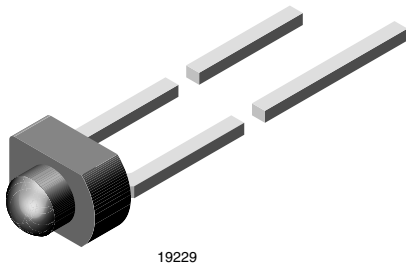




Universal LED, Ø 1.8 mm Tinted Diffused Miniplast Package



FEATURES

- Three colors
- For DC and pulse operation
- Luminous intensity categorized
- End-to-end stackable in center-to-center spacing of 0.1" (2.54 mm)
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912



PRODUCT GROUP AND PACKAGE DATA

- Product group: LED
- Package: 1.8 mm (miniplast)
- Product series: standard
- Angle of half intensity: ± 20°

APPLICATIONS

- General indicating and lighting purposes

| 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. | | |
| TLUO2400 ⁽¹⁾ | Red | 1.6 | 11 | - | 10 | 612 | 618 | 625 | 10 | - | 2 | 3 | 20 | GaAsP on GaP |
| TLUO2401 | Red | 4 | 10 | 20 | 10 | 612 | 618 | 625 | 10 | - | 2 | 3 | 20 | GaAsP on GaP |
| TLUY2400 | Yellow | 1 | 8 | - | 10 | 581 | 586 | 594 | 10 | - | 2.4 | 3 | 20 | GaAsP on GaP |
| TLUY2401 | Yellow | 2.5 | 6 | 12.5 | 10 | 581 | 586 | 594 | 10 | - | 2.4 | 3 | 20 | GaAsP on GaP |
| TLUY2401-AS12 ⁽¹⁾ | Yellow | 2.5 | 6 | 12.5 | 10 | 581 | 586 | 594 | 10 | - | 2.4 | 3 | 20 | GaAsP on GaP |
| TLUG2400 | Green | 1.6 | 10 | - | 10 | 562 | 568 | 575 | 10 | - | 2.4 | 3 | 20 | GaP on GaP |
| TLUG2401 | Green | 4 | 12 | 20 | 10 | 562 | 568 | 575 | 10 | - | 2.4 | 3 | 20 | GaP on GaP |

Note

⁽¹⁾ Not for new designs

| ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified) | | | | | |
|---|--------------------------|----------|-------------------|-------------|------|
| TLUO240., TLUY240., TLUG240. | | | | | |
| PARAMETER | TEST CONDITION | PART | SYMBOL | VALUE | UNIT |
| Reverse voltage | | | V _R | 6 | V |
| DC forward current | | TLUO240. | I _F | 30 | mA |
| | | TLUY240. | I _F | 30 | mA |
| | | TLUG240. | I _F | 30 | mA |
| Surge forward current | t _p ≤ 10 μs | | I _{FSM} | 1 | A |
| Power dissipation | T _{amb} ≤ 55 °C | TLUO240. | P _V | 100 | mW |
| | | TLUY240. | P _V | 100 | mW |
| | | TLUG240. | 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 ≤ 3 s, 2 mm from body | | T _{sd} | 260 | °C |
| | t ≤ 5 s, 4 mm from body | | T _{sd} | 260 | °C |
| Thermal resistance junction/ambient | | TLUO240. | R _{thJA} | 450 | K/W |
| | | TLUY240. | R _{thJA} | 450 | K/W |
| | | TLUG240. | R _{thJA} | 450 | K/W |

**OPTICAL AND ELECTRICAL CHARACTERISTICS** ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
TLUO240., RED

| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|-----------------------------------|---|-------------------------|-------------|------|----------|------|------------|
| Luminous intensity ⁽¹⁾ | $I_F = 10\text{ mA}$ | TLUO2400 ⁽²⁾ | I_V | 1.6 | 11 | - | mcd |
| | | TLUO2401 | I_V | 4 | 10 | 20 | mcd |
| Dominant wavelength | $I_F = 10\text{ mA}$ | | λ_d | 612 | 618 | 625 | nm |
| Peak wavelength | $I_F = 10\text{ mA}$ | | λ_p | - | 630 | - | nm |
| Angle of half intensity | $I_F = 10\text{ mA}$ | | ϕ | - | ± 20 | - | $^{\circ}$ |
| 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 | $V_R = 0\text{ V}$, $f = 1\text{ MHz}$ | | C_j | - | 50 | - | pF |

Notes

- (1) In one packing unit $I_{Vmin.}/I_{Vmax.} \leq 0.5$
(2) Not for new designs

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
TLUY240., YELLOW

| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|-----------------------------------|---|----------|-------------|------|----------|------|------------|
| Luminous intensity ⁽¹⁾ | $I_F = 10\text{ mA}$ | TLUY2400 | I_V | 1 | 8 | - | mcd |
| | | TLUY2401 | I_V | 2.5 | 6 | 12.5 | mcd |
| Dominant wavelength | $I_F = 10\text{ mA}$ | | λ_d | 581 | 586 | 594 | nm |
| Peak wavelength | $I_F = 10\text{ mA}$ | | λ_p | - | 585 | - | nm |
| Angle of half intensity | $I_F = 10\text{ mA}$ | | ϕ | - | ± 20 | - | $^{\circ}$ |
| 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 | $V_R = 0\text{ V}$, $f = 1\text{ MHz}$ | | 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)
TLUG240., GREEN

| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|-----------------------------------|---|----------|-------------|------|----------|------|------------|
| Luminous intensity ⁽¹⁾ | $I_F = 10\text{ mA}$ | TLUG2400 | I_V | 1.6 | 10 | - | mcd |
| | | TLUG2401 | I_V | 4 | 12 | 20 | mcd |
| Dominant wavelength | $I_F = 10\text{ mA}$ | | λ_d | 562 | 568 | 575 | nm |
| Peak wavelength | $I_F = 10\text{ mA}$ | | λ_p | - | 565 | - | nm |
| Angle of half intensity | $I_F = 10\text{ mA}$ | | ϕ | - | ± 20 | - | $^{\circ}$ |
| 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 | $V_R = 0\text{ V}$, $f = 1\text{ MHz}$ | | C_j | - | 50 | - | pF |

Note

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



| LUMINOUS INTENSITY CLASSIFICATION | | |
|-----------------------------------|-----------------------|------|
| GROUP | LIGHT INTENSITY (mcd) | |
| | STANDARD | |
| | MIN. | MAX. |
| L | 1 | 2 |
| M | 1.6 | 3.2 |
| N | 2.5 | 5 |
| P | 4 | 8 |
| Q | 6.3 | 12.5 |
| R | 10 | 20 |
| S | 16 | 32 |

Note

- Luminous intensity is tested at a current pulse duration of 25 ms and an accuracy of $\pm 11\%$.
These 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 on 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

| GROUP | DOM. WAVELENGTH (nm) | | | |
|-------|----------------------|------|-------|------|
| | YELLOW | | GREEN | |
| | MIN. | MAX. | MIN. | MAX. |
| 1 | 581 | 584 | - | - |
| 2 | 583 | 586 | - | - |
| 3 | 585 | 588 | 562 | 565 |
| 4 | 587 | 590 | 564 | 567 |
| 5 | 589 | 592 | 566 | 569 |
| 6 | 591 | 594 | 568 | 571 |
| 7 | - | - | 570 | 573 |
| 8 | - | - | 572 | 575 |

Note

- Wavelengths are tested at a current pulse duration of 25 ms

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

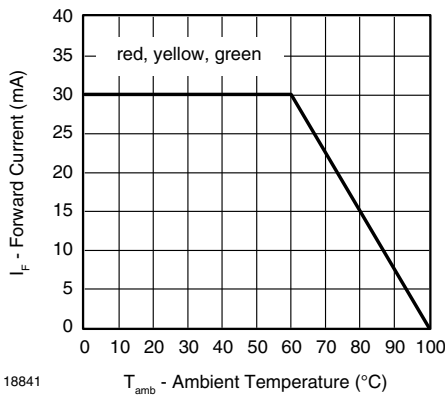


Fig. 1 - Forward Current vs. Ambient Temperature

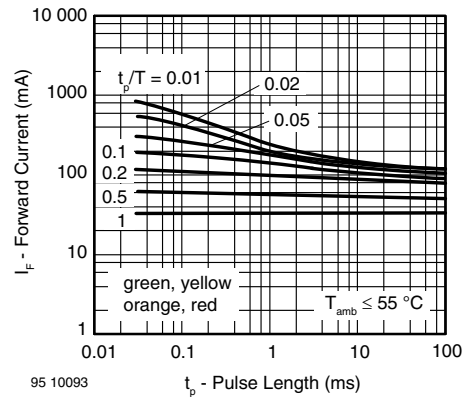


Fig. 2 - Forward Current vs. Pulse Length

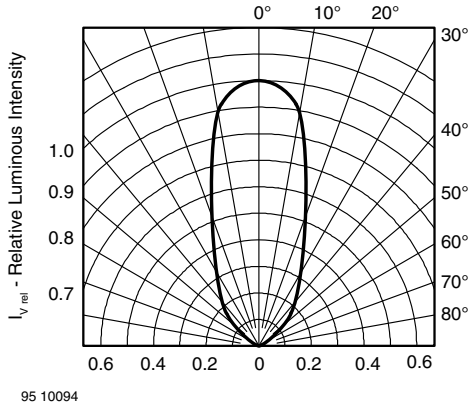


Fig. 3 - Relative Luminous Intensity vs. Angular Displacement

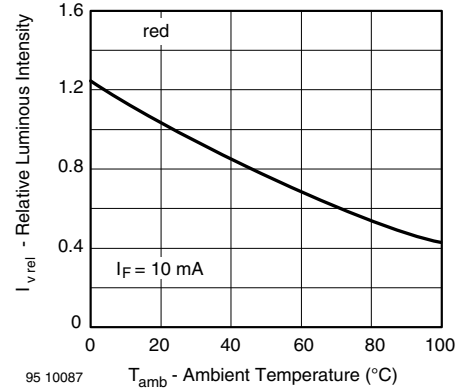


Fig. 6 - Relative Luminous Intensity vs. Ambient Temperature

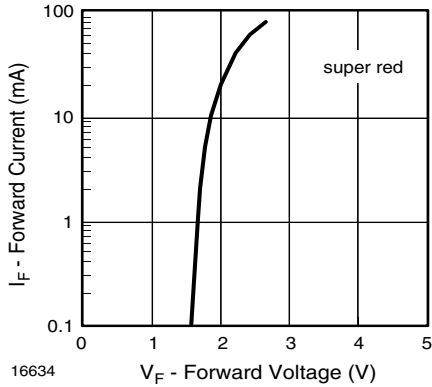


Fig. 4 - Forward Current vs. Forward Voltage

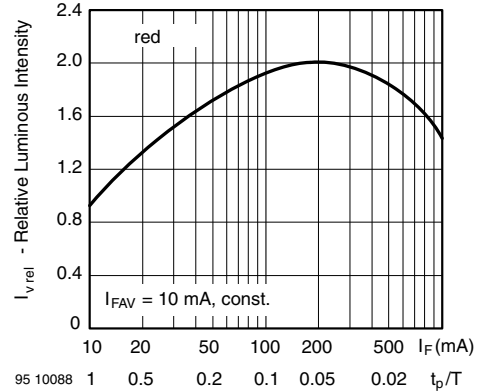


Fig. 7 - Relative Luminous Intensity vs. Forward Current/Duty Cycle

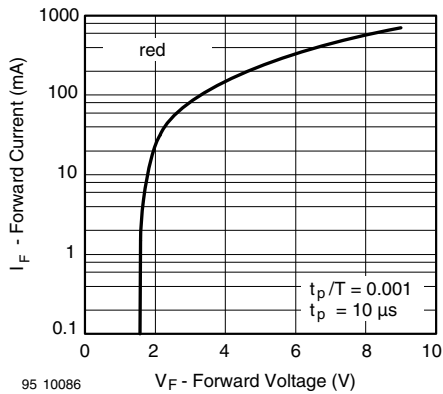


Fig. 5 - Forward Current vs. Forward Voltage

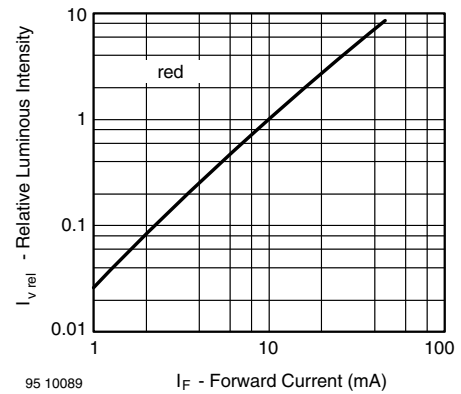


Fig. 8 - Relative Luminous Intensity vs. Forward Current

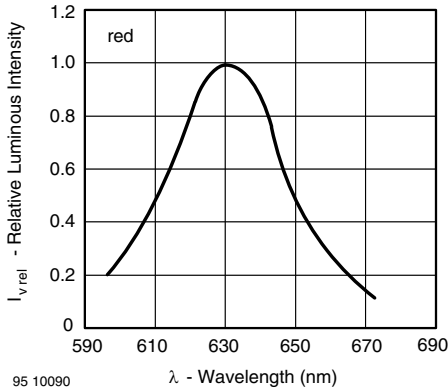


Fig. 9 - Relative Intensity vs. Wavelength

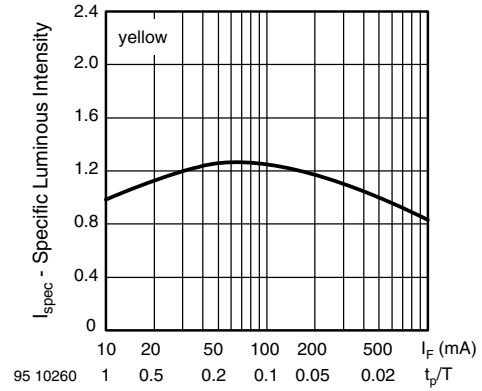


Fig. 12 - Relative Luminous Intensity vs. Forward Current/Duty Cycle

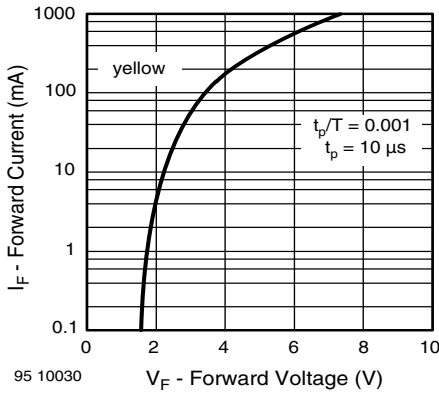


Fig. 10 - Forward Current vs. Forward Voltage

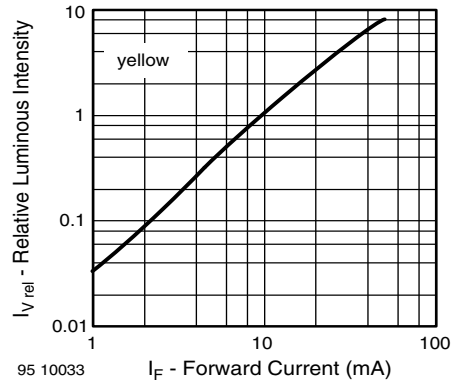


Fig. 13 - Relative Luminous Intensity vs. Forward Current

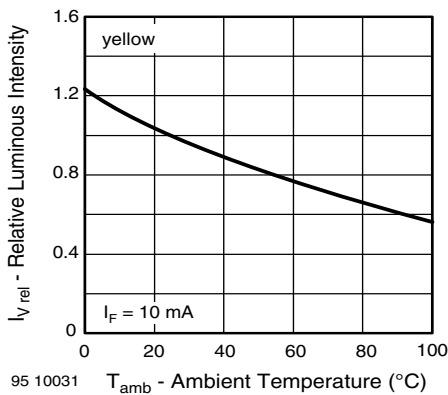


Fig. 11 - Relative Luminous Intensity vs. Ambient Temperature

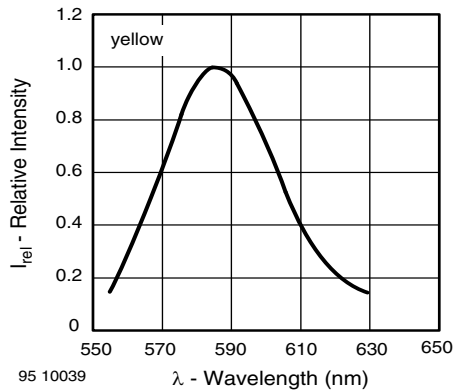


Fig. 14 - Relative Intensity vs. Wavelength

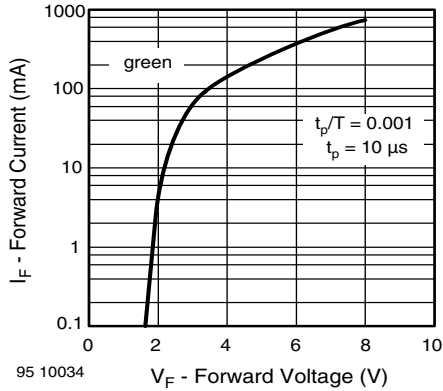


Fig. 15 - Forward Current vs. Forward Voltage

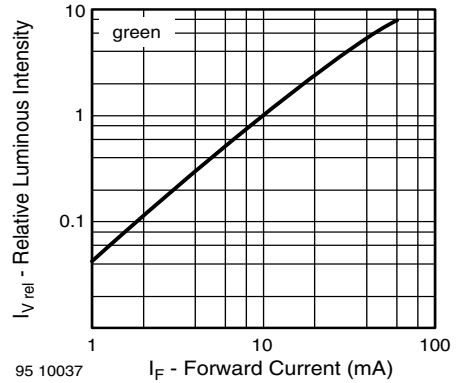


Fig. 18 - Relative Luminous Intensity vs. Forward Current

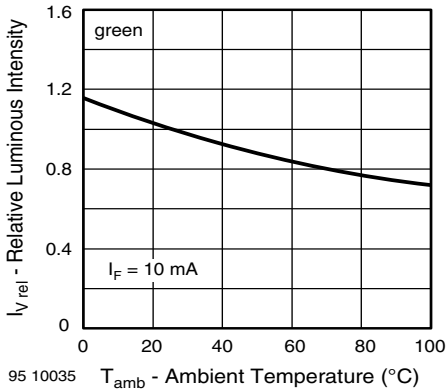


Fig. 16 - Relative Luminous Intensity vs. Ambient Temperature

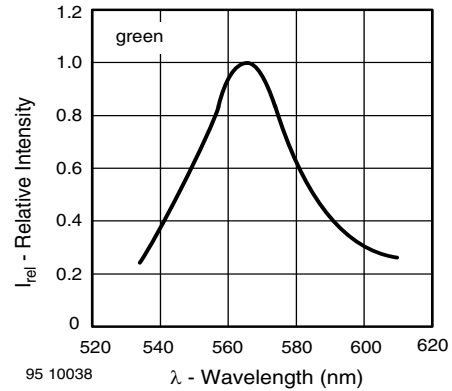


Fig. 19 - Relative Intensity vs. Wavelength

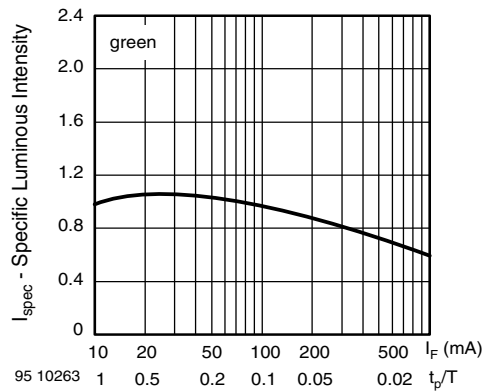
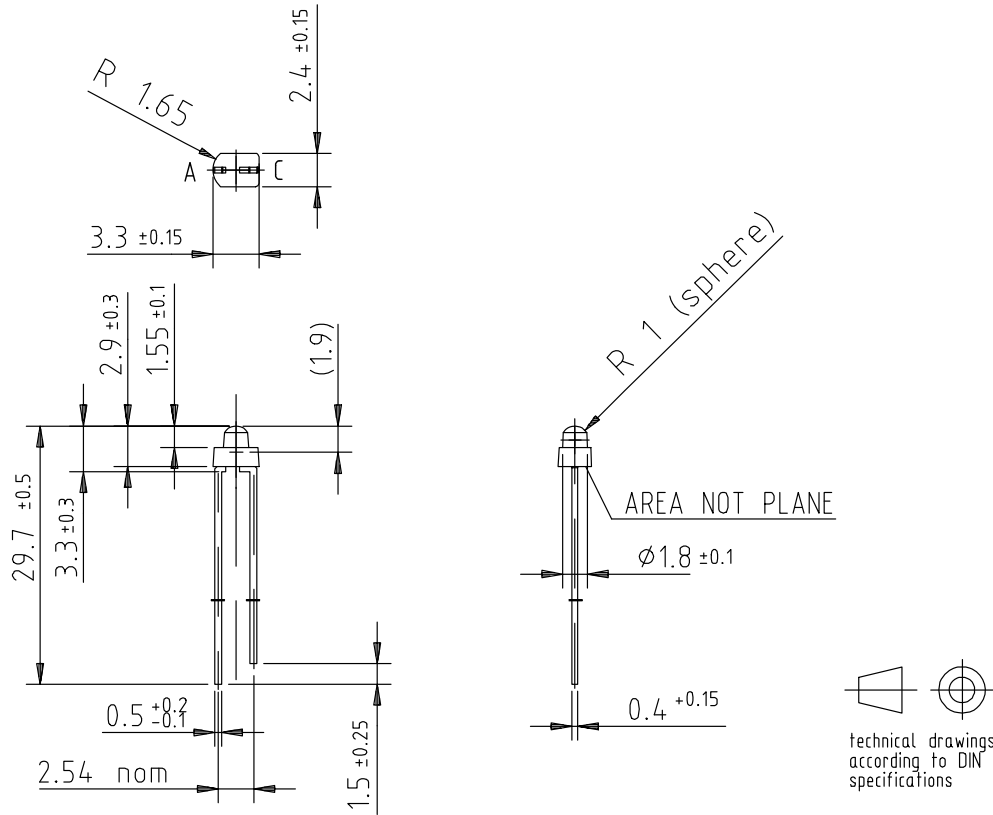


Fig. 17 - Specific Luminous Intensity vs. Forward Current

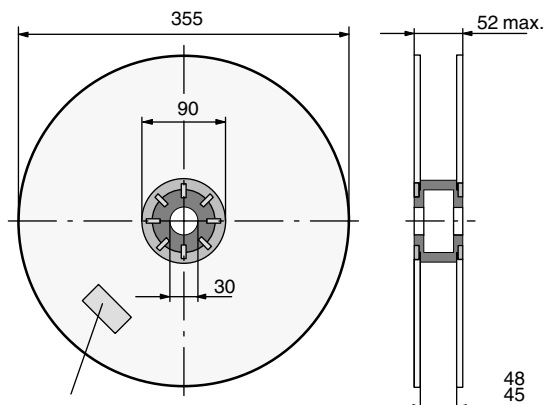


PACKAGE DIMENSIONS in millimeters



Drawing-No.: 6.544-5052.01-4
Issue: 1; 12.10.95
95 11262

REEL DIMENSIONS in millimeters

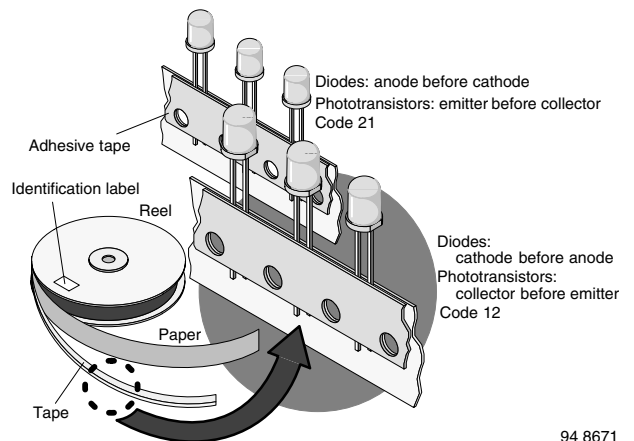


Identification label:
Vishay/type/group/tape code/production code/quantity

948641

Fig. 20 - Reel

TAPE

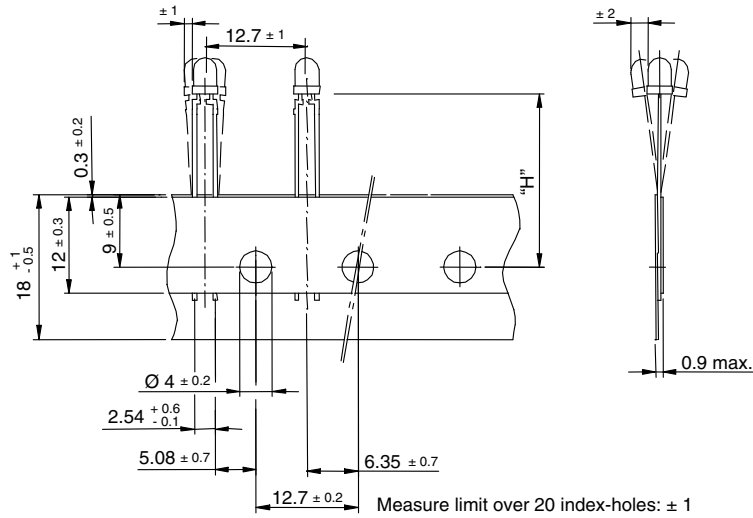


94 8671

Fig. 21 - LED in Tape



TAPE DIMENSIONS in millimeters



| | |
|---------------|---------------------------|
| Quantity per: | Reel (Mat. - No. 1764) |
| | 2000 |

94 8171

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

| PACKING | |
|----------------|----------|
| Packing | Quantity |
| Tape and reel | 5 x 2000 |
| Bulk | 1 x 5000 |



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