Data Sheet

ASMT-Bx20

PCB-Based Subminiature Lamps (PCB PolyLED)

Description

The Broadcom® ASMT-Bx20 is an environmental friendly green product of unique PCB-based subminiature lamps, namely PCB PolyLED. These PolyLEDs come in untinted, nondiffused 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 AlInGaP Red, AlInGaP Green, InGaN Blue, and AlInGaP Amber.

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.

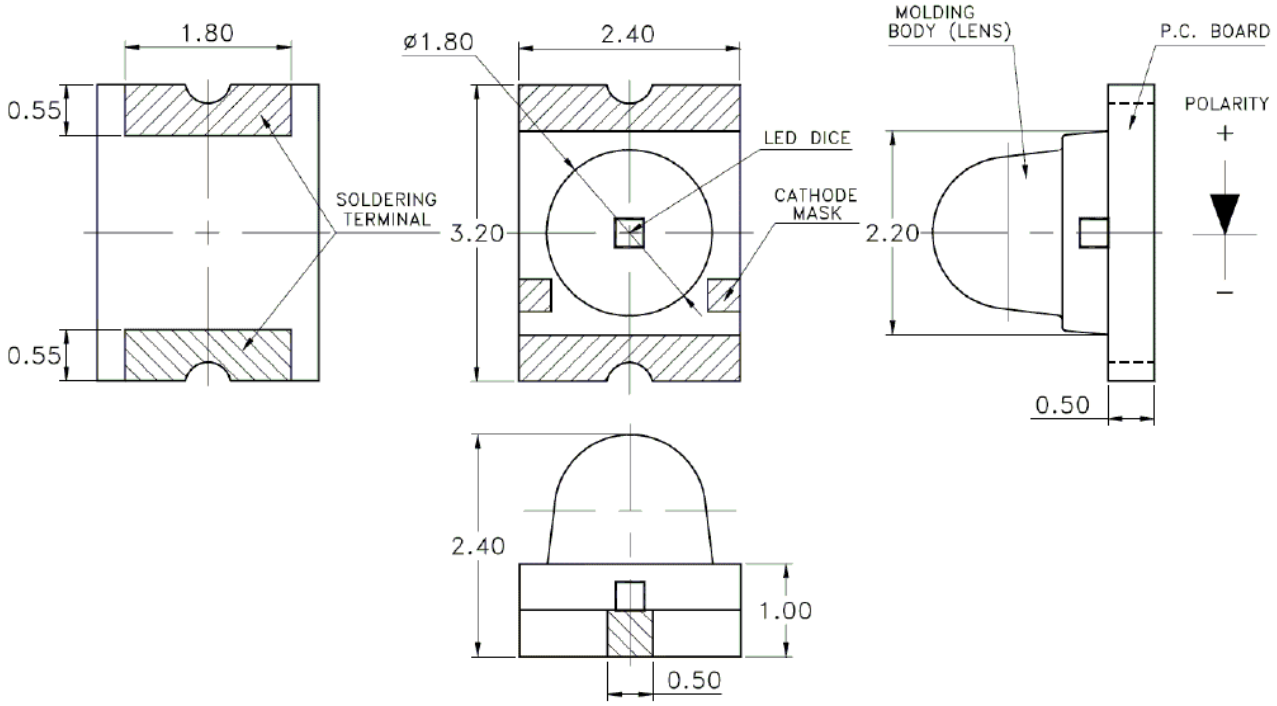
Features

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

Applications

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

Package Dimensions



NOTE:

1. All dimensions are in millimeters.
2. Tolerance is ± 0.1 mm unless otherwise specified.

Device Selection Guide

Part Number	Die Technology	Color	Package Description
ASMT-BA20	AlInGaP	Amber	Untinted, nondiffused
ASMT-BG20	AlInGaP	Green	Untinted, nondiffused
ASMT-BR20	AlInGaP	Red	Untinted, nondiffused
ASMT-BB20	InGaN	Blue	Untinted, nondiffused

Part Numbering System

A S M T - B [x_1] 2 0 - [x_2] [x_3] [x_4] [x_5] 0

Number	Field	Option	Description
x_1	Color	A	Amber
		G	Green
		R	Red
		B	Blue
x_2	Die Technology	A	AlInGaP
		N	InGaN
x_3	Min Iv Bin Options	See the Light Intensity (IV) Bin Limits table	
x_4	Max Iv Bin Options		
x_5	Color Bin Selection	See the Color Bin Limits tables	

Absolute Maximum Ratings at T_A = 25°C

Parameter	AlInGaP	InGaN	Units
DC Forward Current[a]	30	20	mA
Reverse Voltage (I_R = 100 mA)	5	5	V
LED Junction Temperature	95	95	°C
Operating Temperature Range	–40 to +85		°C
Storage Temperature Range	–40 to +85		°C
Soldering Temperature (Pb-Free)	260°C for 10 seconds		

a. Derate linearly as shown in Figure 5.

Electrical Characteristics at T_A = 25°C

Part Number	Forward Voltage V_F (V)[a] at I_F = 20 mA		Reverse Breakdown V_R (V) at I_R = 100 µA	Thermal Resistance $R\theta_{J\text{-}PIN}$ (°C/W)
	Typ.	Max.	Min.	Typ.
AlInGaP Amber	2.0	2.4	5	450
AlInGaP Green	2.0	2.4	5	450
AlInGaP Red	2.0	2.4	5	450
InGaN Blue	3.2	3.8	5	450

a. V_F tolerance is ± 0.1V.

Optical Characteristics at T_A = 25°C

Part Number	Luminous Intensity I_V[a] (mcd) at 20 mA	Peak Wavelength λ_{peak} (nm)	Dominant Wavelength λ_d[b] (nm)	Viewing Angle $2\theta_{1/2}$[c] (Degrees)
	Typ.	Typ.	Typ.	Typ.
AlInGaP Amber	750	592	590	15
AlInGaP Green	650	565	569	15
AlInGaP Red	650	635	626	15
InGaN Blue	650	470	468	15

a. 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.

b. The dominant wavelength, λ_d, is derived from the CIE Chromaticity Diagram and represents the perceived color of the device.

c. $\theta_{1/2}$ is the off-axis angle where the luminous intensity is ½ the peak intensity.

Light Intensity (I_V) Bin Limits[1]

Bin ID	Intensity (mcd)	
	Min.	Max.
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: ± 15%.

Color Bin Limits[1]

Amber Color Bins[1]

Bin ID	Dominant Wavelength (nm)	
	Min.	Max.
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: ± 1 nm.

Green Color Bins[1]

Bin ID	Dominant Wavelength (nm)	
	Min.	Max.
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: ± 1 nm.

Red Color Bins[1]

Bin ID	Dominant Wavelength (nm)	
	Min.	Max.
—	620.0	635.0

Tolerance: ±1 nm.

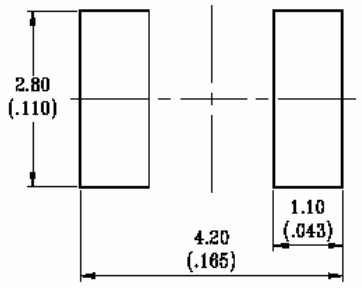
Blue Color Bins[1]

Bin ID	Dominant Wavelength (nm)	
	Min.	Max.
1	460.0	465.0
2	465.0	470.0
3	470.0	475.0
4	475.0	480.0

Tolerance: ± 1 nm.

1. Bin categories are established for classification of products. Products may not be available in all categories. Contact your Broadcom representative for information on current available bins.

Figure 1: Recommended Soldering Land Pattern



NOTE:

1. All dimensions are in millimeters (inches).
2. Tolerance is ± 0.1 mm (± 0.004 in.) unless otherwise specified.

Figure 2: Relative Intensity vs. Wavelength

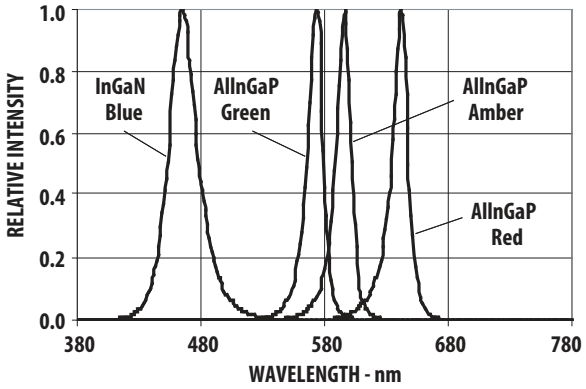


Figure 3: Forward Current vs. Forward Voltage

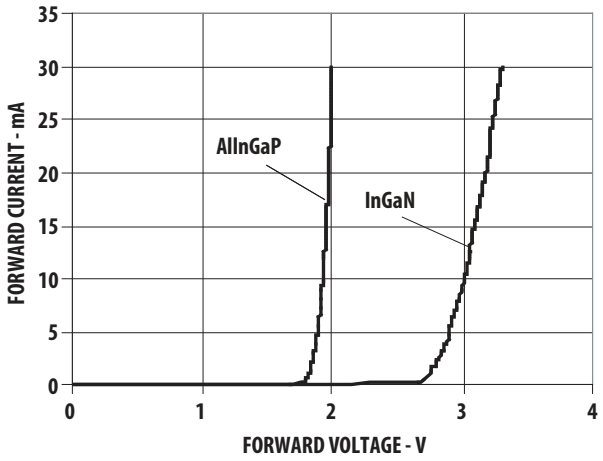


Figure 4: Relative Luminous Intensity vs. DC Forward Current

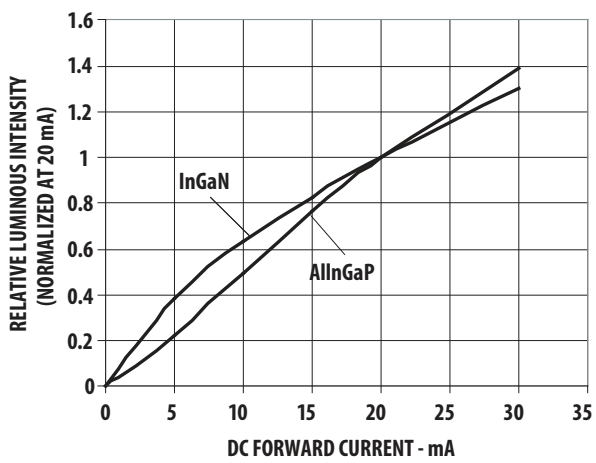


Figure 5: Maximum Forward Current vs. Ambient Temperature. For AlInGap and InGaN derating based on $T_{JMAX=}$ = 95°C.

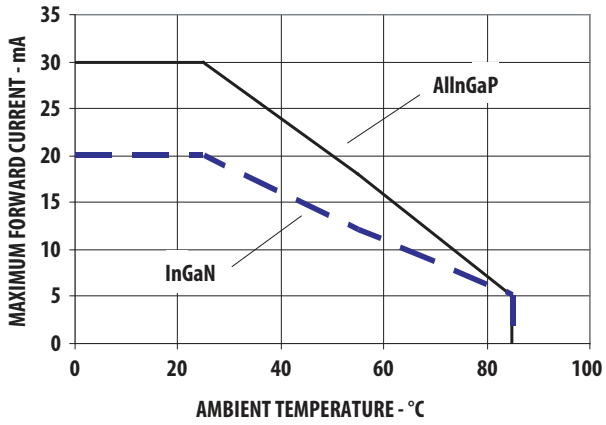


Figure 6: Radiation Pattern

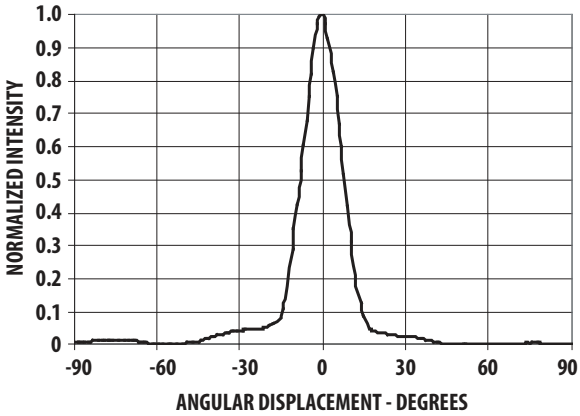


Figure 7: Recommended Reflow Soldering Profile

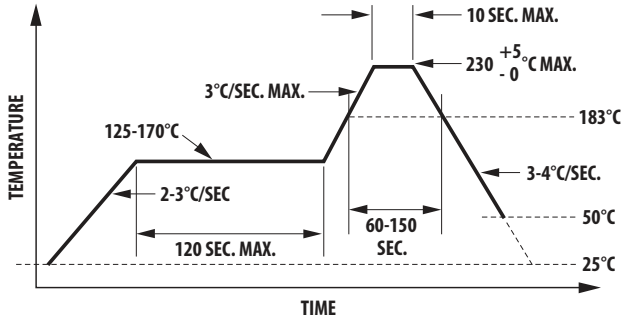


Figure 8: Recommended Pb-Free Reflow Soldering Profile

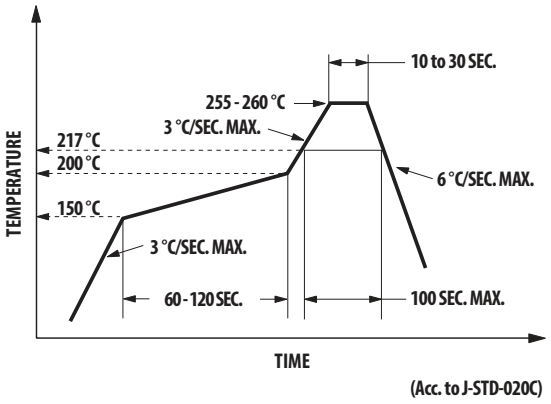


Figure 9: Reeling Orientation

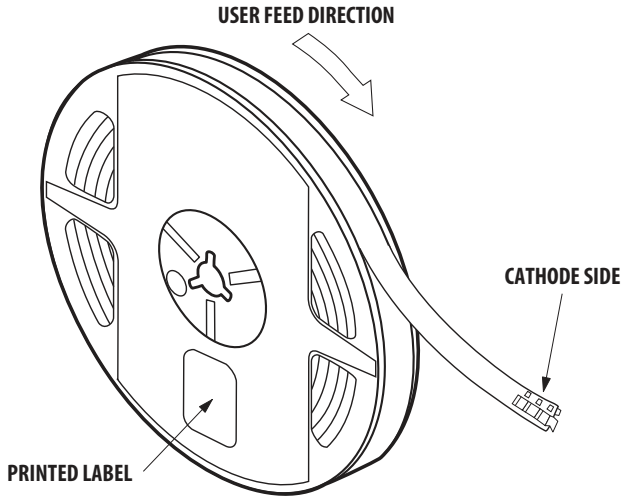
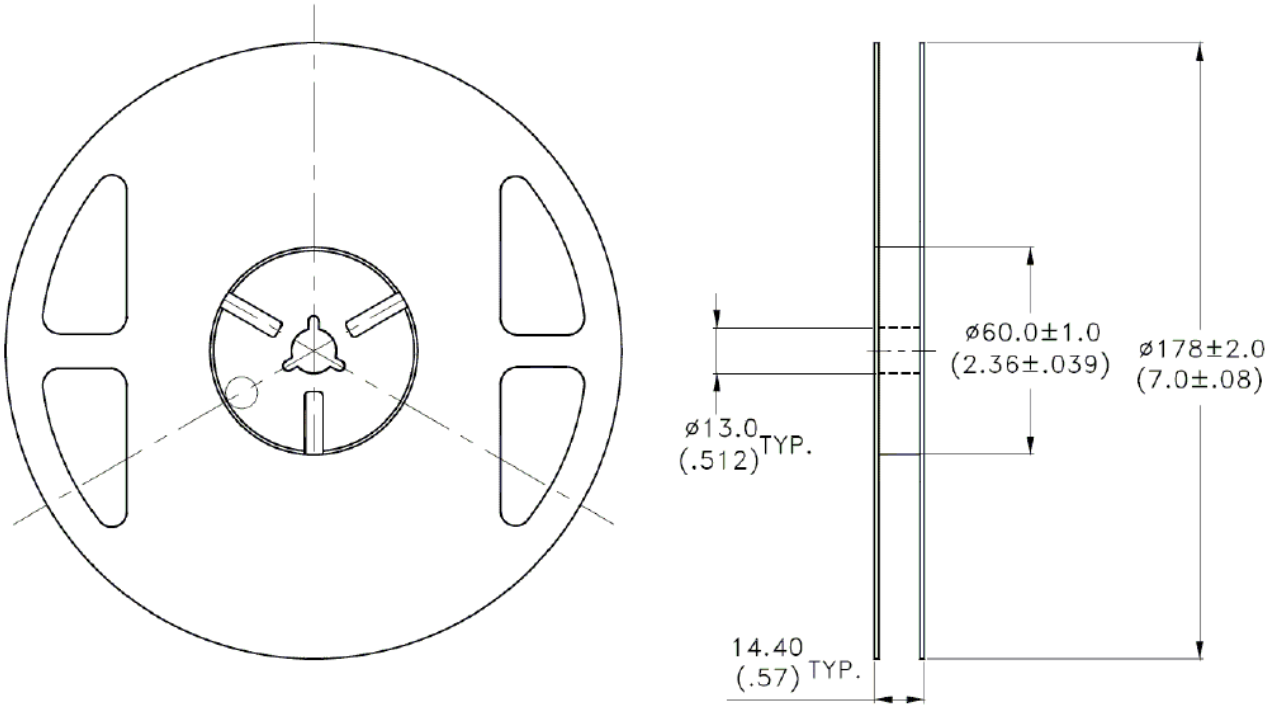
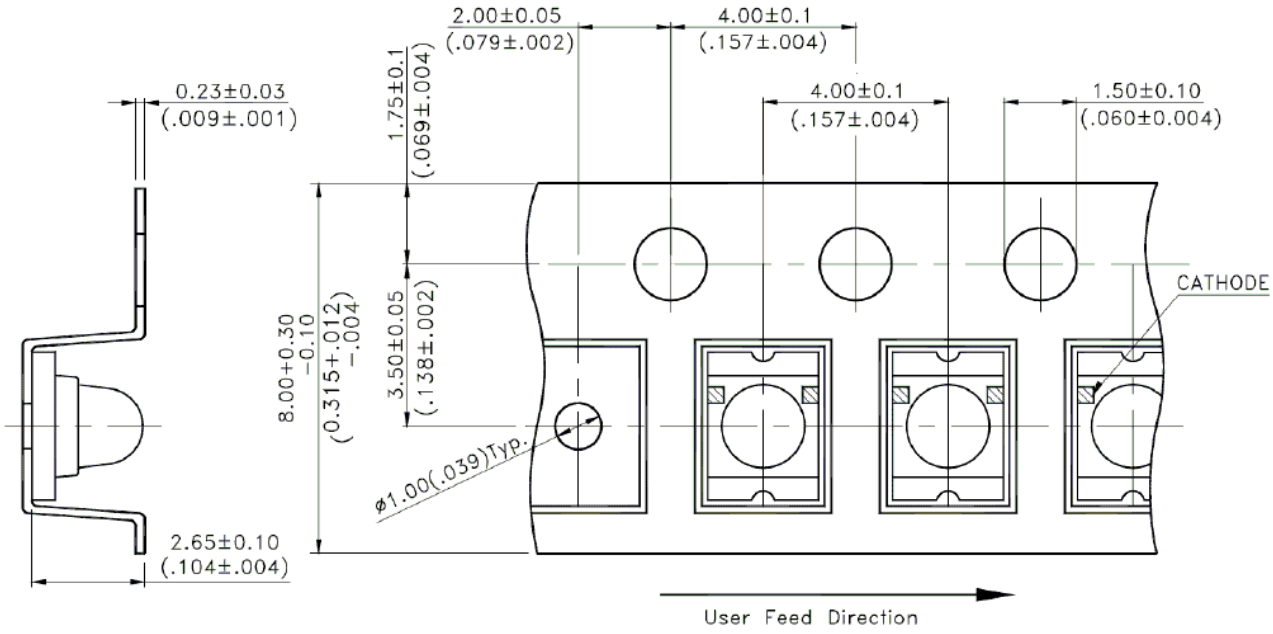


Figure 10: Reel Dimensions



NOTE: All dimensions are in millimeters (inches).

Figure 11: Tape Dimensions



NOTE: All dimensions are in millimeters (inches).