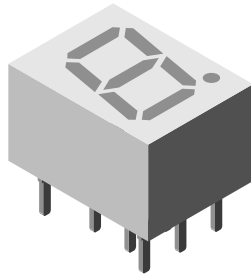




# Low Current 7 mm 7-Segment Display



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](http://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 ( $\mu\text{cd}$ )			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 ( $T_{amb} = 25^\circ\text{C}$ , 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	$T_{amb} \leq 45^\circ\text{C}$	$P_V$	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 <sup>(1)</sup> (digit average)	$I_F = 2\text{ mA}$	TDSL1150	$I_V$	180	260	-	$\mu\text{cd}$
		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	$\lambda_d$	612	-	625	nm
Peak wavelength	$I_F = 2\text{ mA}$		$\lambda_p$	-	635	-	nm
Angle of half intensity	$I_F = 2\text{ mA}$		$\phi$	-	$\pm 50$	-	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**

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

**LUMINOUS INTENSITY CLASSIFICATION**

GROUP	LIGHT INTENSITY ( $\mu\text{cd}$ )	
	MIN.	MAX.
STANDARD		
E	180	360
F	280	560
G	450	900
H	700	1400
I	1100	2200
K	1800	3600

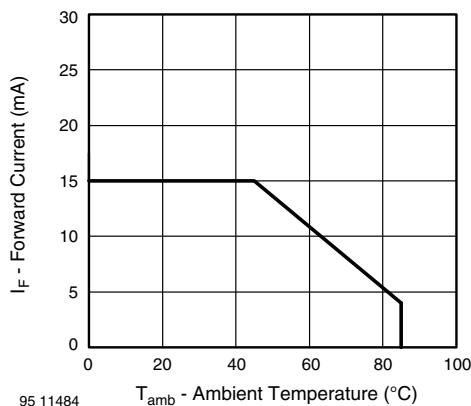
**TYPICAL CHARACTERISTICS** ( $T_{amb} = 25\text{ }^{\circ}\text{C}$ , unless otherwise specified)


Fig. 1 - Forward Current vs. Ambient Temperature

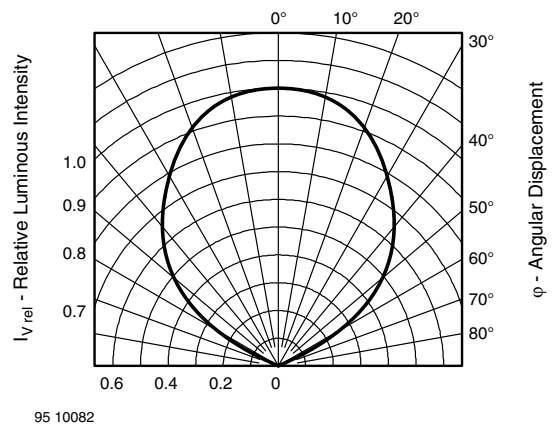


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

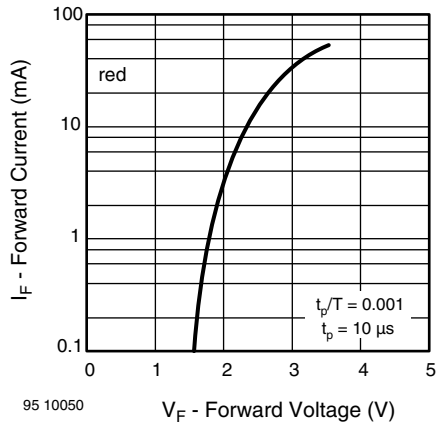


Fig. 3 - Forward Current vs. Forward Voltage

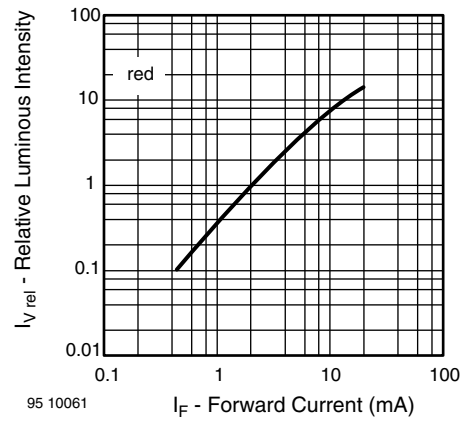


Fig. 6 - Relative Luminous Intensity vs. Forward Current

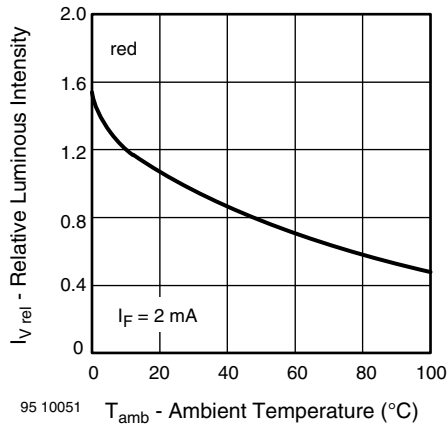


Fig. 4 - Relative Luminous Intensity vs. Ambient Temperature

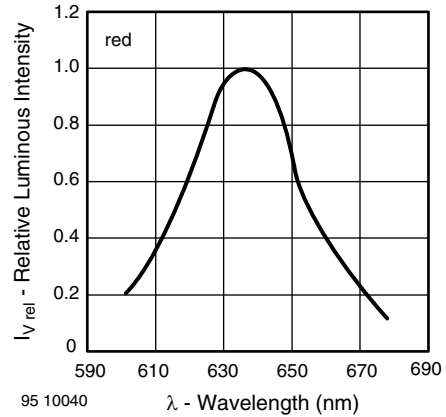


Fig. 7 - Relative Intensity vs. Wavelength

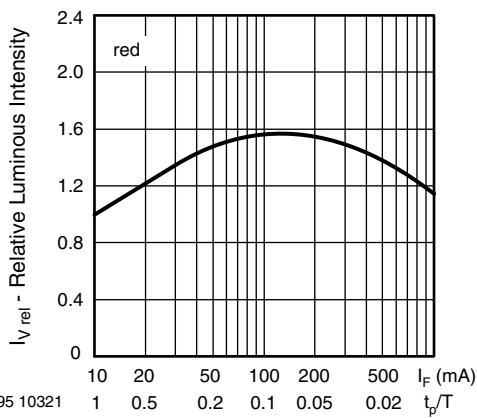


Fig. 5 - Relative Luminous Intensity vs. Forward Current/Duty Cycle

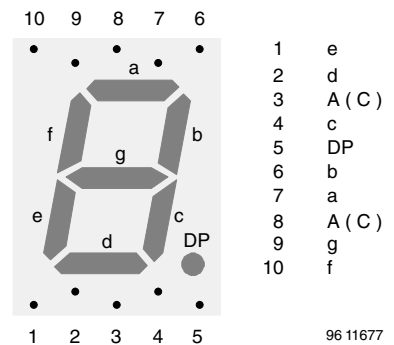
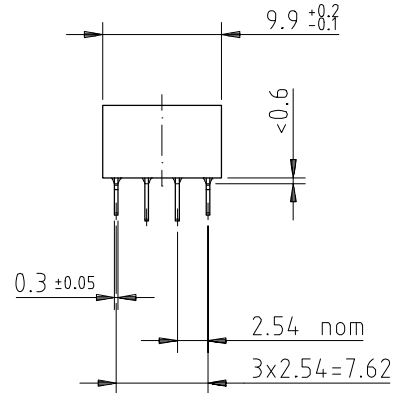
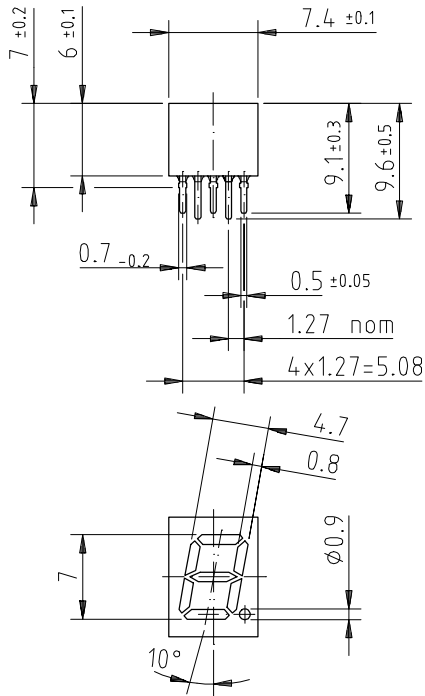


Fig. 8 - TDSL11..



## PACKAGE DIMENSIONS in millimeters



Technical drawings according to DIN specifications

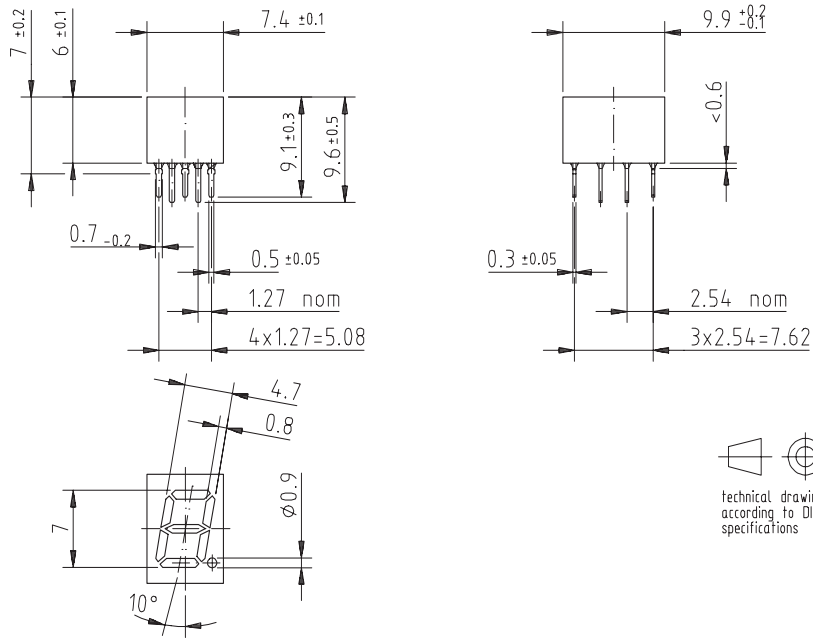
Drawing-No.: 6.544-5083.01-4

Issue: 1; 21.11.95

95 11342

## Display-7 mm

### Package Dimensions in mm



95 11342

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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.

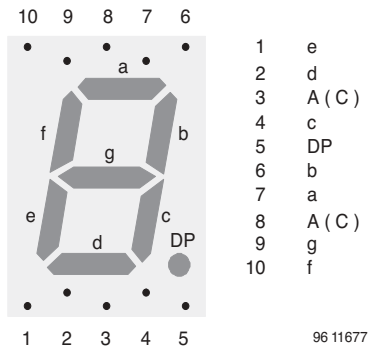
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Telephone: 49 (0)7131 67 2831, Fax number: 49 (0)7131 67 2423

## Pin Connections 7 mm



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