

## Data Sheet

### Description

The ASMT-Bx20 is an environmental friendly green product of unique PCB based subminiature lamps, namely PCB PolyLED. These PolyLEDs come in un-tinted, non-diffused package to cater for various product themes and ease handling applications.

The small size, narrow footprint, and high brightness make these LEDs excellent for backlighting, status indication, and panel illumination applications.

The available colors are AllnGaP Red, AllnGaP Green, InGaN Blue, and AllnGaP Amber.

In order to facilitate pick and place operation, these PCB PolyLEDs are shipped in tape and reel, with 1500 units per reel. The package is compatible with reflow soldering and binned by both color and intensity.

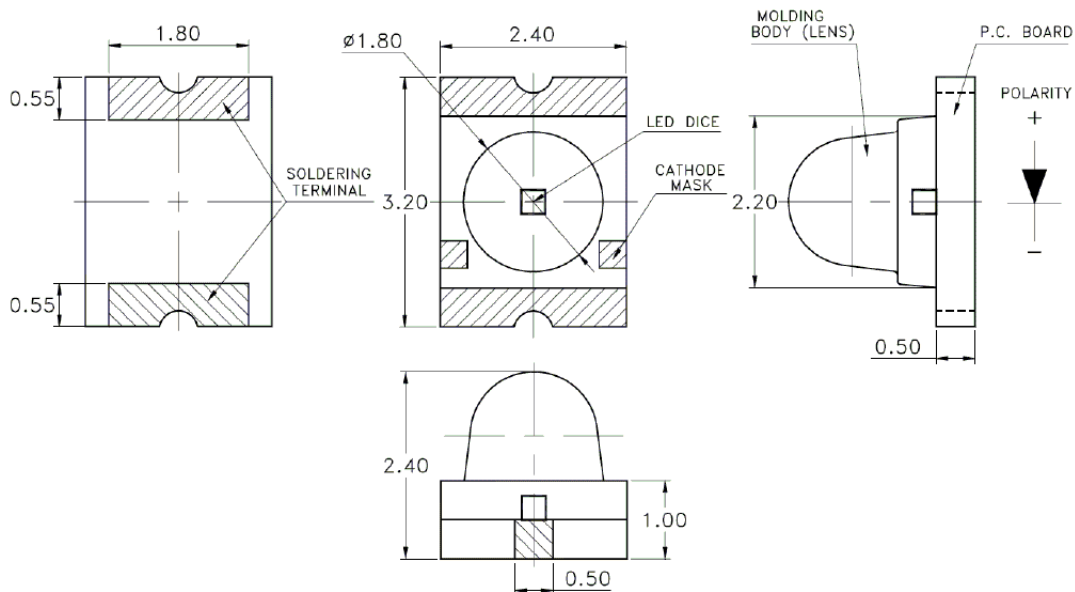
### Features

- Small foot print
- Available in four colors
- Low power consumption
- Non-diffused dome for high brightness
- Supreme product quality and reliability
- Operating temperature range of -40 °C to +85°C
- Package in 8mm tape on 7" diameter reels
- Compatible with automated placement equipment
- Compatible with infrared and vapor phase reflow soldering process

### Applications

- Panel indicator
- LCD backlighting
- Symbol backlighting
- Push-button backlighting
- Indoor mono/full color sign

### Package Dimensions



#### Notes:

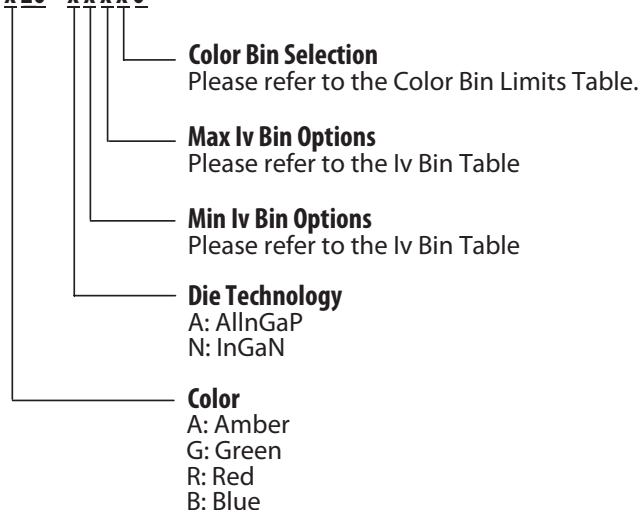
1. All dimensions in millimeters.
2. Tolerance is  $\pm 0.1$ mm unless otherwise specified.

## Device Selection Guide

| Part Number | Die Technology | Color | Package Description    |
|-------------|----------------|-------|------------------------|
| ASMT-BA20   | AllnGaP        | Amber | Untinted, Non-diffused |
| ASMT-BG20   | AllnGaP        | Green | Untinted, Non-diffused |
| ASMT-BR20   | AllnGaP        | Red   | Untinted, Non-diffused |
| ASMT-BB20   | InGaN          | Blue  | Untinted, Non-diffused |

## Part Numbering System

ASMT - B x 20 - x x x x 0



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

| Parameter                                | AllnGaP                             | InGaN | Units            |
|--|-------------------------------------|-------|------------------|
| DC Forward Current <sup>[1]</sup>        | 30                                  | 20    | mA               |
| Reverse Voltage ( $I_R = 100\text{mA}$ ) | 5                                   | 5     | V                |
| LED Junction Temperature                 | 95                                  | 95    | $^\circ\text{C}$ |
| Operating Temperature Range              | -40 to +85                          |       | $^\circ\text{C}$ |
| Storage Temperature Range                | -40 to +85                          |       | $^\circ\text{C}$ |
| Soldering Temperature (Pb Free)          | 260 $^\circ\text{C}$ for 10 seconds |       |                  |

## Electrical Characteristics at $T_A = 25^\circ\text{C}$

| Part Number   | Forward Voltage<br>$V_F$ (Volts) <sup>[1]</sup> @ $I_F = 20\text{mA}$ |      | Reverse Breakdown<br>$V_R$ (Volts) @ $I_R = 100\mu\text{A}$ | Thermal Resistance<br>$R_{\theta J-PIN}$ ( $^\circ\text{C}/\text{W}$ ) |
|---------------|---|------|---|--|
|               | Typ.  | Max. | Min.  | Typ.   |
| AllnGaP Amber | 2.0   | 2.4  | 5   | 450  |
| AllnGaP Green | 2.0   | 2.4  | 5   | 450  |
| AllnGaP Red   | 2.0   | 2.4  | 5   | 450  |
| InGaN Blue    | 3.2   | 3.8  | 5   | 450  |

Notes:

1.  $V_f$  tolerance :  $\pm 0.1\text{V}$

## Optical Characteristics at $T_A = 25^\circ\text{C}$

| Part Number   | Luminous Intensity             | Peak Wavelength                      | Dominant Wavelength          | Viewing Angle                         |
|---------------|--------------------------------|--------------------------------------|------------------------------|---------------------------------------|
|               | $I_V$ [1] (mcd) @ 20mA<br>Typ. | $\lambda_{\text{peak}}$ (nm)<br>Typ. | $\lambda_d$ [2] (nm)<br>Typ. | $2\theta_{1/2}$ [3] (Degrees)<br>Typ. |
| AllnGaP Amber | 750                            | 592                                  | 590                          | 15                                    |
| AllnGaP Green | 650                            | 565                                  | 569                          | 15                                    |
| AllnGaP Red   | 650                            | 635                                  | 626                          | 15                                    |
| InGaN Blue    | 650                            | 470                                  | 468                          | 15                                    |

Notes:

- The luminous intensity  $I_V$  is measured at the peak of the spatial radiation pattern which may not be aligned with the mechanical axis of the LED package.
- The dominant wavelength,  $\lambda_d$ , is derived from the CIE Chromaticity Diagram and represents the perceived color of the device.
- $\theta_{1/2}$  is the off-axis angle where the luminous intensity is  $1/2$  the peak intensity.

### Light Intensity ( $I_V$ ) Bin Limits [1]

| Bin ID | Intensity (mcd) |         |
|--------|-----------------|---------|
|        | Minimum         | Maximum |
| 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 Bin Limits [1]

### Amber Color Bins [1]

| Bin ID | Dominant Wavelength (nm) |         |
|--------|--------------------------|---------|
|        | Minimum                  | Maximum |
| 1      | 582.0                    | 584.5   |
| 2      | 584.5                    | 587.0   |
| 3      | 587.0                    | 589.5   |
| 4      | 589.5                    | 592.0   |
| 5      | 592.0                    | 594.5   |
| 6      | 594.5                    | 597.0   |

Tolerance :  $\pm 1$  nm

Notes:

- Bin categories are established for classification of products. Products may not be available in all categories. Please contact your Avago representative for information on current available bins.

### Green Color Bins [1]

| Bin ID | Dominant Wavelength (nm) |         |
|--------|--------------------------|---------|
|        | Minimum                  | Maximum |
| 1      | 561.5                    | 564.5   |
| 2      | 564.5                    | 567.5   |
| 3      | 567.5                    | 570.5   |
| 4      | 570.5                    | 573.5   |
| 5      | 573.5                    | 576.5   |

Tolerance :  $\pm 1$  nm

### Red Color Bins [1]

| Bin ID | Dominant Wavelength (nm) |         |
|--------|--------------------------|---------|
|        | Minimum                  | Maximum |
| -      | 620.0                    | 635.0   |

Tolerance :  $\pm 1$  nm

### Blue Color Bins [1]

| Bin ID | Dominant Wavelength (nm) |         |
|--------|--------------------------|---------|
|        | Minimum                  | Maximum |
| 1      | 460.0                    | 465.0   |
| 2      | 465.0                    | 470.0   |
| 3      | 470.0                    | 475.0   |
| 4      | 475.0                    | 480.0   |

Tolerance :  $\pm 1$  nm

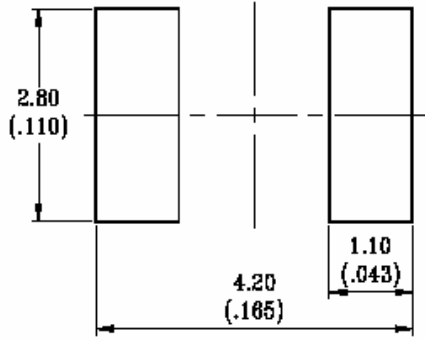


Figure 3. Recommended soldering land pattern.

Notes:

1. All dimensions are in millimeters (inches).
2. Tolerance is  $\pm 0.1\text{mm}$  ( $\pm 0.004\text{in.}$ ) unless otherwise specified.

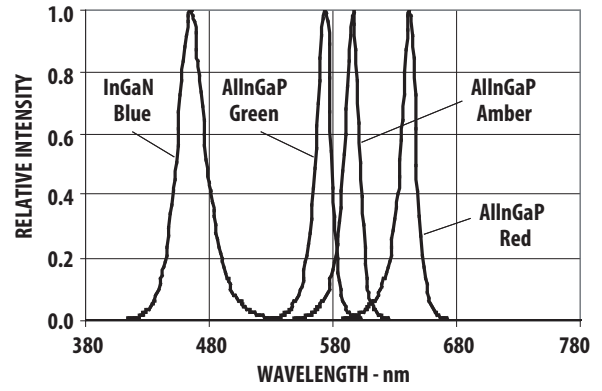


Figure 4. Relative intensity vs. wavelength

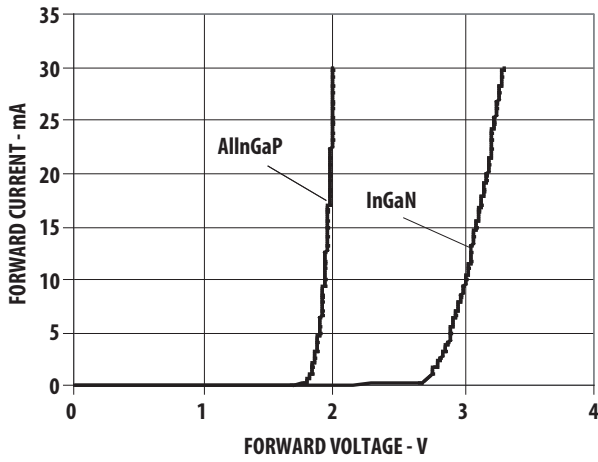


Figure 5. Forward current vs. forward voltage

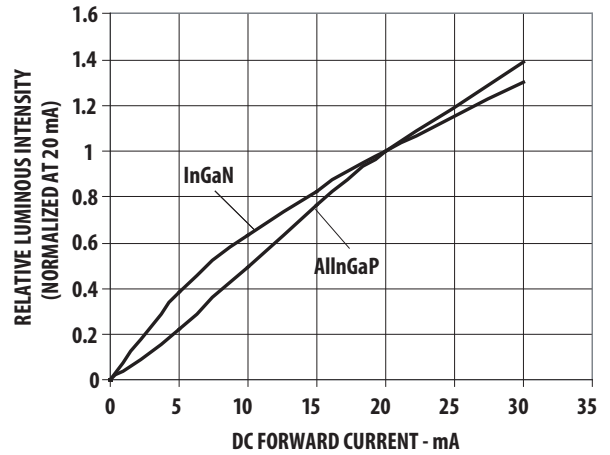


Figure 6. Relative luminous intensity vs. DC forward current

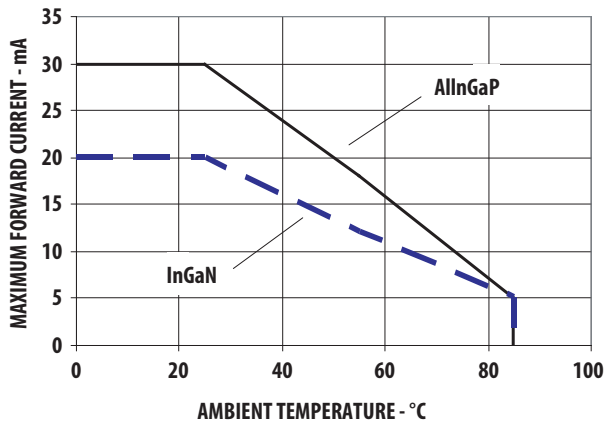


Figure 7. Maximum forward current vs. ambient temperature For AllnGaP & InGaN Derating based on  $T_{JMAX} = 95^{\circ}$

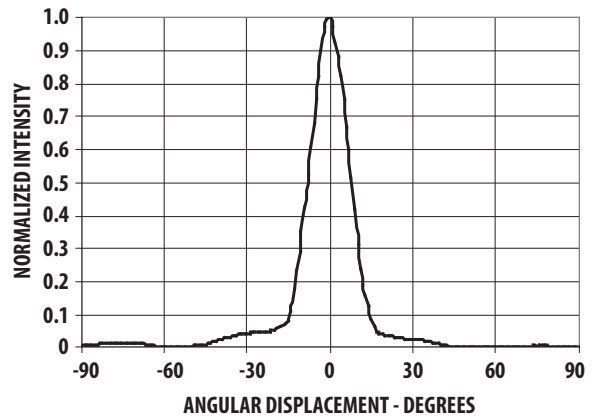


Figure 8. Radiation Pattern

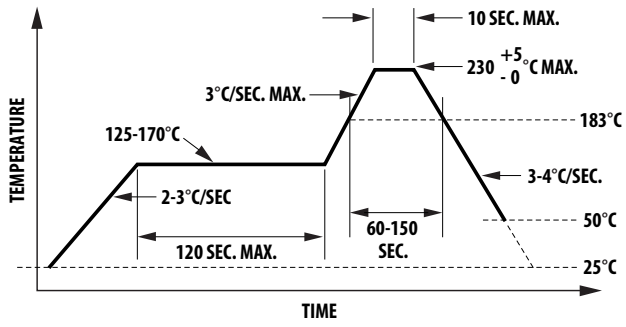


Figure 9. Recommended reflow soldering profile

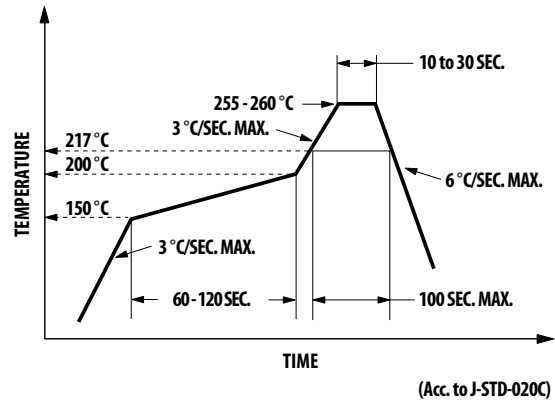


Figure 10. Recommended Pb-free reflow soldering profile

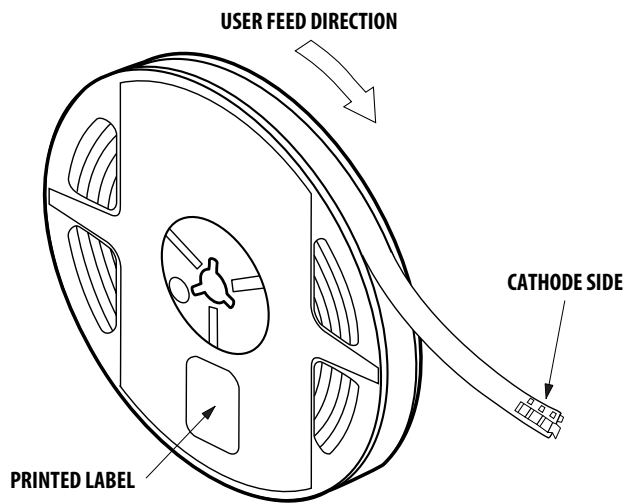


Figure 11. Reeling orientation

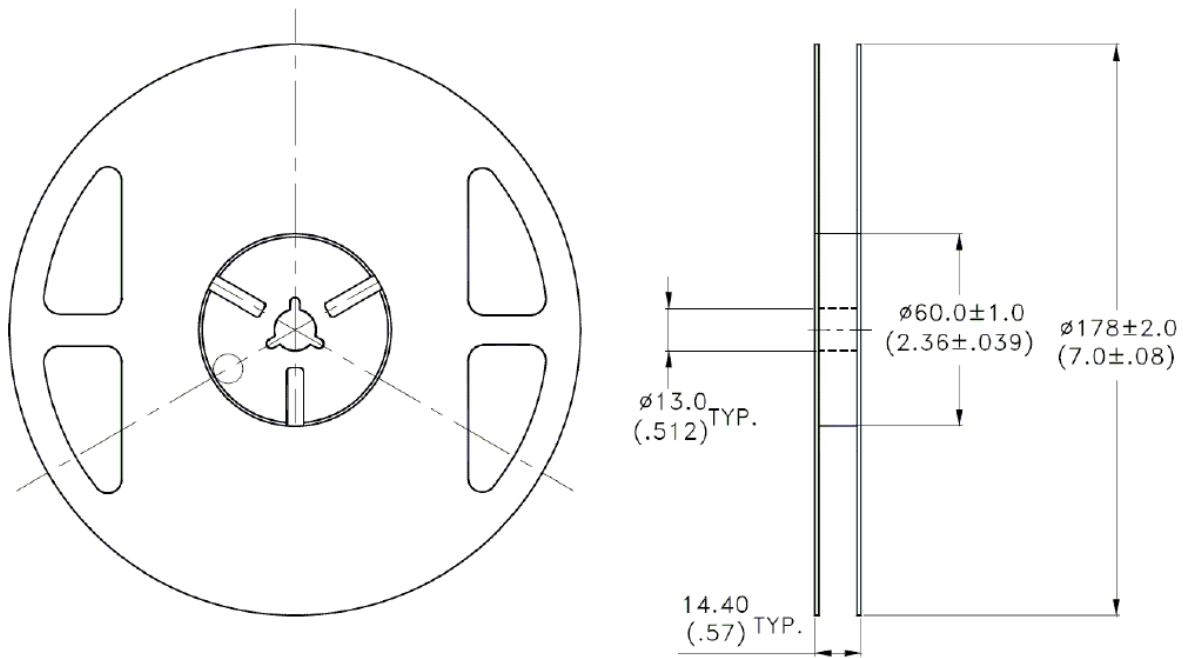


Figure 12. Reel dimensions [1]

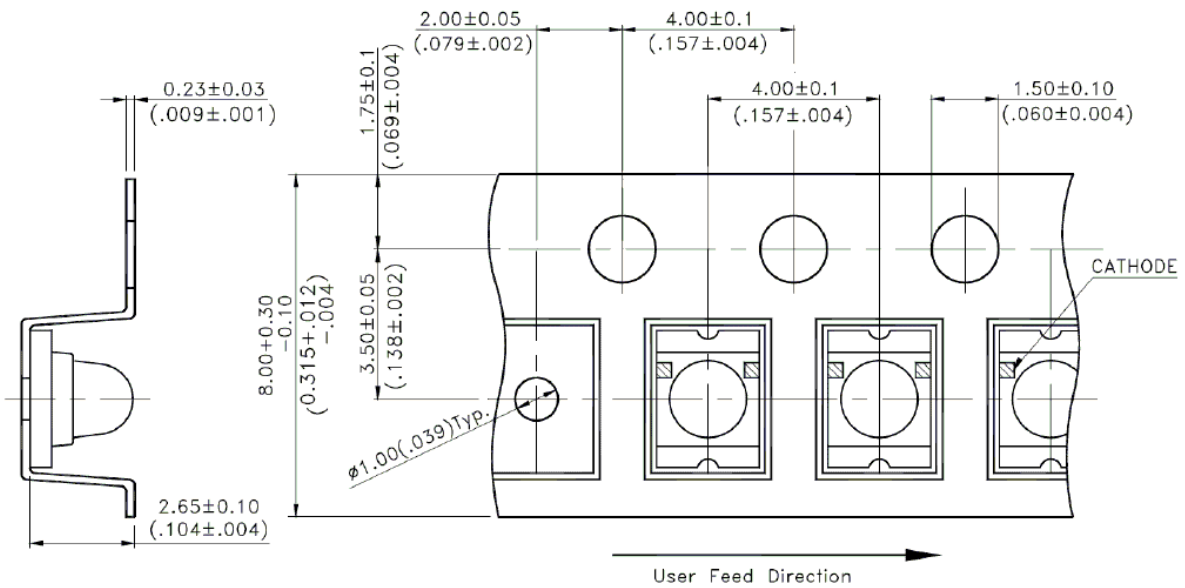


Figure 13. Tape dimensions [1]

Notes:

1. All dimensions are in millimeters (inches).

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

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