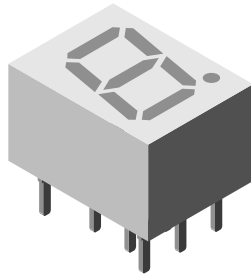


Low Current 7 mm 7-Segment Display



19235

DESCRIPTION

The TDSL11.0 series are 7 mm character seven segment low current LED displays in a very compact package.

The displays are designed for a viewing distance up to 3 m and available in high efficiency red. The grey package surface and the evenly lighted segments provide an optimum on-off contrast.

All displays are categorized in luminous intensity groups. That allows users to assemble displays with uniform appearance.

Typical applications include instruments, panel meters, point-of-sale terminals and household equipment.

FEATURES

- Low power consumption
- Suitable for DC and multiplex operation
- Evenly lighted segments
- Grey package surface
- Untinted segments
- Luminous intensity categorized
- Wide viewing angle
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912


RoHS
COMPLIANT

APPLICATIONS

- Panel meters
- Test- and measure-equipment
- Point-of-sale terminals
- Control units

PRODUCT GROUP AND PACKAGE DATA

- Product group: Display
- Package: 7 mm
- Product series: Low current
- Angle of half intensity: $\pm 50^\circ$

PARTS TABLE

| PART | COLOR | LUMINOUS INTENSITY (μcd) | | | at I_F (mA) | WAVELENGTH (nm) | | | at I_F (mA) | FORWARD VOLTAGE (V) | | | at I_F (mA) | CIRCUITRY |
|----------|-------|---------------------------------------|------|------|---------------|-----------------|------|------|---------------|---------------------|------|------|---------------|----------------|
| | | MIN. | TYP. | MAX. | | MIN. | TYP. | MAX. | | MIN. | TYP. | MAX. | | |
| TDSL1150 | Red | 180 | 260 | - | 2 | 612 | - | 625 | 2 | - | 1.8 | 2.4 | 2 | Common anode |
| TDSL1160 | Red | 180 | 260 | - | 2 | 612 | - | 625 | 2 | - | 1.8 | 2.4 | 2 | Common cathode |

ABSOLUTE MAXIMUM RATINGS ($T_{\text{amb}} = 25^\circ\text{C}$, unless otherwise specified) TDSL1150, TDSL1160

| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
|-----------------------------------------|-------------------------------------------------|-------------------|--------------|------------------|
| Reverse voltage per segment | | V_R | 6 | V |
| DC forward current per segment | | I_F | 15 | mA |
| Peak forward current per segment | | I_{FM} | 45 | mA |
| Surge forward current per segment | $t_p \leq 10 \mu\text{s}$ (non repetitive) | I_{FSM} | 106 | mA |
| Power dissipation | $T_{\text{amb}} \leq 45^\circ\text{C}$ | P_V | 320 | 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 + 85 | $^\circ\text{C}$ |
| Soldering temperature | $t \leq 3 \text{ s}$, 2 mm below seating plane | T_{sd} | 260 | $^\circ\text{C}$ |
| Thermal resistance LED junction/ambient | | R_{thJA} | 180 | K/W |

| OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | | |
|---------------------------------------------------------------------------------------------------------------|--------------------------------------|-----------------------|-------------|------|----------|------|----------------|
| TDSL1150, TDSL1160, RED | | | | | | | |
| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Luminous intensity per segment ⁽¹⁾ (digit average) | $I_F = 2\text{ mA}$ | TDSL1150 | I_V | 180 | 260 | - | μcd |
| | | TDSL1160 | | 180 | 260 | - | |
| | $I_F = 5\text{ mA}$ | TDSL1150 | | - | 1000 | - | |
| | | TDSL1160 | | - | 1000 | - | |
| | $I_F = 20\text{ mA}, t_p/T = 0.25$ | TDSL1150 | | - | 1300 | - | |
| | | TDSL1160 | | - | 1300 | - | |
| Dominant wavelength | $I_F = 2\text{ mA}$ | TDSL1150, TDSL1160 | 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 | - | ± 50 | - | deg |
| Forward voltage per segment | $I_F = 2\text{ mA}$ | | V_F | - | 1.8 | 2.4 | V |
| | $I_F = 20\text{ mA}$ | | V_F | - | 2.7 | 3 | V |
| Reverse voltage per segment | $I_F = 10\text{ }\mu\text{A}$ | | V_R | 6 | 20 | - | V |
| Junction capacitance | $V_R = 0\text{ V}, f = 1\text{ MHz}$ | | C_j | - | 30 | - | pF |

Note

⁽¹⁾ $I_{Vmin.}$ and I_V groups are mean values of all segments (a to g, D1 to D4), matching factor within segments is ≥ 0.5 , excluding decimal points and colon.

| LUMINOUS INTENSITY CLASSIFICATION | | | |
|-----------------------------------|------------------------------------|------|------|
| GROUP | LIGHT INTENSITY (μcd) | | |
| | STANDARD | MIN. | MAX. |
| E | 180 | 360 | |
| F | 280 | 560 | |
| G | 450 | 900 | |
| H | 700 | 1400 | |
| I | 1100 | 2200 | |
| K | 1800 | 3600 | |

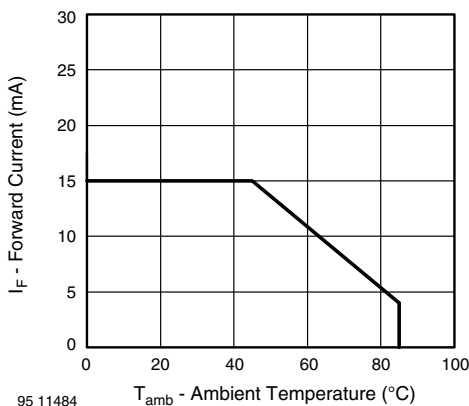
TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Forward Current vs. Ambient Temperature

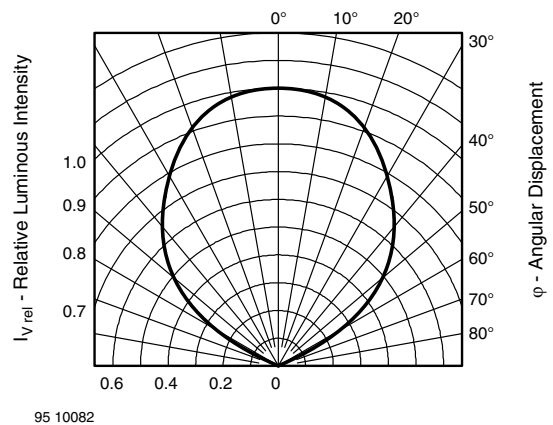


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

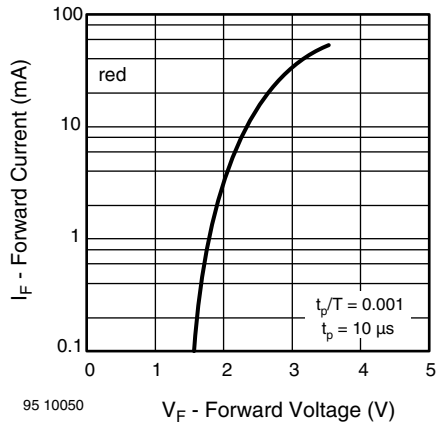


Fig. 3 - Forward Current vs. Forward Voltage

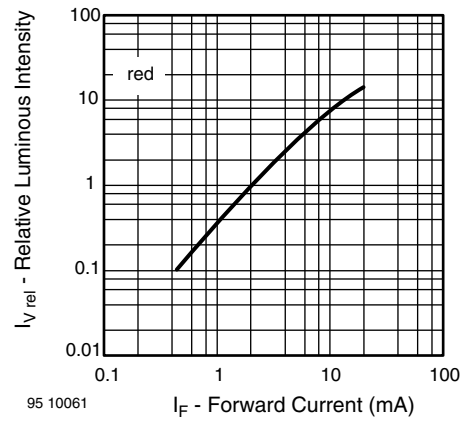


Fig. 6 - Relative Luminous Intensity vs. Forward Current

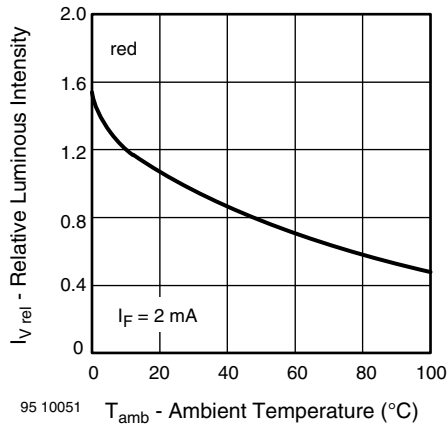


Fig. 4 - Relative Luminous Intensity vs. Ambient Temperature

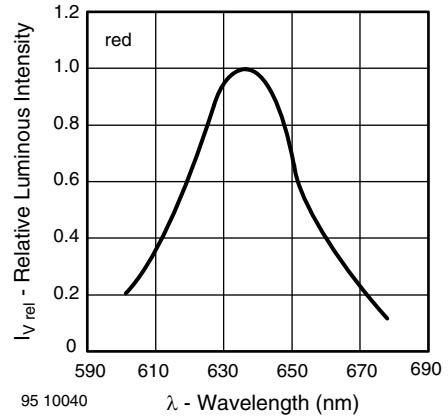


Fig. 7 - Relative Intensity vs. Wavelength

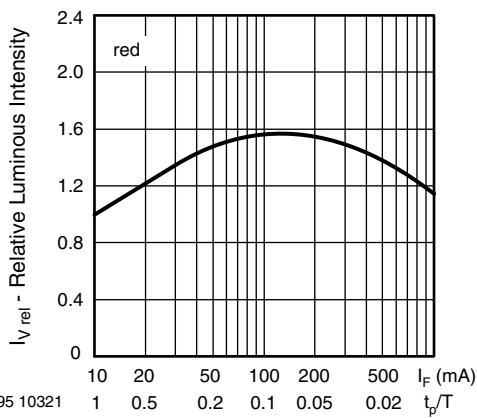


Fig. 5 - Relative Luminous Intensity vs. Forward Current/Duty Cycle

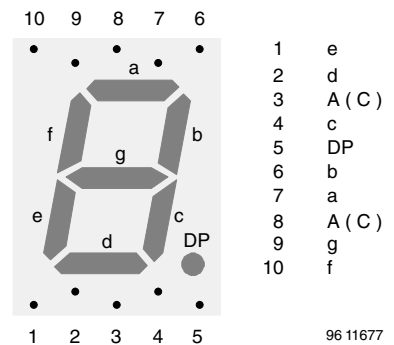
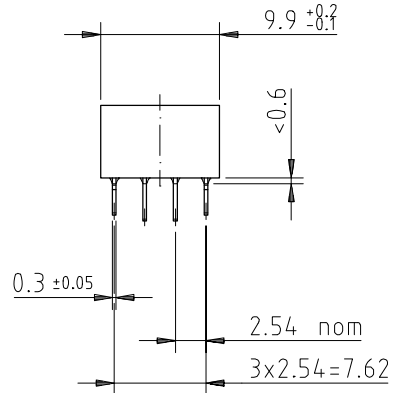
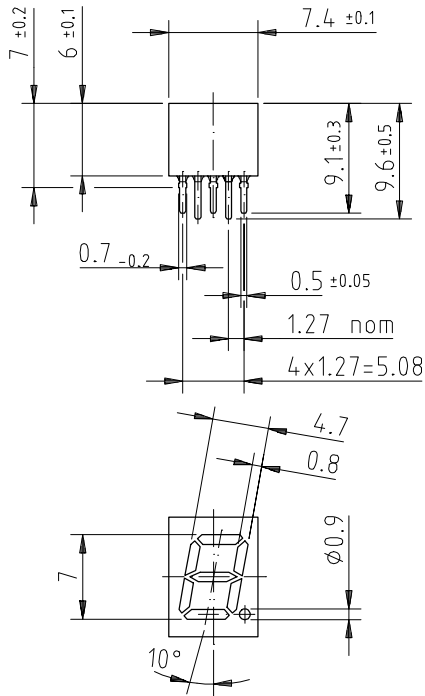


Fig. 8 - TDSL11..



PACKAGE DIMENSIONS in millimeters



Technical drawings according to DIN specifications

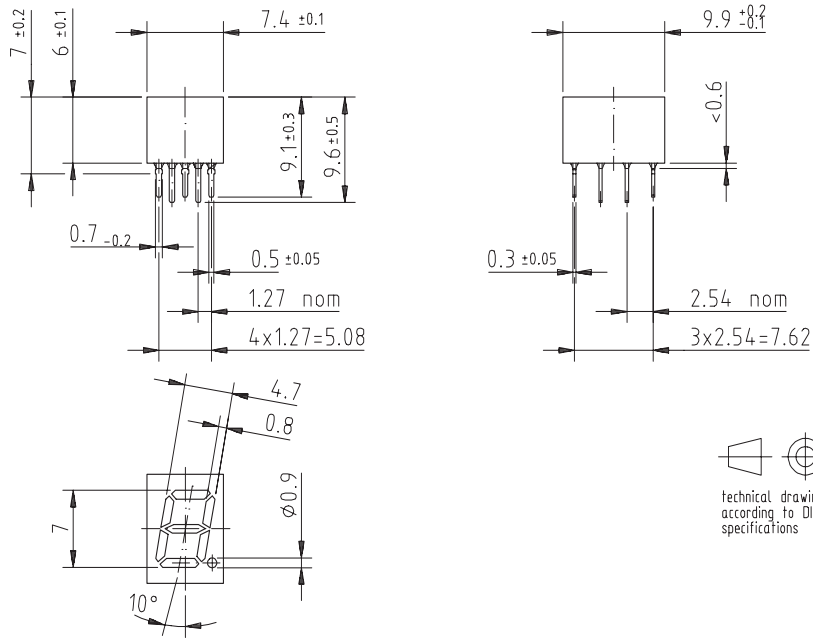
Drawing-No.: 6.544-5083.01-4

Issue: 1; 21.11.95

95 11342

Display-7 mm

Package Dimensions in mm



95 11342

Ozone Depleting Substances Policy Statement

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3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

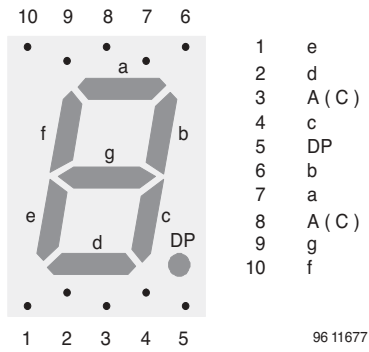
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Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany
Telephone: 49 (0)7131 67 2831, Fax number: 49 (0)7131 67 2423

Pin Connections 7 mm



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