

# Agilent Surface Mount LED ChipLED Products

## Product Selection



### ChipLED Background

An industry leader in high brightness LED technology, Agilent Technologies offers a wide range of high quality ChipLED products to meet customer demands for various surface mount lighting requirements.

High brightness LED technology offers better efficiency, lower driving current and lower number of LEDs required. Agilent's ChipLED products have the lowest profile in the industry, and are positioned to support high volume, cost effective solutions.

### About the Products

Agilent manufactures AllnGaP, AlGaAs and InGaN ChipLEDs. AllnGaP ChipLEDs are available in amber, orange and red for high brightness applications. Standard brightness colors include green, red, AlGaAs red, orange, and yellow in addition to several bi-color variations.

Also available now are Agilent InGaN ChipLEDs in blue and green. Agilent has all the colors you need!

The ChipLED footprint is industry standard with top mount, reverse mount and right angle mount packaging options. Our low profile products integrate well into designs where space is limited.

ChipLED products are used in a variety of applications including LCD and push button backlighting for cellular phones, white goods and appliances, industrial measurement and control systems, and for symbol lighting and status indication in computer peripherals and consumer goods.

Low power consumption, small size and easy assembly make the ChipLED ideal for backlighting handsets as well as backlighting industrial displays.

### Features and Benefits

- Small size
  - Saves PC board space
- Wide viewing angle
  - Well-suited for backlighting applications
- Intensity and color bin uniformity
  - Can be closely mounted without any intensity variations

- Available in multiple colors
  - Broad range of colors: Red, AlGaAs Red, Green, Orange, Yellow, and InGaN Blue and InGaN Green
- Variety of packages and mounting options
  - Top, reverse, and right angle auto mountable
- Industry standard footprint
  - No change in existing board layout
- High volume, high reliability
  - Cost effective solution

### Typical Applications

- Telecommunications
  - Keypad and LCD backlighting for mobile phones, pagers and cordless phones
- Industrial
  - Status and symbol indicator
  - Keypad and LCD backlighting
- Consumer
  - White goods and appliances
- Computer Peripherals
  - Status indicator
- Indoor Full/Mono Color Sign



## Agilent Surface Mount LED ChipLED Products

| Part Number                           | Color         | Dominant Wavelength (nm) | Viewing Angle | Lens     | Intensity |           | Vf Typ (V) | Test Current (mA) |
|---------------------------------------|---------------|--------------------------|---------------|----------|-----------|-----------|------------|-------------------|
|                                       |               |                          |               |          | Min (mcd) | Typ (mcd) |            |                   |
| <b>Top Mount (C150)</b>               |               |                          |               |          |           |           |            |                   |
| <b>3.2 x 1.6 x 1.1 mm (L x W x H)</b> |               |                          |               |          |           |           |            |                   |
| HSMH-C150                             | AS AlGaAs Red | 639                      | 170°          | Diffused | 7.2       | 17        | 1.8        | 20                |
| HSMD-C150                             | GaP Orange    | 604                      | 170°          | Diffused | 2.8       | 8         | 2.2        | 20                |
| HSMG-C150                             | GaP Green     | 572                      | 170°          | Diffused | 4.5       | 15        | 2.2        | 20                |
| HSMS-C150                             | GaP Red       | 626                      | 170°          | Diffused | 2.8       | 10        | 2.1        | 20                |
| HSMY-C150                             | GaP Yellow    | 586                      | 170°          | Diffused | 2.8       | 8         | 2.1        | 20                |
| HSMQ-C150                             | InGaN Green   | 527                      | 140°          | Diffused | 45        | 145       | 3.4        | 20                |
| HSMR-C150                             | InGaN Blue    | 473                      | 140°          | Diffused | 18        | 55        | 3.4        | 20                |

Quantity: 3,000 per 7 inch reel

### Top Mount Low Profile (C170)

2.0 x 1.25 x 0.8 mm (L x W x H)

|            |                   |     |      |          |      |     |     |    |
|------------|-------------------|-----|------|----------|------|-----|-----|----|
| HSMH-C170  | AS AlGaAs Red     | 639 | 170° | Diffused | 7.2  | 17  | 1.8 | 20 |
| HSMD-C170  | GaP Orange        | 604 | 170° | Diffused | 2.8  | 8   | 2.2 | 20 |
| HSMG-C170  | GaP Green         | 572 | 170° | Diffused | 4.5  | 15  | 2.2 | 20 |
| HSMS-C170  | GaP Red           | 626 | 170° | Diffused | 2.8  | 10  | 2.1 | 20 |
| HSMY-C170  | GaP Yellow        | 586 | 170° | Diffused | 2.8  | 8   | 2.1 | 20 |
| HSM A-C170 | AS AllnGaP Amber  | 592 | 170° | Diffused | 28.5 | 90  | 1.9 | 20 |
| HSMC-C170  | AS AllnGaP Red    | 626 | 170° | Diffused | 28.5 | 90  | 1.9 | 20 |
| HSM L-C170 | AS AllnGaP Orange | 605 | 170° | Diffused | 28.5 | 90  | 1.9 | 20 |
| HSM B-C170 | GaN Blue          | 466 | 170° | Diffused | 1.8  | 6   | 3.8 | 20 |
| HSM Z-C170 | TS Red            | 631 | 170° | Diffused | 45   | 165 | 2.2 | 20 |
| HSM M-C170 | InGaN Green       | 525 | 170° | Diffused | 45   | 120 | 3.3 | 20 |
| HSM N-C170 | InGaN Blue        | 470 | 170° | Diffused | 11.2 | 35  | 3.3 | 20 |
| HSM Q-C170 | InGaN Green       | 527 | 140° | Diffused | 45   | 145 | 3.4 | 20 |
| HSM R-C170 | InGaN Blue        | 473 | 140° | Diffused | 18   | 55  | 3.4 | 20 |

Quantity: 4,000 per 7 inch reel

### Top Mount Low Profile (C190)

1.6 x 0.8 x 0.8 mm (L x W x H)

|            |                   |     |      |          |      |     |     |    |
|------------|-------------------|-----|------|----------|------|-----|-----|----|
| HSMH-C190  | AS AlGaAs Red     | 639 | 170° | Diffused | 7.2  | 17  | 1.8 | 20 |
| HSMD-C190  | GaP Orange        | 604 | 170° | Diffused | 2.8  | 8   | 2.2 | 20 |
| HSMG-C190  | GaP Green         | 572 | 170° | Diffused | 4.5  | 5   | 2.2 | 20 |
| HSMS-C190  | GaP Red           | 626 | 170° | Diffused | 2.8  | 10  | 2.1 | 20 |
| HSMY-C190  | GaP Yellow        | 586 | 170° | Diffused | 2.8  | 8   | 2.1 | 20 |
| HSM A-C190 | AS AllnGaP Amber  | 592 | 170° | Diffused | 28.5 | 90  | 1.9 | 20 |
| HSMC-C190  | AS AllnGaP Red    | 626 | 170° | Diffused | 28.5 | 90  | 1.9 | 20 |
| HSM L-C190 | AS AllnGaP Orange | 605 | 170° | Diffused | 28.5 | 90  | 1.9 | 20 |
| HSM Z-C190 | TS Red            | 631 | 170° | Diffused | 45   | 165 | 2.2 | 20 |
| HSM B-C190 | GaN Blue          | 466 | 170° | Diffused | 1.8  | 6   | 3.8 | 20 |
| HSM M-C190 | InGaN Green       | 525 | 170° | Diffused | 45   | 120 | 3.3 | 20 |
| HSM N-C190 | InGaN Blue        | 470 | 170° | Diffused | 11.2 | 35  | 3.3 | 20 |
| HSM Q-C190 | InGaN Green       | 527 | 140° | Diffused | 45   | 145 | 3.4 | 20 |
| HSM R-C190 | InGaN Blue        | 473 | 140° | Diffused | 18   | 55  | 3.4 | 20 |












Quantity: 4,000 per 7 inch reel

## Agilent Surface Mount LED ChipLED Products

| Part Number | Color | Dominant Wavelength (nm) | Viewing Angle | Lens | Intensity |           | Vf Typ (V) | Test Current (mA) |
|-------------|-------|--------------------------|---------------|------|-----------|-----------|------------|-------------------|
|             |       |                          |               |      | Min (mcd) | Typ (mcd) |            |                   |

### Top Mount Very Low Profile (C191)















1.6 x 0.8 x 0.6 mm (L x W x H)

|            |   |     |      |          |      |     |     |    |
|------------|---|-----|------|----------|------|-----|-----|----|
| HSMH-C191  |  AS AlGaAs Red     | 639 | 170° | Diffused | 7.2  | 17  | 1.8 | 20 |
| HSMD-C191  |  GaP Orange        | 604 | 170° | Diffused | 2.8  | 8   | 2.2 | 20 |
| HSMG-C191  |  GaP Green         | 572 | 170° | Diffused | 4.5  | 5   | 2.2 | 20 |
| HSMS-C191  |  GaP Red           | 626 | 170° | Diffused | 2.8  | 10  | 2.1 | 20 |
| HSMY-C191  |  GaP Yellow        | 586 | 170° | Diffused | 2.8  | 8   | 2.1 | 20 |
| HSMA-C191  |  AS AllnGaP Amber  | 592 | 170° | Diffused | 28.5 | 90  | 1.9 | 20 |
| HSMC-C191  |  AS AllnGaP Red    | 626 | 170° | Diffused | 28.5 | 90  | 1.9 | 20 |
| HSMML-C191 |  AS AllnGaP Orange | 605 | 170° | Diffused | 28.5 | 90  | 1.9 | 20 |
| HSMN-C191  |  InGaN Blue        | 470 | 170° | Diffused | 11.2 | 35  | 3.3 | 20 |
| HSMQ-C191  |  InGaN Green       | 527 | 140° | Diffused | 45   | 145 | 3.4 | 20 |
| HSMR-C191  |  InGaN Blue        | 473 | 140° | Diffused | 18   | 55  | 3.4 | 20 |

Quantity: 4,000 per 7 inch reel

### Right Angle (C110)







3.2 x 1.0 x 1.5 mm (L x W x H)

|            |   |     |      |              |      |     |     |    |
|------------|---|-----|------|--------------|------|-----|-----|----|
| HSMH-C110  |  AS AlGaAs Red       | 639 | 130° | Non-diffused | 7.2  | 17  | 1.8 | 20 |
| HSMD-C110  |  GaP Orange         | 604 | 130° | Non-diffused | 2.8  | 8   | 2.2 | 20 |
| HSMG-C110  |  GaP Green         | 572 | 130° | Non-diffused | 4.5  | 15  | 2.2 | 20 |
| HSMS-C110  |  GaP Red           | 626 | 130° | Non-diffused | 2.8  | 10  | 2.1 | 20 |
| HSMY-C110  |  GaP Yellow        | 586 | 130° | Non-diffused | 2.8  | 8   | 2.1 | 20 |
| HSMA-C110  |  AS AllnGaP Amber  | 592 | 130° | Non-diffused | 28.5 | 95  | 1.9 | 20 |
| HSMC-C110  |  AS AllnGaP Red    | 626 | 130° | Non-diffused | 28.5 | 95  | 1.9 | 20 |
| HSMML-C110 |  AS AllnGaP Orange | 605 | 130° | Non-diffused | 28.5 | 95  | 1.9 | 20 |
| HSMB-C110  |  GaN Blue          | 466 | 130° | Non-diffused | 1.8  | 6.5 | 3.8 | 20 |
| HSMZ-C110  |  TS Red            | 631 | 130° | Non-diffused | 45   | 170 | 2.2 | 20 |
| HSMML-C110 |  InGaN Green       | 525 | 130° | Non-diffused | 45   | 126 | 3.3 | 20 |
| HSMN-C110  |  InGaN Blue        | 470 | 130° | Non-diffused | 11.2 | 39  | 3.3 | 20 |
| HSMQ-C110  |  InGaN Green       | 527 | 130° | Non-diffused | 45   | 150 | 3.4 | 20 |
| HSMR-C110  |  InGaN Blue        | 473 | 130° | Non-diffused | 18   | 60  | 3.4 | 20 |

Quantity: 3,000 per 7 inch reel

### Reverse Mount (C265)

3.4 x 1.25 x 1.1 mm (L x W x H)

|            |   |     |      |              |      |    |     |    |
|------------|---|-----|------|--------------|------|----|-----|----|
| HSMA-C265  |  AS AllnGaP Amber  | 592 | 150° | Non-diffused | 28.5 | 75 | 1.9 | 20 |
| HSMC-C265  |  AS AllnGaP Red    | 626 | 150° | Non-diffused | 28.5 | 75 | 1.9 | 20 |
| HSME-C265  |  AS AllnGaP Green  | 572 | 170° | Non-diffused | 18   | 50 | 2.1 | 20 |
| HSMML-C265 |  AS AllnGaP Orange | 605 | 150° | Non-diffused | 28.5 | 75 | 1.9 | 20 |
| HSMG-C265  |  GaP Green         | 572 | 170° | Non-diffused | 4.5  | 15 | 2.2 | 20 |
| HSMH-C265  |  AS AlGaAs         | 639 | 170° | Non-diffused | 7.2  | 17 | 1.8 | 20 |







Quantity: 3,000 per 7 inch reel

## Agilent Surface Mount LED ChipLED Products

| Part Number | Color | Dominant Wavelength (nm) | Viewing Angle | Lens | Intensity |           | Vf Typ (V) | Test Current (mA) |
|-------------|-------|--------------------------|---------------|------|-----------|-----------|------------|-------------------|
|             |       |                          |               |      | Min (mcd) | Typ (mcd) |            |                   |

### Bi-Color (C15x)




3.2 x 2.7 x 1.1 mm (L x W x H)

|           |  |     |      |          |     |    |     |    |
|-----------|--|-----|------|----------|-----|----|-----|----|
| HSMF-C155 |  GaP Green  | 572 | 170° | Diffused | 4.5 | 15 | 2.2 | 20 |
|           |  GaP Red    | 626 | 170° | Diffused | 2.8 | 10 | 2.1 | 20 |
| HSMF-C156 |  GaP Green  | 572 | 170° | Diffused | 4.5 | 15 | 2.2 | 20 |
|           |  GaP Yellow | 586 | 170° | Diffused | 2.8 | 8  | 2.1 | 20 |
| HSMF-C157 |  GaP Green  | 572 | 170° | Diffused | 4.5 | 15 | 2.2 | 20 |
|           |  GaP Orange | 604 | 170° | Diffused | 2.8 | 8  | 2.2 | 20 |

Quantity: 3,000 per 7 inch reel

### Tri-Color (C118)

3.2 x 2.7 x 1.1 mm (L x W x H)






|           |   |     |     |          |      |     |     |    |
|-----------|---|-----|-----|----------|------|-----|-----|----|
| HSMF-C118 |  GaP Green   | 525 | 130 | Diffused | 45   | 120 | 3.5 | 20 |
|           |  AllnGaP Red | 626 | 135 | Diffused | 28.5 | 90  | 1.9 | 20 |
|           |  InGaN Blue  | 470 | 125 | Diffused | 11.2 | 40  | 3.5 | 20 |

Quantity: 3,000 per 7 inch reel

## The SIZE DOES MATTER Series

### World's Smallest Top Mount (C280)







1.0 x 0.5 x 0.4 mm

|           |  |     |      |          |      |    |     |    |
|-----------|--|-----|------|----------|------|----|-----|----|
| HSMC-C280 |  AS AllnGaP Amber | 592 | 130° | Diffused | 28.5 | 90 | 1.9 | 20 |
| HSMC-C280 |  AS AllnGaP Red   | 626 | 130° | Diffused | 28.5 | 90 | 1.9 | 20 |
| HSMG-C280 |  GaP Green        | 572 | 130° | Diffused | 4.5  | 15 | 2.2 | 20 |
| HSMS-C280 |  GaP Red          | 626 | 130° | Diffused | 2.8  | 10 | 2.1 | 20 |
| HSMY-C280 |  GaP Yellow       | 586 | 130° | Diffused | 2.8  | 8  | 2.1 | 20 |

Quantity: 4,000 per 7 inch reel

### Top Mount Very Low Profile (C177)

2.0 x 1.25 x 0.4 mm

|           |   |     |      |          |      |    |     |    |
|-----------|---|-----|------|----------|------|----|-----|----|
| HSMC-C177 |  GaP Orange        | 604 | 130° | Diffused | 2.8  | 8  | 2.2 | 20 |
| HSMG-C177 |  GaP Green         | 572 | 130° | Diffused | 4.5  | 5  | 2.2 | 20 |
| HSMS-C177 |  GaP Red           | 626 | 130° | Diffused | 2.8  | 10 | 2.1 | 20 |
| HSMC-C177 |  AS AllnGaP Amber  | 592 | 130° | Diffused | 28.5 | 90 | 1.9 | 20 |
| HSMC-C177 |  AS AllnGaP Red    | 626 | 130° | Diffused | 28.5 | 90 | 1.9 | 20 |
| HSMC-C177 |  AS AllnGaP Orange | 605 | 130° | Diffused | 28.5 | 90 | 1.9 | 20 |








Quantity: 4,000 per 7 inch reel

## Agilent Surface Mount LED ChipLED Products

| Part Number | Color | Dominant Wavelength (nm) | Viewing Angle | Lens | Intensity |           | Vf Typ (V) | Test Current (mA) |
|-------------|-------|--------------------------|---------------|------|-----------|-----------|------------|-------------------|
|             |       |                          |               |      | Min (mcd) | Typ (mcd) |            |                   |

### Top Mount Very Low Profile (C197)











1.6 x 0.8 x 0.4 mm (L x W x H)

|           |   |     |      |          |      |    |     |    |
|-----------|---|-----|------|----------|------|----|-----|----|
| HSMC-C197 |  GaP Orange        | 604 | 130° | Diffused | 2.8  | 8  | 2.2 | 20 |
| HSMG-C197 |  GaP Green         | 572 | 130° | Diffused | 4.5  | 5  | 2.2 | 20 |
| HSMC-C197 |  GaP Red           | 626 | 130° | Diffused | 2.8  | 10 | 2.1 | 20 |
| HSMY-C197 |  GaP Yellow        | 586 | 130° | Diffused | 2.8  | 8  | 2.1 | 20 |
| HSMC-C197 |  AS AllnGaP Amber  | 592 | 130° | Diffused | 28.5 | 90 | 1.9 | 20 |
| HSMC-C197 |  AS AllnGaP Red    | 626 | 130° | Diffused | 28.5 | 90 | 1.9 | 20 |
| HSMC-C197 |  AS AllnGaP Orange | 605 | 130° | Diffused | 28.5 | 90 | 1.9 | 20 |

Quantity: 4,000 per 7 inch reel

### World's Smallest Right Angle (C120)







1.6 x 0.6 x 1.0 mm (L x W x H)

|           |   |     |      |              |      |     |     |    |
|-----------|---|-----|------|--------------|------|-----|-----|----|
| HSMH-C120 |  AS AlGaAs           | 639 | 155° | Non-diffused | 7.2  | 17  | 1.8 | 20 |
| HSMC-C120 |  GaP Orange          | 604 | 155° | Non-diffused | 2.8  | 8   | 2.2 | 20 |
| HSMG-C120 |  GaP Green           | 572 | 155° | Non-diffused | 4.5  | 15  | 2.2 | 20 |
| HSMC-C120 |  AS AllnGaP Amber    | 592 | 155° | Non-diffused | 28.5 | 90  | 1.9 | 20 |
| HSMC-C120 |  AS AllnGaP Red     | 626 | 155° | Non-diffused | 28.5 | 90  | 1.9 | 20 |
| HSMC-C120 |  AS AllnGaP Orange | 605 | 155° | Non-diffused | 28.5 | 90  | 1.9 | 20 |
| HSMC-C120 |  InGaN Green       | 525 | 155° | Non-diffused | 45   | 120 | 3.4 | 20 |
| HSMC-C120 |  InGaN Blue        | 470 | 155° | Non-diffused | 11.2 | 30  | 3.4 | 20 |
| HSMC-C120 |  InGaN Green       | 527 | 155° | Non-diffused | 45   | 145 | 3.4 | 20 |
| HSMC-C120 |  InGaN Blue        | 473 | 155° | Non-diffused | 18   | 55  | 3.4 | 20 |

Quantity: 4,000 per 7 inch reel

### World's Smallest Bicolor (C16x)

1.6 x 0.8 x 0.5 mm

|           |  |     |      |          |     |    |     |    |
|-----------|--|-----|------|----------|-----|----|-----|----|
| HSMF-C165 |  GaP Green  | 572 | 120° | Diffused | 4.5 | 15 | 2.2 | 20 |
|           |  GaP Red    | 626 | 120° | Diffused | 2.8 | 10 | 2.1 | 20 |
| HSMF-C166 |  GaP Green  | 572 | 120° | Diffused | 4.5 | 15 | 2.2 | 20 |
|           |  GaP Yellow | 586 | 120° | Diffused | 2.8 | 8  | 2.1 | 20 |
| HSMF-C167 |  GaP Green  | 572 | 120° | Diffused | 4.5 | 15 | 2.2 | 20 |
|           |  GaP Orange | 604 | 120° | Diffused | 2.8 | 8  | 2.2 | 20 |

Quantity: 4,000 per 7 inch reel

## Agilent Surface Mount LED ChipLED Products

### Surface Mount Chip LEDs Standard Intensity Categories

| Bin ID | Intensity (mcd) |         |
|--------|-----------------|---------|
|        | min             | max     |
| A      | 0.11            | 0.18    |
| B      | 0.18            | 0.29    |
| C      | 0.29            | 0.45    |
| D      | 0.45            | 0.72    |
| E      | 0.72            | 1.10    |
| F      | 1.10            | 1.80    |
| G      | 1.80            | 2.80    |
| H      | 2.80            | 4.50    |
| J      | 4.50            | 7.20    |
| K      | 7.20            | 11.20   |
| L      | 11.20           | 18.00   |
| M      | 18.00           | 28.50   |
| N      | 28.50           | 45.00   |
| P      | 45.00           | 71.50   |
| Q      | 71.50           | 112.50  |
| R      | 112.50          | 180.00  |
| S      | 180.00          | 285.00  |
| T      | 285.00          | 450.00  |
| U      | 450.00          | 715.00  |
| V      | 715.00          | 1125.00 |
| W      | 1125.00         | 1800.00 |
| X      | 1800.00         | 2850.00 |
| Y      | 2850.00         | 4500.00 |

Tolerance:  $\pm 15\%$

### Color Binnings

| Package        | Color Bin | Wavelength (nm)   |       |
|----------------|-----------|-------------------|-------|
|                |           | min               | max   |
| GaN/InGaN Blue | A         | 460.0             | 465.0 |
|                | B         | 465.0             | 470.0 |
|                | C         | 470.0             | 475.0 |
|                | D         | 475.0             | 480.0 |
| InGaN Green    | A         | 515.0             | 520.0 |
|                | B         | 520.0             | 525.0 |
|                | C         | 525.0             | 530.0 |
|                | D         | 530.0             | 535.0 |
| Orange         | A         | 597.0             | 600.0 |
|                | B         | 600.0             | 603.0 |
|                | C         | 603.0             | 606.0 |
|                | D         | 606.0             | 609.0 |
|                | E         | 609.0             | 612.0 |
|                | F         | 612.0             | 615.0 |
| Red            |           | Full Distribution |       |
| AlGaAs Red     |           | Full Distribution |       |

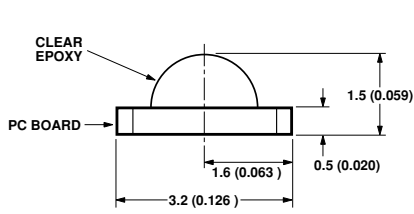
Tolerance:  $\pm 1.0$  nm

| Package | Color Bin | Wavelength (nm) |       |
|---------|-----------|-----------------|-------|
|         |           | min             | max   |
| Green   | A         | 561.5           | 564.5 |
|         | B         | 564.5           | 567.5 |
|         | C         | 567.5           | 570.5 |
|         | D         | 570.5           | 573.5 |
|         | E         | 573.5           | 576.5 |
|         | F         | 576.5           | 579.5 |
| Yellow  | A         | 582.0           | 584.5 |
|         | B         | 584.5           | 587.0 |
|         | C         | 587.0           | 589.5 |
|         | D         | 589.5           | 592.0 |
|         | E         | 592.0           | 594.5 |
|         | F         | 594.5           | 597.0 |
| Amber   | A         | 582.0           | 584.5 |
|         | B         | 584.5           | 587.0 |
|         | C         | 587.0           | 589.5 |
|         | D         | 589.5           | 592.0 |
|         | E         | 592.0           | 594.5 |
|         | F         | 594.5           | 597.0 |

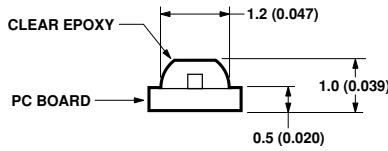
Tolerance:  $\pm 0.5$  nm

# Agilent Surface Mount LED ChipLED Products

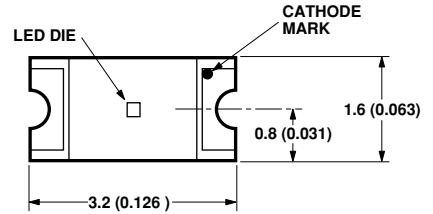
## Surface Mount Chip LEDs Package Dimensions



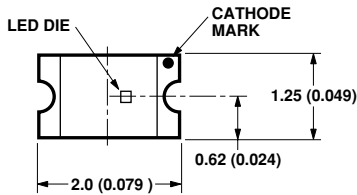
HSMx-C110



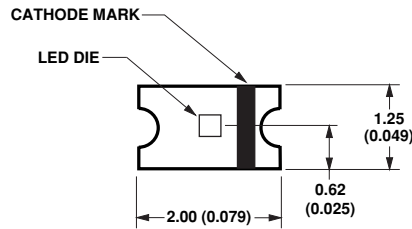
HSMx-C120



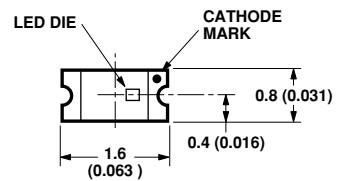
HSMx-C150



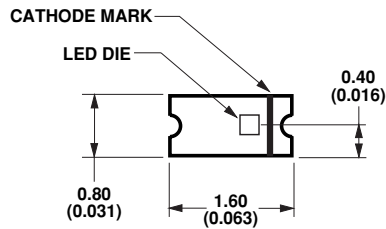
HSMx-C170



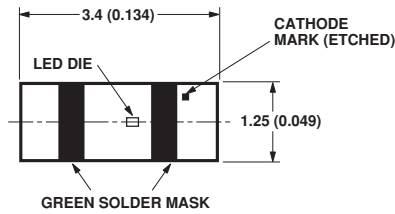
HSMx-C177



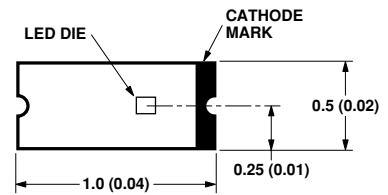
HSMx-C190/C191



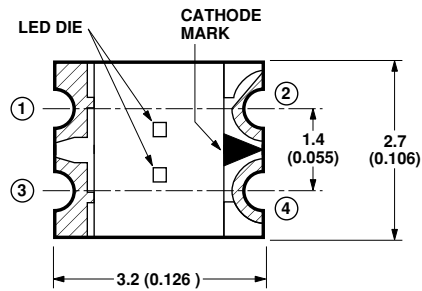
HSMx-C197



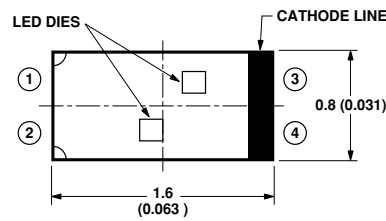
HSMx-C265



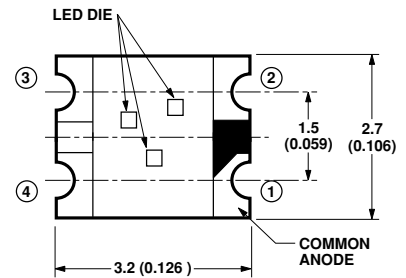
HSMx-C280



HSMF-C15x



HSMF-C16x



HSMF-C118

Dimensions are in millimeters (Inches).

Tolerance is  $\pm 0.1$  mm ( $\pm 0.004$  in.)  
unless otherwise specified.

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Obsoletes 5988-5526EN

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