High Intensity Red Low Current Seven Segment Display

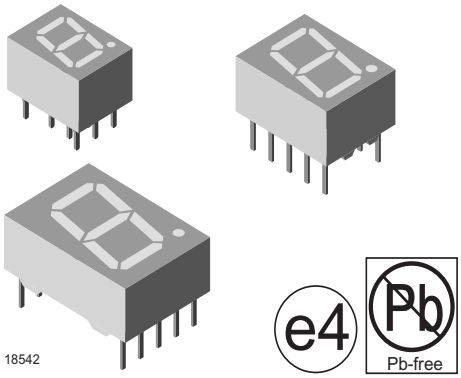
Description

This series defines a new standard for Low Current Displays. It is a single digit 7-Segment LED display utilizing AlInGaP 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 µcd at 1.0 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° to +85° C without current derating.

Crosstalk between segments is possible at drive currents above 5 mA per segment. Therefore it is recommend to apply more than 5 mA only under direct sunlight or with tinted filter glass.



Applications

Battery driven instruments
Telecom devices
Home appliances
Instrumentation
POS Terminals

Features

- 1500 µcd typical at 1.0 mA
- Very low power consumption
- Wide viewing angle
- Grey package surface
- Light intensity categorized at I_F= 1.0mA
- Lead-free device

Parts Table

Part	Color, Luminous Intensity	Circuitry
TDSR0750	High intensity low current red	Common anode
TDSR0760	High intensity low current red	Common cathode
TDSR1050	High intensity low current red	Common anode
TDSR1060	High intensity low current red	Common cathode
TDSR1350	High intensity low current red	Common anode
TDSR1360	High intensity low current red	Common cathode

Absolute Maximum Ratings

T_{amb} = 25 °C, unless otherwise specified
TDSR0750/0760 , TDSR1050/1060 , TDSR1350/1360

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	$t_p \leq 10$ µs, duty cycle 1/10	I_{FM}	50	mA

Parameter	Test condition	Symbol	Value	Unit
Power dissipation	$T_{amb} \leq 85°C$	P_V	185	mW
Junction temperature		T_j	105	°C
Operating temperature range		T_{amb}	- 40 to + 85	°C
Storage temperature range		T_{stg}	- 40 to + 85	°C
Soldering temperature	t ≤ 3 sec, 2mm below seating plane	T_{sd}	260	°C
Thermal resistance LED junction/ambient		R_{thJA}	100	K/W

Optical and Electrical Characteristics

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

Red

Parameter	Test condition	Symbol	Min	Typ.	Max	Unit
TDSR0750, TDSR0760						
Luminous intensity per segment (digit average)	I_F = 1 mA	I_V	180		2200	µcd
Dominant wavelength	I_F = 1 mA	λ_d		640		nm
Peak wavelength	I_F = 1 mA	λ_p		650		nm
Forward voltage per segment or DP	I_F = 1 mA	V_F		1.8	2.4	V
Reverse voltage per segment or DP	V_R = 6 V	I_R		10		µA
TDSR1050, TDSR1060						
Luminous intensity per segment (digit average)	I_F = 1 mA	I_V	280		3600	µcd
Dominant wavelength	I_F = 1 mA	λ_d		640		nm
Peak wavelength	I_F = 1 mA	λ_p		650		nm
Forward voltage per segment or DP	I_F = 1 mA	V_F		1.8	2.4	V
Reverse voltage per segment or DP	V_R = 6 V	I_R		10		µA
TDSR1350, TDSR1360						
Luminous intensity per segment (digit average)	I_F = 1 mA	I_V	280		3600	µcd
Dominant wavelength	I_F = 1 mA	λ_d		640		nm
Peak wavelength	I_F = 1 mA	λ_p		650		nm
Forward voltage per segment or DP	I_F = 1 mA	V_F		1.8	2.4	V
Reverse voltage per segment or DP	V_R = 6 V	I_R		10		µA

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

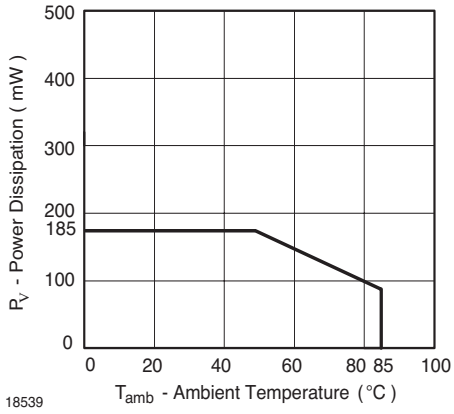


Figure 1. Power Dissipation vs. Ambient Temperature

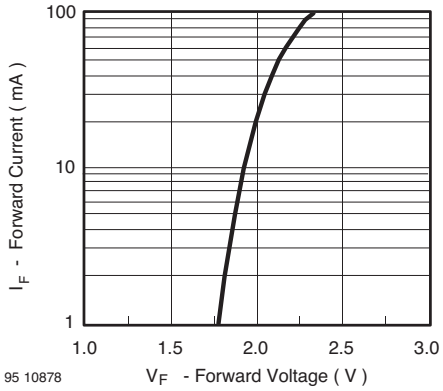


Figure 4. Forward Current vs. Forward Voltage

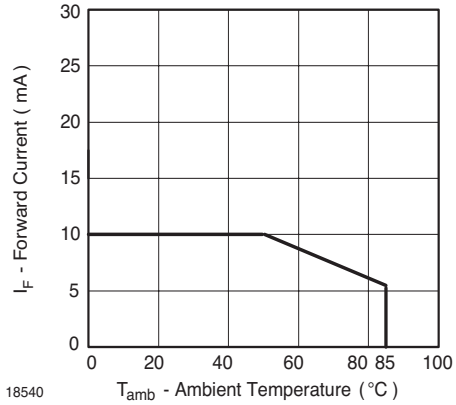


Figure 2. Forward Current vs. Ambient Temperature

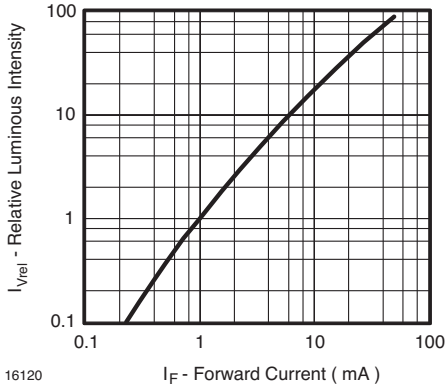


Figure 5. Relative Luminous Intensity vs. Forward Current

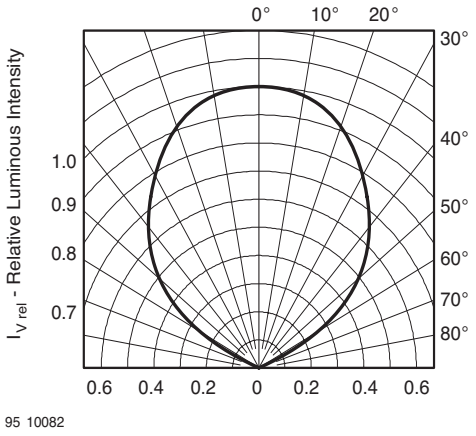


Figure 3. Rel. Luminous Intensity vs. Angular Displacement

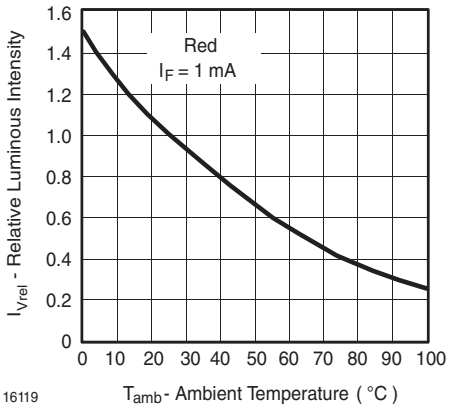


Figure 6. Rel. Luminous Intensity vs. Ambient Temperature

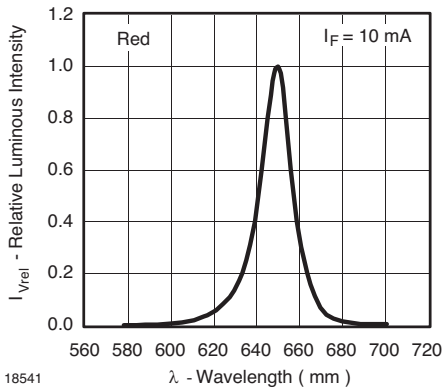
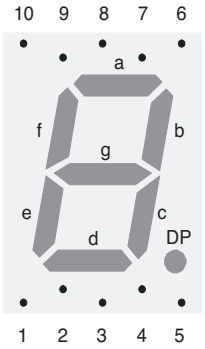
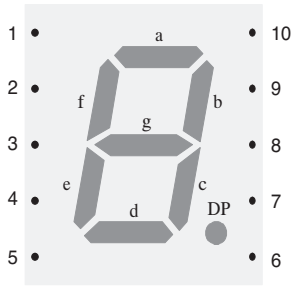


Figure 7. Rel. Luminous Intensity vs. Ambient Temperature



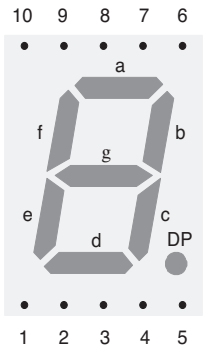
1	e
2	d
3	A (C)
4	c
5	DP
6	b
7	a
8	A (C)
9	g
10	f

96 11677



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

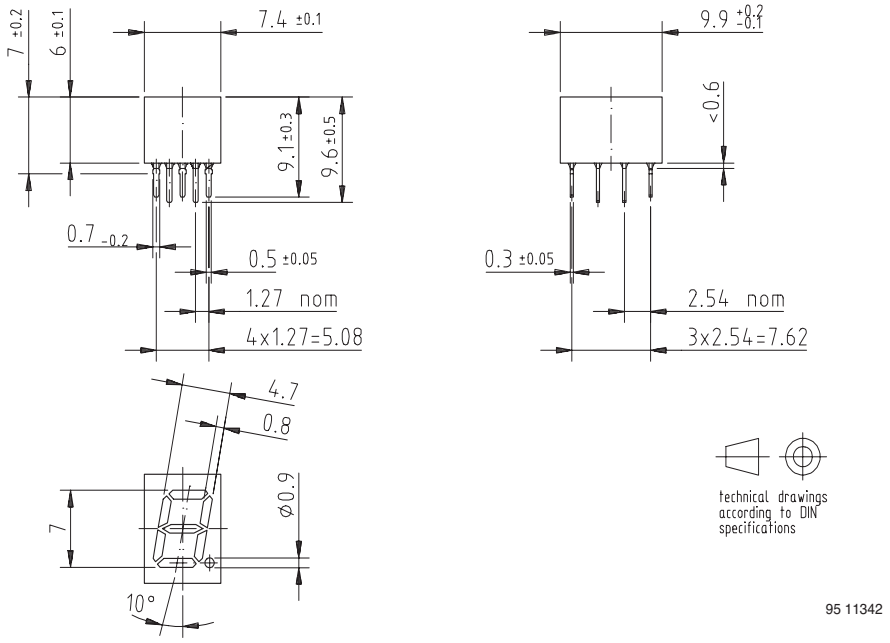
96 11678



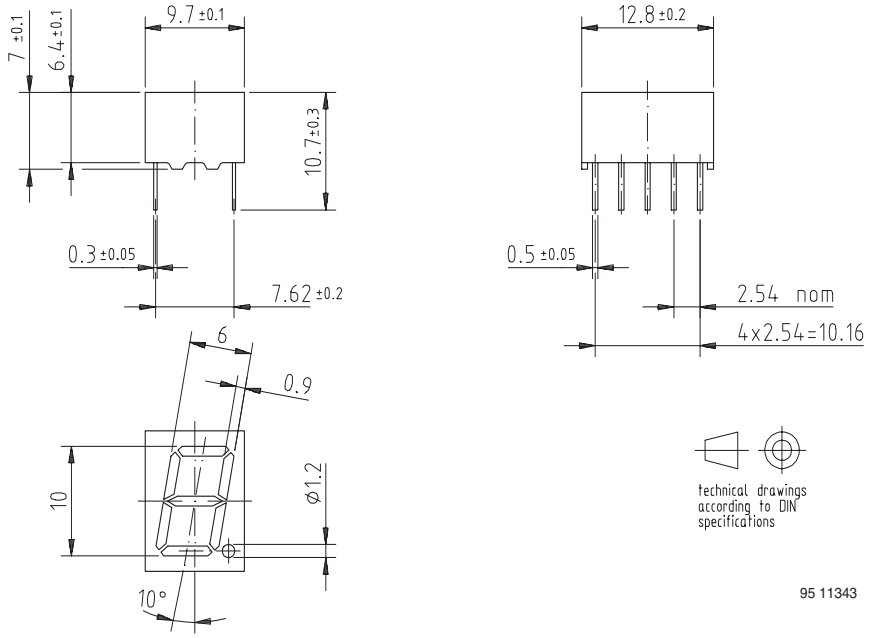
1	e
2	d
3	A (C)
4	c
5	DP
6	b
7	a
8	A (C)
9	f
10	g

95 10896

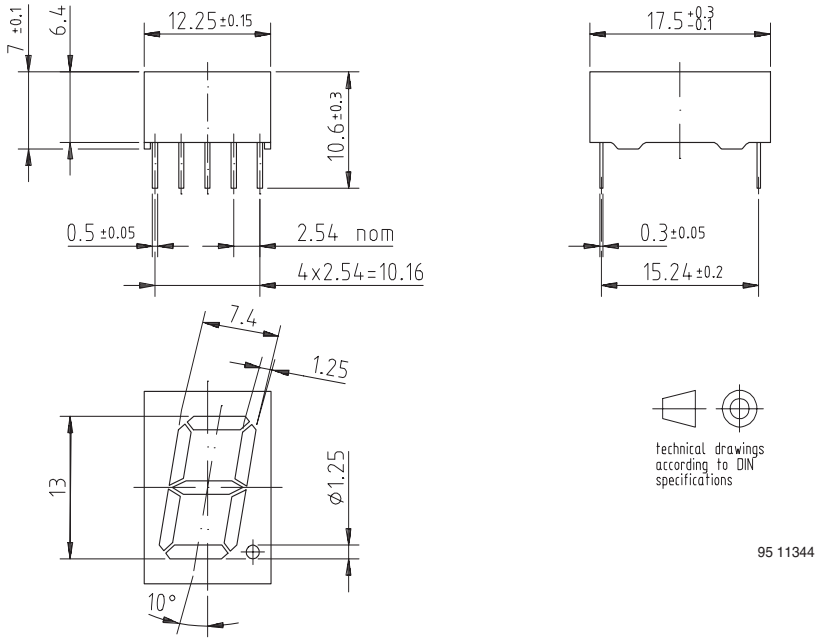
Package Dimensions in mm



Package Dimensions in mm



Package Dimensions in mm



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.

Vishay Semiconductor GmbH, P.O.B. 3535, D-74025 Heilbronn, Germany
Telephone: 49 (0)7131 67 2831, Fax number: 49 (0)7131 67 2423

Notice

Specifications of the products displayed herein are subject to change without notice. Vishay Intertechnology, Inc., or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Information contained herein is intended to provide a product description only. No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document. Except as provided in Vishay's terms and conditions of sale for such products, Vishay assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of Vishay products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Vishay for any damages resulting from such improper use or sale.