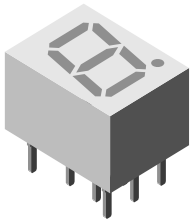
Low Current 7 mm Seven Segment Display

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 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 appearence.



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e4 Pb Pb-free

Typical applications include instruments, panel meters, point-of-sale terminals and household equipment.

Applications

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

Features

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

Parts Table

Part	Color, Luminous Intensity	Remarks
TDSL1150	Red	Common anode
TDSL1160	Red	Common cathode

Absolute Maximum Ratings

T_{amb} = 25 °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	$t_p \leq 10$ µs (non repetitive)	I_{FSM}	106	mA
Power dissipation	$T_{amb} \leq 45$ °C	P_V	320	mW
Junction temperature		T_j	100	°C

Parameter	Test condition	Symbol	Value	Unit
Operating temperature range		T_{amb}	-40 to + 85	°C
Storage temperature range		T_{stg}	-40 to + 85	°C
Soldering temperature	t ≤ 3 sec, 2 mm below seating plane	T_{sd}	260	°C
Thermal resistance LED junction/ambient		R_{thJA}	180	K/W

Optical and Electrical Characteristics

T_{amb} = 25 °C, unless otherwise specified

Red

TDSL1150 / TDSL1160

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
Forward voltage per segment	I_F = 2 mA	V_F		1.8	2.4	V
	I_F = 20 mA	V_F		2.7	3	V
Reverse voltage per segment	I_R = 10 µA	V_R	6	20		V
Junction capacitance	V_R = 0, f = 1 MHz	C_j		30		pF
Luminous intensity per segment (digit average) [1]	I_F = 2 mA	I_V	180	260		µcd
	I_F = 5 mA	I_V		1000		µcd
	I_F = 20 mA, t_p/T = 0.25	I_V		1300		µcd
Dominant wavelength	I_F = 2 mA	λ_d	612		625	nm
Peak wavelength	I_F = 2 mA	λ_p		635		nm
Angle of half intensity	I_F = 2 mA	φ		± 50		deg

[1] I_{Vmin} and I_V groups are mean values of segments a to g

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

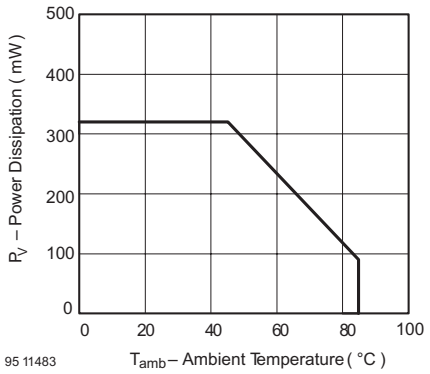


Figure 1. Power Dissipation vs. Ambient Temperature

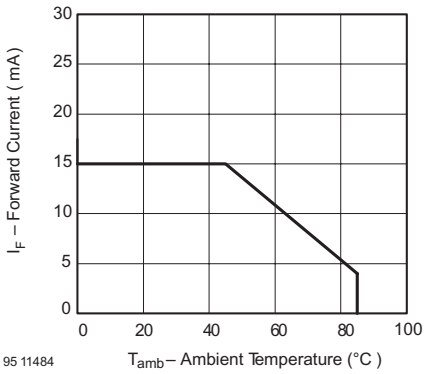


Figure 2. Forward Current vs. Ambient Temperature for AlInGaP

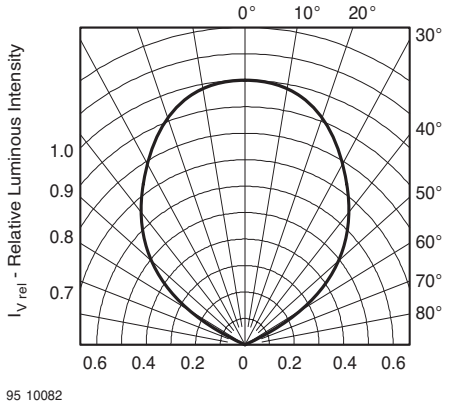


Figure 3. Rel. Luminous Intensity vs. Angular Displacement

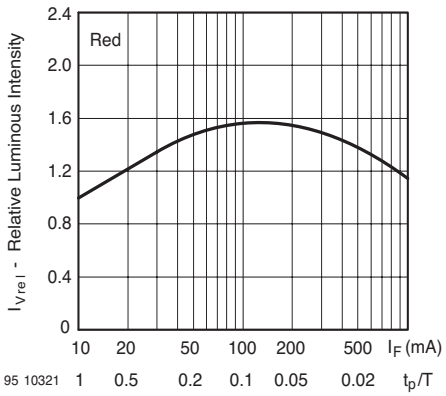


Figure 6. Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

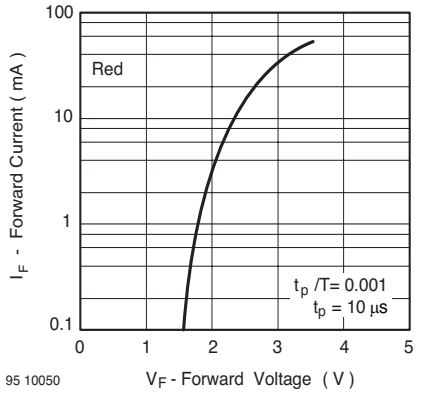


Figure 4. Forward Current vs. Forward Voltage

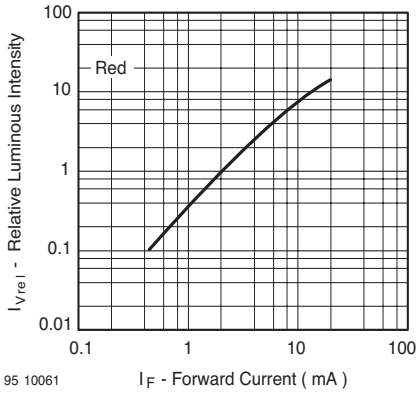


Figure 7. Relative Luminous Intensity vs. Forward Current

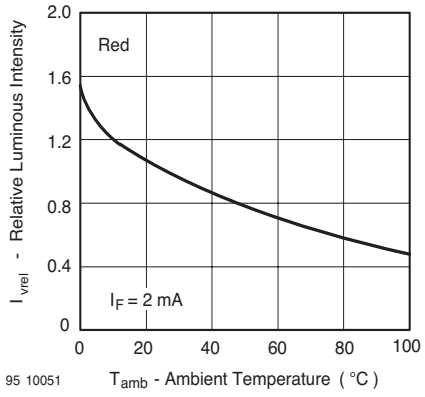


Figure 5. Rel. Luminous Intensity vs. Ambient Temperature

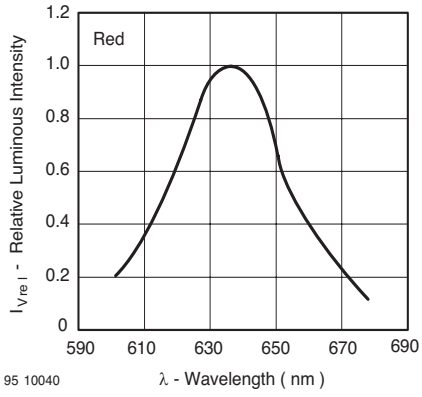
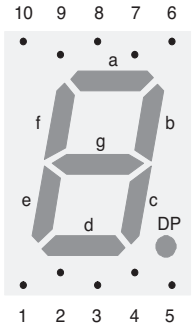


Figure 8. Relative Intensity vs. Wavelength



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

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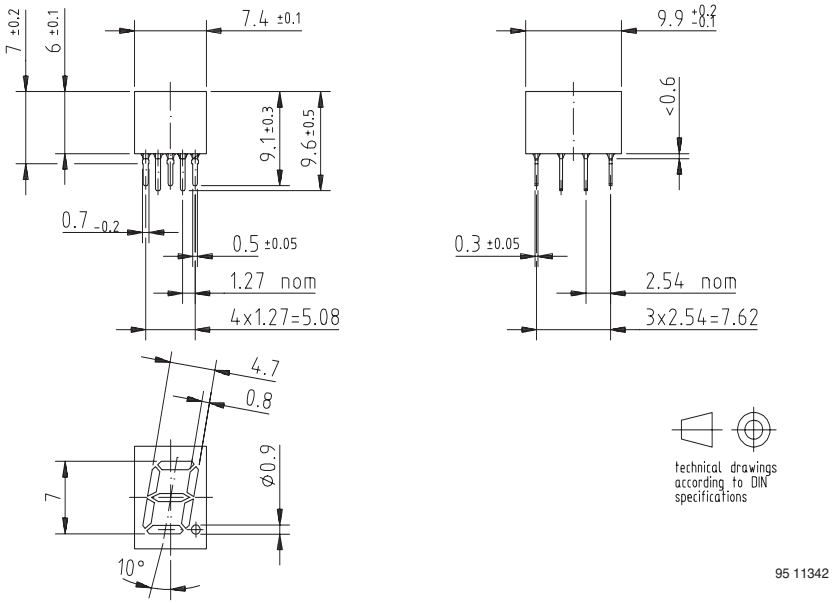
Package Dimensions in mm



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Ozone Depleting Substances Policy Statement

It is the policy of **Vishay Semiconductor GmbH** to

1. Meet all present and future national and international statutory requirements.
2. Regularly and continuously improve the performance of our products, processes, distribution and operatingsystems 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).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively
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.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

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