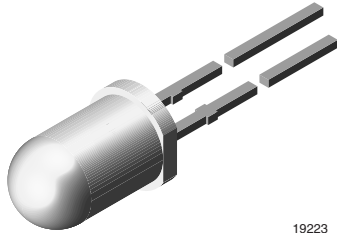


Ultrabright LED, Ø 5 mm Untinted Non-Diffused



19223

DESCRIPTION

The TLC.52.. series are a clear, non diffused 5 mm LED for high end applications where supreme luminous intensity required.

These lamps with clear untinted plastic case utilize the highly developed ultrabright AllnGaP (AS).

The lens and the viewing angle is optimized to achieve best performance of light output and visibility.

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 5 mm
- Product series: power
- Angle of half intensity: $\pm 15^\circ$

FEATURES

- Untinted non-diffused lens
- Utilizing ultrabright AllnGaP (AS)
- High luminous intensity
- High operating temperature:
 T_j (chip junction temperature) up to 125 °C for AllnGaP devices
- Luminous intensity and color categorized for each packing unit
- ESD-withstand voltage: up to 2 kV according to JESD22-A114-B
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC



RoHS
COMPLIANT

APPLICATIONS

- Interior and exterior lighting
- Outdoor LED panels
- Instrumentation and front panel indicators
- Central high mounted stop lights (CHMSL) for motor vehicles
- Replaces incandescent lamps
- Traffic signals
- Light guide design

PARTS TABLE

| PART | COLOR, LUMINOUS INTENSITY | TECHNOLOGY |
|----------|---------------------------|-----------------|
| TLCR5200 | Red, $I_V > 1350$ mcd | AllnGaP on GaAs |
| TLCY5200 | Yellow, $I_V > 1350$ mcd | AllnGaP on GaAs |

ABSOLUTE MAXIMUM RATINGS ¹⁾ TLCR5200, TLCY5200

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|-------------------------------------|---------------------------------|------------|---------------|------|
| Reverse voltage ²⁾ | | V_R | 5 | V |
| DC Forward current | $T_{amb} \leq 85^\circ\text{C}$ | I_F | 50 | mA |
| Surge forward current | $t_p \leq 10 \mu\text{s}$ | I_{FSM} | 1 | A |
| Power dissipation | | P_V | 135 | mW |
| Junction temperature | | T_j | 125 | °C |
| Operating temperature range | | T_{amb} | - 40 to + 100 | °C |
| Storage temperature range | | T_{stg} | - 40 to + 100 | °C |
| Soldering temperature | $t \leq 5$ s, 2 mm from body | T_{sd} | 260 | °C |
| Thermal resistance junction/ambient | | R_{thJA} | 300 | K/W |

Note:

¹⁾ $T_{amb} = 25^\circ\text{C}$ unless otherwise specified

²⁾ Driving the LED in reverse direction is suitable for a short term application

| OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ TLCR5200, RED | | | | | | | |
|--|------------------------|----------|------------------|------|----------|------|------|
| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Luminous intensity ²⁾ | $I_F = 50 \text{ mA}$ | TLCR5200 | I_V | 1350 | 4000 | | mcd |
| Dominant wavelength | $I_F = 50 \text{ mA}$ | | λ_d | 611 | 616 | 622 | nm |
| Peak wavelength | $I_F = 50 \text{ mA}$ | | λ_p | | 622 | | nm |
| Spectral bandwidth at 50 % $I_{rel \text{ max.}}$ | $I_F = 50 \text{ mA}$ | | $\Delta\lambda$ | | 18 | | nm |
| Angle of half intensity | $I_F = 50 \text{ mA}$ | | φ | | ± 15 | | deg |
| Forward voltage | $I_F = 50 \text{ mA}$ | | V_F | | 2.1 | 2.7 | V |
| Reverse voltage | $I_R = 10 \mu\text{A}$ | | V_R | 5 | | | V |
| Temperature coefficient of V_F | $I_F = 50 \text{ mA}$ | | TC_{V_F} | | - 3.5 | | mV/K |
| Temperature coefficient of λ_d | $I_F = 50 \text{ mA}$ | | TC_{λ_d} | | 0.05 | | nm/K |

Note:

¹⁾ $T_{amb} = 25 \text{ }^\circ\text{C}$ unless otherwise specified

²⁾ In one packing unit $I_{Vmax.}/I_{Vmin.} \leq 2.0$

| OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ TLCY5200, YELLOW | | | | | | | |
|---|------------------------|----------|------------------|------|----------|------|------|
| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Luminous intensity ²⁾ | $I_F = 50 \text{ mA}$ | TLCY5200 | I_V | 1350 | 4000 | | mcd |
| Dominant wavelength | $I_F = 50 \text{ mA}$ | | λ_d | 585 | 590 | 597 | nm |
| Peak wavelength | $I_F = 50 \text{ mA}$ | | λ_p | | 593 | | nm |
| Spectral bandwidth at 50 % $I_{rel \text{ max.}}$ | $I_F = 50 \text{ mA}$ | | $\Delta\lambda$ | | 17 | | nm |
| Angle of half intensity | $I_F = 50 \text{ mA}$ | | φ | | ± 15 | | deg |
| Forward voltage | $I_F = 50 \text{ mA}$ | | V_F | | 2.1 | 2.7 | V |
| Reverse voltage | $I_R = 10 \mu\text{A}$ | | V_R | 5 | | | V |
| Temperature coefficient of V_F | $I_F = 50 \text{ mA}$ | | TC_{V_F} | | - 3.5 | | mV/K |
| Temperature coefficient of λ_d | $I_F = 50 \text{ mA}$ | | TC_{λ_d} | | 0.1 | | nm/K |

Note:

¹⁾ $T_{amb} = 25 \text{ }^\circ\text{C}$ unless otherwise specified

²⁾ In one packing unit $I_{Vmax.}/I_{Vmin.} \leq 2.0$

| LUMINOUS INTENSITY CLASSIFICATION | | |
|-----------------------------------|-----------------------|---------|
| GROUP | LIGHT INTENSITY (mcd) | |
| | MIN. | MAX. |
| STANDARD | | |
| FF | 1350 | 2700 |
| GG | 1800 | 3600 |
| HH | 2400 | 4800 |
| II | 3200 | 6400 |
| KK | 4300 | 8600 |
| LL | 5750 | 11 500 |
| MM | 7500 | 15 000 |
| NN | 10 000 | 20 000 |
| PP | 13 500 | 27 000 |
| QQ | 18 000 | 36 000 |
| RR | 24 000 | 48 000 |
| SS | 32 000 | 64 000 |
| TT | 43 000 | 86 000 |
| UU | 57 500 | 115 000 |

Note:

Luminous intensity is tested at a current pulse duration of 25 ms and an accuracy of $\pm 11 \%$.

The type numbers represent the order groups which include only a few brightness groups. Only one group will be shipped on each bag (there will be no mixing of two groups on each bag).

In order to ensure availability, single brightness groups will not be orderable.

In a similar manner for colors where wavelength groups are measured and binned, single wavelength groups will be shipped in any one bag.

In order to ensure availability, single wavelength groups will not be orderable.

| COLOR CLASSIFICATION | | | | |
|----------------------|----------------------|------|------|------|
| GROUP | DOM. WAVELENGTH (nm) | | | |
| | YELLOW | | RED | |
| | MIN. | MAX. | MIN. | MAX. |
| 0 | 585 | 588 | | |
| 1 | 587 | 591 | 611 | 618 |
| 2 | 589 | 594 | 614 | 622 |
| 3 | 592 | 597 | | |

Note:

Wavelengths are tested at a current pulse duration of 25 ms and an accuracy of $\pm 1 \text{ nm}$.

TYPICAL CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified

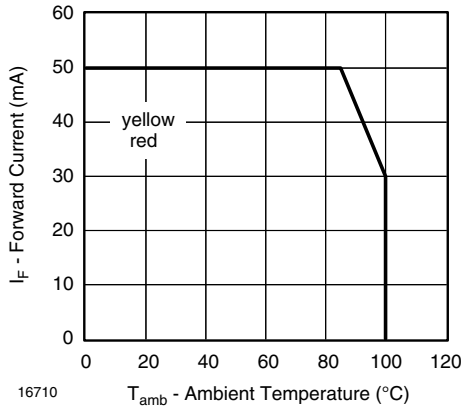


Figure 1. Forward Current vs. Ambient Temperature

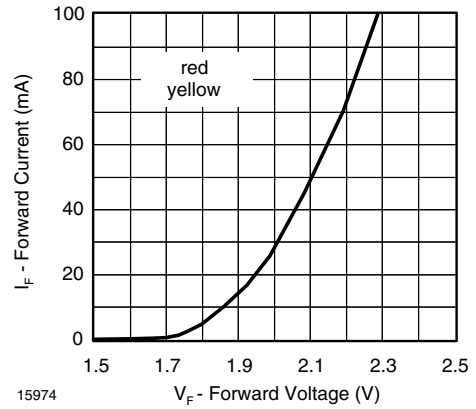


Figure 4. Forward Current vs. Forward Voltage

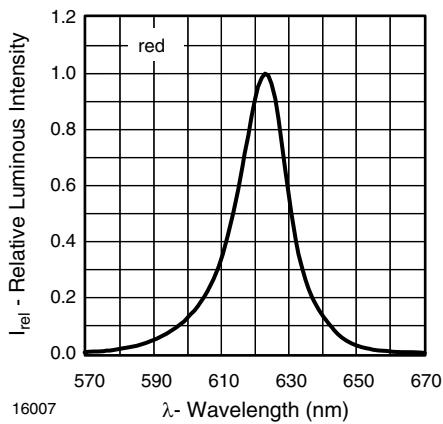


Figure 2. Relative Intensity vs. Wavelength

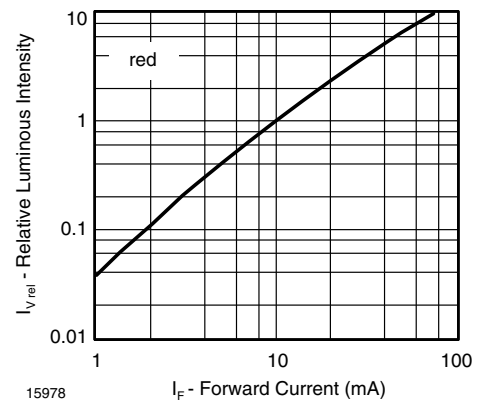


Figure 5. Relative Luminous Flux vs. Forward Current

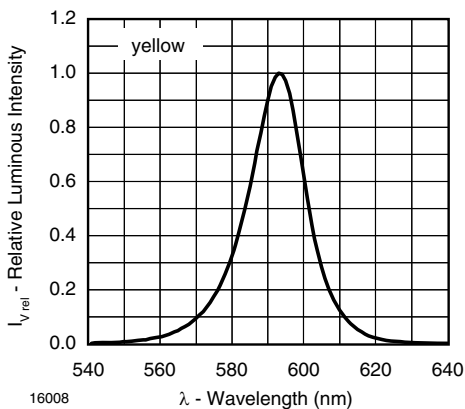


Figure 3. Relative Intensity vs. Wavelength

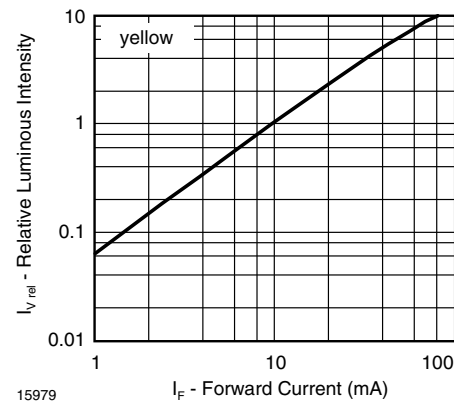
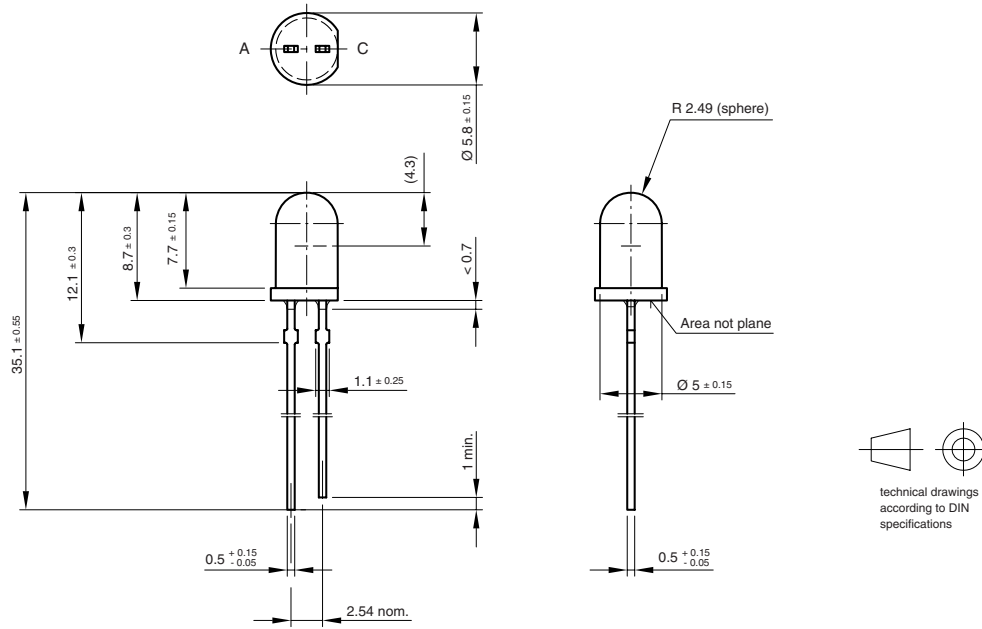


Figure 6. Relative Luminous Flux vs. Forward Current

PACKAGE DIMENSIONS in millimeters



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