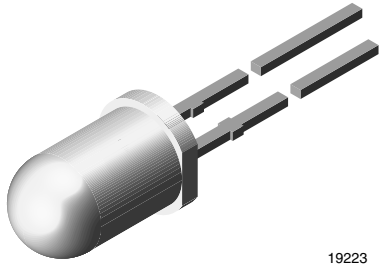




Low Current LED in Ø 5 mm Tinted Diffused Package



19223

PRODUCT GROUP AND PACKAGE DATA

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

FEATURES

- Low power consumption
- High brightness
- CMOS/MOS compatible
- Specified at $I_F = 2 \text{ mA}$
- Luminous intensity categorized
- Yellow and green color categorized
- Material categorization:
for definitions of compliance please see www.vishay.com/doc?99912



RoHS
COMPLIANT
HALOGEN
FREE
GREEN
(5-2008)

APPLICATIONS

- Low power DC circuits

| 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. | | |
| TLLR5400 | Red | 0.63 | 1.2 | - | 2 | 612 | - | 625 | 2 | - | 1.9 | 2.4 | 2 | GaAsP on GaP |
| TLLR5401 | Red | 1 | 2 | - | 2 | 612 | - | 625 | 2 | - | 1.9 | 2.4 | 2 | GaAsP on GaP |
| TLLY5400 | Yellow | 0.63 | 1.2 | - | 2 | 581 | - | 594 | 2 | - | 2.4 | 2.9 | 2 | GaAsP on GaP |
| TLLY5401 | Yellow | 1 | 2 | - | 2 | 581 | - | 594 | 2 | - | 2.4 | 2.9 | 2 | GaAsP on GaP |
| TLLG5400 | Green | 0.63 | 1.2 | - | 2 | 562 | - | 575 | 2 | - | 1.9 | 2.4 | 2 | GaP on GaP |
| TLLG5400-AS12 | Green | 0.63 | 1.2 | - | 2 | 562 | - | 575 | 2 | - | 1.9 | 2.4 | 2 | GaP on GaP |
| TLLG5401 | Green | 1 | 2 | - | 2 | 562 | - | 575 | 2 | - | 1.9 | 2.4 | 2 | GaP on GaP |

| ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25^\circ\text{C}$, unless otherwise specified) TLLR540., TLLY540., TLLG540. | | | | |
|---|---------------------------------------|------------|-------------|------------------|
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
| Reverse voltage | | V_R | 6 | V |
| DC forward current | $T_{amb} \leq 90^\circ\text{C}$ | I_F | 7 | mA |
| Surge forward current | $t_p \leq 10 \mu\text{s}$ | I_{FSM} | 0.15 | A |
| Power dissipation | $T_{amb} \leq 90^\circ\text{C}$ | P_V | 20 | mW |
| Junction temperature | | T_j | 100 | $^\circ\text{C}$ |
| Operating temperature range | | T_{amb} | -40 to +100 | $^\circ\text{C}$ |
| Storage temperature range | | T_{stg} | -55 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/ambient | | R_{thJA} | 500 | K/W |



| OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | | |
|--|---|----------|-------------|------|----------|------|------|
| TLLR540., RED | | | | | | | |
| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Luminous intensity ⁽¹⁾ | $I_F = 2\text{ mA}$ | TLLR5400 | I_V | 0.63 | 1.2 | - | mcd |
| | | TLLR5401 | I_V | 1 | 2 | - | mcd |
| Dominant wavelength | $I_F = 2\text{ mA}$ | | λ_d | 612 | - | 625 | nm |
| Peak wavelength | $I_F = 2\text{ mA}$ | | λ_p | - | 635 | - | nm |
| Angle of half intensity | $I_F = 2\text{ mA}$ | | ϕ | - | ± 25 | - | deg |
| Forward voltage | $I_F = 2\text{ mA}$ | | V_F | - | 1.9 | 2.4 | V |
| Reverse voltage | $I_R = 10\text{ }\mu\text{A}$ | | V_R | 6 | 20 | - | V |
| Junction capacitance | $V_R = 0\text{ V}$, $f = 1\text{ MHz}$ | | C_j | - | 50 | - | pF |

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

| OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | | |
|--|---|----------|-------------|------|----------|------|------|
| TLLY540., YELLOW | | | | | | | |
| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Luminous intensity ⁽¹⁾ | $I_F = 2\text{ mA}$ | TLLY5400 | I_V | 0.63 | 1.2 | - | mcd |
| | | TLLY5401 | I_V | 1 | 2 | - | mcd |
| Dominant wavelength | $I_F = 2\text{ mA}$ | | λ_d | 581 | - | 594 | nm |
| Peak wavelength | $I_F = 2\text{ mA}$ | | λ_p | - | 585 | - | nm |
| Angle of half intensity | $I_F = 2\text{ mA}$ | | ϕ | - | ± 25 | - | deg |
| Forward voltage | $I_F = 2\text{ mA}$ | | V_F | - | 2.4 | 2.9 | V |
| Reverse voltage | $I_R = 10\text{ }\mu\text{A}$ | | V_R | 6 | 20 | - | V |
| Junction capacitance | $V_R = 0\text{ V}$, $f = 1\text{ MHz}$ | | C_j | - | 50 | - | pF |

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

| OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | | |
|--|---|----------|-------------|------|----------|------|------|
| TLLG540., GREEN | | | | | | | |
| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Luminous intensity ⁽¹⁾ | $I_F = 2\text{ mA}$ | TLLG5400 | I_V | 0.63 | 1.2 | - | mcd |
| | | TLLG5401 | I_V | 1 | 2 | - | mcd |
| Dominant wavelength | $I_F = 2\text{ mA}$ | | λ_d | 562 | - | 575 | nm |
| Peak wavelength | $I_F = 2\text{ mA}$ | | λ_p | - | 565 | - | nm |
| Angle of half intensity | $I_F = 2\text{ mA}$ | | ϕ | - | ± 25 | - | deg |
| Forward voltage | $I_F = 2\text{ mA}$ | | V_F | - | 1.9 | 2.4 | V |
| Reverse voltage | $I_R = 10\text{ }\mu\text{A}$ | | V_R | 6 | 20 | - | V |
| Junction capacitance | $V_R = 0\text{ V}$, $f = 1\text{ MHz}$ | | C_j | - | 50 | - | pF |

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

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

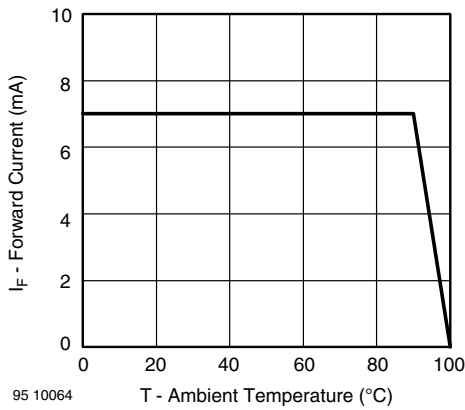


Fig. 1 - Forward Current vs. Ambient Temperature

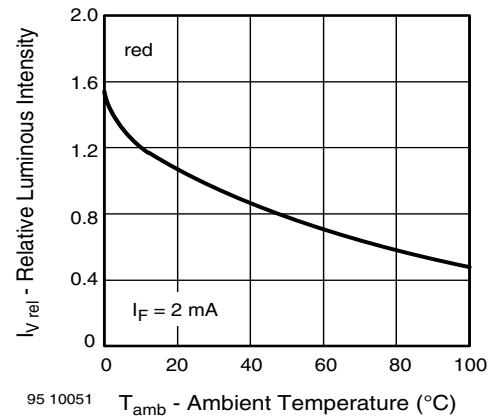


Fig. 4 - Relative Luminous Intensity vs. Ambient Temperature

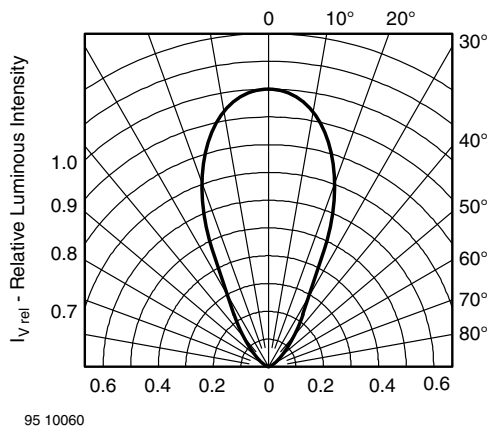


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

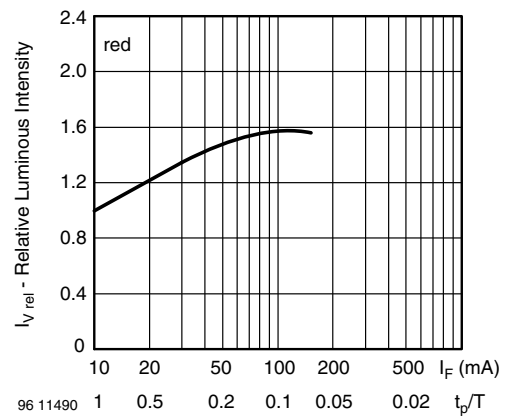


Fig. 5 - Relative Luminous Intensity vs. Forward Current/Duty Cycle

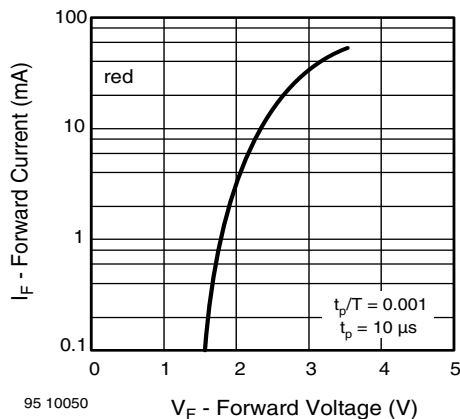


Fig. 3 - Forward Current vs. Forward Voltage

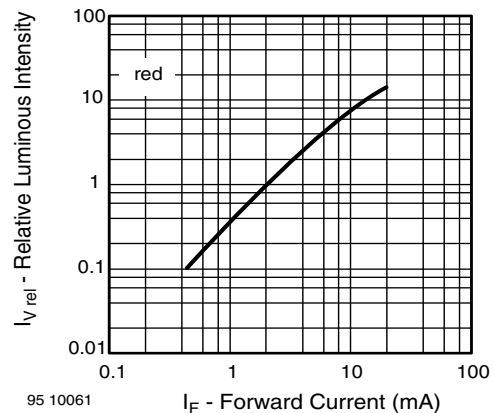


Fig. 6 - Relative Luminous Intensity vs. Forward Current

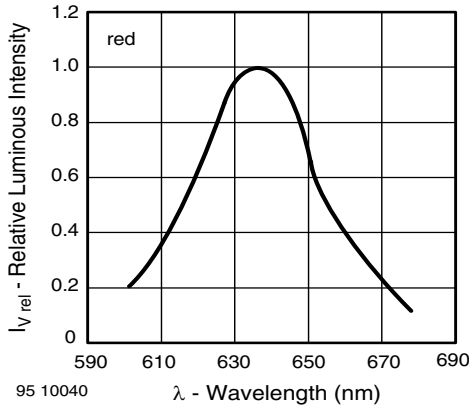


Fig. 7 - Relative Intensity vs. Wavelength

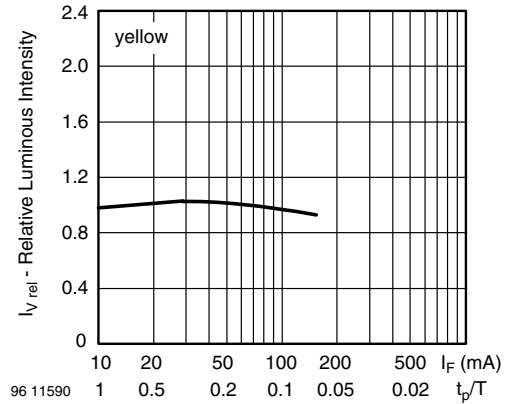


Fig. 10 - Relative Luminous Intensity vs. Forward Current/Duty Cycle

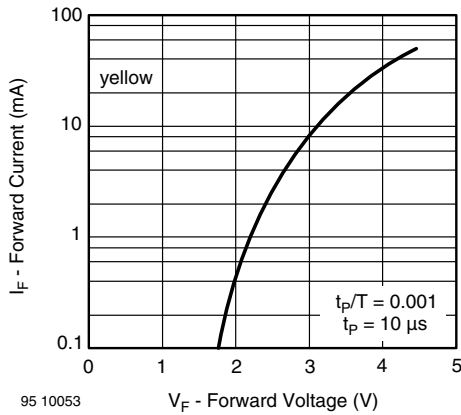


Fig. 8 - Forward Current vs. Forward Voltage

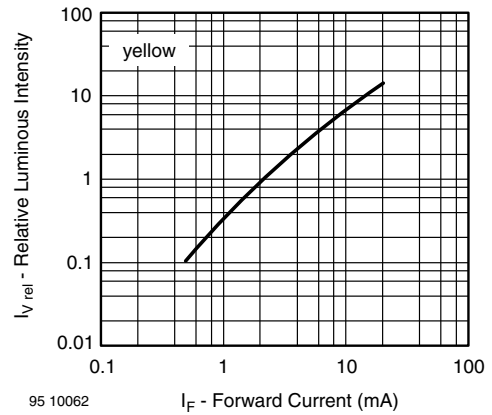


Fig. 11 - Relative Luminous Intensity vs. Forward Current

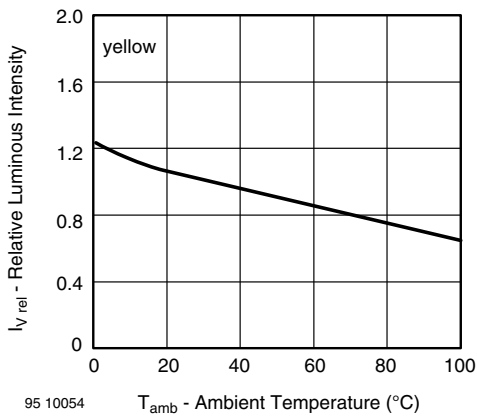


Fig. 9 - Relative Luminous Intensity vs. Ambient Temperature

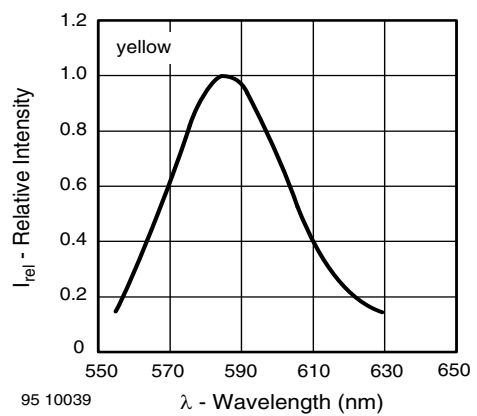


Fig. 12 - Relative Intensity vs. Wavelength

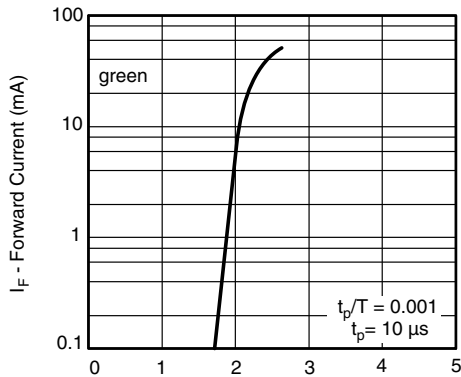


Fig. 13 - Forward Current vs. Forward Voltage

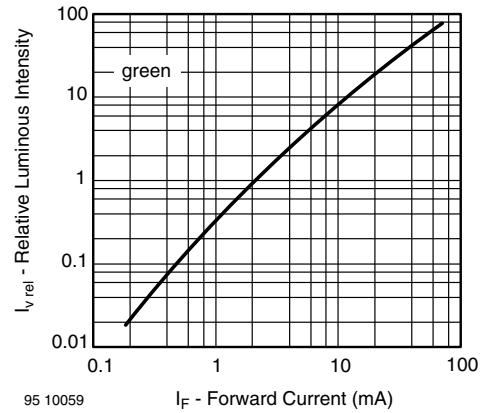


Fig. 16 - Relative Luminous Intensity vs. Forward Current

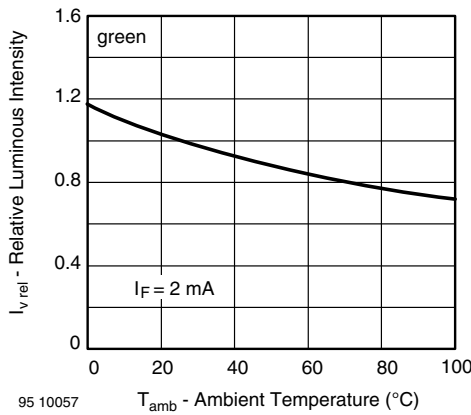


Fig. 14 - Relative Luminous Intensity vs. Ambient Temperature

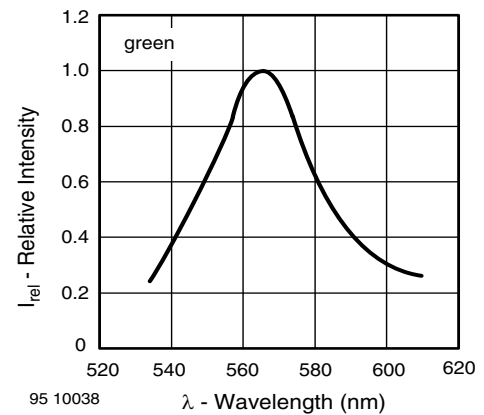


Fig. 17 - Relative Intensity vs. Wavelength

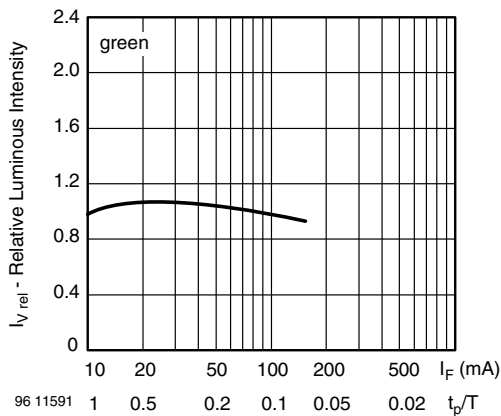
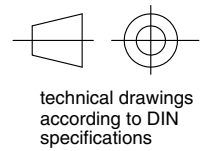
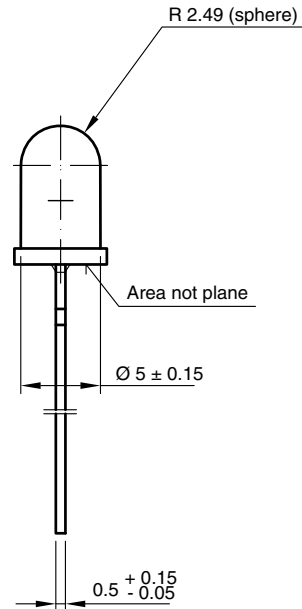
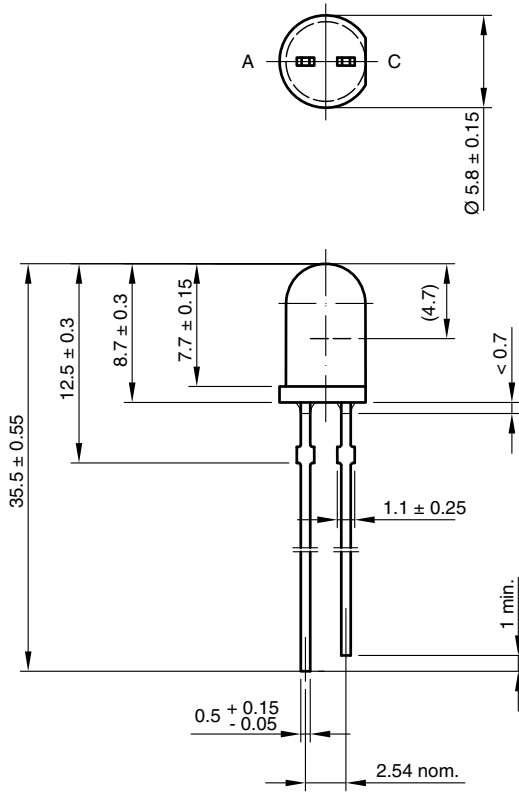


Fig. 15 - Relative Luminous Intensity vs. Forward Current/Duty Cycle

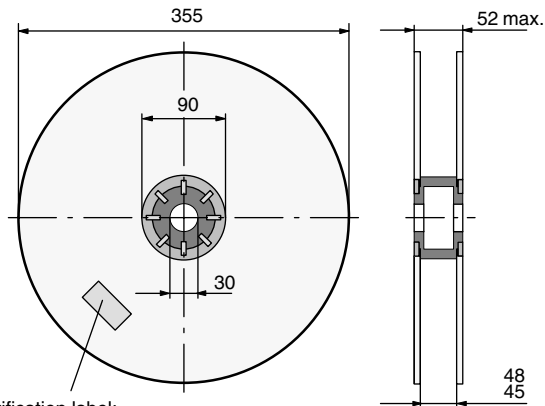


PACKAGE DIMENSIONS in millimeters



6.544-5258.02-4
Issue: 7; 23.07.10
95 10916

REEL

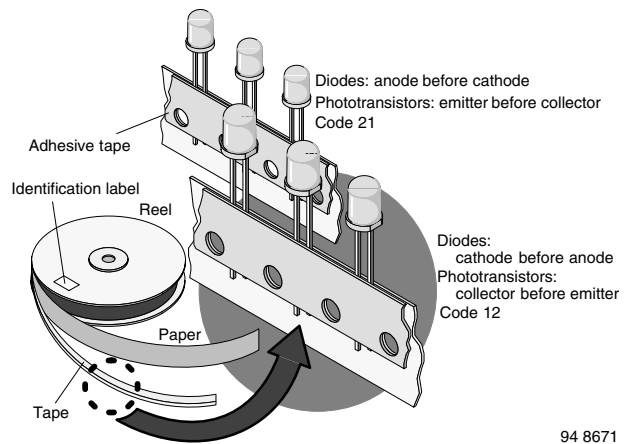


Identification label:
Vishay/type/group/tape code/production code/quantity

948641

Fig. 18 - Reel Dimensions

TAPE



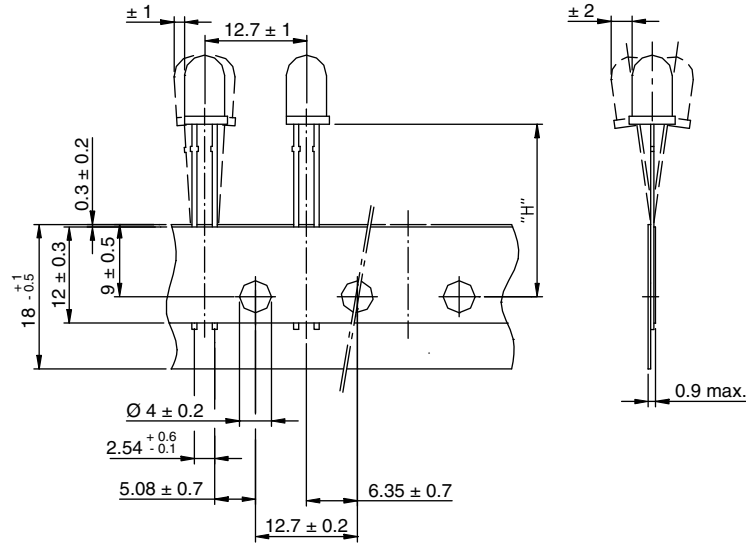
94 8671

Fig. 19 - LED in Tape

AS12 = cathode leaves tape first



TAPE DIMENSIONS in millimeters



Measure limit over 20 index-holes: ± 1

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

94 8172

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



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