




PRODUCT SPECIFICATION

Model No: CSLR-U502HR4-A0

| Descriptions: | |
|------------------|---------------------|
| ■ Product Type | : Lighting LED Lamp |
| ■ LED Package | : Ø5mm Round |
| ■ Emitting Color | : Red |
| ■ Viewing Angle | : 15° |
| ■ No Stopper | |



| CUSTOMER APPROVED SIGNATURES | APPROVED BY | CHECKED BY | PREPARED BY |
|------------------------------|---|--|---|
| |  |  |  |

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| | |
|-----------|------------------|
| Spec. No. | PS-LR-U502HR4-A0 |
| Rev. | F |

Model No.: CSLR-U502HR4-A0

■ **Feature**

1. Low Power Consumption.
2. High Luminous Output.
3. High Reliability and Solid.
4. Optimal Optical/Mechanical Design.
5. RoHS compliant.

■ **Device Selection Guide**

| Part No. | Chip | Color | |
|-----------------|----------|---------|-------------------|
| | Material | Emitted | Lens Resin |
| CSLR-U502HR4-A0 | AllnGaP | Red | Water Transparent |

■ **Applications**

1. Amusement
2. Architecture and entertainment lighting
3. Electronic signs and signals.

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■ **Absolute Maximum Ratings**

| Parameter | Symbol | Rating | Unit |
|---|-----------------|--|------|
| Power Dissipation | Pd | 72 | mW |
| Continuous Forward Current | I _f | 30 | mA |
| Peak Forward Current (Duty Cycle 1/10,1KHz) ^{*1} | I _{fP} | 100 | mA |
| Reverse Voltage | V _r | 5 | V |
| ESD Sensitivity | ESD | 1000 | V |
| LED Junction Temperature ^{*2} | T _j | 110 | °C |
| Operating Temperature | Topr | -40~ +85°C | |
| Storage Temperature | Tstg | -40 ~ +100°C | |
| Lead Soldering Temperature | Tsol | Max. 260 for 5 sec Max. (1.6mm from the epoxy body) | |

Note:

1. Pulse width \cong 0.1 msec, duty \cong 1/10.
2. Proper current rating must be observed to maintain junction temperature below the maximum at all the time.

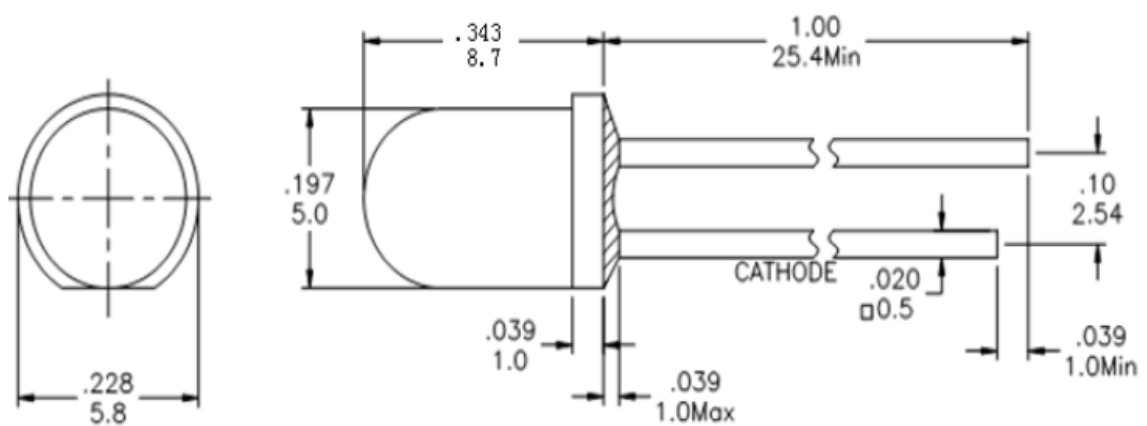
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Electrical / Optical Characteristic

| Parameter | Symbol | Min | Typ | Max | Unit | Condition |
|---------------------|-------------------|-------|-------|-------|------|-----------------------|
| Luminous Intensity* | I _v | 6600 | 9600 | ----- | mcd | I _f = 20mA |
| Forward Voltage | V _f | ----- | 2.0 | 2.6 | V | |
| Dominant Wavelength | λ _d | ----- | 625 | ----- | nm | |
| Viewing Angle | 2θ _{1/2} | ----- | 15 | ----- | Deg | |
| Reverse Current | I _r | ----- | ----- | 10 | μA | V _r = 5V |
| ESD Sensitivity | HBM | ----- | ----- | 1000 | V | MIL-STD-833G |

* Luminous intensity value is traceable to CIE127-2007 standards

Package Outline Dimensions



※ Tolerance: ±0.25 Unit: mm

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■ **Luminous Intensity Rank Limits (If = 20mA)**

| Luminous Intensity | | | |
|--------------------|-------|-------|------|
| Bin Code | Min | Max | Unit |
| 35 | 6600 | 8600 | mcd |
| 36 | 8600 | 11200 | |
| 37 | 11200 | 14600 | |
| 38 | 14600 | 19000 | |

■ **Dominant Wavelength Rank Limits(If = 20mA)**

| Bin Code | Min | Max | Unit |
|----------|-----|-----|------|
| A6 | 616 | 620 | nm |
| R1 | 620 | 625 | |
| R2 | 625 | 630 | |
| R3 | 630 | 635 | |

■ **Forward Voltage Rank Limits(If = 20mA)**

| Bin Code | Min | Max | Unit |
|----------|-----|-----|------|
| C | 1.8 | 2.0 | V |
| D | 2.0 | 2.2 | |
| E | 2.2 | 2.4 | |
| F | 2.4 | 2.6 | |

Notes:

1. Tolerance of measurement of luminous intensity :±15%;
2. Tolerance of measurement of dominant wavelength:±2nm;
3. Tolerance of measurement of forward voltage:±0.1v;
4. All data are measured by OPT's test equipment.
5. One delivery will include several color rank, VF rank and Iv ranks of the products.
6. The quantity-ratio of the ranks is decided by OPT.

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■ **Electrical / Optical Characteristics Curves (Ta = 25°C Unless Otherwise Noted)**

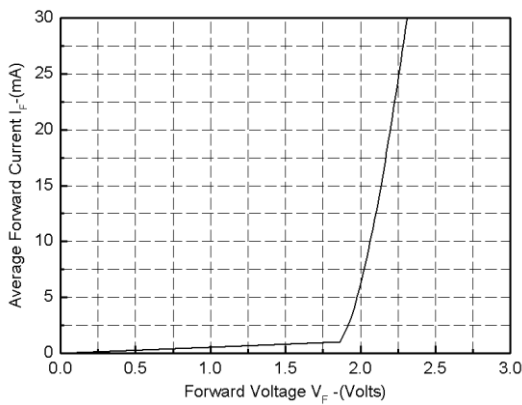


Figure1. Forward Current VS. Forward Voltage

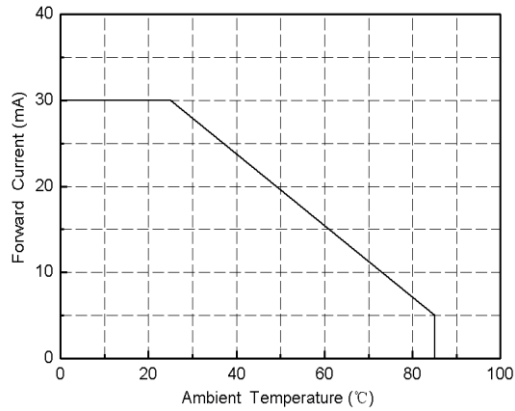


Figure2. Forward Current VS. Ambient Temperature;

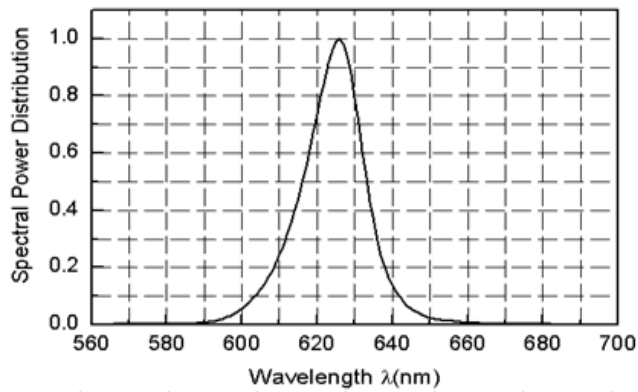


Figure3. Spectral Power Distribution VS. Wavelength

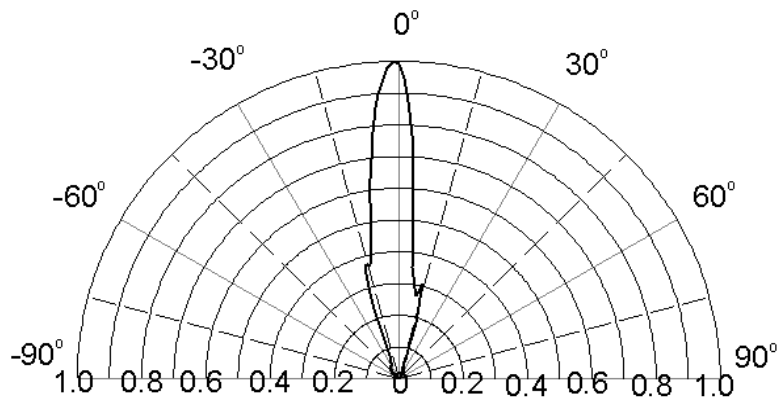


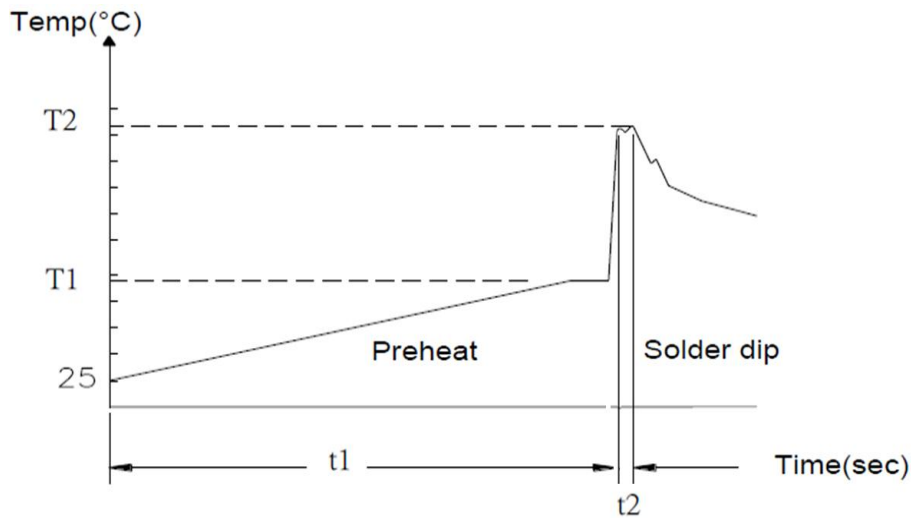
Figure4. Relative Luminosity VS. Radiation Angle

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■ Precautions For Use

1. Wave Soldering Profile

.Distance : 1.6 mm min (From seating plane)



| Item | Condition | | Notes |
|------------|-----------|------------|---|
| Preheat | Temp. T1 | 120-180 °C | PWB temperature (soldering side surface) |
| | time t1 | 60-180 sec | |
| Solder Dip | Temp. T2 | 230-260 °C | Bath temperature |
| | time t2 | 2-4 sec | Solder tank passage time |

2. Hand Soldering (Iron Condition)

- 2.1 Soldering Iron: 30W Max
- 2.2 Temperature 350°C Max (iron tip 260°C Max)
- 2.3 Soldering Time: 3 Seconds Max (Once)
- 2.4 Distance: 1.6mm min (From seating plane)

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3. Static Electricity

3.1 Static electricity or surge voltage damages LEDs.

It is recommended that a wrist band or an anti-electrostatic glove should be used when handling the LEDs.

3.2 All devices, equipment and machinery must be properly grounded. It is recommended that measures be taken against surge voltage to the equipment that mounts the LEDs.

4. Storage

4.1 Shelf life: Within 18 months under following conditions.

Un-opened, at normal temperature / Normal relative humidity (+5~+30°C / 70%Rh.max.).

■ Reliability Test Program/ Reliability Test Item Tests and Results

| NO. | Test Item | Standard Test Method | Test Conditions | Test Duration | Failure Criteria | Units Failed/Tested |
|-----|--|--|--|---------------|------------------|---------------------|
| 1 | OPERATION LIFE | JESD22-A108 | Ta= UNDER ROOM TEMPERATURE IF=20MA | 1000HRS | #2 | 0/20 |
| 2 | HIGH TEMPERATURE HIGH HUMIDITY BURN-IN | JEITA ED-4701/102A MIL-STD-750 1026 MIL-STD-830 1005 | Ta=85°C RH= 85% IF=5MA | 1000HRS | #2 | 0/20 |
| 3 | LOW TEMPERATURE STORAGE | JEITA ED-4701/202A MIL-STD-750 1026 MIL-STD-830 1005 | Ta= -55±5°C | 1000HRS | #1 | 0/20 |
| 4 | THERMAL SHOCK | JEITA ED-4701/307B MIL-STD-202 | -55°C ± 5°C ~ 105°C ± 5°C 10mins 10mins | 100 CYCLES | #1 | 0/20 |
| 5 | SOLDERABILITY | JEITA ED-4701/303A MIL-STD-202(210F) | LEAD FREE:T.sol= 245 ± 5°C(SnCu) DWELL TIME= 5± 1secs | / | #3 | 0/20 |

Notes:

Measurements are performed after allowing the LEDs to return to room temperature.

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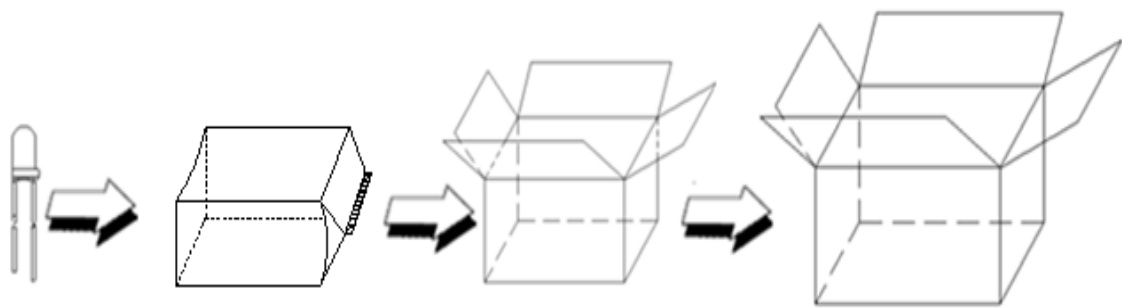
Failure Criteria

| Criteria # | Items | Conditions | Failure Criteria |
|------------|------------------------|------------|-------------------------------|
| #1 | Forward Voltage(Vf) | IF=20mA | >U.S.L.X1.1 |
| | Luminous Intensity(Iv) | IF=20mA | <L.S.L.X0.7 |
| #2 | Forward Voltage(Vf) | IF=20mA | >U.S.L.X1.1 |
| | Luminous Intensity(Iv) | IF=20mA | <L.S.L.X0.5 |
| #3 | Solderability | / | Less than 95% solder coverage |

U.S.L.: Upper Specification limit L.S.L.: Lower Specification Limit

Package

| Package Name | Package Dimension | | Distribution of the layer or box | | Total Mount | |
|--------------|-------------------|------|----------------------------------|------|-------------|------|
| | Size | Unit | Amount | Unit | Amount | Unit |
| Bag | 210*105*0.1 | mm | 1 | Bag | 1000 | PCS |
| Inner Box | 303x220x150 | mm | 1 | Box | 12000 | PCS |
| Outer Box | 470x330x320 | mm | 1 | Box | 48000 | PCS |



LED

Bag

Inner Box

Outer Box

| | |
|-----------|------------------|
| Spec. No. | PS-LR-U502HR4-A0 |
| Rev. | F |

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■ Change story-

| Rev. | Date | Change Description |
|------|------------|--|
| A | 2009.07.16 | NEW |
| B | 2009.09.15 | IV TYP.5900 |
| C | 2015.08.14 | Change the drawing size mark,Solderabilng atandard upadate |
| D | 2017.02.07 | Correct cover Stopper to No Stopper |
| E | 2018.05.29 | Format to update, Add different test standard Rank Limits |
| F | 2023.03.15 | Delete CS bright corporation's address; |

Please confirm with OPT salesman, if your request different form standard specification.