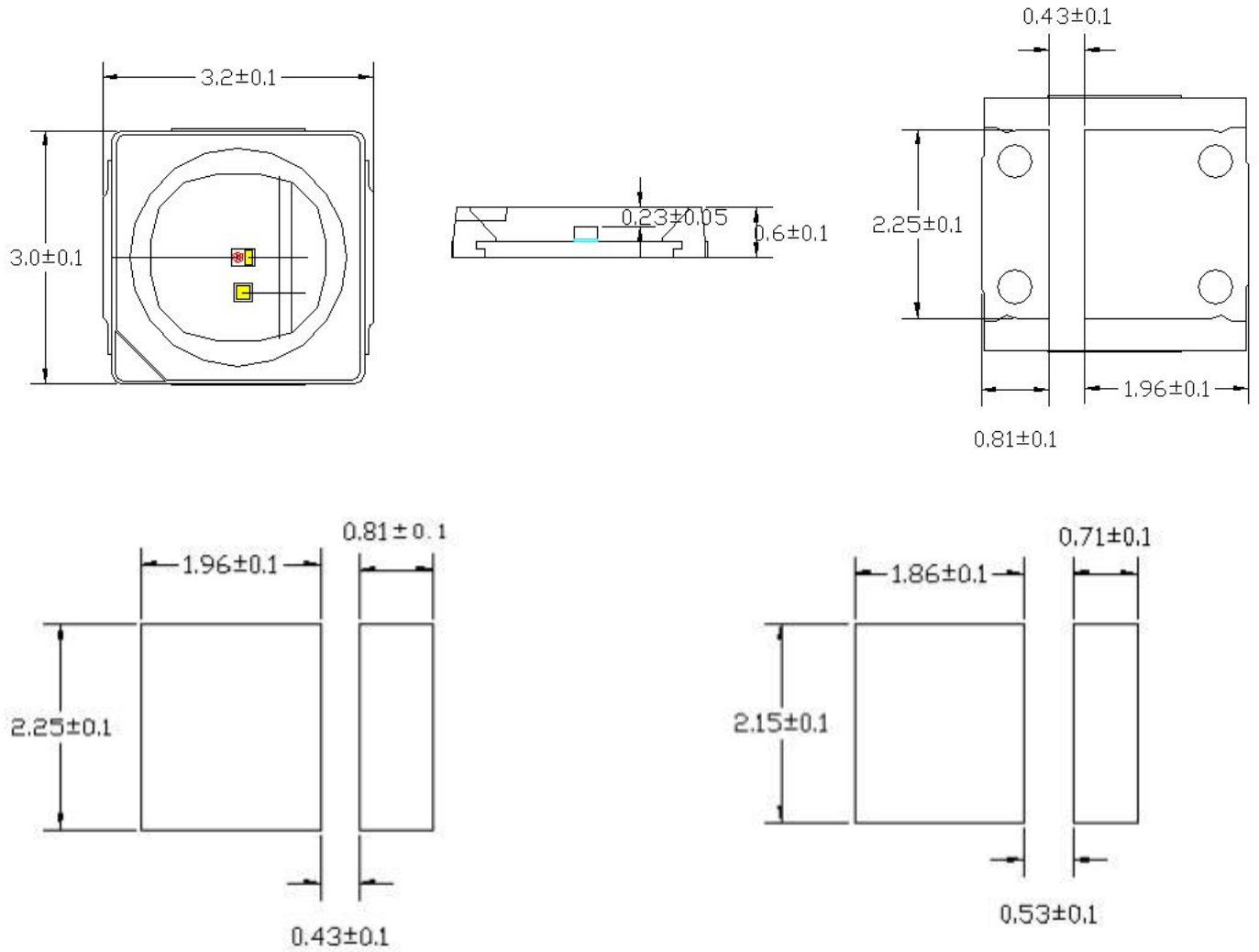
远场发射光斑 Far-Field Illumination Pattern



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6、产品及钢网尺寸 Product and PCB Pad Dimensions

Product Dimensions:



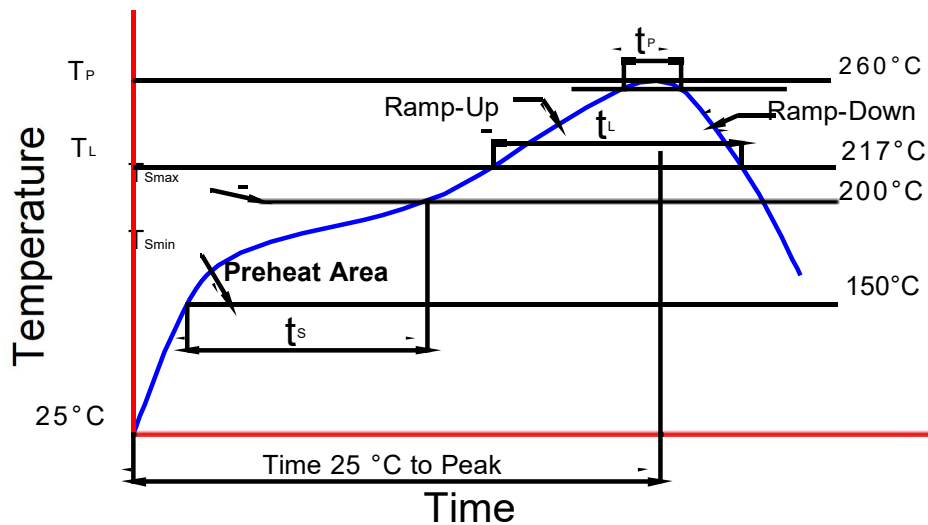
建议焊盘图

建议钢网图

备注 Notes:

- ❖ 所有尺寸均以 mm 为单位
All dimensions are in millimeters
- ❖ 尺寸未按照公差±0.1mm 标记的，按照图纸标记
Size is not marked in accordance with tolerance ±0.1mm and dimension tolerances in accordance with drawings

7、回流焊特性 Reflow Soldering Characteristics

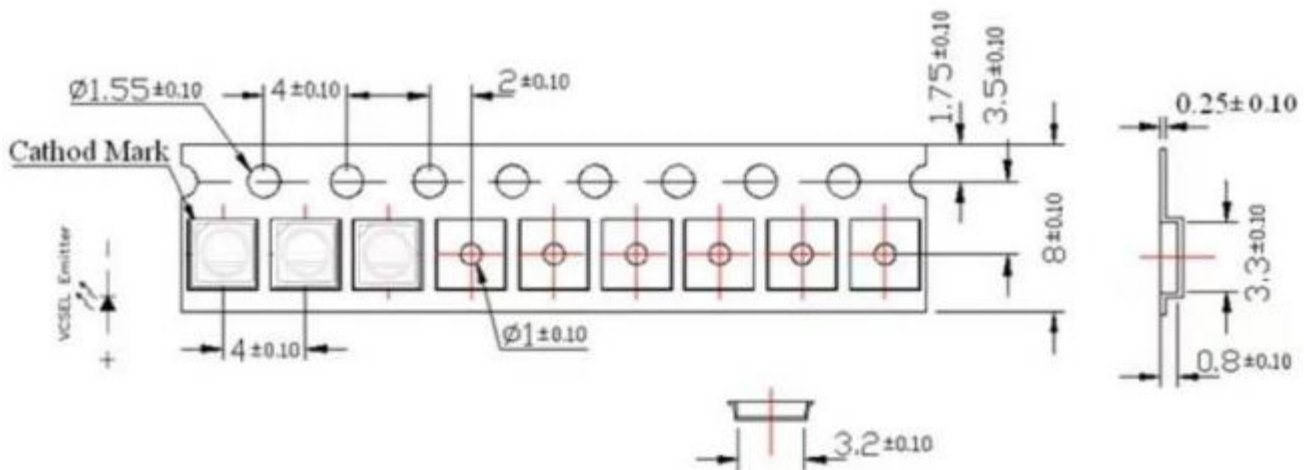
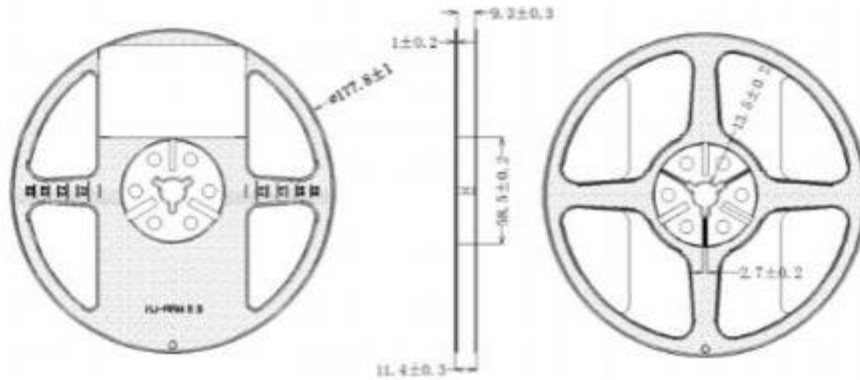
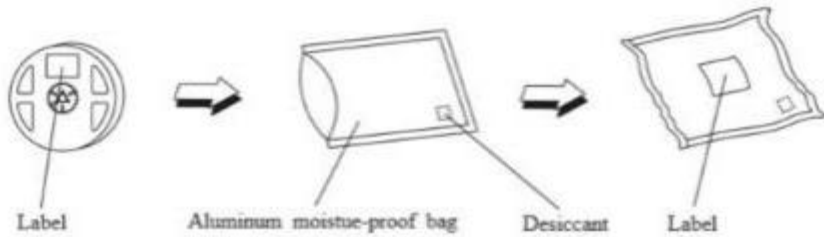


根据 EDEC-J-STD-020D 内容，参考以下内容。

Compatible with the JEDEC-J-STD-020D, using the parameters listed below.

| 特制参数 Profile Feature | 无铅焊料 Lead-Free Solder |
|---|-----------------------|
| 平均上升速率 (T _{Smax} 至 T _p) Average Ramp-Up Rate (T _{Smax} to T _p) | 3 °C/sec max. |
| 预热: 温度最小值 (T _{Smin}) Preheat: Temperature Min (T _{Smin}) | 150 |
| 预热: 最高温度 (T _{Smax}) Preheat: Temperature Max (T _{Smax}) | 200 |
| 预热: 时间 (t _{Smin} 到 t _{Smax}) Preheat: Time (t _{Smin} to t _{Smax}) | 60- 180 secs |
| 回流温度 (T _L) Time Maintained Above: Temperature (T _L) | 217°C |
| 回流时间 (t _L) Time Maintained Above: Time (t _L) | 60- 150 secs |
| 峰值/分类温度 (T _p) Peak/Classification Temperature (T _p) | 255 ± 5°C |
| 实际峰值温度 (t _p) 在 5°C 以内的时间 Time Within 5°C of Actual Peak Temperature (t _p) | 20~40 secs |
| 降低速率 Ramp-Down Rate | 5°C/sec max. |

8、卷轴 Reel Dimensions



备注 Notes:

- ❖ 卷轴包装 2000pcs
Reel:2000pcs.
- ❖ 卷轴包装方法符合 IJSC0806 (连续胶带上的电子元件包装)
The tape packing method complies with IJSC0806(Packing of Electronic Components on Continuous Tapes).
- ❖ 当卷轴由于工作中断而重绕时, 载带上压力不应超过 10N, 否则投射器可能会粘在盖带上
When the tape is rewound due to work interruptions, no more than 10N should be applied to the embossed carrier tape.
The projectors may stick to the cover tape.

9、可靠性 Reliability

a) 测试和结果 Tests and Results

| 测试项目 | 测试条件 | 测试周期 | 失效数/测试数 | 失效标准 |
|----------|---|-----------|---------|------|
| 可焊性(回流焊) | $T_{sld}=255\pm 5^{\circ}\text{C}$, 5sec, Lead-free Solder (Sn-3.0Ag-0.5Cu) | 3times | 0/12 | #2 |
| 冷热冲击 | $-40^{\circ}\text{C} \sim 125^{\circ}\text{C}$, 1000 cycles | 100cycles | 0/12 | #1 |
| 高温高湿存储 | 85°C , RH=85% | 1000h | 0/12 | #1 |
| 低温存储 | -40°C | 1000h | 0/12 | #1 |

b) 失效判定 Failure Criteria

| 判定 Criteria # | 项目 Items | 条件 Conditions | 失效判定 Failure Criteria |
|------------------|-------------|------------------|---------------------------|
| #1 | 外观 | - | 外观正常, 无胶裂 |
| #2 | 回流焊 | - | 焊接面积 $<80\%$ 外观正常, 无胶裂 |

10、注意事项 Cautions

a) 存储 Storage

- 不要将芯片放在潮湿的地方，存放温度在 5°C~30°C之间，相对湿度在30%以下。
Do not place the chips in damp places, Storage temperature between 5 °C and 30 °C, Relative humidity under 30%.
- 开包后建议在 24 小时内过完回流焊，车间条件≤30°C/60%RH。
After opening the package, it is recommended to finish the reflow within 24 hours. The workshop conditions are ≤30°C/60%RH
- 如果受潮，需将贴片卷盘放入 60°C烤箱烘烤 24 小时；打开后，投射器可重新密封在原始真空袋中。
If it is wet, the patch reel should be baked in a 60 °C oven for 24 hours; after opening, the projector can be resealed in the original vacuum bag.
- 不要接触任何未知的液体，特别是丙酮。
Don't touch any unknown liquid, In particular, acetone.
- 防止静电死亡，手动操作需要戴橡胶手套并佩戴静电环。
Prevent electrostatic killed, Manual operation is required to wear rubber gloves and wear electrostatic ring.

b) 清洗 Cleaning

- 通常，投射器不建议对部件进行湿式清洁处理，因为封装不是密封的。
In general, Projector does not recommend a wet cleaning process for component as the package is not hermetically sealed.
- 由于采用开放式设计，所有类型的清洁液都可能渗透到封装中，导致投射器退化或完全失效。
Due to the open design, all kind of cleaning liquids can infiltrate the package and cause a degradation or a complete failure of the projector.

c) 操作注意 Handling Precautions

- 在处理过程中，还应注意确保组件顶面没有压力
During the handling, care should be taken as well to ensure no pressure on the top surface of component.
- 应避免使用所有类型的尖锐物体(例如镊子，指甲等)，以防止对硅树脂造成压力，因为这会导致部件损坏。
All types of sharp objects(e.g. forceps, fingernail, etc) should be avoided in order to prevent stress to the silicone, since this can lead to damage of the component.

11、文件履历表 Document Resume

| 序号 | 变更日期 | 变更人 | 版本 | 变更内容 |
|----|----------|-----|-----|------|
| 1 | 2024.5.7 | 陈志彬 | A00 | 新版发行 |
| | | | | |
| | | | | |
| | | | | |

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