

Low Current 10 mm Seven Segment Display

Color	Type	Circuitry
High efficiency red	TDSL3150	Common anode
	TDSL3160	Common cathode

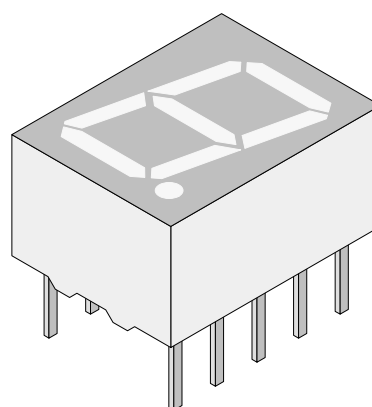
Description

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 meters 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.



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Features

- Low power consumption
- Suitable for DC and multiplex operation
- Evenly lighted segments
- Grey package surface
- Untinted segments
- Luminous intensity categorized
- Wide viewing angle

Applications

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

TDSL31.0

Absolute Maximum Ratings

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

TDSL3150 /TDSL3160

Parameter	Test Conditions	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	$t \leq 3 \text{ sec}$, 2mm below seating plane	T_{sd}	260	$^{\circ}\text{C}$
Thermal resistance LED junction/ambient		R_{thJA}	180	K/W

Optical and Electrical Characteristics

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

High efficiency red (TDSL3150 , TDSL3160)

Parameter	Test Conditions	Type	Symbol	Min	Typ	Max	Unit
Luminous intensity per segment (digit average) ¹⁾	$I_F = 2 \text{ mA}$		I_V	180	260		μcd
	$I_F = 5 \text{ mA}$		I_V		1000		μcd
	$I_F = 20 \text{ mA}$, $t_p/T = 0.25$		I_V		1300		μcd
Dominant wavelength	$I_F = 2 \text{ mA}$		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	$I_R = 10 \mu\text{A}$		V_R	6	20		V
Junction capacitance	$V_R = 0$, $f = 1 \text{ MHz}$		C_j		30		pF
¹⁾ I_{Vmin} and I_V groups are mean							

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

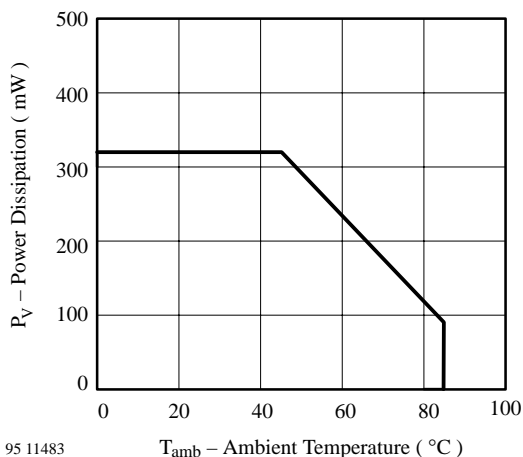


Figure 1. Power Dissipation vs. Ambient Temperature

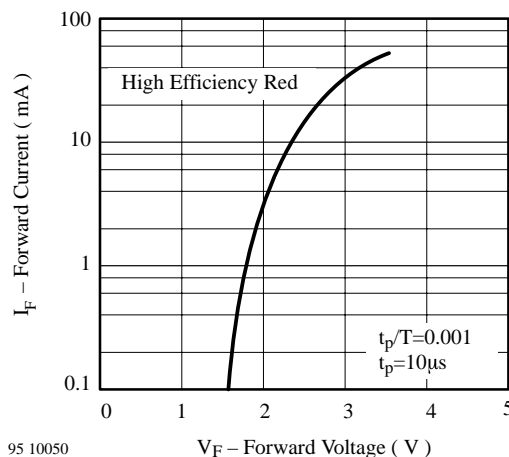


Figure 4. Forward Current vs. Forward Voltage

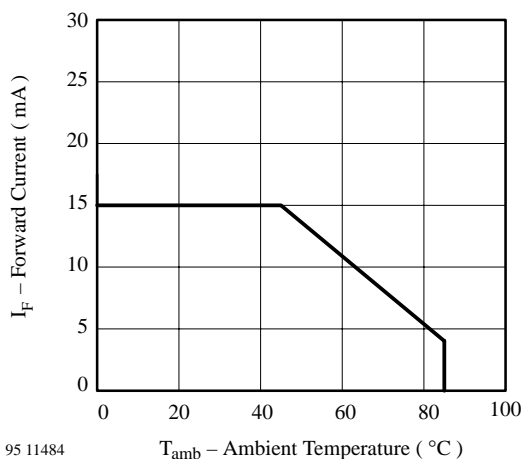


Figure 2. Forward Current vs. Ambient Temperature

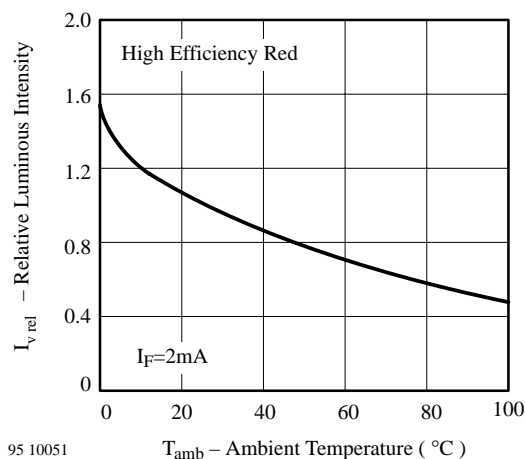


Figure 5. Rel. Luminous Intensity vs. Ambient Temperature

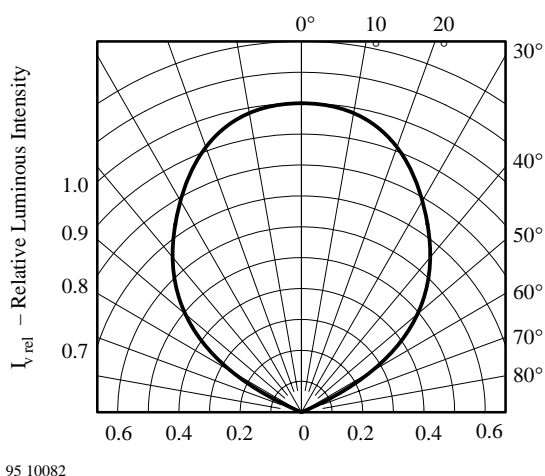


Figure 3. Rel. Luminous Intensity vs. Angular Displacement

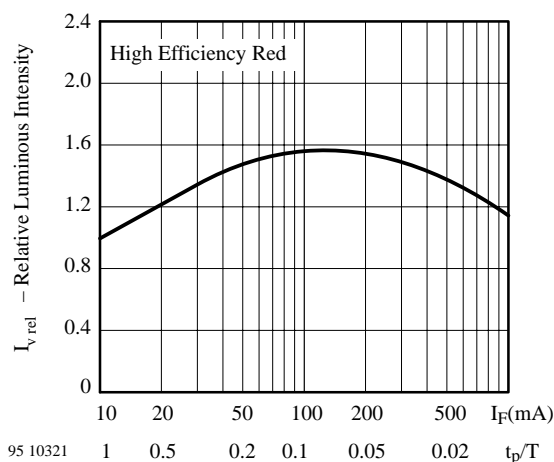


Figure 6. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

TDSL31.0

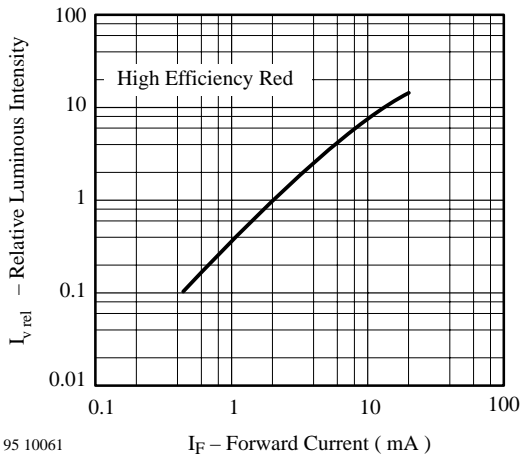


Figure 7. Relative Luminous Intensity vs. Forward Current

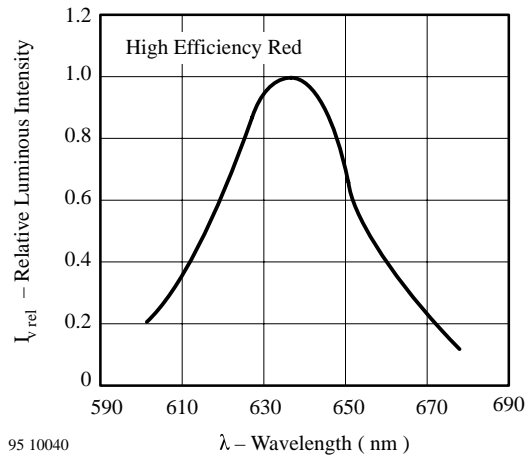
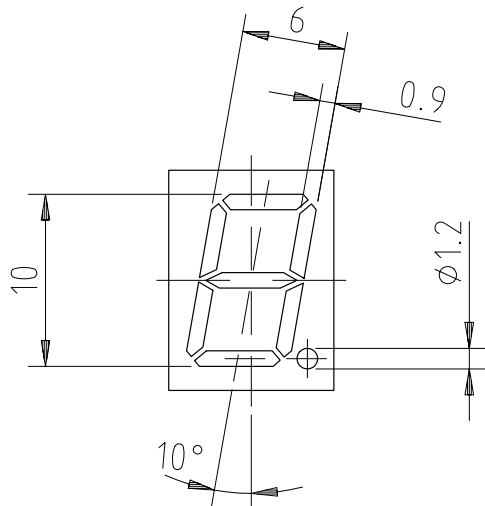
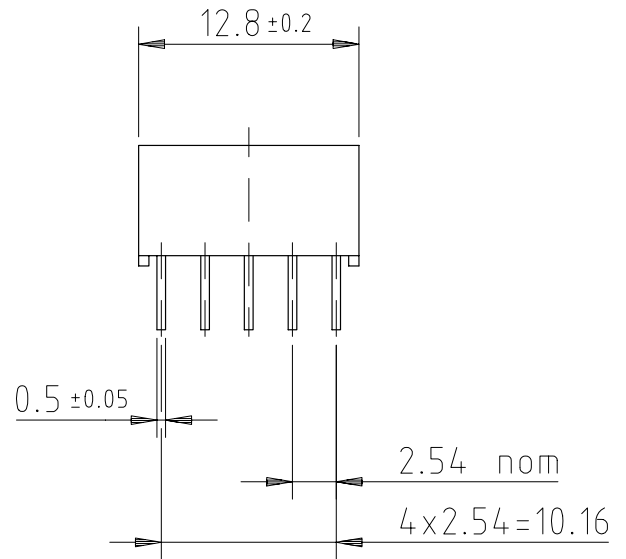
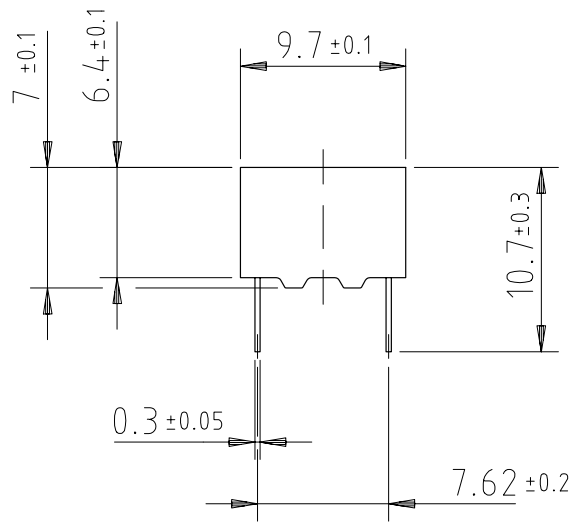
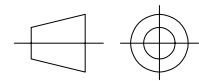


Figure 8. Relative Luminous Intensity vs. Wavelength

Dimensions in mm

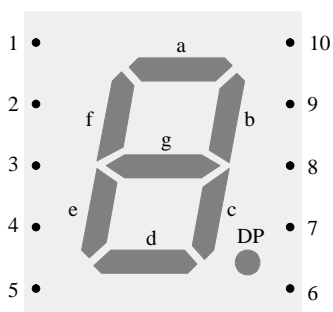


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technical drawings
according to DIN
specifications

Pin connections



- | | |
|----|-------|
| 1 | g |
| 2 | f |
| 3 | A (C) |
| 4 | e |
| 5 | d |
| 6 | DP |
| 7 | c |
| 8 | A (C) |
| 9 | b |
| 10 | a |

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