

# ASMT-CW00

InGaN White, 0.4mm Low Profile  
Right Angle Surface Mount ChipLED



## Data Sheet

### Description

The ASMT-CW00 of white color chip-type LEDs is designed with the smallest footprint to achieve high density of components on board. They have the industry standard footprint 1.6 mm x 1.0 mm and a height of only 0.4 mm. This makes them very suitable for cellular phone and mobile equipment backlighting and indication application where space is a constraint. In order to facilitate automated pick and place operation, these ChipLEDs are shipped in conductive tape and reel, with 4000 units per reel. These part are compatible with IR soldering.

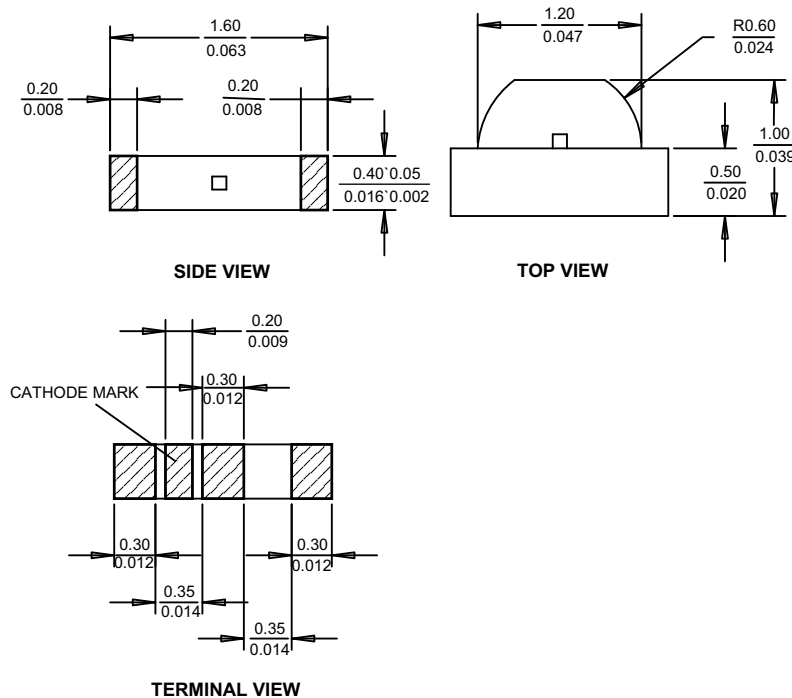
### Features

- Small size right angle mount
- 0603 industry standard footprint
- 0.4 mm low profile type
- Operating temperature range of -40°C to +85 °C
- Compatible with IR reflow soldering process
- Available in 8mm tape on 178mm (7') diameter reels
- Reel sealed in zip locked moisture barrier bags

### Applications

- LCD Backlighting
- Keypad Side / Backlighting
- Pushbutton backlighting
- Symbol Indicator

### Package Dimension



#### Notes:

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

**CAUTION:** ASMT-CW00 LEDs are Class 1A ESD sensitive per JESD22-A114C.01. Please observe appropriate precautions during handling and processing. Refer to Application Note AN-1142 for additional details.

## Device Selection Guide

| Package Dimension (mm)      | Parts per Reel | Package Description    |
|-----------------------------|----------------|------------------------|
| 1.6 (L) x 1.0 (W) x 0.4 (H) | 4000           | Untinted, Non-diffused |

## Absolute Maximum Ratings at T<sub>A</sub> = 25°C

| Parameter                                | ASMT-CW00                                   | Unit |
|--|---|------|
| DC Forward Current <sup>[1]</sup>        | 10  | mA   |
| Power Dissipation                        | 32  | mW   |
| Reverse Voltage (I <sub>R</sub> = 100μA) | 5   | V    |
| LED Junction Temperature                 | 95  | °C   |
| Operating Temperature Range              | -40 to +85                                  | °C   |
| Storage Temperature Range                | -40 to +85                                  | °C   |
| Soldering Temperature                    | See reflow soldering profile (Figure 8 & 9) |      |

Note:

1. Derate linearly as shown in Figure 4.

## Electrical Characteristics at T<sub>A</sub> = 25°C

| Part Number | Forward Voltage<br>V <sub>F</sub> (Volts) <sup>[1]</sup> @ I <sub>F</sub> = 5mA |      | Reverse Breakdown<br>V <sub>R</sub> (Volts) @ I <sub>R</sub> = 100μA | Thermal Resistance<br>R <sub>ΘJ-PIN</sub> (°C/W) |
|-------------|---|------|--|--|
|             | Min.  | Max. | Minimum  | Typical  |
| ASMT-CW00   | 2.55  | 3.15 | 5  | 450  |

Notes:

1. V<sub>F</sub> tolerance : ±0.1V

## Optical Characteristics at T<sub>A</sub> = 25°C

| Part Number | Luminous Intensity I <sub>v</sub> <sup>[1]</sup> (mcd) @ 5mA |      | Color Chromaticity <sup>[2]</sup> | Viewing Angle 2 θ <sub>1/2</sub> <sup>[3]</sup><br>(Degrees) |
|-------------|--|------|-----------------------------------|--|
|             | Min.   | Typ. | Bin                               | Typical  |
| ASMT-CW00   | 18   | 35   | A1 – D2 (Refer to Figure 1)       | 170  |

Notes:

1. The luminous intensity I<sub>v</sub> is measured at the peak of the spatial radiation pattern which may not be aligned with the mechanical axis of the LED package.
2. The chromaticity coordinates are derived from the CIE Chromaticity Diagram and represents the perceived color of the device.
3. θ<sub>1/2</sub> is the off-axis angle where the luminous intensity is ½ the peak intensity.

## Light Intensity ( $I_V$ ) Bin Limits

| Bin ID | Intensity (mcd) |         |
|--------|-----------------|---------|
|        | Minimum         | Maximum |
| M      | 18.00           | 28.50   |
| N      | 28.50           | 45.00   |
| P      | 45.00           | 71.50   |
| Q      | 71.50           | 112.50  |

Tolerance :  $\pm 15\%$

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.

## Forward Voltage ( $V_F$ ) Bin Limits

| Bin ID | Forward Voltage (V) |         |
|--------|---------------------|---------|
|        | Minimum             | Maximum |
| 1      | 2.55                | 2.75    |
| 2      | 2.75                | 2.95    |
| 3      | 2.95                | 3.15    |

Tolerance :  $\pm 0.1V$

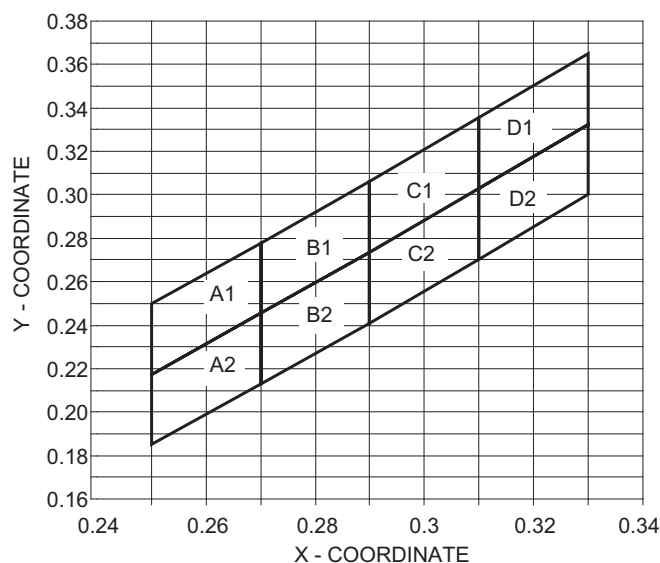


Figure 1. Color bin limits (CIE 1931 Chromaticity Diagram) [Tolerance:  $\pm 0.02$ ]

| Rank | Chromaticity Coordinates |        |        |        |        |
|------|--------------------------|--------|--------|--------|--------|
|      |                          | X      | Y      | Z      | W      |
| A1   | X                        | 0.2700 | 0.2700 | 0.2500 | 0.2500 |
|      | Y                        | 0.2455 | 0.2780 | 0.2500 | 0.2175 |
| A2   | X                        | 0.2700 | 0.2700 | 0.2500 | 0.2500 |
|      | Y                        | 0.2455 | 0.2130 | 0.1850 | 0.2175 |
| B1   | X                        | 0.2700 | 0.2700 | 0.2900 | 0.2900 |
|      | Y                        | 0.2455 | 0.2780 | 0.3060 | 0.2735 |
| B2   | X                        | 0.2700 | 0.2700 | 0.2900 | 0.2900 |
|      | Y                        | 0.2455 | 0.2130 | 0.2410 | 0.2735 |
| C1   | X                        | 0.2900 | 0.3100 | 0.3100 | 0.2900 |
|      | Y                        | 0.3060 | 0.3355 | 0.3030 | 0.2735 |
| C2   | X                        | 0.2900 | 0.3100 | 0.3100 | 0.2900 |
|      | Y                        | 0.2410 | 0.2705 | 0.3030 | 0.2735 |
| D1   | X                        | 0.3100 | 0.3100 | 0.3300 | 0.3300 |
|      | Y                        | 0.3030 | 0.3355 | 0.3650 | 0.3325 |
| D2   | X                        | 0.3100 | 0.3100 | 0.3300 | 0.3300 |
|      | Y                        | 0.3030 | 0.2705 | 0.3000 | 0.3325 |

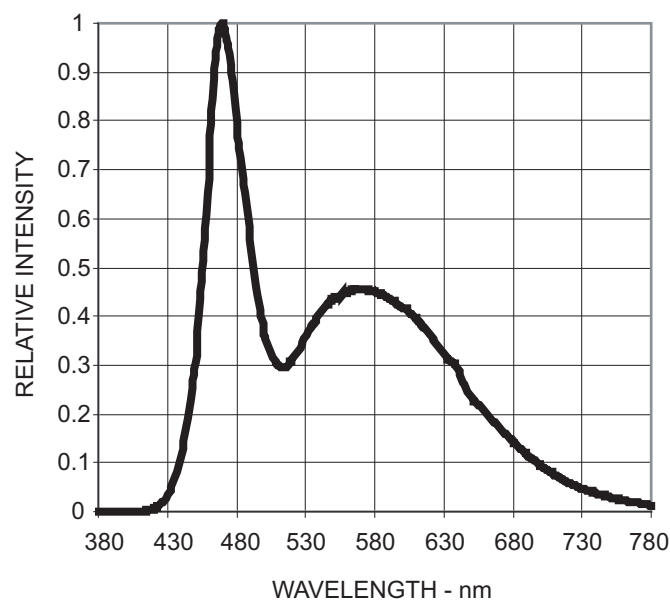


Figure 2. Relative intensity vs. wavelength

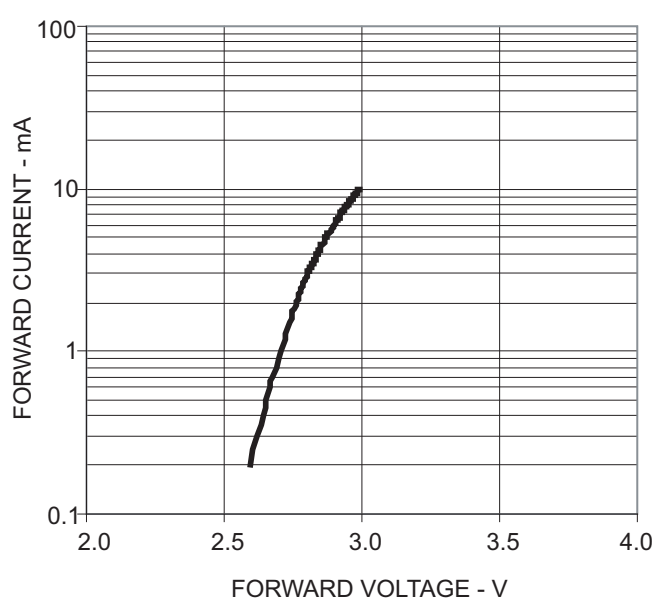


Figure 3. Forward voltage vs. forward current

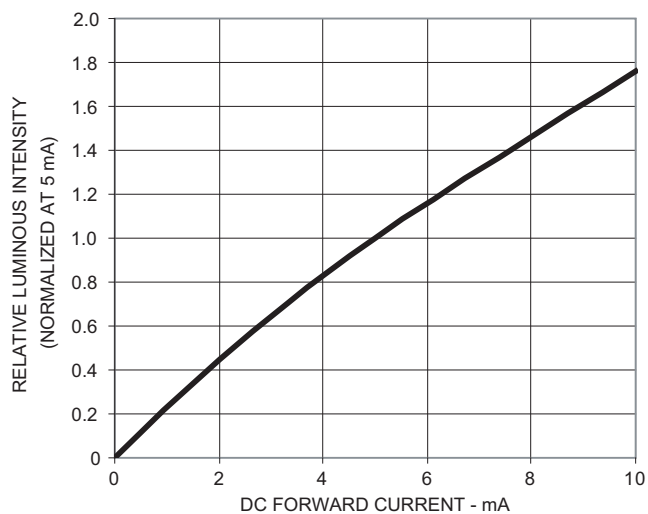


Figure 4. Luminous intensity vs. forward current

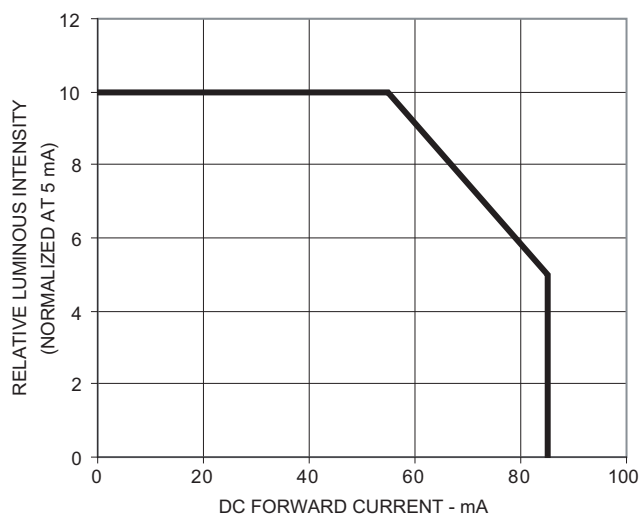


Figure 5. Maximum forward current vs. ambient temperature

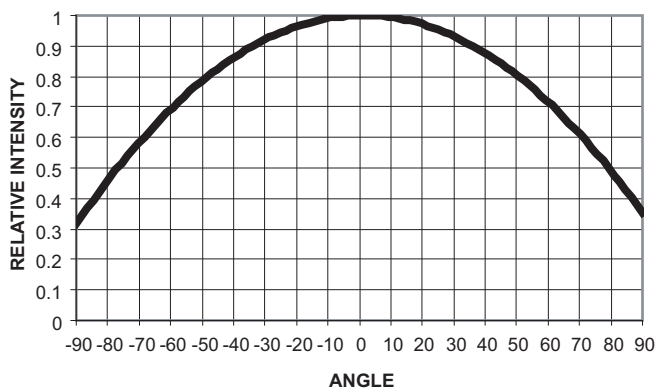
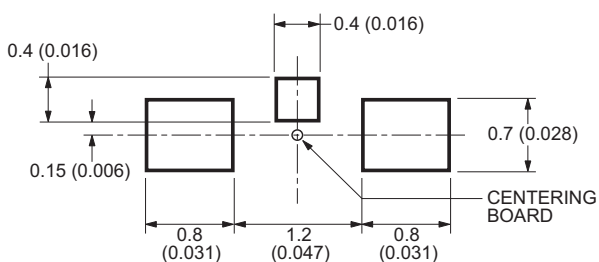


Figure 6. Radiation pattern



- 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 7. Recommended soldering land pattern

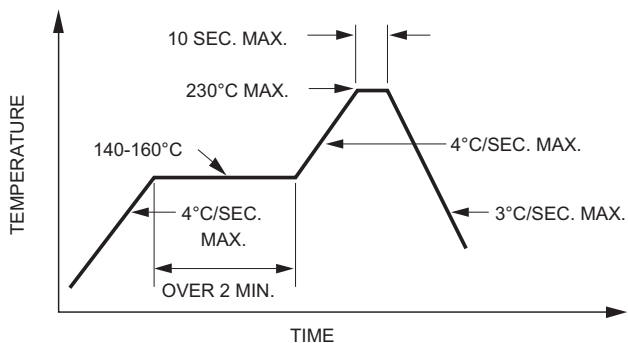


Figure 8. Recommended reflow soldering profile

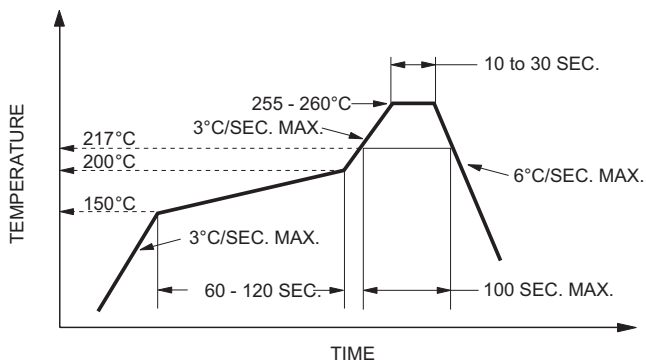


Figure 9. Recommended Pb-free reflow soldering profile

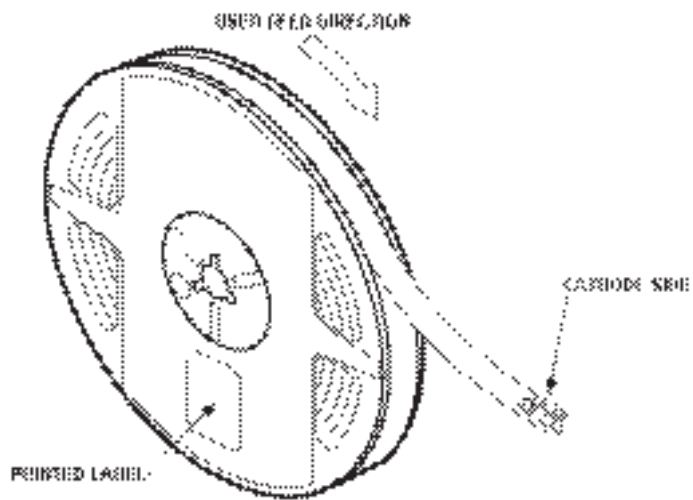


Figure 10. Reeling orientation

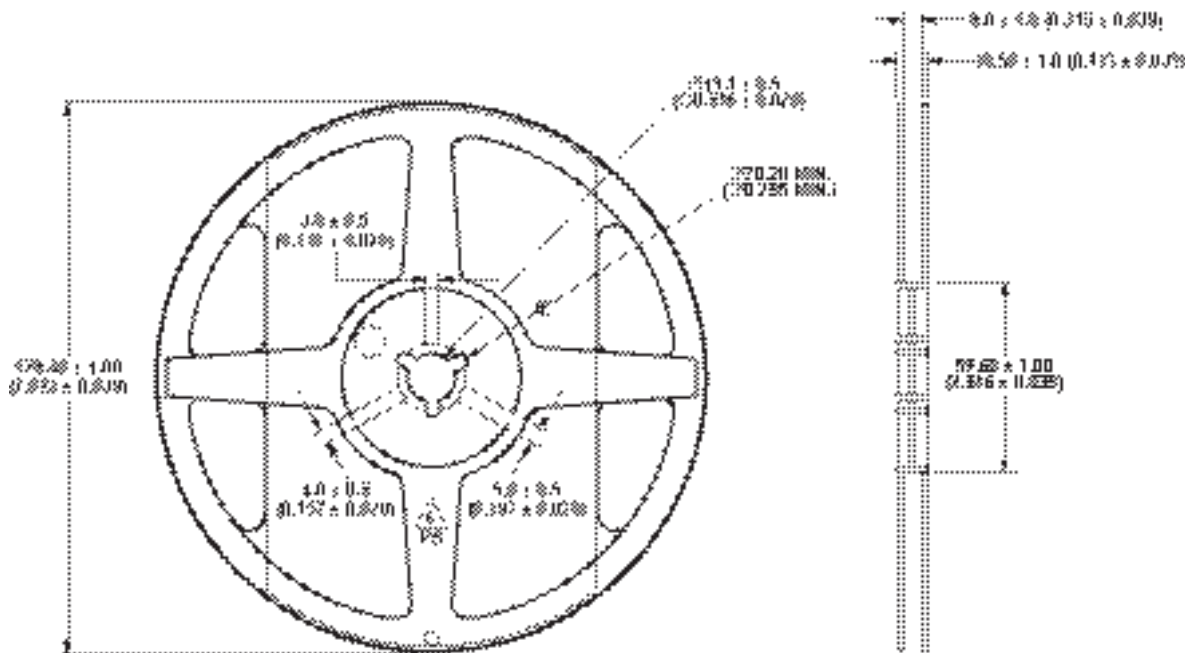
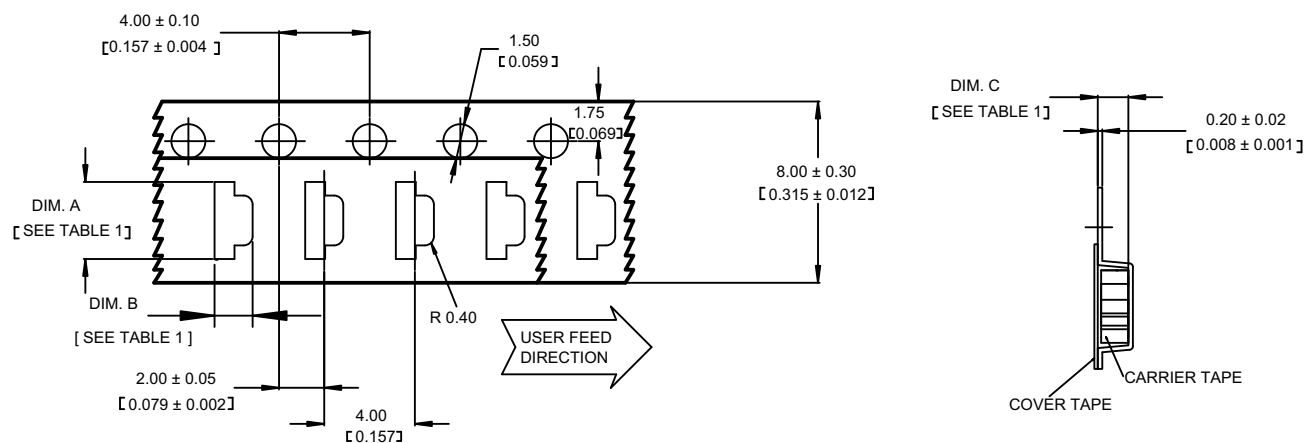


Figure 11. Reel dimensions

Notes:

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



#### Notes:

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

Table 1.

| PART NUMBER | DIM.A $\pm 0.10$ (0.004) | DIM.B $\pm 0.10$ (0.004) | DIM.C $\pm 0.10$ (0.004) |
|-------------|--------------------------|--------------------------|--------------------------|
| ASMT-CW00   | 1.75 (0.069)             | 1.10 (0.043)             | 0.60 (0.024)             |

Dimensions In Millimeters (Inches)

Figure 12. Tape dimensions

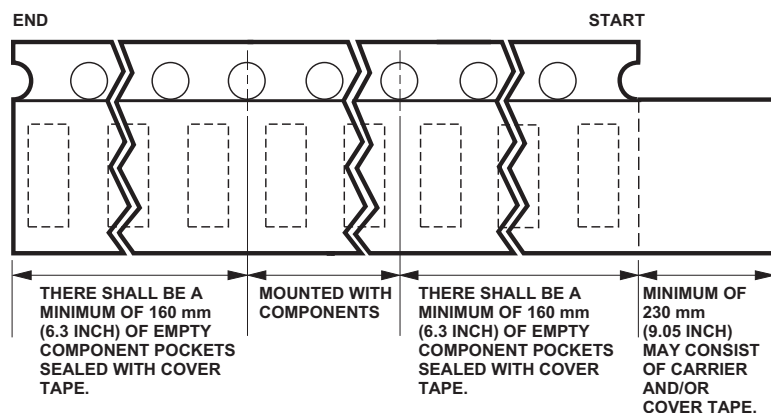


Figure 13. Tape leader and trailer dimensions

## Reflow Soldering

For more information on reflow soldering, refer to Application Note AN-1060, Surface Mounting SMT LED Indicator Components.

## Storage Condition

5 to 30°C @ 60%RH max. Baking is required before mounting, if

1. Humidity Indicator Card is  $> 10\%$  when read at  $23 \pm 5^\circ\text{C}$ .
2. Device expose to factory conditions  $< 30^\circ\text{C}/60\%\text{RH}$  more than 672 hours.

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

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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