

HDSP-521A/523A

14.22 mm (0.56 inch) Dual Digit General Purpose
Seven Segment Display

AVAGO
TECHNOLOGIES

Data Sheet



Description

The 14.22 mm (0.56 inch) LED dual digit seven segment displays use industry standard size package and pinout. The device is available in either common anode or common cathode. These gray face displays are suitable for indoor use.

Devices

AlGaAs Red	Description
HDSP-521A	Common Anode Right Hand Decimal
HDSP-523A	Common Cathode Right Hand Decimal

Features

- Industry standard size
- Industry standard pinout
14.22 mm (0.56 inch)
DIP lead on 2.54 mm
- AlGaAs Red color
- Excellent appearance
Evenly lighted segments gray package gives optimum contrast ± 50 ft. viewing angle
- Design flexibility
Common anode right hand decimal point or common cathode right hand decimal point

Applications

- Suitable for indoor use
- Not recommended for industrial application, i.e., operating temperature requirements exceeding $+85^{\circ}\text{C}$ or below -35°C ^[1]
- Extreme temperature cycling not recommended

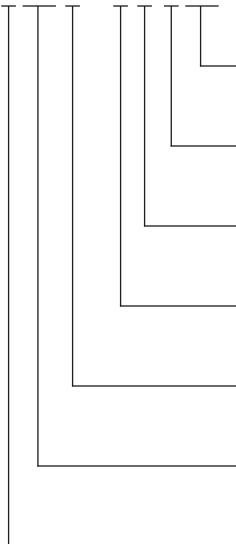
Note:

1. For additional details, please contact your local Avago sales office or an authorized distributor.

Part Numbering System

5082 - x xx x - x x x xx

HDSP - x xx x - x x x xx



Mechanical Options^[1]

00: No Mechanical Option

Color Bin Options^[1,2]

0: No Color Bin Limitation

Maximum Intensity Bin^[1,2]

0: No Maximum Intensity Bin Limitation

Minimum Intensity Bin^[1,2]

0: No Minimum Intensity Bin Limitation

Device Configuration/Color^[1]

A: AlGaAs Red

Device Specific Configuration^[1]

Refer to Respective Datasheet

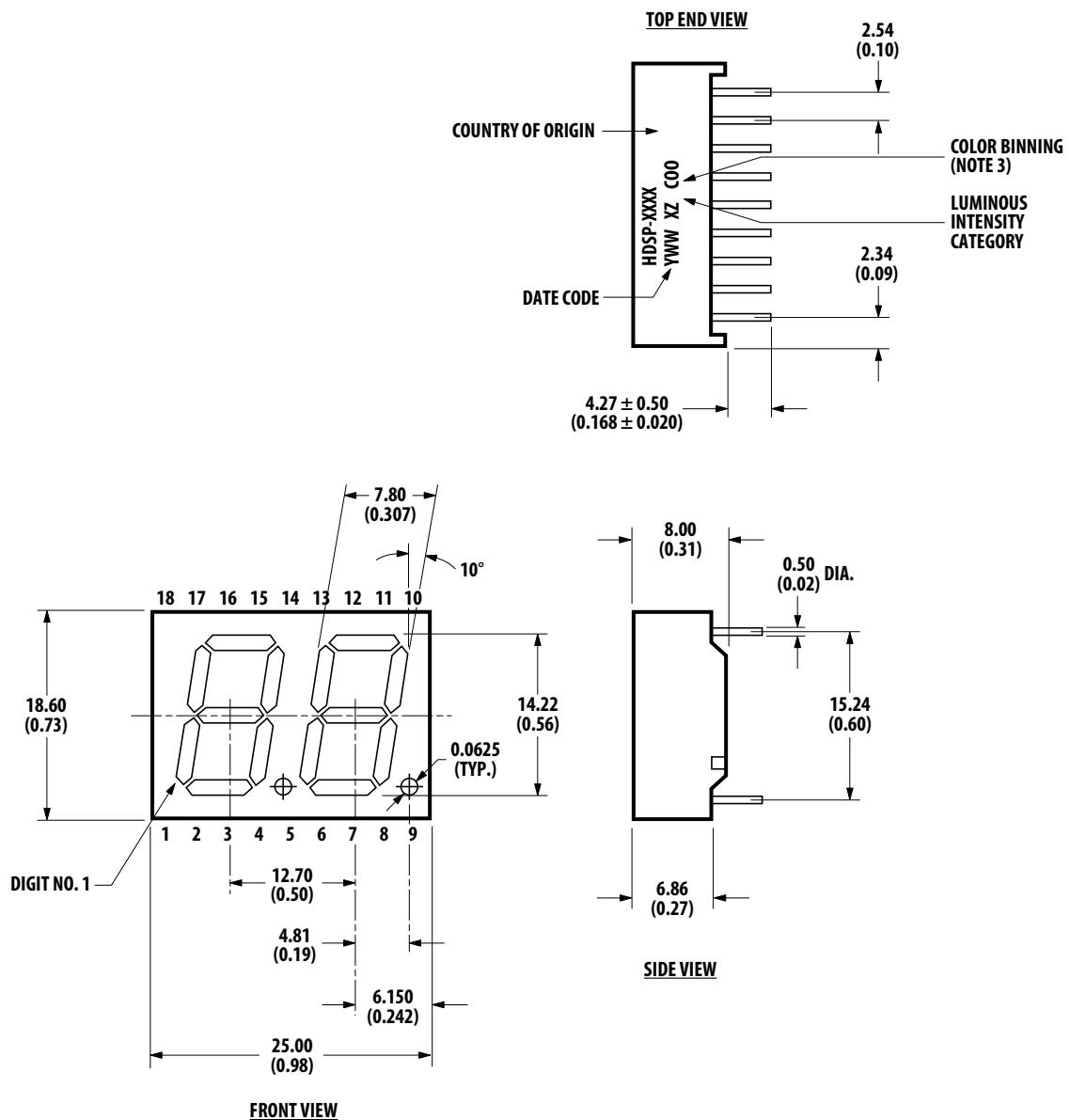
Package^[1]

Refer to Respective Datasheet

Notes:

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.

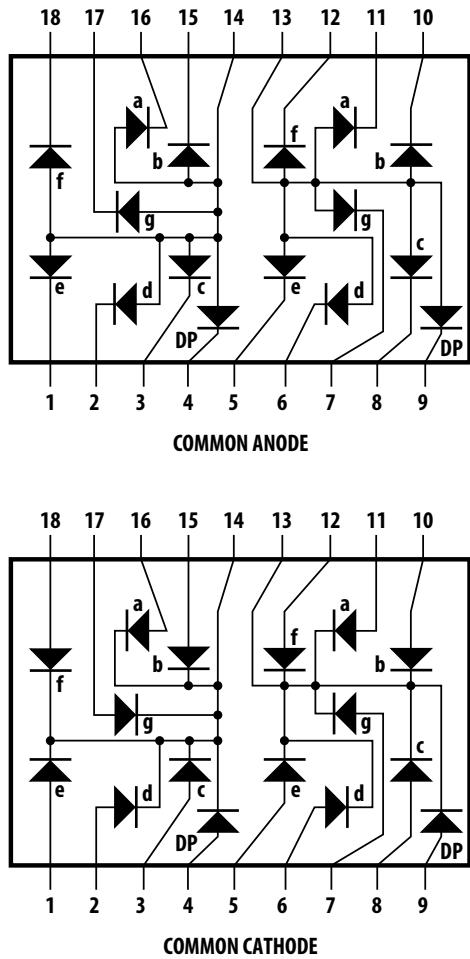
Package Dimensions



Notes:

1. ALL DIMENSIONS ARE IN MILLIMETERS (INCHES).
2. TOLERANCE IS 0.25 mm (0.01 INCH) UNLESS OTHERWISE STATED.

Internal Circuit Diagram



COMMON ANODE		COMMON CATHODE	
PIN	FUNCTION	PIN	FUNCTION
1	E CATHODE NO. 1	1	E ANODE NO. 1
2	D CATHODE NO. 1	2	D ANODE NO. 1
3	C CATHODE NO. 1	3	C ANODE NO. 1
4	DP CATHODE NO. 1	4	DP ANODE NO. 1
5	E CATHODE NO. 2	5	E ANODE NO. 2
6	D CATHODE NO. 2	6	D ANODE NO. 2
7	G CATHODE NO. 2	7	G ANODE NO. 2
8	C CATHODE NO. 2	8	C ANODE NO. 2
9	DP CATHODE NO. 2	9	DP ANODE NO. 2
10	B CATHODE NO. 2	10	B ANODE NO. 2
11	A CATHODE NO. 2	11	A ANODE NO. 2
12	F CATHODE NO. 2	12	F ANODE NO. 2
13	DIGIT NO. 2 ANODE	13	DIGIT NO. 2 CATHODE
14	DIGIT NO. 1 ANODE	14	DIGIT NO. 1 CATHODE
15	B CATHODE NO. 1	15	B ANODE NO. 1
16	A CATHODE NO. 1	16	A ANODE NO. 1
17	G CATHODE NO. 1	17	G ANODE NO. 1
18	F CATHODE NO. 1	18	F ANODE NO. 1

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

Parameter	AlGaAs Red HDSP-52xA	Units
Power Dissipation Segment	30	mW
Forward Current Segment	15 ^[1]	mA
Peak Forward Current per Segment (1/10 Duty Factor at 10 KHz)	80	mA
Operating Temperature Range	-35 to +85	°C
Storage Temperature Range	-35 to +85	°C
Reverse Voltage per Segment or DP	5	V
Wavesoldering Temperature for 3 seconds ^[2] (at 2 mm Distance from the body)	250	°C

Notes:

1. Derate above 25°C at 0.2 mA/°C.
2. Not recommended to be soldered more than 2 times. Minimum interval between solderings is 15 minutes. Total soldering time not to exceed 5 seconds.

Intensity Bin Limits (mcd at 10 mA)

AlGaAs Red		
Bin Name	Min. ^[1]	Max. ^[1]
J	3.201	5.050
K	5.051	8.000
L	8.001	12.650

Note:

1. Tolerance for each bin limit is $\pm 10\%$.

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

AlGaAs Red

Device	Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
HDSP-521A, HDSP-523A	Luminous Intensity /Segment (Segment Average) ^[1, 2]	I_V	3.201	3.66 6.500		mcd	$I_F = 5 \text{ mA}$ $I_F = 10 \text{ mA}$
	Forward Voltage / Segment or DP	V_F		1.85	2.00	V	$I_F = 20 \text{ mA}$
	Peak Wavelength	λ_{PEAK}		660		nm	
	Dominant Wavelength ^[3]	λ_d		643		nm	
	Reverse Voltage/Segment or DP ^[4]	V_R	5			V	$I_R = 100 \mu\text{A}$

Notes:

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

AlGaAs Red

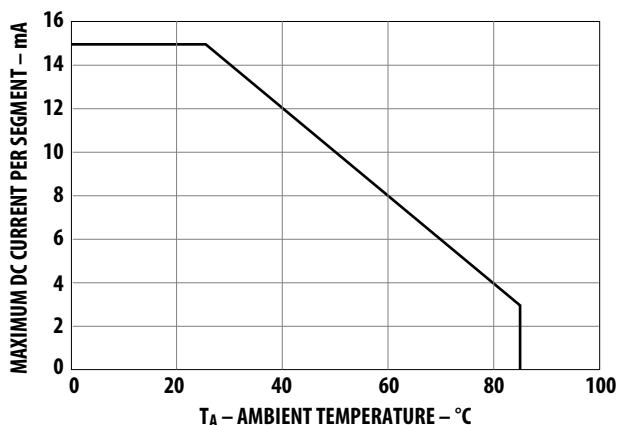


Figure 1. Maximum allowable average or DC current vs. ambient temperature.

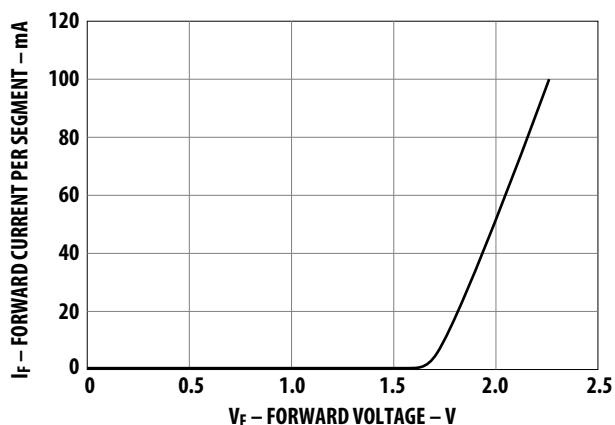


Figure 2. Forward current vs. forward voltage.

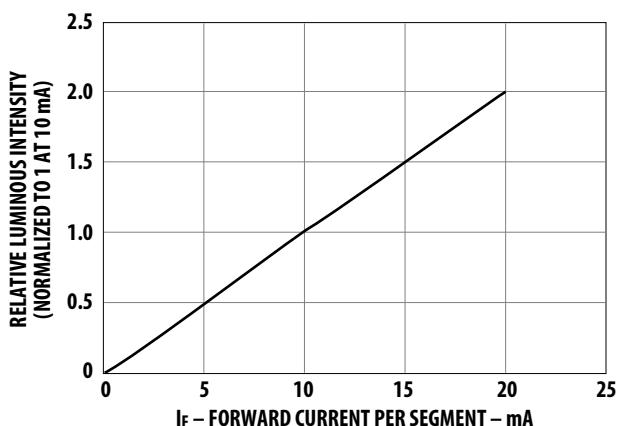


Figure 3. Relative luminous intensity vs. DC forward current.

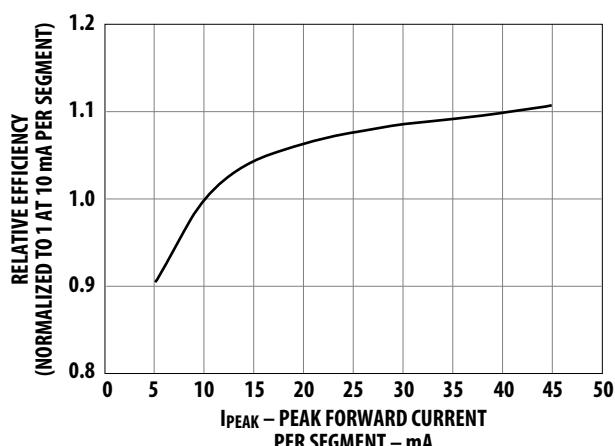


Figure 4. Relative efficiency (luminous intensity per unit current) vs. peak current.

Contrast Enhancement

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

Soldering/Cleaning

Cleaning agents from the ketone family (acetone, methyl ethylketone, 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 web site: www.avagotech.com

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