



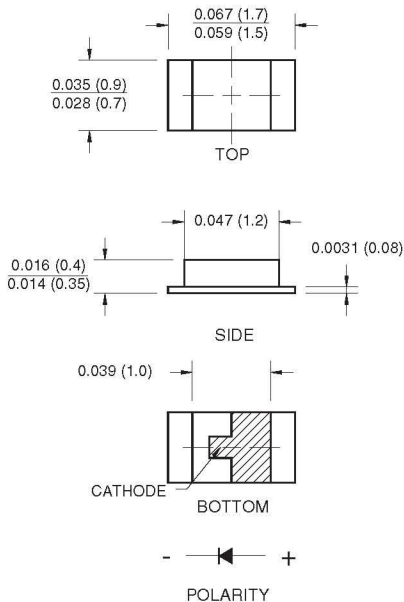
# SURFACE MOUNT LED LAMP

## 0603 (0.35 mm Height)

QTLP603CIWTR

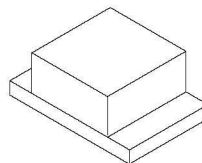
White

### PACKAGE DIMENSIONS



NOTE:

Dimensions for all drawings are in inches (mm).



### APPLICATIONS

- Keypad backlighting
- Push-button backlighting
- LCD backlighting

### DESCRIPTION

This surface mount chip LED is designed to fit industry standard footprint. Small size, low profile and wide viewing angle make this LED an ideal choice for backlighting applications and panel illumination. This device utilizes an InGaN/Sapphire blue LED.

### FEATURES

- Miniature footprint — 1.6(L) X 0.8(W) X 0.35(H) mm
- Wide viewing angle of 120°
- Diffused Optics
- Moisture-proof packaging
- Available in 0.315" (8mm) width tape on 7" (178mm) diameter reel; 2,000 units per reel



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| ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ\text{C}$ unless otherwise specified) |           |               |                  |
|---|-----------|---------------|------------------|
| Parameter   | Symbol    | Rating        | Unit             |
| Operating Temperature   | $T_{OPR}$ | -40 to +85    | $^\circ\text{C}$ |
| Storage Temperature   | $T_{STG}$ | -40 to +90    | $^\circ\text{C}$ |
| Lead Soldering Time   | $T_{SOL}$ | 260 for 5 sec | $^\circ\text{C}$ |
| Continuous Forward Current  | $I_F$     | 25            | mA               |
| Peak Forward Current<br>( $f = 1.0$ KHz, Duty Factor = 1/10)                    | $I_{FM}$  | 100           | mA               |
| Reverse Voltage   | $V_R$     | 5             | V                |
| Power Dissipation   | $P_D$     | 110           | mW               |

| ELECTRICAL / OPTICAL CHARACTERISTICS ( $T_A = 25^\circ\text{C}$ ) |              |              |
|---|--------------|--------------|
| Part Number   | QTLP603CIWTR | Condition    |
| Luminous Intensity (mcd)  |              |              |
| Bin I3  | 21 - 42      | $I_F = 5$ mA |
| Bin I4  | 30 - 60      |              |
| Bin I5  | 45 - 90      |              |
| Forward Voltage (V)   |              |              |
| Bin V0  | 2.55 - 2.75  | $I_F = 5$ mA |
| Bin V1  | 2.75 - 2.95  |              |
| Bin V2  | 2.95 - 3.15  |              |
| Bin V3  | 3.15 - 3.35  |              |
| Chromaticity Coordinate   | See page 3   | $I_F = 5$ mA |
| Reverse Current ( $\mu\text{A}$ ) - max                           | 10           | $V_R = 5$ V  |
| Spectral Line Half Width (nm)                                     | 35           | $I_F = 5$ mA |
| Viewing Angle ( $^\circ$ )  | 120          | $I_F = 5$ mA |

Notes:

- Forward Voltage Tolerance =  $\pm 0.1\text{V}$
- Luminous Intensity Tolerance =  $\pm 15\%$



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**Color Ranks**

(I<sub>F</sub> = 5mA, T<sub>a</sub> = 25°C)

|   | Bin a0 |       |       |       |
|---|--------|-------|-------|-------|
| x | 0.280  | 0.264 | 0.283 | 0.296 |
| y | 0.248  | 0.267 | 0.305 | 0.276 |

|   | Bin b5 |       |       |       |
|---|--------|-------|-------|-------|
| x | 0.296  | 0.311 | 0.307 | 0.287 |
| y | 0.276  | 0.294 | 0.315 | 0.295 |

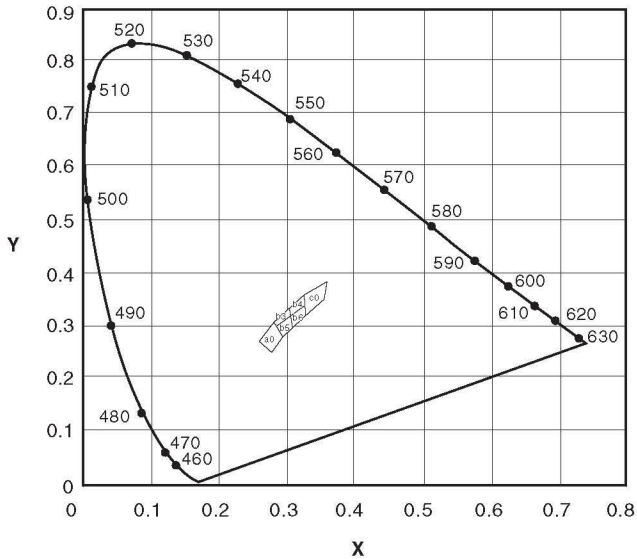
|   | Bin b3 |       |       |       |
|---|--------|-------|-------|-------|
| x | 0.307  | 0.287 | 0.304 | 0.283 |
| y | 0.315  | 0.295 | 0.330 | 0.305 |

|   | Bin b6 |       |       |       |
|---|--------|-------|-------|-------|
| x | 0.311  | 0.307 | 0.330 | 0.330 |
| y | 0.294  | 0.315 | 0.318 | 0.339 |

|   | Bin b4 |       |       |       |
|---|--------|-------|-------|-------|
| x | 0.307  | 0.330 | 0.330 | 0.304 |
| y | 0.315  | 0.339 | 0.360 | 0.330 |

|   | Bin c0 |       |       |       |
|---|--------|-------|-------|-------|
| x | 0.330  | 0.330 | 0.361 | 0.356 |
| y | 0.318  | 0.360 | 0.385 | 0.351 |

**Chromaticity Diagram**





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### TYPICAL PERFORMANCE CURVES

Fig. 1 Forward Current vs. Forward Voltage

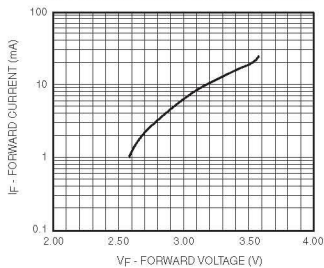


Fig. 2 Relative Luminous Intensity vs. DC Forward Current

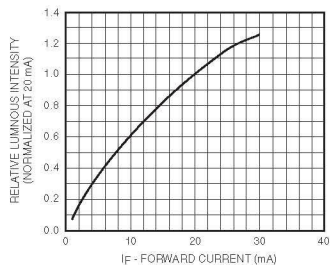


Fig. 3 Relative Intensity vs. Peak Wavelength

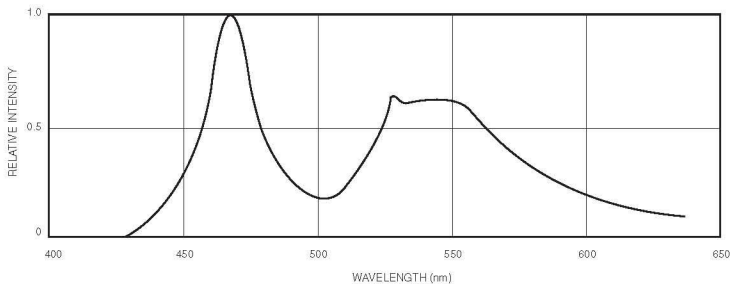


Fig.4 Radiation Diagram

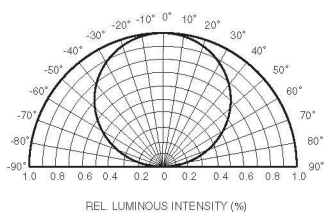
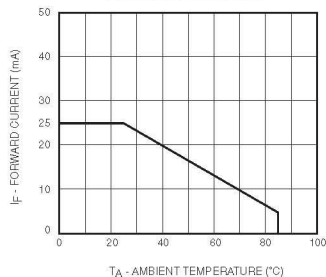


Fig.5 Maximum Forward Current vs. Ambient Temperature





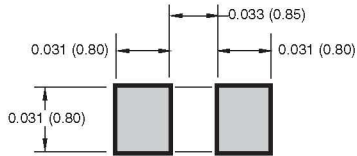
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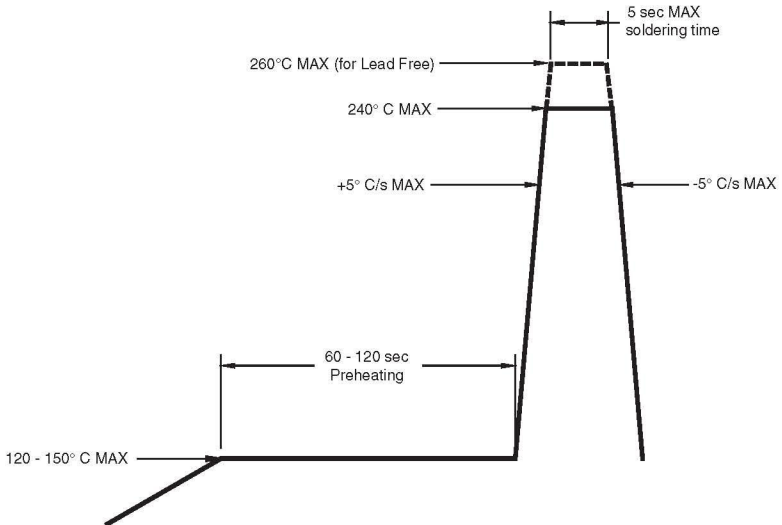
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### RECOMMENDED PRINTED CIRCUIT BOARD PATTERN



### RECOMMENDED IR REFLOW SOLDERING PROFILE





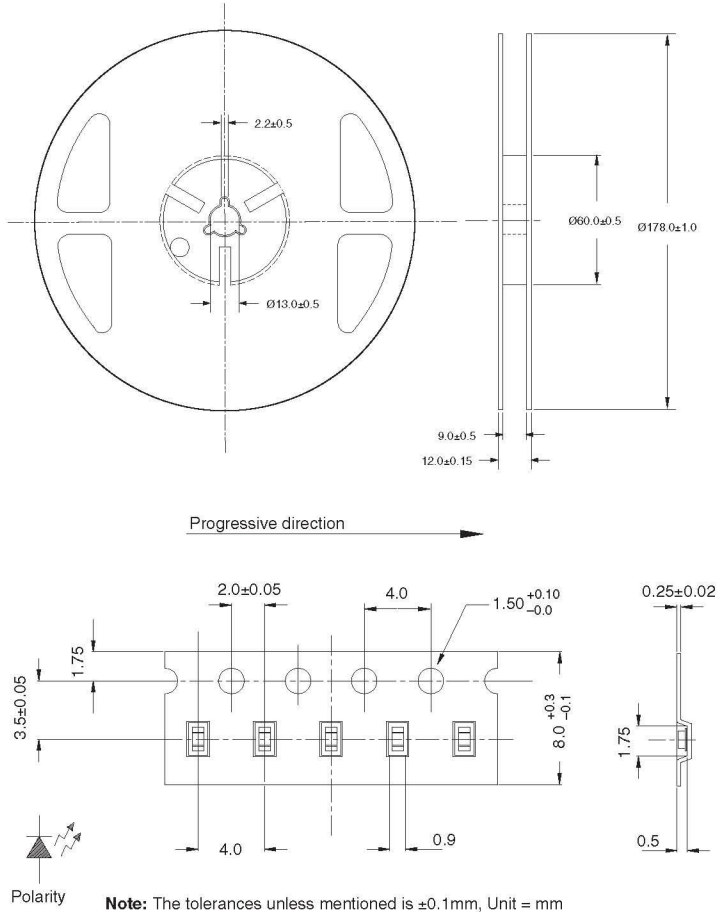
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### TAPE AND REEL DIMENSIONS





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