

High Efficiency LED, Ø 5 mm Tinted Non-Diffused Package



19223

DESCRIPTION

The TLH.52.. series was developed for standard applications like general indicating and lighting purposes.

It is housed in a 5 mm tinted non-diffused plastic package. The small viewing angle of these devices provides a high brightness.

Several selection types with different luminous intensities are offered. All LEDs are categorized in luminous intensity groups. The green and yellow LEDs are categorized additionally in wavelength groups.

That allows users to assemble LEDs with uniform appearance.

FEATURES

- Choice of three bright colors
- Standard T-1 $\frac{3}{4}$ package
- Small mechanical tolerances
- Suitable for DC and high peak current
- Small viewing angle
- Luminous intensity categorized
- Yellow and green color categorized
- TLH.52.. with stand-offs
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC


RoHS
COMPLIANT

APPLICATIONS

- Status lights
- Off/on indicator
- Background illumination
- Readout lights
- Maintenance lights
- Legend light

PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 5 mm
- Product series: standard
- Angle of half intensity: $\pm 14^\circ$

PARTS TABLE

| PART | COLOR, LUMINOUS INTENSITY | TECHNOLOGY |
|----------------|-------------------------------|--------------|
| TLHR5200 | Red, $I_V = 50$ mcd (typ.) | GaAsP on GaP |
| TLHR5201 | Red, $I_V = 60$ mcd (typ.) | GaAsP on GaP |
| TLHR5205 | Red, $I_V = 70$ mcd (typ.) | GaAsP on GaP |
| TLHY5200 | Yellow, $I_V = 50$ mcd (typ.) | GaAsP on GaP |
| TLHG5200 | Green, $I_V = 40$ mcd (typ.) | GaP on GaP |
| TLHG5201 | Green, $I_V = 45$ mcd (typ.) | GaP on GaP |
| TLHG5201-AS12Z | Green, $I_V = 45$ mcd (typ.) | GaP on GaP |
| TLHG5205 | Green, $I_V = 50$ mcd (typ.) | GaP on GaP |
| TLHG5205-AS21 | Green, $I_V = 50$ mcd (typ.) | GaP on GaP |

| ABSOLUTE MAXIMUM RATINGS ¹⁾ TLHR520. TLHY520. , TLHG520. | | | | |
|---|---|------------|---------------|------------------|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
| Reverse voltage | | V_R | 6 | V |
| DC Forward current | $T_{amb} \leq 65\text{ }^\circ\text{C}$ | I_F | 30 | mA |
| Surge forward current | $t_p \leq 10\text{ }\mu\text{s}$ | I_{FSM} | 1 | A |
| Power dissipation | $T_{amb} \leq 65\text{ }^\circ\text{C}$ | P_V | 100 | mW |
| Junction temperature | | T_j | 100 | $^\circ\text{C}$ |
| Operating temperature range | | T_{amb} | - 20 to + 100 | $^\circ\text{C}$ |
| Storage temperature range | | T_{stg} | - 55 to + 100 | $^\circ\text{C}$ |
| Soldering temperature | $t \leq 5\text{ s, } 2\text{ mm from body}$ | T_{sd} | 260 | $^\circ\text{C}$ |
| Thermal resistance junction/ambient | | R_{thJA} | 350 | K/W |

Note:

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

| OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ TLHR520., RED | | | | | | | |
|--|-------------------------------|----------|-------------|------|----------|------|------|
| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Luminous intensity ²⁾ | $I_F = 10\text{ mA}$ | TLHR5200 | I_V | 10 | 50 | | mcd |
| | | TLHR5201 | I_V | 16 | 60 | | mcd |
| | | TLHR5205 | I_V | 25 | 70 | | mcd |
| Dominant wavelength | $I_F = 10\text{ mA}$ | | λ_d | 612 | | 625 | nm |
| Peak wavelength | $I_F = 10\text{ mA}$ | | λ_p | | 635 | | nm |
| Angle of half intensity | $I_F = 10\text{ mA}$ | | ϕ | | ± 14 | | deg |
| Forward voltage | $I_F = 20\text{ mA}$ | | V_F | | 2 | 3 | V |
| Reverse voltage | $I_R = 10\text{ }\mu\text{A}$ | | V_R | 6 | 15 | | V |
| Junction capacitance | $V_R = 0, f = 1\text{ MHz}$ | | C_j | | 50 | | pF |

Note:

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

²⁾ In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$

| OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ TLHY520., YELLOW | | | | | | | |
|---|-------------------------------|----------|-------------|------|----------|------|------|
| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Luminous intensity ²⁾ | $I_F = 10\text{ mA}$ | TLHY5200 | I_V | 10 | 50 | | mcd |
| Dominant wavelength | $I_F = 10\text{ mA}$ | | λ_d | 581 | | 594 | nm |
| Peak wavelength | $I_F = 10\text{ mA}$ | | λ_p | | 585 | | nm |
| Angle of half intensity | $I_F = 10\text{ mA}$ | | ϕ | | ± 14 | | deg |
| Forward voltage | $I_F = 20\text{ mA}$ | | V_F | | 2.4 | 3 | V |
| Reverse voltage | $I_R = 10\text{ }\mu\text{A}$ | | V_R | 6 | 15 | | V |
| Junction capacitance | $V_R = 0, f = 1\text{ MHz}$ | | C_j | | 50 | | pF |

Note:

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

²⁾ In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$

| OPTICAL AND ELECTRICAL CHARACTERISTICS ¹⁾ TLHG520., GREEN | | | | | | | |
|--|------------------------------|----------|-------------|------|----------|------|------|
| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Luminous intensity ²⁾ | $I_F = 10 \text{ mA}$ | TLHG5200 | I_V | 16 | 40 | | mcd |
| | | TLHG5201 | I_V | 25 | 45 | | mcd |
| | | TLHG5205 | I_V | 40 | 50 | | mcd |
| Dominant wavelength | $I_F = 10 \text{ mA}$ | | λ_d | 562 | | 575 | nm |
| Peak wavelength | $I_F = 10 \text{ mA}$ | | λ_p | | 565 | | nm |
| Angle of half intensity | $I_F = 10 \text{ mA}$ | | ϕ | | ± 14 | | deg |
| Forward voltage | $I_F = 20 \text{ mA}$ | | V_F | | 2.4 | 3 | V |
| Reverse voltage | $I_R = 10 \mu\text{A}$ | | V_R | 6 | 15 | | V |
| Junction capacitance | $V_R = 0, f = 1 \text{ MHz}$ | | C_j | | 50 | | pF |

Note:

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

²⁾ In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$

TYPICAL CHARACTERISTICS

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



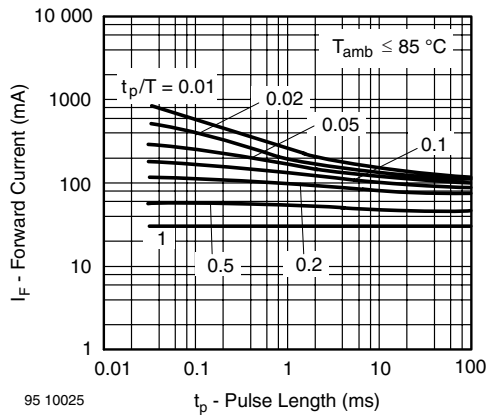
95 10046 T_{amb} - Ambient Temperature ($^\circ\text{C}$)

Figure 1. Forward Current vs. Ambient Temperature



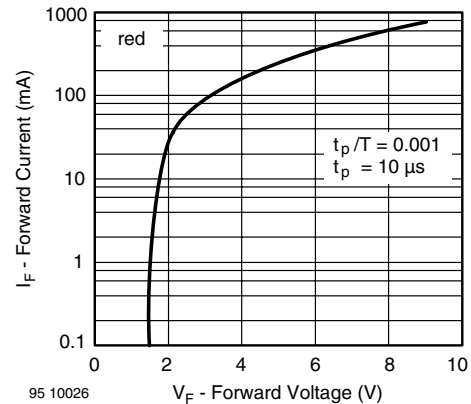
95 10044

Figure 3. Rel. Luminous Intensity vs. Angular Displacement



95 10025

Figure 2. Forward Current vs. Pulse Length



95 10026

Figure 4. Forward Current vs. Forward Voltage

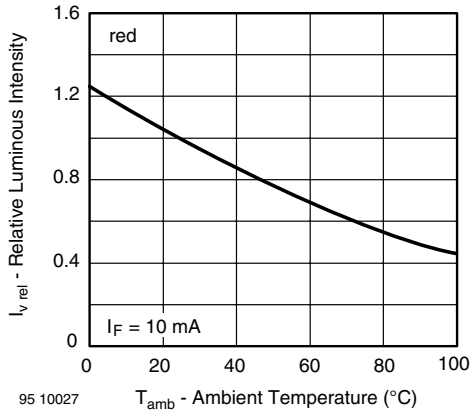


Figure 5. Rel. Luminous Intensity vs. Ambient Temperature

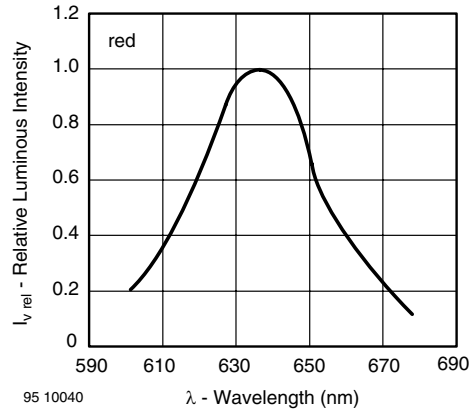


Figure 8. Relative Intensity vs. Wavelength



Figure 6. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle



Figure 9. Forward Current vs. Forward Voltage



Figure 7. Relative Luminous Intensity vs. Forward Current

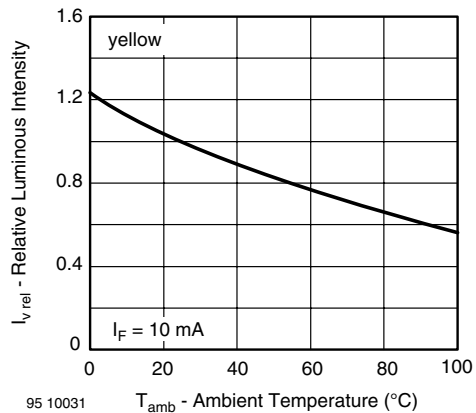


Figure 10. Rel. Luminous Intensity vs. Ambient Temperature



Figure 11. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle



Figure 14. Forward Current vs. Forward Voltage



Figure 12. Relative Luminous Intensity vs. Forward Current



Figure 15. Rel. Luminous Intensity vs. Ambient Temperature

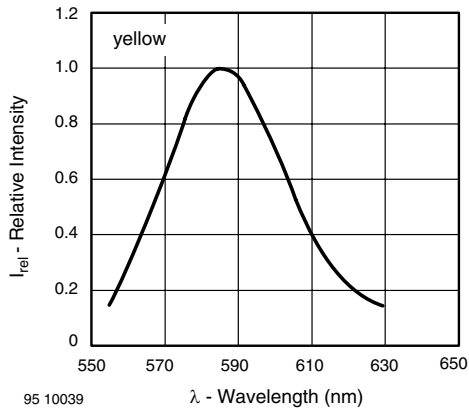


Figure 13. Relative Intensity vs. Wavelength

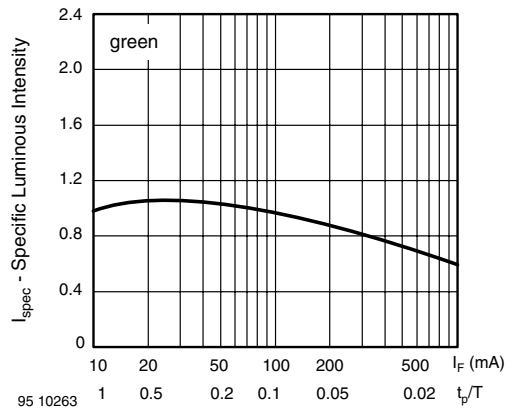


Figure 16. Specific Luminous Intensity vs. Forward Current



Figure 17. Relative Luminous Intensity vs. Forward Current



Figure 18. Relative Intensity vs. Wavelength

PACKAGE DIMENSIONS in millimeters



6.544-5258.01-4
 Issue: 5; 19.05.09
 96 12119

REEL



Figure 19. Reel Dimensions

AS12 = cathode leaves tape first
AS21 = anode leaves tape first

AMMOPACK

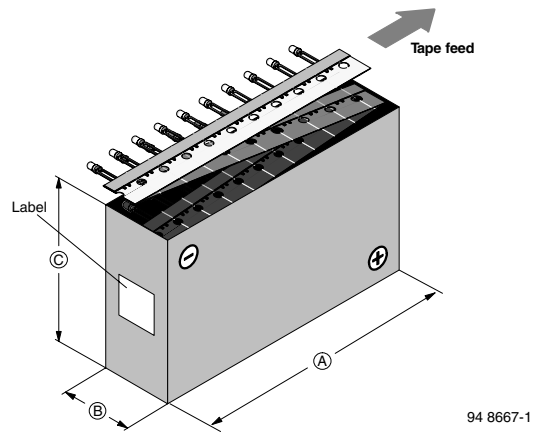


Figure 21. Tape Direction

Note:
AS12Z and AS21Z still valid for already existing types BUT NOT FOR NEW DESIGN

TAPE



Figure 20. LED in Tape

TAPE DIMENSIONS



| | |
|---------------|-------------------------|
| Quantity per: | Reel (Mat.-no. 1764) |
| | 1000 |

94 8172

| | |
|--------|-------------------|
| Option | Dim. "H" ± 0.5 mm |
| AS | 17.3 |



Disclaimer

All product specifications and data are subject to change without notice.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained herein or in any other disclosure relating to any product.

Vishay disclaims any and all liability arising out of the use or application of any product described herein or of any information provided herein to the maximum extent permitted by law. The product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein, which apply to these products.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications unless otherwise expressly indicated. Customers using or selling Vishay products not expressly indicated for use in such applications do so entirely at their own risk and agree to fully indemnify Vishay for any damages arising or resulting from such use or sale. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

Product names and markings noted herein may be trademarks of their respective owners.