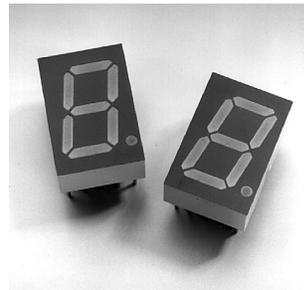


HDSP-50xB Series

14.2 mm (0.56 inch) General Purpose Blue
Seven Segment Displays



Data Sheet

Description

These 14.2 mm (0.56 inch) blue displays use industry standard size and pin-out. The devices are available as either common anode or common cathode. The HDSP-50xB series are suitable for indoor use.

Devices

| Blue HDSP- | Description |
|------------|-----------------------------------|
| 501B | Common Anode Right Hand Decimal |
| 503B | Common Cathode Right Hand Decimal |

Note:

- For details, please contact your local Avago components sales office or an authorized distributor.

Features

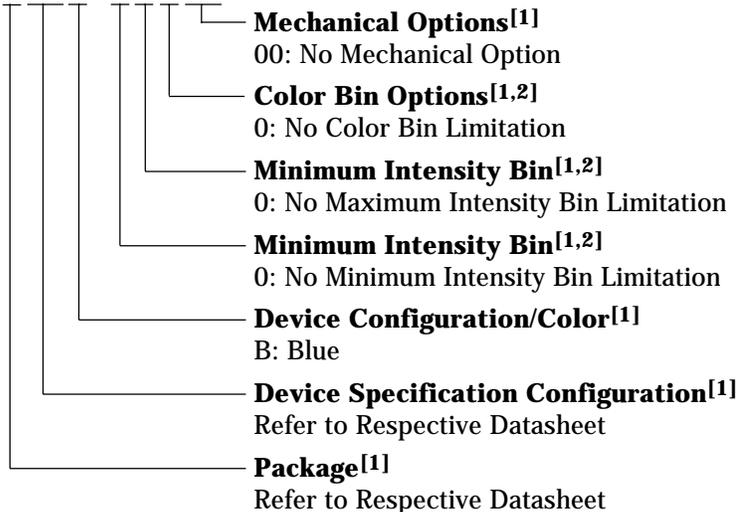
- **Industry standard size**
- **Industry standard pin-out**
15.24 mm (0.6 in.) DIP leads on 2.54 mm (0.1 in.) centers
- **Blue color**
- **Mitered font**
Mitered corners on segments
- **Gray face paint**
Gray package gives optimum contrast
- **±50° viewing angle**
- **Design flexibility**
Common anode or common cathode
- **Categorized for luminous intensity**

Applications

- **Suitable for indoor use**
- **Not recommended for industrial applications, i.e., operating temperature requirements exceeding 80°C or below -20°C^[1]**
- **Extreme temperature cycling not recommended^[1]**

Part Numbering System

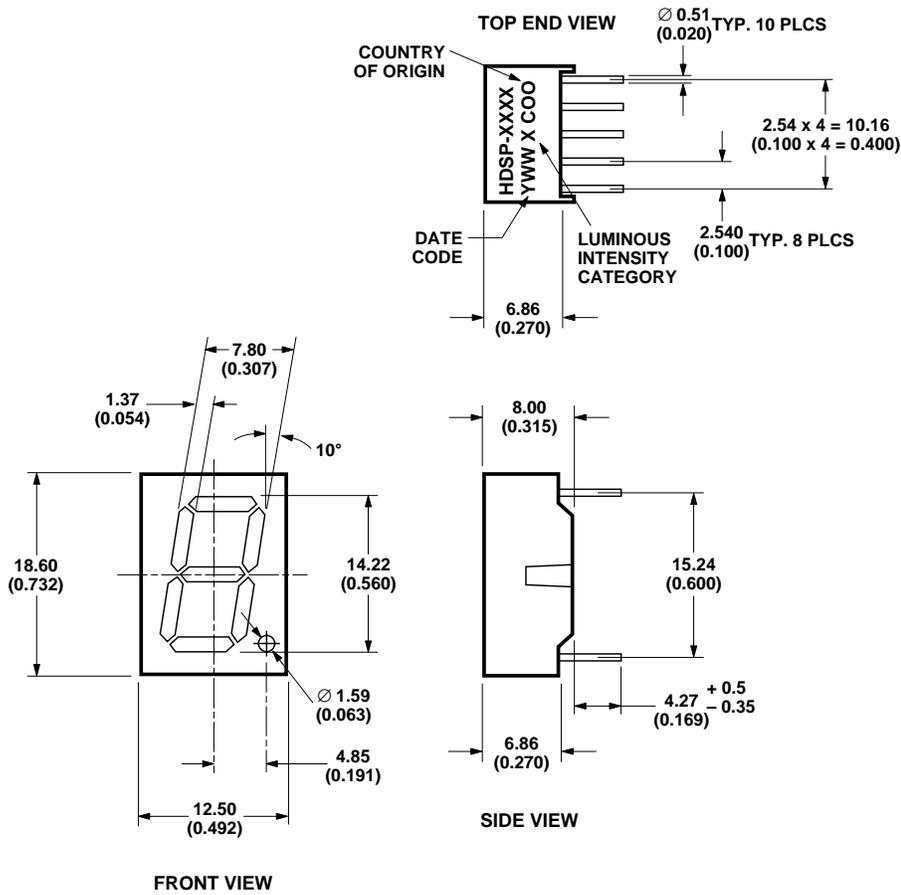
5082 - X XX X - X X X XX
HDSP - X XX X - X X X XX



Notes:

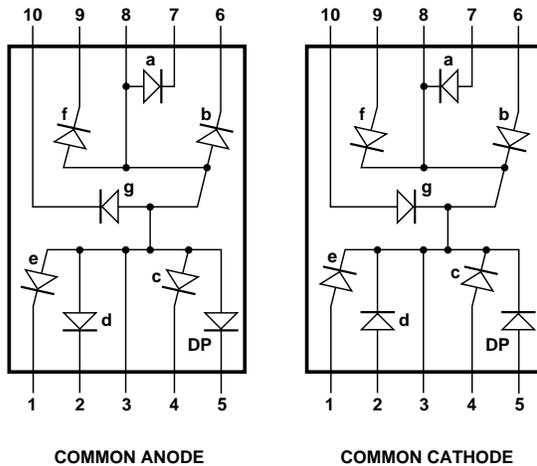
- For codes not listed in the figure above, please refer to the respective datasheet or contact your nearest Avago representative for details.
- Bin options refer to shippable bins for a part-number. Color and Intensity Bins are typically restricted to 1 bin per tube (exceptions may apply). Please refer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

Package Dimensions



- NOTES:**
1. ALL DIMENSIONS ARE IN MILLIMETERS (INCHES).
 2. UNLESS OTHERWISE STATED, TOLERANCES ARE ± 0.25 mm.

Internal Circuit Diagram



| HDSP-501B | | HDSP-503B | |
|--------------|--------------|----------------|----------------|
| COMMON ANODE | | COMMON CATHODE | |
| PIN | FUNCTION | PIN | FUNCTION |
| 1 | CATHODE e | 1 | ANODE e |
| 2 | CATHODE d | 2 | ANODE d |
| 3 | COMMON ANODE | 3 | COMMON CATHODE |
| 4 | CATHODE c | 4 | ANODE c |
| 5 | CATHODE DP | 5 | ANODE DP |
| 6 | CATHODE b | 6 | ANODE b |
| 7 | CATHODE a | 7 | ANODE a |
| 8 | COMMON ANODE | 8 | COMMON CATHODE |
| 9 | CATHODE f | 9 | ANODE f |
| 10 | CATHODE g | 10 | ANODE g |

Absolute Maximum Ratings at T_A=25°C

| Parameter | Symbol | HDSP-501B HDSP-503B | Units |
|---|-------------------|------------------------|-------|
| Power Dissipated per Segment or DP | P _D | 135 | mW |
| Peak Forward Current per Segment or DP (1/10 Duty Cycle, 0.1 ms Pulse Width) | I _{PEAK} | 70 | mA |
| DC Forward Current per Segment or DP ^[1] | I _F | 30 ^[1] | mA |
| Reverse Voltage per Segment or DP | V _R | 5 | V |
| Operating Temperature | T _O | -20 to +80 | °C |
| Storage Temperature | T _S | -30 to +85 | °C |
| Wave Soldering Conditions (1.6 mm [0.063 in.] below Body) | Temperature | 250 | °C |
| | Time | 3 | s |

Note:

- Derate above 25°C at 0.33 mA/°C.

Optical/Electrical Characteristics at T_A=25°C

| Devices HDSP- | Parameter | Symbol | Min. | Typ. | Max. | Units | Test Conditions |
|------------------|--|-------------------|------|------|------|-------|------------------------|
| 501B 503B | Luminous Intensity/Segment (Segment Average) ^[1,2] | I _v | 2.02 | 3.40 | | mcd | I _F = 10 mA |
| | Forward Voltage/Segment or DP | V _F | | 3.80 | 4.50 | V | I _F = 20 mA |
| | Peak Wavelength | λ _{PEAK} | | 428 | | nm | |
| | Dominant Wavelength ^[3] | λ _d | | 466 | | nm | |
| | Reverse Current/Segment or DP ^[4] | I _R | | | 100 | μA | V _R = 5 V |

Notes:

- Case temperature of the device immediately prior to the intensity measurement is 25°C.
- The digits are categorized for luminous intensity. The intensity category is designated by a letter on the side of the package.
- The dominant wavelength, λ_d, is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.
- Typical specification for reference only. Do not exceed absolute maximum ratings.

Intensity Bin Limits^[1] (μcd at 10 mA)

| Bin Name | Min. ^[2] | Max. ^[2] |
|----------|---------------------|---------------------|
| H | 2020 | 2630 |
| I | 2630 | 3420 |
| J | 3420 | 4200 |
| K | 4200 | 5040 |

Notes:

- Bin categories are established for classification of products. Products may not be available in all bin categories.
- Tolerance for each bin limit is ± 10%.

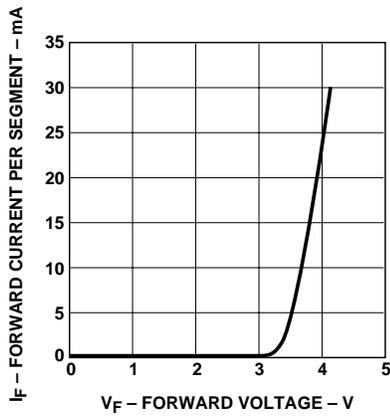


Figure 1. Forward Current vs. Forward Voltage.

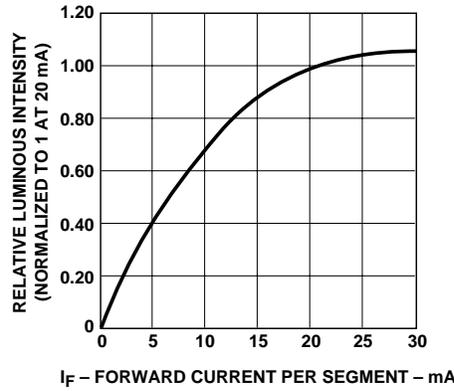


Figure 2. Relative Luminous Intensity vs. DC Forward Current.

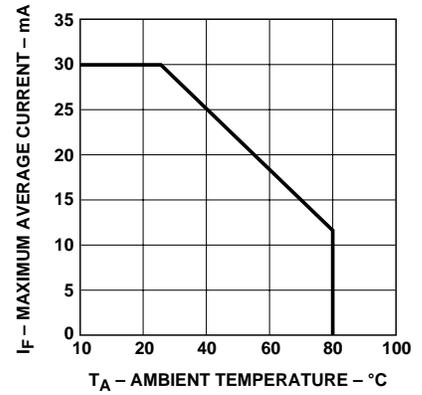


Figure 3. Maximum Allowable Average Current per Dot vs. Ambient Temperature.

Contrast Enhancement

For information on contrast enhancement, please see 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 please refer to Application Note 1027.

Device Reliability

For reliability information, please see the reliability data sheet 14.2 mm (0.56 inch) General Purpose Blue Seven Segment Display.

For product information and a complete list of distributors, please go to our website: www.avagotech.com

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