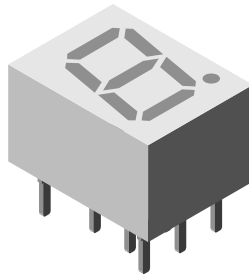


Low Current 7 mm Seven Segment Display



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 untinted 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
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC


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 at 2 mA	CIRCUITRY
TDSL1150	Red	$I_V = 260 \mu\text{cd}$ (typ.)	Common anode
TDSL1160	Red	$I_V = 260 \mu\text{cd}$ (typ.)	Common cathode

ABSOLUTE MAXIMUM RATINGS ⁽¹⁾ 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	$T_{amb} \leq 45^\circ\text{C}$	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

Note

⁽¹⁾ $T_{amb} = 25^\circ\text{C}$, unless otherwise specified

OPTICAL AND ELECTRICAL CHARACTERISTICS ⁽¹⁾ TDSL1150, TDSL1160, RED							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity per segment ⁽²⁾ (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	$I_F = 10 \mu\text{A}$		V_R	6	20	-	V
Junction capacitance	$V_R = 0 \text{ V}, f = 1 \text{ MHz}$		C_j	-	30	-	pF

Notes

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

(2) $I_{V\text{min}}$ 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)	
	MIN.	MAX.
STANDARD		
E	180	360
F	280	560
G	450	900
H	700	1400
I	1100	2200
K	1800	3600

BASIC CHARACTERISTICS

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

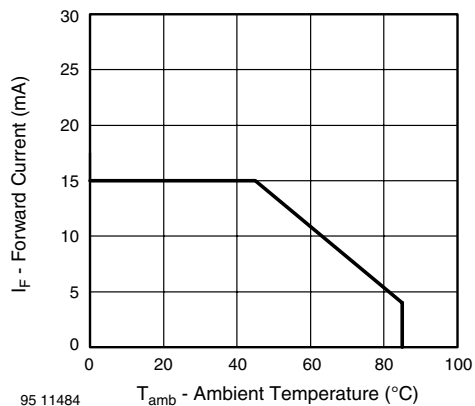


Fig. 1 - Forward Current vs. Ambient Temperature

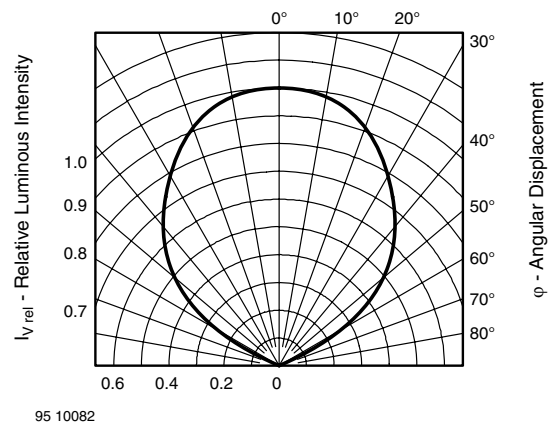


Fig. 2 - Rel. Luminous Intensity vs. Angular Displacement

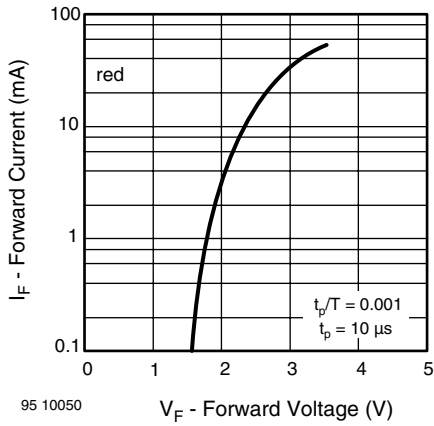


Fig. 3 - Forward Current vs. Forward Voltage

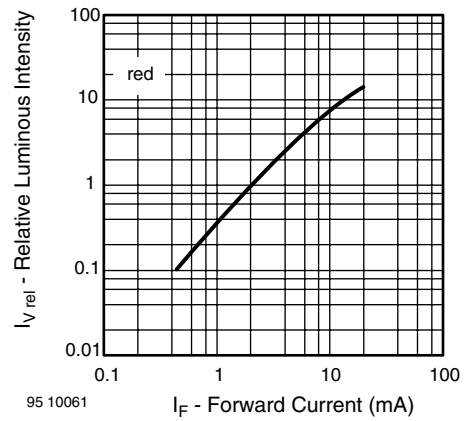


Fig. 6 - Relative Luminous Intensity vs. Forward Current

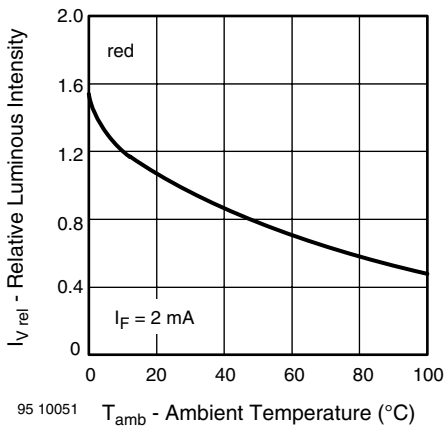


Fig. 4 - Rel. Luminous Intensity vs. Ambient Temperature

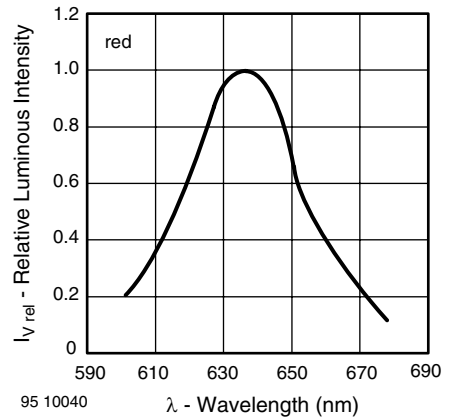


Fig. 7 - Relative Intensity vs. Wavelength

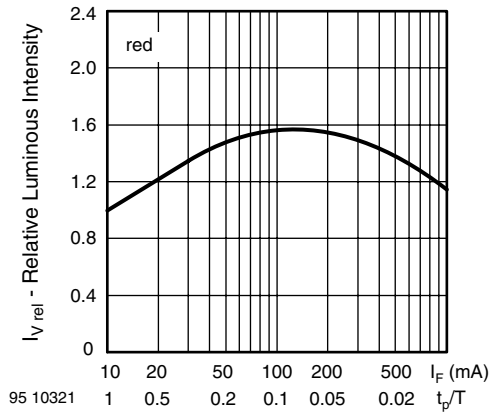
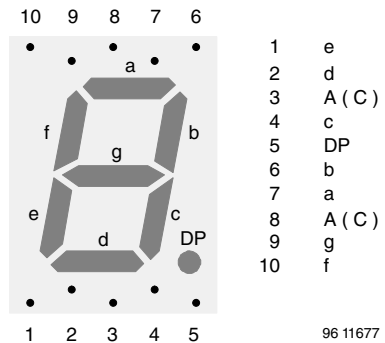


Fig. 5 - Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

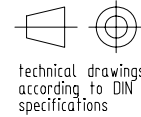
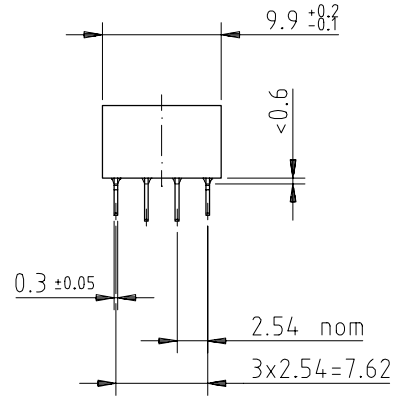
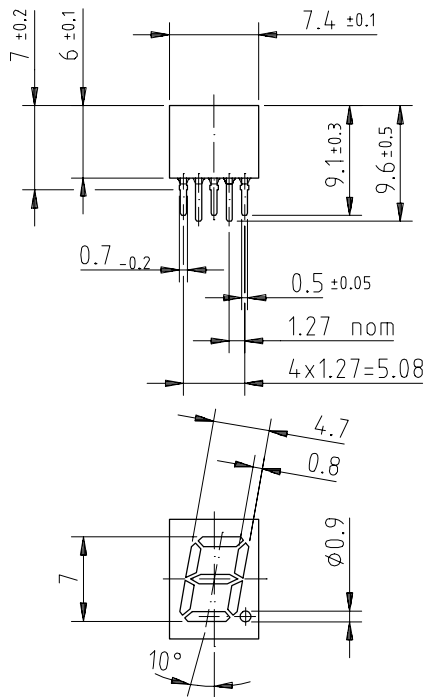


TDSL11..

Vishay Semiconductors Low Current 7 mm Seven Segment Display



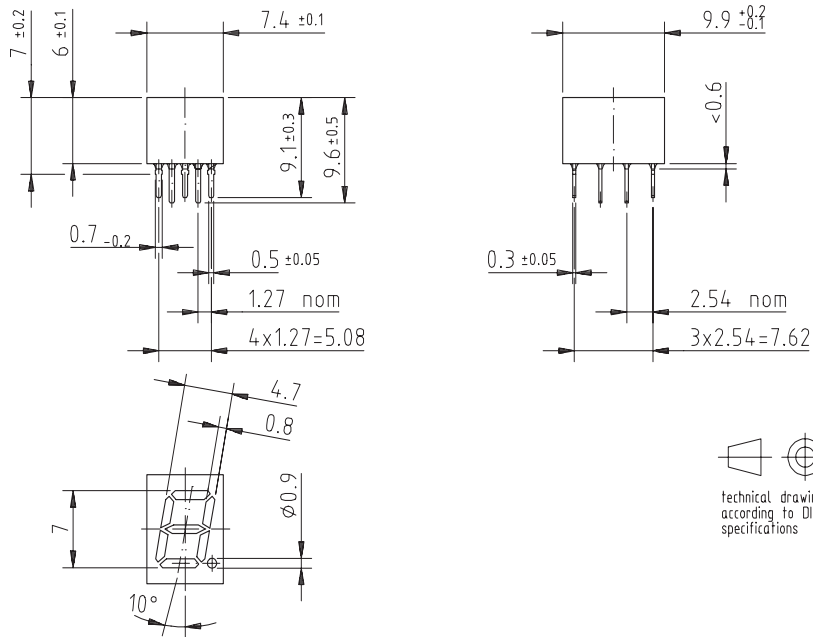
PACKAGE DIMENSIONS in millimeters



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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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).

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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.

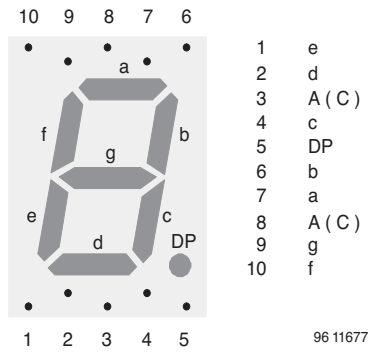
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Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany
Telephone: 49 (0)7131 67 2831, Fax number: 49 (0)7131 67 2423

Pin Connections 7 mm



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