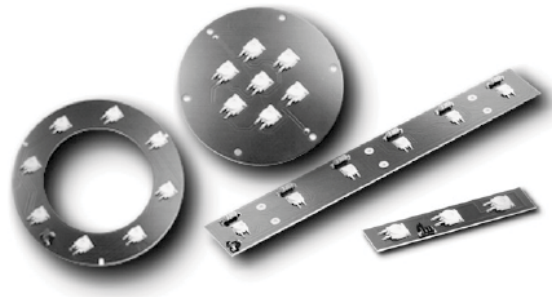


# ADJD-xMxx

## High Power Light Strip, Ring & Round



### Data Sheet



#### Description

Avago's Light Strip, Ring & Round Power LEDs range of products offers a series of LEDs which provides better life-time robustness and reliability compared to the conventional light sources. They are mounted on a metal-core PCB and thereby making it easier for thermal management. The wide radiation pattern of the Line Power LED makes it an ideal light source to illuminate a wide area.

#### Applications

- Reading light
- Architectural lighting
- Decorative lighting
- Backlighting
- Task lighting
- Safety / Emergency lighting
- Illumination in vending machine
- Refrigeration lighting
- Retail lighting
- Illumination for machine vision equipment

#### Features

- Available in Cool White and Warm White color.
- Various options with different number of LEDs on MCPCB to meet different lighting output requirement
- Energy efficient
- Exposed pad for excellent heat transfer
- Integrated heat sink to simplify thermal management design for efficient heat dissipation
- Long operation life.
- Wide viewing angle.
- Silicone encapsulation
- Ease of mechanical mounting
- Plug & Play assembly for ease of installation
- Lead free and ROHS compliant

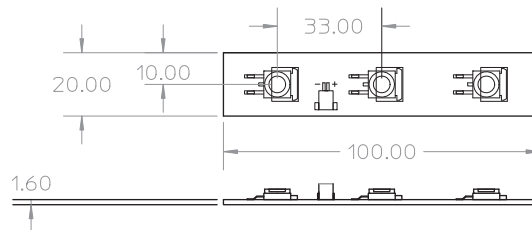
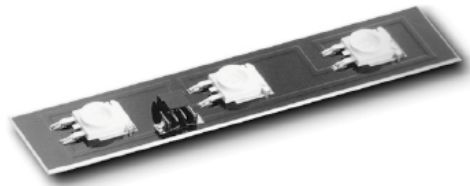
#### Specifications

- InGaN technology
- Smooth wide radiation pattern

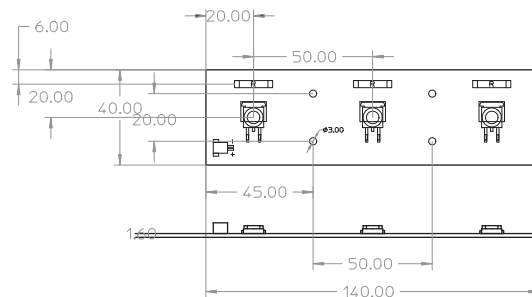
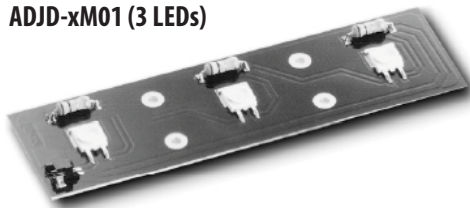
## Package Dimensions

### Light Strip

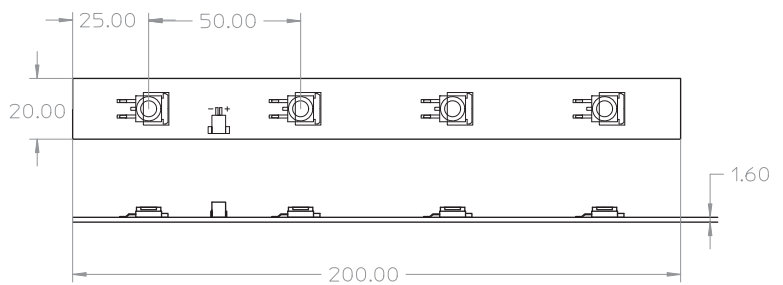
#### ADJD-xM00 (3 LEDs)



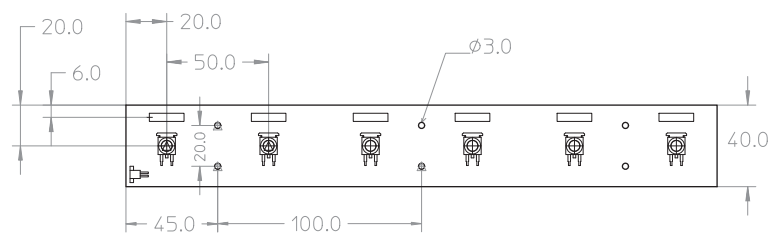
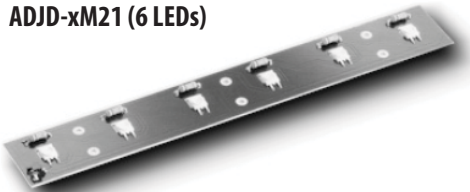
#### ADJD-xM01 (3 LEDs)



#### ADJD-xM10 (4 LEDs)



#### ADJD-xM21 (6 LEDs)

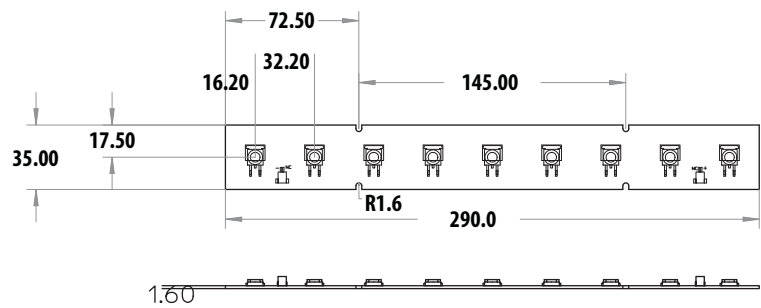


#### Notes:

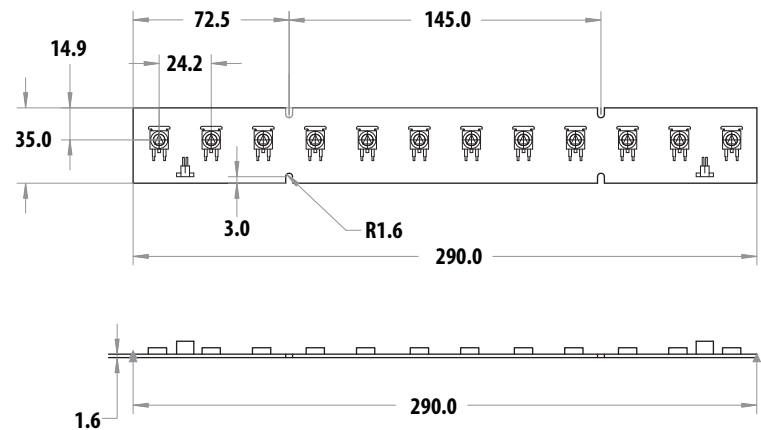
1. All dimensions are in millimeters.
2. Tolerance is  $\pm 0.1$  mm unless otherwise specified.



**ADJD-xM30 (9 LEDs)**

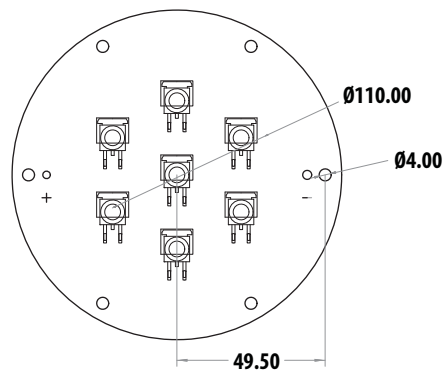
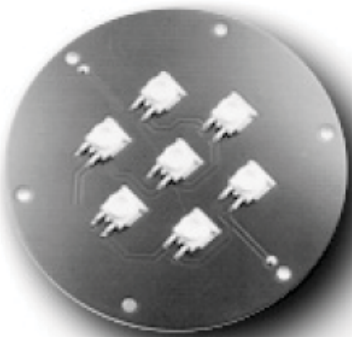


**ADJD-xM40 (12 LEDs)**

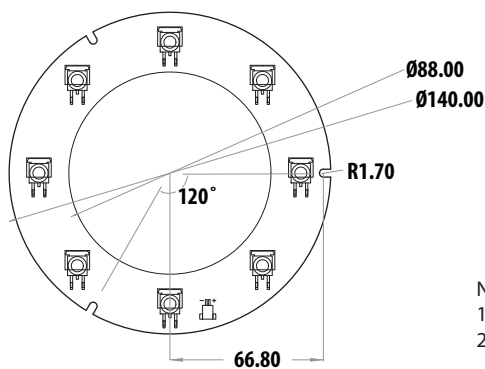


**Light Ring & Round**

**ADJD-xMR0 (7 LEDs)**



**ADJD-xMR3 (8 LEDs)**



**Notes:**

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

## Device Selection Guide (T<sub>J</sub> = 25°C) [1]

| Module Type | Color      | No. of LEDs | Part Number | Luminous Flux, $\Phi_v$ [2,3]<br>(lm) |      |       | Test Current<br>(mA) | Dice Technology |
|-------------|------------|-------------|-------------|---------------------------------------|------|-------|----------------------|-----------------|
|             |            |             |             | Min.                                  | Typ. | Max.  |                      |                 |
| Strip       | Cool White | 3           | ADJD-WM00   | 56.0                                  | 80.0 | 124.0 | 350                  | InGaN           |
|             |            | 3           | ADJD-WM01   |                                       |      |       |                      |                 |
|             |            | 4           | ADJD-WM10   |                                       |      |       |                      |                 |
|             |            | 6           | ADJD-WM21   |                                       |      |       |                      |                 |
|             |            | 9           | ADJD-WM30   |                                       |      |       |                      |                 |
|             |            | 12          | ADJD-WM40   |                                       |      |       |                      |                 |
|             | Warm White | 3           | ADJD-YM00   | 56.0                                  | 70.0 | 95.0  | 350                  | InGaN           |
|             |            | 3           | ADJD-YM01   |                                       |      |       |                      |                 |
|             |            | 4           | ADJD-YM10   |                                       |      |       |                      |                 |
|             |            | 6           | ADJD-YM21   |                                       |      |       |                      |                 |
|             |            | 9           | ADJD-YM30   |                                       |      |       |                      |                 |
|             |            | 12          | ADJD-YM40   |                                       |      |       |                      |                 |
| Round       | Cool White | 7           | ADJD-WMR0   | 56.0                                  | 80.0 | 124.0 | 350                  | InGaN           |
| Ring        |            | 8           | ADJD-WMR3   |                                       |      |       |                      |                 |
| Round       | Warm White | 7           | ADJD-YMR0   | 56.0                                  | 70.0 | 95.0  | 350                  | InGaN           |
| Ring        |            | 8           | ADJD-YMR3   |                                       |      |       |                      |                 |

Notes:

1. Applicable to a single unit of LED only. Data are based on ASMT-Mxx4 component level device only.
2.  $\phi_v$  is the total luminous flux output as measured with an integrating sphere at 25ms mono pulse condition.
3. Flux tolerance is  $\pm 10\%$ .

## Part Numbering System

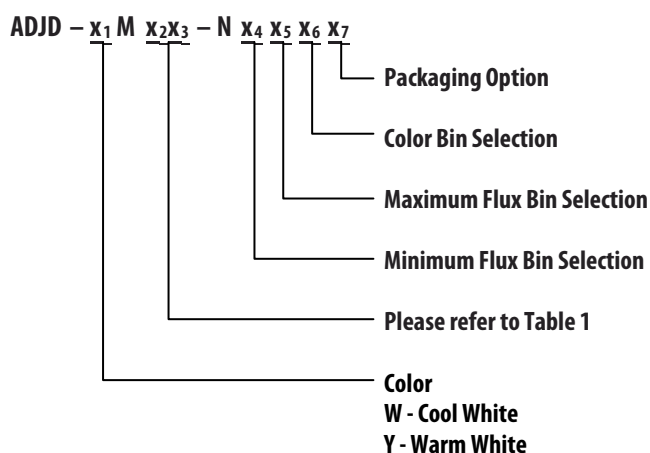


Table 1.

| x <sub>2</sub> x <sub>3</sub> | No. of LEDs | Module Type | Resistor | Driving Condition |
|-------------------------------|-------------|-------------|----------|-------------------|
| 00                            | 3           | Strip       | No       | Current           |
| 01                            | 3           | Strip       | Yes      | Voltage           |
| 10                            | 4           | Strip       | No       | Current           |
| 21                            | 6           | Strip       | Yes      | Voltage           |
| 30                            | 9           | Strip       | No       | Current           |
| 40                            | 12          | Strip       | No       | Current           |
| R0                            | 7           | Round       | No       | Current           |
| R3                            | 8           | Ring        | No       | Current           |

Note:

1. Please refer to Page 10 for selection details.

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

| Parameter                           | ADJD- | xM00 | xM10 | xMR0 | xM40        | xMR3 | xM30 | xM01 | xM21 | Units            |
|-------------------------------------|-------|------|------|------|-------------|------|------|------|------|------------------|
| DC Forward Current <sup>[1]</sup>   |       | 350  | 350  | 350  | 700         | 700  | 1050 |      |      | mA               |
| Input Voltage <sup>[2]</sup>        |       |      |      |      |             |      |      | 12   | 12   | V                |
| Operating Ambient Temperature Range |       |      |      |      | -40 to +85  |      |      |      |      | $^\circ\text{C}$ |
| Storage Temperature Range           |       |      |      |      | -40 to +100 |      |      |      |      | $^\circ\text{C}$ |

Note:

1.DC forward current.

2.Input Voltage only applicable for ADJD-xM01 and ADJD-xM21.

### Optical Characteristics at 350 mA ( $T_J = 25^\circ\text{C}$ )<sup>[1]</sup>

| Part Number | No. of LEDs | Color      | Correlated Color Temperature, CCT (Kelvin) |       | Viewing Angle $2\theta_{1/2}$ <sup>[2]</sup> (Degrees) | Luminous Efficiency (lm/W) |
|-------------|-------------|------------|--------------------------------------------|-------|--------------------------------------------------------|----------------------------|
|             |             |            | Min                                        | Max   | Typ                                                    | Typ                        |
| ADJD-WM00   | 3           | Cool White | 4000                                       | 10000 | 110                                                    | 65                         |
| ADJD-WM01   | 3           |            |                                            |       |                                                        |                            |
| ADJD-WM10   | 4           |            |                                            |       |                                                        |                            |
| ADJD-WM21   | 6           |            |                                            |       |                                                        |                            |
| ADJD-WM30   | 9           |            |                                            |       |                                                        |                            |
| ADJD-WM40   | 12          |            |                                            |       |                                                        |                            |
| ADJD-WMR0   | 7           |            |                                            |       |                                                        |                            |
| ADJD-WMR3   | 8           |            |                                            |       |                                                        |                            |
| ADJD-YM00   | 3           | Warm White | 2600                                       | 4000  | 110                                                    | 57                         |
| ADJD-YM01   | 3           |            |                                            |       |                                                        |                            |
| ADJD-YM10   | 4           |            |                                            |       |                                                        |                            |
| ADJD-YM21   | 6           |            |                                            |       |                                                        |                            |
| ADJD-YM30   | 9           |            |                                            |       |                                                        |                            |
| ADJD-YM40   | 12          |            |                                            |       |                                                        |                            |
| ADJD-YMR0   | 7           |            |                                            |       |                                                        |                            |
| ADJD-YMR3   | 8           |            |                                            |       |                                                        |                            |

Notes:

1. Applicable to a single unit of LED only. Data are based on ASMT-Mxx4 component level device only.

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

### Electrical Characteristic at 350 mA ( $T_J = 25^\circ\text{C}$ )<sup>[1]</sup>

| Dice Type | Forward Voltage $V_F$ (Volts) |      |      | Input Voltage $V_{in}$ <sup>[2]</sup> (Volts) |      |
|-----------|-------------------------------|------|------|-----------------------------------------------|------|
|           | Min.                          | Typ. | Max. | Typ.                                          | Max. |
| InGaN     | 2.8                           | 3.5  | 4.0  | 10.2                                          | 12.0 |

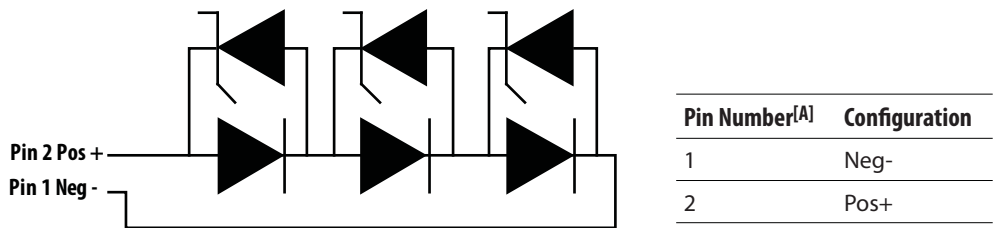
Notes:

1. Applicable to a single unit of LED only. Data are based on ASMT-Mxx4 component level device only.

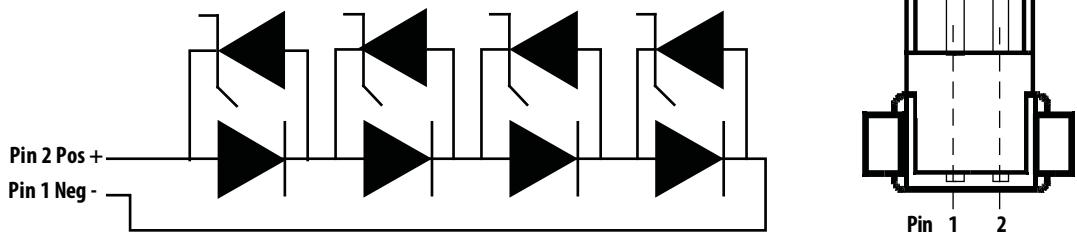
2. Input Voltage only applicable for ADJD-xM01 and ADJD-xM21.

**Electrical Configuration**

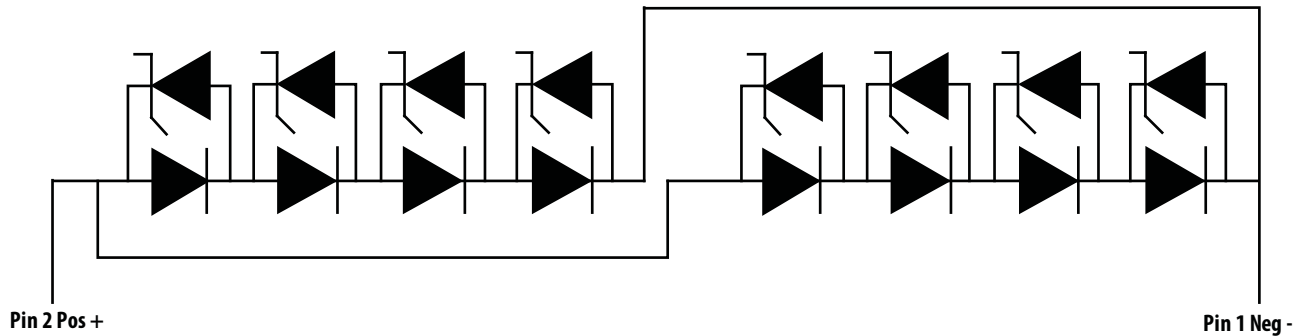
**ADJD-xM00 (3 LEDs)**



**ADJD-xM10 (4 LEDs)**

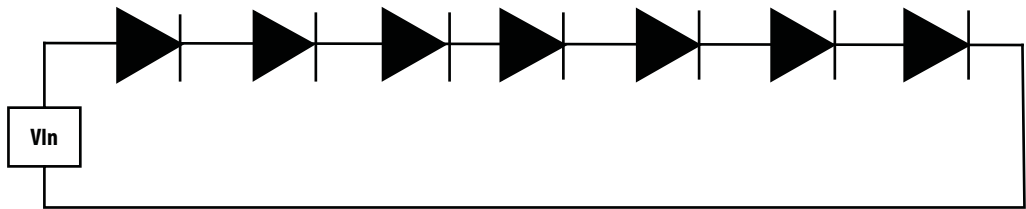


**ADJD-xMR3 (8 LEDs)**



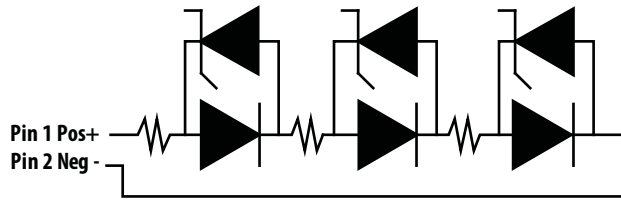
\*Note:  
A. The above configuration is only applicable for ADJD-xM00 / ADJD-xM10 and ADJD-xMR3

**ADJD-xMR0 (7 LEDs)**



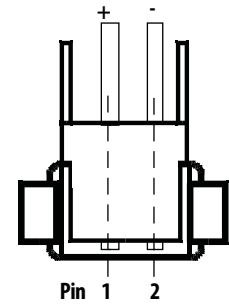
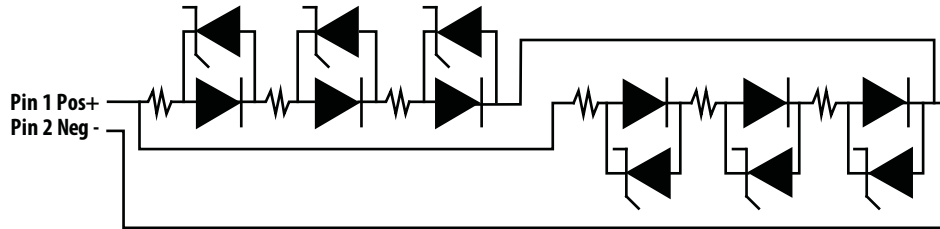
\*Note:  
Connector is not applicable for ADJD-xMR0

### ADJD-xM01 (3 LEDs)



| Pin Number <sup>[B]</sup> | Configuration |
|---------------------------|---------------|
| 1                         | Neg-          |
| 2                         | Pos+          |

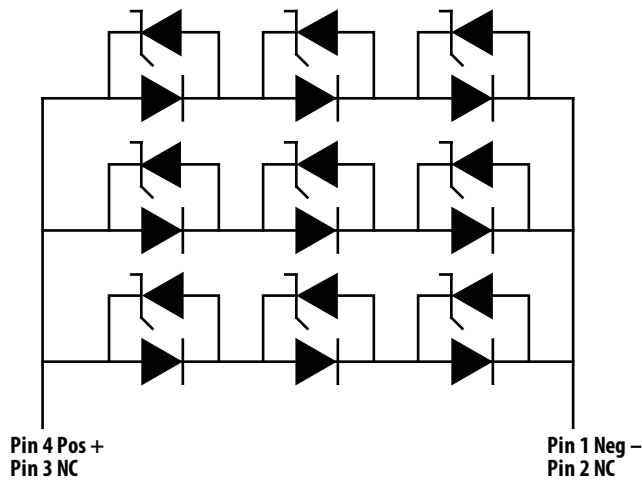
### ADJD-xM21 (6 LEDs)



\*Note:

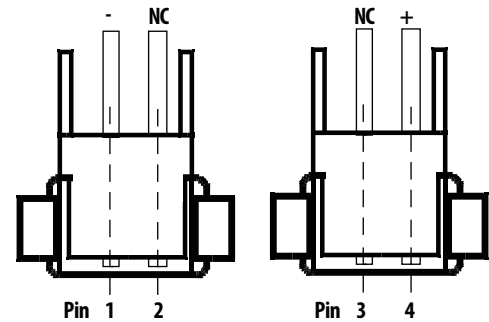
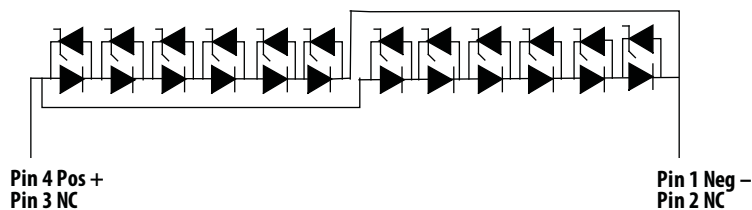
B. The above configuration is only applicable for ADJD-xM01 and ADJD-xM21

### ADJD-xM30 (9 LEDs)



| Pin Number <sup>[C]</sup> | Configuration |
|---------------------------|---------------|
| 1                         | Neg-          |
| 2                         | NC            |
| 3                         | NC            |
| 4                         | Pos+          |

### ADJD-xM40 (12 LEDs)

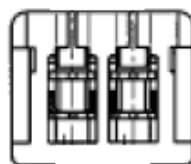


\*Note:

C. The above configuration is only applicable for ADJD-xM30 and ADJD-xM40

**Recommend Female Connector:**

**Tyco 173977-2**



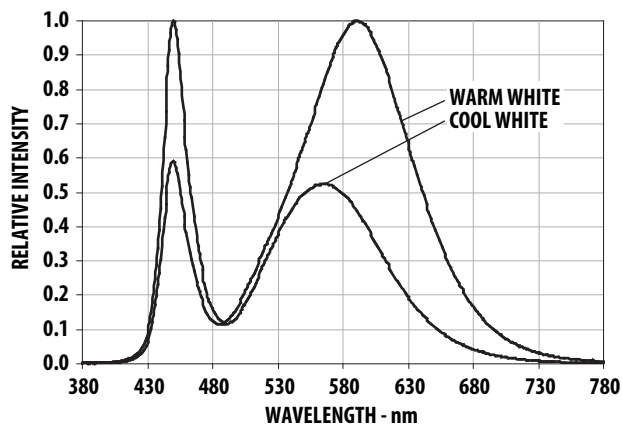


Figure 1. Relative Intensity vs. Wavelength.

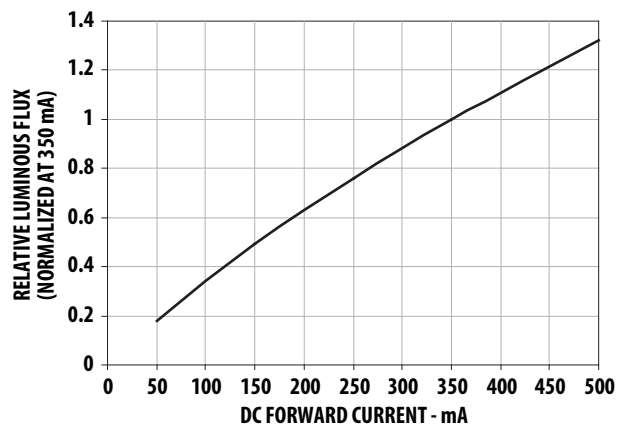


Figure 2. Relative Luminous Flux vs. Mono Pulse Current.

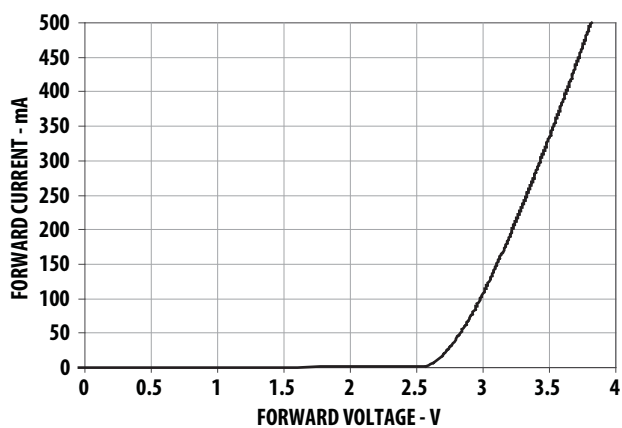


Figure 3. Forward Current vs. Forward Voltage.

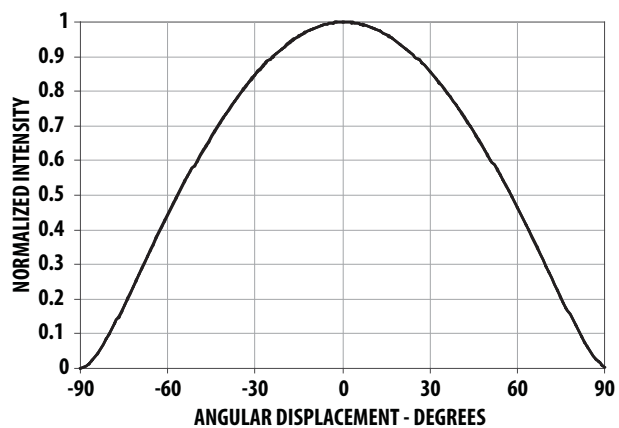


Figure 4. Radiation Pattern.

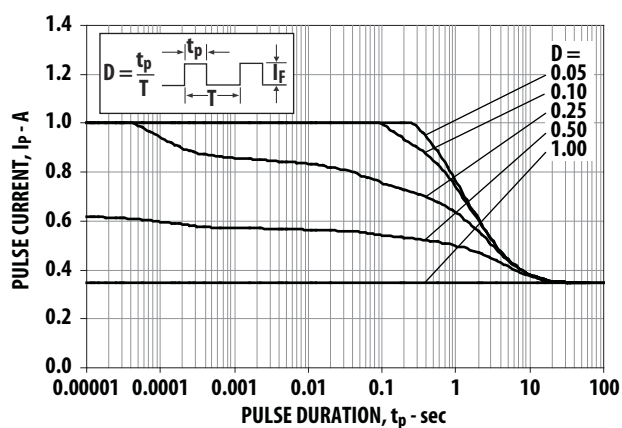


Figure 5. Maximum pulse current vs. ambient temperature. Derated based on  $T_A = 25^\circ\text{C}$ ,  $R_{\theta JA} = 50^\circ\text{C/W}$ .

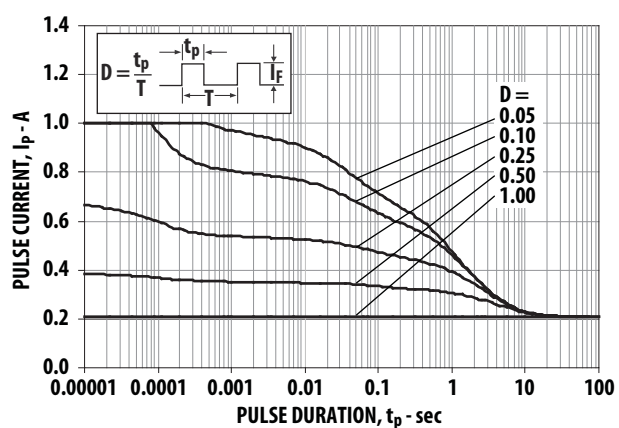


Figure 6. Maximum pulse current vs. ambient temperature. Derated based on  $T_A = 85^\circ\text{C}$ ,  $R_{\theta JA} = 50^\circ\text{C/W}$ .

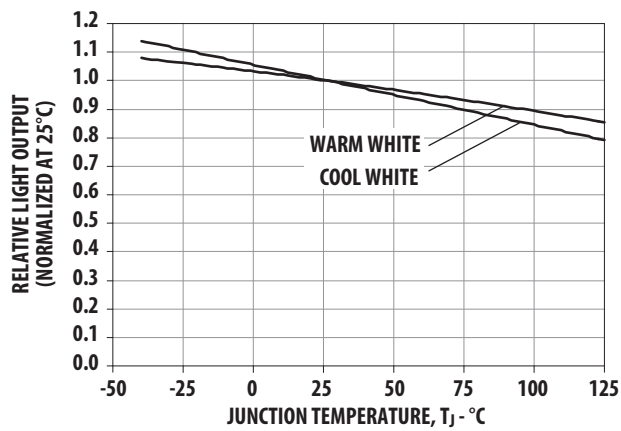


Figure 7. Relative Light Output vs. Junction Temperature.

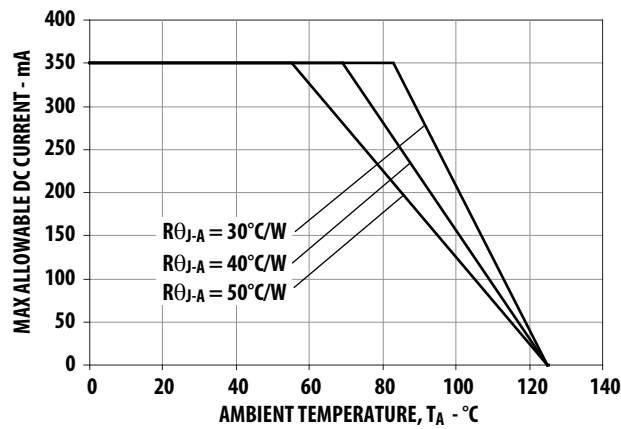


Figure 8. Maximum Forward Current vs. Ambient Temperature.  
Derated based on  $T_{JMAX} = 125^{\circ}\text{C}$ ,  $R_{\theta JA} = 30^{\circ}\text{C/W}$ ,  $40^{\circ}\text{C/W}$  and  $50^{\circ}\text{C/W}$ .

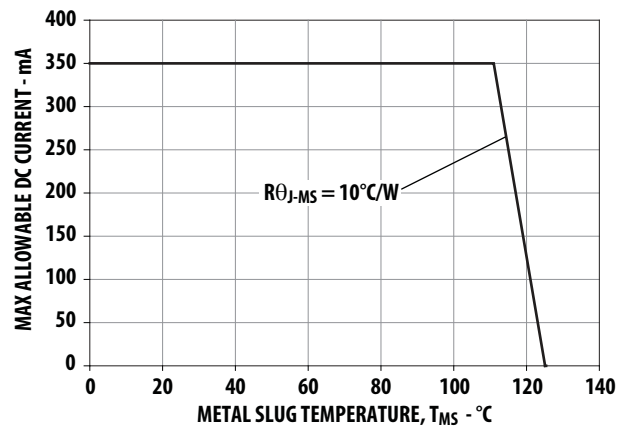


Figure 9. Maximum Forward Current vs. Metal Slug Temperature.  
Derated based on  $T_{JMAX} = 125^{\circ}\text{C}$ ,  $R_{\theta JMS} = 10^{\circ}\text{C/W}$ .

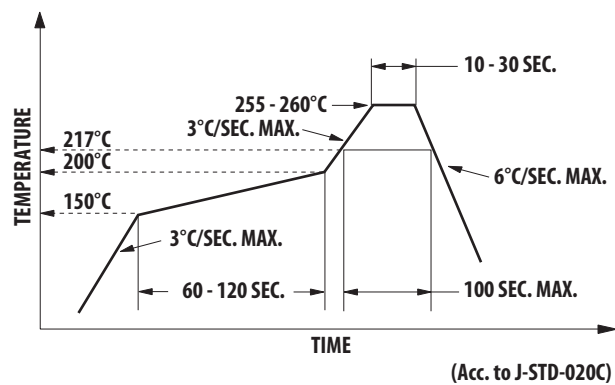


Figure 10. Recommended Reflow Soldering.

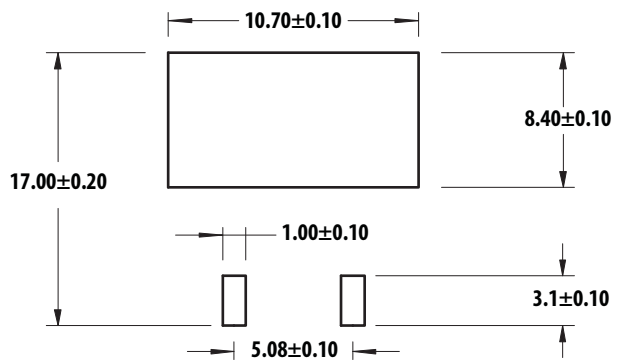


Figure 11. Recommended soldering land pattern.

Notes:

1. For detail information on reflow soldering of Avago surface mount LEDs, do refer to Avago Application Note AN1060 Surface Mounting SMT LED Indicator Components.
2. All parametric charts are only applicable to ASMT-Mxx4 component level device only.

## Option Selection Details

### ADJD - x<sub>1</sub> M x<sub>2</sub>x<sub>3</sub> - N x<sub>4</sub> x<sub>5</sub> x<sub>6</sub> x<sub>7</sub>

x<sub>4</sub> – Minimum Flux Bin

x<sub>5</sub> – Maximum Flux Bin

x<sub>6</sub> – Color Bin Selection

x<sub>7</sub> - Packaging Option.

## Flux Bin Limit [x<sub>4</sub>, x<sub>5</sub>]

| Bin | Luminous Flux (lm) at I <sub>F</sub> = 350mA |       |
|-----|----------------------------------------------|-------|
|     | Min.                                         | Max.  |
| K   | 56.0                                         | 73.0  |
| L   | 73.0                                         | 95.0  |
| M   | 95.0                                         | 124.0 |

Notes:

1. Tolerance for each bin limits is ±10 %.
2. Applicable to a single unit of LED ASMT-Mxx4 only.

## Color Bin Selections [x<sub>6</sub>]

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

### Cool White

| O | Full Distribution  |
|---|--------------------|
| A | A only             |
| B | B only             |
| C | C only             |
| D | D only             |
| E | E only             |
| F | F only             |
| G | G only             |
| H | H only             |
| L | A and G only       |
| M | B and H only       |
| N | A and C only       |
| P | B and D only       |
| Q | E and C only       |
| R | F and D only       |
| S | G and H only       |
| U | E and F only       |
| W | C and D only       |
| Z | A and B only       |
| 1 | A, B, C and D only |
| 2 | G, H, A and B only |
| 4 | C, D, E and F only |

### Warm White

| O | Full Distribution  |
|---|--------------------|
| A | A only             |
| B | B only             |
| C | C only             |
| D | D only             |
| E | E only             |
| F | F only             |
| N | A and C only       |
| P | B and D only       |
| Q | E and C only       |
| R | F and D only       |
| U | E and F only       |
| W | C and D only       |
| Z | A and B only       |
| 1 | A, B, C and D only |
| 4 | C, D, E and F only |

## Color Bin Limit

| Cool White |   | Color Limits<br>(Chromaticity Coordinates) |       |       |       |
|------------|---|--------------------------------------------|-------|-------|-------|
| Bin A      | X | 0.367                                      | 0.362 | 0.329 | 0.329 |
|            | Y | 0.400                                      | 0.372 | 0.345 | 0.369 |
| Bin B      | X | 0.362                                      | 0.356 | 0.329 | 0.329 |
|            | Y | 0.372                                      | 0.330 | 0.302 | 0.345 |
| Bin C      | X | 0.329                                      | 0.329 | 0.305 | 0.301 |
|            | Y | 0.369                                      | 0.345 | 0.322 | 0.342 |
| Bin D      | X | 0.329                                      | 0.329 | 0.311 | 0.305 |
|            | Y | 0.345                                      | 0.302 | 0.285 | 0.322 |
| Bin E      | X | 0.303                                      | 0.307 | 0.283 | 0.274 |
|            | Y | 0.333                                      | 0.311 | 0.284 | 0.301 |
| Bin F      | X | 0.307                                      | 0.311 | 0.290 | 0.283 |
|            | Y | 0.311                                      | 0.285 | 0.265 | 0.284 |
| Bin G      | X | 0.388                                      | 0.379 | 0.362 | 0.367 |
|            | Y | 0.417                                      | 0.383 | 0.372 | 0.400 |
| Bin H      | X | 0.379                                      | 0.369 | 0.356 | 0.362 |
|            | Y | 0.383                                      | 0.343 | 0.330 | 0.372 |

Tolerance:  $\pm 0.01$

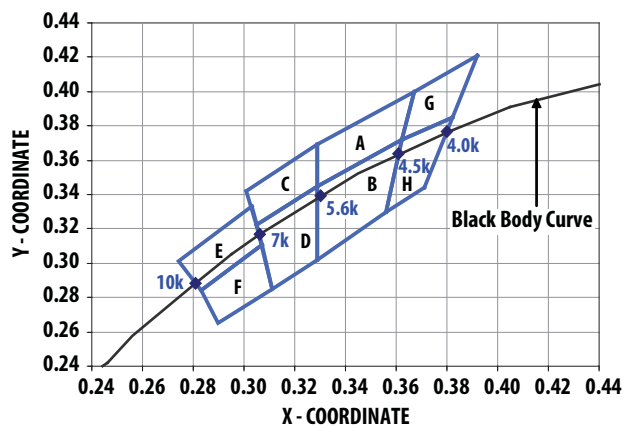


Figure 12. Color bins (Cool White).

## Packaging Option [x<sub>7</sub>]

| Selection | Option |
|-----------|--------|
| 0         | Tray   |

| Warm White |   | Color Limits<br>(Chromaticity Coordinates) |       |       |       |
|------------|---|--------------------------------------------|-------|-------|-------|
| Bin A      | X | 0.452                                      | 0.488 | 0.470 | 0.438 |
|            | Y | 0.434                                      | 0.447 | 0.414 | 0.403 |
| Bin B      | X | 0.438                                      | 0.470 | 0.452 | 0.424 |
|            | Y | 0.403                                      | 0.414 | 0.384 | 0.376 |
| Bin C      | X | 0.407                                      | 0.418 | 0.452 | 0.438 |
|            | Y | 0.393                                      | 0.422 | 0.434 | 0.403 |
| Bin D      | X | 0.395                                      | 0.407 | 0.438 | 0.424 |
|            | Y | 0.362                                      | 0.393 | 0.403 | 0.376 |
| Bin E      | X | 0.381                                      | 0.387 | 0.418 | 0.407 |
|            | Y | 0.377                                      | 0.404 | 0.422 | 0.393 |
| Bin F      | X | 0.373                                      | 0.381 | 0.407 | 0.395 |
|            | Y | 0.349                                      | 0.377 | 0.393 | 0.362 |

Tolerance:  $\pm 0.01$

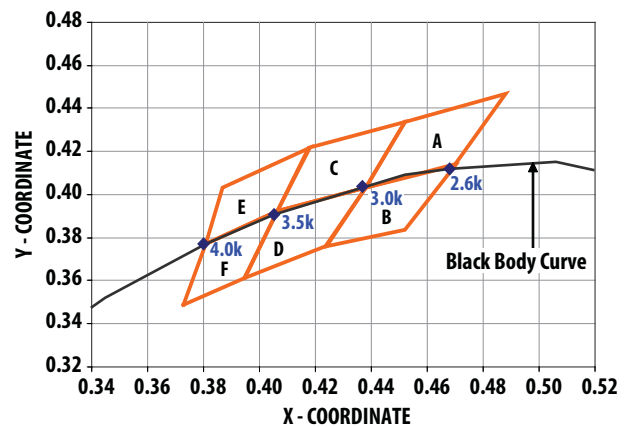


Figure 13. Color bins (Warm White).

## Example

### ADJD-WM40-NKMZ0

ADJD-MW40-Nxxxx – Cool White, 12 LEDs Strip

- x<sub>4</sub> = K – Minimum Flux Bin K
- x<sub>5</sub> = M – Maximum Flux Bin M
- x<sub>6</sub> = Z – Color Bin A and B only
- x<sub>7</sub> = 0 – Tray Option

## 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 (white plastic).

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