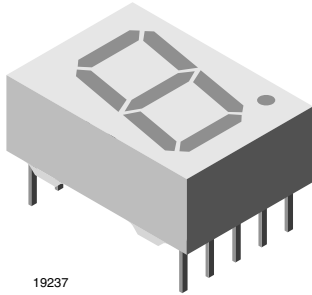




High Intensity Red Low Current 7-Segment Display



FEATURES

- 1500 μcd typical at 1 mA
- Very low power consumption
- Wide viewing angle
- Grey package surface
- Light intensity categorized at $I_F = 1 \text{ mA}$
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



RoHS COMPLIANT

DESCRIPTION

This series defines a new standard for low current displays. It is a single digit 7-segment LED display utilizing AlInGaP technology in color red.

The supreme light intensity allows applications under direct sunlight or “black front” designs by using tinted filter glass in front of the display.

Typical 1500 μcd at 1 mA is best in class performance for applications with very limited power supply. The maximum forward current of 10 mA is allowed for an ambient temperature range of - 40 °C to + 85 °C without current derating.

Crosstalk between segments is possible at drive currents above 5 mA per segment. Therefore it is recommend to apply more than 5 mA only under direct sunlight or with tinted filter glass.

APPLICATIONS

- Battery driven instruments
- Telecom devices
- Home appliances
- Instrumentation
- POS terminals

PRODUCT GROUP AND PACKAGE DATA

- Product group: Display
- Package: 13 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. | | |
| TDSR1350 | Red | 280 | - | 3600 | 1 | - | 640 | - | 1 | - | 1.8 | 2.4 | 1 | Common anode |
| TDSR1360 | Red | 280 | - | 3600 | 1 | - | 640 | - | 1 | - | 1.8 | 2.4 | 1 | Common cathode |
| TDSR1360-IK | Red | 1100 | - | 3600 | 1 | - | 640 | - | 1 | - | 1.8 | 2.4 | 1 | Common cathode |

| ABSOLUTE MAXIMUM RATINGS ($T_{\text{amb}} = 25 \text{ }^\circ\text{C}$, unless otherwise specified) | | | | |
|---|--|-------------------|--------------|------------------|
| TDSR1350, TDSR1360, TDSR1360-IK | | | | |
| PARAMETER | TEST CONDITION | SYMBOL | VALUE | UNIT |
| Reverse voltage per segment | | V_R | 5 | V |
| DC forward current per segment | | I_F | 10 | mA |
| Peak forward current per segment | $t_p \leq 10 \text{ } \mu\text{s}$, duty cycle 1/10 | I_{FM} | 50 | mA |
| Power dissipation | $T_{\text{amb}} \leq 85 \text{ }^\circ\text{C}$ | P_V | 185 | mW |
| Junction temperature | | T_j | 105 | $^\circ\text{C}$ |
| 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} | 100 | K/W |

OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)
TDSR1350, TDSR1360, TDSR1360-IK, RED

| PARAMETER | TEST CONDITION | PART | SYMBOL | MIN. | TYP. | MAX. | UNIT |
|--|---------------------|---------------------------------------|-------------|------|----------|------|----------------|
| Luminous intensity per segment (digit average) | $I_F = 1\text{ mA}$ | TDSR1350 | I_V | 280 | - | 3600 | μcd |
| | | TDSR1360 | | 280 | - | 3600 | |
| | | TDSR1360-IK | | 1100 | - | 3600 | |
| Dominant wavelength | $I_F = 1\text{ mA}$ | TDSR1350, TDSR1360, TDSR1360-IK | λ_d | - | 640 | - | nm |
| Peak wavelength | $I_F = 1\text{ mA}$ | | λ_p | - | 650 | - | nm |
| Angle of half intensity | $I_F = 1\text{ mA}$ | | j | - | ± 50 | - | deg |
| Forward voltage per segment or DP | $I_F = 1\text{ mA}$ | | V_F | - | 1.8 | 2.4 | V |
| Reverse voltage per segment or DP | $V_R = 6\text{ V}$ | | I_R | - | 10 | - | μA |

LUMINOUS INTENSITY CLASSIFICATION

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

Note

- The above type numbers represent the order groups which include only a few brightness groups. Only one group will be shipped in one tube (there will be no mixing of two groups in one tube). In order to ensure availability, single brightness groups will not be orderable.

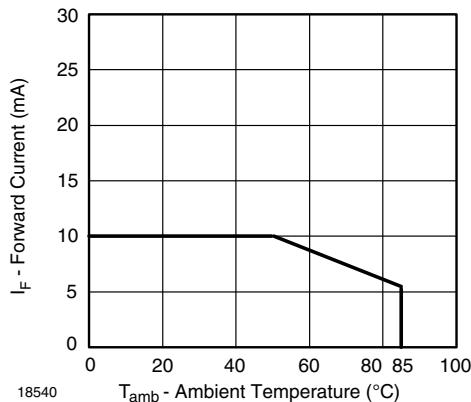
TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)


Fig. 1 - Forward Current vs. Ambient Temperature

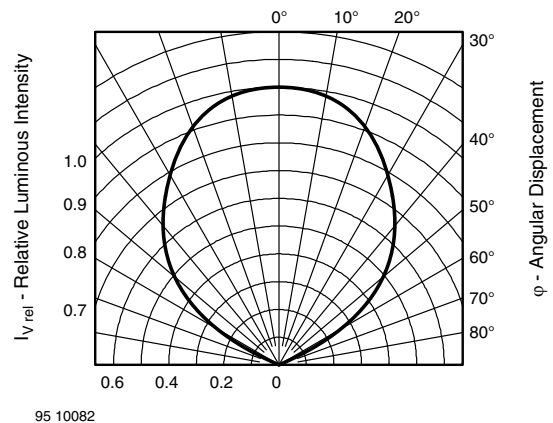


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

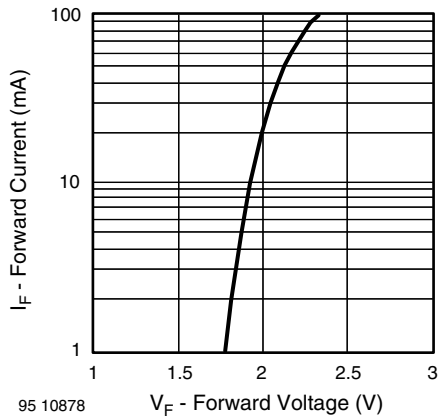


Fig. 3 - Forward Current vs. Forward Voltage

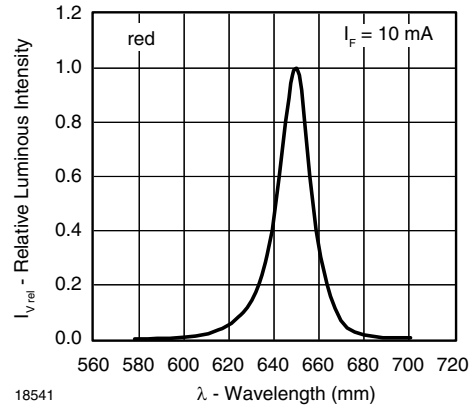


Fig. 6 - Relative Luminous Intensity vs. Ambient Temperature

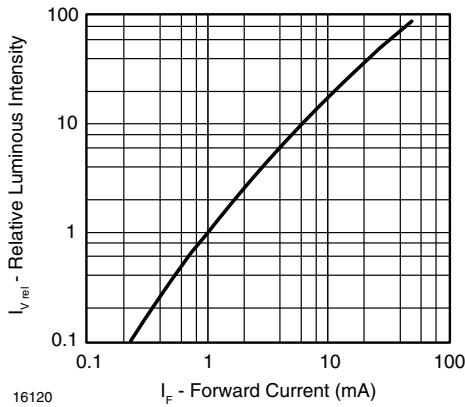


Fig. 4 - Relative Luminous Intensity vs. Forward Current

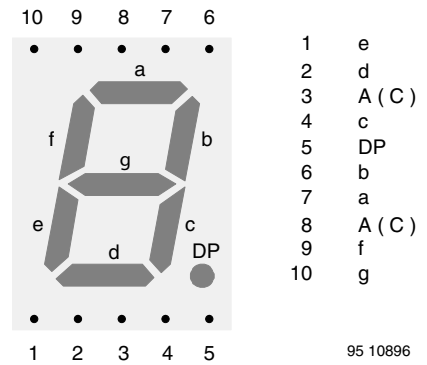


Fig. 7 - TDSR1350, TDSR1360

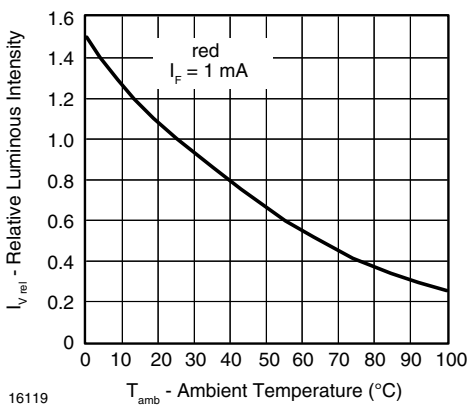
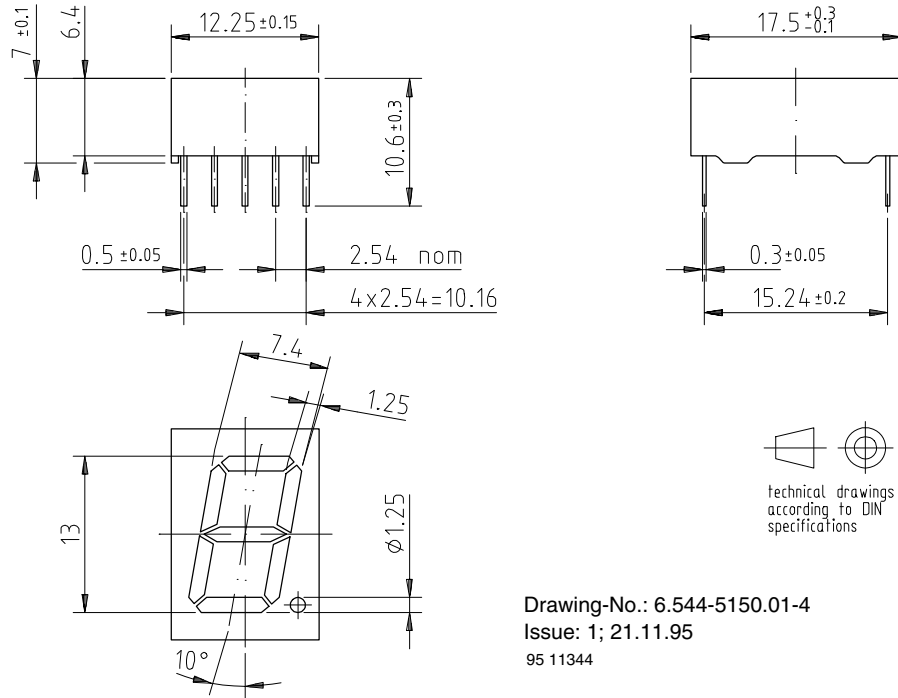


Fig. 5 - Relative Luminous Intensity vs. Ambient Temperature



PACKAGE DIMENSIONS FOR TDSR13.. in millimeters



Drawing-No.: 6.544-5150.01-4
Issue: 1; 21.11.95
95 11344



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