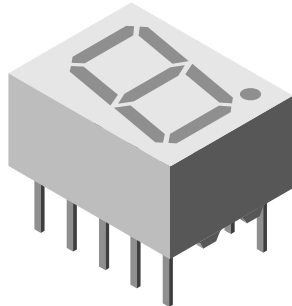


## Low Current 10 mm Seven Segment Display



19236

### DESCRIPTION

The TDSL31.0 series are 10 mm character seven segment low current LED displays in a very compact package.

The displays are designed for a viewing distance up to 6 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

### PRODUCT GROUP AND PACKAGE DATA

- Product group: display
- Package: 10 mm
- Product series: low current
- Angle of half intensity:  $\pm 50^\circ$

### PARTS TABLE

PART	COLOR	LUMINOUS INTENSITY at 2 mA	CIRCUITRY
TDSL3150	Red	$I_V = 260 \mu\text{cd}$ (typ.)	Common anode
TDSL3160	Red	$I_V = 260 \mu\text{cd}$ (typ.)	Common cathode

### ABSOLUTE MAXIMUM RATINGS <sup>(1)</sup> TDSL3150, TDSL3160

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)	$I_{FSM}$	100	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

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

OPTICAL AND ELECTRICAL CHARACTERISTICS <sup>(1)</sup> TDSL3150, TDSL3160, RED							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity per segment <sup>(2)</sup> (digit average)	$I_F = 2 \text{ mA}$	TDSL3150	$I_V$	180	260	-	$\mu\text{cd}$
		TDSL3160		180	260	-	
Dominant wavelength	$I_F = 2 \text{ mA}$	TDSL3150, TDSL3160	$\lambda_{cd}$	612	-	625	nm
Peak wavelength	$I_F = 2 \text{ mA}$		$\lambda_p$	-	635	-	nm
Angle of half intensity	$I_F = 2 \text{ mA}$		$\varphi$	-	$\pm 50$	-	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	$I_F = 10 \mu\text{A}$		$V_R$	6	20	-	V
Junction capacitance	$V_R = 0 \text{ V}, f = 1 \text{ MHz}$		$C_j$	-	30	-	pF

### Notes

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

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

### BASIC CHARACTERISTICS

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

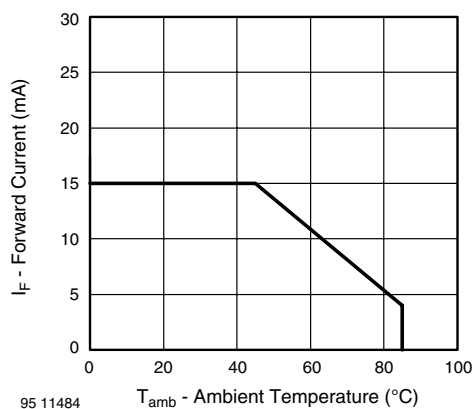


Fig. 1 - Forward Current vs. Ambient Temperature

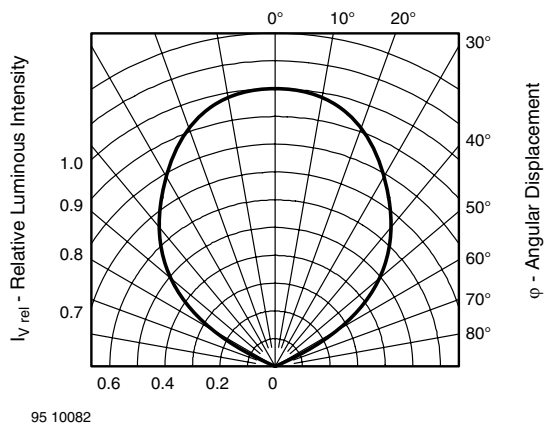


Fig. 2 - Rel. Luminous Intensity vs. Angular Displacement

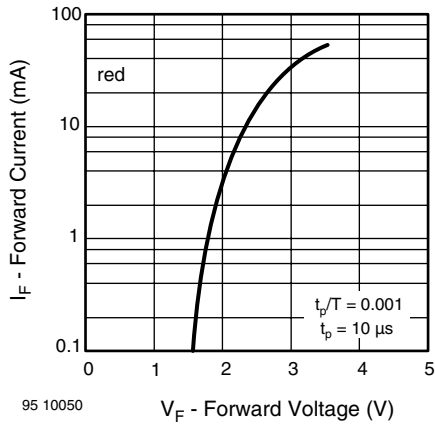


Fig. 3 - Forward Current vs. Forward Voltage

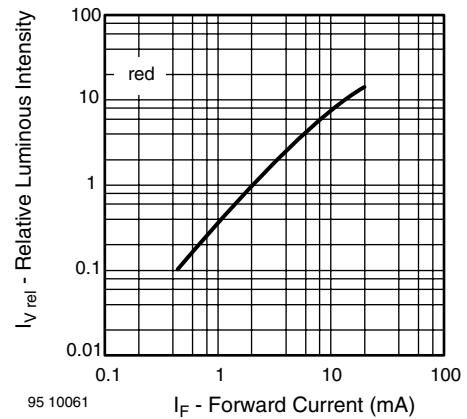


Fig. 6 - Relative Luminous Intensity vs. Forward Current

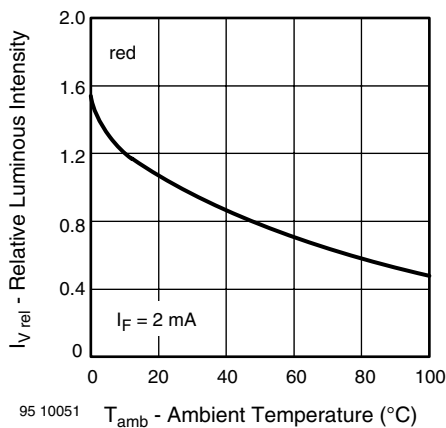


Fig. 4 - Rel. Luminous Intensity vs. Ambient Temperature

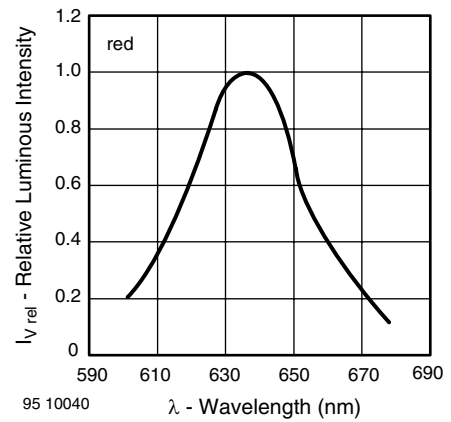


Fig. 7 - Relative Intensity vs. Wavelength

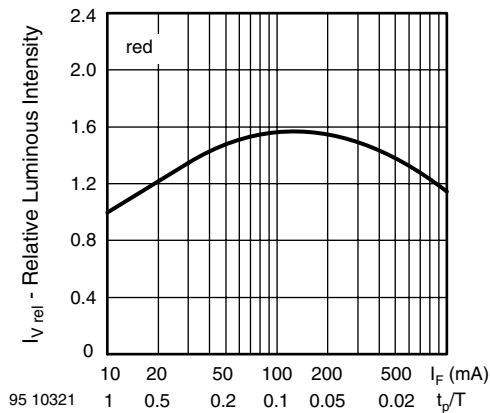
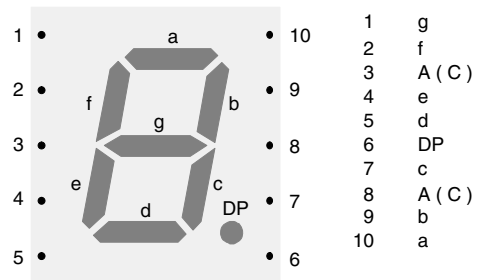


Fig. 5 - Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle



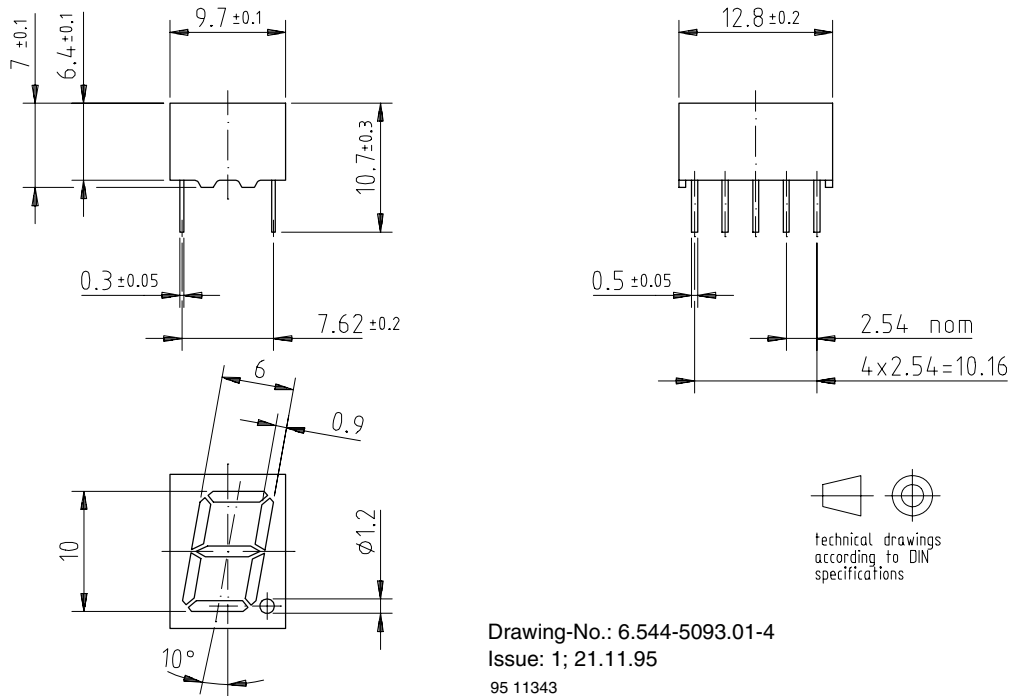
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# TDSL31..

Vishay Semiconductors Low Current 10 mm Seven Segment Display



## PACKAGE DIMENSIONS in millimeters





## Disclaimer

All product specifications and data are subject to change without notice.

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