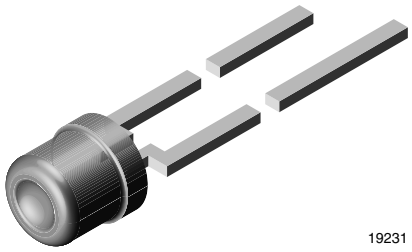
# Backlighting LED, Ø 3 mm Tinted Non-Diffused Package



19231

## FEATURES

- High light output
- Wide viewing angle
- Categorized for luminous flux
- Tinted clear package
- Low power dissipation
- Low self heating
- Rugged design
- High reliability
- 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 TLV.420. series was developed for backlighting. Due to its special shape the spatial distribution of the radiation is qualified for backlighting.

To optimize the brightness of backlighting a custom-built reflector (with scattering) is required. Uniform illumination can be enhanced by covering the front of the reflector with diffusor material.

This is a flexible solution for backlighting different areas.

## APPLICATIONS

- Backlighting of display panels, LCD displays, symbols on switches, keyboards, graphic boards, and measuring scales
- Illumination of large areas e.g. dot matrix displays

## PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 3 mm backlighting
- Product series: standard
- Angle of half intensity: ± 85°

**PARTS TABLE**

| PART | COLOR | LUMINOUS FLUX (mlm) | | | 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. | | |
| TLVH42N2Q2 | Red | 35.5 | - | 112 | 15 | 612 | - | 625 | 10 | - | 2.4 | 3.0 | 20 | GaAsP on GaP |

**ABSOLUTE MAXIMUM RATINGS** ($T_{amb}$ = 25 °C, unless otherwise specified)
**TLVH42N2Q2**

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|---|---|---|---|---|
| Reverse voltage (1) | | $V_R$ | 6 | V |
| DC forward current | $T_{amb} \leq 60$ °C | $I_F$ | 30 | mA |
| Surge forward current | $t_p \leq 10$ µs | $I_{FSM}$ | 1 | A |
| Power dissipation | | $P_V$ | 90 | 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/ambient | | $R_{thJA}$ | 400 | K/W |

**Note**

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

## OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb}$ = 25 °C, unless otherwise specified)
## TLVH42N2Q2, RED

| PARAMETER | TEST CONDITION | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|---|---|---|---|---|---|---|
| Luminous flux | $I_F$ = 15 mA | $\phi_V$ | 35.5 | - | 112 | mlm |
| Dominant wavelength | $I_F$ = 10 mA | $\lambda_d$ | 612 | - | 625 | nm |
| Peak wavelength | $I_F$ = 10 mA | $\lambda_p$ | - | 635 | - | nm |
| Angle of half intensity | $I_F$ = 10 mA | $\varphi$ | - | ± 85 | - | deg |
| Forward voltage | $I_F$ = 20 mA | $V_F$ | - | 2.4 | 3.0 | V |
| Reverse voltage | $I_R$ = 10 µA | $V_R$ | 6 | 12 | - | V |
| Junction capacitance | $V_R$ = 0 V, f = 1 MHz | $C_j$ | - | 50 | - | pF |

## LUMINOUS FLUX CLASSIFICATION

| GROUP | LUMINOUS FLUX (mlm) | |
|---|---|---|
| STANDARD | MIN. | MAX. |
| N2 | 35.5 | 45 |
| P1 | 45 | 56 |
| P2 | 56 | 71 |
| Q1 | 71 | 90 |
| Q2 | 90 | 112 |

**Note**

- Luminous flux is tested at a current pulse duration of 25 ms and an accuracy of ± 11 %.
  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.

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

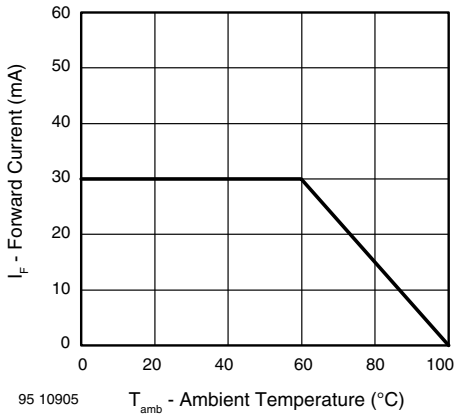



Fig. 1 - Forward Current vs. Ambient Temperature

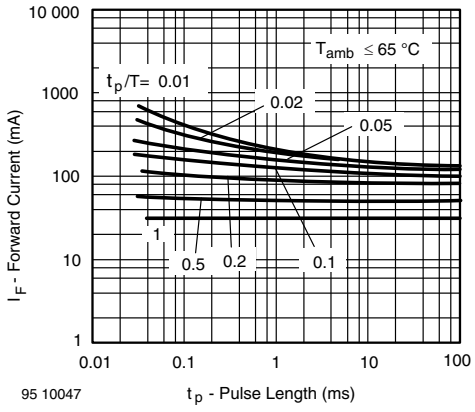



Fig. 2 - Forward Current vs. Pulse Length

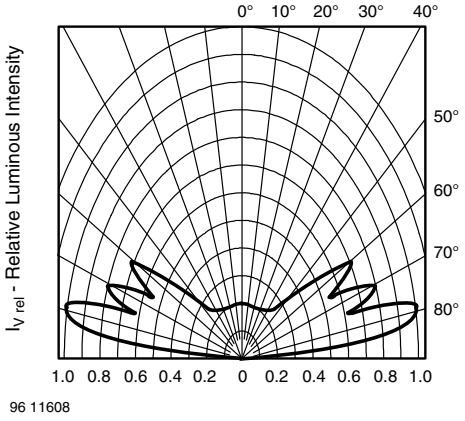



Fig. 3 - Relative Luminous Intensity vs. Angular Displacement for 90° Emission Angle

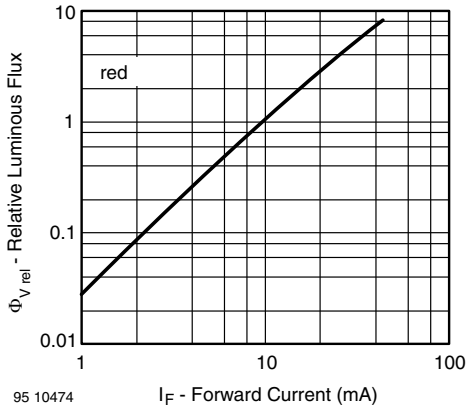



Fig. 6 - Relative Luminous Flux vs. Forward Current

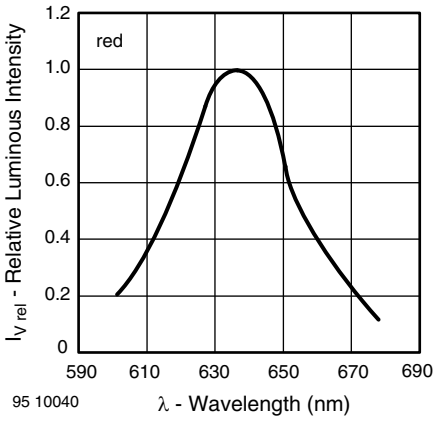



Fig. 4 - Relative Intensity vs. Wavelength

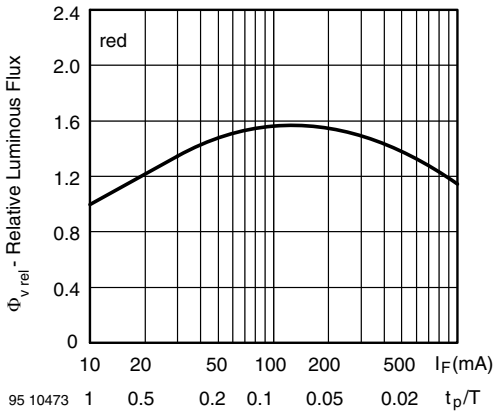



Fig. 7 - Relative Luminous Flux vs. Forward Current/Duty Cycle

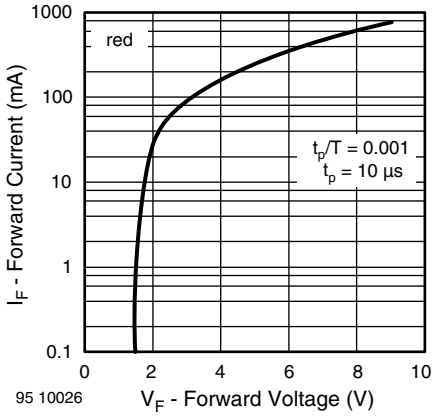



Fig. 5 - Forward Current vs. Forward Voltage

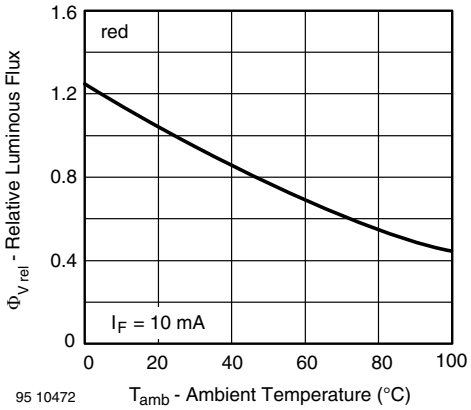
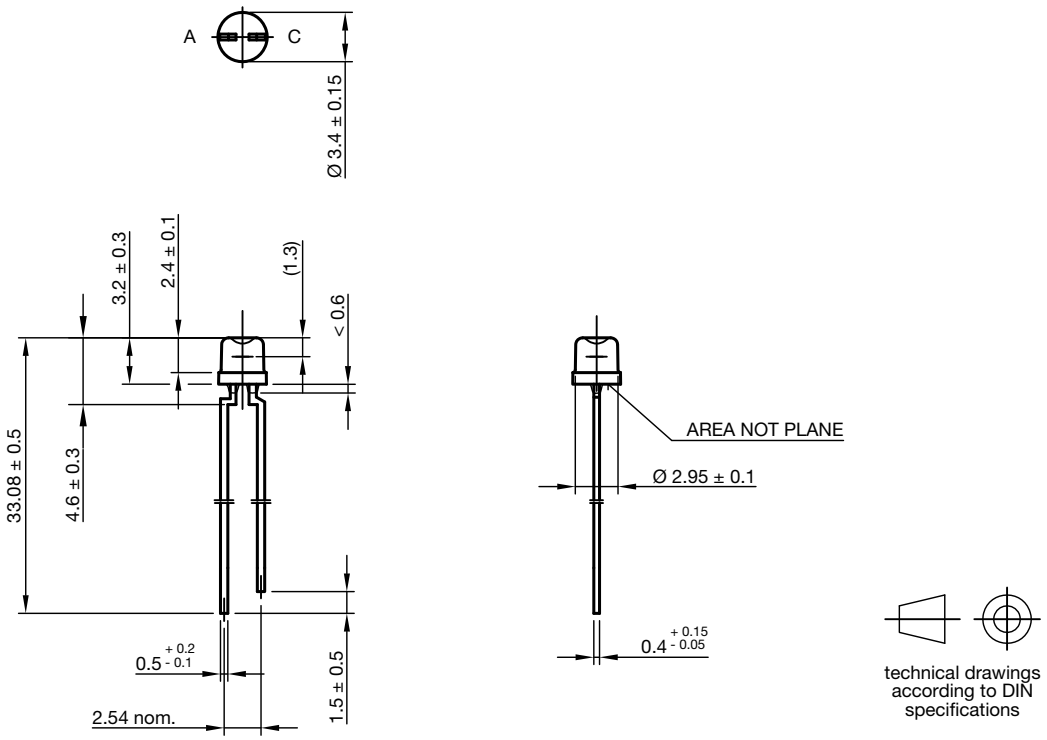



Fig. 8 - Relative Luminous Flux vs. Ambient Temperature

**PACKAGE DIMENSIONS** in millimeters




Drawing-No.: 6.544-5268.01-4
Issue: 3; 28.07.14

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