

# ADSP-H1x1/H1x3

## 1.0" Single Digit PCB Based LED Display



## Datasheet

### Description

This is 1.0" height single digit display. It utilizes AlInGaP Red, Orange, Yellow, Green and Deep Red chips. This device is halogenated.

All devices are categorized for luminous intensity. The orange, yellow and green devices are categorized for color. Use of similar device categories will yield a uniform display.

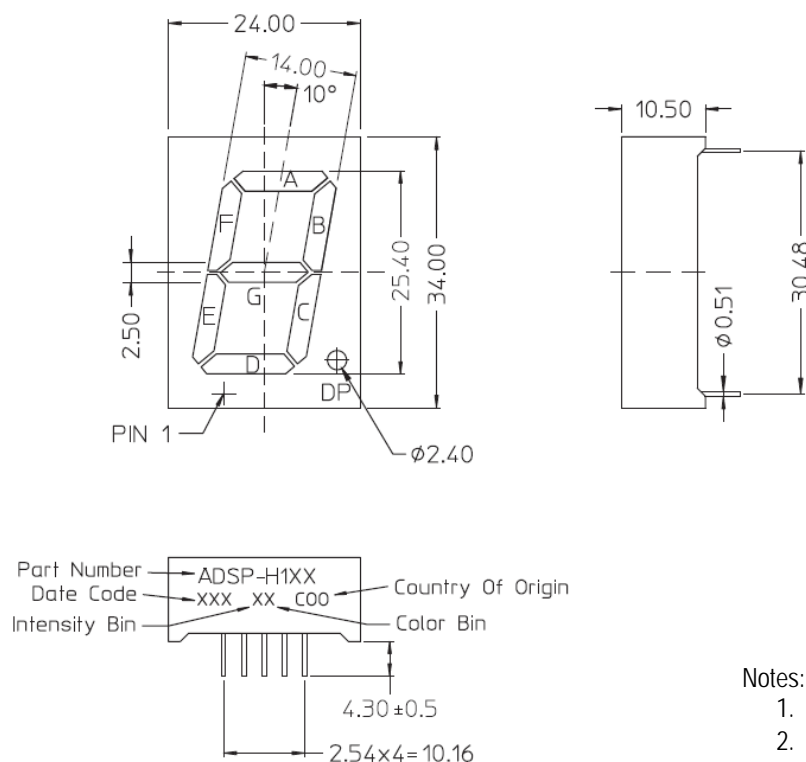
### Features

- High reliability
- Excellent characters appearance
- Available in CA and CC
- RoHS Compliant
- Gray top surface with white diffused segments.

### Ordering Information

Red	Green	Yellow	Orange	Deep Red	Description
ADSP-H1E1	ADSP-H1G1	ADSP-H1Y1	ADSP-H1L1	ADSP-H1A1	Common Anode, Right Hand Decimal
ADSP-H1E3	ADSP-H1G3	ADSP-H1Y3	ADSP-H1L3	ADSP-H1A3	Common Cathode, Right Hand Decimal

### Package Dimensions



### Notes:

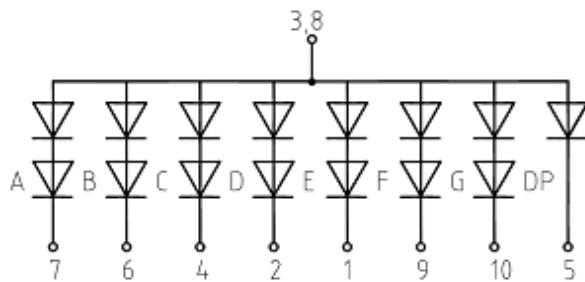
1. All dimensions are in millimeter.
2. Unless otherwise stated, the tolerance is  $\pm 0.25$ mm.

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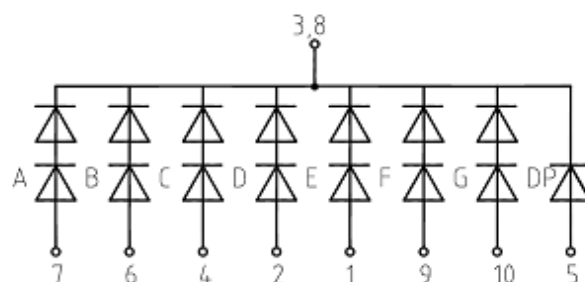


## Circuit Diagram

**Common Anode**



**Common Cathode**



## Absolute Maximum Ratings at $T_A = 25^\circ\text{C}$

Parameter	Symbol	Red/Yellow/ Orange/ Green/ Deep Red	Units
Power Dissipation per segment / Dot Point (DP)	$P_D$	104/52	mW
Continuous Forward Current per segment	$I_F$	20	mA
Peak Forward Current per segment (1/10 Duty Cycle, 0.1m sec pulse width)		100	mA
Derating Linearly from $25^\circ\text{C}$ per segment		0.21	mA/ $^\circ\text{C}$
Reverse Voltage per segment / DP	$V_R$	10/5	V
Operating Temperature	$T_O$	-40 to 85	$^\circ\text{C}$
Storage Temperature	$T_S$	-40 to 85	$^\circ\text{C}$
Wave solder Condition 1.6mm below body		260 $^\circ\text{C}$ peak for 3 secs max	

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# Electrical / Optical Characteristic at T<sub>A</sub> = 25°C

## Red

Parameter	Symbol	Min	Typ	Max	Units	Test Conditions
Average Luminous Intensity (Digit Average)	I <sub>V</sub>	—	70	—	mcd	I <sub>F</sub> = 10mA
Peak Wavelength	λ <sub>p</sub>	—	634	—	nm	I <sub>F</sub> = 20mA
Dominant Wavelength	λ <sub>d</sub>	—	625	—	nm	I <sub>F</sub> = 20mA
Forward Voltage per segment / DP	V <sub>F</sub>	—	4.0/2.0	5.2/2.6	V	I <sub>F</sub> = 20mA
Reverse Current per segment / DP	I <sub>R</sub>	—	—	100	μA	V <sub>R</sub> = 10V/ 5V(DP)
Luminous Intensity Matching Ratio (Segment to Segment)	I <sub>V-M</sub>		2:1			I <sub>F</sub> = 10mA

## Green

Parameter	Symbol	Min	Typ	Max	Units	Test Conditions
Average Luminous Intensity (Digit Average)	I <sub>V</sub>	—	25	—	mcd	I <sub>F</sub> = 10mA
Peak Wavelength	λ <sub>p</sub>	—	570	—	nm	I <sub>F</sub> = 20mA
Dominant Wavelength	λ <sub>d</sub>	—	571	—	nm	I <sub>F</sub> = 20mA
Forward Voltage per segment / DP	V <sub>F</sub>	—	4.0/2.0	5.2/2.6	V	I <sub>F</sub> = 20mA
Reverse Current per segment / DP	I <sub>R</sub>	—	—	100	μA	V <sub>R</sub> = 10V/ 5V(DP)
Luminous Intensity Matching Ratio (Segment to Segment)	I <sub>V-M</sub>		2:1			I <sub>F</sub> = 10mA

## Yellow

Parameter	Symbol	Min	Typ	Max	Units	Test Conditions
Average Luminous Intensity (Digit Average)	I <sub>V</sub>	—	60	—	mcd	I <sub>F</sub> = 10mA
Peak Wavelength	λ <sub>p</sub>	—	592	—	nm	I <sub>F</sub> = 20mA
Dominant Wavelength	λ <sub>d</sub>	—	587	—	nm	I <sub>F</sub> = 20mA
Forward Voltage per segment / DP	V <sub>F</sub>	—	4.0/2.0	5.2/2.6	V	I <sub>F</sub> = 20mA
Reverse Current per segment / DP	I <sub>R</sub>	—	—	100	μA	V <sub>R</sub> = 10V/ 5V(DP)
Luminous Intensity Matching Ratio (Segment to Segment)	I <sub>V-M</sub>		2:1			I <sub>F</sub> = 10mA

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### Orange

Parameter	Symbol	Min	Typ	Max	Units	Test Conditions
Average Luminous Intensity (Digit Average)	$I_V$	—	80	—	mcd	$I_F = 10\text{mA}$
Peak Wavelength	$\lambda_P$	—	610	—	nm	$I_F = 20\text{mA}$
Dominant Wavelength	$\lambda_d$	—	605	—	nm	$I_F = 20\text{mA}$
Forward Voltage per segment / DP	$V_F$	—	4.0/2.0	5.2/2.6	V	$I_F = 20\text{mA}$
Reverse Current per segment / DP	$I_R$	—	—	100	$\mu\text{A}$	$V_R = 10\text{V}/5\text{V(DP)}$
Luminous Intensity Matching Ratio (Segment to Segment)	$I_{V-M}$		2:1			$I_F = 10\text{mA}$

### Deep Red

Parameter	Symbol	Min	Typ	Max	Units	Test Conditions
Average Luminous Intensity (Digit Average)	$I_V$	—	70	—	mcd	$I_F = 10\text{mA}$
Peak Wavelength	$\lambda_P$	—	644	—	nm	$I_F = 20\text{mA}$
Dominant Wavelength	$\lambda_d$	—	635	—	nm	$I_F = 20\text{mA}$
Forward Voltage per segment / DP	$V_F$	—	4.0/2.0	5.2/2.6	V	$I_F = 20\text{mA}$
Reverse Current per segment / DP	$I_R$	—	—	100	$\mu\text{A}$	$V_R = 10\text{V}/5\text{V(DP)}$
Luminous Intensity Matching Ratio (Segment to Segment)	$I_{V-M}$		2:1			$I_F = 10\text{mA}$

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Red

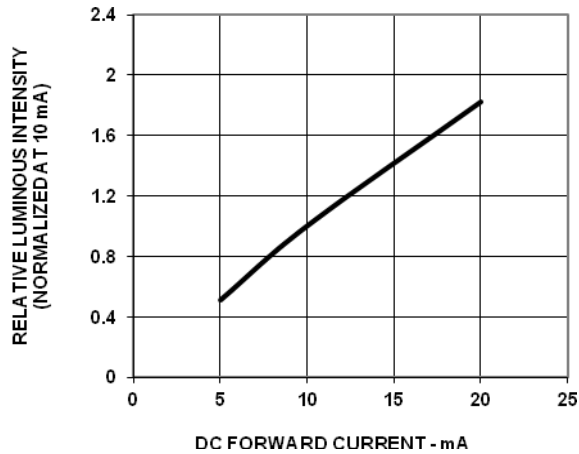


Fig 1: Relative Luminous Intensity Vs Forward Current

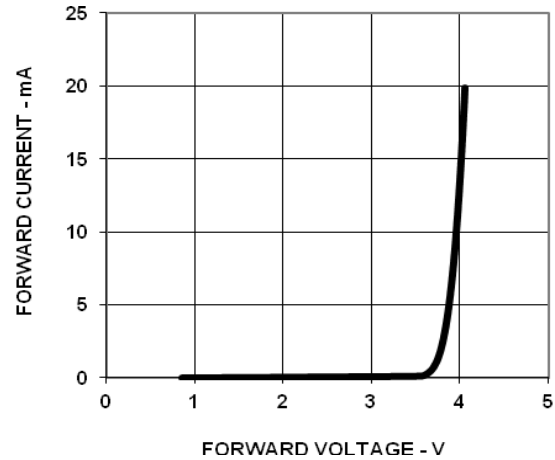


Fig 2: Forward Voltage Vs Current (Segment)

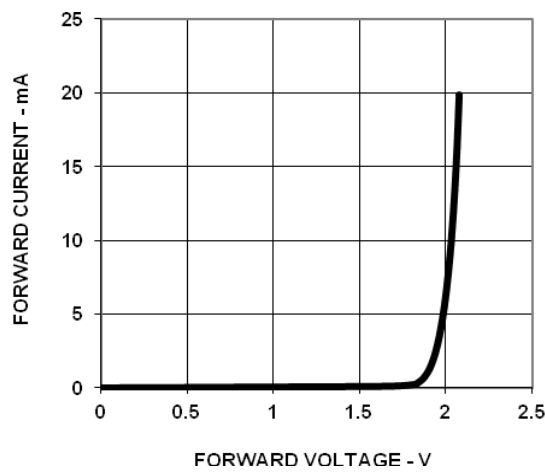


Fig 3: Forward Voltage Vs Current (DP)

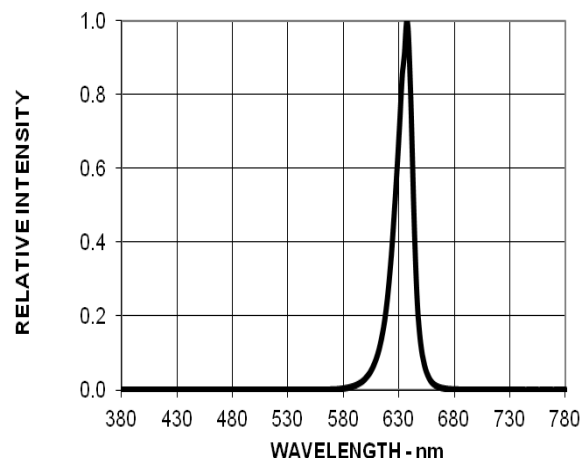


Fig 4: Relative Luminous Intensity Vs Wavelength

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Green

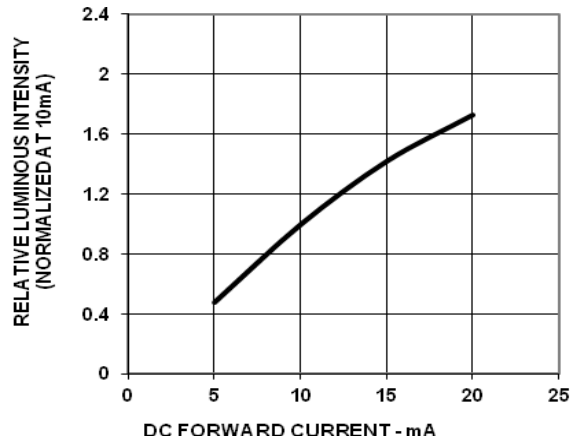


Fig 1: Relative Luminous Intensity Vs Forward Current

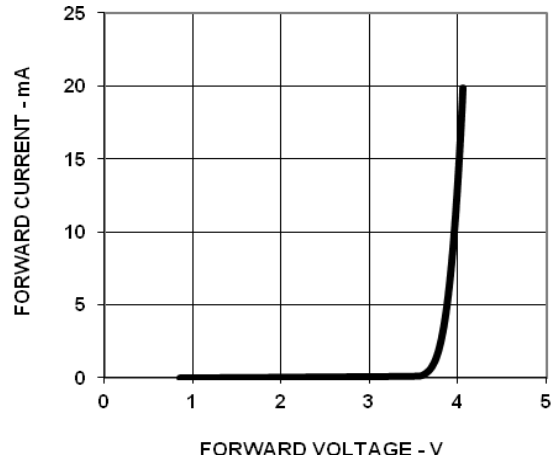


Fig 2: Forward Voltage Vs Current (Segment)

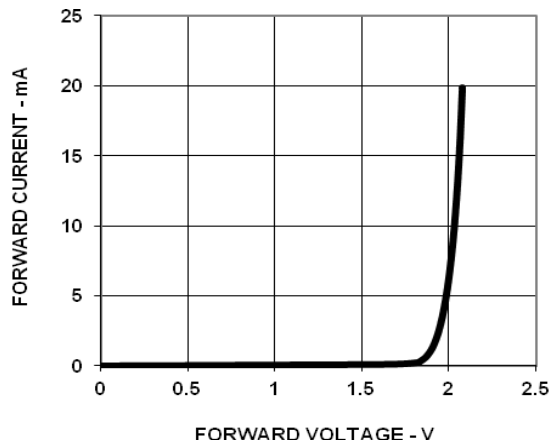


Fig 3: Forward Voltage Vs Current (DP)

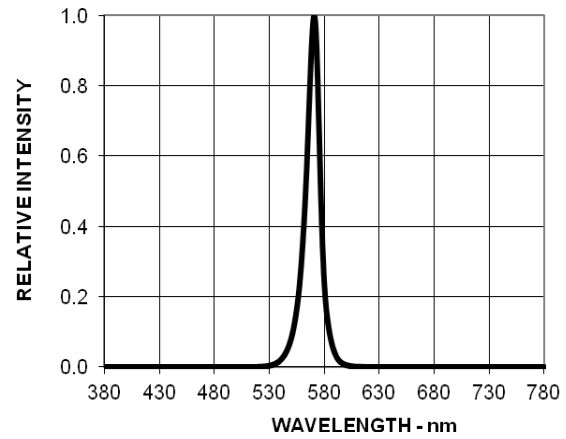


Fig 4: Relative Luminous Intensity Vs Wavelength

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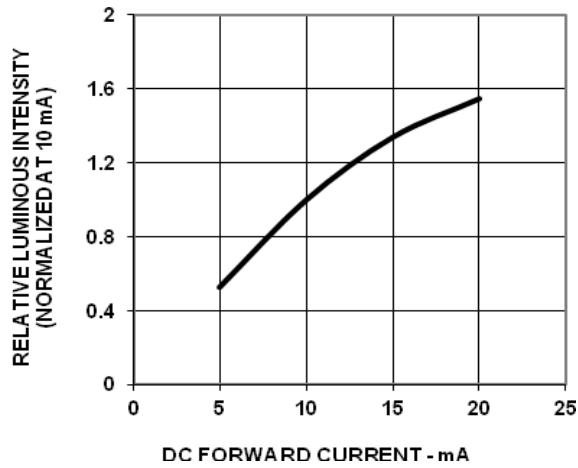


Fig 1: Relative Luminous Intensity Vs Forward Current

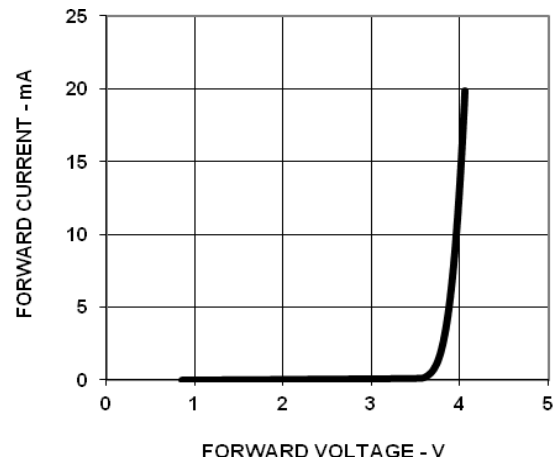


Fig 2: Forward Voltage Vs Current( Segment)

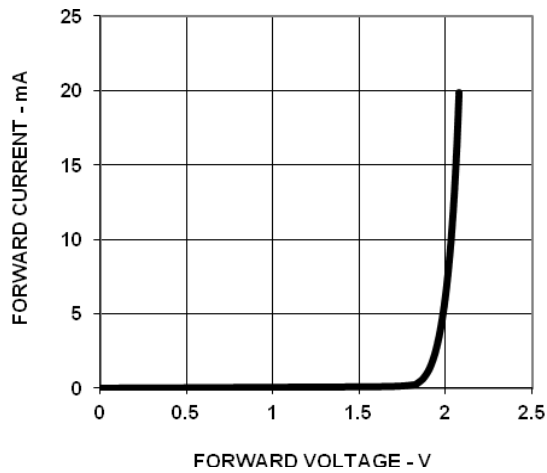


Fig 3: Forward Voltage Vs Current (DP)

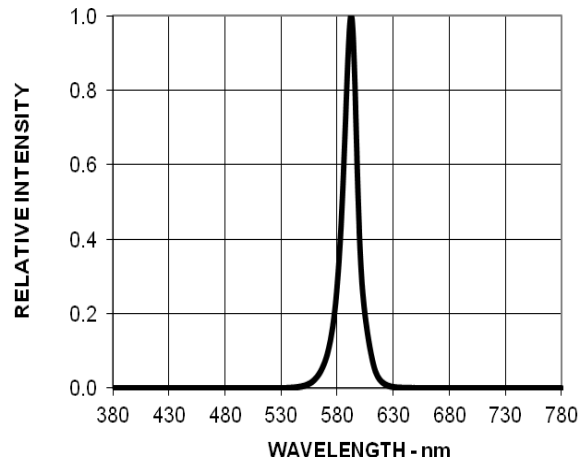


Fig 4: Relative Luminous Intensity Vs Wavelength

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Orange

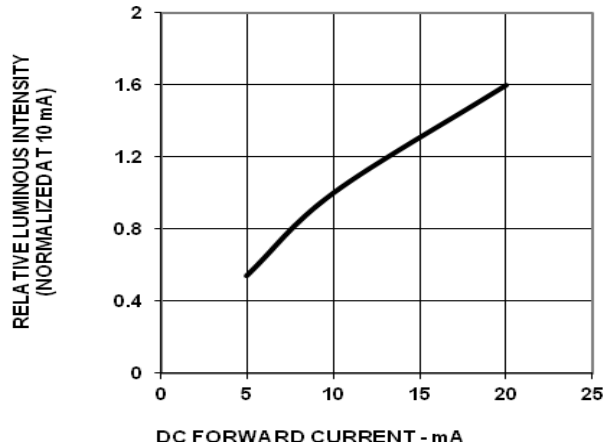


Fig 1: Relative Luminous Intensity Vs Forward Current

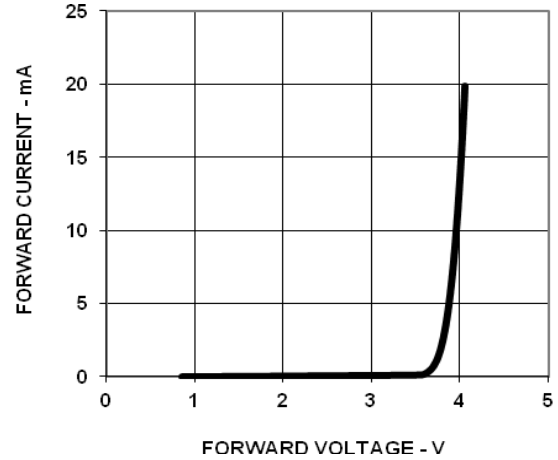


Fig 2: Forward Voltage Vs Current (Segment)

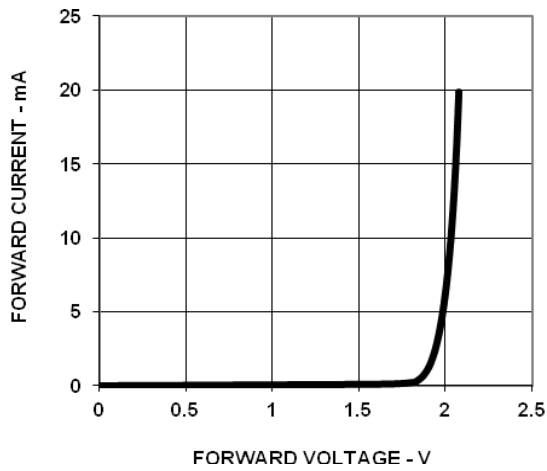


Fig 3: Forward Voltage Vs Current (DP)

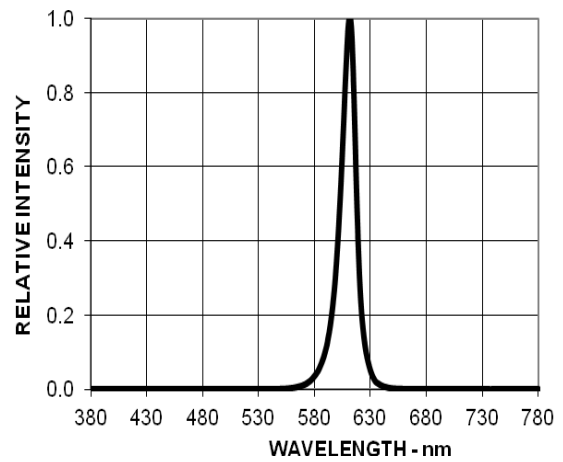


Fig 4: Relative Luminous Intensity Vs Wavelength

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## Deep Red

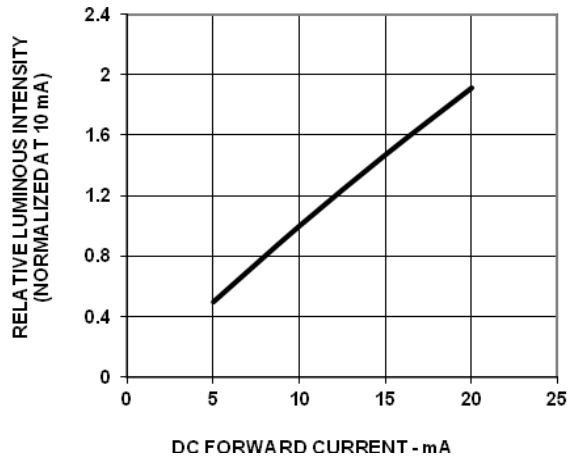


Fig 1: Relative Luminous Intensity Vs Forward Current

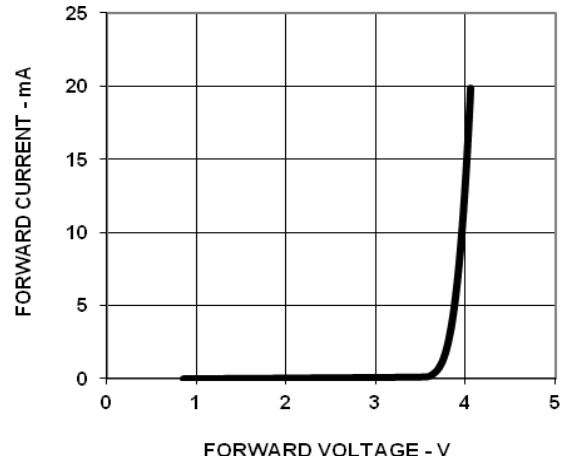


Fig 2: Forward Voltage Vs Current (Segment)

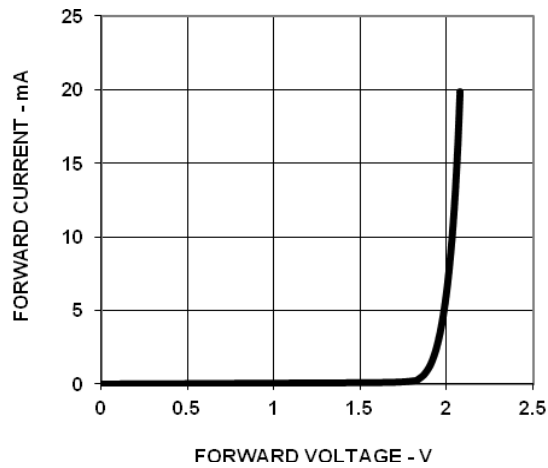


Fig 3: Forward Voltage Vs Current (DP)

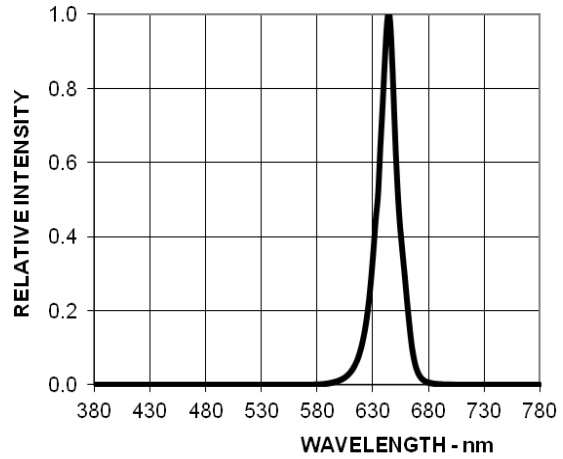


Fig 4: Relative Luminous Intensity Vs Wavelength

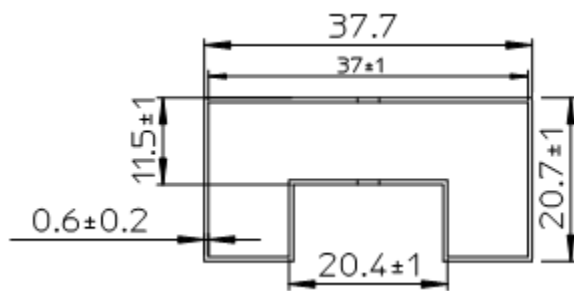
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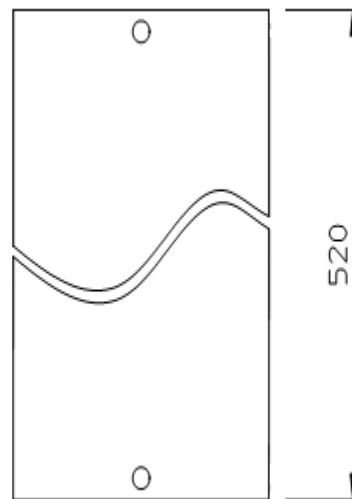
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## Packing Tube Specifications:

20 PCS PRODUCTS PER IC TUBE



Tube Front View



Tube Top View

## Reference

For further information on soldering LEDs, please refer to Avago Technologies Application Note 1027.

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