## TELUX™

### Description

The TELUX™ series is a clear, non diffused LED for applications where supreme luminous flux is required.

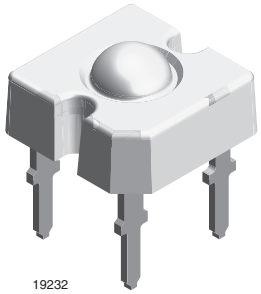
It is designed in an industry standard 7.62 mm square package utilizing highly developed with super bright, AlInGaP, OMA technology.

The supreme heat dissipation of TELUX™ allows applications at high ambient temperatures.

All packing units are binned for luminous flux, forward voltage and color to achieve the most homogenous light appearance in application.

SAE and ECE color requirements for automobile application are available for color red.

ESD resistivity 2 kV (HBM) according to MIL STD 883D, method 3015.7.




### Features

- Utilizing one of the world's brightest (AS) AlInGaP technologies (OMA)
- High luminous flux
- Supreme heat dissipation: $R_{thJP}$ is 90 K/W
- High operating temperature: $T_{amb}$ = - 40 to + 110 °C
- Meets SAE and ECE color requirements for the automobile industry for color red
- Packed in tubes for automatic insertion
- Luminous flux, forward voltage and color categorized for each tube
- Small mechanical tolerances allow precise usage of external reflectors or lightguides
- Lead (Pb)-free component
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

### Applications

Exterior lighting

Tail-, Stop - and Turn Signals of motor vehicles

Replaces small incandescent lamps

Traffic signals and signs

### Parts Table

| Part | Color, Luminous Intensity | Angle of Half Intensity (±φ) | Technology |
|---|---|---|---|
| TLWR9420 | Red, $\phi_V$ > 3000 mlm | 25 x 68 | AlInGaP on GaAs |
| TLWR9421 | Red, $\phi_V$ > 3500 mlm | 25 x 68 | AlInGaP on GaAs |
| TLWR9422 | Red, $\phi_V$ > 4000 mlm | 25 x 68 | AlInGaP on GaAs |
| TLWR9520 | Red, $\phi_V$ > 3000 mlm | 40 x 90 | AlInGaP on GaAs |
| TLWR9521 | Red, $\phi_V$ > 3500 mlm | 40 x 90 | AlInGaP on GaAs |
| TLWR9522 | Red, $\phi_V$ > 4000 mlm | 40 x 90 | AlInGaP on GaAs |

## Absolute Maximum Ratings

$T_{amb}$ = 25 °C, unless otherwise specified

**TLWR9.2.**

| Parameter | Test condition | Symbol | Value | Unit |
|---|---|---|---|---|
| Reverse voltage | $I_R$ = 100 µA | $V_R$ | 10 | V |
| DC Forward current | $T_{amb} \leq 85$ °C | $I_F$ | 70 | mA |
| Surge forward current | $t_p \leq 10$ µs | $I_{FSM}$ | 0.1 | A |
| Junction temperature | | $T_j$ | 125 | °C |
| Operating temperature range | | $T_{amb}$ | - 40 to + 110 | °C |
| Storage temperature range | | $T_{stg}$ | - 55 to + 110 | °C |
| Soldering temperature | t ≤ 5 s, 1.5 mm from body<br>preheat temperature<br>100 °C/ 30 sec. | $T_{sd}$ | 260 | °C |
| Thermal resistance junction/ ambient | with cathode heatsink<br>of 70 $mm^2$ | $R_{thJA}$ | 200 | K/W |

## Optical and Electrical Characteristics

$T_{amb}$ = 25 °C, unless otherwise specified

## Red

**TLWR9.2.**

| Parameter | Test condition | Part | Symbol | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|---|
| Total flux | $I_F$ = 70 mA, $R_{thJA}$ = 200 °K/W | TLWR9420 | $\phi_V$ | 3000 | 3700 | | mlm |
| | | TLWR9421 | $\phi_V$ | 3500 | 4200 | | mlm |
| | | TLWR9422 | $\phi_V$ | 4000 | 5000 | | mlm |
| | | TLWR9520 | $\phi_V$ | 3000 | 3700 | | mlm |
| | | TLWR9521 | $\phi_V$ | 3500 | 4200 | | mlm |
| | | TLWR9522 | $\phi_V$ | 4000 | 5000 | | mlm |
| Dominant wavelength | $I_F$ = 70 mA, $R_{thJA}$ = 200 °K/W | | $\lambda_d$ | 611 | 615 | 634 | nm |
| Peak wavelength | $I_F$ = 70 mA, $R_{thJA}$ = 200 °K/W | | $\lambda_p$ | | 624 | | nm |
| Angle of half intensity | $I_F$ = 70 mA, $R_{thJA}$ = 200 °K/W | TLWR942x | φ | | 25 x 68 | | deg |
| | | TLWR952x | φ | | 40 x 90 | | deg |
| Forward voltage | $I_F$ = 70 mA, $R_{thJA}$ = 200 °K/W | | $V_F$ | 1.83 | 2.5 | 3.03 | V |
| Reverse voltage | | | $V_R$ | 10 | 20 | | V |
| Temperature coefficient < $\lambda_d$ | $I_F$ = 70 mA | | $TC\lambda_d$ | | 0.05 | | nm/K |
| Temperature coefficient $V_F$ | $I_F$ = 70 mA, T > - 25 °C | | $TC_{VF}$ | | - 2.0 | | mV/K |

## Forward Voltage Classification

| Group | Forward Voltage (V) | |
|---|---|---|
| | min | max |
| Y | 1.83 | 2.07 |
| Z | 1.95 | 2.19 |
| 0 | 2.07 | 2.31 |
| 1 | 2.19 | 2.43 |
| 2 | 2.31 | 2.55 |
| 3 | 2.43 | 2.67 |
| 4 | 2.55 | 2.79 |
| 5 | 2.67 | 2.91 |
| 6 | 2.79 | 3.03 |

## Color Classification

| Group | Dominant Wavelength (nm) | |
|---|---|---|
| | min | max |
| 1 | 611 | 618 |
| 2 | 614 | 622 |
| 3 | 616 | 634 |

## Luminous Flux Classification

| Group | Luminous Intensity (mlm) | |
|---|---|---|
| | min | max |
| F | 3000 | 4200 |
| G | 3500 | 4800 |
| H | 4000 | 6100 |
| I | 5000 | 7300 |
| K | 6000 | 9700 |

## Typical Characteristics (Tamb = 25 °C unless otherwise specified)

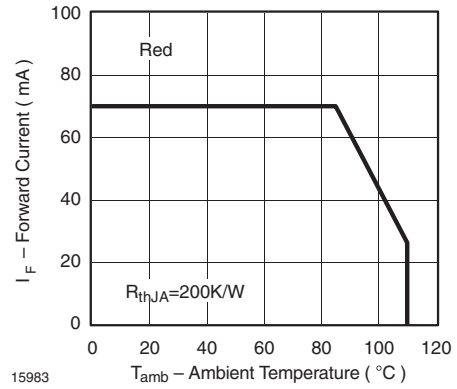



Figure 1. Forward Current vs. Ambient Temperature

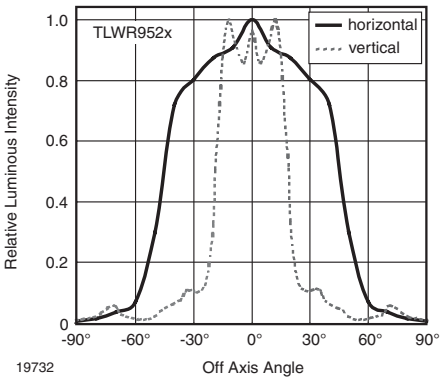



Figure 3. Rel. Luminous Intensity vs. Off Axis

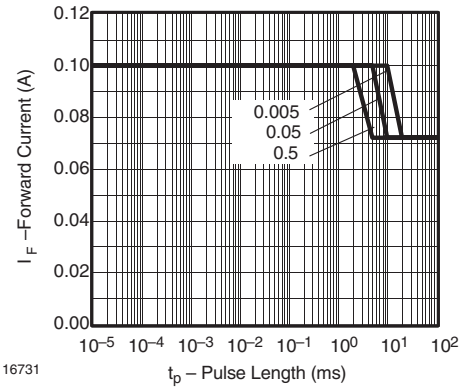



Figure 2. Forward Current vs. Pulse Length

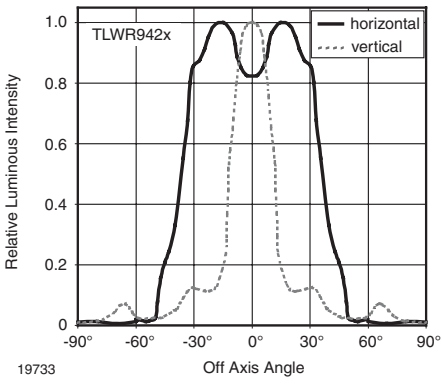



Figure 4. Rel. Luminous Intensity vs. Off Axis

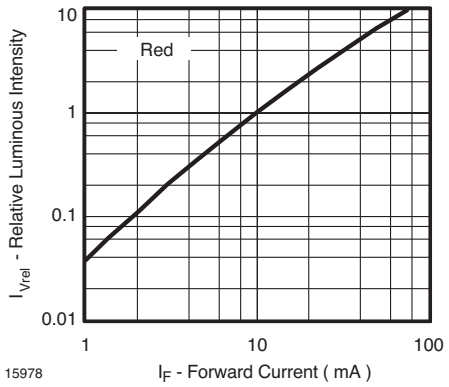



Figure 5. Relative Luminous Flux vs. Forward Current

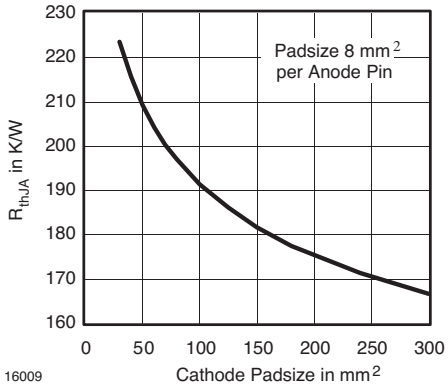



Figure 8. Thermal Resistance Junction Ambient vs. Cathode Padsize

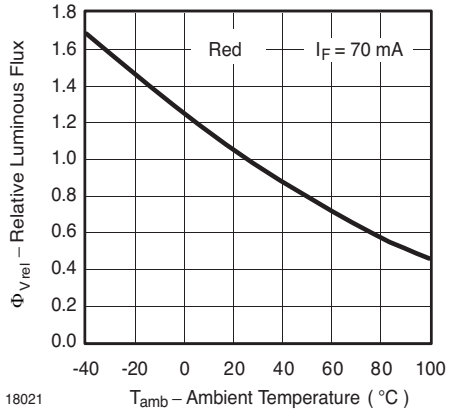



Figure 6. Rel. Luminous Flux vs. Ambient Temperature

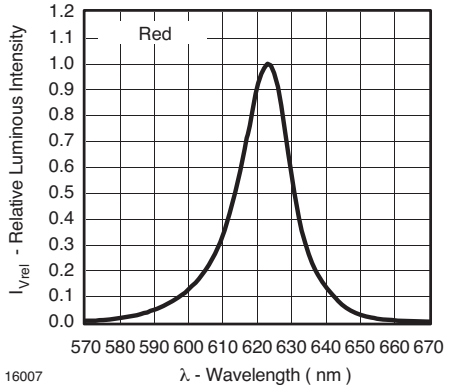
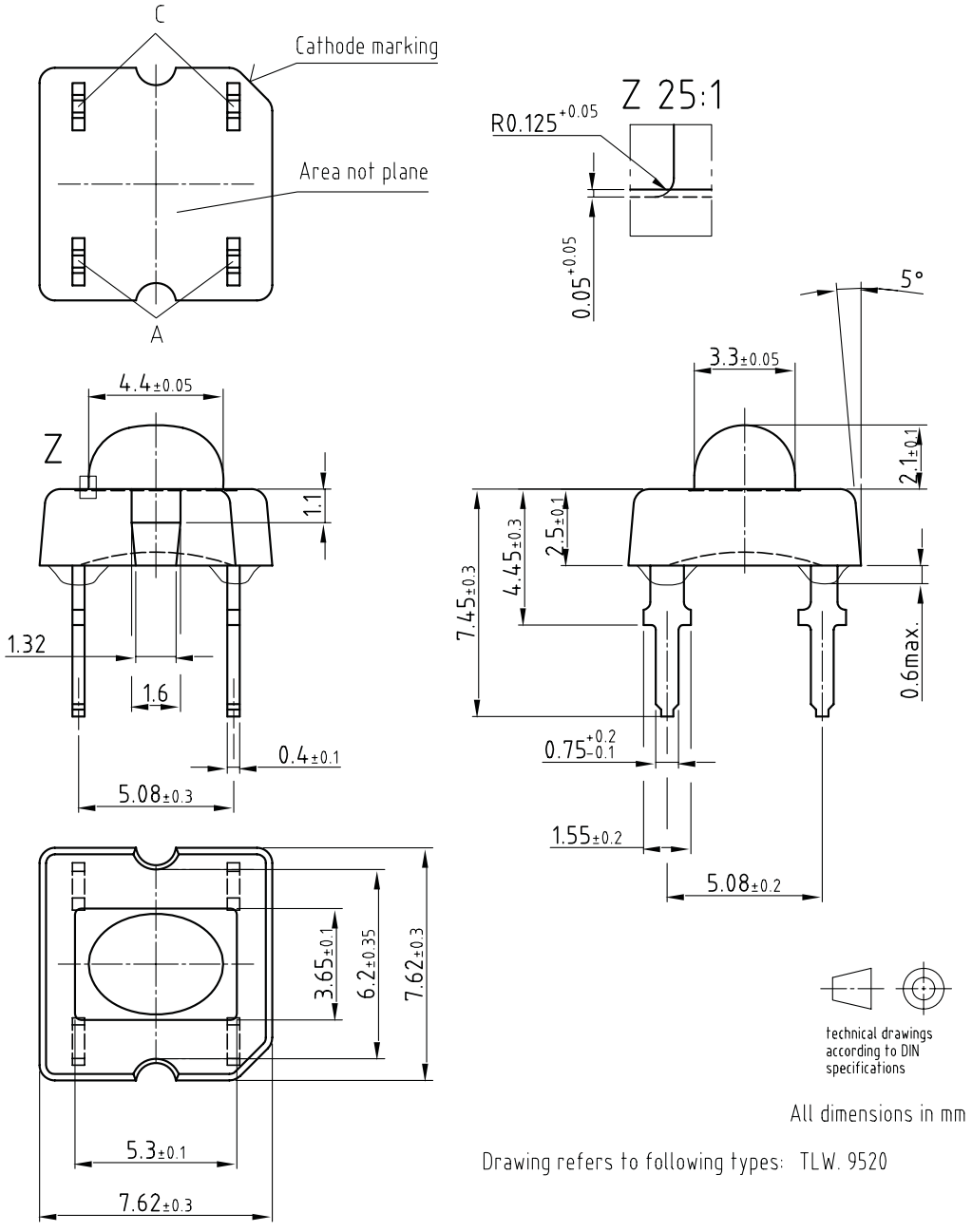



Figure 7. Relative Intensity vs. Wavelength

## Package Dimensions in mm

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Issue: 1; 23.09.05

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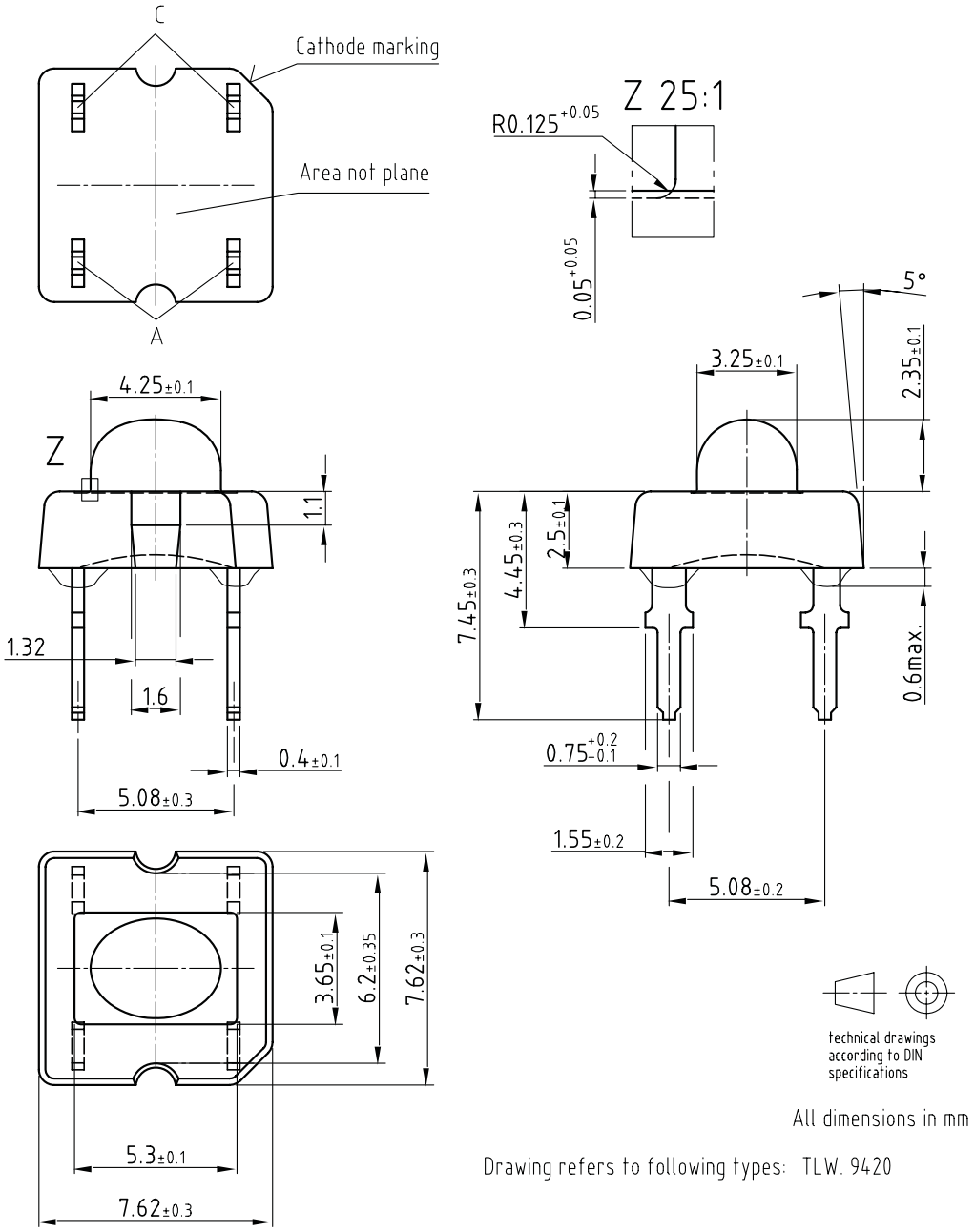
### Package Dimensions in mm

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Issue: 1; 23.09.05

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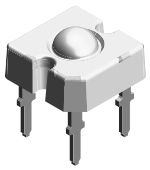
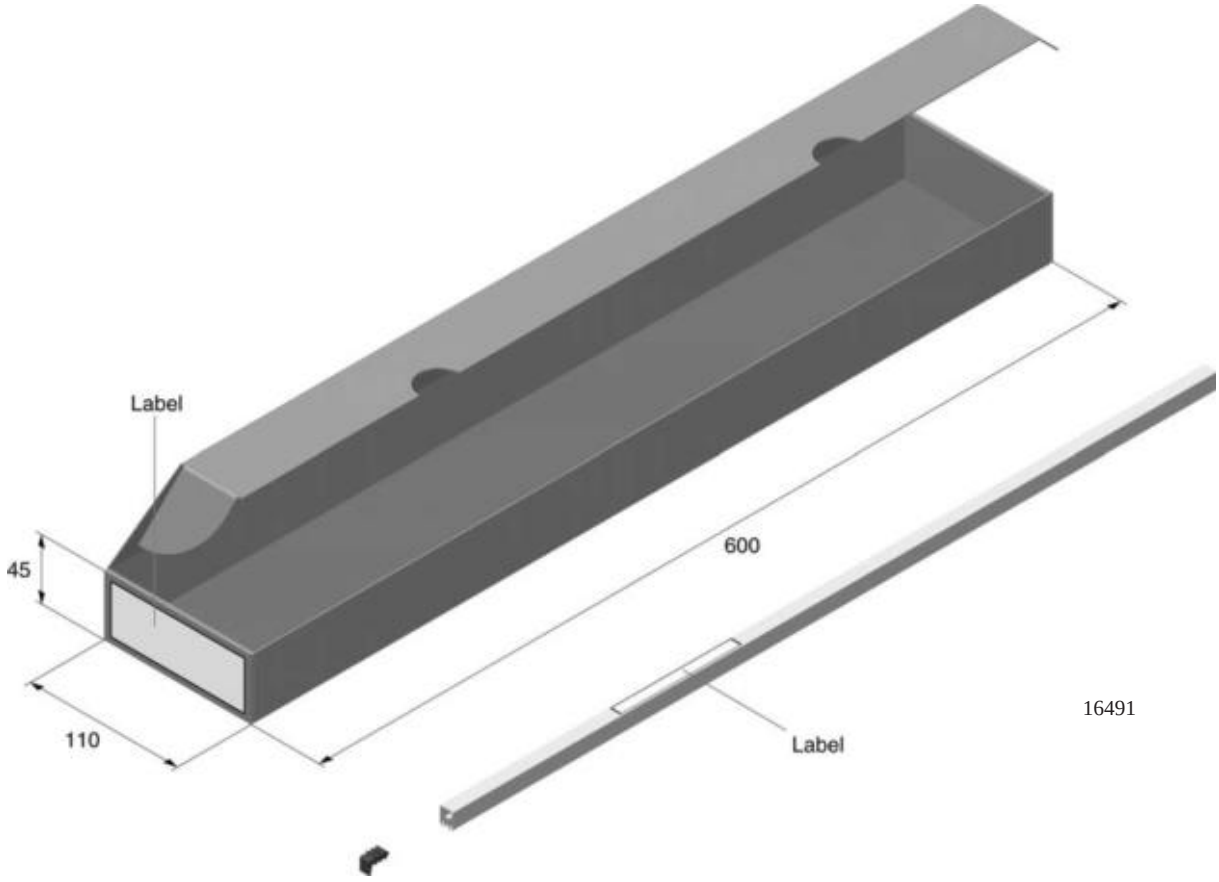
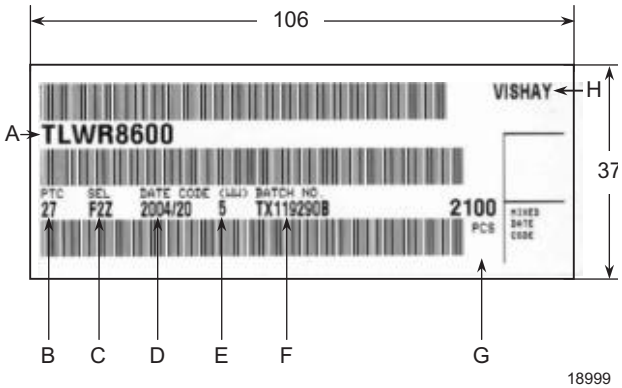
## Packing Information



**Fan Fold Box**



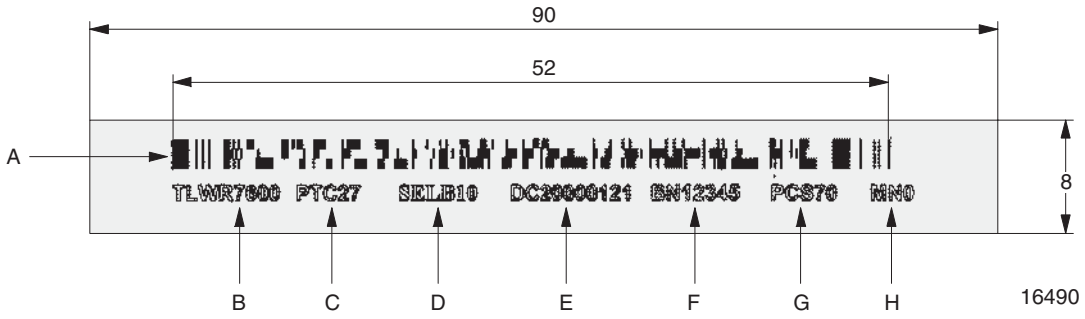

**Label of Fan Fold Box**




A) Type of component
B) Manufacturing plant
C) SEL – Selection Code (Bin)
Digit 1 – code for Luminous Flux group
Digit 2 – code for Dominant Wavelengthgroup
Digit 3 – code for Forward Voltage group
D) Date Code year/week
E) Day Code (e. g. 5: Friday)
F) Batch No.
G) Total quantity
H) Company code

Note: Any distance between bar code and character is more than 1mm.

**Example for TELUX tube label**




A) Bar code
B) Type of component
C) Manufacturing plant
D) SEL – Selection code (Bin)
Digit1 – code for Luminous Flux group
Digit2 – code for Dominant Wavelength group
Digit3 – code for Forward Voltage group
E) Date code
F) Batch No.
G) Total quantity
H) Company code

**Tube with Bar code label**

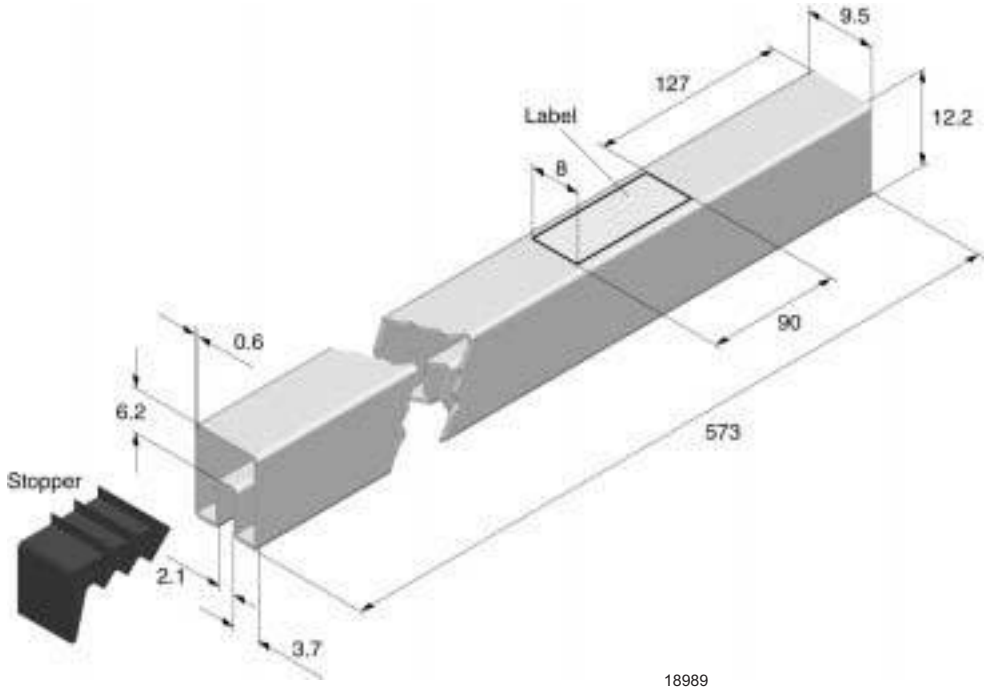



Figure 9. Drawing proportions not scaled

## Ozone Depleting Substances Policy Statement

It is the policy of Vishay Semiconductor GmbH to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA
3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.



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