

# HDSP-431G/433G

## 10 mm Three Digit Slim Font with 2 Colons Seven-Segment Displays

### Data Sheet

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#### Description

The 10 mm (0.4 inch) Three Digit Slim Font with 2-Colons Seven Segment Displays incorporates a new slim font character design. This slim font features narrow width, specially mitered segments to give a fuller appearance to the illuminated character. Faces of these displays are painted a neutral gray for enhanced on/off contrast.

All devices are available in either common anode or common cathode configuration with tinted green segments.

#### Features

- Excellent appearance
- Slim font design
- Mitered corners, evenly illuminated segments
- Gray face for optimum on/off contrast
- Choice of colors: green
- Choice of character size: 10 mm (0.4 inch)
- Characterized for luminous intensity

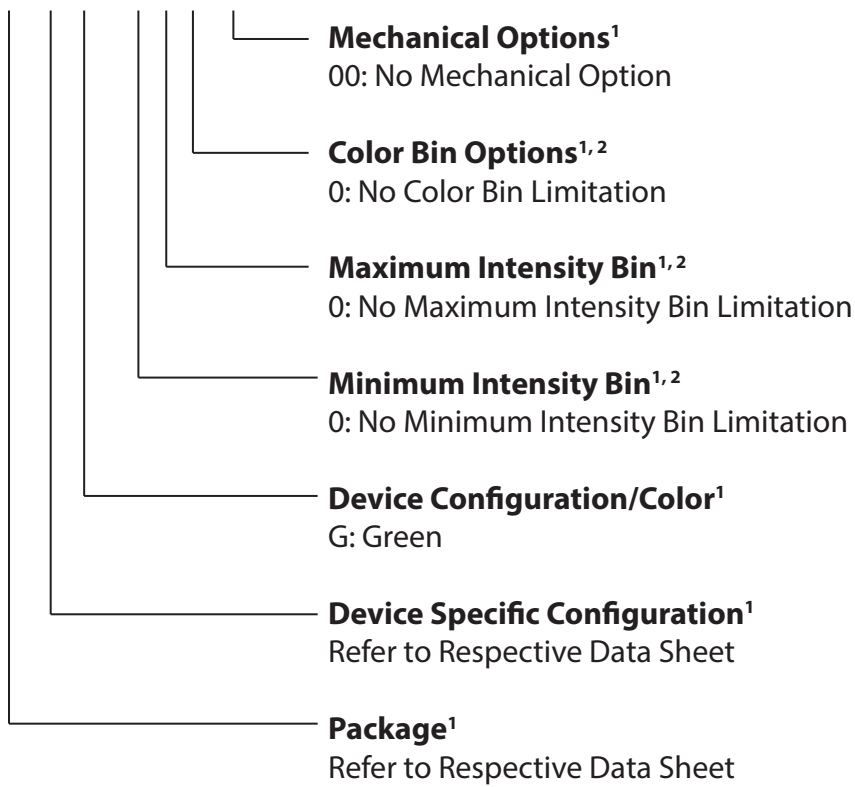
#### Devices

| Green     | Description  |
|-----------|--|
| HDSP-431G | 3 Digit, Common Anode, Untinted-Diffused, 0.4" Display   |
| HDSP-433G | 3 Digit, Common Cathode, Untinted-Diffused, 0.4" Display |

## Part Numbering System

5082 - x xx x - x x x xx

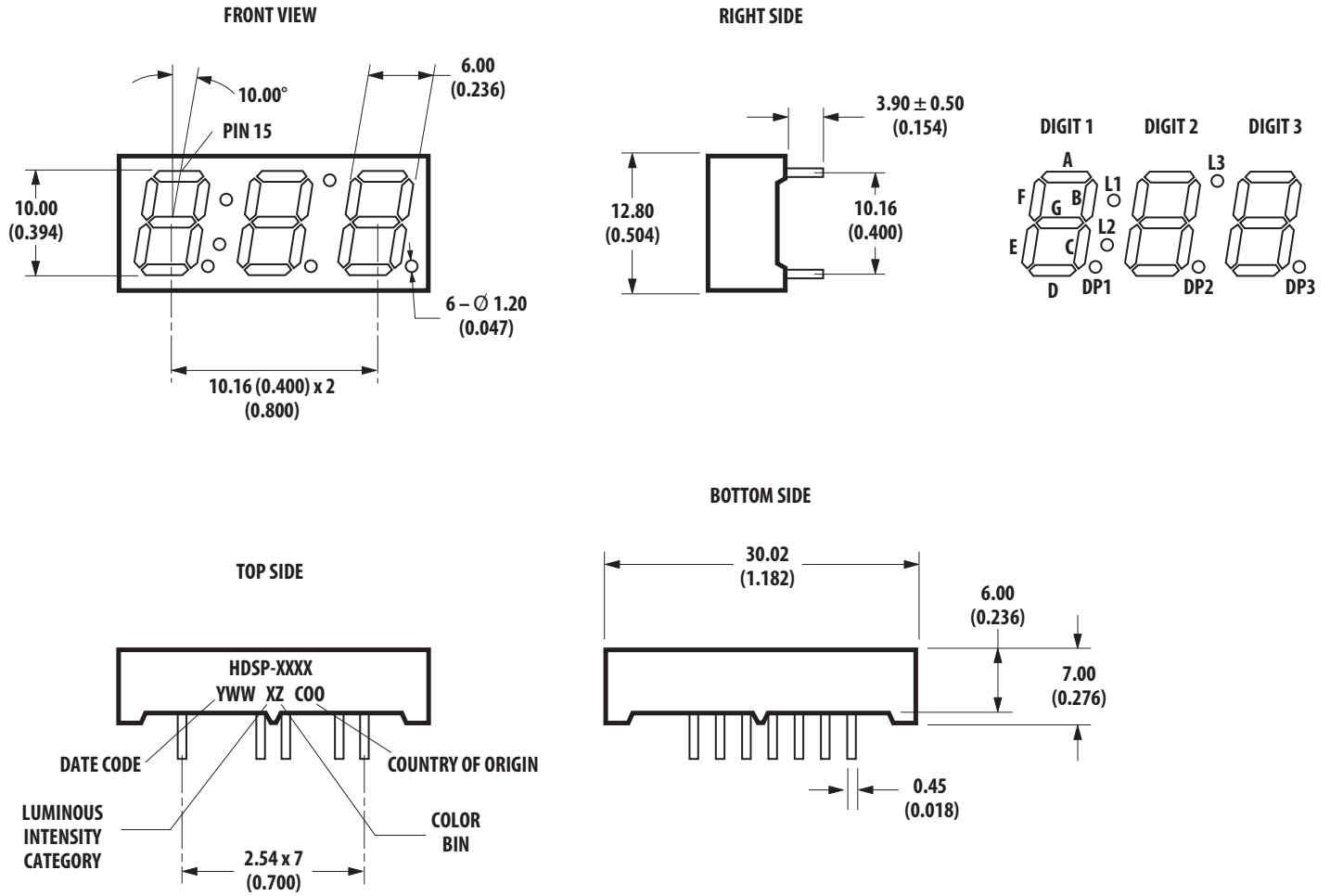
HDSP - x xx x - x x x xx



### NOTE

1. For codes not listed in the figure above, please refer to the respective data sheet or contact your nearest Avago representative for details.
2. Bin options refer to shippable bins for a part-number. Color and Intensity Bins are typically restricted to 1 bin per tube (exceptions may apply). Please refer to respective data sheet for specific bin limit information.

## Package Dimensions

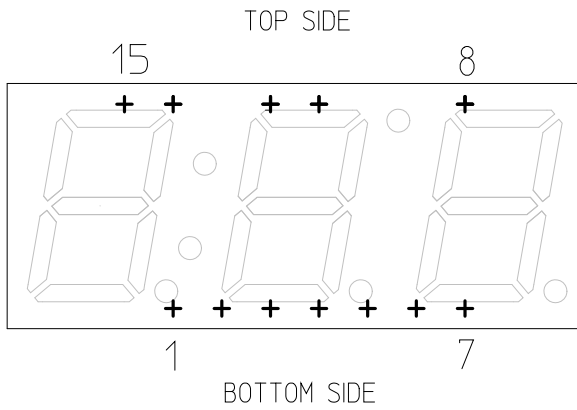


### NOTE

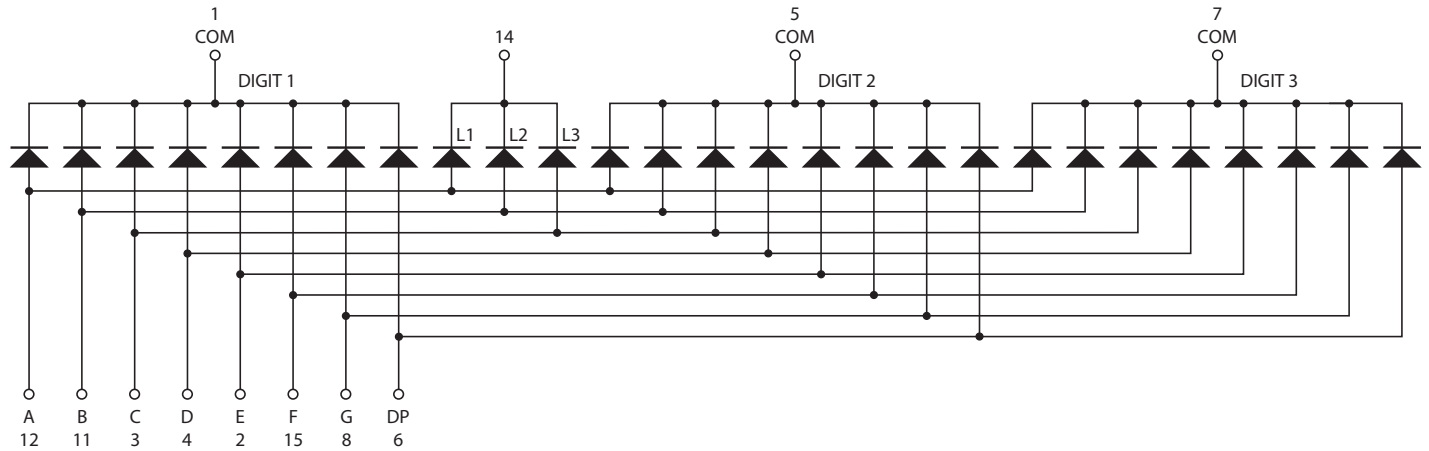
1. All dimensions are in millimeters (inches).
2. Unless otherwise stated, tolerances are ± 0.25 mm.

## Pin Information

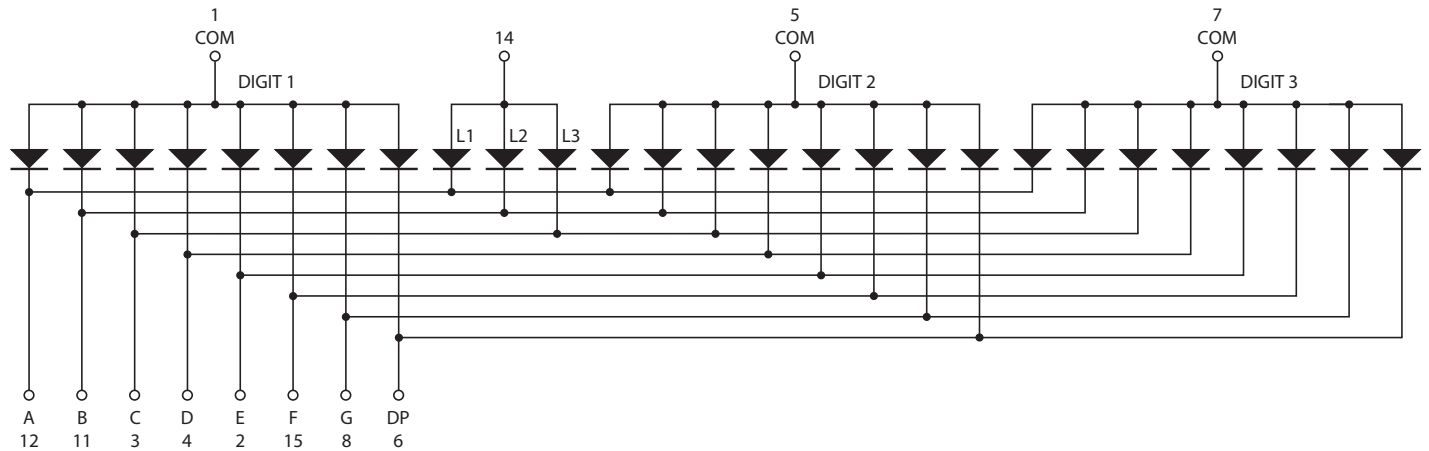
| Pin | Function                  |
|-----|---------------------------|
| 1   | Digit 1 Common A/C        |
| 2   | E                         |
| 3   | C                         |
| 4   | D                         |
| 5   | Digit 2 Common A/C        |
| 6   | DP                        |
| 7   | Digit 3 Common A/C        |
| 8   | G                         |
| 9   | No pin                    |
| 10  | No pin                    |
| 11  | B                         |
| 12  | A                         |
| 13  | No pin                    |
| 14  | L1, L2, and L3 Common A/C |
| 15  | F                         |



## Internal Circuit Diagram (Common Cathode): HDSP-433G



## Internal Circuit Diagram (Common Anode): HDSP-431G



## Absolute Maximum Ratings

| Description   | Green       | Units |
|---|-------------|-------|
| Average Power per Segment or DP                             | 65          | mW    |
| Peak Forward Current per Segment or DP                      | 100         | mA    |
| DC Forward Current per Segment or DP <sup>1</sup>           | 25          | mA    |
| Operating Temperature Range                                 | -40 to +105 | °C    |
| Storage Temperature Range                                   | -40 to +105 | °C    |
| Reverse Voltage per Segment or DP                           | 3           | V     |
| Wave Soldering Temperature for 3 Seconds 1.59 mm below Body | 250         | °C    |

### NOTE

1. Derate above 40 °C at 33 mA/°C for Green.

## Electrical/Optical Characteristics at $T_A = 25\text{ }^\circ\text{C}$

| Device Series           | Parameter                                   | Symbol           | Min.  | Typ.  | Max. | Units | Test Conditions                     |
|-------------------------|---|------------------|-------|-------|------|-------|-------------------------------------|
| HDSP-431G/<br>HDSP-433G | Luminous Intensity/ Segment (Digit Average) | $I_V$            | 3.200 | 5.000 |      | mcd   | $I_F = 10\text{ mA}$                |
|                         | Forward Voltage/ Segment or DP              | $V_F$            |       | 2.25  | 2.50 | V     | $I_F = 20\text{ mA}$                |
|                         | Peak Wavelength                             | $\lambda_{PEAK}$ |       | 568   |      | nm    | $I_F = 20\text{ mA}$                |
|                         | Dominant Wavelength                         | $\lambda_d$      |       | 573   |      | nm    | $I_F = 20\text{ mA}$                |
|                         | Reverse Current                             | $I_R$            |       |       |      | 100   | $\mu\text{A}$<br>$V_R = 5\text{ V}$ |

### NOTE

1. Typical specification for reference only. Do not exceed absolute maximum ratings.
2. The dominant wavelength,  $\lambda$ , is derived from the CIE chromaticity diagram and is that single wavelength that defines the color of the device.

## Intensity Bin Limits (mcd) Green

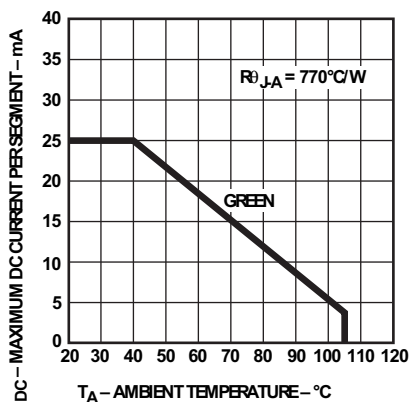
| Green           |       |       |
|-----------------|-------|-------|
| HDSP-431G/433G  |       |       |
| IV Bin Category | Min.  | Max.  |
| L               | 3.200 | 5.050 |
| M               | 5.051 | 8.000 |

## Color Categories

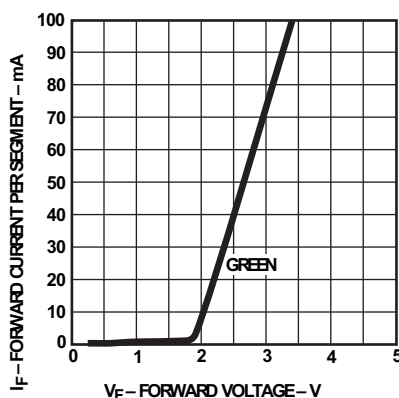
| Color | Bin | Dominant Wavelength (nm) |       |
|-------|-----|--------------------------|-------|
|       |     | Min.                     | Max.  |
| Green | 3   | 570.0                    | 574.0 |
|       | 4   | 567.0                    | 571.0 |

**NOTE** All categories are established for classification of products. Products may not be available in all categories. Contact your Avago representative for further clarification and information.

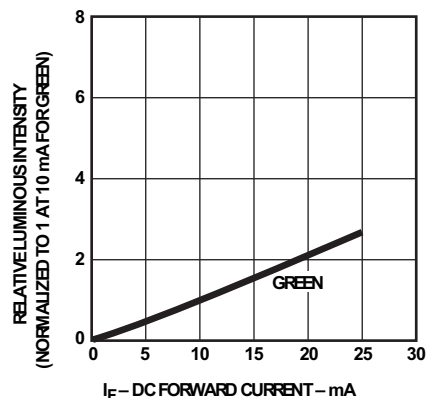
**Figure 1 Maximum Allowable DC Current vs. Ambient Temperature**



**Figure 2 Forward Current vs. Forward Voltage**



**Figure 3 Relative Luminous Intensity vs. DC Forward Current**



## Contrast Enhancement

For information on contrast enhancement, refer to Application Note 1015.

## Soldering/Cleaning

Cleaning agents from the ketone family (acetone, methyl ethyl ketone, etc.) and from the chlorinated hydrocarbon family (methylene chloride, trichloroethylene, carbon tetrachloride, etc.) are not recommended for cleaning LED parts. All of these various solvents attack or dissolve the encapsulating epoxies used to form the package of plastic LED parts.

For information on soldering LEDs, refer to Application Note 1027.

For product information and a complete list of distributors, please go to our web site:

[www.avagotech.com](http://www.avagotech.com)

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