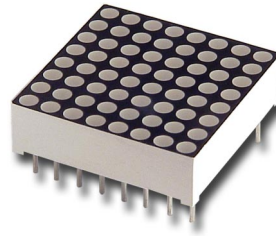


# HDSP-S8xE/S8xG Series

17.5 mm (0.69 inch) General Purpose 8 x 8 Dot Matrix  
Alphanumeric Displays



## Data Sheet



### Description

These displays have a 17.5 mm (0.69 inch) character height. The devices are available in common anode and common cathode. The displays come in only black face paint and are available in a choice of GaP Red (HER) or GaP Green colors.

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

### 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<sup>[1]</sup>

### Features

- 8 x 8 Dot matrix font
- X-Y stackable
- Choice of colors
  - Single color: red or green
- Face paint color: black
- Design flexibility
  - Common row anode
  - Common row cathode
- Categorized for luminous intensity
- Green categorized for color

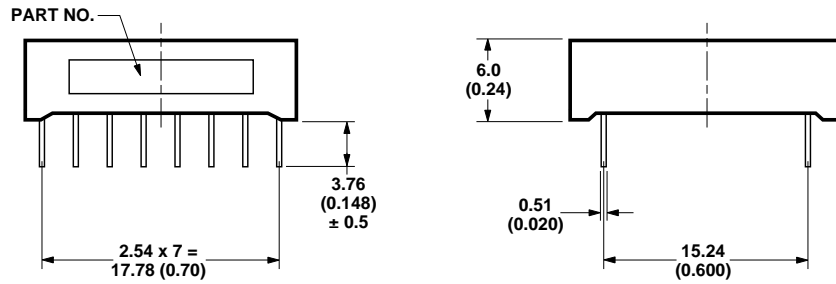
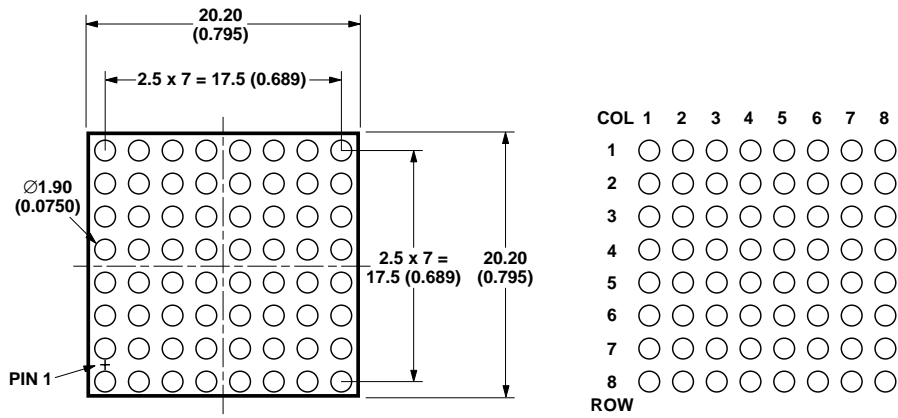
### Devices

Gap Red HDSP-	GaP Green HDSP-	Description
S80E	S80G	17.5 mm Black Surface Common Row Anode
S85E	S85G	17.5 mm Black Surface Common Row Cathode

#### Note:

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

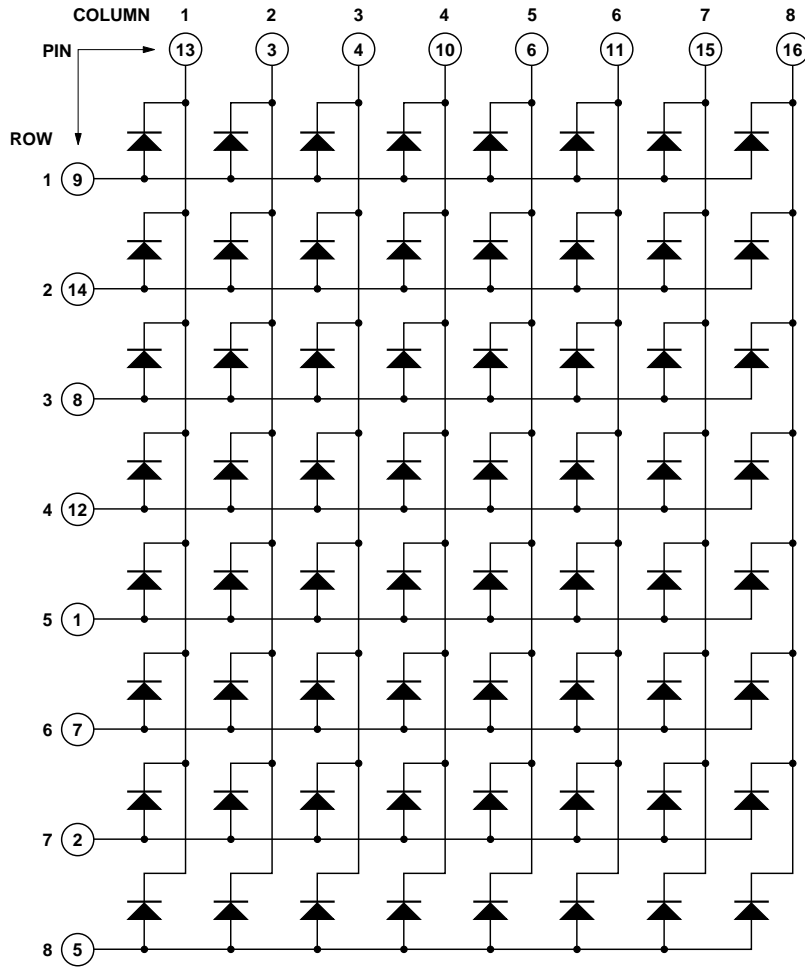
# Package Dimensions



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

# Internal Circuit Diagram

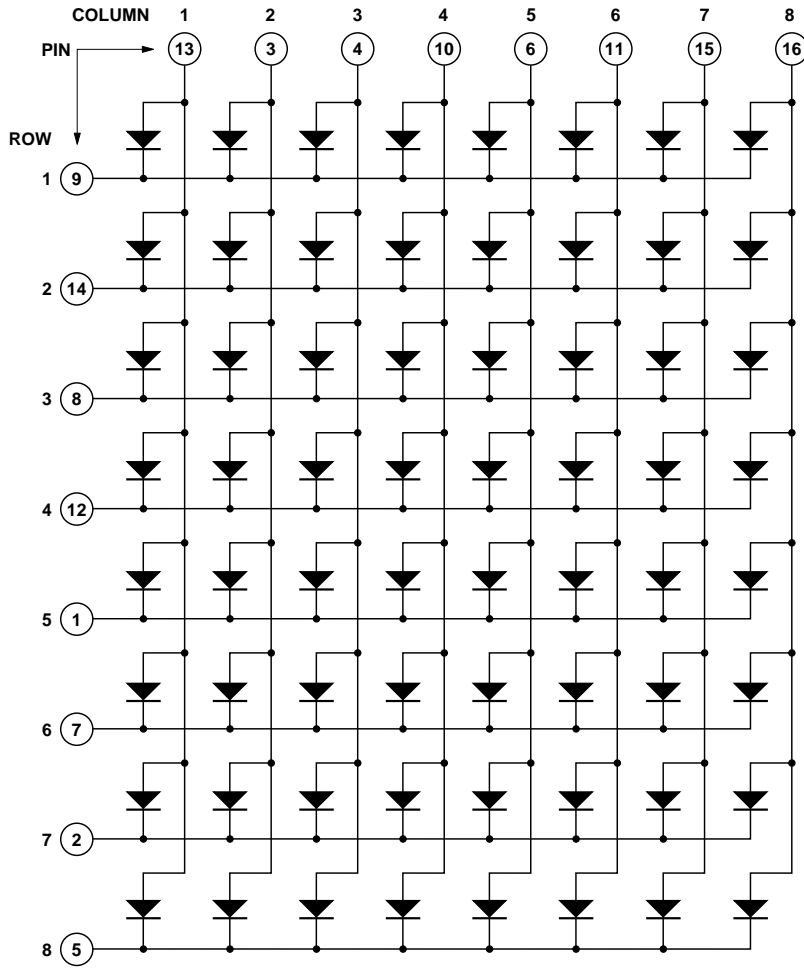
Common Row Anode HDSP-S80E/S80G



PIN	CONNECTION
1	ROW 5
2	ROW 7
3	COLUMN 2
4	COLUMN 3
5	ROW 8
6	COLUMN 5
7	ROW 6
8	ROW 3
9	ROW 1
10	COLUMN 4
11	COLUMN 6
12	ROW 4
13	COLUMN 1
14	ROW 2
15	COLUMN 7
16	COLUMN 8

# Internal Circuit Diagram

Common Row Cathode HDSP-S85E/S85G



PIN	CONNECTION
1	ROW 5
2	ROW 7
3	COLUMN 2
4	COLUMN 3
5	ROW 8
6	COLUMN 5
7	ROW 6
8	ROW 3
9	ROW 1
10	COLUMN 4
11	COLUMN 6
12	ROW 4
13	COLUMN 1
14	ROW 2
15	COLUMN 7
16	COLUMN 8

### Absolute Maximum Ratings at T<sub>A</sub> = 25 °C

Parameter	GaP Red HDSP-S80E/S85E	GaP Green HDSP-S80G/S85G	Units
Average Power per Dot <sup>[1]</sup>	65	65	mW
Peak Forward Current per Dot <sup>[1]</sup> (1/8 Duty Cycle at 10 KHz)	80	100	mA
Average Forward Current per Dot	25 <sup>[1,2]</sup>	25 <sup>[1,3]</sup>	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 <sup>[4]</sup> (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 2 times. Minimum interval between solderings is 15 minutes. Total soldering time not to exceed 3 seconds.

### Optical/Electrical Characteristics at T<sub>A</sub> = 25 °C

#### GaP Red

Devices HDSP-	Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
S80E/ S85E	Luminous Intensity/Dot (Digit Average) <sup>[1]</sup>	I <sub>v</sub>	0.82	1.2		mcd	I <sub>FP</sub> = 40 mA, 1/8 Duty Factor
	Peak Wavelength	λ <sub>peak</sub>		632		nm	I <sub>F</sub> = 20 mA
	Dominant Wavelength <sup>[2]</sup>	λ <sub>d</sub>		622		nm	I <sub>F</sub> = 20 mA
	Forward Voltage	V <sub>F</sub>		2.1	2.4	V	I <sub>F</sub> = 20 mA
	Reverse Voltage <sup>[3]</sup>	V <sub>R</sub>	3.0			V	I <sub>R</sub> = 100 μA
	Luminous Intensity Matching Ratio	I <sub>v-m</sub>			2:1		I <sub>FP</sub> = 40 mA, 1/8 Duty Factor

#### GaP Green

Devices HDSP-	Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
S80G\ S85G	Luminous Intensity/Dot (Digit Average) <sup>[1]</sup>	I <sub>v</sub>	1.0	1.5		mcd	I <sub>FP</sub> = 40 mA, 1/8 Duty Factor
	Peak Wavelength	λ <sub>peak</sub>		568		nm	I <sub>F</sub> = 20 mA
	Dominant Wavelength <sup>[2]</sup>	λ <sub>d</sub>		573		nm	I <sub>F</sub> = 20 mA
	Forward Voltage	V <sub>F</sub>		2.3	2.6	V	I <sub>F</sub> = 20 mA
	Reverse Voltage <sup>[3]</sup>	V <sub>R</sub>	3.0			V	I <sub>R</sub> = 100 μA
	Luminous Intensity Matching Ratio	I <sub>v-m</sub>			2:1		I <sub>FP</sub> = 40 mA, 1/8 Duty Factor

**Notes:**

1. The digits are categorized for luminous intensity. The intensity category is designated by a letter on the side of the package.
2. The dominant wavelength, λ<sub>d</sub>, 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.

### Intensity Bin Limits<sup>[1]</sup> (mcd at I<sub>FP</sub> = 40 mA, 1/8 Duty Factor)

#### GaP Red

Bin Name	Min. <sup>[2]</sup>	Max. <sup>[2]</sup>
E	0.97	1.45
F	1.46	2.19

#### GaP Green

Bin Name	Min. <sup>[2]</sup>	Max. <sup>[2]</sup>
E	0.97	1.45
F	1.46	2.19
G	2.20	3.30

**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  $\pm 10\%$ .

### Color Bin Limits (nm)<sup>[1]</sup>

#### Green

Bin Name	Min. <sup>[2]</sup>	Max. <sup>[2]</sup>
3	569.1	571
4	571.1	573
5	573.1	575

**Notes:**

1. Bin categories are established for classification of products. Products may not be available in all bin categories.
2. Tolerance for each color bin limit is  $\pm 1.0$  nm.

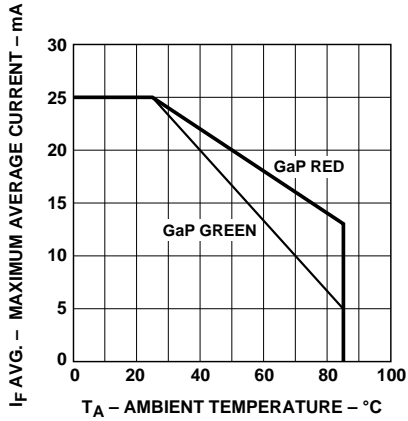


Figure 1. Maximum allowable average current per dot vs. ambient temperature.

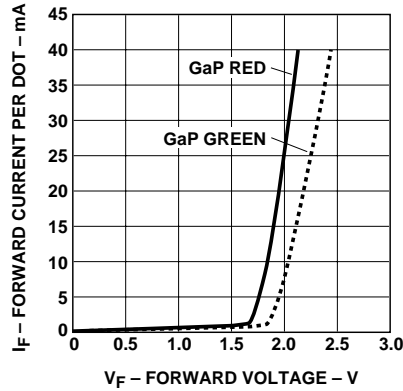


Figure 2. Forward current vs. forward voltage.

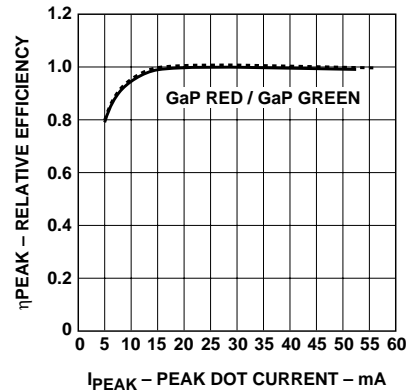


Figure 3. Relative luminous intensity vs. dc forward current.

### Contrast Enhancement

For information on contrast enhancement, 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 *17.5 mm General Purpose 8 x 8 Dot Matrix Alphanumeric Displays*.

For product information and a complete list of distributors, please go to our website: [www.avagotech.com](http://www.avagotech.com)

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