

HDSP-B58x Series

53.3 mm (2.1 inch) General Purpose 5 x 8 Dot Matrix
Bi-Color Alphanumeric Displays



Data Sheet



Description

These displays have a 53.3 mm (2.1 inch) character height. The devices are available in either common row anode or common row cathode configurations. The displays come in only black face paint. This bi-color display consists of GaP Red (HER) and GaP Green colors.

These parts are subjected to Out-going Quality Assurance (OQA) inspection with an AQL of 0.065% for functional and visual/cosmetic defects.

Devices

HDSP-	Description
B581	53.3 mm Black Surface Common Row Anode
B582	53.3 mm Black Surface Common Row Cathode

Note:

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

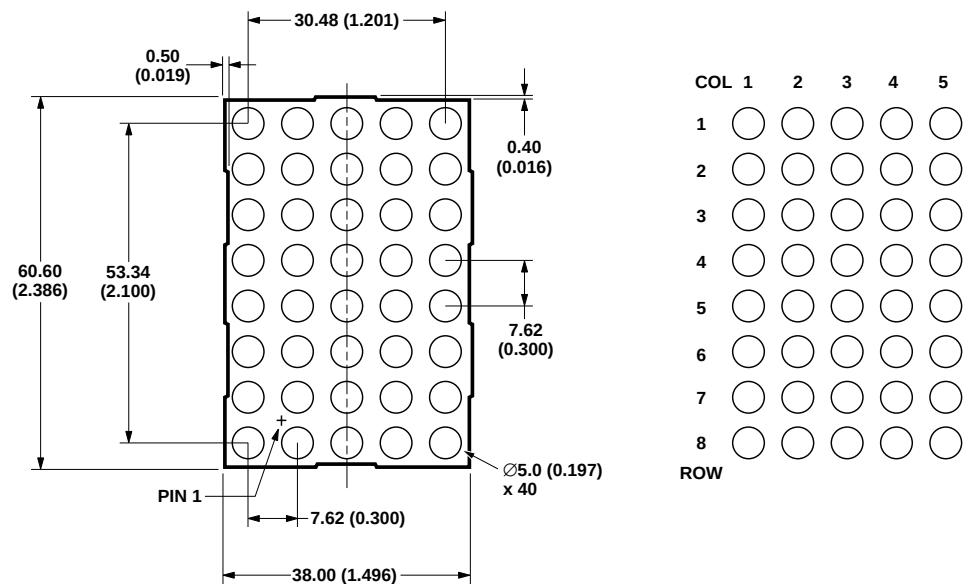
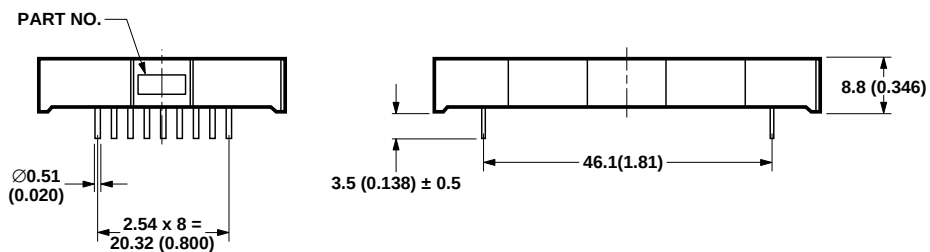
Features

- **5 x 8 Dot matrix font**
- **X-Y stackable**
- **Pin-out**
 - 45.72 mm (1.8 in.) Dual-In-Line (DIP) leads on 2.54 mm (0.1 in.) centers
- **Color**
 - Bi-color: GaP Red and GaP Green
- **Face paint color: black**
- **Design flexibility**
 - Common row anode or common row cathode
- **Categorized for luminance**

Applications

- **Suitable for indoor use**
- **Not recommended for industrial applications, i.e., operating temperature requirements exceeding 85°C or below -35°C**
- **Extreme temperature cycling not recommended^[1]**

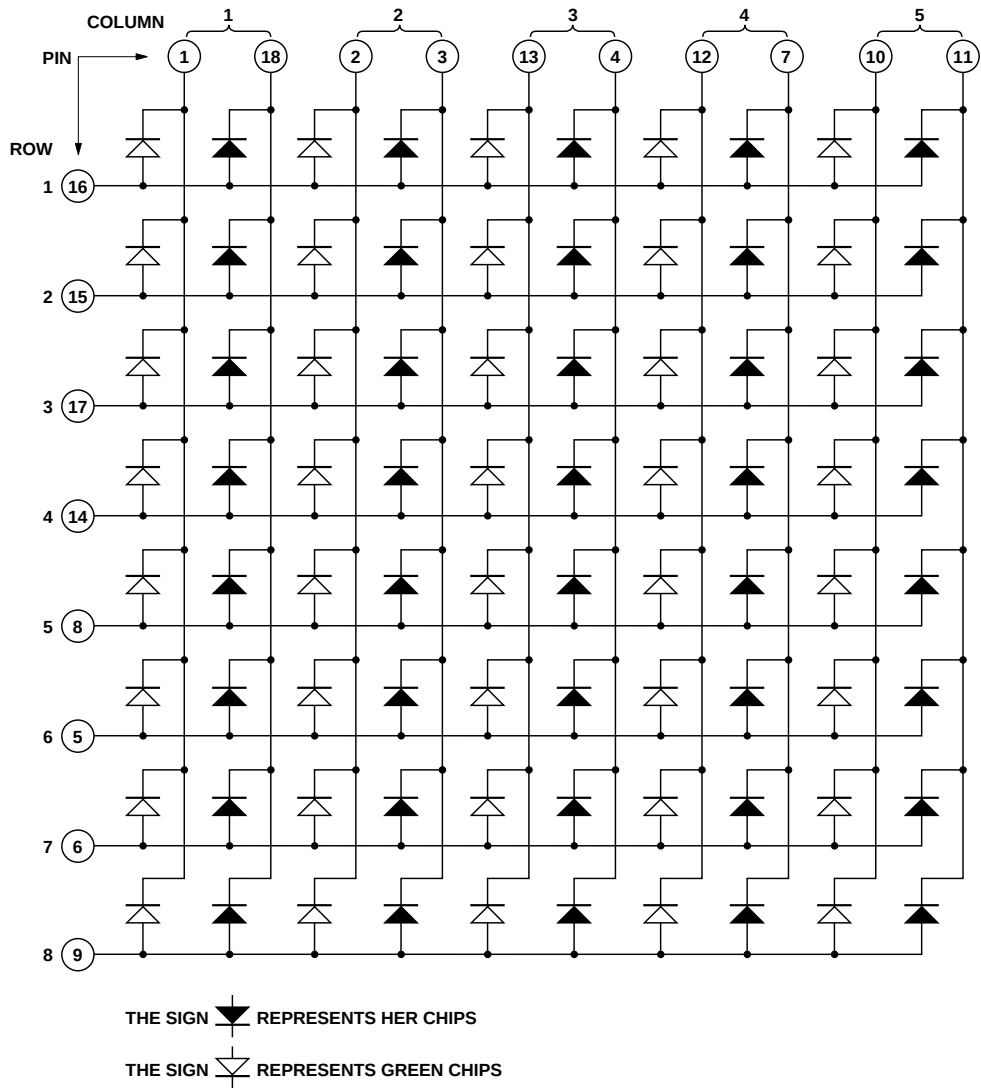
Package Dimensions



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

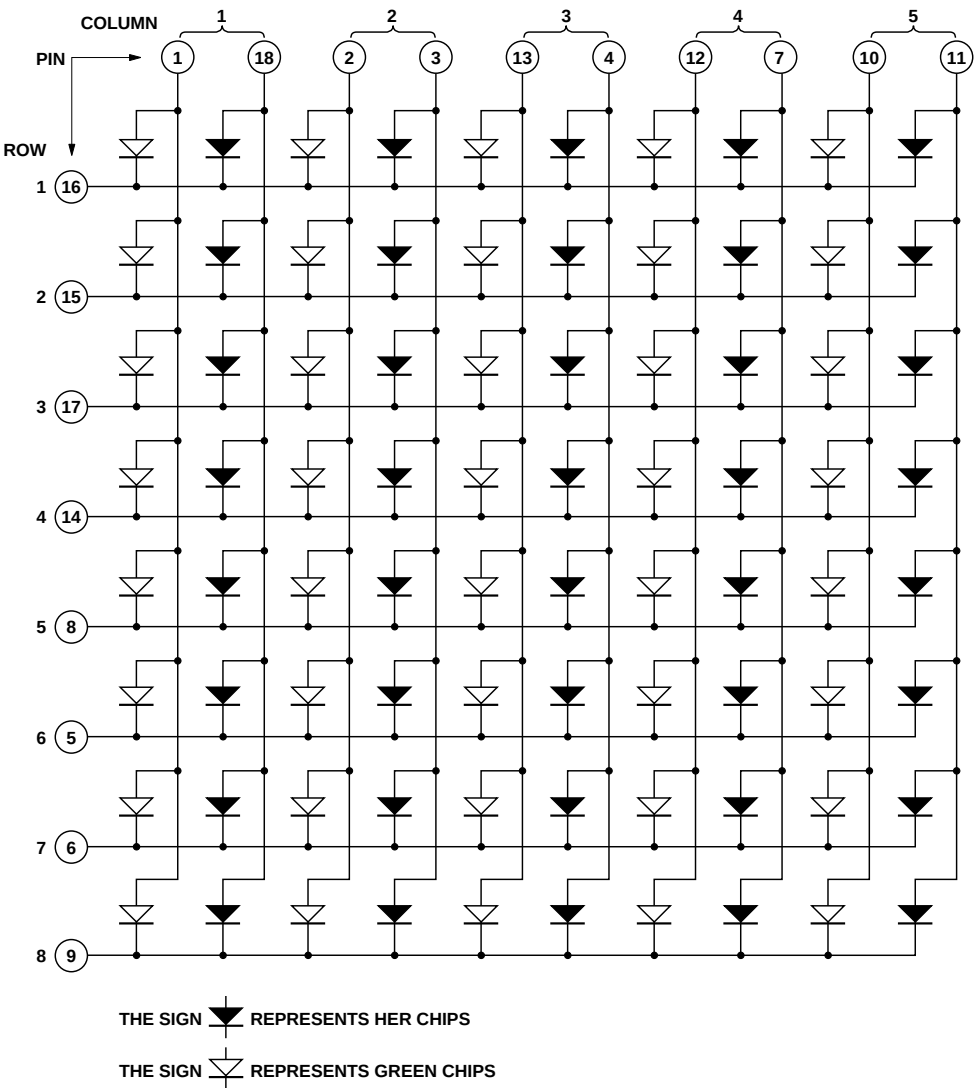
Internal Circuit Diagram

HDSP-B581



PIN NO.	CONNECTION
1	COLUMN 1 GREEN
2	COLUMN 2 GREEN
3	COLUMN 2 RED
4	COLUMN 3 RED
5	ROW 6
6	ROW 7
7	COLUMN 4 RED
8	ROW 5
9	ROW 8
10	COLUMN 5 GREEN
11	COLUMN 5 RED
12	COLUMN 4 GREEN
13	COLUMN 3 GREEN
14	ROW 4
15	ROW 2
16	ROW 1
17	ROW 3
18	COLUMN 1 RED

Internal Circuit Diagram
 HDSP-B582



PIN NO.	FUNCTION
1	COLUMN 1 GREEN ANODE
2	COLUMN 2 GREEN ANODE
3	COLUMN 2 RED ANODE
4	COLUMN 4 RED ANODE
5	ROW 6 CATHODE
6	ROW 7 CATHODE
7	COLUMN 4 RED ANODE
8	ROW 5 CATHODE
9	ROW 8 CATHODE
10	COLUMN 5 GREEN ANODE
11	COLUMN 5 RED ANODE
12	COLUMN 4 GREEN ANODE
13	COLUMN 3 GREEN ANODE
14	ROW 4 CATHODE
15	ROW 2 CATHODE
16	ROW 1 CATHODE
17	ROW 3 CATHODE
18	COLUMN 1 RED ANODE

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

Parameter	GaP Red HDSP-B581 / B582	GaP Green HDSP-B581 / B582	Units
Average Power per Dot ^[1]	65	65	mW
Peak Forward Current per Dot ^[1] (1/8 Duty Cycle at 10 kHz)	80	100	mA
Average Forward Current per Dot	25 ^[1,2]	25 ^[1,3]	mA
Reverse Voltage per Dot	3	3	V
Operating Temperature	-35 to +85	-35 to +85	°C
Storage Temperature	-35 to +85	-35 to +85	°C
Wave Soldering Temperature for 3 seconds ^[4] (2 mm [0.078 in.] below Body)	250	250	°C

Notes:

1. Do not exceed maximum average current per dot.
2. Derate above 25°C at 0.20 mA/°C.
3. Derate above 25°C at 0.33 mA/°C.
4. Not recommended to be soldered more than two times. Minimum interval between solderings is 15 minutes.
Total soldering time not to exceed 3 seconds.

Optical / Electrical Characteristics at T_A = 25°C

GaP Red

Devices HDSP-	Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
B581/ B582	Peak Wavelength	λ_{peak}		640		nm	I _F = 20 mA
	Dominant Wavelength ^[2]	λ_d		628		nm	I _F = 20 mA
	Forward Voltage	V _F		2.1	2.6	V	I _F = 20 mA
	Reverse Voltage ^[3]	V _R	3.0			V	I _R = 100 μ A
	Luminous Intensity Matching Ratio	I _{V-m}			2:1		I _{FP} = 40 mA, 1/8 Duty Factor

GaP Green

Devices HDSP-	Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
B581/ B582	Peak Wavelength	λ_{peak}		568		nm	I _F = 20 mA
	Dominant Wavelength ^[2]	λ_d		573		nm	I _F = 20 mA
	Forward Voltage	V _F		2.3	2.6	V	I _F = 20 mA
	Reverse Voltage ^[3]	V _R	3.0			V	I _R = 100 μ A
	Luminous Intensity Matching Ratio	I _{V-m}			2:1		I _{FP} = 40 mA, 1/8 Duty Factor

Bi-Color

Devices HDSP-	Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
B581 B582	Luminance/Unit (Digit Average) ^[1]	I _V	72	110	179	Cd/m ²	I _{FP} = 40 mA, 1/8 Duty Factor

Notes:

1. The digits are categorized for luminance. The luminance category is designated by a letter on the side of the package.
2. The dominant wavelength, λ_d , is derived from the CIE chromaticity diagram and represents the single wavelength which defines the color of the device.
3. Typical specification for reference only. Do not exceed absolute maximum ratings.

Bi-Color (Cd / m² at I_{FP} = 40 mA, 1 / 8 Duty Factor)

Bin Name	Min. ^[2]	Max. ^[2]
E	72	86
F	86	104
G	104	124
H	124	149
I	149	179

Hue Grade

Coordinate	4	5	Bin 6	7	8
X	0.542-0.553	0.552-0.563	0.562-0.573	0.572-0.583	0.582-0.593
Y	0.445-0.456	0.435-0.446	0.425-0.436	0.415-0.426	0.405-0.416

Notes:

1. Bin categories are established for classification of products. Products may not be available in all bin categories.
2. Tolerance for each intensity bin limit is $\pm 10\%$.

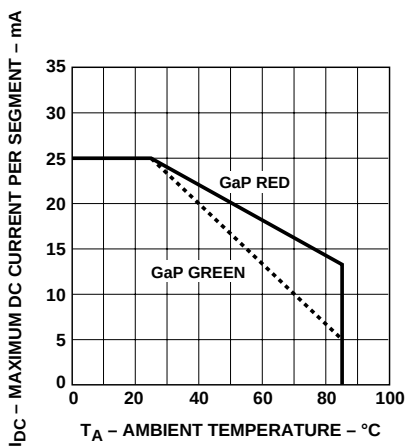


Figure 1. Maximum allowable average current per dot vs. ambient temperature.

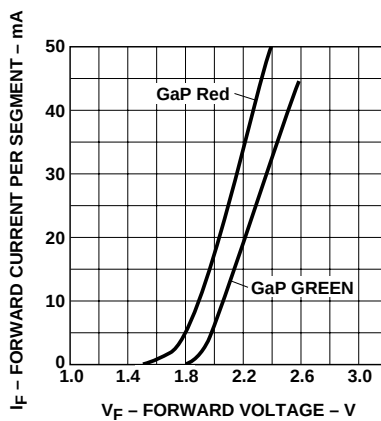


Figure 2. Forward current vs. forward voltage.

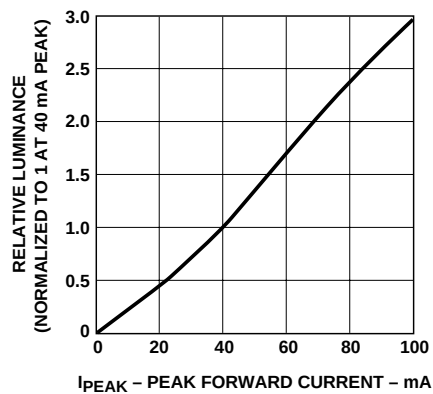


Figure 3. Relative luminance vs. peak forward current.

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 and Note 1060.

Device Reliability

For reliability information, please see the reliability datasheet *General Purpose 5 x 8 Dot Matrix Bi-Color Displays*.

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

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5988-2005EN June 23, 2006

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