

# High Power Chip Type White LED

## NSSW440

### Characteristics

- High Power Chip Type LEDs
- Half Angle (  $2\theta_{1/2}$  ) : 120°/ 60°
- Surface Mount Chip LEDs

### Applications

- Advertising Signs
- Indicators
- LCD Back Lights
- Illuminations

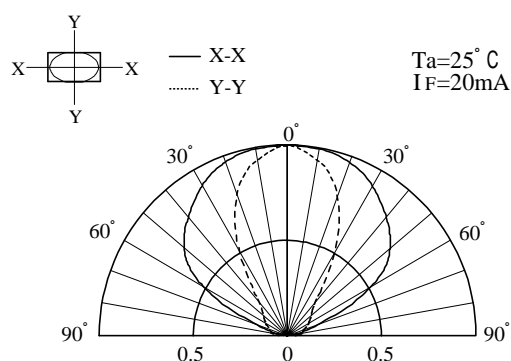
### Absolute Maximum Rating

(Ta = 25 °)

| Item                    | Symbol | Absolute Maximum Rating | Unit |
|-------------------------|--------|-------------------------|------|
| DC Forward Current      | IF     | 30                      | mA   |
| Pulse Forward Current ※ | IFP    | 100                     | mA   |
| Reverse Voltage         | VR     | 5                       | V    |
| Power Dissipation       | PD     | 120                     | mW   |
| Operating Temperature   | Topr   | -30 ~ +85               |      |
| Storage Temperature     | Tstg   | -40 ~ +100              |      |

Pulse width Max.10ms Duty ratio Max. 1/10

### Directivity



### Electrical• Optical Characteristics

(Ta = 25 °)

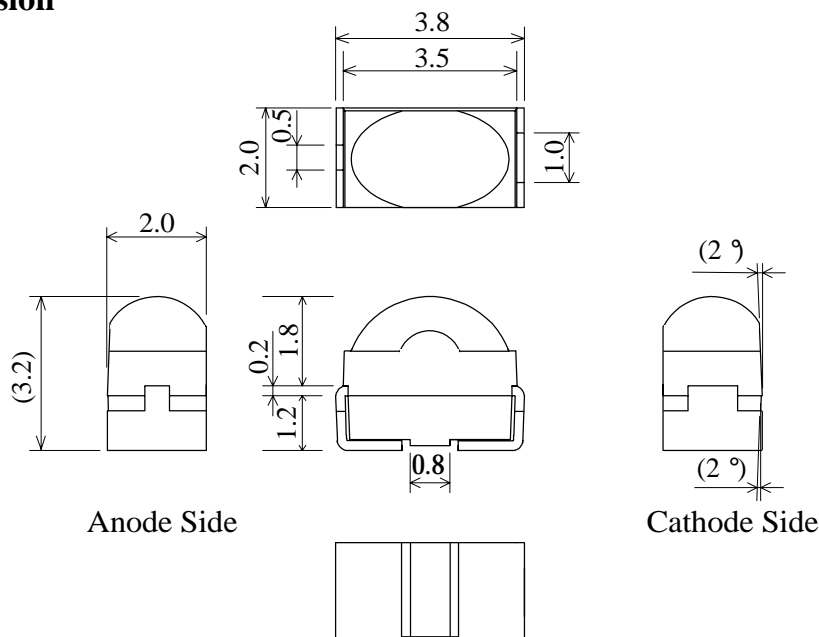
| Item                     | Symbol | Condition | Min. | Typ. | Max. | Unit |
|--------------------------|--------|-----------|------|------|------|------|
| DC Forward Voltage       | VF     | IF=20mA   | -    | 3.6  | 4.0  | V    |
| DC Reverse Current       | IR     | VR=5V     | -    | -    | 50   | μA   |
| Luminous Intensity       | Iv     | IF=20mA   | -    | 0.66 | -    | cd   |
| Chromaticity Coordinate※ | x      | IF=20mA   | -    | 0.31 | -    | -    |
| Chromaticity Coordinate※ | y      | IF=20mA   | -    | 0.32 | -    | -    |

Please refer to CIE 1931 chromaticity diagram.

### Outline Dimension

Tolerance : ± 0.2

Unit :mm



## CAUTIONS

White LEDs are devices which are materialized by combining Blue LEDs and special phosphors.

Consequently, the color of White LEDs is changed a little by an operating current.

Care should be taken after due consideration when using LEDs.

### (1) Soldering Conditions

- The LEDs can be soldered in place using the reflow soldering method.  
Nichia cannot guarantee the LEDs after they have been assembled using the solder dipping method.
- The recommended soldering conditions are as follows :

#### 【Hand Soldering】

Soldering iron temp : 300 Max. 3 seconds (one time only)

A soldering iron with a 20W Max. only must be used.

#### 【Reflow Soldering】

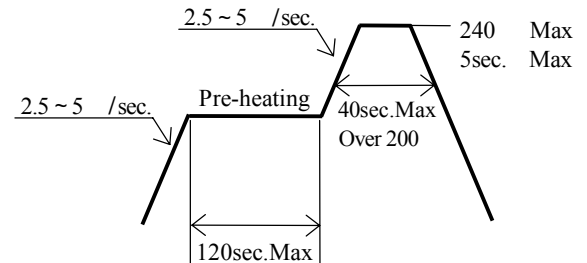
Use the conditions shown to the right figure.

Pre-heating : 120 ~ 150 2 minutes Max.

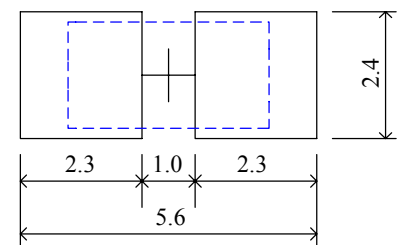
Soldering : 240 Max. 5 seconds Max.

(Rapid cooling should be avoided.)

#### 【Temperature-Profile】



#### 【Recommended installation pattern】



- When using the chip mounter, it is possibly happens that handling LEDs is difficult in accordance with the machine. For the purpose to ensure this will not cause trouble, pre-test should be performed by using the production machine.
- Modifications should not be done after the LEDs have been soldered.  
If modifications cannot be avoided, a double-head soldering iron should be used after checking whether the characteristics of the LEDs will not be damaged by modification after soldering.
- Reflow Soldering should not be done more than once.
- When soldering, do not apply force to the package during heating.
- After soldering, do not warp the circuit board.

### (2) Static Electricity

- Static Electricity and surge damage the LEDs. It is recommended to use a wrist band or anti-electrostatic glove when handling the LEDs. All devices, equipment and machinery must be properly grounded.
- When inspecting own final products on which LEDs were mounted, it is recommended to check also whether the mounted LEDs are damaged by static electricity or not. It is easy to find static-damaged LEDs by light emission test at lower current (below 1mA is recommended). Damaged LEDs will show some unusual characteristics such as leak current remarkably increases, starting forward voltage becomes lower, or the LEDs get unlighted at the low current.

### (3) Heat Generation

- Heat generation must be taken into design consideration when using the LEDs.  
The coefficient of temperature increase per input electric power is about 0.5 /mW at the LED's active layer.  
This coefficient will be affected by the heat resistance of the circuit board and by dense mounting of the LEDs.  
At the same time, precautions must be taken into the design of circuitry to avoid intense heat generation.  
Proper designs which allow radiation of heat, etc. may be needed.
- The operating current should be decided after considering the ambient maximum temperature when the LEDs are illuminating.

### (4) Others

- Care must be taken to ensure that the reverse voltage will not exceed the absolute maximum rating when using the LEDs with matrix drive.
- The electrode sections are plated with silver. Those will become discolored by contact with corroded gas etc. Precautions must be taken to maintain a clean storing atmosphere.
- The LEDs light output is strong enough to injure human eyes. Precautions must be taken to prevent looking directly at the LEDs with unaided eyes for more than a few seconds.
- These LEDs described in this brochure are intended to be used for ordinary electronic equipment (such as office equipment, communications equipment, measurement instruments and household appliances).  
Consult Nichia's sales staff in advance for information on the applications in which exceptional quality and reliability are required, particularly when the failure or malfunction of the LEDs may directly jeopardize life or health (such as for airplanes, aerospace, automobiles, traffic control equipment, life support systems and safety devices.)
- User shall not reverse engineer by disassembling or analysis of the LEDs without having the prior written consent of Nichia. When defective LEDs are found, User shall inform to Nichia directly before disassembling or analysis.
- The formal specifications must be exchanged and signed by both parties before large volume purchase begins.
- The appearance and specifications of the product may be modified for improvement without notice.