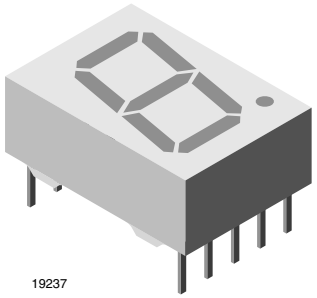
Low Current 13 mm Seven Segment Display



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

Pb-free

e4

RoHS COMPLIANT

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.

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	COLOR	LUMINOUS INTENSITY at 2 mA	CIRCUITRY
TDSL5150	Red	I_V = 400 µcd (typ.)	Common anode
TDSL5150-GH	Red	I_V = (450 to 1400) µcd	Common anode
TDSL5160	Red	I_V = 400 µcd (typ.)	Common cathode
TDSL5160-GH	Red	I_V = (450 to 1400) µcd	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	$t_p \leq 10$ µs (non repetitive)	I_{FSM}	100	mA
Power dissipation	$T_{amb} \leq 45$ °C	P_V	320	mW
Junction temperature		T_j	100	°C
Operating temperature range		T_{amb}	- 40 to + 85	°C
Storage temperature range		T_{stg}	- 40 to + 85	°C
Soldering temperature	t ≤ 3 s 2 mm below seating plane	T_{sd}	260	°C
Thermal resistance LED junction/ambient		R_{thJA}	180	K/W

Note

(1) T_{amb} = 25 °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 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 mA	TDSL5150, TDSL5160	I_V	-	1600	-	
	I_F = 20 mA, t_p/T = 0.25		I_V	-	2000	-	
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
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_F = 10 µA		V_R	6	20	-	V
Junction capacitance	V_R = 0 V, f = 1 MHz		C_j	-	30	-	pF

Notes

(1) T_{amb} = 25 °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 ≥ 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
H	700	1400
I	1100	2200
K	1800	3600

BASIC CHARACTERISTICS

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

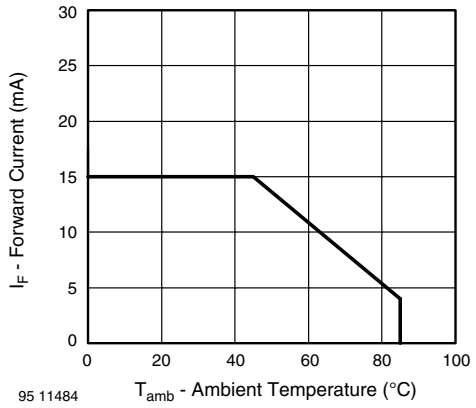


Fig. 1 - Forward Current vs. Ambient Temperature

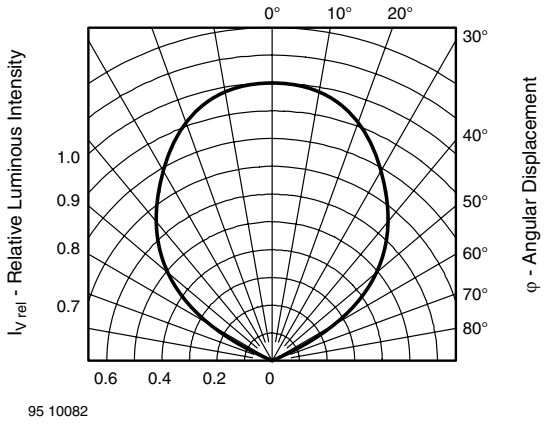


Fig. 2 - Rel. Luminous Intensity vs. Angular Displacement

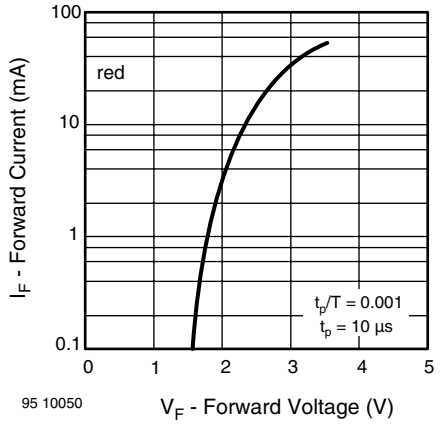


Fig. 3 - Forward Current vs. Forward Voltage

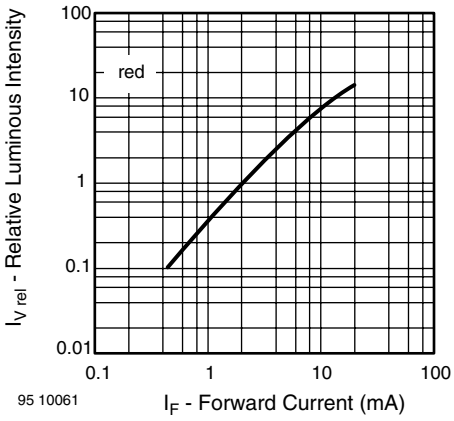


Fig. 6 - Relative Luminous Intensity vs. Forward Current

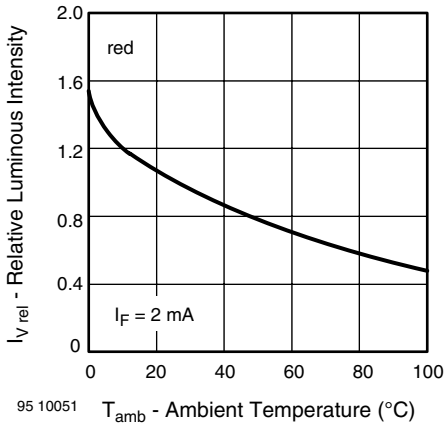


Fig. 4 - Rel. Luminous Intensity vs. Ambient Temperature

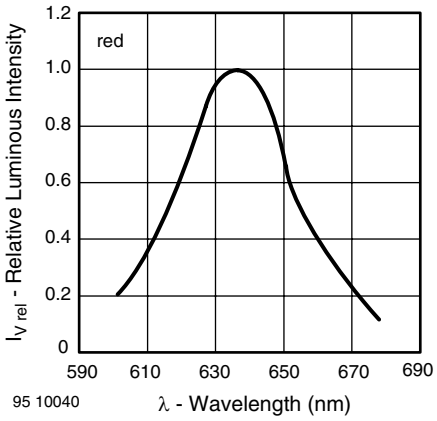


Fig. 7 - Relative Intensity vs. Wavelength

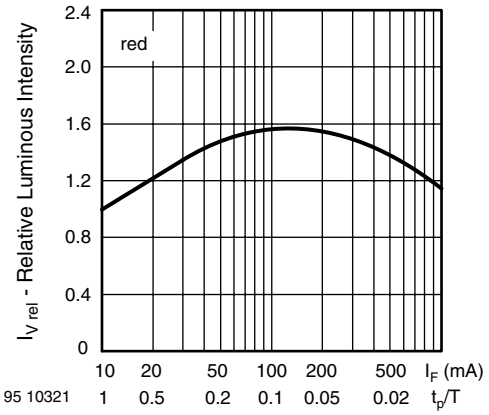
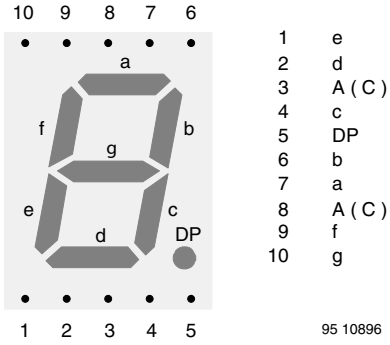
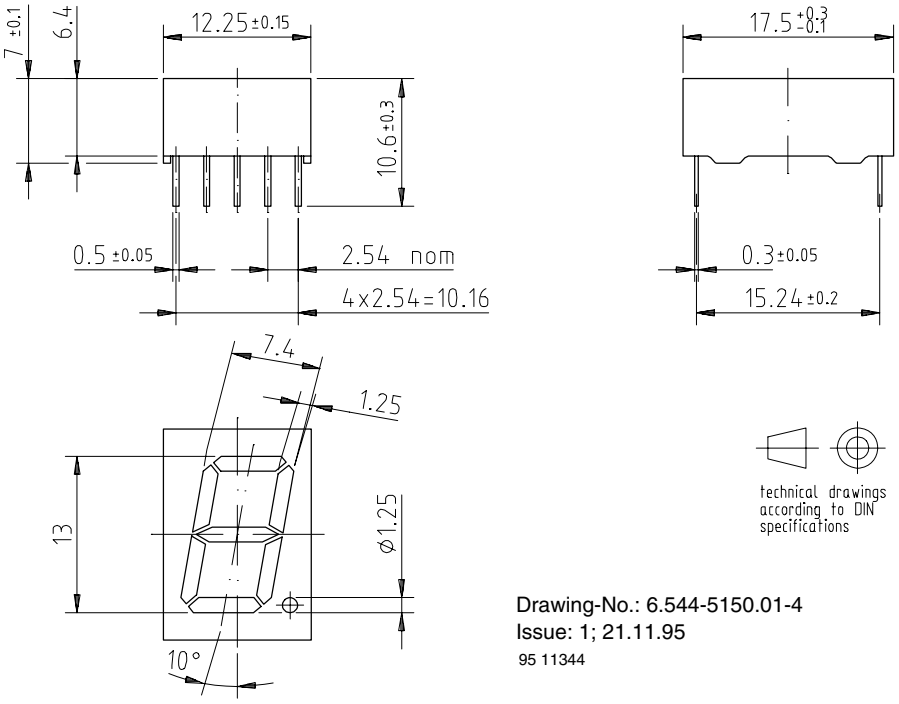


Fig. 5 - Rel. Lumin. Intensity vs. Forw. Current/Duty Cycle



PACKAGE DIMENSIONS in millimeters



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