

# ASMT-Jx33

## 3W Mini Power LED Light Source



### Data Sheet



Lead (Pb) Free  
RoHS 6 fully  
compliant



#### Description

The 3W Mini Power LED Light Source is a high performance energy efficient device which delivers high flux output and possesses high color rendering index. This device can handle high driving current. Option with electrically isolated metal slug is also available.

The White Mini Power LED is available in the range of color temperature from 2700K to 10000K.

The low profile package design and ultra small footprint is suitable for a wide variety of applications especially where space and height is a constraint.

The package is compatible with reflow soldering process. To facilitate easy pick & place assembly, the LEDs are packed in EIA-compliant tape and reel.

#### Features

- High Color Rendering Index (CRI)
- Available in Cool White, Neutral White and Warm White
- Small footprint and low profile
- Symmetrical outline
- Energy efficient
- Direct heat transfer from metal slug to mother board
- Compatible with reflow soldering process
- High current operation
- Long operation life
- Wide viewing angle
- Silicone encapsulation
- Non-ESD sensitive (threshold > 16kV)
- MSL 1 products

#### Applications

- Retail lighting
- Display case lighting
- Security lighting
- Commercial lighting such as window decorative lighting in shopping malls
- Architectural lighting

**CAUTION:** Customer is advised to keep the LEDs in the MBB when not in use as prolonged exposure to environment might cause the silver plated leads to tarnish, which might cause difficulties in soldering.

## Package Dimensions

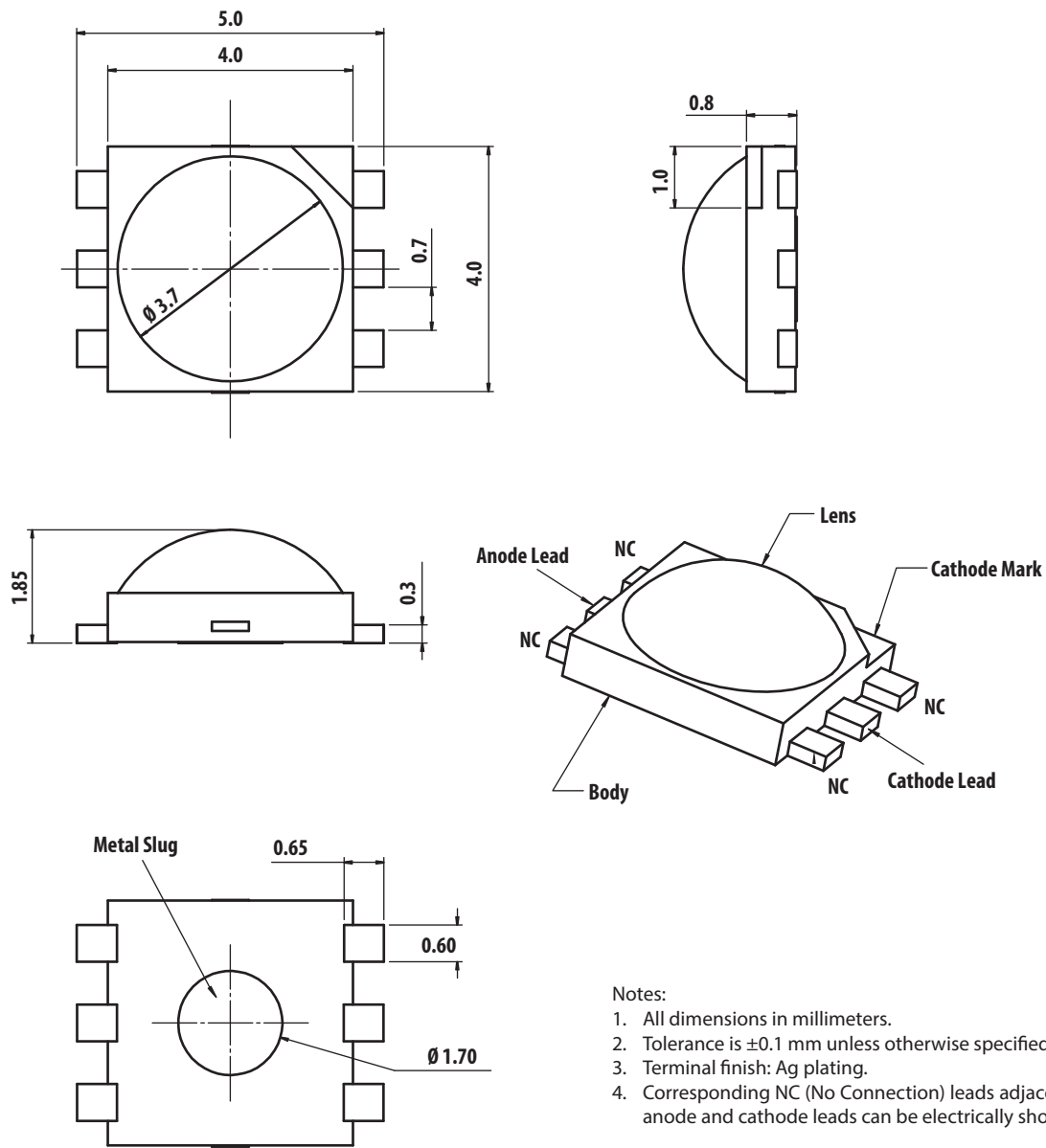
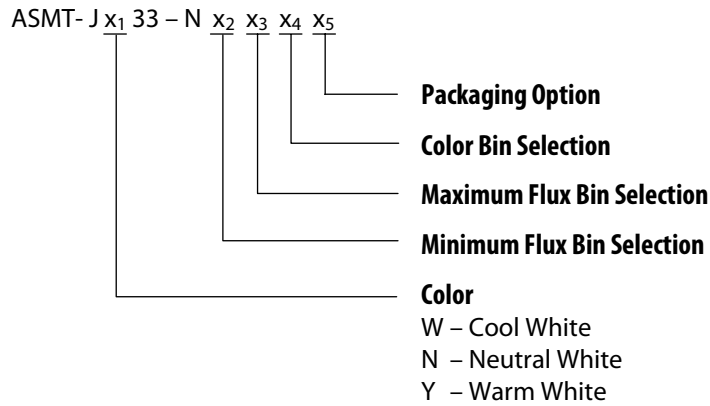


Figure 1. ASMT-Jx33 package outline drawing

## Part Numbering System



Note:

1. Please refer to Page 7 for selection details.

## Device Selection Guide (T<sub>J</sub> = 25°C)

| Part Number     | Color         | Luminous Flux (lm), Φ <sub>V</sub> <sup>[1,2]</sup> |       |       | Test Current (mA) | Dice Technology | Electrically Isolated Metal Slug |
|-----------------|---------------|-----------------------------------------------------|-------|-------|-------------------|-----------------|----------------------------------|
|                 |               | Min.                                                | Typ.  | Max.  |                   |                 |                                  |
| ASMT-JW33-NUV01 | Cool White    | 87.4                                                | 100.0 | 113.6 | 350               | InGaN           | Yes                              |
| ASMT-JW33-NVW01 |               | 99.6                                                | 110.0 | 129.5 | 350               | InGaN           | Yes                              |
| ASMT-JN33-NUV01 | Neutral White | 87.4                                                | 100.0 | 113.6 | 350               | InGaN           | Yes                              |
| ASMT-JN33-NVW01 |               | 99.6                                                | 110.0 | 129.5 | 350               | InGaN           | Yes                              |
| ASMT-JY33-NRS01 | Warm White    | 39.8                                                | 60.0  | 67.2  | 350               | InGaN           | Yes                              |
| ASMT-JY33-NSTJ1 |               | 51.7                                                | 70.0  | 87.4  | 350               | InGaN           | Yes                              |
| ASMT-JY33-NTU01 |               | 67.2                                                | 90.0  | 99.6  | 350               | InGaN           | Yes                              |

Notes:

1. Φ<sub>V</sub> is the total luminous flux output as measured with an integrating sphere at 25ms mono pulse condition.
2. Flux tolerance is ±10%

## Absolute Maximum Ratings

| Parameter                                        | InGaN              | Units |
|--------------------------------------------------|--------------------|-------|
| DC Forward Current <sup>[1]</sup>                | 700                | mA    |
| Peak Pulsing Current                             | 2400               | mA    |
| Power Dissipation                                | 2730               | mW    |
| LED Junction Temperature                         | 135                | °C    |
| Operating Metal Slug Temperature Range at 350 mA | -40 to +120        | °C    |
| Operating Metal Slug Temperature Range at 700 mA | -40 to +105        | °C    |
| Storage Temperature Range                        | -40 to +120        | °C    |
| Soldering Temperature                            | Refer to Figure 14 |       |
| Reverse Voltage <sup>[2]</sup>                   | Not recommended    |       |

Notes:

1. Derate linearly based on Figure 10.
2. Not designed for reverse bias operation.

### Optical Characteristics at 350 mA ( $T_J = 25^\circ\text{C}$ )

| Part Number     | Color         | Correlated Color Temperature, CCT (Kelvin) |       | Viewing Angle, $2\theta_{1/2}$ [1] (°) | Luminous Efficiency (lm/W) | Color Rendering Index, CRI |
|-----------------|---------------|--------------------------------------------|-------|----------------------------------------|----------------------------|----------------------------|
|                 |               | Min.                                       | Max.  |                                        |                            |                            |
| ASMT-JW33-NUV01 | Cool White    | 4500                                       | 10000 | 140                                    | 89                         | 80                         |
| ASMT-JW33-NVW01 |               | 4500                                       | 10000 | 140                                    | 98                         | 80                         |
| ASMT-JN33-NUV01 | Neutral White | 3500                                       | 4500  | 140                                    | 89                         | 80                         |
| ASMT-JN33-NVW01 |               | 3500                                       | 4500  | 140                                    | 98                         | 80                         |
| ASMT-JY33-NRS01 | Warm White    | 2700                                       | 3500  | 140                                    | 54                         | 90                         |
| ASMT-JY33-NSTJ1 |               | 2850                                       | 3250  | 140                                    | 63                         | 85                         |
| ASMT-JY33-NTU01 |               | 2700                                       | 3500  | 140                                    | 80                         | 85                         |

Note:

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

### Electrical Characteristic at 350 mA ( $T_J = 25^\circ\text{C}$ )

| Dice Type | Forward Voltage, $V_F$ (Volts) |     |      | Thermal Resistance, $R_{\theta J-MS}$ (°C/W) [1] |
|-----------|--------------------------------|-----|------|--------------------------------------------------|
|           | Min.                           | Typ | Max. | Typ.                                             |
| InGaN     | 2.8                            | 3.2 | 3.5  | 9                                                |

Note:

1.  $R_{\theta J-MS}$  is Thermal Resistance from LED junction to metal slug.

### Optical and Electrical Characteristic at 700 mA ( $T_J = 25^\circ\text{C}$ )

| Part Number     | Color         | Luminous Flux (lm), $\phi_V$ | Forward Voltage, $V_F$ (Volts) |
|-----------------|---------------|------------------------------|--------------------------------|
|                 |               | Typ.                         | Typ.                           |
| ASMT-JW33-NUV01 | Cool White    | 178.0                        | 3.6                            |
| ASMT-JW33-NVW01 |               | 196.0                        | 3.6                            |
| ASMT-JN33-NUV01 | Neutral White | 178.0                        | 3.6                            |
| ASMT-JN33-NVW01 |               | 196.0                        | 3.6                            |
| ASMT-JY33-NRS01 | Warm White    | 107.0                        | 3.6                            |
| ASMT-JY33-NSTJ1 |               | 125.0                        | 3.6                            |
| ASMT-JY33-NTU01 |               | 160.0                        | 3.6                            |

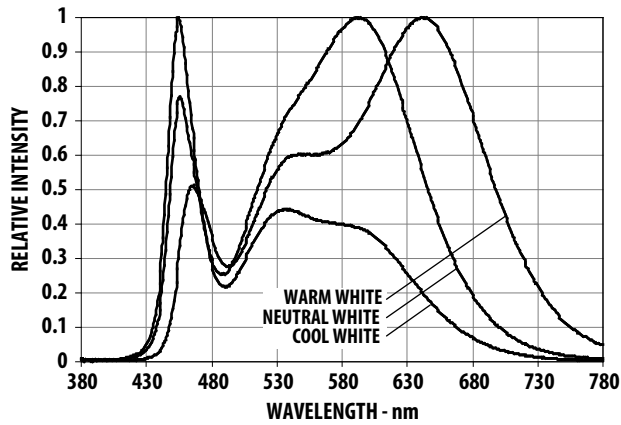


Figure 2. Relative Intensity vs. Wavelength for Cool White and Warm White

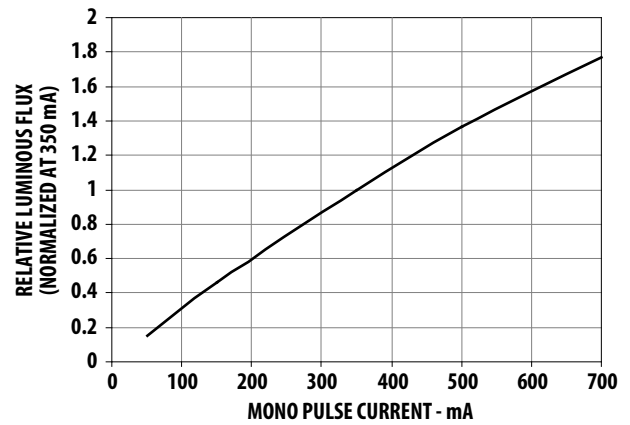


Figure 3. Relative Luminous Flux vs. Mono Pulse Current

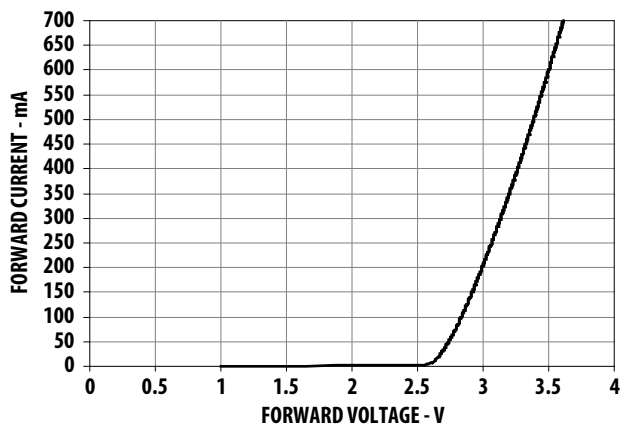


Figure 4. Forward Current vs. Forward Voltage

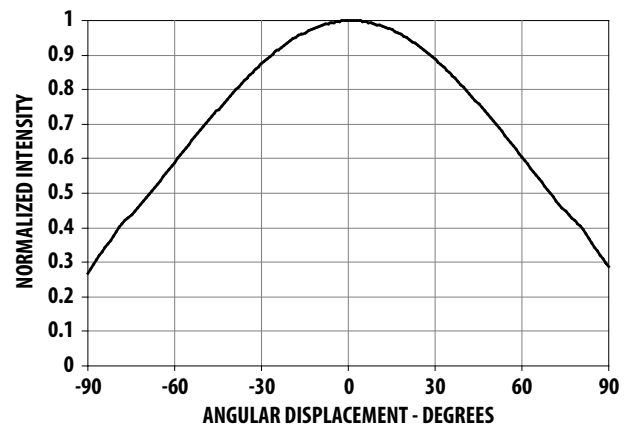


Figure 5. Radiation Pattern for Cool White, Warm White and Neutral White

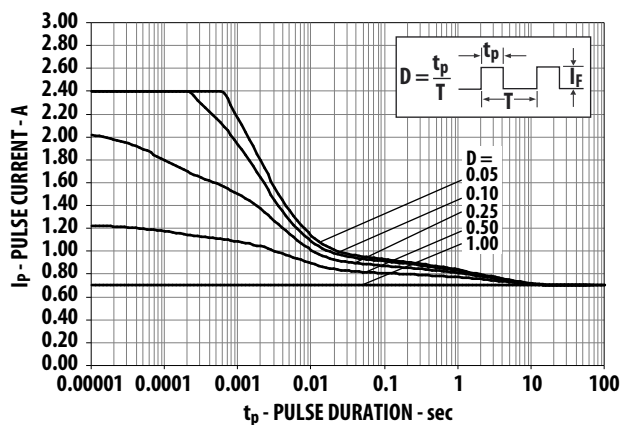


Figure 6. Maximum pulse current vs. pulse duration. Derated based on  $T_A = 25^\circ\text{C}$ ,  $R\theta_{JA} = 30^\circ\text{C/W}$ .

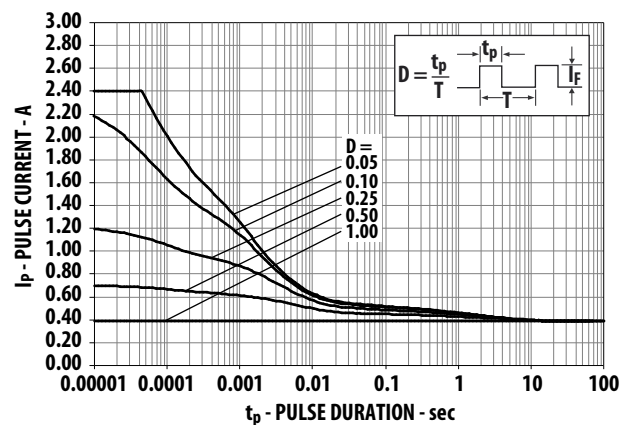


Figure 7. Maximum pulse current vs. pulse duration. Derated based on  $T_A = 85^\circ\text{C}$ ,  $R\theta_{JA} = 30^\circ\text{C/W}$ .

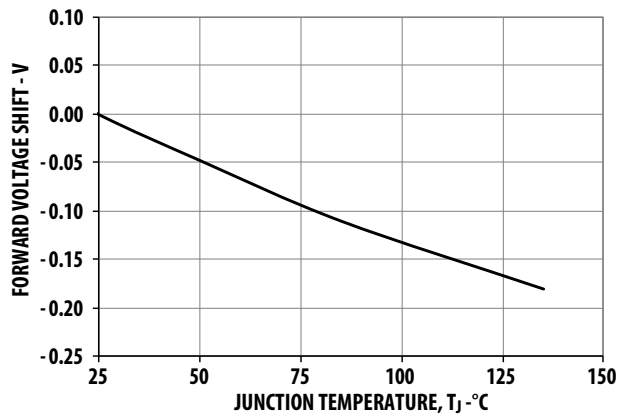


Figure 8. Forward Voltage Shift vs. Junction Temperature

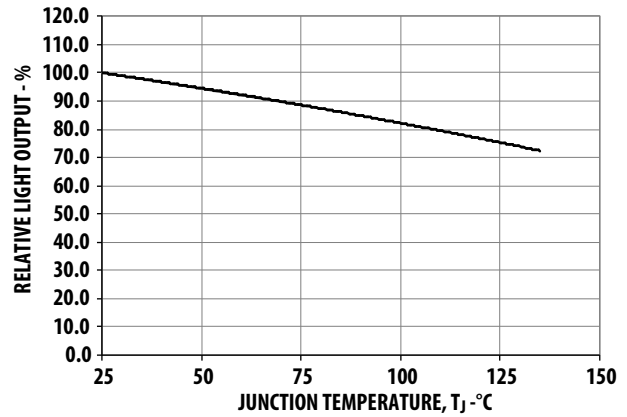


Figure 9. Relative Light Output vs. Junction Temperature.

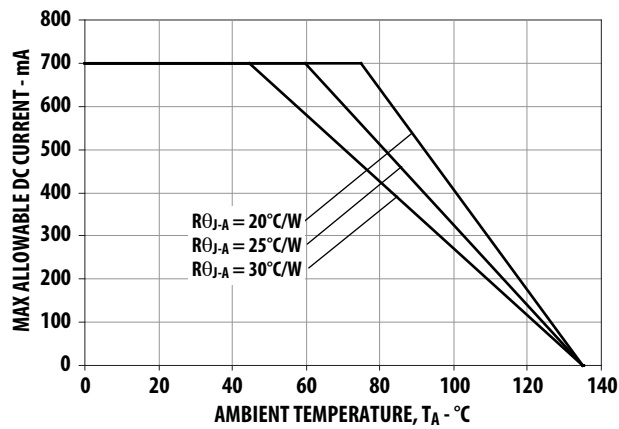


Figure 10. Maximum Forward Current vs. Ambient Temperature. Derated based on  $T_{JMAX} = 125^\circ\text{C}$ ,  $R_{\theta JA} = 20^\circ\text{C/W}$ ,  $25^\circ\text{C/W}$  and  $30^\circ\text{C/W}$

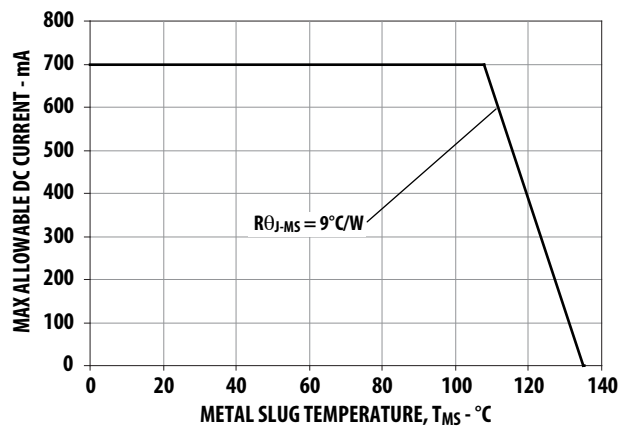


Figure 11. Maximum Forward Current vs. Metal Slug Temperature. Derated based on  $T_{JMAX} = 125^\circ\text{C}$ ,  $R_{\theta JMS} = 9^\circ\text{C/W}$

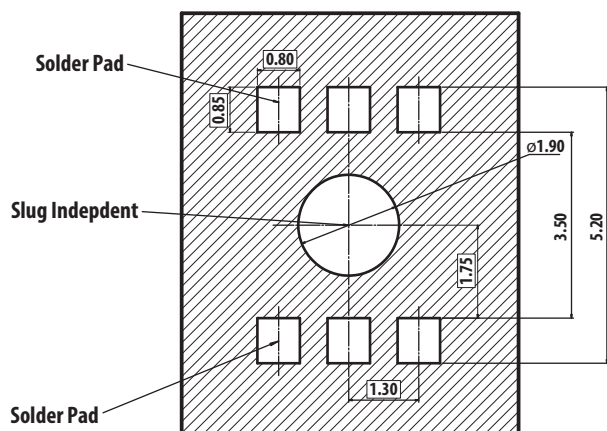


Figure 12. Recommended soldering land pattern

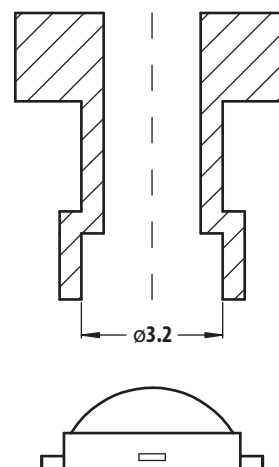


Figure 13. Recommended pick and place nozzle tip. Inner diameter = 3.2 mm

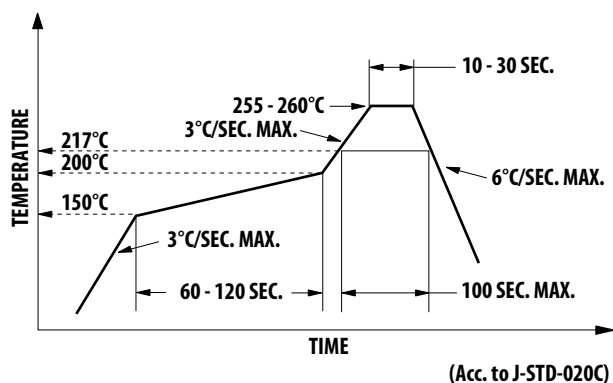


Figure 14. Recommended Reflow Soldering Profile

Note:

For detail information on reflow soldering of Avago surface mount LEDs, do refer to Avago Application Note AN1060 Surface Mounting SMT LED Indicator Components.

## Option Selection Details

### ASMT-J x<sub>1</sub> 33 – N x<sub>2</sub> x<sub>3</sub> x<sub>4</sub> x<sub>5</sub>

x<sub>2</sub> – Minimum Flux Bin Selection

x<sub>3</sub> – Maximum Flux Bin Selection

x<sub>4</sub> – Color Bin Selection

x<sub>5</sub> – Packaging Option

## Flux Bin Limit [x<sub>2</sub>, x<sub>3</sub>]

| Bin ID | Luminous Flux (lm) at 350 mA |       |
|--------|------------------------------|-------|
|        | Min.                         | Max.  |
| Q      | 30.6                         | 39.8  |
| R      | 39.8                         | 51.7  |
| S      | 51.7                         | 67.2  |
| T      | 67.2                         | 87.4  |
| U      | 87.4                         | 99.6  |
| V      | 99.6                         | 113.6 |
| W      | 113.6                        | 129.5 |

Tolerance for each bin limits is ±10%

## Color Bin Selection [x<sub>4</sub>]

Individual reel will contain parts from one color bin selection only.

### Cool White

| Selection | Bin ID            |
|-----------|-------------------|
| 0         | Full Distribution |
| H         | UN, VN, U0 and V0 |
| J         | WN, VN, W0 and V0 |
| K         | XN, WN, X0 and W0 |
| P         | Y0                |

### Warm White

| Selection | Bin ID            |
|-----------|-------------------|
| 0         | Full Distribution |
| H         | M1, N1, M0 and N0 |
| J         | P1, N1, P0 and N0 |
| K         | Q1, P1, Q0 and P0 |

### Neutral White

| Selection | Bin ID            |
|-----------|-------------------|
| 0         | Full Distribution |
| G         | S1, R1, S0 and R0 |
| H         | TN, S1, T0 and S0 |

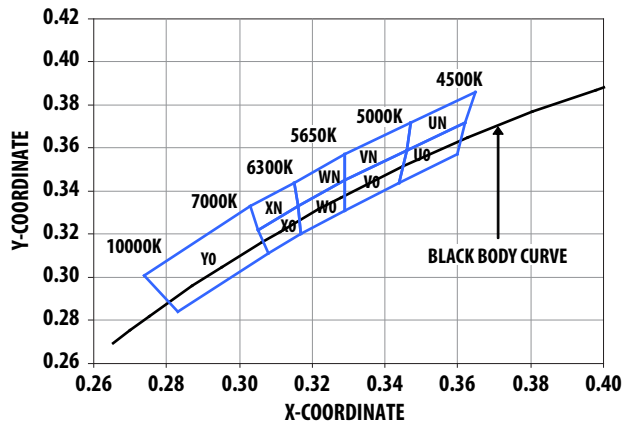


Figure 15. Color bin Structure for Cool White

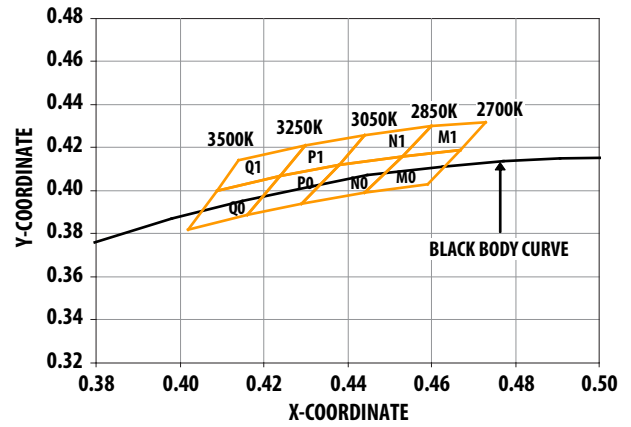


Figure 16. Color bin structure for Warm White

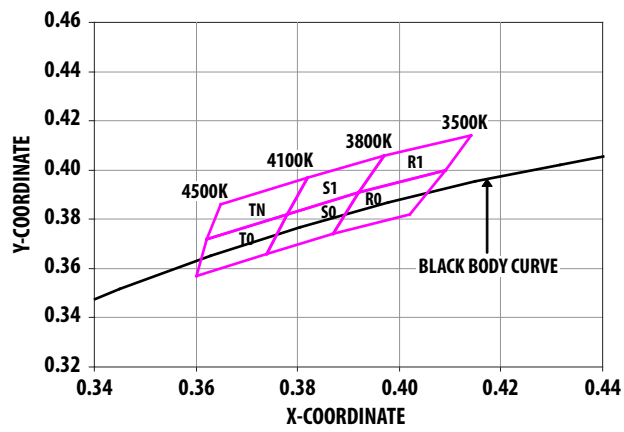


Figure 17. Color bin structure for Neutral White

## Color Bin Limits

| Cool White | Color Limits (Chromaticity Coordinates) |       |       |       |       |
|------------|-----------------------------------------|-------|-------|-------|-------|
| Bin UN     | x                                       | 0.365 | 0.362 | 0.346 | 0.347 |
|            | y                                       | 0.386 | 0.372 | 0.359 | 0.372 |
| Bin U0     | x                                       | 0.362 | 0.360 | 0.344 | 0.346 |
|            | y                                       | 0.372 | 0.357 | 0.344 | 0.359 |
| Bin VN     | x                                       | 0.329 | 0.329 | 0.347 | 0.346 |
|            | y                                       | 0.345 | 0.357 | 0.372 | 0.359 |
| Bin V0     | x                                       | 0.329 | 0.329 | 0.346 | 0.344 |
|            | y                                       | 0.331 | 0.345 | 0.359 | 0.344 |
| Bin WN     | x                                       | 0.329 | 0.316 | 0.315 | 0.329 |
|            | y                                       | 0.345 | 0.333 | 0.344 | 0.357 |
| Bin W0     | x                                       | 0.329 | 0.329 | 0.317 | 0.316 |
|            | y                                       | 0.345 | 0.331 | 0.320 | 0.333 |
| Bin XN     | x                                       | 0.305 | 0.303 | 0.315 | 0.316 |
|            | y                                       | 0.322 | 0.333 | 0.344 | 0.333 |
| Bin X0     | x                                       | 0.308 | 0.305 | 0.316 | 0.317 |
|            | y                                       | 0.311 | 0.322 | 0.333 | 0.320 |
| Bin YO     | x                                       | 0.308 | 0.283 | 0.274 | 0.303 |
|            | y                                       | 0.311 | 0.284 | 0.301 | 0.333 |

Tolerance:  $\pm 0.01$

| Neutral White | Color Limits (Chromaticity Coordinates) |       |       |       |       |
|---------------|-----------------------------------------|-------|-------|-------|-------|
| Bin R1        | x                                       | 0.414 | 0.409 | 0.392 | 0.397 |
|               | y                                       | 0.414 | 0.400 | 0.391 | 0.406 |
| Bin R0        | x                                       | 0.392 | 0.387 | 0.402 | 0.409 |
|               | y                                       | 0.391 | 0.374 | 0.382 | 0.400 |
| Bin S1        | x                                       | 0.397 | 0.392 | 0.378 | 0.382 |
|               | y                                       | 0.406 | 0.391 | 0.382 | 0.397 |
| Bin S0        | x                                       | 0.392 | 0.387 | 0.374 | 0.378 |
|               | y                                       | 0.391 | 0.374 | 0.366 | 0.382 |
| Bin TN        | x                                       | 0.382 | 0.378 | 0.362 | 0.365 |
|               | y                                       | 0.397 | 0.382 | 0.372 | 0.386 |
| Bin T0        | x                                       | 0.378 | 0.374 | 0.360 | 0.362 |
|               | y                                       | 0.382 | 0.366 | 0.357 | 0.372 |

Tolerance:  $\pm 0.01$

| Warm White | Color Limits (Chromaticity Coordinates) |       |       |       |       |
|------------|-----------------------------------------|-------|-------|-------|-------|
| Bin M1     | x                                       | 0.460 | 0.453 | 0.467 | 0.473 |
|            | y                                       | 0.430 | 0.416 | 0.419 | 0.432 |
| Bin M0     | x                                       | 0.453 | 0.444 | 0.459 | 0.467 |
|            | y                                       | 0.416 | 0.399 | 0.403 | 0.419 |
| Bin N1     | x                                       | 0.444 | 0.438 | 0.453 | 0.460 |
|            | y                                       | 0.426 | 0.412 | 0.416 | 0.430 |
| Bin N0     | x                                       | 0.438 | 0.429 | 0.444 | 0.453 |
|            | y                                       | 0.412 | 0.394 | 0.399 | 0.416 |
| Bin P1     | x                                       | 0.430 | 0.424 | 0.438 | 0.444 |
|            | y                                       | 0.421 | 0.407 | 0.412 | 0.426 |
| Bin P0     | x                                       | 0.424 | 0.416 | 0.429 | 0.438 |
|            | y                                       | 0.407 | 0.389 | 0.394 | 0.412 |
| Bin Q1     | x                                       | 0.414 | 0.409 | 0.424 | 0.430 |
|            | y                                       | 0.414 | 0.400 | 0.407 | 0.421 |
| Bin Q0     | x                                       | 0.409 | 0.402 | 0.416 | 0.424 |
|            | y                                       | 0.400 | 0.382 | 0.389 | 0.407 |

Tolerance:  $\pm 0.01$

## Packaging Option [x5]

| Selection | Option        |
|-----------|---------------|
| 1         | Tape and Reel |

## Example

### ASMT-JW33-NSU01

ASMT-JW33-Nxxxx – Cool White, InGaN,  
Electrically isolated Heat Sink

- |           |                        |
|-----------|------------------------|
| $X_2 = S$ | – Minimum Flux Bin S   |
| $X_3 = U$ | – Maximum Flux Bin U   |
| $X_4 = 0$ | – Full Distribution    |
| $X_5 = 1$ | – Tape and Reel Option |

## Tape and Reel – Option 1

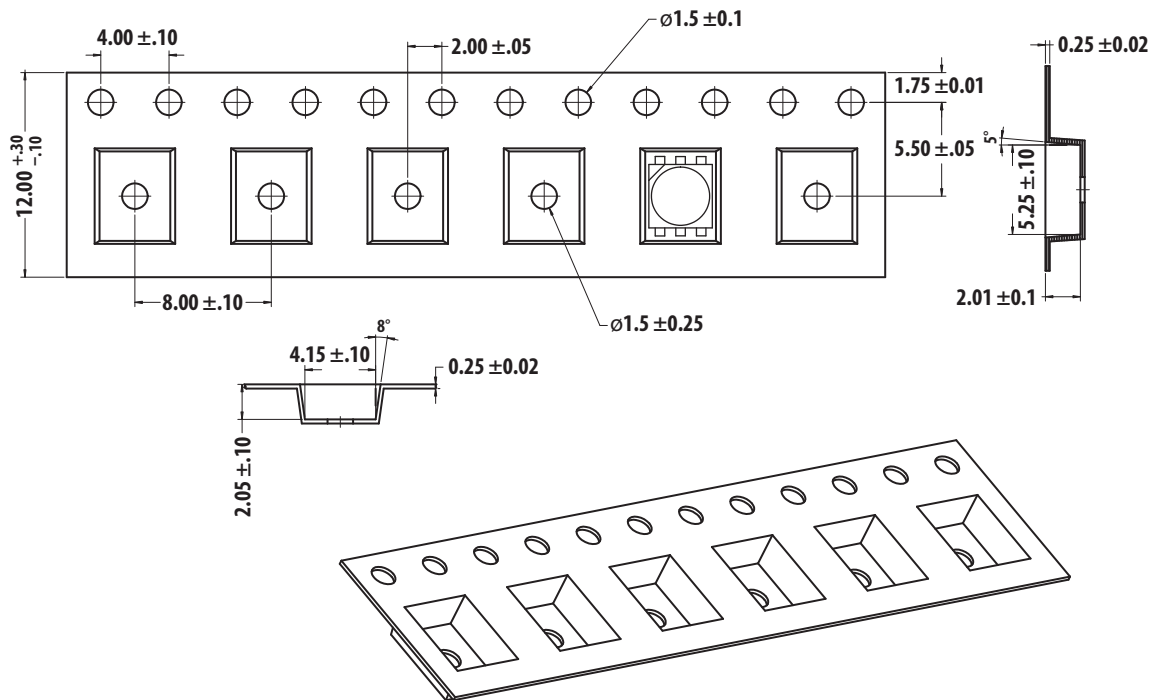
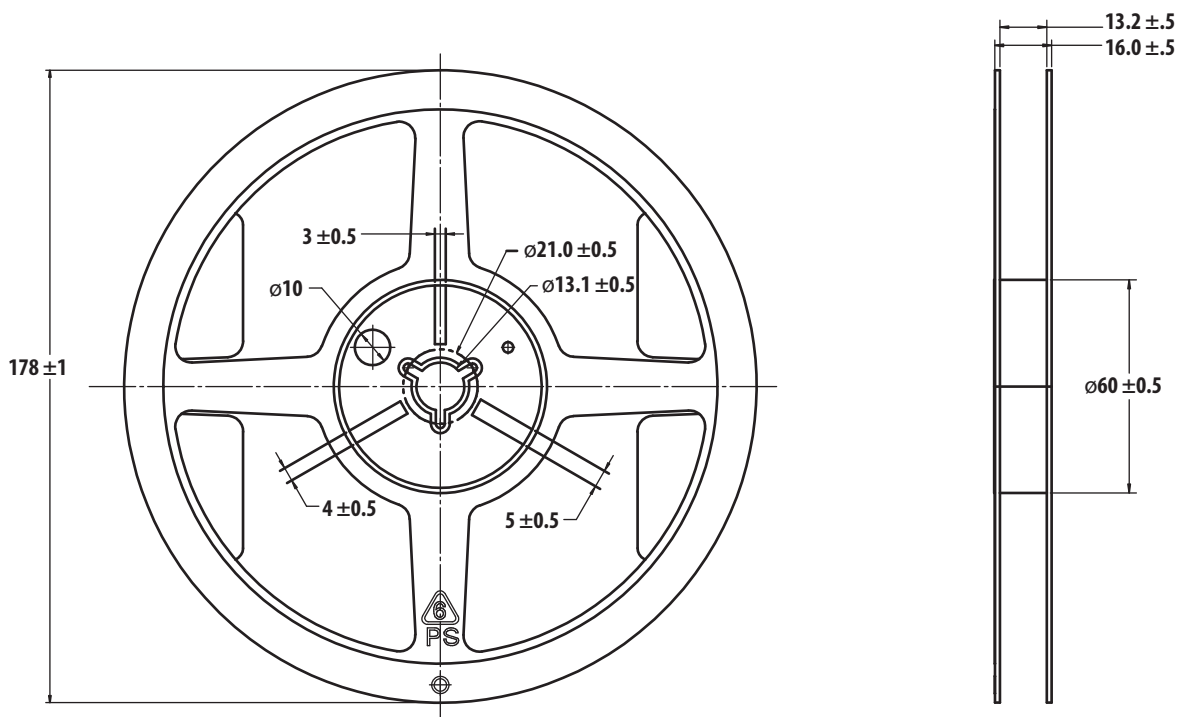


Figure 18. Carrier Tape Dimensions



### Notes:

1. Empty component pockets sealed with top cover tape.
2. 250 or 500 pieces per reel.
3. Drawing not to scale.
4. All dimensions are in millimeters.

Figure 19. Reel dimensions

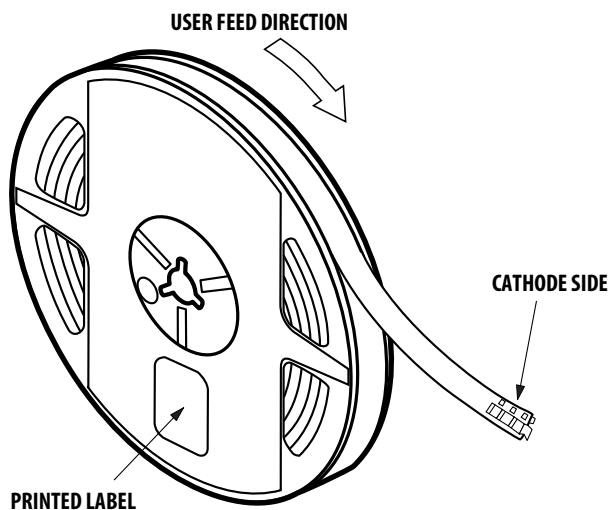


Figure 20. Reeling Orientation

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