# HDSP-A4xC Series

Alphanumeric Display, 0.54" (13.7 mm)
4 Character As Al In Ga P Red

## Data Sheet

### Description

These 0.54” (13.7 mm) AS Al In Ga P displays are available in either common anode or common cathode.

### Devices

| As Al In Ga P Red | Description |
|---|---|
| HDSP-A42C | Common Anode |
| HDSP-A47C | Common Cathode |

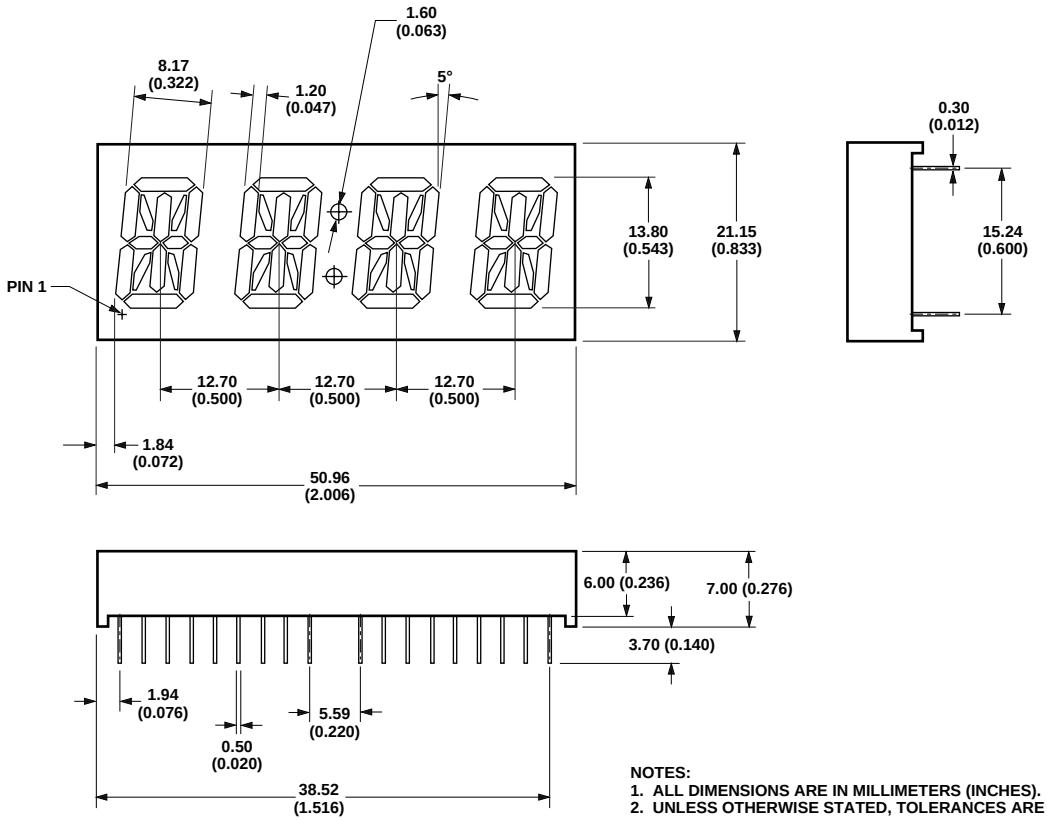
### Features

- **As Al In Ga P red color**
- **Gray face paint**
  Gray package gives optimum contrast
- **Design flexibility**
  Common anode or common cathode

### Applications

- **Suitable for alphanumeric**
- **Operating temperature range –40˚C to 105˚C**

### Package Dimensions

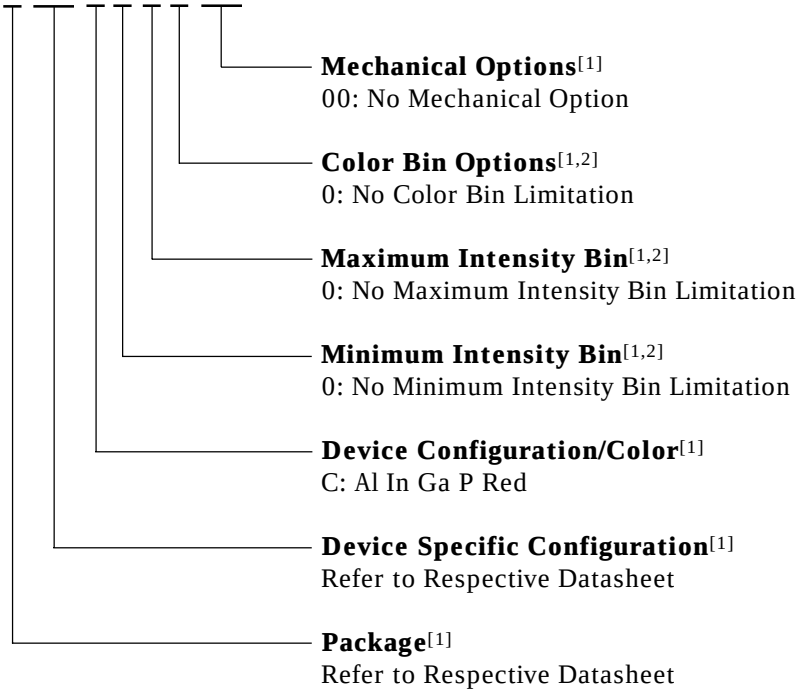



NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS (INCHES).
2. UNLESS OTHERWISE STATED, TOLERANCES ARE ± 0.25 mm.

## Part Numbering System

5082 -X X X X-X X X X X

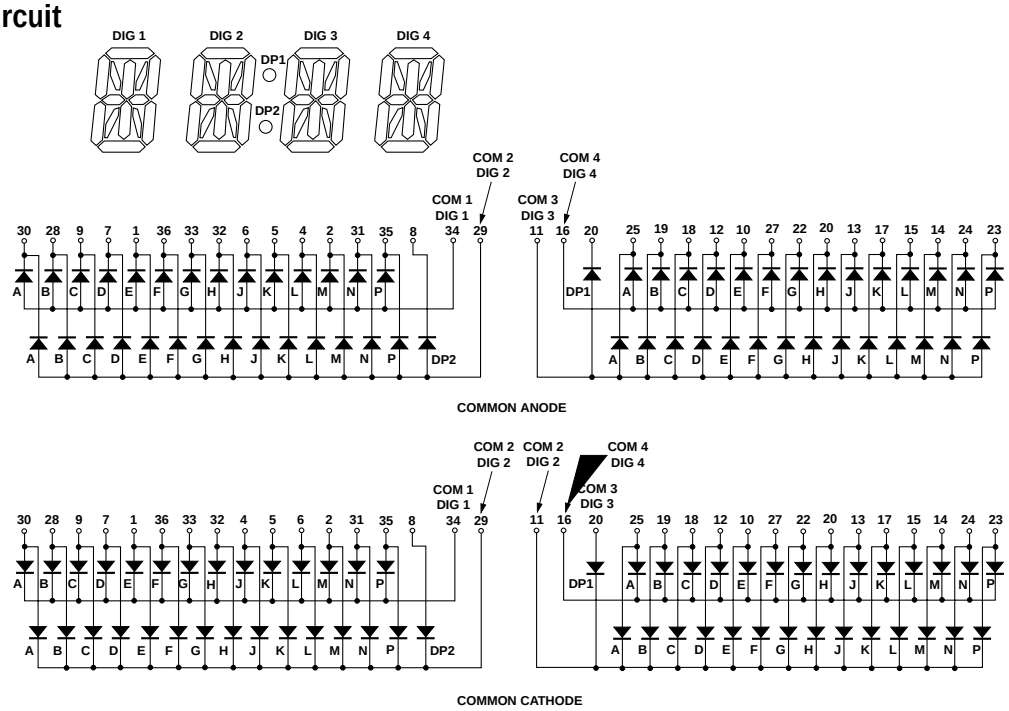
HDSP-X X X X-X X X X X




**Notes:**

1. For codes not listed in the figure above, please refer to the respective datasheet 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 datasheet for specific bin limit information.

## Internal Circuit




| Pin | Pin Configuration A<br>Common Anode | Pin Configuration B<br>Common Cathode |
|---|---|---|
| 1 | 1E/2E Cathode | 1E/2E Anode |
| 2 | 1M/2M Cathode | 1M/2M Anode |
| 3 | No Connection | No Connection |
| 4 | 1L/2L Cathode | 1L/2L Anode |
| 5 | 1K/2K Cathode | 1K/2K Anode |
| 6 | 1J/2J Cathode | 1J/2J Anode |
| 7 | 1D/2D Cathode | 1D/2D Anode |
| 8 | DP2 Cathode | DP2 Anode |
| 9 | 1C/2C Cathode | 1C/2C Anode |
| 10 | 3E/4E Cathode | 3E/4E Anode |
| 11 | DIGIT No. 3 Common Anode | DIGIT No. 3 Common Cathode |
| 12 | 3D/4D Cathode | 3D/4D Anode |
| 13 | 3J/4J Cathode | 3J/4J Anode |
| 14 | 3M/4M Cathode | 3M/4M Anode |
| 15 | 3L/4L Cathode | 3L/4L Anode |
| 16 | DIGIT No. 4 Common Anode | DIGIT No. 4 Common Cathode |
| 17 | 3K/4K Cathode | 3K/4K Anode |
| 18 | 3C/4C Cathode | 3C/4C Anode |
| 19 | 3B/4B Cathode | 3B/4B Anode |
| 20 | 3H/4H Cathode | 3H/4H Anode |
| 21 | No Connection | No Connection |
| 22 | 3G/4G Cathode | 3G/4G Anode |
| 23 | 3P/4P Cathode | 3P/4P Anode |
| 24 | 3N/4N Cathode | 3N/4N Anode |
| 25 | 3A/4A Cathode | 3A/4A Anode |
| 26 | DP1 Cathode | DP1 Anode |
| 27 | 3F/4F Cathode | 3F/4F Anode |
| 28 | 1B/2B Cathode | 1B/2B Anode |
| 29 | DIGIT No. 2 Common Anode | DIGIT No. 2 Common Cathode |
| 30 | 1A/2A Cathode | 1A/2A Anode |
| 31 | 1N/2N Cathode | 1N/2N Anode |
| 32 | 1H/2H Cathode | 1H/2H Anode |
| 33 | 1G/2G Cathode | 1G/2G Anode |
| 34 | DIGIT No. 2 Common Anode | DIGIT No. 2 Common Cathode |
| 35 | 1P/2P Cathode | 1P/2P Anode |
| 36 | 1F/2F Cathode | 1F/2F Anode |

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

| Description | Symbol | HDSP-A42C / HDSP-A47C | Units |
|---|---|---|---|
| DC Forward Current per Segment or DP[1,2,3] | $I_F$ | 50 | mA |
| Peak Forward Current per Segment or DP[2,3] | $\lambda_{PEAK}$ | 100 | mA |
| Average Forward Current[3] | $\lambda_{AVE}$ | 30 | mA |
| Reverse Voltage per Segment or DP ($I_R$ = 100 μA) | $V_R$ | 5 | V |
| Operating Temperature | $T_O$ | –40 to +105 | °C |
| Storage Temperature | $T_S$ | –40 to +120 | °C |
| Lead Soldering Conditions | Temperature | 260 | °C |
| | Time | 3 | s |

**Notes:**
1. Derate linearly as shown in Figure 1.
2. For long term performance with minimal light output degradation, drive currents between 10 mA and 30 mA are recommended. For more information on recommended drive conditions, please refer to Application Brief I-024 (5966-3087E).
3. Operating at currents below 1 mA is not recommended. Please contact your local representative for further information.

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

| Device Series HDSP- | Parameter | Symbol | Min. | Typ. | Max. | Units | Test Conditions |
|---|---|---|---|---|---|---|---|
| A42C | Forward Voltage | $I_V$ | 1.70 | 1.90 | 2.20 | V | $I_F$ = 20 mA |
| A47C | Reverse Voltage | $V_R$ | 5 | 20 | | V | $I_F$ = 100 μA |
| | Peak Wavelength | $\lambda_{PEAK}$ | | 635 | | nm | Peak Wavelength of Spectral Distribution at $I_F$ = 20 mA |
| | Dominant Wavelength[3] | $\lambda_d$ | 622.5 | 626 | 630 | nm | |
| | Spectral Halfwidth | $\Delta\lambda_{1/2}$ | | 17 | | nm | Wavelength Width at Spectral Distribution 1/2 Power Point at $I_F$ = 20 mA |
| | Speed of Response | $\tau_s$ | | 20 | | ns | Exponential Time Constant, $e^{-t\tau s}$ |
| | Capacitance | C | | 40 | | pF | $V_F$ = 0, f = 1 MHz |

## Intensity Bin Limits[1]
**(mcd at 10 mA)**

| Bin Name | Min.[2] | Max.[2] |
|---|---|---|
| T | 18.0 | 25.0 |
| U | 25.0 | 36.0 |

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

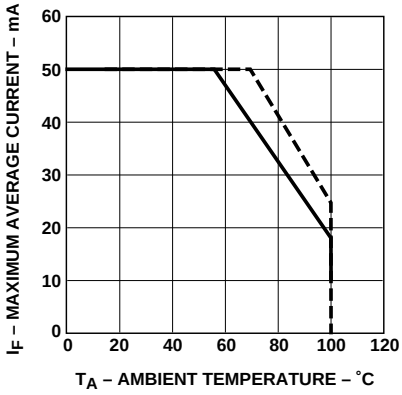



**Figure 1. Maximum forward current vs. ambient temperature. Derating based on $T_{JMAX}$ = 130°C.**

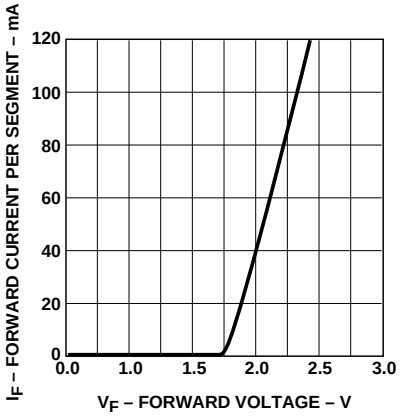



**Figure 2. Forward current vs. forwrad voltage.**

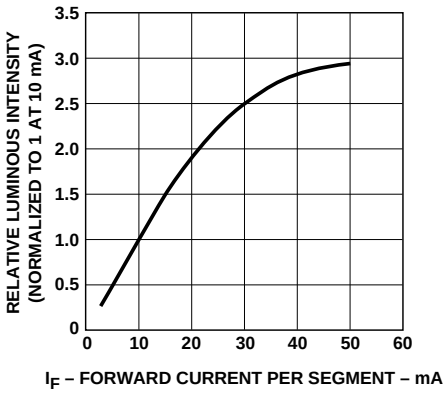



**Figure 3. Relative luminous intensity vs. DC forward current.**

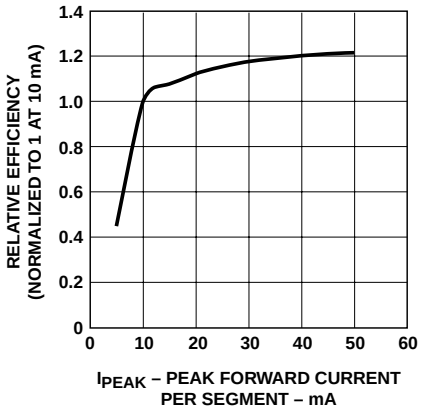



**Figure 4. Relative efficiency (luminous intensity per unit current) vs. peak current.**

## Contrast Enhancement

For information on contrast enhancement, please see Application Note 1015.

## Soldering / Cleaning

Cleaning agents from 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.

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