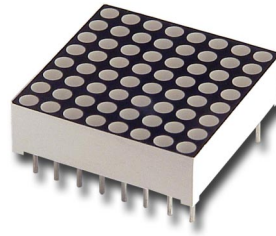


HDSP-S8xE/S8xG Series

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^[1]

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

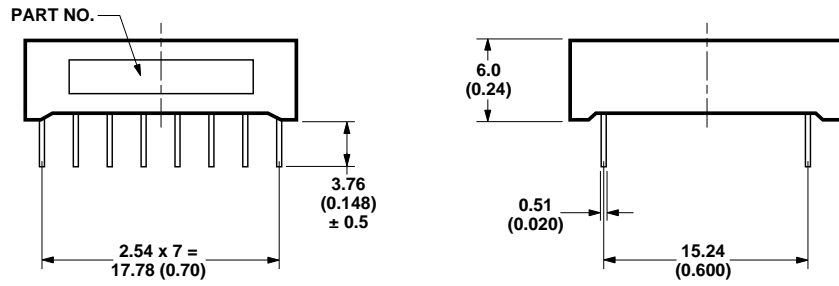
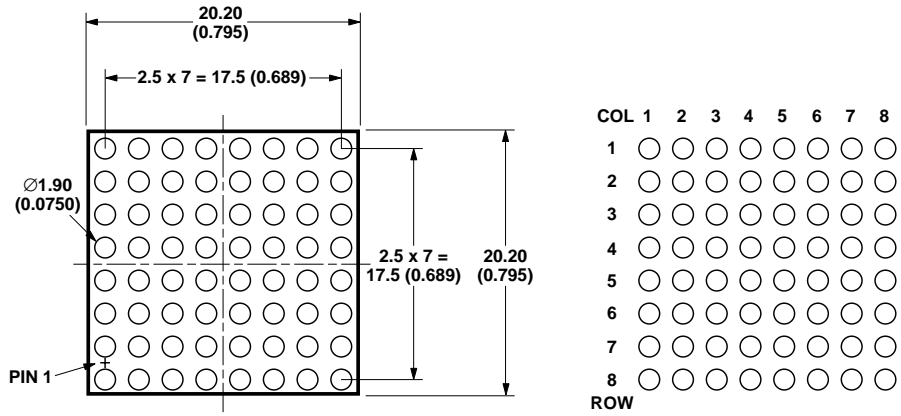
Devices

| 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.

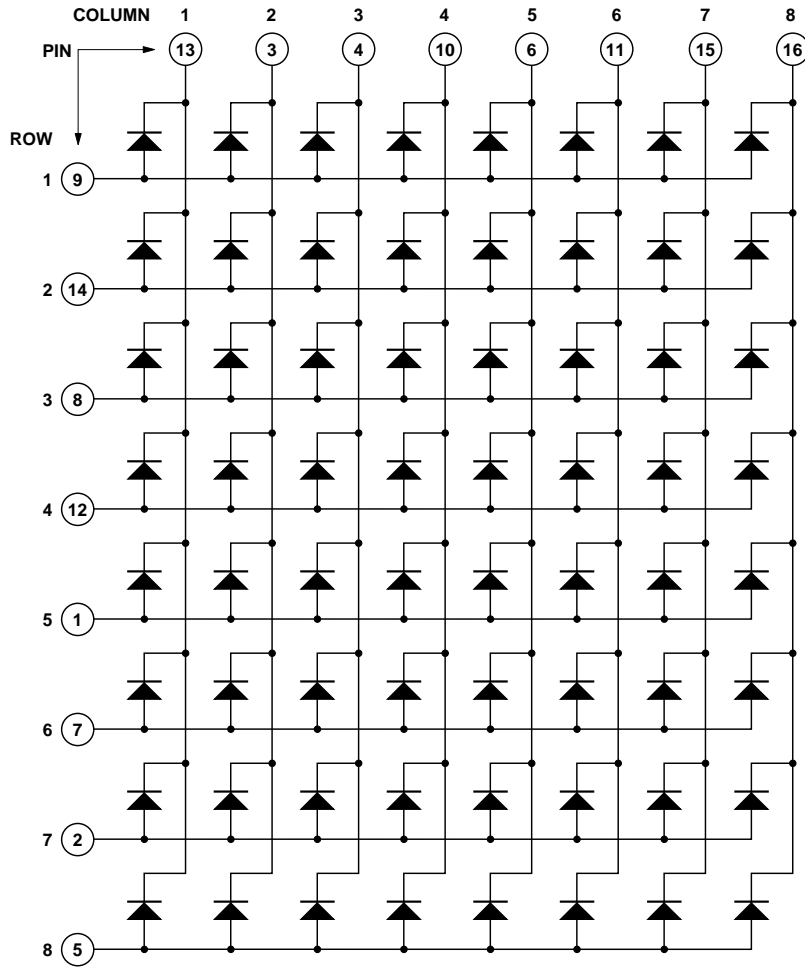
Package Dimensions



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

Internal Circuit Diagram

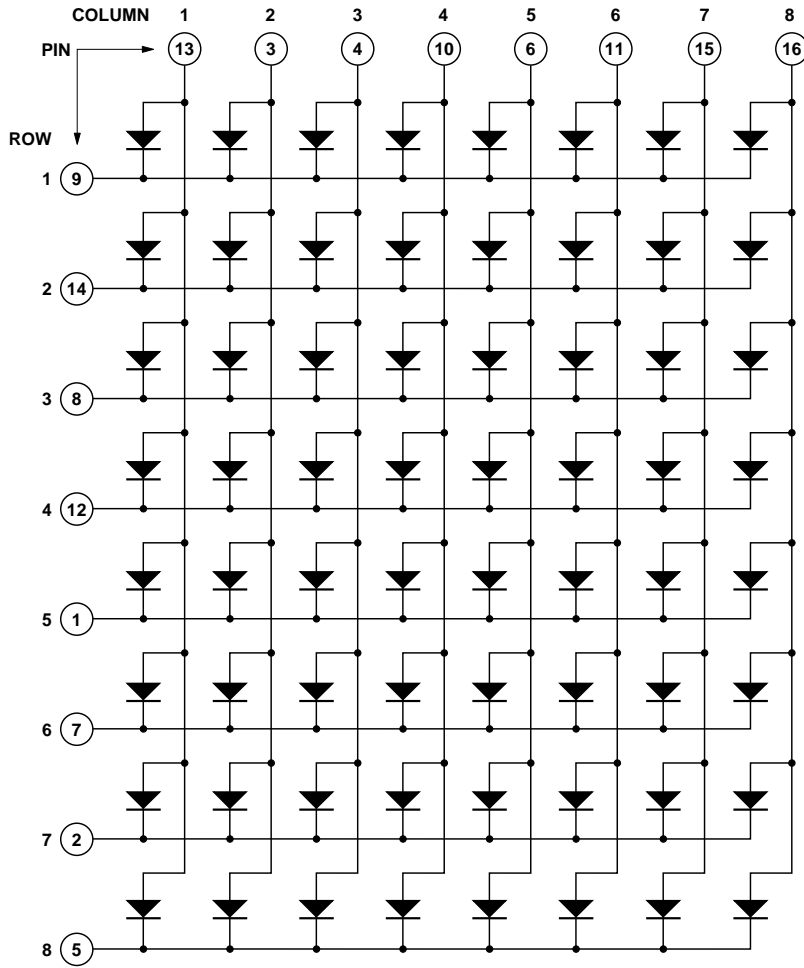
Common Row Anode HDSP-S80E/S80G



| 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_A = 25 °C

| Parameter | GaP Red HDSP-S80E/S85E | GaP Green HDSP-S80G/S85G | 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 2 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 |
|------------------|--|-------------------|------|------|------|-------|---|
| S80E/ S85E | Luminous Intensity/Dot (Digit Average) ^[1] | I _v | 0.82 | 1.2 | | mcd | I _{FP} = 40 mA, 1/8 Duty Factor |
| | Peak Wavelength | λ _{peak} | | 632 | | nm | I _F = 20 mA |
| | Dominant Wavelength ^[2] | λ _d | | 622 | | nm | I _F = 20 mA |
| | Forward Voltage | V _F | | 2.1 | 2.4 | V | I _F = 20 mA |
| | Reverse Voltage ^[3] | V _R | 3.0 | | | V | I _R = 100 μA |
| | 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 |
|------------------|--|-------------------|------|------|------|-------|---|
| S80G\ S85G | Luminous Intensity/Dot (Digit Average) ^[1] | I _v | 1.0 | 1.5 | | mcd | I _{FP} = 40 mA, 1/8 Duty Factor |
| | 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 μA |
| | Luminous Intensity Matching Ratio | I _{v-m} | | | 2:1 | | I _{FP} = 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_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.

Intensity Bin Limits^[1] (mcd at I_{FP} = 40 mA, 1/8 Duty Factor)

GaP Red

| Bin Name | Min. ^[2] | Max. ^[2] |
|----------|---------------------|---------------------|
| E | 0.97 | 1.45 |
| F | 1.46 | 2.19 |

GaP Green

| Bin Name | Min. ^[2] | Max. ^[2] |
|----------|---------------------|---------------------|
| 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)^[1]

Green

| Bin Name | Min. ^[2] | Max. ^[2] |
|----------|---------------------|---------------------|
| 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 ± 1.0 nm.

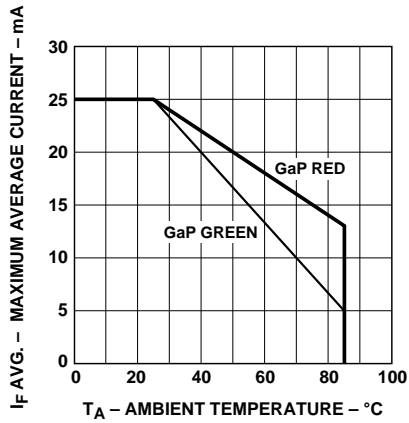


Figure 1. Maximum allowable average current per dot vs. ambient temperature.

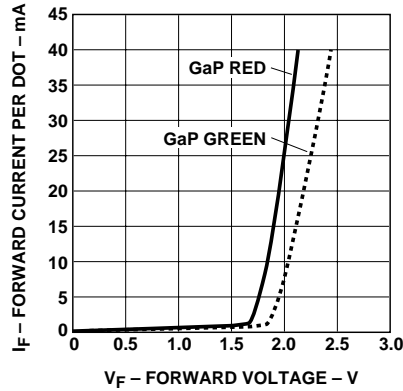


Figure 2. Forward current vs. forward voltage.

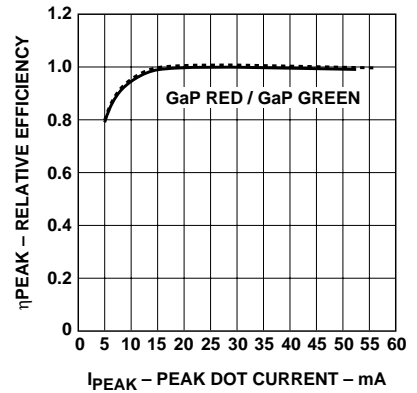


Figure 3. Relative luminous intensity vs. dc forward current.

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

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