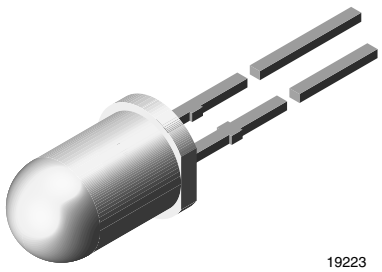
# High Efficiency LED, Ø 5 mm Tinted Non-Diffused Package



19223

## FEATURES

- Choice of three bright colors
- Standard T-1¾ 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
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free

e3

RoHS COMPLIANT

HALOGEN FREE GREEN (5-2008)

## 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.

## 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: ± 14°

## PARTS TABLE

| PART | COLOR | LUMINOUS INTENSITY (mcd) | | | at $I_F$ (mA) | WAVELENGTH (nm) | | | at $I_F$ (mA) | FORWARD VOLTAGE (V) | | | at $I_F$ (mA) | TECHNOLOGY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MIN. | TYP. | MAX. | | MIN. | TYP. | MAX. | | MIN. | TYP. | MAX. | | |
| TLHR5200 | Red | 10 | 50 | - | 10 | 612 | - | 630 | 10 | - | 2 | 3 | 20 | GaAsP on GaP |
| TLHR5201 | Red | 16 | 60 | - | 10 | 612 | - | 630 | 10 | - | 2 | 3 | 20 | GaAsP on GaP |
| TLHR5205 | Red | 25 | 70 | - | 10 | 612 | - | 630 | 10 | - | 2 | 3 | 20 | GaAsP on GaP |
| TLHY5200 | Yellow | 10 | 50 | - | 10 | 581 | - | 594 | 10 | - | 2 | 3 | 20 | GaAsP on GaP |
| TLHG5200 | Green | 16 | 40 | - | 10 | 562 | - | 575 | 10 | - | 2 | 3 | 20 | GaP on GaP |
| TLHG5201 | Green | 25 | 45 | - | 10 | 562 | - | 575 | 10 | - | 2 | 3 | 20 | GaP on GaP |
| TLHG5201-AS12Z | Green | 25 | 45 | - | 10 | 562 | - | 575 | 10 | - | 2 | 3 | 20 | GaP on GaP |
| TLHG5205 | Green | 40 | 50 | - | 10 | 562 | - | 575 | 10 | - | 2 | 3 | 20 | GaP on GaP |

**ABSOLUTE MAXIMUM RATINGS** ($T_{amb}$ = 25 °C, unless otherwise specified)
**TLHR520. TLHY520. , TLHG520.**

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|---|---|---|---|---|
| Reverse voltage | | $V_R$ | 6 | V |
| DC forward current | $T_{amb} \leq 65$ °C | $I_F$ | 30 | mA |
| Surge forward current | $t_p \leq 10$ µs | $I_{FSM}$ | 1 | A |
| Power dissipation | $T_{amb} \leq 65$ °C | $P_V$ | 100 | mW |
| Junction temperature | | $T_j$ | 100 | °C |
| Operating temperature range | | $T_{amb}$ | -40 to +100 | °C |
| Storage temperature range | | $T_{stg}$ | -55 to +100 | °C |
| Soldering temperature | t ≤ 5 s, 2 mm from body | $T_{sd}$ | 260 | °C |
| Thermal resistance junction-to-ambient | | $R_{thJA}$ | 350 | K/W |

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ($T_{amb}$ = 25 °C, unless otherwise specified)
**TLHR520., RED**

| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| Luminous intensity (1) | $I_F$ = 10 mA | TLHR5200 | $I_V$ | 10 | 50 | - | mcd |
| | | TLHR5201 | $I_V$ | 16 | 60 | - | mcd |
| | | TLHR5205 | $I_V$ | 25 | 70 | - | mcd |
| Dominant wavelength | $I_F$ = 10 mA | | $\lambda_d$ | 612 | - | 630 | nm |
| Peak wavelength | $I_F$ = 10 mA | | $\lambda_p$ | - | 635 | - | nm |
| Angle of half intensity | $I_F$ = 10 mA | | φ | - | ± 14 | - | ° |
| Forward voltage | $I_F$ = 20 mA | | $V_F$ | - | 2 | 3 | V |
| Reverse voltage | $I_R$ = 10 µA | | $V_R$ | 6 | 15 | - | V |
| Junction capacitance | $V_R$ = 0 V, f = 1 MHz | | $C_j$ | - | 50 | - | pF |

**Note**
(1) In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ($T_{amb}$ = 25 °C, unless otherwise specified)
**TLHY520., YELLOW**

| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| Luminous intensity (1) | $I_F$ = 10 mA | TLHY5200 | $I_V$ | 10 | 50 | - | mcd |
| Dominant wavelength | $I_F$ = 10 mA | | $\lambda_d$ | 581 | - | 594 | nm |
| Peak wavelength | $I_F$ = 10 mA | | $\lambda_p$ | - | 585 | - | nm |
| Angle of half intensity | $I_F$ = 10 mA | | φ | - | ± 14 | - | ° |
| Forward voltage | $I_F$ = 20 mA | | $V_F$ | - | 2 | 3 | V |
| Reverse voltage | $I_R$ = 10 µA | | $V_R$ | 6 | 15 | - | V |
| Junction capacitance | $V_R$ = 0 V, f = 1 MHz | | $C_j$ | - | 50 | - | pF |

**Note**
(1) In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ($T_{amb}$ = 25 °C, unless otherwise specified)
**TLHG520., GREEN**

| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|---|
| Luminous intensity (1) | $I_F$ = 10 mA | TLHG5200 | $I_V$ | 16 | 40 | - | mcd |
| | | TLHG5201 | $I_V$ | 25 | 45 | - | mcd |
| | | TLHG5205 | $I_V$ | 40 | 50 | - | mcd |
| Dominant wavelength | $I_F$ = 10 mA | | $\lambda_d$ | 562 | - | 575 | nm |
| Peak wavelength | $I_F$ = 10 mA | | $\lambda_p$ | - | 565 | - | nm |
| Angle of half intensity | $I_F$ = 10 mA | | φ | - | ± 14 | - | ° |
| Forward voltage | $I_F$ = 20 mA | | $V_F$ | - | 2 | 3 | V |
| Reverse voltage | $I_R$ = 10 µA | | $V_R$ | 6 | 15 | - | V |
| Junction capacitance | $V_R$ = 0 V, f = 1 MHz | | $C_j$ | - | 50 | - | pF |

**Note**
(1) In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$

**TYPICAL CHARACTERISTICS** ($T_{amb}$ = 25 °C, unless otherwise specified)

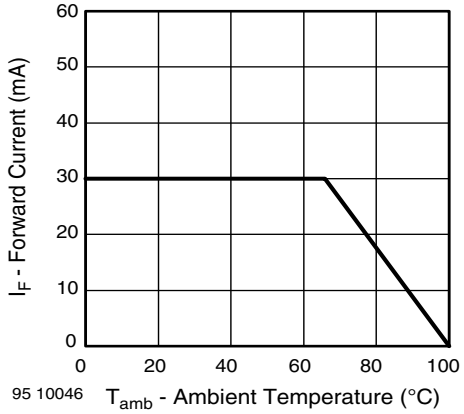



Fig. 1 - Forward Current vs. Ambient Temperature

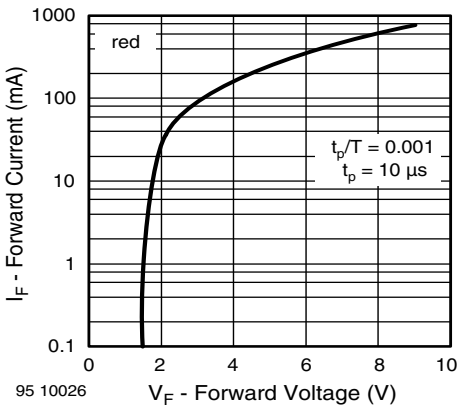



Fig. 4 - Forward Current vs. Forward Voltage

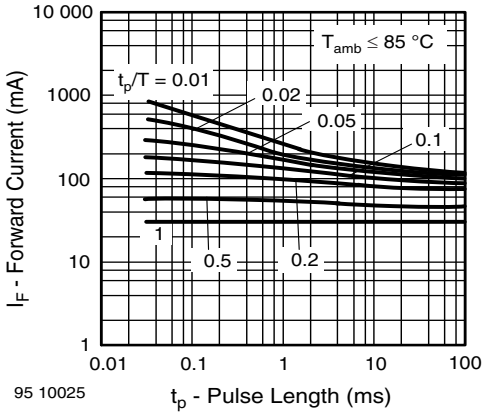



Fig. 2 - Forward Current vs. Pulse Length

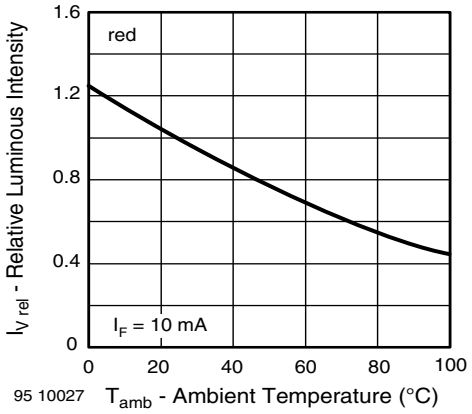



Fig. 5 - Relative Luminous Intensity vs. Ambient Temperature

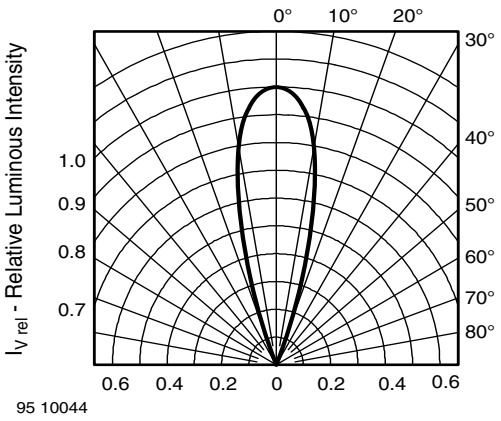



Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

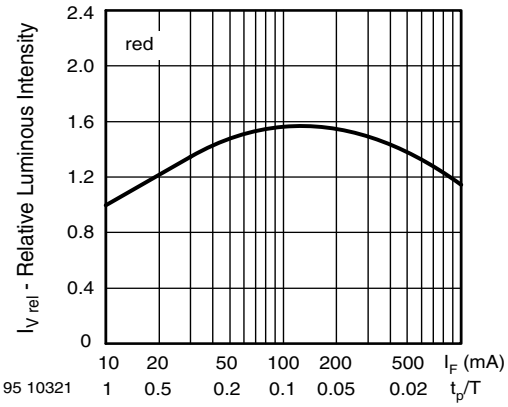



Fig. 6 - Relative Luminous. Intensity vs. Forward Current/Duty Cycle

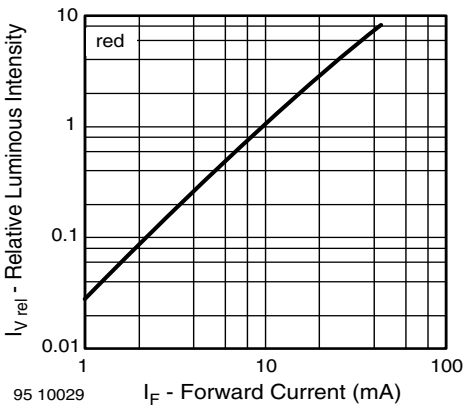



Fig. 7 - Relative Luminous Intensity vs. Forward Current

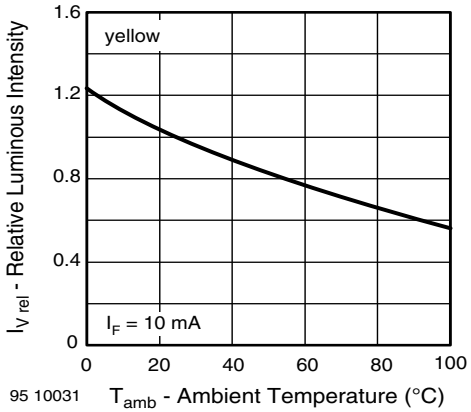



Fig. 10 - Relative Luminous Intensity vs. Ambient Temperature

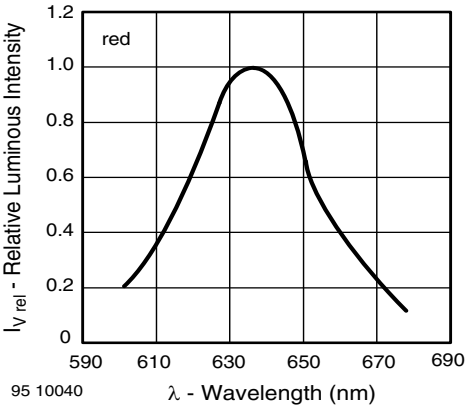



Fig. 8 - Relative Intensity vs. Wavelength

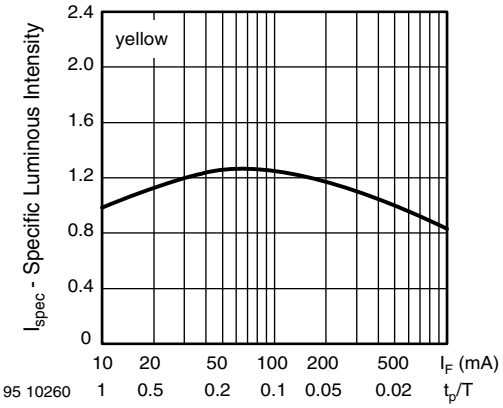



Fig. 11 - Relative Luminous Intensity vs. Forward Current/Duty Cycle

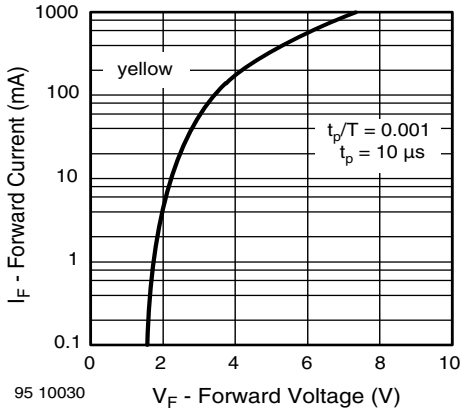



Fig. 9 - Forward Current vs. Forward Voltage

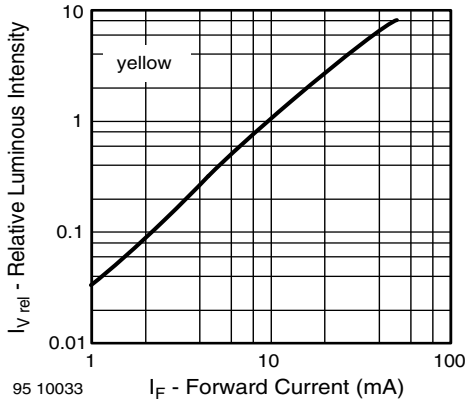



Fig. 12 - Relative Luminous Intensity vs. Forward Current

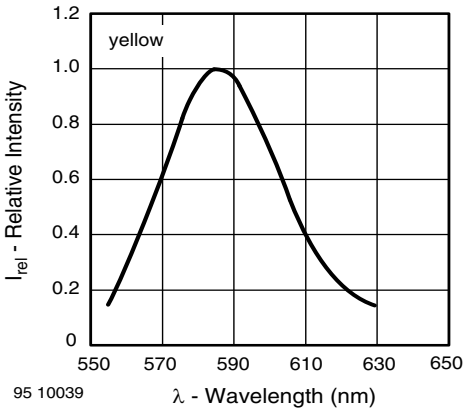



Fig. 13 - Relative Intensity vs. Wavelength

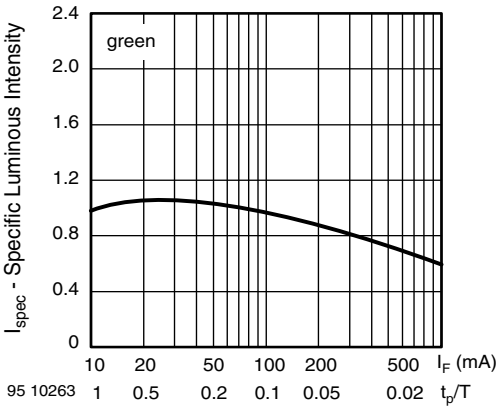



Fig. 16 - Specific Luminous Intensity vs. Forward Current

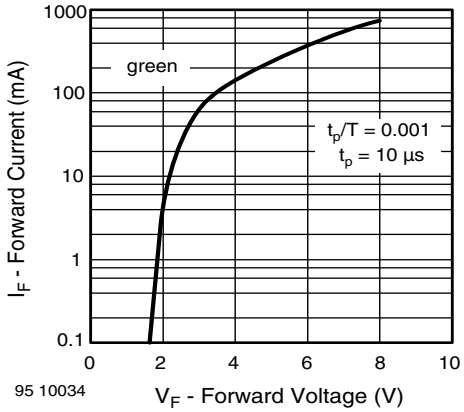



Fig. 14 - Forward Current vs. Forward Voltage

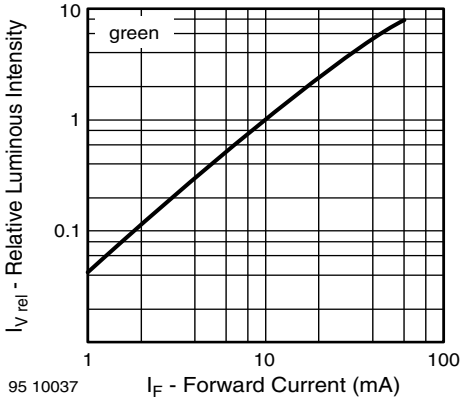



Fig. 17 - Relative Luminous Intensity vs. Forward Current

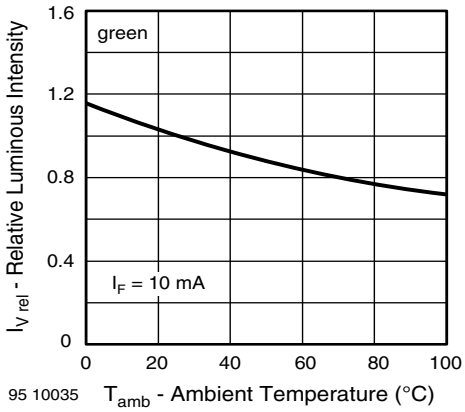



Fig. 15 - Relative Luminous Intensity vs. Ambient Temperature

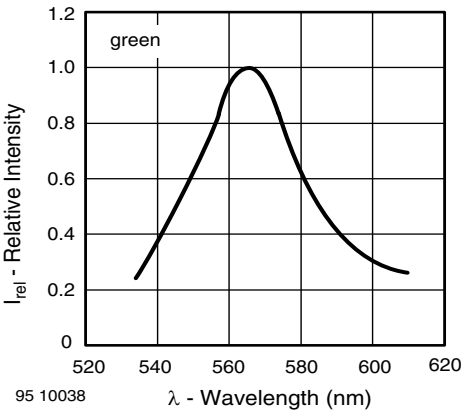
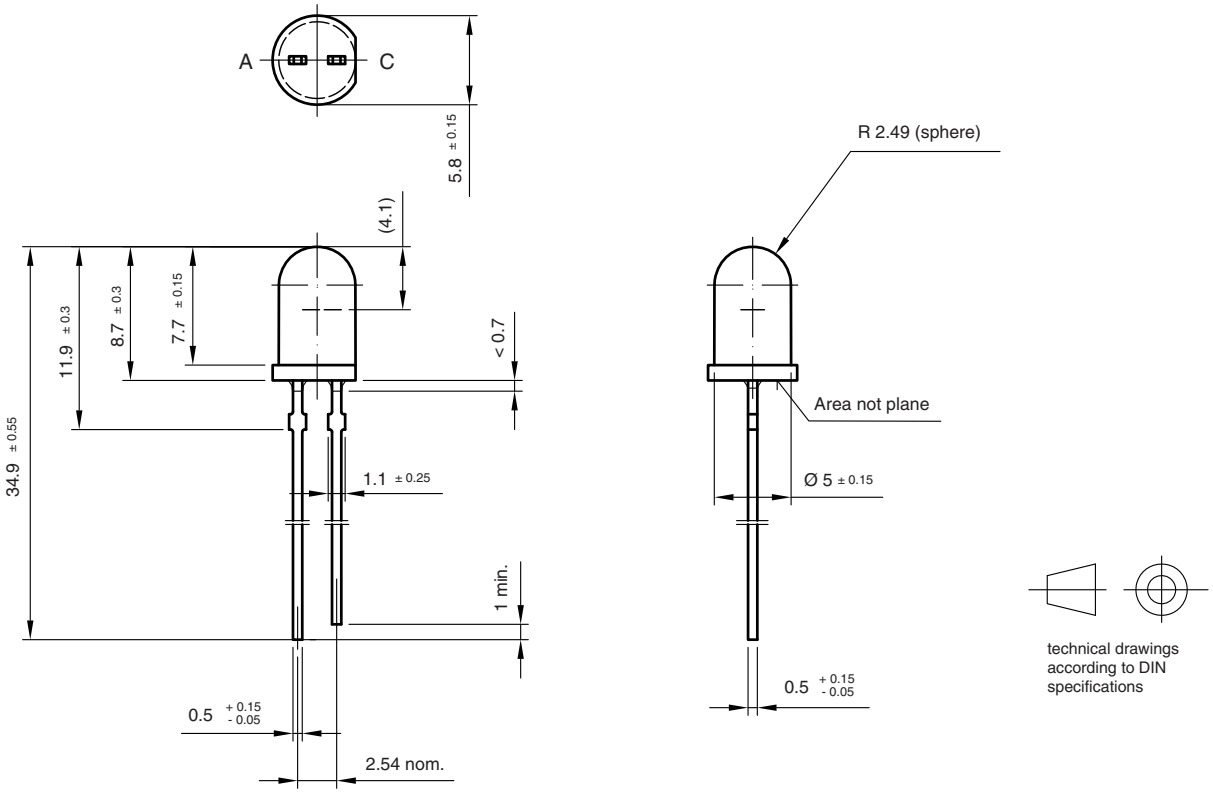



Fig. 18 - Relative Intensity vs. Wavelength

## PACKAGE DIMENSIONS in millimeters




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

## REEL

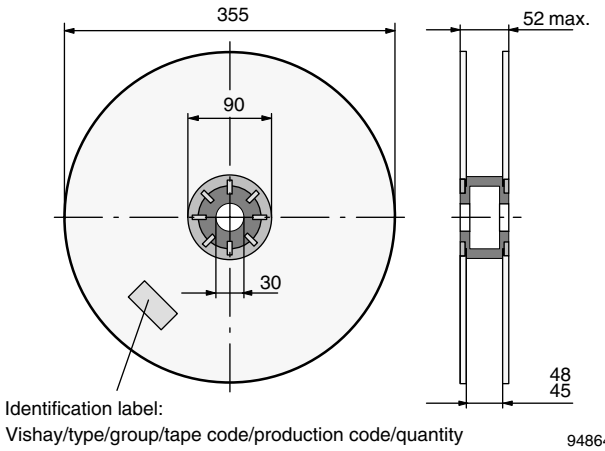



Fig. 19 - Reel Dimensions

## TAPE

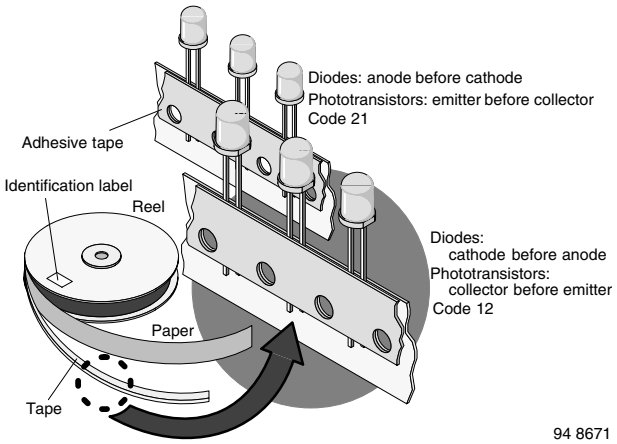



Fig. 20 - LED in Tape

AS12 = cathode leaves tape first

AS21 = anode leaves tape first

**AMMOPACK**

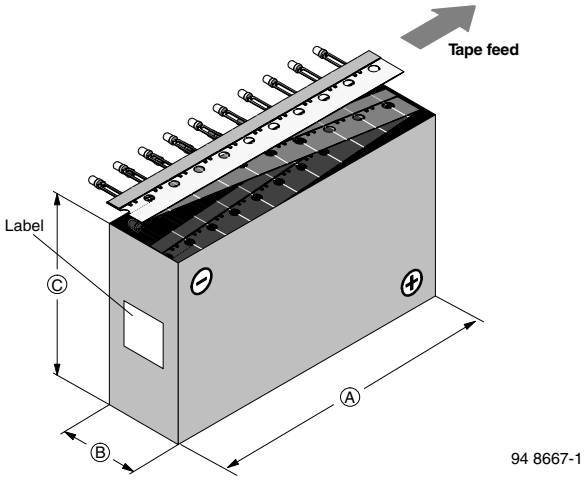
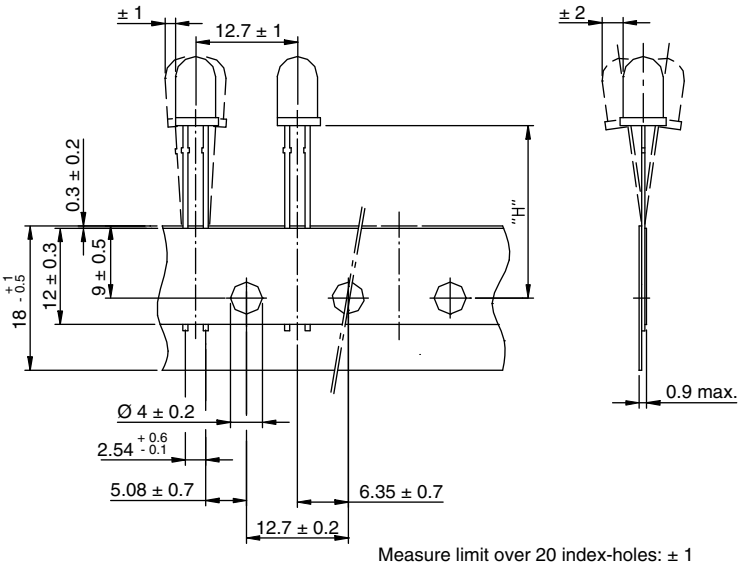



Fig. 21 - Tape Direction

**Note**

- The new nomenclature for ammopack is e.g. ASZ only, without suffix for the LED orientation. The carton box has to be turned to the desired position: “+” for anode first, or “-” for cathode first. AS12Z and AS21Z are still valid for already existing types, BUT NOT FOR NEW DESIGN

## **TAPE DIMENSIONS** in millimeters




| Option | Dim. “H” ± 0.5 mm |
|---|---|
| AS | 17.3 |

# Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

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 in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay’s knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer’s responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer’s technical experts. Product specifications do not expand or otherwise modify Vishay’s terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, Vishay products are not designed for use in medical, life-saving, or life-sustaining applications or for any other application in which the failure of the Vishay product could result in personal injury or death. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

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

# X-ON Electronics

Largest Supplier of Electrical and Electronic Components

***Click to view similar products for*** Standard LEDs - Through Hole ***category:***

***Click to view products by*** Vishay ***manufacturer:***

Other Similar products are found below :

LTL-10254W LTL-1214A LTL-3251A LTL-4262N LTL-433P LTL-5234 LTL87HTBK LTW-87HD4B HLMP-EL30-PS0DD 1L0532V23G0TD001 NSPW500CS NTE30036 NTE30044 NTE30059 NTE3020 LD CQDP-1U3U-W5-1-K LO566UHR3-70G-A3 LP379PPG1C0G0300001 SLX-LX3044GD SLX-LX3044ID SLX-LX3044YD 1.90690.3330000 SSS-LX4673ID-410B 1L0532Y24I0TD001 264-7SYGD/S530-E2 HLMP-1301-G00FG HLMP1385 LTL-10224W LTL-1224A LTL-1234A LTL-2251AT LTL-307YE-012 LTL-403HR LTL-4222 LU7-E-B 4380H1 TLHY44K1L2 HLMP-3962-F0002 HLMP-GG15-R0000 323-2SURD/S530-A3 L53SRC/E-Z L-7679C1ZGC 4302T1-5V 4306D23 4363D1/5 WP1503SRC/J4 WP153GDT WP153YDT WP1543SGC WP1543SURC