

# ADSP-H5x1/H5x3

## 0.52" Single Digit PCB Based LED Display



### Datasheet

#### Description

This is 0.52" height single digit display. It utilizes AllnGaP 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.

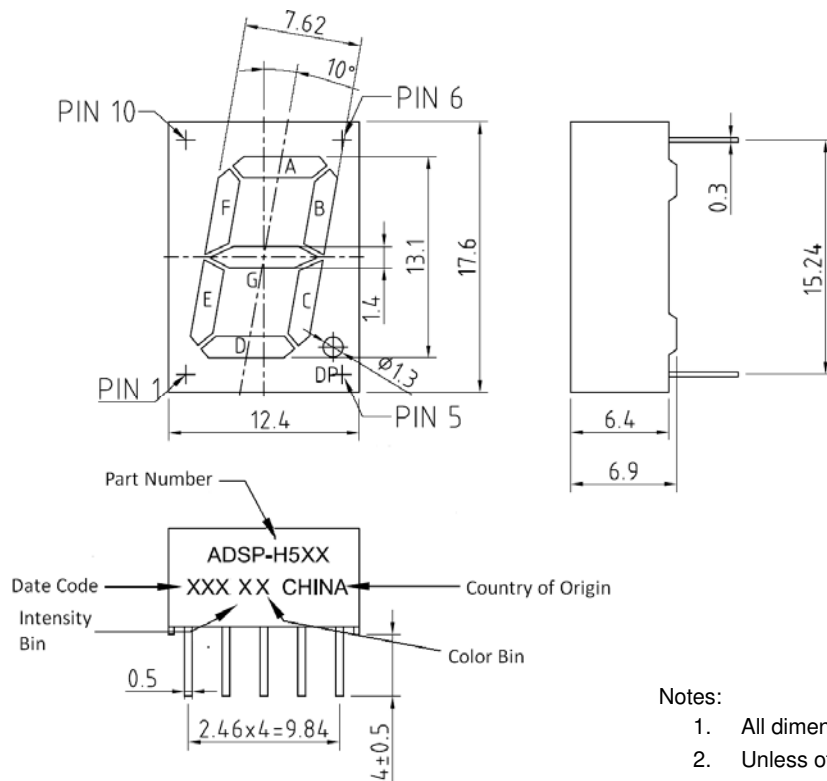
#### Features

- 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-H5E1	ADSP-H5G1	ADSP-H5Y1	ADSP-H5L1	ADSP-H5A1	Common Anode, Right Hand Decimal
ADSP-H5E3	ADSP-H5G3	ADSP-H5Y3	ADSP-H5L3	ADSP-H5A3	Common Cathode, Right Hand Decimal

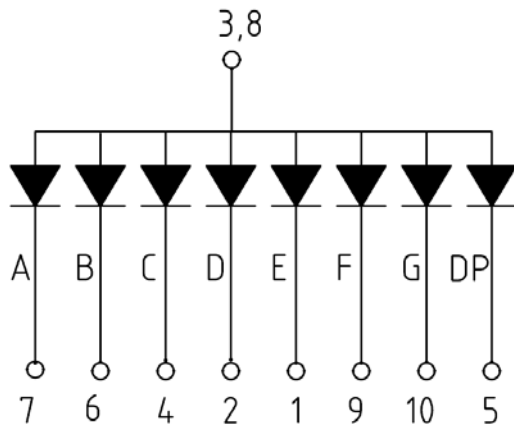
#### Package Dimensions



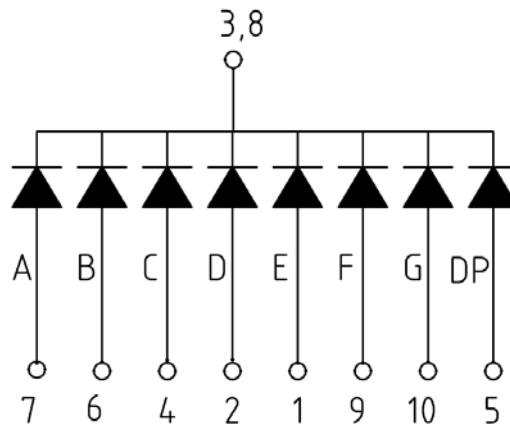
- Notes:
1. All dimensions are in millimeter.
  2. Unless otherwise stated, the tolerance is  $\pm 0.25$ mm.

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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 or Dot Point (DP)	$P_D$	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 or DP	$V_R$	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  $T_A = 25^\circ\text{C}$** **Red**

Parameter	Symbol	Min	Typ	Max	Units	Test Conditions
Average Luminous Intensity (Digit Average)	$I_V$	–	40	–	mcd	$I_F = 10\text{mA}$
Peak Wavelength	$\lambda_p$	–	634	–	nm	$I_F = 20\text{mA}$
Dominant Wavelength	$\lambda_d$	–	625	–	nm	$I_F = 20\text{mA}$
Forward Voltage per segment / DP	$V_F$	–	2.0	2.6	V	$I_F = 20\text{mA}$
Reverse Current per segment / DP	$I_R$	–	–	100	$\mu\text{A}$	$V_R = 5\text{V}$
Luminous Intensity Matching Ratio (Segment to Segment)	$I_{V-M}$		2:1			$I_F = 10\text{mA}$

**Green**

Parameter	Symbol	Min	Typ	Max	Units	Test Conditions
Average Luminous Intensity (Digit Average)	$I_V$	–	15	–	mcd	$I_F = 10\text{mA}$
Peak Wavelength	$\lambda_p$	–	570	–	nm	$I_F = 20\text{mA}$
Dominant Wavelength	$\lambda_d$	–	571	–	nm	$I_F = 20\text{mA}$
Forward Voltage per segment / DP	$V_F$	–	2.0	2.6	V	$I_F = 20\text{mA}$
Reverse Current per segment / DP	$I_R$	–	–	100	$\mu\text{A}$	$V_R = 5\text{V}$
Luminous Intensity Matching Ratio (Segment to Segment)	$I_{V-M}$		2:1			$I_F = 10\text{mA}$

**Yellow**

Parameter	Symbol	Min	Typ	Max	Units	Test Conditions
Average Luminous Intensity (Digit Average)	$I_V$	–	33	–	mcd	$I_F = 10\text{mA}$
Peak Wavelength	$\lambda_p$	–	592	–	nm	$I_F = 20\text{mA}$
Dominant Wavelength	$\lambda_d$	–	587	–	nm	$I_F = 20\text{mA}$
Forward Voltage per segment / DP	$V_F$	–	2.0	2.6	V	$I_F = 20\text{mA}$
Reverse Current per segment / DP	$I_R$	–	–	100	$\mu\text{A}$	$V_R = 5\text{V}$
Luminous Intensity Matching Ratio (Segment to Segment)	$I_{V-M}$		2:1			$I_F = 10\text{mA}$

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## Orange

Parameter	Symbol	Min	Typ	Max	Units	Test Conditions
Average Luminous Intensity (Digit Average)	$I_V$	–	40	–	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	$V_F$	–	2.0	2.6	V	$I_F = 20\text{mA}$
Reverse Current per segment / DP	$I_R$	–	–	100	$\mu\text{A}$	$V_R = 5\text{V}$
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)	$I_V$	–	35	–	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	$V_F$	–	2.0	2.6	V	$I_F = 20\text{mA}$
Reverse Current per segment / DP	$I_R$	–	–	100	$\mu\text{A}$	$V_R = 5\text{V}$
Luminous Intensity Matching Ratio (Segment to Segment)	$I_{V-M}$		2:1			$I_F = 10\text{mA}$

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Red

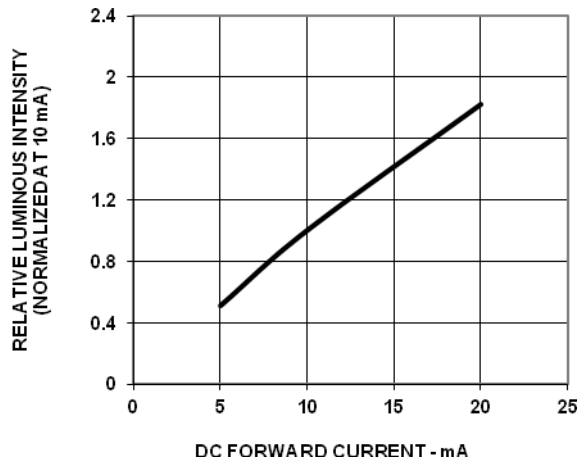


Fig 1: Relative Luminous Intensity Vs Forward Current

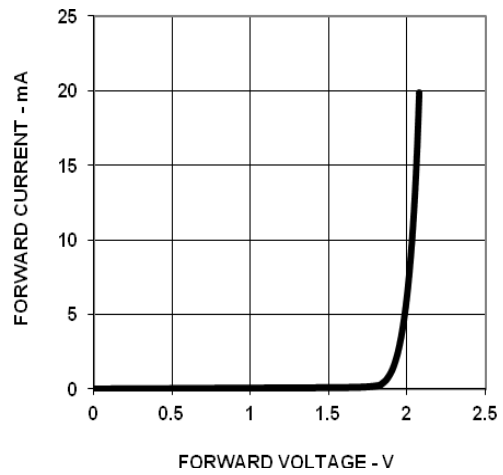


Fig 2: Forward Voltage Vs Current

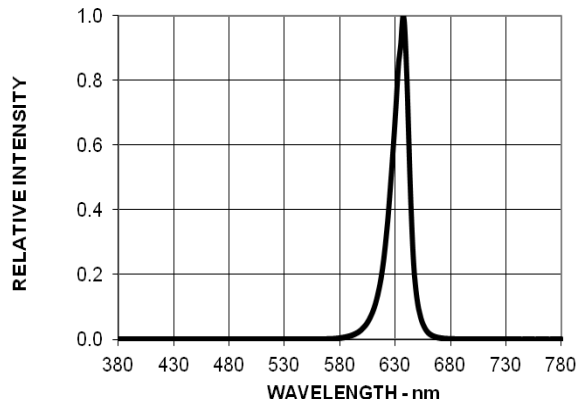


Fig 3: Relative Luminous Intensity Vs Wavelength

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Green

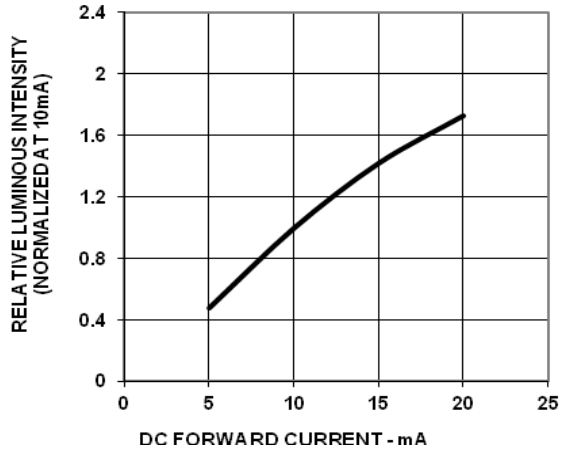


Fig 1: Relative Luminous Intensity Vs Forward Current

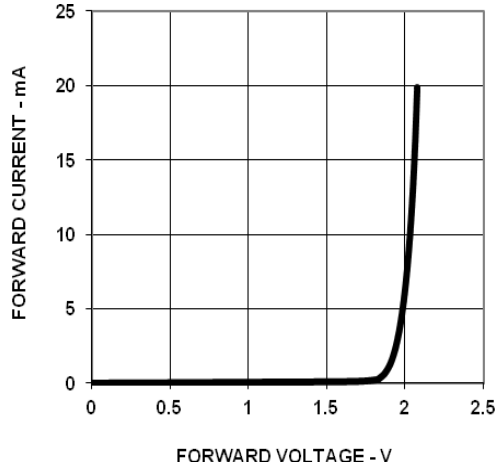


Fig 2: Forward Voltage Vs Current

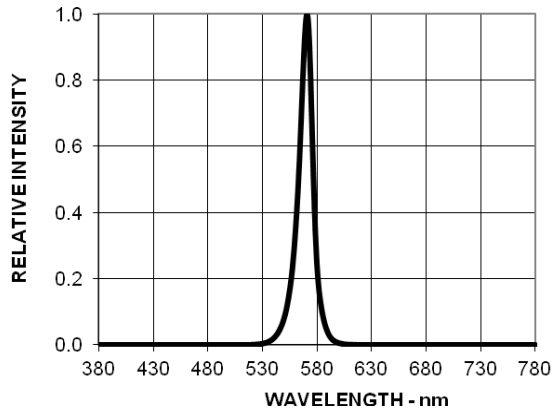


Fig 3: Relative Luminous Intensity Vs Wavelength

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Yellow

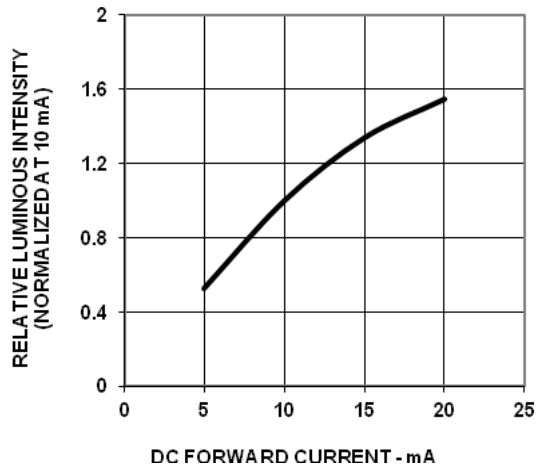


Fig 1: Relative Luminous Intensity Vs Forward Current

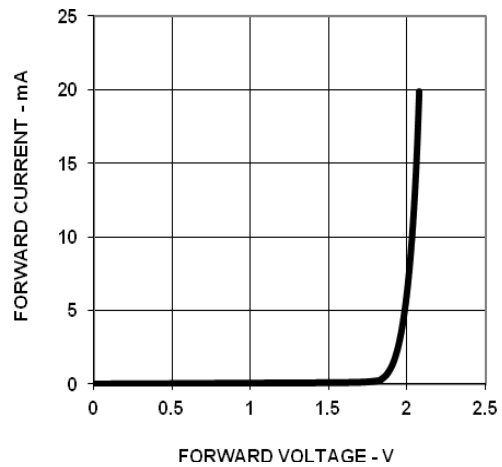


Fig 2: Forward Voltage Vs Current

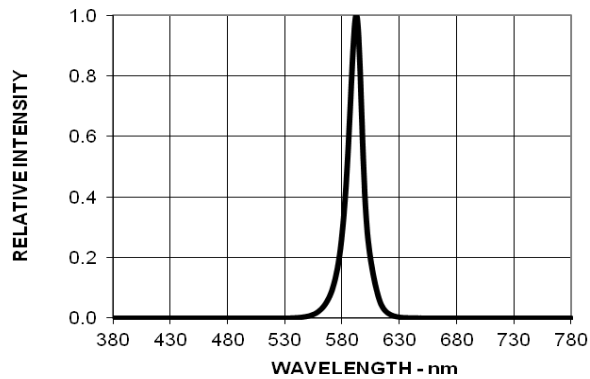


Fig 3: Relative Luminous Intensity Vs Wavelength

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Orange

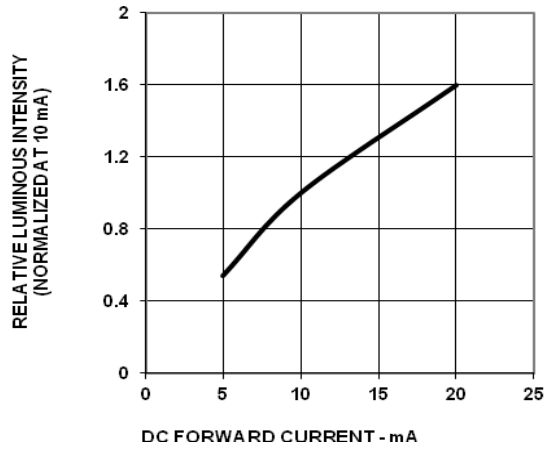


Fig 1: Relative Luminous Intensity Vs Forward Current

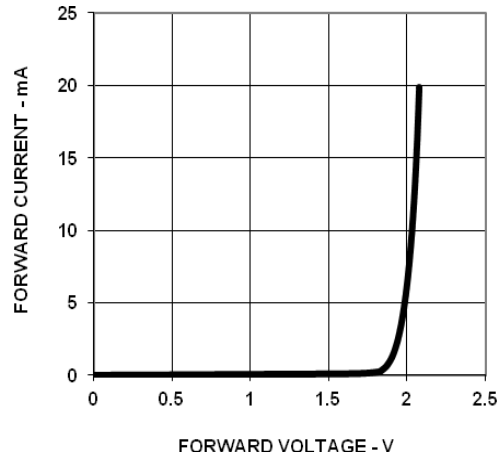


Fig 2: Forward Voltage Vs Current

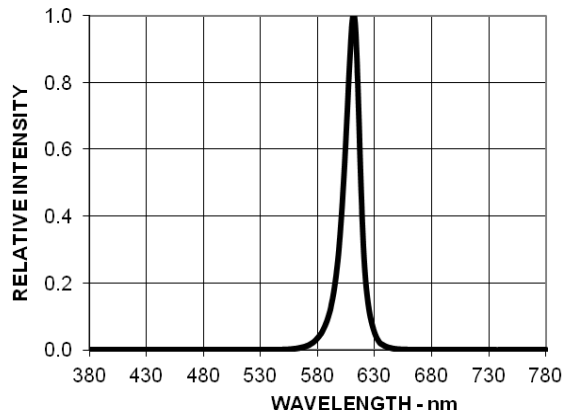


Fig 3: Relative Luminous Intensity Vs Wavelength

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Deep Red

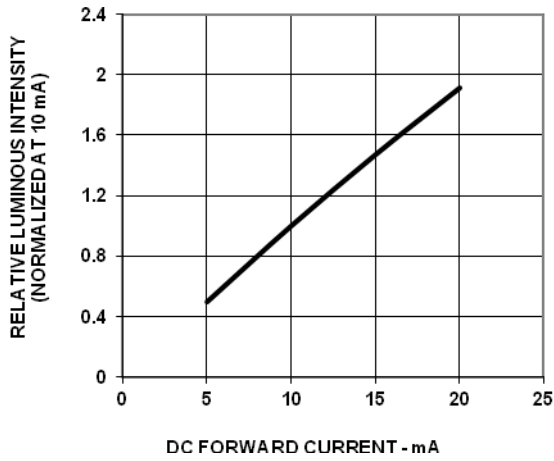


Fig 1: Relative Luminous Intensity Vs Forward Current

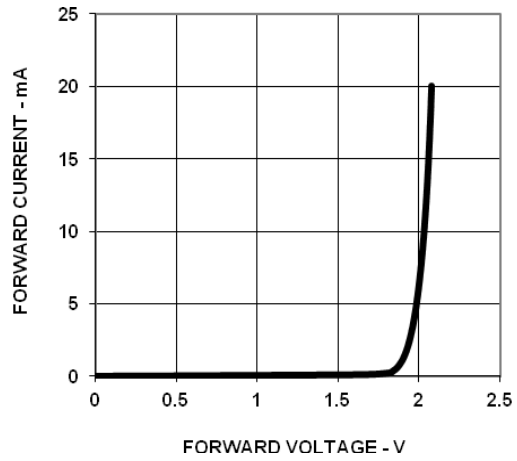


Fig 2: Forward Voltage Vs Current

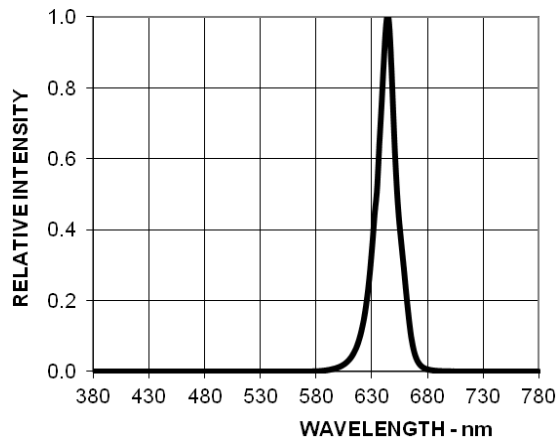


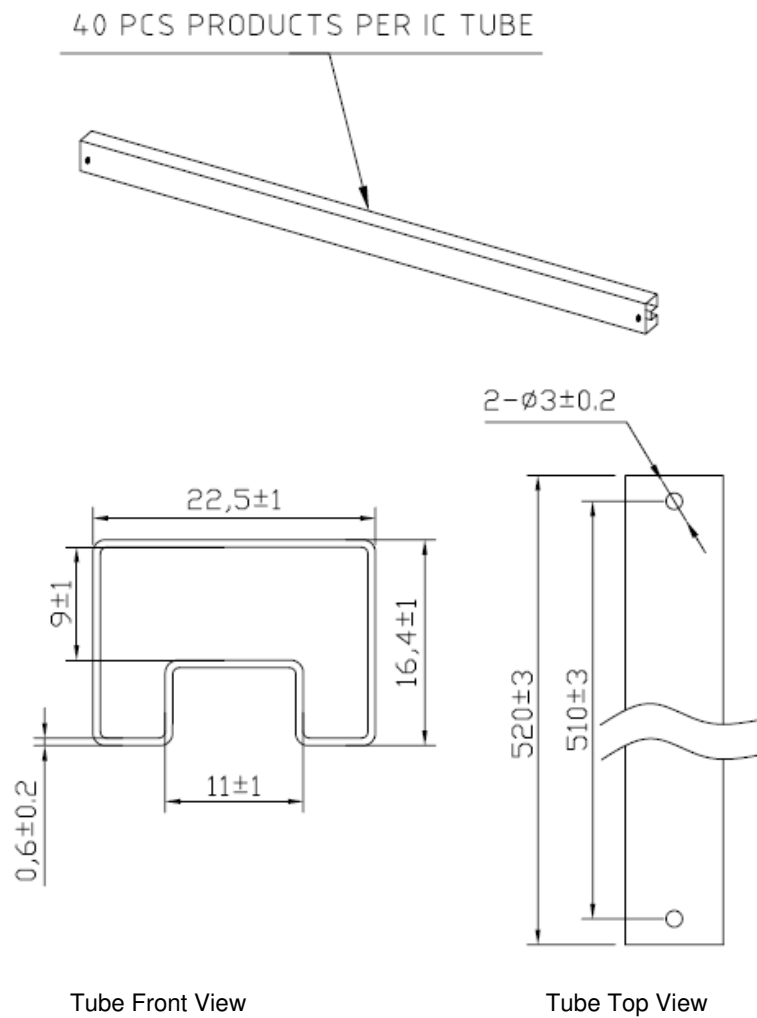
Fig3 : Relative Luminous Intensity Vs Wavelength

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## Packing Tube Specifications:



## Reference

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

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