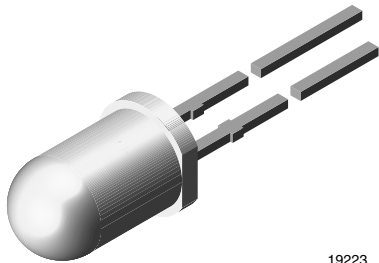




## High Efficiency LED, Ø 5 mm Tinted Diffused Package



19223

### DESCRIPTION

The tinted diffused 5 mm green LED series was developed for standard applications like general indicating and lighting purposes. It is using AlInGaP chip technology and includes the standard versions TLHG542... with stand-off and TLHG642... without stand-off. The wide viewing angle of these devices provides a high on-off contrast.

All LEDs are categorized in luminous intensity groups.

That allows users to assemble LEDs with uniform appearance.

### PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 5 mm
- Product series: standard
- Angle of half intensity:  $\pm 25^\circ$

### FEATURES

- Standard T-1 $\frac{3}{4}$  package
- Wide viewing angle
- Luminous intensity and wavelength categorized
- TLHG542... with stand-offs, TLHG642... without stand-offs
- Material categorization:  
for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

### APPLICATIONS

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



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

### PARTS TABLE

| PART         | COLOR | LUMINOUS INTENSITY (mcd) |      |      | at I <sub>F</sub> (mA) | WAVELENGTH (nm) |      |      | at I <sub>F</sub> (mA) | FORWARD VOLTAGE (V) |      |      | at I <sub>F</sub> (mA) | TECHNOLOGY      |
|--------------|-------|--------------------------|------|------|------------------------|-----------------|------|------|------------------------|---------------------|------|------|------------------------|-----------------|
|              |       | MIN.                     | TYP. | MAX. |                        | MIN.            | TYP. | MAX. |                        | MIN.                | TYP. | MAX. |                        |                 |
| TLHG5420     | Green | 6.3                      | 20   | -    | 10                     | 562             | 570  | 575  | 10                     | -                   | 2.1  | 2.4  | 20                     | AlInGaP on GaAs |
| TLHG5420-ASZ | Green | 6.3                      | 20   | -    | 10                     | 562             | 570  | 575  | 10                     | -                   | 2.1  | 2.4  | 20                     | AlInGaP on GaAs |
| TLHG5420-KSZ | Green | 6.3                      | 20   | -    | 10                     | 562             | 570  | 575  | 10                     | -                   | 2.1  | 2.4  | 20                     | AlInGaP on GaAs |
| TLHG6420     | Green | 6.3                      | 20   | -    | 10                     | 562             | 570  | 575  | 10                     | -                   | 2.1  | 2.4  | 20                     | AlInGaP on GaAs |
| TLHG6420-ASZ | Green | 6.3                      | 20   | -    | 10                     | 562             | 570  | 575  | 10                     | -                   | 2.1  | 2.4  | 20                     | AlInGaP on GaAs |
| TLHG6420-CSZ | Green | 6.3                      | 20   | -    | 10                     | 562             | 570  | 575  | 10                     | -                   | 2.1  | 2.4  | 20                     | AlInGaP on GaAs |

**ABSOLUTE MAXIMUM RATINGS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**TLHG542., TLHG642.**

| PARAMETER                                   | TEST CONDITION                       | SYMBOL     | VALUE       | UNIT               |
|---------------------------------------------|--------------------------------------|------------|-------------|--------------------|
| Reverse voltage                             |                                      | $V_R$      | 5           | V                  |
| DC forward current                          |                                      | $I_F$      | 25          | mA                 |
| Surge forward current                       | (Duty cycle 1/10 at 1 kHz)           | $I_{FSM}$  | 60          | mA                 |
| Power dissipation                           |                                      | $P_V$      | 60          | mW                 |
| Junction temperature                        |                                      | $T_j$      | 100         | $^{\circ}\text{C}$ |
| Operating temperature range                 |                                      | $T_{amb}$  | -40 to +85  | $^{\circ}\text{C}$ |
| Storage temperature range                   |                                      | $T_{stg}$  | -40 to +100 | $^{\circ}\text{C}$ |
| Soldering temperature                       | $t \leq 5\text{ s}$ , 2 mm from body | $T_{sd}$   | 260         | $^{\circ}\text{C}$ |
| Thermal resistance junction to solder point |                                      | $R_{thJS}$ | 325         | K/W                |

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)  
**TLHG542., TLHG642., GREEN**

| PARAMETER                         | TEST CONDITION                          | PART      | SYMBOL      | MIN. | TYP.     | MAX. | UNIT          |
|-----------------------------------|-----------------------------------------|-----------|-------------|------|----------|------|---------------|
| Luminous intensity <sup>(1)</sup> | $I_F = 10\text{ mA}$                    | TLHG5420. | $I_V$       | 6.3  | 20       | -    | mcd           |
|                                   |                                         | TLHG6420. | $I_V$       | 6.3  | 20       | -    | mcd           |
| Dominant wavelength               | $I_F = 10\text{ mA}$                    |           | $\lambda_d$ | 562  | 570      | 575  | nm            |
| Peak wavelength                   | $I_F = 10\text{ mA}$                    |           | $\lambda_p$ | -    | 571      | -    | nm            |
| Angle of half intensity           | $I_F = 10\text{ mA}$                    |           | $\phi$      | -    | $\pm 25$ | -    | $^{\circ}$    |
| Forward voltage <sup>(2)</sup>    | $I_F = 20\text{ mA}$                    |           | $V_F$       | -    | 2.1      | 2.4  | V             |
| Reverse current                   | $V_R = 5\text{ V}$                      |           | $I_R$       | -    | -        | 10   | $\mu\text{A}$ |
| Junction capacitance              | $V_R = 0\text{ V}$ , $f = 1\text{ MHz}$ |           | $C_j$       | -    | 50       | -    | pF            |

**Notes**<sup>(1)</sup> In one packing unit  $I_{Vmin}/I_{Vmax} \leq 0.5$ <sup>(2)</sup> Measurement uncertainty of forward voltage:  $\pm 0.1\text{ V}$ **LUMINOUS INTENSITY CLASSIFICATION**

| GROUP | LUMINOUS INTENSITY (mcd) |      |
|-------|--------------------------|------|
|       | MIN.                     | MAX. |
| Q     | 6.3                      | 12.5 |
| R     | 10                       | 20   |
| S     | 16                       | 32   |
| T     | 25                       | 50   |
| U     | 40                       | 80   |
| V     | 63                       | 125  |

**Note**

- Luminous flux is tested at a current pulse duration of 25 ms and an accuracy of  $\pm 10\%$ .  
The above 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 in 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 on any one bag.  
In order to ensure availability, single wavelength groups will not be orderable.

**COLOR CLASSIFICATION**

| GROUP | DOM. WAVELENGTH (nm) |      |
|-------|----------------------|------|
|       | GREEN                |      |
|       | MIN.                 | MAX. |
| 3     | 562                  | 565  |
| 4     | 564                  | 567  |
| 5     | 566                  | 569  |
| 6     | 568                  | 571  |
| 7     | 570                  | 573  |
| 8     | 572                  | 575  |

**Note**

- Wavelengths are tested at a current pulse duration of 25 ms and an accuracy of 1 nm

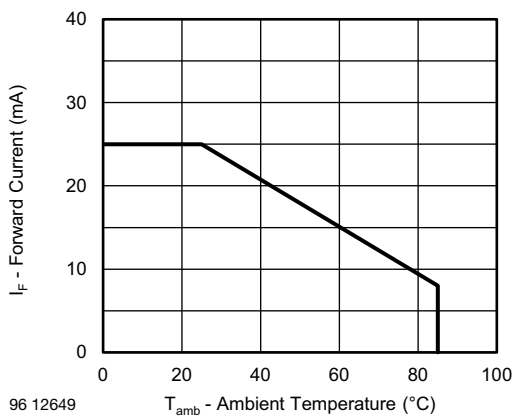
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Forward Current vs. Ambient Temperature

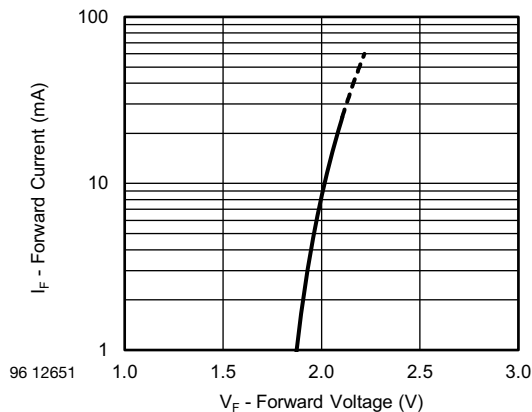


Fig. 4 - Forward Current vs. Forward Voltage

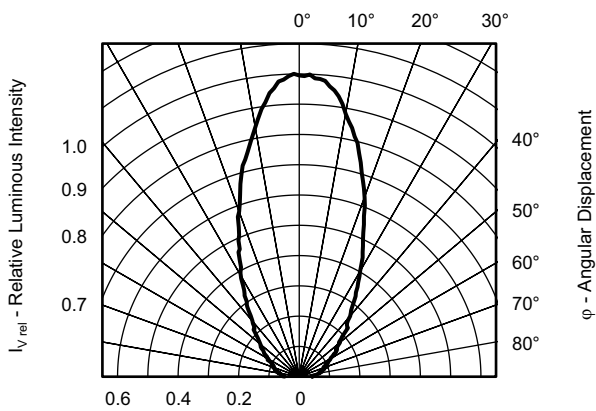


Fig. 2 - Rel. Luminous Intensity vs. Angular Displacement

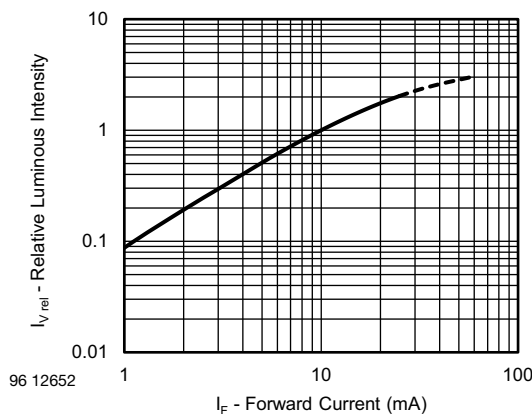


Fig. 5 - Relative Luminous Intensity vs. Forward Current

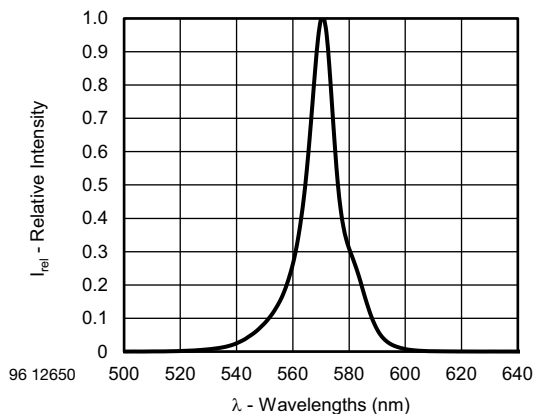


Fig. 3 - Relative Intensity vs. Wavelength

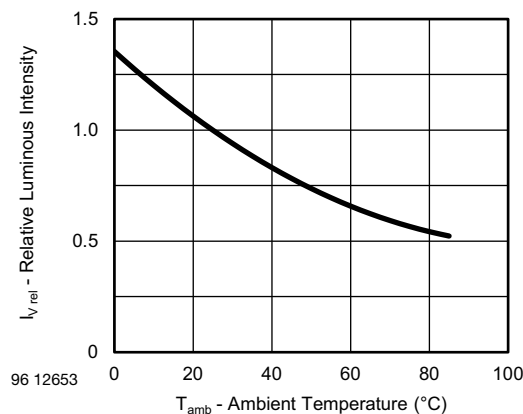
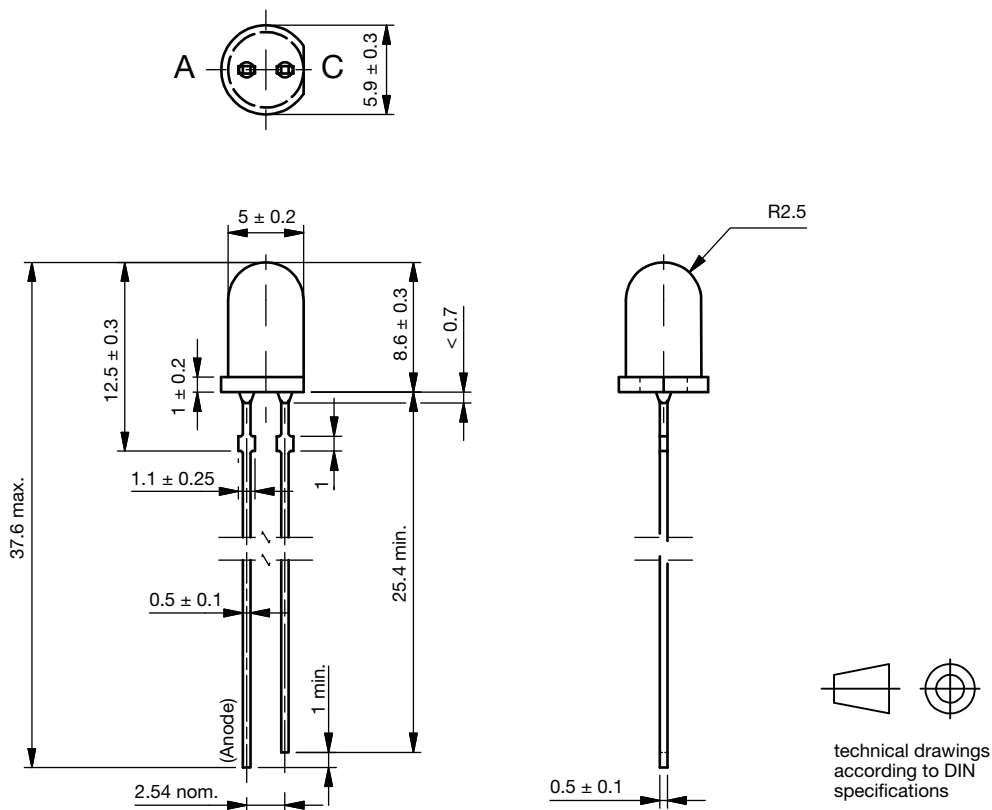


Fig. 6 - Relative Luminous Intensity vs. Ambient Temperature

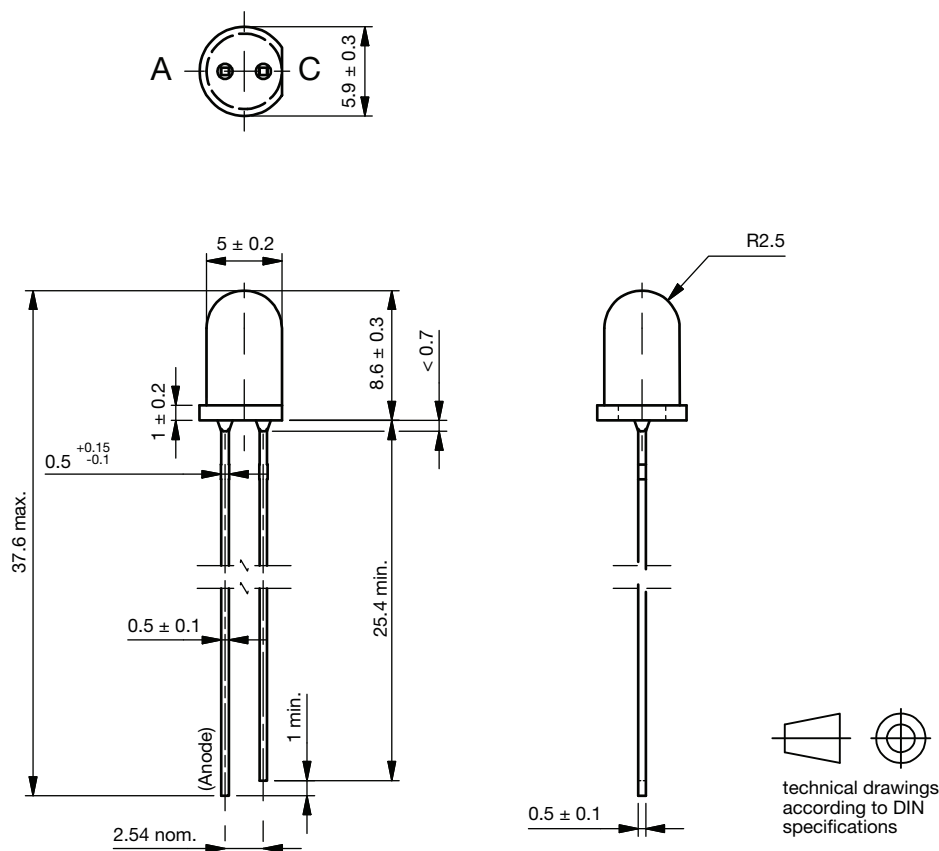


**PACKAGE DIMENSIONS FOR TLHG542.** in millimeters



Drawing-No.: 6.544-5443.1-4  
Issue: 1; 03.05.2023

### PACKAGE DIMENSIONS FOR TLHG642. in millimeters



Drawing-No.: 6.544-5444.1-4  
Issue: 1; 03.05.2023

## AMMOPACK

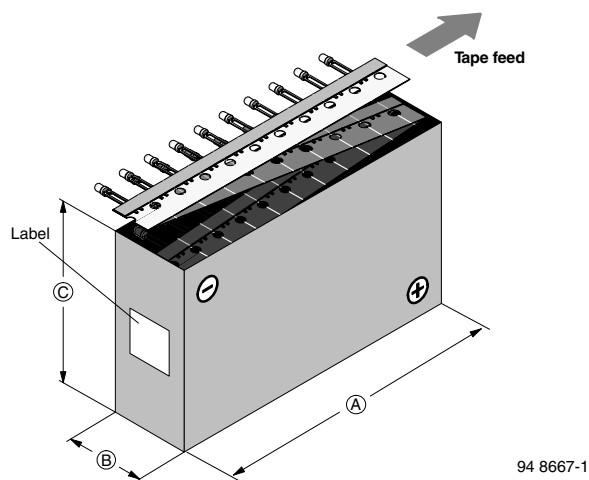
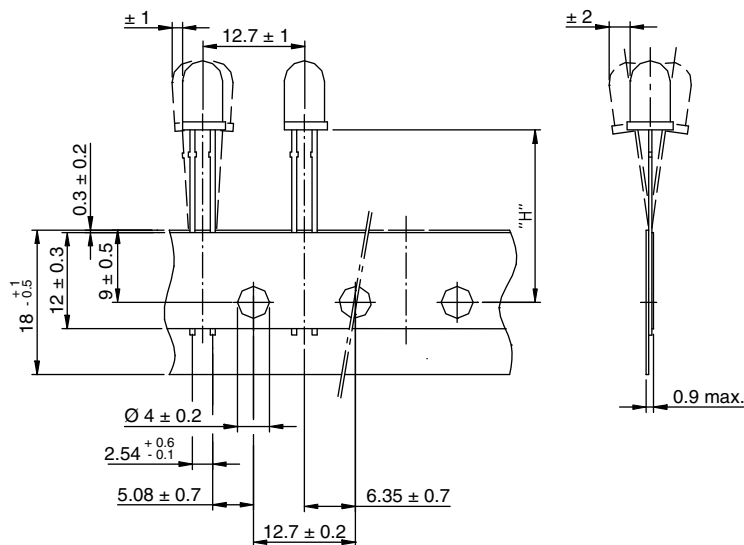


Fig. 7 - Tape Direction

### Note

- The new nomenclature for ammpack 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

Measure limit over 20 index-holes:  $\pm 1$ 

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

94 8172

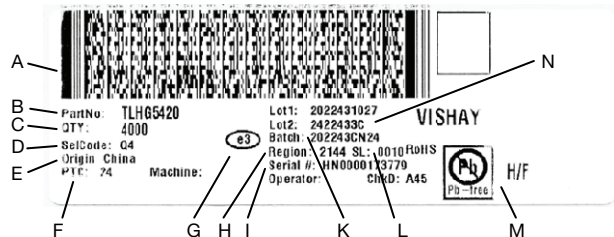
| Option | Dim. "H" $\pm 0.5$ mm | Dim. "X" $\pm 0.5$ mm |
|--------|-----------------------|-----------------------|
| AS     | 17.3                  | -                     |
| KS     | 19.7                  | -                     |
| CS     | 22.0                  | -                     |

**PACKING INFORMATION**

| PART                        | BULK | TAPE AND REEL | AMMOPACK |
|-----------------------------|------|---------------|----------|
| TLHG542. / TLHG642.         | 4000 | -             | -        |
| TLHG542.-.SZ / TLHG642.-.SZ | -    | -             | 5 x 1000 |



**BAR CODE PRODUCT LABEL** (example)



A. 2D barcode

B. Part No: Vishay part number

C. QTY: quantity

D. SelCode: selection bin code

E. Country of origin

F. PTC: production plant code

G. Termination finish

H. Region code

I. Serial#: serial number

K. Batch number: year, week, country code, plant code

L. SL: storage location

M. Environmental symbols: RoHS, lead (Pb)-free, halogen-free

N. Lot numbers



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