

RoHS

Specification

规 格 书

Customer Name：

客户名称：

Customer P/N：

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  | 客户品号： |  |  |  |  |  |
|  |  | Factory P/N： |  | A-4014H456W-S1-HR3-DM |
|  |  |  | 公司品号： |  |  |  |  |  |  |
|  |  | Sending Date： |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | 送样日期： |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | Client approval |  | Approval |  |
|  |  | 客户审核 |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Approval |  | Audit |  | Confirmation | Approval | Audit | Confirmation |
| 核准 |  | 确认 |  | 制作 | 核准 | 确认 | 制作 |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  | 殷小平 |  |  |  | 谭娅 |
|  |  |  |  |  |  |  |  |  |
| □ Qualified |  | □ Disqualified | DATE: |  |  |  |  |
| 接受 |  |  | 不接受 | 日期： |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |

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**A-4014H456W-S1-HR3-DM**

**Features**(特征）

PLCC-2 Package.(PLCC-2 封装）

Extremely wide viewing angle.（宽的发光角度）

Suitable for all SMT assembly and solder process.（适用于所有的SMT组装和焊接工艺）

Available on tape and reel.（适用于载带及卷轴）

Moisture sensitivity level: Level 4.（防潮等级 Level 4）

Package:4000pcs/reel..(包装每卷4000PCS）

RoHS compliant. (RoHS 认证）

|  |  |  |
| --- | --- | --- |
| **Description**（描述） | **ATTENTION** |  |
| OBSERVE PRECAUTIONS |  |
|  | FOR HANDLING |  |
|  | ELECTROSTATIC |  |
| The White LED which was fabricated using a blue chip and the phosphor | DISCHARGE |  |
| SENSITIVE |  |
|  |  |
|  | DEVICES |  |
| 白光LED由蓝光芯片与荧光粉激发而成 |  |  |
| 注意：操作时应注意静电敏感 |  |
|  |  |
|  | 释放设备装置 |  |
|  |  |  |

**Applications**（应用）

* Optical indicator（光学指示）
* Indoor display（室内显示）
* Automotive lighting（汽车照明）
* Backlight for LCD, switch and Symbol, display

（LCD背光、转换器，开关和标志，显示器等）

* Tubular light application（用于日光灯管）
* General use（一般应用）

**Package Dimensions**（封装尺寸）

1. [0.16]
2. [0.15]

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2 | 1 | [0.04] | [0.06] |  |
| 0.95 | 1.45 |  |
|  |  |  |

**Recommended Soldering Pattern**

（建议焊盘尺寸图）

|  |  |  |
| --- | --- | --- |
| 1.03 [0.04] | [0.03] | 2.48 [0.10] |
|  | 0.75 |  |

|  |  |  |
| --- | --- | --- |
| 0.50 [0.02] | [0.04] |  |
|  |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 0.50 [0.02] | 0.40 [0.02] | 0.70 [0.03] |  |
|  |  |

|  |  |  |
| --- | --- | --- |
|  | 0.95 [0.04] |  |
| 0.75[0.03] |  |

2  1

Notes:（备注）

1. All dimension units are millimeters.（所有标注尺寸单位为毫米）

2.All dimension tolerance is ±0.15mm unless otherwise noted.（除特别标注外，所有尺寸允许公差±0.15mm ）

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|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **4014H456W-S1-HR3-DM** |  |  |  |  |  |  |
| **Selection Guide**（选择指南） |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  | Luminous intensity(mcd) | Luminous flux(lm) | Viewing |  |
|  |  |  | Angle |  |
|  |  |  | 光强@ 60mA | 光通量@ 60mA |  |
| Part No. 型号 | Dice | Lens Type | 视角度 |  |
|  |  |  |  |  |  |
| 胶体类型 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  | Min. | Typ. | Min | Typ | 21/2 |  |
|  |  |  |  |  |  |  |  |  |
| HL-A-4014H456W-S1-HR3- | WHITE | Yellow Diffused | 6500 | 7100 | 22 | 24 | 120° |  |
| DM | (InGaN ) |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

Note:(备注）

1/2 is the angle from optical centerline where the luminous intensity is 1/2 the optical centerline value. q1/2 是半值角,指光强是光学中心线光强的1/2处到光学中心线的角度

1. the above luminous intensity measurement allowance tolerance ±10%.

上述发光强度的测试允许公差为±10%

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Electrical / Optical Characteristics at Ta=25°C** | 电性与光学特性 |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Symbol | Min. |  |  | Typ. | Max. |  | Units |  | Test |  |
|  | Parameter（参数） |  |  |  |  |  | Conditions |  |
|  |  | （符号） | （最小） |  | （平均） | （最大） |  | （单位） |  |  |
|  |  |  |  |  |  | 测试条件 |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Forward Voltage |  | VF | 2.8 |  | - - | 3.4 |  | V |  | IF=60mA |  |
|  | 正向电压 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Reverse Current |  | IR | - - |  | - - | 10 |  | μA |  | VR = 5V |  |
|  | 反向电流 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | X | - - |  | 0.380 | - - |  | - - |  | IF=60mA |  |
|  | Color Coordinates |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 色度坐标 |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  | Y | - - |  | 0.375 | - - |  | - - |  | IF=60mA |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Color Temperature |  | Tc | - - |  | 4000 | - - |  | K |  | IF=60mA |  |
|  | 色温 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | Color Rendering Index |  | CRI | 80 |  | - - | - - |  | Ra |  | IF=60mA |  |
|  | 显色性指数 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Absolute Maximum Ratings at Ta=25°C** |  | 绝对最大额定值 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | Parameter（参数） |  |  | Symbol（符号） |  | Rating（值） |  | Units（单位） |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  | Power Dissipation（功耗） |  | Pd |  |  | 200 |  |  | mW |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  | Forward Current（正向电流） |  | IF |  |  | 60 |  |  | mA |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  | Peak Forward Current [1]（峰值正向电流） |  | IFP |  |  | 250 |  |  | mA |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | Reverse Voltage（反向电压） |  | VR |  |  | 5 |  |  |  | V |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  | Electrostatic Discharge (HBM)（静电） |  | ESD |  |  | 1000 |  |  | V |  |
|  |  |  |  |  |  |  |  |  |  |
|  | Operating Temperature（操作温度） |  | Topr |  |  | -40 ~ +85 |  | ℃ |  |
|  |  |  |  |  |  |  |  |  |  |
|  | Storage Temperature（保存温度） |  | Tstg |  |  | -40 ~ +100 |  | ℃ |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Note:（备注）

1. 1/10 Duty cycle, 0.1ms pulse width.（脉宽0.1ms,周期1/10）
2. The above forward voltage measurement allowance tolerance is ±0.1V.（以上所示电压测量误差±0.1V）

3. The above color coordinates measurement allowance tolerance is ±0.003. （以上所示坐标测量误差±0.003）

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**4014H456W-S1-HR3-DM**

**Typical optical characteristics curves** 典型光学特性曲线

Ambient Temperature vs. Forward Current

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  | 环境温度与正向电流特性曲线 |  |  |
|  | 80 |  |  |  |  |  |  |
|  | 70 |  |  |  |  |  |  |
| Current(mA) | 60 |  |  |  |  |  |  |
| 50 |  |  |  |  |  |  |
| 40 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Forward | 30 |  |  |  |  |  |  |
| 20 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  | 10 |  |  |  |  |  |  |
|  | 0 |  |  |  |  |  |  |
|  | 0 | 20 | 40 | 60 | 80 | 100 |  |

Ambient Temperature Ta(℃)

Forward Voltage VS. Forward Current

正向电压与正向电流特性曲线

Relative spectral emission

相对光谱分布特性曲线

Forward Current VS. Relative Intensity

|  |  |  |  |
| --- | --- | --- | --- |
|  | 正向电流与相对光强特性曲线 |  |  |
|  | 2.0 |  |  |  |  |  |  |  |  |  |  |
| Intensity | 1.5 |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| Luminous | 1.0 |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
| Relative | 0.5 |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  | 0.0 |  |  |  |  |  |  |  |  |  |  |
|  | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 |  |
|  |  |  | Forward Current(mA) |  |  |  |

Ambient Temperature VS. Relative Intensity

|  |  |  |  |
| --- | --- | --- | --- |
|  | 环境温度与相对光强特性曲线 |  |  |
|  | 3.0 |  |  |  |  |  |  |  |
| Intensity | 2.5 |  |  |  |  |  |  |  |
| 2.0 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Luminous | 1.5 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| Relative | 1.0 |  |  |  |  |  |  |  |
| 0.5 |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  | 0.0 |  |  |  |  |  |  |  |
|  | -40 | -20 | 0 | 20 | 40 | 60 | 80 |  |
|  |  |  | Ambient Temperature | Ta(℃) |  |

Radiation diagram

辐射图特性曲线

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|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **4014H456W-S1-HR3-DM** |  |  |  |  |  |  |  |  |  |
|  | 0.41 |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 0.40 |  |  |  |  |  |  |  |  | N5-1 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 0.39 |  |  |  |  |  | N4-1 |  | N5-2 |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | N4-2 |  | N5-3 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 0.38 |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | N4-3 |  | N5-4 |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 0.37 |  |  |  | N4-4 |  | N5-5 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | 0.36 |  |  |  | N4-5 |  | N5-6 |  |  |  |  |  |  |
|  |  |  |  | N4-6 |  |  |  |  |  |  |  |  |  |
|  | 0.35 |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 0.34 |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | 0.36 |  | 0.37 |  | 0.38 |  | 0.39 |  | 0.40 |  |
|  | N4-1 4000-4250K |  |  | N4-2 4000-4250K |  |  | N4-3 4000-4250K |  |
| x | 0.3746 | 0 .3863 | 0 .3844 | 0.3731 | x | 0.3731 | 0 .3844 | 0 .3824 | 0.3716 | x | 0.3716 | 0 .3824 | 0 .3803 0.3699 |  |
| y | 0.3927 | 0 .4003 | 0 .3927 | 0.3853 | y | 0.3853 | 0 .3927 | 0 .3850 | 0.3779 | y | 0.3779 | 0 .3850 | 0 .3767 0.3699 |  |
|  | N4-4 4000-4250K |  |  | N4-5 4000-4250K |  |  | N4-6 4000-4250K |  |
| x | 0.3699 | 0 .3803 | 0 .3782 | 0.3682 | x | 0.3682 | 0 .3782 | 0 .3765 | 0.3669 | x | 0.3669 | 0 .3765 | 0 .3748 0.3655 |  |
| y | 0.3699 | 0 .3767 | 0 .3684 | 0.3618 | y | 0.3618 | 0 .3684 | 0 .3615 | 0.3551 | y | 0.3551 | 0 .3615 | 0 .3546 0.3484 |  |
|  | N5-1 3800-4000K |  |  | N5-2 3800-4000K |  |  | N5-3 3800-4000K |  |
| x | 0.3863 | 0 .3970 | 0 .3947 | 0.3844 | x | 0.3844 | 0 .3947 | 0 .3923 | 0.3824 | x | 0.3824 | 0 .3923 | 0 .3898 0.3803 |  |
| y | 0.4003 | 0 .4066 | 0 .3987 | 0.3927 | y | 0.3927 | 0 .3987 | 0 .3908 | 0.3850 | y | 0.3850 | 0 .3908 | 0 .3824 0.3767 |  |
|  | N5-4 3800-4000K |  |  | N5-5 3800-4000K |  |  | N5-6 3800-4000K |  |
| x | 0.3803 | 0 .3898 | 0 .3873 | 0.3782 | x | 0.3782 | 0 .3873 | 0 .3852 | 0.3765 | x | 0.3765 | 0 .3852 | 0 .3831 0.3748 |  |
| y | 0.3767 | 0 .3824 | 0 .3740 | 0.3684 | y | 0.3684 | 0 .3740 | 0 .3669 | 0.3615 | y | 0.3615 | 0 .3669 | 0 .3597 0.3546 |  |
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**4014H456W-S1-HR3-DM**

**Reliability Test Items And Conditions** 信赖性测试项目及条件

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Test Items | Ref.Standard | Test Condition | Time | Quantity | Ac/Re |  |
| 项目 | 参考标准 | 测试条件 | 时间 | 数量 | 接收/拒收 |  |
|  |  |  |  |  |  |  |
| Reflow | JESD22-B106 | Temp:260℃max | 3 times. | 22Pcs. | 0/1 |  |
| 回流焊 | T=10 sec |  |
|  |  |  |  |  |
|  |  |  |  |  |  |  |
| Temperature Cycle |  | 100℃±5℃ 30 min. |  |  |  |  |
| JESD22-A104 | ↑↓5 min | 100 Cycles | 22Pcs. | 0/1 |  |
| 温度循环 |  |
|  | -40℃±5℃ 30 min. |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| High Temperature Storage | JESD22-A103 | Temp:100℃±5℃ | 1000Hrs. | 22Pcs. | 0/1 |  |
| 高温保存 |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Low Temperature Storage | JESD22-A119 | Temp:-40℃±5℃ | 1000Hrs. | 22Pcs. | 0/1 |  |
| 低温保存 |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Life Test | JESD22-A108 | Ta=25℃±5℃ | 1000Hrs. | 22Pcs. | 0/1 |  |
| 常温通电 | IF=60mA |  |
|  |  |  |  |  |
|  |  |  |  |  |  |  |
| High Temperature |  | 85℃±5℃/ 85%RH |  |  |  |  |
| High Humidity Life Test | JESD22-A101 | 1000Hrs. | 22Pcs. | 0/1 |  |
| IF=15mA |  |
| 高温高湿通电 |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |  |

**Criteria For Judging Damage** 失效判定标准

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  |  |  | Criteria For Judgement |  |
| Test Items | Symbol | Test Condition | 判定标准 |  |  |
| 项目 | 符号 | 测试条件 |  |  |  |  |
| Min. 最小 |  | Max. 最大 |  |
|  |  |  |  |  |
|  |  |  |  |  |  |  |
| Forward Voltage | VF | IF=60mA | - - |  | U.S.L\*)x1.1 |  |
| 正向电压 |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| Reverse Current | IR | VR = 5V | - - |  | U.S.L\*)x2.0 |  |
| 反向电流 |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Luminous Flux** | lm | IF=60mA | L.S.L\*)x0.7 |  | - - |  |
| 光通量 |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |  |

U.S.L: Upper standard level 规格上限 L.S.L: Lower standard level 规格下限

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