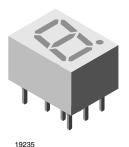


Vishay Semiconductors

High Intensity Red Low Current 7-Segment Display



DESCRIPTION

This series defines a new standard for low current displays. It is a single digit 7-segment LED display utilizing AllnGaP technology in color red.

The supreme light intensity allows applications under direct sunlight or "black front" designs by using tinted filter glass in front of the display.

Typical 1500 μ cd at 1 mA is best in class performance for applications with very limited power supply. The maximum forward current of 10 mA is allowed for an ambient temperature range of -40 °C to +85 °C without current derating.

Due to the design of 7 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

- 1500 µcd typical at 1 mA
- Very low power consumption
- · Wide viewing angle
- · Grey package surface
- Light intensity categorized at I_F = 1 mA
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912





RoHS COMPLIANT

APPLICATIONS

- · Battery driven instruments
- Telecom devices
- · Home appliances
- Instrumentation
- POS terminals

PRODUCT GROUP AND PACKAGE DATA

Product group: display

• Package: 7 mm

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

PARTS TABLE															
PART	LUMINOUS INTENSITY at WAVELENGTH (μcd) I _F (nm)			GTH	at I _F	FORWARD VOLTAGE (V)			at I _F	CIRCUITRY					
		MIN.	MIN. TYP. MAX. (m		(mA)	MIN.	TYP.	MAX.	(mA)	MIN.	TYP.	MAX.	(mA)		
TDSR0750	Red	180	-	2200	1	-	640	-	1	-	1.8	2.4	1	Common anode	
TDSR0750-HI	Red	700	-	2200	1	-	640	-	1	1	1.8	2.4	1	Common anode	
TDSR0760	Red	180	-	2200	1	-	640	-	1	-	1.8	2.4	1	Common cathode	

ABSOLUTE MAXIMUM RATINGS ($T_{amb} = 25$ °C, unless otherwise specified) TDSR0750, TDSR0750-HI, TDSR0760						
PARAMETER	TEST CONDITION	SYMBOL	VALUE	UNIT		
Reverse voltage per segment		V_R	5	V		
DC forward current per segment		I _F	10	mA		
Peak forward current per segment	t _p ≤ 10 μs, duty cycle 1/10	I _{FM}	50	mA		
Power dissipation	T _{amb} ≤ 85 °C	P _V	185	mW		
Junction temperature		Tj	105	°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}	100	K/W		



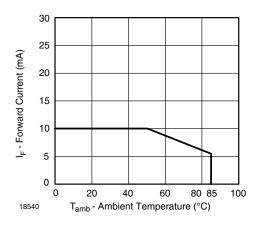
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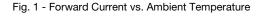
OPTICAL AND ELECTRICAL CHARACTERISTICS (T _{amb} = 25 °C, unless otherwise specified) TDSR0750, TDSR0750-HI, TDSR0760, RED							
PARAMETER	TEST CONDITION	PART	SYMBOL	MIN.	TYP.	MAX.	UNIT
	I _F = 1 mA	TDSR0750	I _V	180	-	2200	μcd
Luminous intensity per segment (digit average)		TDSR0750-HI		700	-	2200	
(digit avoidgo)		TDSR0760		180	-	2200	
Dominant wavelength	I _F = 1 mA		λ_{d}	-	640	-	nm
Peak wavelength	$I_F = 1 \text{ mA}$	TDSR0750,	λ_{p}	-	650	=.	nm
Angle of half intensity	I _F = 1 mA	TDSR0750-HI,	φ	-	± 50	=.	0
Forward voltage per segment or DP	I _F = 1 mA	TDSR0760	V _F	-	1.8	2.4	V
Reverse voltage per segment or DP	V _R = 6 V		I _R	-	10	-	μΑ

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

Note

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





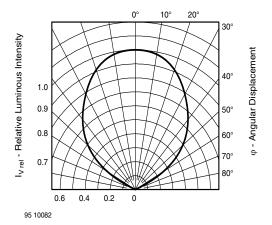


Fig. 2 - Relative Luminous Intensity vs. Angular Displacement

The above type numbers represent the order groups which include only a few brightness groups. Only one group will be shipped in one tube
(there will be no mixing of two groups in one tube).
 In order to ensure availability, single brightness groups will not be orderable.

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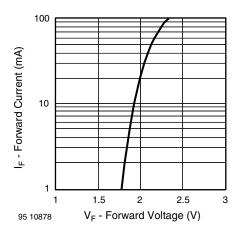


Fig. 3 - Forward Current vs. Forward Voltage

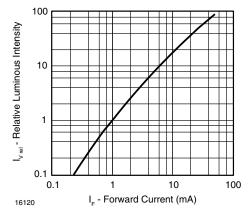


Fig. 4 - Relative Luminous Intensity vs. Forward Current

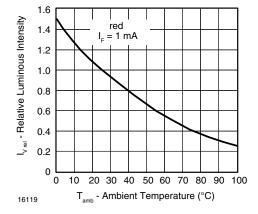


Fig. 5 - Relative Luminous Intensity vs. Ambient Temperature

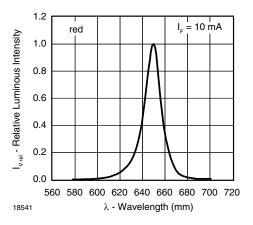


Fig. 6 - Relative Luminous Intensity vs. Ambient Temperature

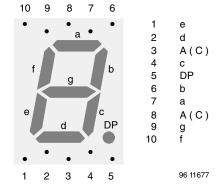


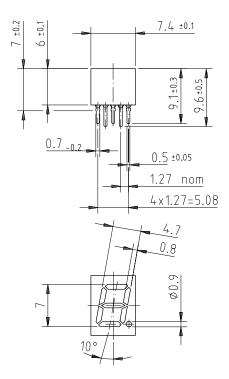
Fig. 7 - TDSR07..

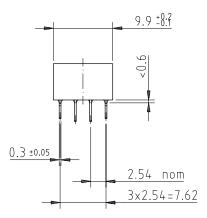


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PACKAGE DIMENSIONS FOR TDSR07.. in millimeters







Drawing-No.: 6.544-5083.01-4

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