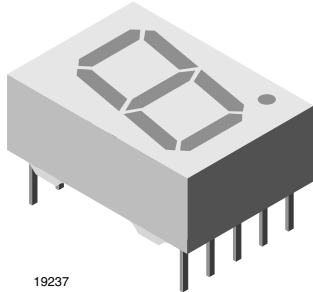


Low Current 13 mm Seven Segment Display



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 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
- Control units

PRODUCT GROUP AND PACKAGE DATA

- Product group: display
- Package: 13 mm
- Product series: low current
- Angle of half intensity: $\pm 50^\circ$

PARTS TABLE

PART	COLOR	LUMINOUS INTENSITY at 2 mA	CIRCUITRY
TDSL5150	Red	$I_V = 400 \mu\text{cd}$ (typ.)	Common anode
TDSL5150-GH	Red	$I_V = (450 \text{ to } 1400) \mu\text{cd}$	Common anode
TDSL5160	Red	$I_V = 400 \mu\text{cd}$ (typ.)	Common cathode
TDSL5160-GH	Red	$I_V = (450 \text{ to } 1400) \mu\text{cd}$	Common cathode

ABSOLUTE MAXIMUM RATINGS ⁽¹⁾ 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	$t_p \leq 10 \mu\text{s}$ (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

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

OPTICAL AND ELECTRICAL CHARACTERISTICS ⁽¹⁾ TDSL5150, TDSL5160, RED							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
Luminous intensity per segment ⁽²⁾ (digit average)	$I_F = 2 \text{ mA}$	TDSL5150	I_V	280	400	-	μcd
		TDSL5150-GH	I_V	450	-	1400	
		TDSL5160	I_V	280	400	-	
		TDSL5160-GH	I_V	450	-	1400	
	$I_F = 5 \text{ mA}$	TDSL5150, TDSL5160	I_V	-	1600	-	
	$I_F = 20 \text{ mA}, t_p/T = 0.25$		I_V	-	2000	-	
Dominant wavelength	$I_F = 2 \text{ mA}$	TDSL5150, TDSL5160	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	$I_F = 10 \mu\text{A}$		V_R	6	20	-	V
Junction capacitance	$V_R = 0 \text{ V}, f = 1 \text{ MHz}$		C_j	-	30	-	pF

Notes

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

(2) $I_{V\text{min}}$ and I_V groups are mean values of all segments (a to g, D1 to D4), matching factor within segments is ≥ 0.5 , excluding decimal points and colon.

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

BASIC CHARACTERISTICS

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

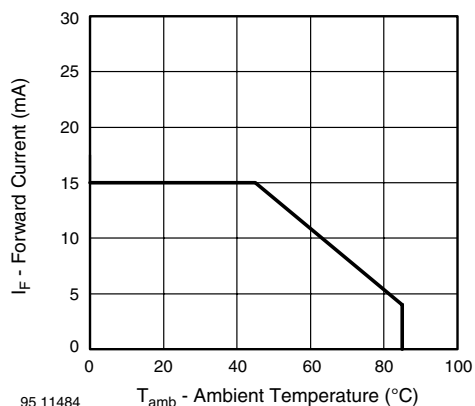


Fig. 1 - Forward Current vs. Ambient Temperature

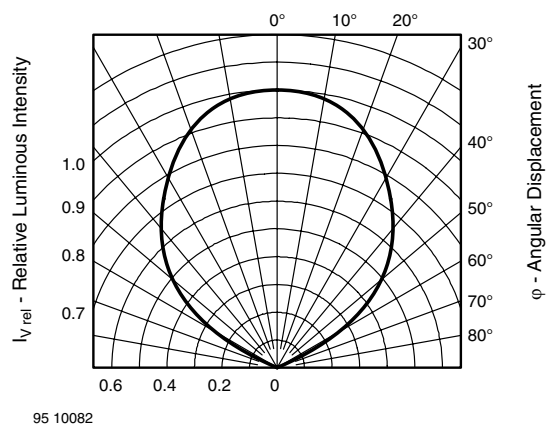


Fig. 2 - Rel. Luminous Intensity vs. Angular Displacement

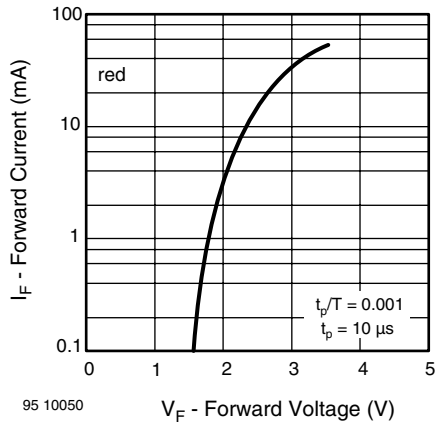


Fig. 3 - Forward Current vs. Forward Voltage

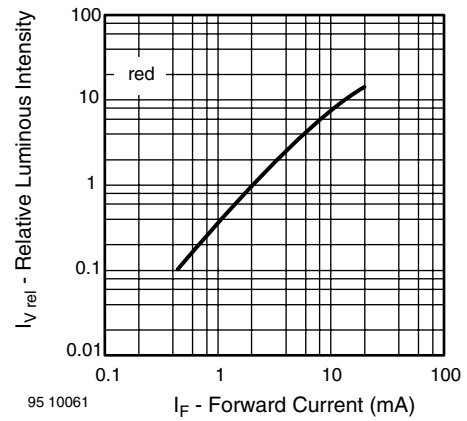


Fig. 6 - Relative Luminous Intensity vs. Forward Current

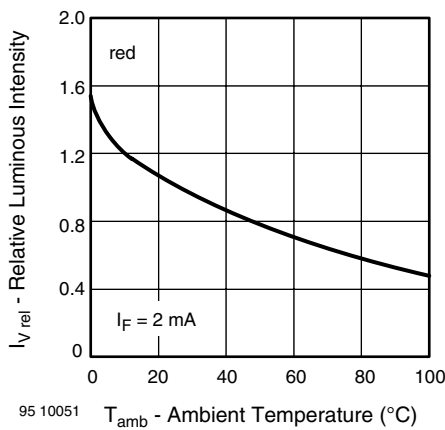


Fig. 4 - Rel. Luminous Intensity vs. Ambient Temperature

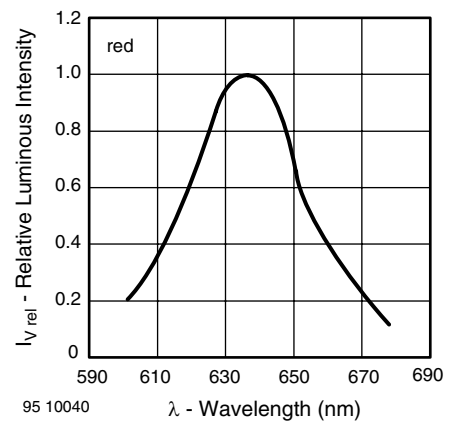


Fig. 7 - Relative Intensity vs. Wavelength

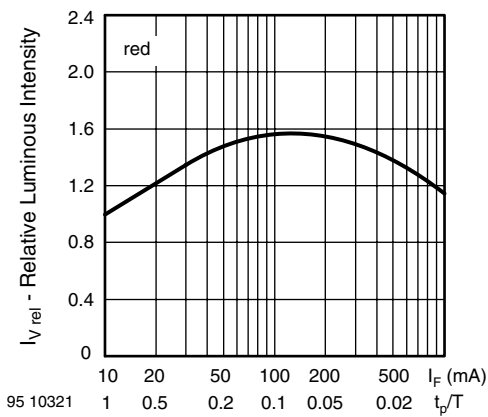
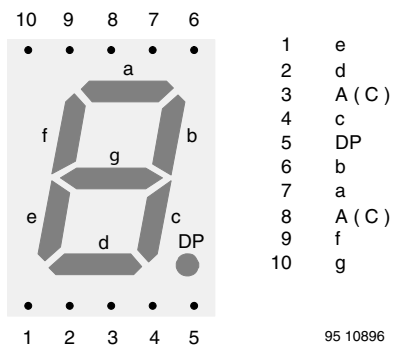


Fig. 5 - Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle

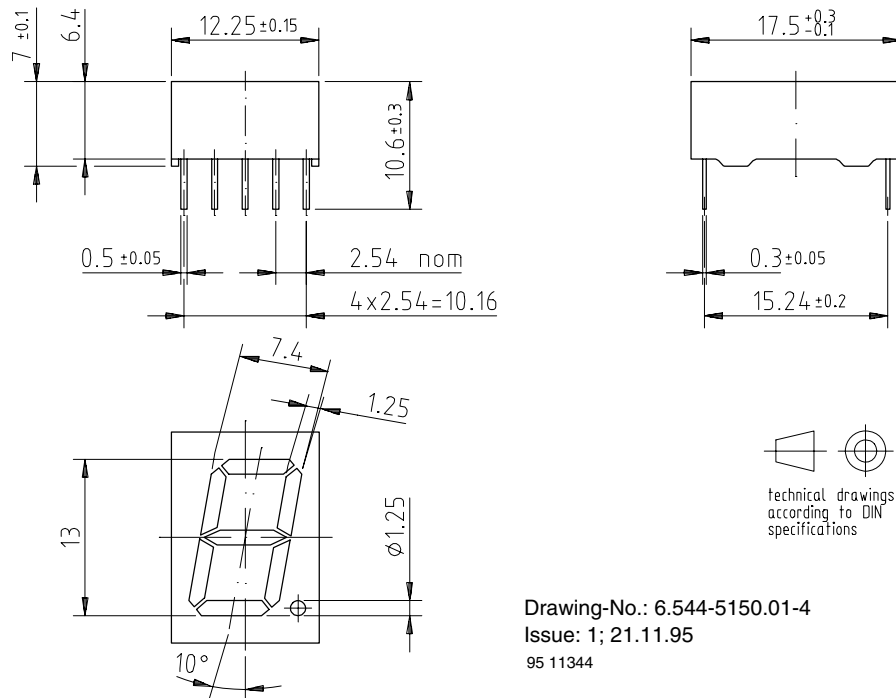


TDSL51..

Vishay Semiconductors Low Current 13 mm Seven Segment Display



PACKAGE DIMENSIONS in millimeters



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Issue: 1; 21.11.95
95 11344



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