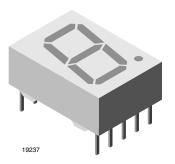


Low Current 13 mm 7-Segment Display



DESCRIPTION

The TDSL51.0 series are 13 mm character seven segment low current LED displays in a very compact package.

The displays are designed for a viewing distance up to 7 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 appearence.

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

Due to the design of 13 mm displays, a certain amount of cross-talk between segments is unavoidable. This light leakage becomes more noticeable as the brightness of the operated segments increases. However, higher environmental illumination, or a partially transparent cover, may reduce this effect. Therefore, it's important to consider this phenomenon during design-in and to validate suitability for the particular application and all its operation modes.

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





ROHS

APPLICATIONS

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

PRODUCT GROUP AND PACKAGE DATA

• Product group: display

Package: 13 mm

Product series: low current
Angle of half intensity: ± 50°

PARTS TABLE															
PART COLOF		LUMINOUS INTENSITY (µcd)			at I _F	WAVELENGTH (nm)			at I _F				at I _F	CIRCUITRY	
		MIN.	TYP.	MAX.	(mA)	MIN.	TYP.	MAX.	(mA)	MIN.	TYP.	MAX.	(mA)		
TDSL5150	Red	280	400	-	2	612	-	625	2	-	1.8	2.4	2	Common anode	
TDSL5160	Red	280	400	-	2	612	-	625	2	-	1.8	2.4	2	Common cathode	

ABSOLUTE MAXIMUM RATINGS (T _{amb} = 25 °C, unless otherwise specified) TDSL5150, TDSL5160							
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	$t_p \le 10 \mu s$ (non repetitive)	I _{FSM}	100	mA			
Power dissipation	T _{amb} ≤ 45 °C	P _V	320	mW			
Junction temperature		Tj	100	°C			
Operating temperature range		T _{amb}	-40 to +85	°C			
Storage temperature range		T _{stg}	-40 to +85	°C			
Soldering temperature	$t \le 3$ s, 2 mm below seating plane	T _{sd}	260	°C			
Thermal resistance LED junction to ambient		R _{thJA}	180	K/W			



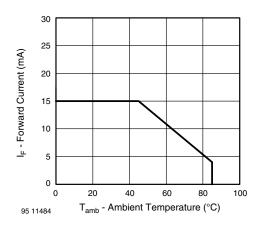
OPTICAL AND ELECTRICAL CHARACTERISTICS ($T_{amb} = 25$ °C, unless otherwise specified) TDSL5150, TDSL5160, RED							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
	I _E = 2 mA	TDSL5150	I _V	280	400	-	- µcd
Luminous intensity per segment (1)		TDSL5160	I _V	280	400	-	
(digit average)	$I_F = 5 \text{ mA}$		Ι _V	-	1600	-	
	$I_F = 20 \text{ mA}, t_p/T = 0.25$		I _V	-	2000	-	
Dominant wavelength	$I_F = 2 \text{ mA}$		λ_{d}	612	=.	625	nm
Peak wavelength	I _F = 2 mA		λρ	-	635	-	nm
Angle of half intensity	$I_F = 2 \text{ mA}$	TDSL5150, TDSL5160	φ	-	± 50	-	0
Familiary was a semant	$I_F = 2 \text{ mA}$		V_{F}	-	1.8	2.4	V
Forward voltage per segment	I _F = 20 mA		V _F	-	2.7	3	V
Reverse voltage per segment	I _F = 10 μA		V _R	6	20	-	V
Junction capacitance	V _R = 0 V, f = 1 MHz		C _j	-	30	-	pF

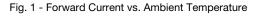
Note

 $l_{Vmin.}$ and l_{V} groups are mean values of all segments (a to g), matching factor within segments is \geq 0.5, excluding decimal points and colon

LUMINOUS INTENSITY CLASSIFICATION						
GROUP	LIGHT INTENSITY (µcd)					
STANDARD	MIN.	MAX.				
E	180	360				
F	280	560				
G	450	900				
Н	700	1400				
I	1100	2200				
К	1800	3600				

TYPICAL CHARACTERISTICS (T_{amb} = 25 °C, unless otherwise specified)





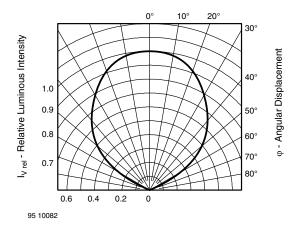


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

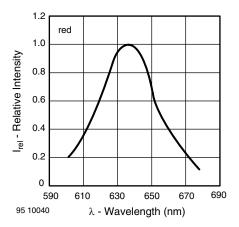


Fig. 3 - Relative Intensity vs. Wavelength

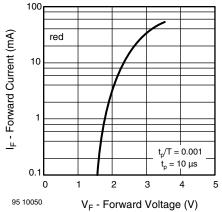


Fig. 4 - Forward Current vs. Forward Voltage

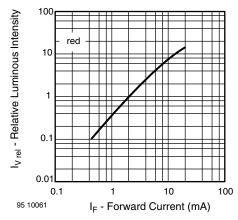


Fig. 5 - Relative Luminous Intensity vs. Forward Current

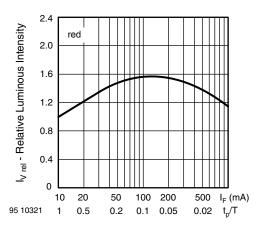


Fig. 6 - Relative Luminous Intensity vs. Forward Current/Duty Cycle

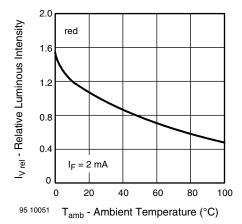


Fig. 7 - Relative Luminous Intensity vs. Ambient Temperature

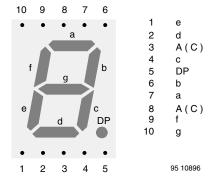
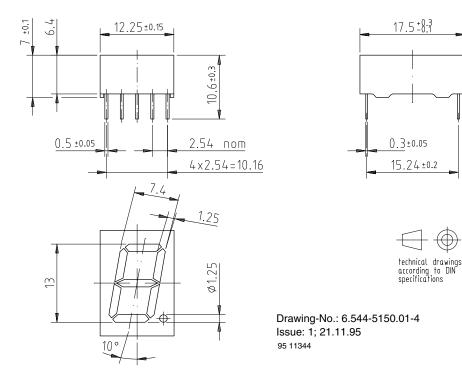


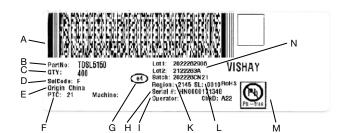
Fig. 8 - TDSL51..



PACKAGE DIMENSIONS in millimeters



LABEL OF FAN FOLD BOX (example)

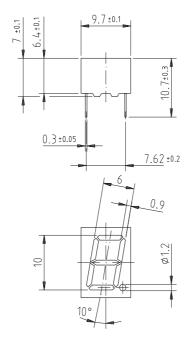


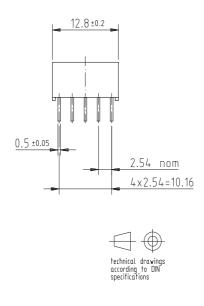
- A. 2D barcode
- B. Part No: Vishay part number
- C. QTY: quantity
- D. SelCode: selection bin code
- E. Country of origin
- F. PTC: production plant code
- G. Termination finish
- H. Region code
- I. Serial#: serial number
- K. Batch number: year, week, country code, plant code
- L. SL: storage location
- M. Environmental symbols: RoHS, lead (Pb)-free, halogen-free
- N. Lot numbers



Display-10 mm

Package Dimensions in mm





Display-10 mm

Vishay Semiconductors



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- 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).

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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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We reserve the right to make changes to improve technical design and may do so without further notice.

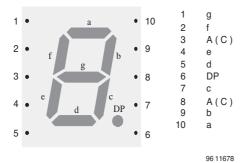
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www.vishay.com Document Number 83924 Rev. 1.1, 25-Mar-04



Pin Connections 10 mm



Document Number 83993 www.vishay.com Rev. 1.1, 07-Jul-04

Pin Connections 10 mm

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