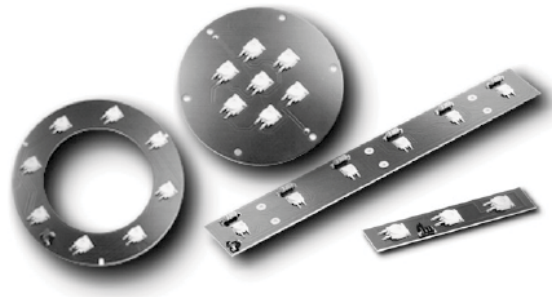


# ADJD-xMxx

## 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

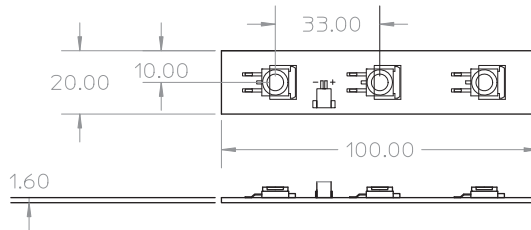
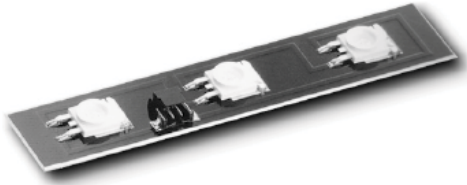
#### Specifications

- InGaN technology
- Smooth wide radiation pattern

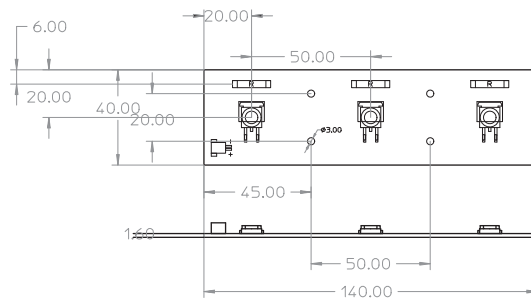
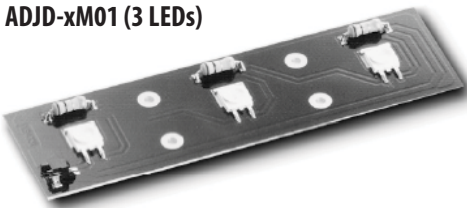
## Package Dimensions

### Light Strip

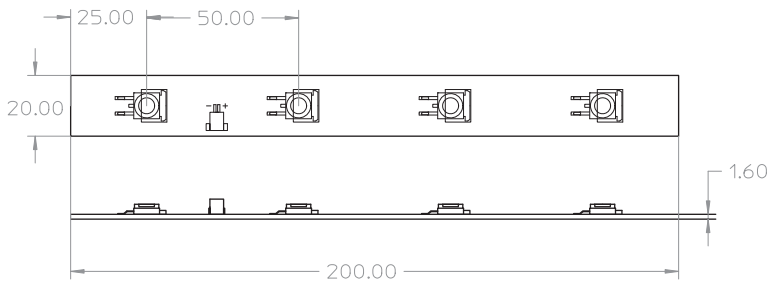
#### ADJD-xM00 (3 LEDs)



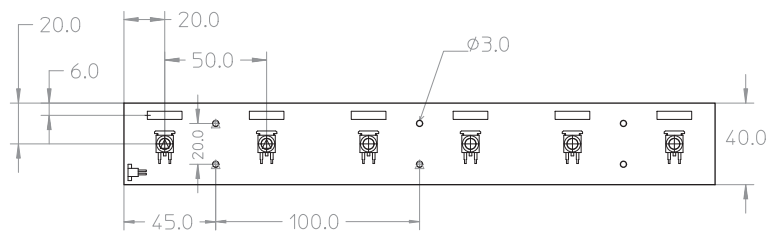
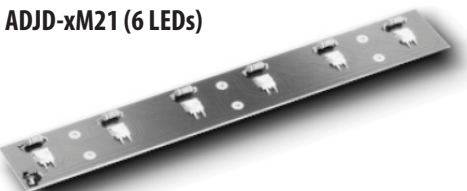
#### ADJD-xM01 (3 LEDs)



#### ADJD-xM10 (4 LEDs)

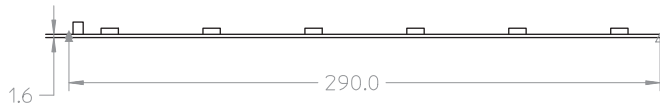


#### ADJD-xM21 (6 LEDs)

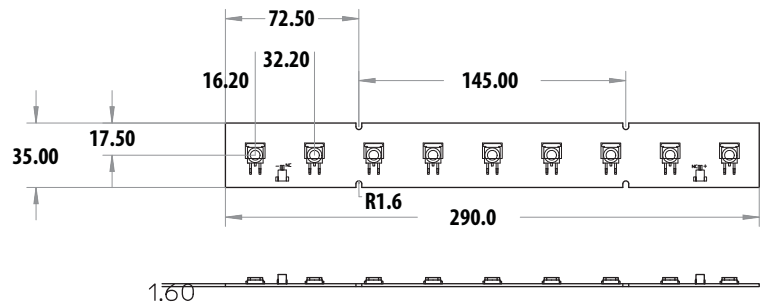


#### Notes:

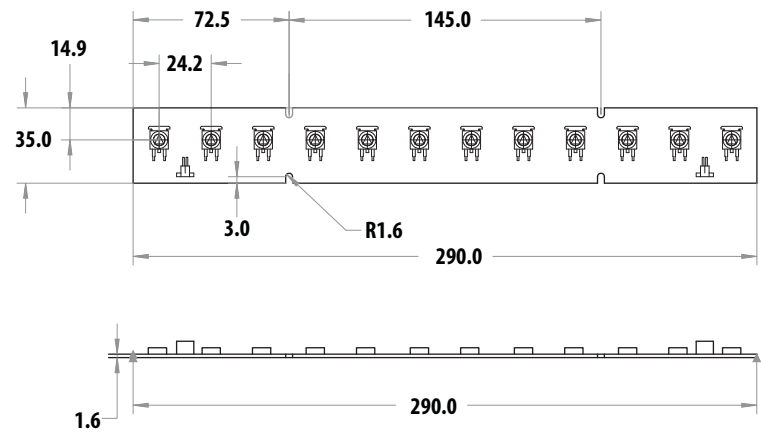
1. All dimensions are in millimeters.
2. Tolerance is  $\pm 0.1$ mm unless otherwise specified.



**ADJD-xM30 (9 LEDs)**

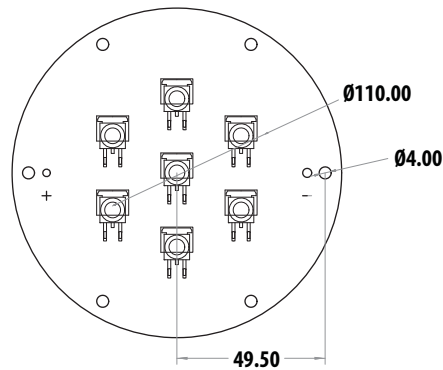
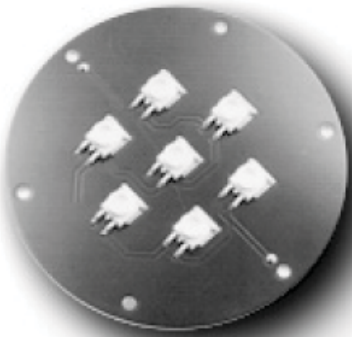


**ADJD-xM40 (12 LEDs)**

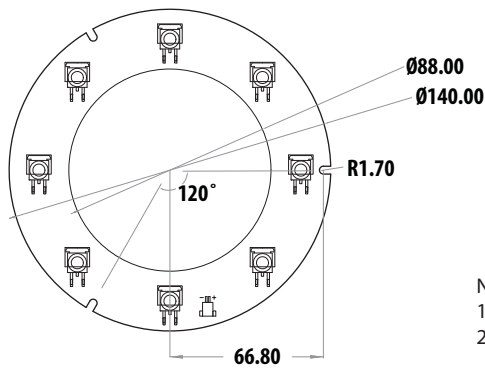


**Light Ring & Round**

**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] (lm)			Test Current (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

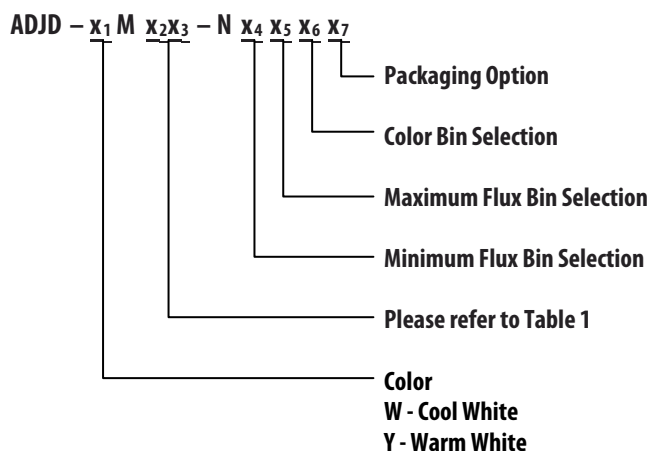


Table 1.

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					°C
Storage Temperature Range					-40 to +100					°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		
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  $1/2$  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	

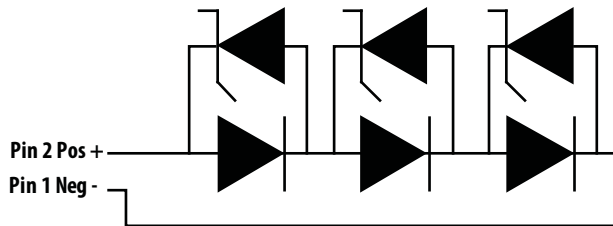
Notes:

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

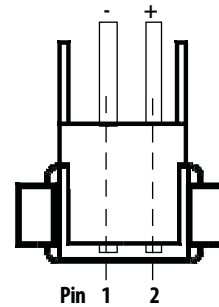
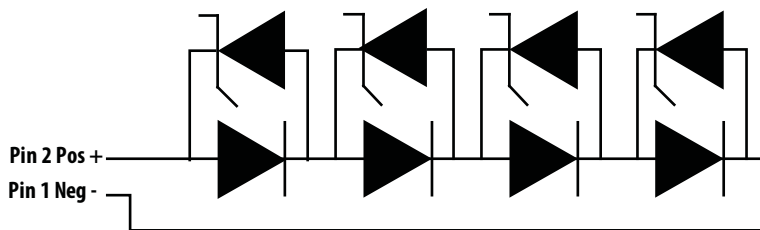
### ADJD-xM00 (3 LEDs)



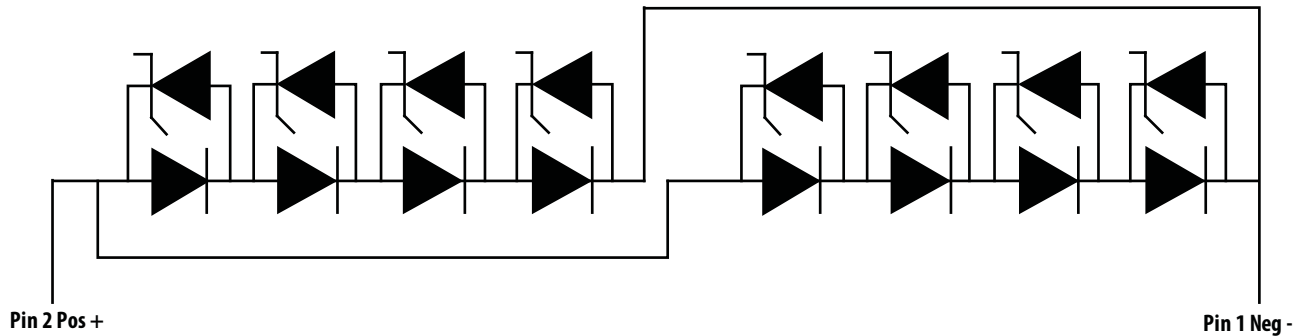
Pin Number <sup>[A]</sup>	Configuration
---------------------------	---------------

1	Neg-
2	Pos+

### ADJD-xM10 (4 LEDs)



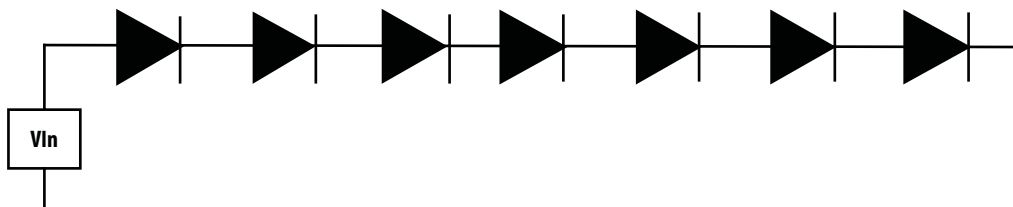
### ADJD-xMR3 (8 LEDs)



\*Note:

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

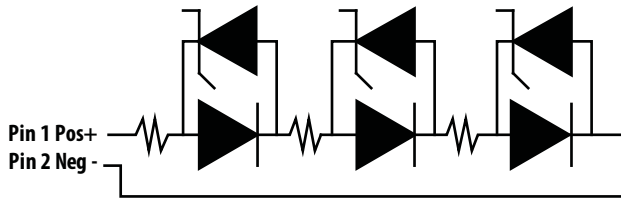
### ADJD-xMR0 (7 LEDs)



\*Note:

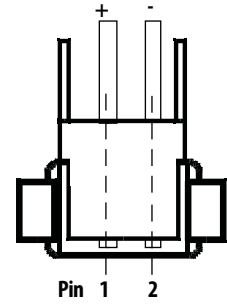
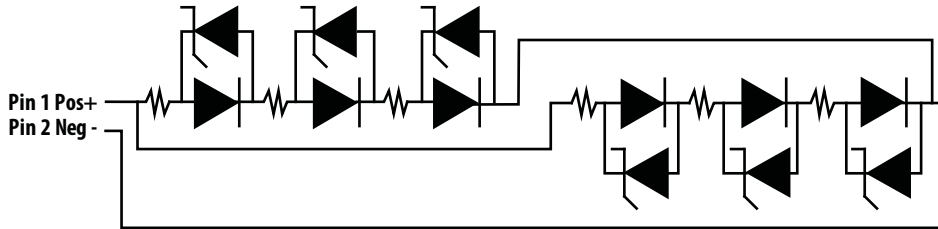
Connector is not applicable for ADJD-xMR0

**ADJD-xM01 (3 LEDs)**



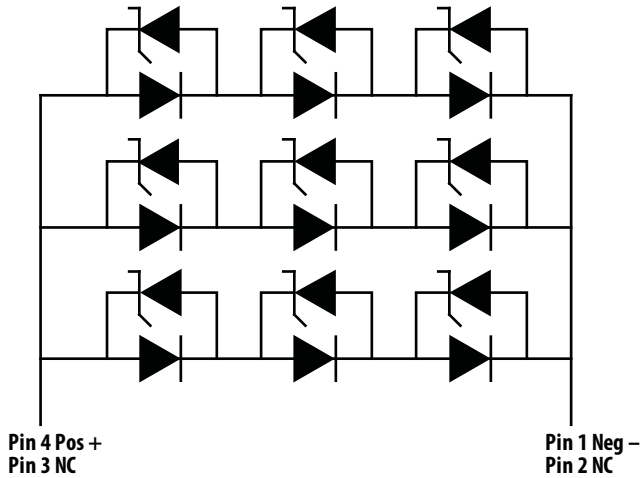
Pin Number <sup>[B]</sup>	Configuration
1	Neg-
2	Pos+

**ADJD-xM21 (6 LEDs)**



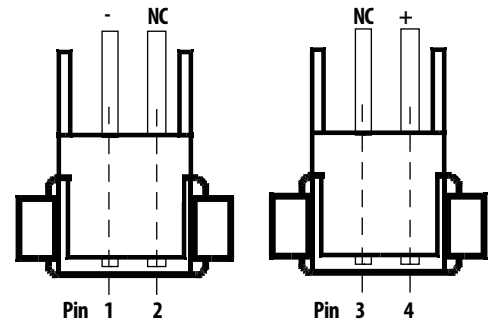
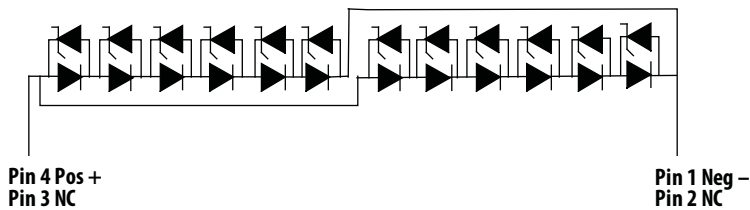
\*Note:  
B. The above configuration is only applicable for ADJD-xM01 and ADJD-xM21

**ADJD-xM30 (9 LEDs)**



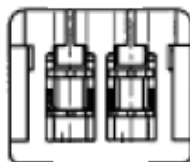
Pin Number <sup>[C]</sup>	Configuration
1	Neg-
2	NC
3	NC
4	Pos+

**ADJD-xM40 (12 LEDs)**



\*Note:  
C. The above configuration is only applicable for ADJD-xM30 and ADJD-xM40

**Recommend Female Connector:  
Tyco 173977-2**



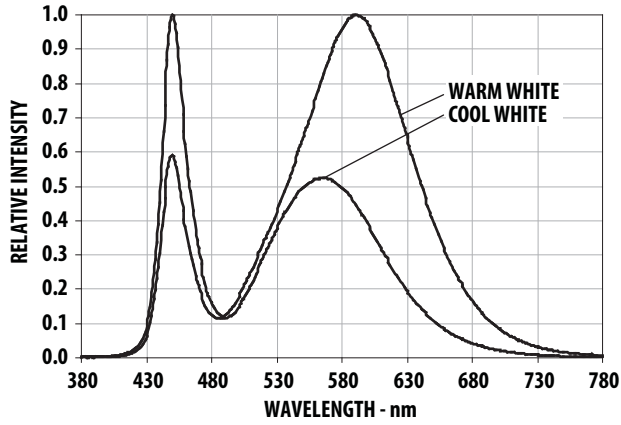


Figure 1. Relative Intensity vs. Wavelength.

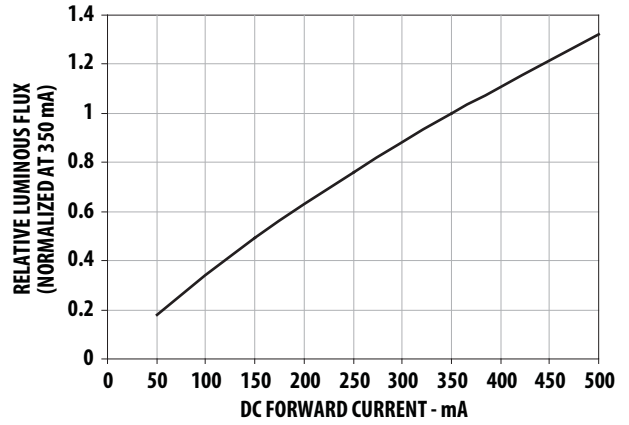


Figure 2. Relative Luminous Flux vs. Mono Pulse Current.

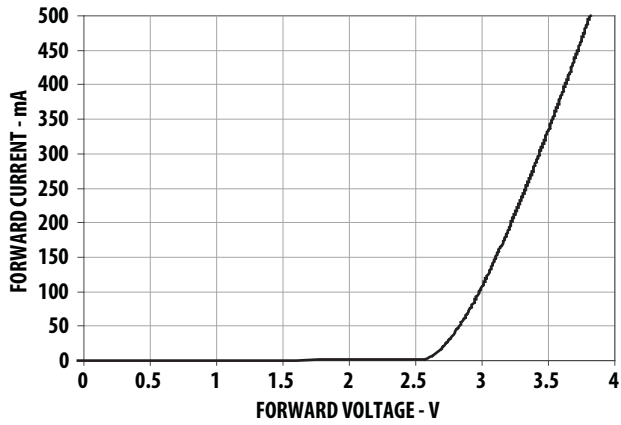


Figure 3. Forward Current vs. Forward Voltage.

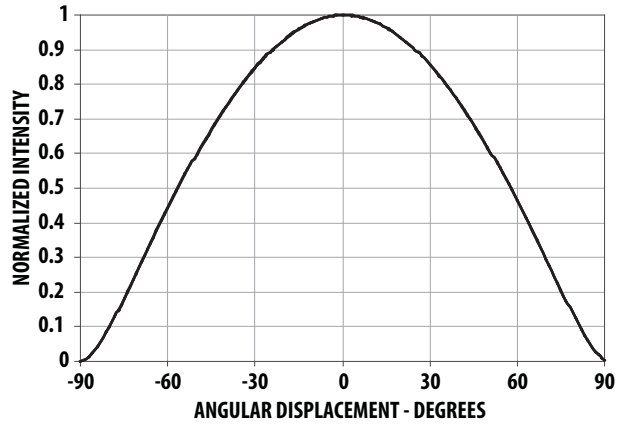


Figure 4. Radiation Pattern.

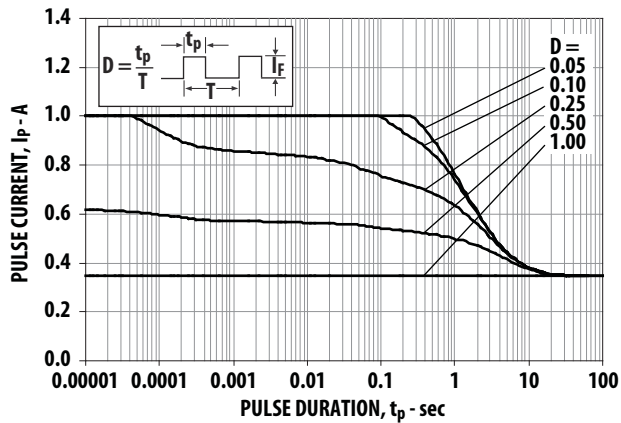


Figure 5. Maximum pulse current vs. ambient temperature. Derated based on  $T_A = 25^\circ\text{C}$ ,  $R_{\theta J-A} = 50^\circ\text{C/W}$ .

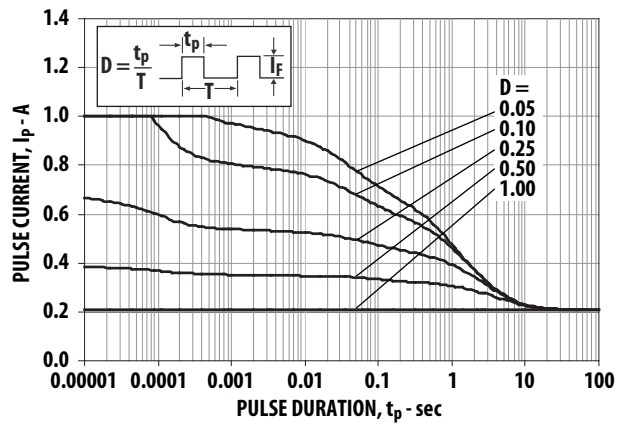


Figure 6. Maximum pulse current vs. ambient temperature. Derated based on  $T_A = 85^\circ\text{C}$ ,  $R_{\theta J-A} = 50^\circ\text{C/W}$ .



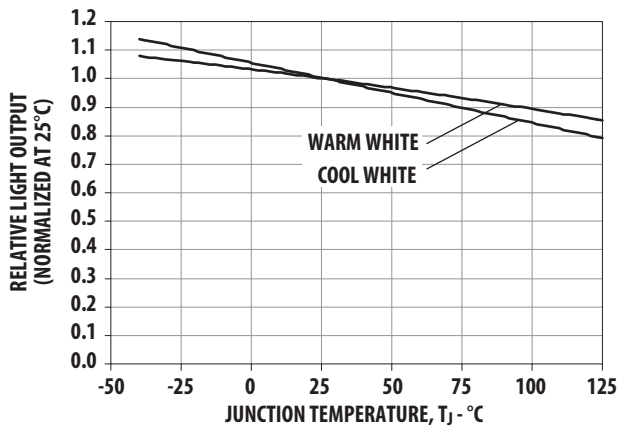


Figure 7. Relative Light Output vs. Junction Temperature.

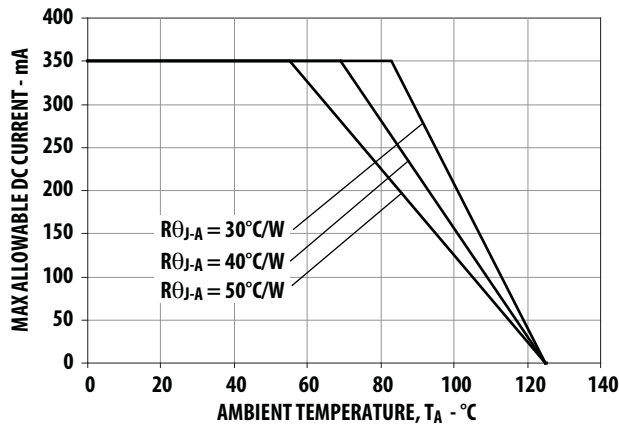


Figure 8. Maximum Forward Current vs. Ambient Temperature. Derated based on  $T_{JMAX} = 125^{\circ}C$ ,  $R_{\theta JA} = 30^{\circ}C/W$ ,  $40^{\circ}C/W$  and  $50^{\circ}C/W$ .

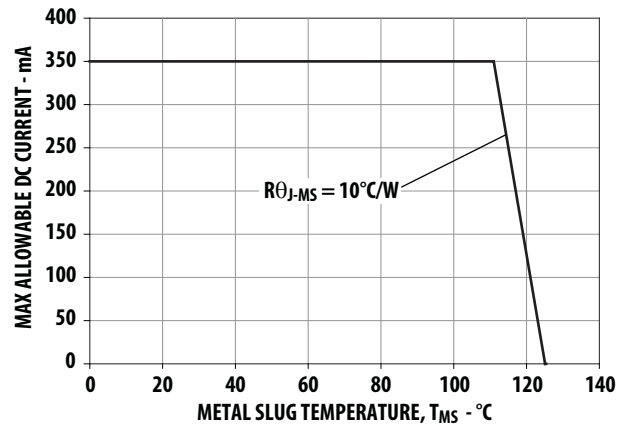


Figure 9. Maximum Forward Current vs. Metal Slug Temperature. Derated based on  $T_{JMAX} = 125^{\circ}C$ ,  $R_{\theta J-MS} = 10^{\circ}C/W$ .

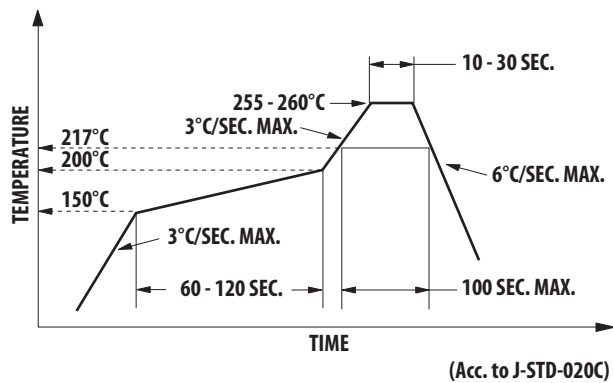


Figure 10. Recommended Reflow Soldering.

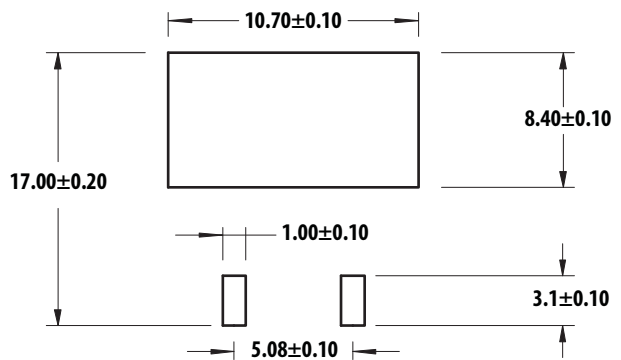


Figure 11. Recommended soldering land pattern.

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 (Chromaticity Coordinates)				
		X	Y	X	Y
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:  $\pm 0.01$

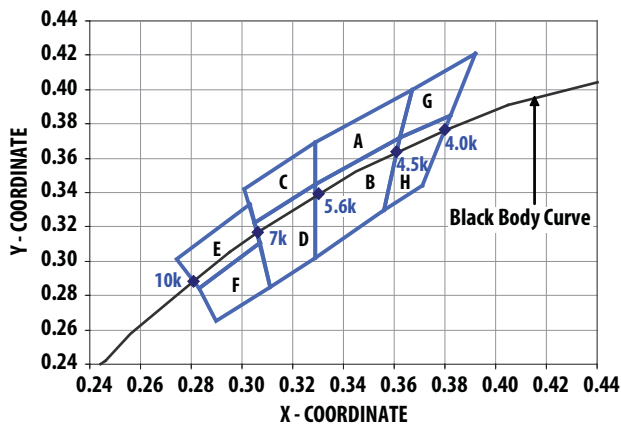


Figure 12. Color bins (Cool White).

Warm White	Color Limits (Chromaticity Coordinates)				
		X	Y	X	Y
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:  $\pm 0.01$

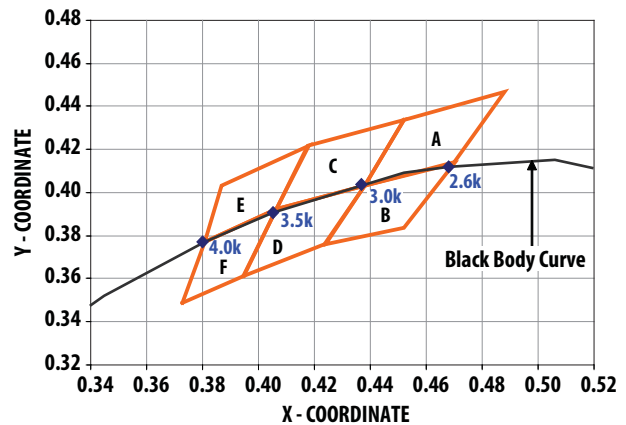


Figure 13. Color bins (Warm White).

### Packaging Option [x7]

Selection	Option
0	Tray

### 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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AV02-1120EN - June 25, 2010

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