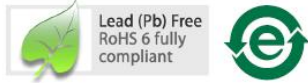


# ASMT-SxB5-Zxxxx

## Surface Mount LED Indicator



### Data Sheet



#### Description

Avago Power PLCC-4 is an extension of our PLCC-2 SMT LEDs. The package can be driven at higher current due to its superior package design. The product is able to dissipate heat more efficiently compared to the conventional PLCC-2 SMT LEDs. In proportion to the increase in driving current, this family of LEDs is able to produce higher light output compared to the conventional PLCC-2 SMT LEDs.

These SMT LEDs have higher reliability and better performance and are designed to work under a wide range of environmental conditions. This high reliability feature makes them ideally suited to be used as interior signs application conditions.

These LEDs are compatible with IR solder reflow process.

The wide viewing angle at 120° makes these LEDs ideally suited for panel, push button, office equipment, industrial equipment, and home appliances. The flat top emitting surface makes it easy for these LEDs to mate with light pipes. With the built-in reflector pushing up the intensity of the light output, these LEDs are also suitable to be used as LED pixels in interior electronic signs.

#### Features

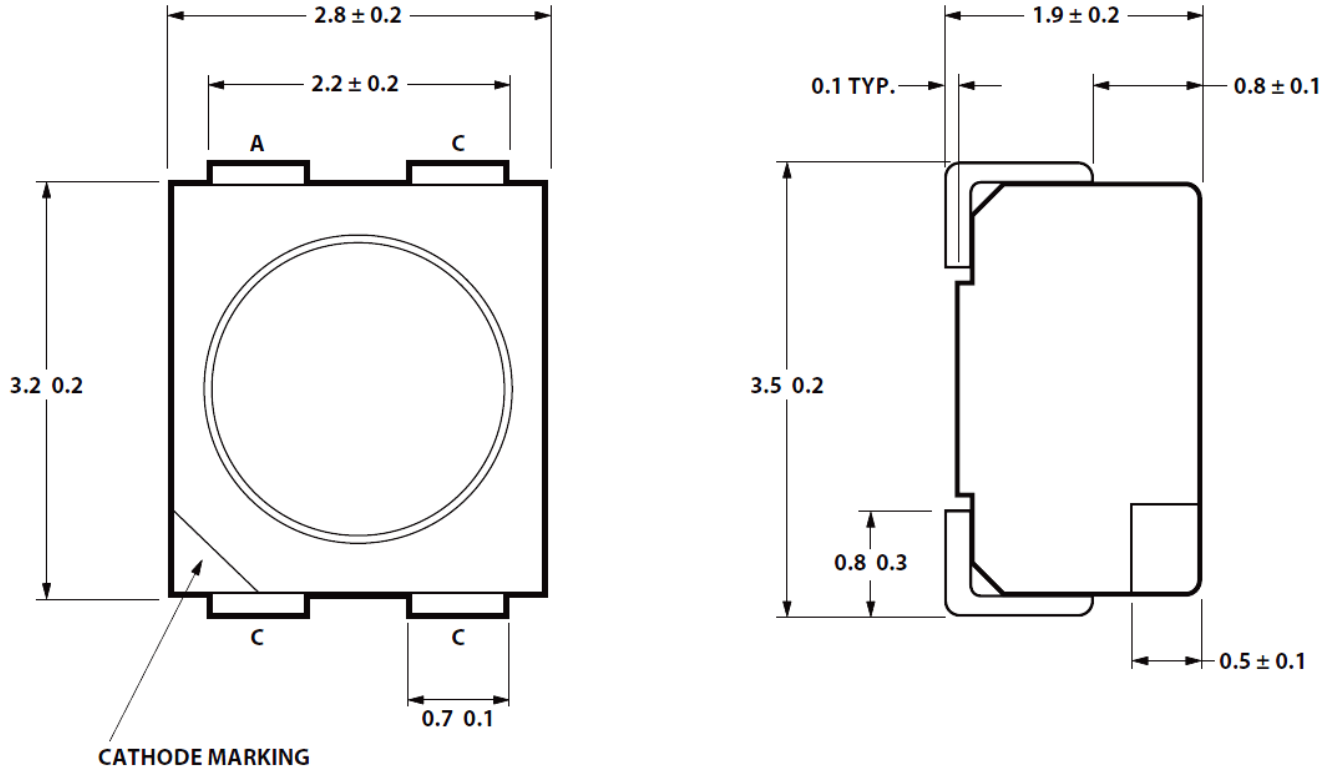
- Industry standard PLCC-4
- High reliability LED package
- High brightness using InGaN dice technologies
- High optical efficiency
- Higher ambient temperature at the same current possible compared to PLCC-2
- Available in full selection of colors
- Super wide viewing angle at 120°
- Available in 8mm carrier tape on 7-inch reel
- Compatible with both IR and TTW soldering process
- Stable & Consistent performance with minimum degradation with Silicone Encapsulation
- JEDEC MSL3

#### Applications

- Electronic signs and signals
  - Interior full color sign
  - Variable message sign
- Office automation, home appliances, industrial equipment
  - Front panel backlighting
  - Push button backlighting
  - Display backlighting

CAUTION: ASMT-SxB5-Zxxxx LEDs are Class 1C ESD sensitive. Please observe appropriate precautions during handling and processing. Refer to Avago Application Note AN-1142 for additional details.

## Package Dimensions



NOTE: ALL DIMENSIONS IN MILLIMETERS.  
ELECTRICAL CONNECTION BETWEEN ALL CATHODES IS RECOMMENDED.

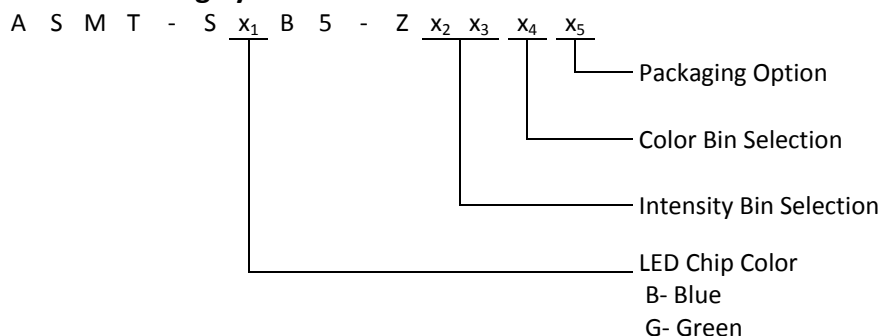
**Table 1. Device Selection Guide**

Color	Part Number	Min IV (mcd)	Max. IV (mcd)	Test Current (mA)	Dice Technology
Blue	ASMT-SBB5-ZT703	355.00	715.00	30	InGaN
Blue	ASMT-SBB5-ZT7P3	355.00	715.00	30	InGaN
Blue	ASMT-SBB5-ZT7Y3	355.00	715.00	30	InGaN
Blue	ASMT-SBB5-ZU3Q3	450.00	900.00	30	InGaN
Blue	ASMT-SBB5-ZU3P3	450.00	900.00	30	InGaN
Blue	ASMT-SBB5-ZU3Y3	450.00	900.00	30	InGaN
Green	ASMT-SGB5-ZW703	1400.00	2850.00	30	InGaN
Green	ASMT-SGB5-ZW7Q3	1400.00	2850.00	30	InGaN
Green	ASMT-SGB5-ZW7P3	1400.00	2850.00	30	InGaN
Green	ASMT-SGB5-ZW7Y3	1400.00	2850.00	30	InGaN
Green	ASMT-SGB5-ZX3Q3	1800.00	3550.00	30	InGaN
Green	ASMT-SGB5-ZX3P3	1800.00	3550.00	30	InGaN
Green	ASMT-SGB5-ZX3Y3	1800.00	3550.00	30	InGaN

**Notes:**

1. The luminous intensity IV, is measured at the mechanical axis of the lamp package. The actual peak of the spatial radiation pattern may not be aligned with this axis.
2. IV Tolerance = ±12%

## Part Numbering System



**Table 2. Absolute Maximum Ratings ( $T_A = 25\text{ }^\circ\text{C}$ )**

Parameters	ASMT-SxB5
DC Forward Current <sup>[1]</sup>	30mA
Peak Forward Current <sup>[2]</sup>	90mA
Power Dissipation	114 mW
Junction Temperature	110 °C
Operating Temperature	- 40 °C to + 100 °C
Storage Temperature	- 40 °C to + 100 °C

Notes:

1. Derate linearly as shown in Figure 4.
2. Duty Factor = 10%, Frequency = 1kHz.
3. Drive current between 10 mA and 20 mA is recommended for best long term performance.
4. Operation at current below 5 mA is not recommended.

**Table 3. Optical Characteristics ( $T_A = 25\text{ }^\circ\text{C}$ )**

Color	Part Number	Dice Technology	Dominant Wavelength <sup>[1]</sup> $\lambda_D$ (nm) Typ.	Viewing Angle $2\theta_{\frac{1}{2}}$ <sup>[2]</sup> (Degrees) Typ.
Blue	ASMT-SBB5	InGaN	470	120
Green	ASMT-SGB5	InGaN	525	120

Notes:

1. The chromaticity coordinates are derived from the CIE 1931 Chromaticity Diagram and represent the perceived color of the device
2.  $\theta_{\frac{1}{2}}$  is the off-axis angle where the luminous intensity is  $\frac{1}{2}$  the peak intensity.
3. The chromaticity coordinates are derived from the CIE 1931 Chromaticity Diagram and represent the perceived color of the device.

**Table 4. Electrical Characteristics ( $T_A = 25\text{ }^\circ\text{C}$ )**

Part Number	Forward Voltage $V_F$ (Volts) @ $I_F = 30\text{ mA}$	
	Typ.	Max.
ASMT-SxB5	3.2	4.1

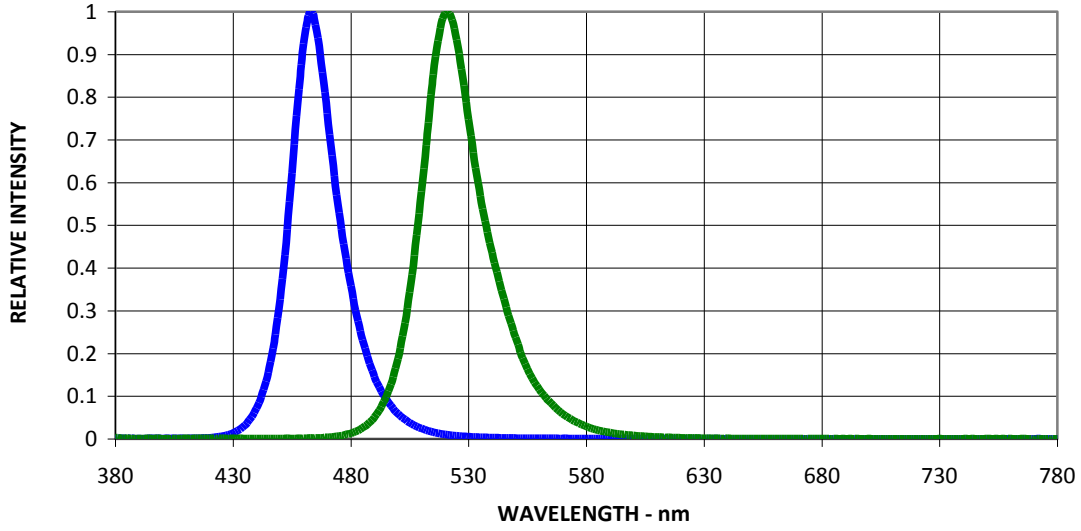


Figure 1. Relative Intensity Vs. Wavelength (ASMT-SBB5 and ASMT SGB5)

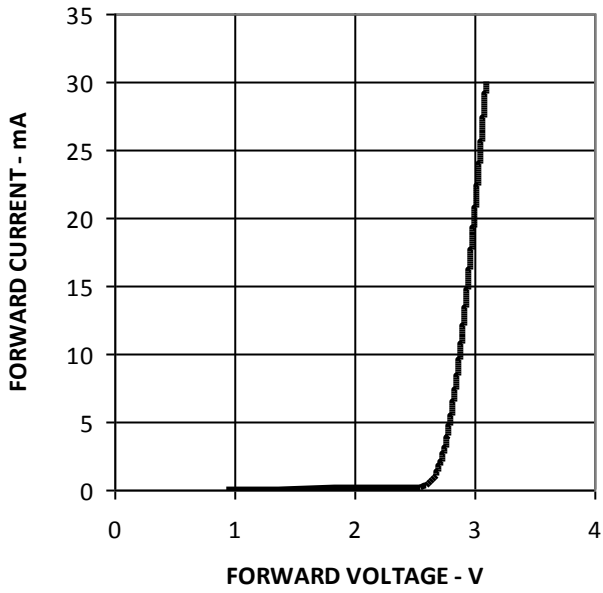


Figure 2. Forward Current Vs. Forward Voltage

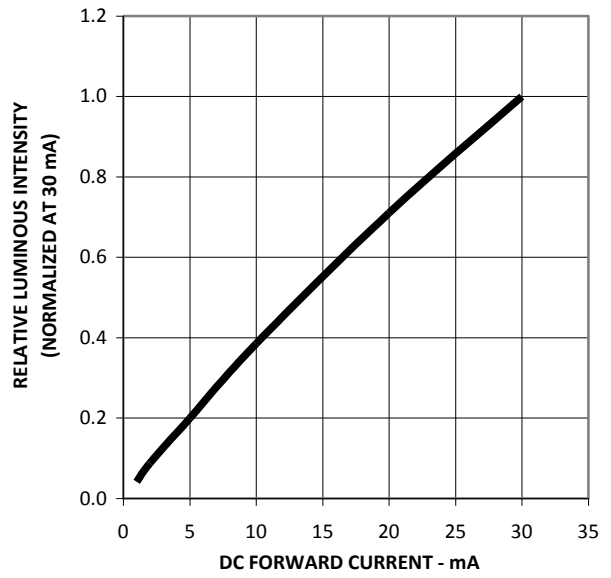
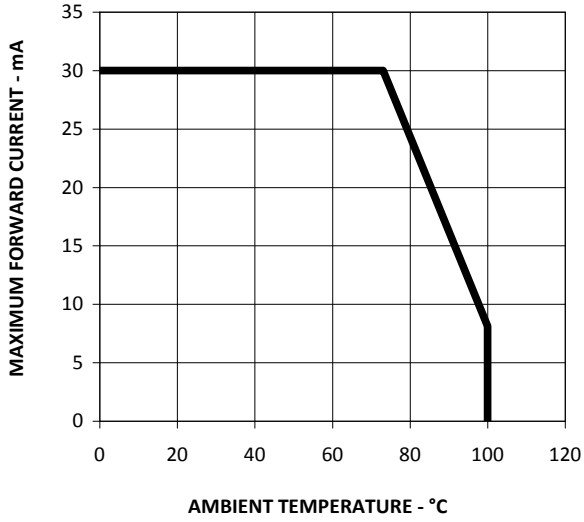
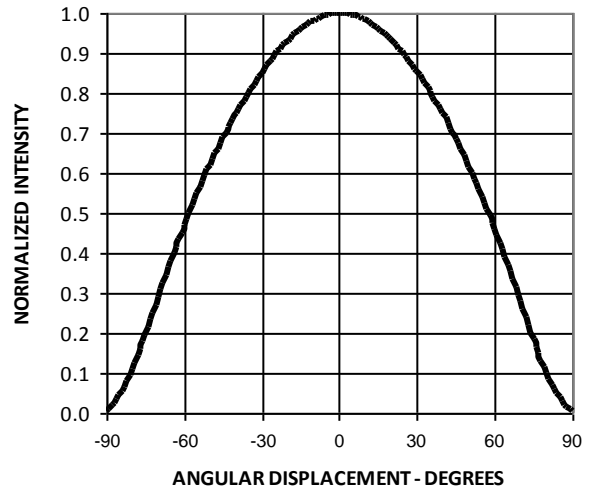


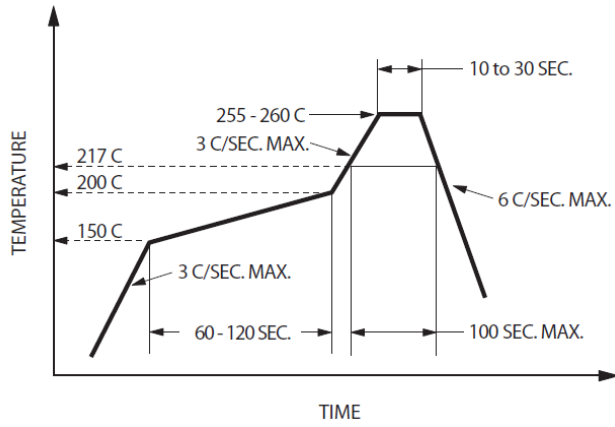
Figure 3. Relative Intensity Vs. Forward Current



**Figure 4. Maximum Forward Current Vs. Ambient Temperature. Derated Based on  $T_{j,MAX} = 110^{\circ}C$ ,  $R_{\theta JA} = 300^{\circ}C/W$**



**Figure 5. Radiation Pattern**



**Note: For detail information on reflow soldering of Avago surface mount LEDs, do refer to Avago Application Note AN 1060 Surface Mounting**

**Figure 6. Recommended Pb-free Reflow Soldering Profile**

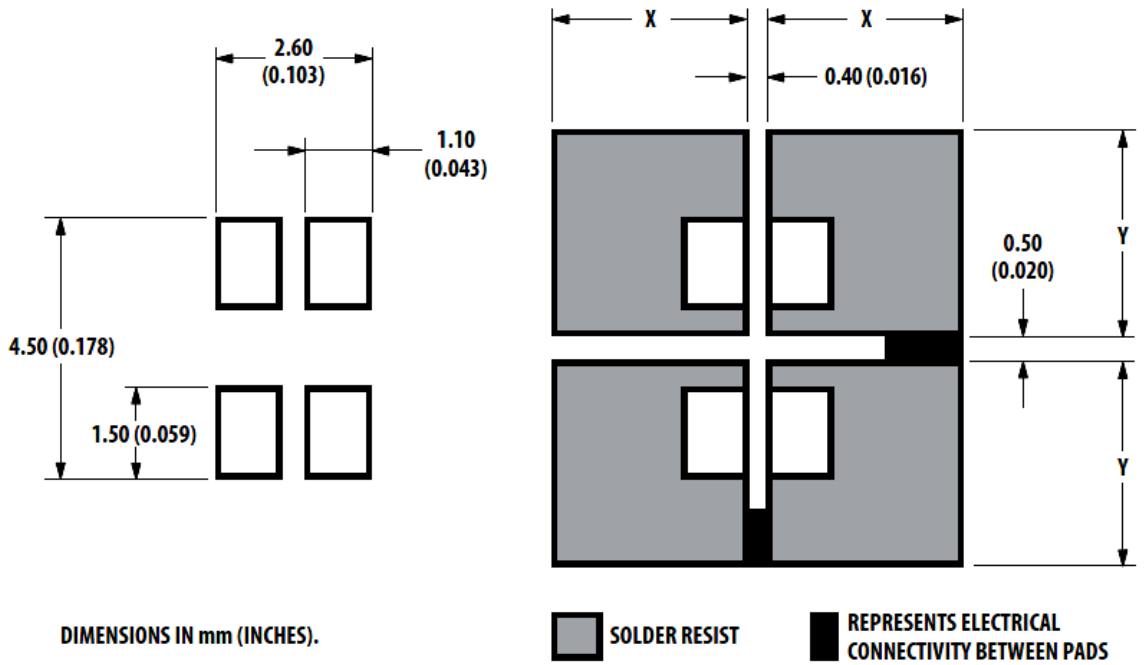


Figure 7. Recommended Soldering Pad Pattern

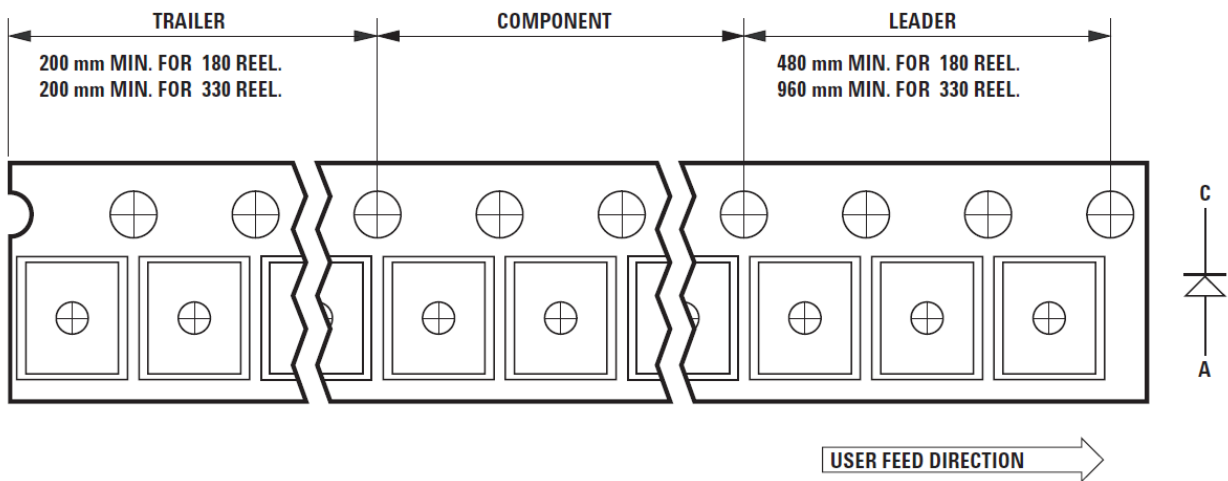


Figure 8. Tape Leader and Trailer Dimensions

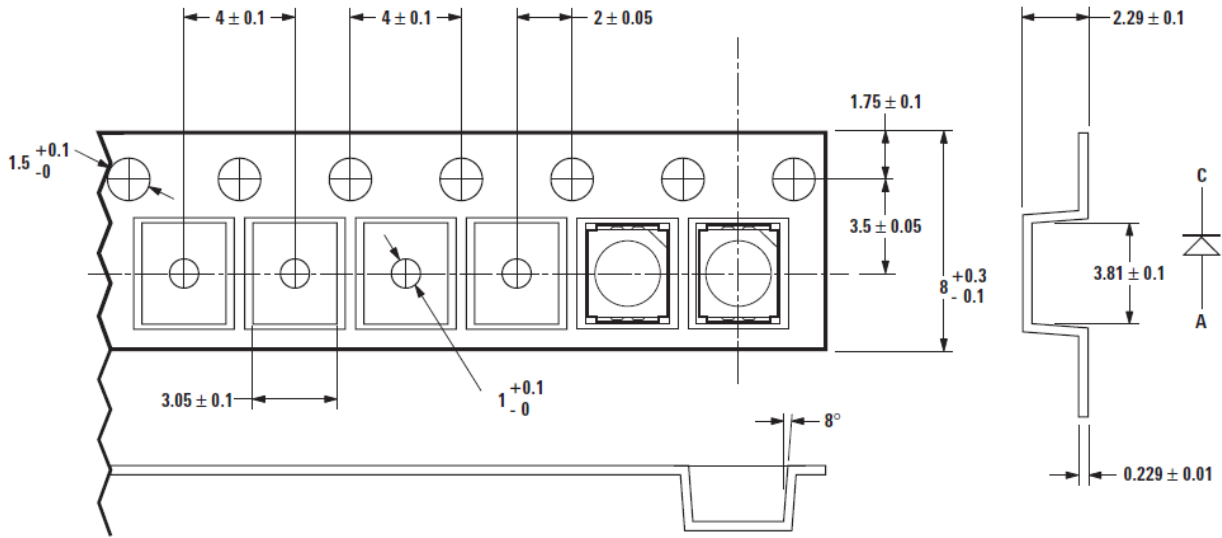


Figure 9. Tape Dimensions

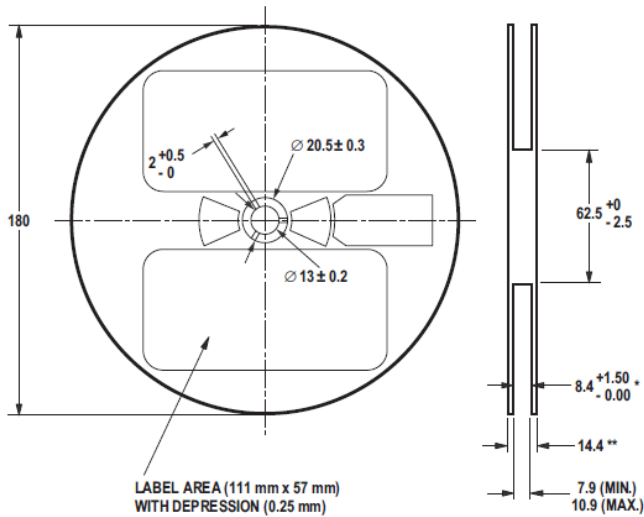


Figure 10. Reel dimensions

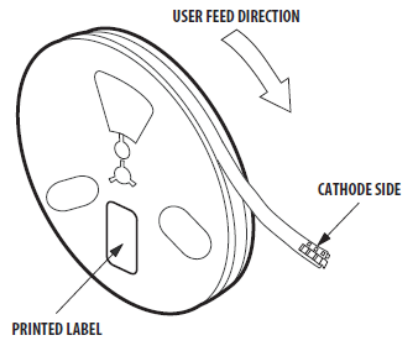


Figure 11. Reeling Orientation

## Handling Precaution

The encapsulation material of the product is made of silicone for better reliability of the product. As silicone is a soft material, please do not press on the silicone or poke a sharp object onto the silicone. These might damage the product and cause premature failure. During assembly or handling, the unit should be held on the body only. Please refer to Avago Application Note AN 5288 for detail information.

## Moisture Sensitivity

This product is qualified as Moisture Sensitive Level 3 per Jedec J-STD-020. Precautions when handling this moisture sensitive product is important to ensure the reliability of the product. Do refer to Avago Application Note AN5305 Handling of Moisture Sensitive Surface Mount Devices for details.

### A. Storage before use

- Unopen moisture barrier bag (MBB) can be stored at  $<40^{\circ}\text{C}/90\%\text{RH}$  for 12 months. If the actual shelf life has exceeded 12 months and the HIC indicates that baking is not required, then it is safe to reflow the LEDs per the original MSL rating.
- It is not recommended to open the MBB prior to assembly (e.g. for IQC).

### B. Control after opening the MBB

- The humidity indicator card (HIC) shall be read immediately upon opening of MBB.
- The LEDs must be kept at  $<30^{\circ}\text{C} / 60\%\text{RH}$  at all time and all high temperature related process including soldering, curing or rework need to be completed within 168 hours.

### C. Control for unfinished reel

- For any unuse LEDs, they need to be stored in sealed MBB with desiccant or desiccator at  $<5\%\text{RH}$ .
- 

### D. Control of assembled boards

- If the PCB soldered with the LEDs is to be subjected to other high temperature processes, the PCB need to be stored in sealed MBB with desiccant or desiccator at  $<5\%\text{RH}$  to ensure no LEDs have exceeded their floor life of 168 hours.

### E. Baking is required if:

- The HIC indicator is not GREEN at 10% and is AZURE at 5%.
- The LEDs are exposed to condition of  $>30^{\circ}\text{C} / 60\%\text{RH}$  at any time.
- The LEDs floor life exceeded 168 hours.

Recommended baking condition:  $60\pm 5^{\circ}\text{C}$  for 20 hours.



### Intensity Bin Select (X<sub>2</sub>X<sub>3</sub>)

Individual reel will contain parts from one half bin only

X <sub>2</sub>	Min I <sub>v</sub> Bin
<hr/>	
X <sub>3</sub>	
<hr/>	
0	Full Distribution
A	1 half bins starting from X <sub>2</sub> 1
2	2 half bins starting from X <sub>2</sub> 1
3	3 half bins starting from X <sub>2</sub> 1
4	4 half bins starting from X <sub>2</sub> 1
5	5 half bins starting from X <sub>2</sub> 1
B	1 half bins starting from X <sub>2</sub> 2
6	2 half bins starting from X <sub>2</sub> 2
7	3 half bins starting from X <sub>2</sub> 2
8	4 half bins starting from X <sub>2</sub> 2
9	5 half bins starting from X <sub>2</sub> 2

### Intensity Bin Limits

Bin ID	Min. (mcd)	Max. (mcd)
S1	180.00	224.00
S2	224.00	285.00
T1	285.00	355.00
T2	355.00	450.00
U1	450.00	560.00
U2	560.00	715.00
V1	715.00	900.00
V2	900.00	1125.00
W1	1125.00	1400.00
W2	1400.00	1800.00
X1	1800.00	2240.00
X2	2240.00	2850.00
Y1	2850.00	3550.00
Y2	3550.00	4500.00
Z1	4500.00	5600.00
Z2	5600.00	7150.00

Tolerance of each bin limit = ± 12%

### Color Bin Select (X<sub>4</sub>)

Individual reel will contain parts from one full bin only.

X <sub>4</sub>	
0	Full Distribution
Z	A and B only
Y	B and C only
W	C and D only
V	D and E only
U	E and F only
T	F and G only
S	G and H only
Q	A, B, and C only
P	B, C, and D only
N	C, D, and E only
M	D, E, and F only
L	E, F, and G only
K	F, G, and H only
1	A, B, C, and D only
2	E, F, G, and H only
3	B, C, D, and E only
4	C, D, E, and F only
5	A, B, C, D, and E only
6	B, C, D, E, and F only

### Color Bin Limits

Blue	Min.(nm)	Max.(nm)
A	460.0	465.0
B	465.0	470.0
C	470.0	475.0
D	475.0	480.0

Green	Min.(nm)	Max.(nm)
A	515.0	520.0
B	520.0	525.0
C	525.0	530.0
D	530.0	535.0

Tolerance of each bin limit = ± 1 nm.

### Packaging Option (X<sub>5</sub>)

Option	Test Current	Package Type	Reel Size
3	30mA	Top Mount	7 inch

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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September 7, 2012

