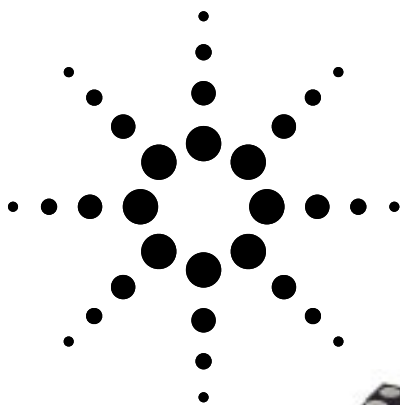




Agilent HDSP-S8xx, HDSP-B8xx Series 53.34 mm (2.1 inch) General Purpose 8 x 8 Dot Matrix Alphanumeric Displays Data Sheet



Description

These displays have a 53.34 mm (2.1 inch) character height. The devices are available in common row cathode and common row anode configurations. The displays come in only black face paint and are available in a choice of GaP Red (HER) or GaP Green colors. The Bi-color displays consist of HER and Green colors.

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

Features

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

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]

Devices

GaP Red HDSP-	GaP Green HDSP-	Description
S82E	S82G	53.34 mm Black Surface Common Row Anode
S87E	S87G	53.34 mm Black Surface Common Row Cathode
B82Z		53.34 mm Black Surface Bi-Color Common Row Anode
B87Z		53.34 mm Black Surface Bi-Color Common Row Cathode

Note:

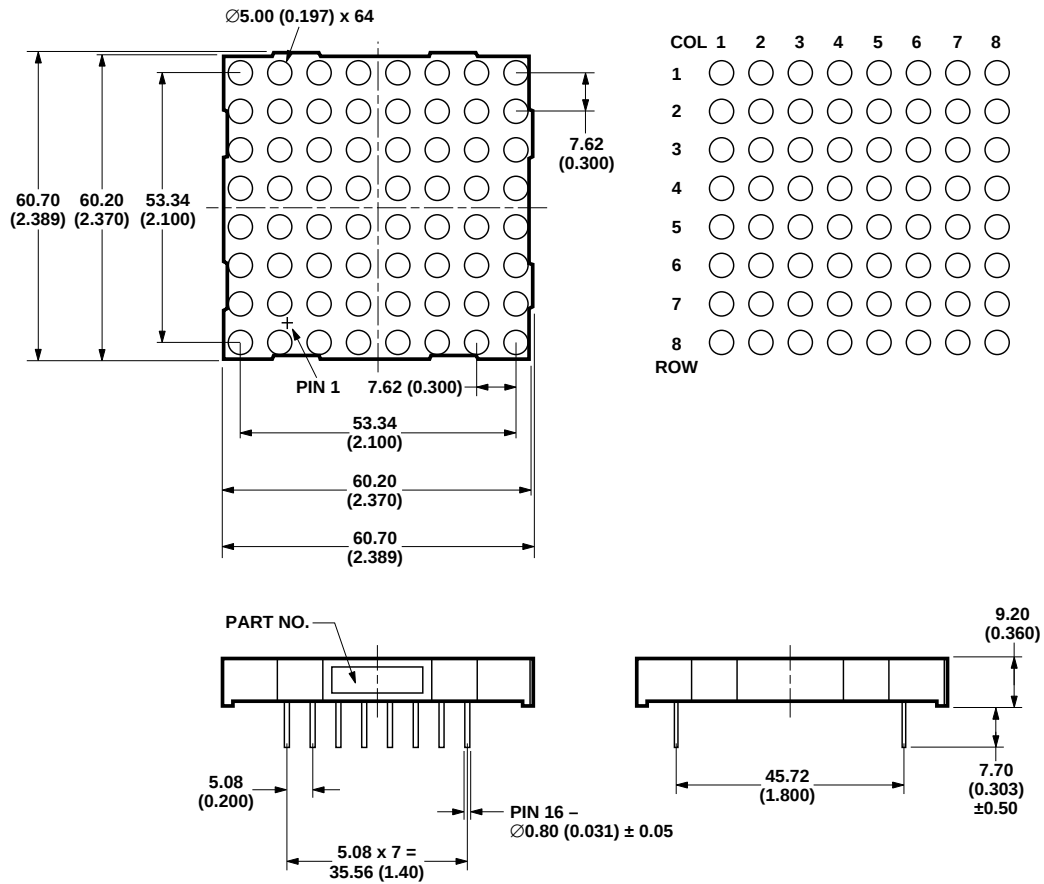
1. For details, please contact your local Agilent components sales office or an authorized distributor.



Agilent Technologies

Package Dimensions

Single Color

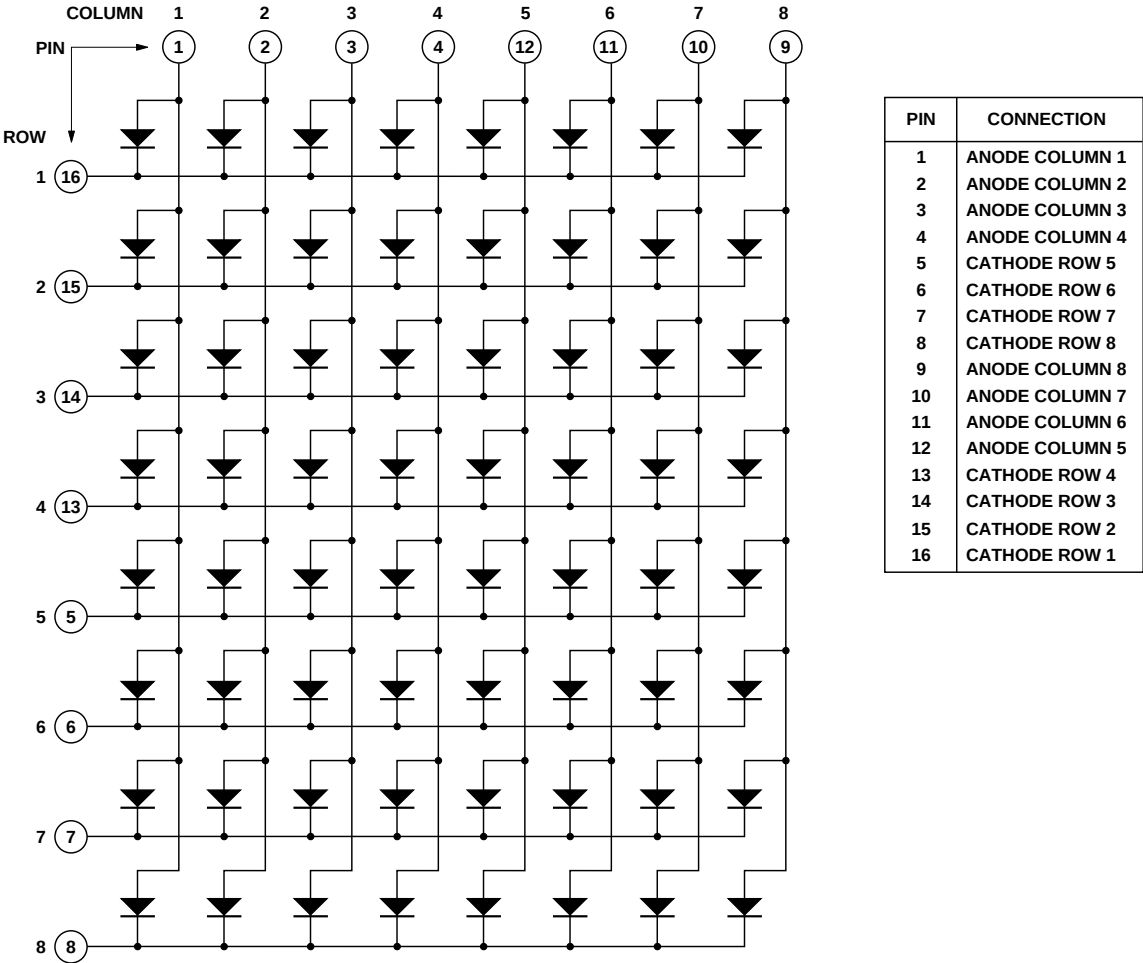


NOTES:

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

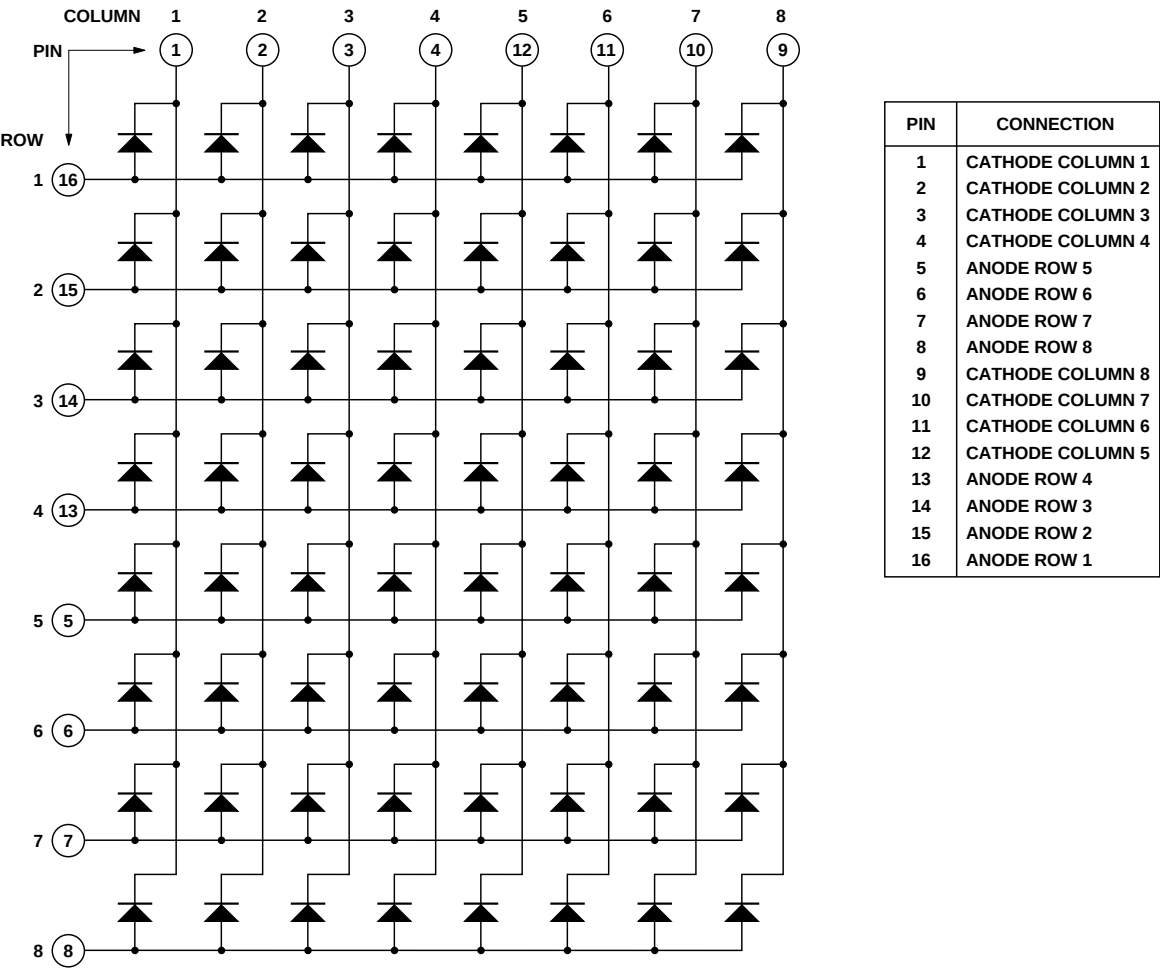
Internal Circuit Diagram

Single Color – Common Row Cathode

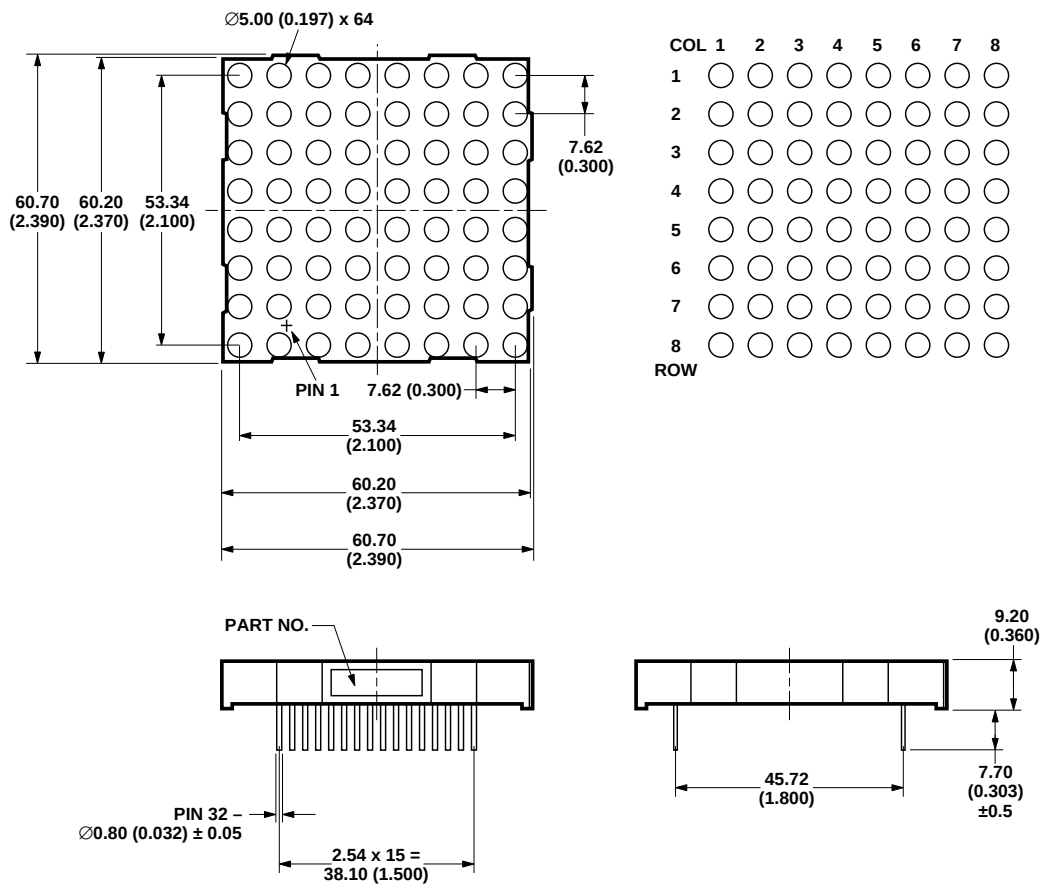


Internal Circuit Diagram

Single Color – Common Row Anode

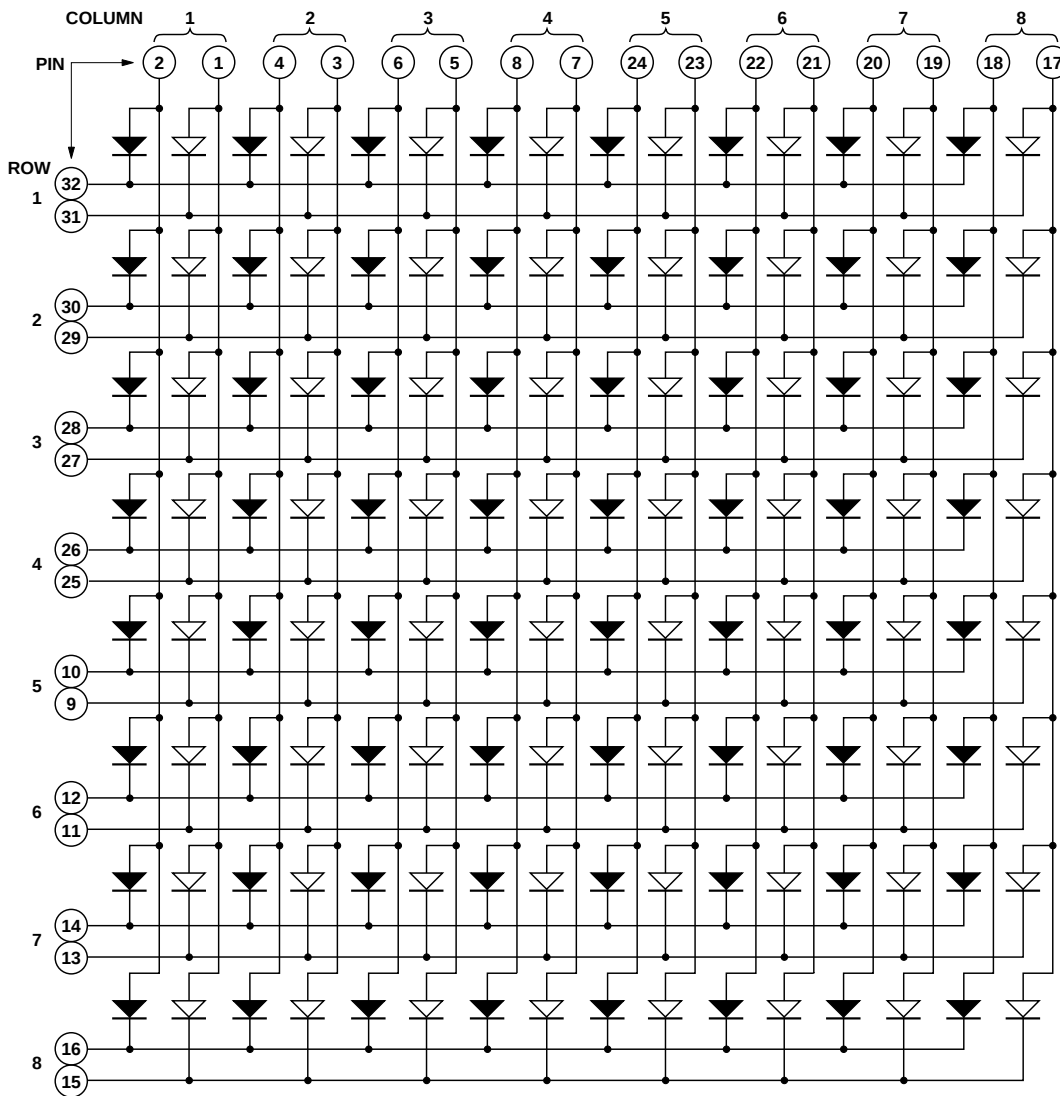


Package Dimensions
Bi-Color



Internal Circuit Diagram

Bi-Color – Common Row Cathode

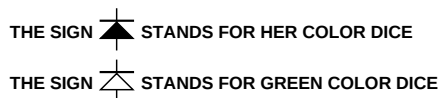


THE SIGN  STANDS FOR HER COLOR DICE

THE SIGN  STANDS FOR GREEN COLOR DICE

PIN NO.	CONNECTION
1	ANODE COLUMN 1 GREEN
2	ANODE COLUMN 1 HER
3	ANODE COLUMN 2 GREEN
4	ANODE COLUMN 2 HER
5	ANODE COLUMN 3 GREEN
6	ANODE COLUMN 3 HER
7	ANODE COLUMN 4 GREEN
8	ANODE COLUMN 4 HER
9	CATHODE ROW 5 GREEN
10	CATHODE ROW 5 HER
11	CATHODE ROW 6 GREEN
12	CATHODE ROW 6 HER
13	CATHODE ROW 7 GREEN
14	CATHODE ROW 7 HER
15	CATHODE ROW 8 GREEN
16	CATHODE ROW 8 HER
17	ANODE COLUMN 8 GREEN
18	ANODE COLUMN 8 HER
19	ANODE COLUMN 7 GREEN
20	ANODE COLUMN 7 HER
21	ANODE COLUMN 6 GREEN
22	ANODE COLUMN 6 HER
23	ANODE COLUMN 5 GREEN
24	ANODE COLUMN 5 HER
25	CATHODE ROW 4 GREEN
26	CATHODE ROW 4 HER
27	CATHODE ROW 3 GREEN
28	CATHODE ROW 3 HER
29	CATHODE ROW 2 GREEN
30	CATHODE ROW 2 HER
31	CATHODE ROW 1 GREEN
32	CATHODE ROW 1 HER

Bi-Color – Common Row Anode



PIN NO.	CONNECTION
1	CATHODE COLUMN 1 GREEN
2	CATHODE COLUMN 1 HER
3	CATHODE COLUMN 2 GREEN
4	CATHODE COLUMN 2 HER
5	CATHODE COLUMN 3 GREEN
6	CATHODE COLUMN 3 HER
7	CATHODE COLUMN 4 GREEN
8	CATHODE COLUMN 4 HER
9	ANODE ROW 5 GREEN
10	ANODE ROW 5 HER
11	ANODE ROW 6 GREEN
12	ANODE ROW 6 HER
13	ANODE ROW 7 GREEN
14	ANODE ROW 7 HER
15	ANODE ROW 8 GREEN
16	ANODE ROW 8 HER
17	CATHODE COLUMN 8 GREEN
18	CATHODE COLUMN 8 HER
19	CATHODE COLUMN 7 GREEN
20	CATHODE COLUMN 7 HER
21	CATHODE COLUMN 6 GREEN
22	CATHODE COLUMN 6 HER
23	CATHODE COLUMN 5 GREEN
24	CATHODE COLUMN 5 HER
25	ANODE ROW 4 GREEN
26	ANODE ROW 4 HER
27	ANODE ROW 3 GREEN
28	ANODE ROW 3 HER
29	ANODE ROW 2 GREEN
30	ANODE ROW 2 HER
31	ANODE ROW 1 GREEN
32	ANODE ROW 1 HER

Absolute Maximum Ratings at T_A = 25°C

Parameter	GaP Red HDSP-S87E/B87Z/S82E/B82Z	GaP Green HDSP-S87G/B87Z/S82G/B82Z	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
Lead Solder Temperature for 3 seconds ^[4] (2 mm [0.078 in.] below seating plane)	260	260	°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
S87E B87Z B82Z	Luminous Intensity/Dot (Digit Average) ^[1]	I _v	1.46	2.2	3.68	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	2.6	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

GaP Green

Devices HDSP-	Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
S87G B87Z B82Z	Luminous Intensity/Dot (Digit Average) ^[1]	I _v	2.12	3.5	5.33	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

Bi-Color

Devices HDSP-	Parameter	Symbol	Min.	Typ.	Max.	Units	Test Conditions
B87Z B82Z	Luminance/Dot (Digit Average) ^[1]	I _v	72	150	258	Cd/m ²	I _{FP} = 40 mA, 1/8 Duty Factor

Notes:

1. The digits are categorized for luminous intensity or luminance. The 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]
F	1.46	1.75
G	1.76	2.11
H	2.12	2.54
I	2.55	3.06
J	3.07	3.68

GaP Green

Bin Name	Min. ^[2]	Max. ^[2]
H	2.12	2.54
I	2.55	3.06
J	3.07	3.68
K	3.69	4.43
L	4.44	5.33

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	104.1	124
H	124.1	149
I	149.1	179
J	179.1	215
K	215.1	258

Hue Grade

Coordinate	4	5	6	Bin 7	8	9	10
X	0.542-0.553	0.552-0.563	0.562-0.573	0.572-0.583	0.582-0.593	0.592-0.603	0.602-0.613
Y	0.445-0.456	0.435-0.446	0.425-0.436	0.415-0.426	0.405-0.416	0.395-0.406	0.385-0.396

Notes:

1. Hue 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]**GaP 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.

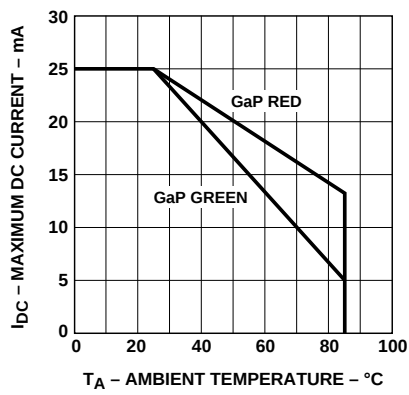


Figure 1. Maximum allowable average current per dot vs. ambient temperature.

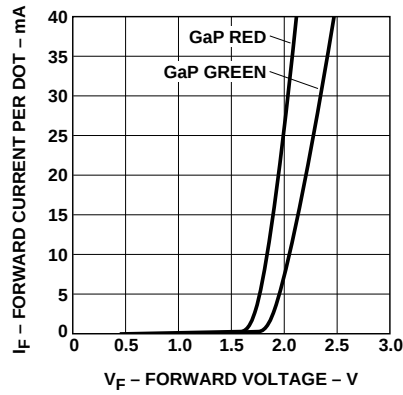


Figure 2. Forward current vs. forward voltage.

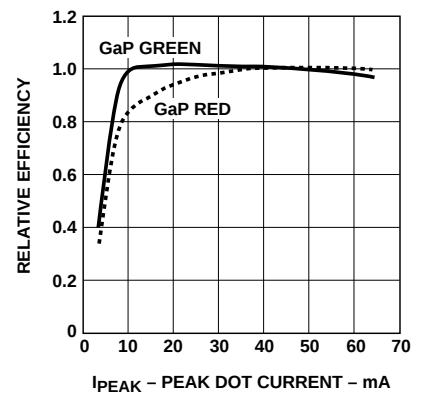


Figure 3. Relative efficiency (luminous intensity per unit dot) vs. peak current per dot.

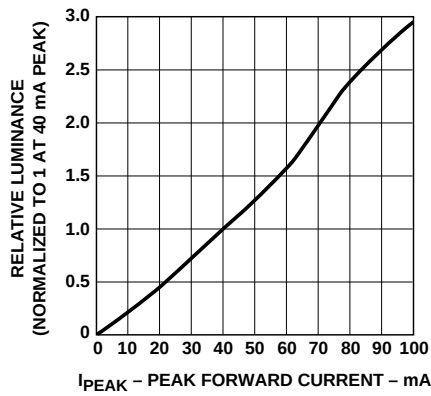


Figure 4. Relative luminance vs. peak forward current.

www.semiconductor.agilent.com

Data subject to change.

Copyright © 2001 Agilent Technologies, Inc.

May 1, 2001

5988-1747EN



Agilent Technologies