

# ADJD-xMxx

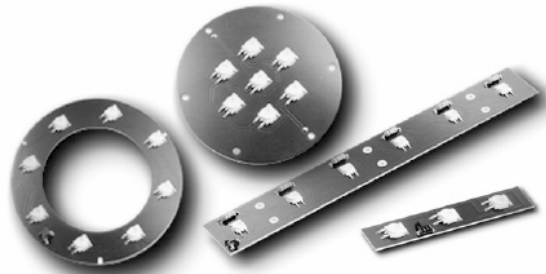
## High Power Light Strip, Ring & Round



## Data Sheet



Lead (Pb) Free  
RoHS 6 fully  
compliant



### Description

Avago's Strip, Ring & Round Power LED's range of products offers a series of LEDs which provides better lifetime robustness and reliability compared to the conventional light sources. It mounted on a metal-core PCB thereby making thermal management easy. The wide radiation pattern of the Line Power LED thus making 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

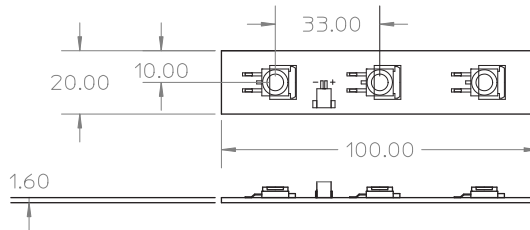
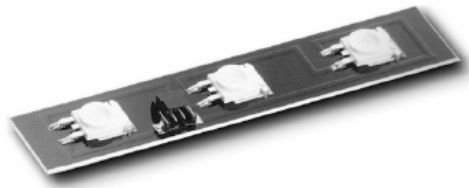
### Specifications

- InGaN technology
- Smooth wide radiation pattern

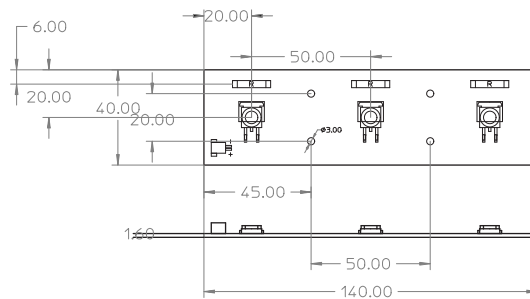
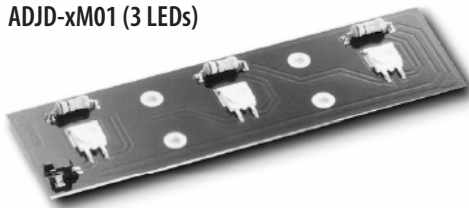
## Package Dimensions

### Light Strip

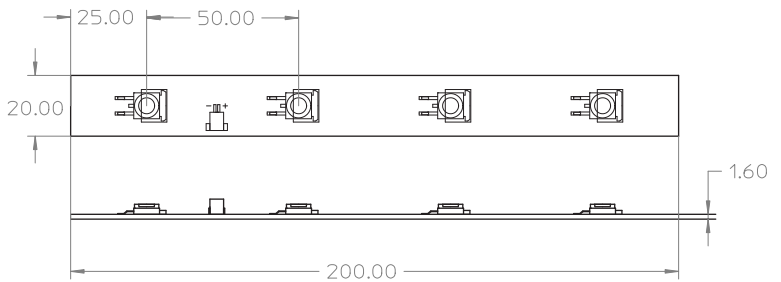
#### ADJD-xM00 (3 LEDs)



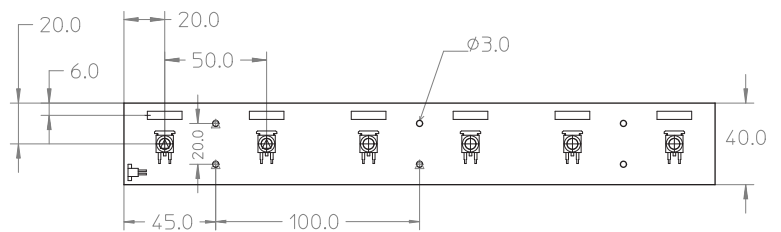
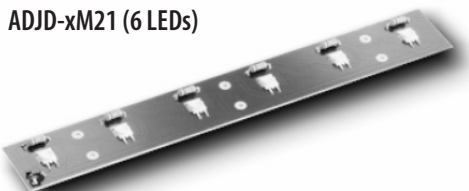
#### ADJD-xM01 (3 LEDs)



#### ADJD-xM10 (4 LEDs)



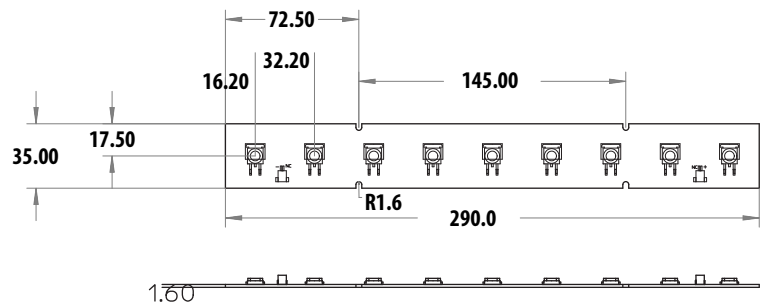
#### ADJD-xM21 (6 LEDs)



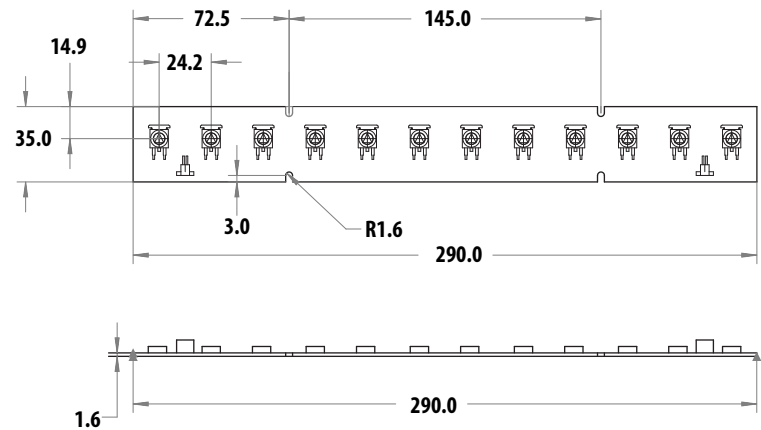
#### Notes:

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

ADJD-xM30 (9 LEDs)

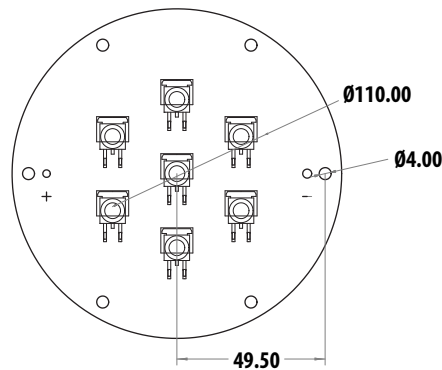
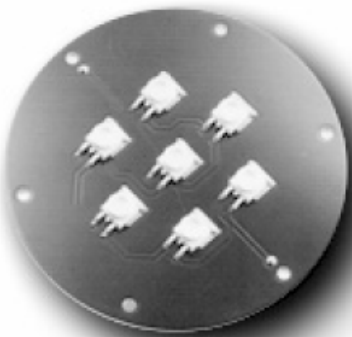


ADJD-xM40 (12 LEDs)

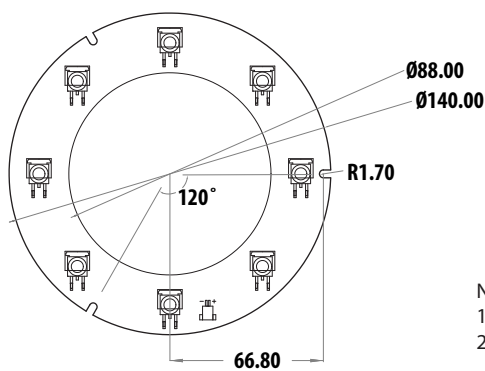


Light Ring & Round

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 at Junction Temperature $T_j = 25^\circ\text{C}$

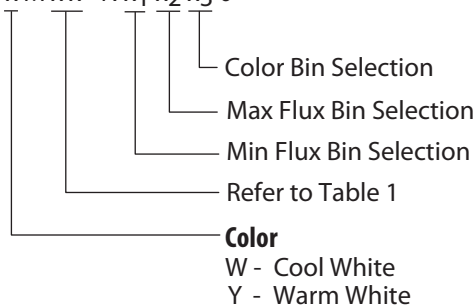
Module Type	Color	No. of LEDs	Part Number	Luminous Flux, $\Phi_v^{[1,2,3,4]}$ (lm)			Test Current (mA)	Dice Technology
				Min.	Typ.	Max.		
Strip	Cool White	3	ADJD-WM00	43.0	60.0	73.0	350	InGaN
		3	ADJD-WM01					
		4	ADJD-WM10					
		6	ADJD-WM21					
		9	ADJD-WM30					
		12	ADJD-WM40					
	Warm White	3	ADJD-YM00	43.0	50.0	73.0	350	InGaN
		3	ADJD-YM01					
		4	ADJD-YM10					
		6	ADJD-YM21					
		9	ADJD-YM30					
		12	ADJD-YM40					
Round	Cool White	7	ADJD-WMR0	43.0	60.0	73.0	350	InGaN
Ring		8	ADJD-WMR3					
Round	Warm White	7	ADJD-YMR0	43.0	50.0	73.0	350	InGaN
Ring		8	ADJD-YMR3					

### Notes:

- $\Phi_v$  is the total luminous flux output as measured with an integrating sphere at 25ms mono pulse condition.
- $\Phi_v$  is referring to a single unit of LED at 350mA.
- $\Phi_v$  data are only applicable for ASMT-Mx00 component level device only.
- Flux tolerance is  $\pm 10\%$ .

## Part Numbering System

ADJD- x M xx - N x<sub>1</sub> x<sub>2</sub> x<sub>3</sub> 0



**Table 1.**

xx	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

### 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<sup>[4]</sup> ( $T_A = 25^\circ\text{C}$ )

Part Number	No. of LEDs	Color	Correlated Color Temperature, CCT (Kelvin)		Viewing Angle $2\theta_{1/2}$ <sup>[3]</sup> (Degrees)	Luminous Efficiency (lm/W)
			Min	Max		
ADJD-WM00	3	Cool White	4000	10000	110	48
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	40
ADJD-YM01	3					
ADJD-YM10	4					
ADJD-YM21	6					
ADJD-YM30	9					
ADJD-YM40	12					
ADJD-YMR0	7					
ADJD-YMR3	8					

Notes:

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

4. Optical Characteristics data are only applicable for ASMT-Mx00 component level device only.

### Electrical Characteristic ( $T_A = 25^\circ\text{C}$ )

Dice Type	Forward Voltage $V_F$ <sup>[5]</sup> (Volts) @ $I_F = 350\text{mA}$		Input Voltage $V_{in}$ <sup>[6]</sup> (Volts)	
	Typ.	Max.	Typ.	Max.
InGaN	3.6	4.0	10.2	12.0

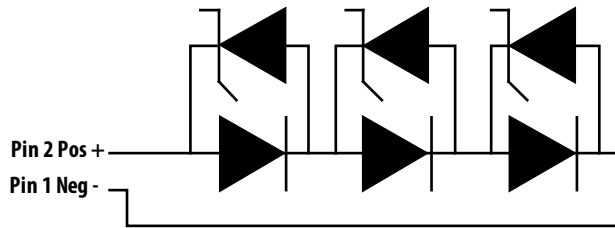
Notes:

5. Forward Voltage is only applicable for ASMT-Mx00 component level device only.

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

## Electrical Configuration

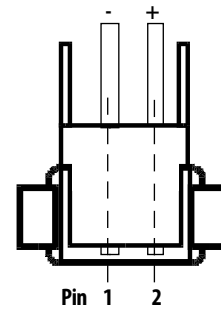
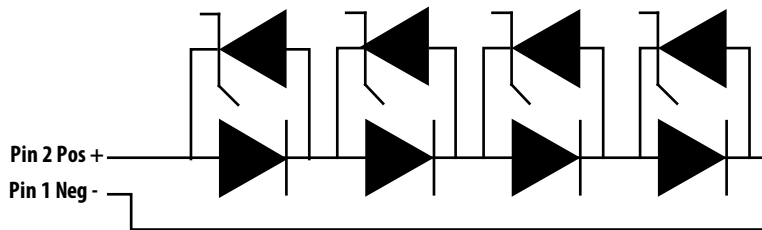
### ADJD-xM00 (3 LEDs)



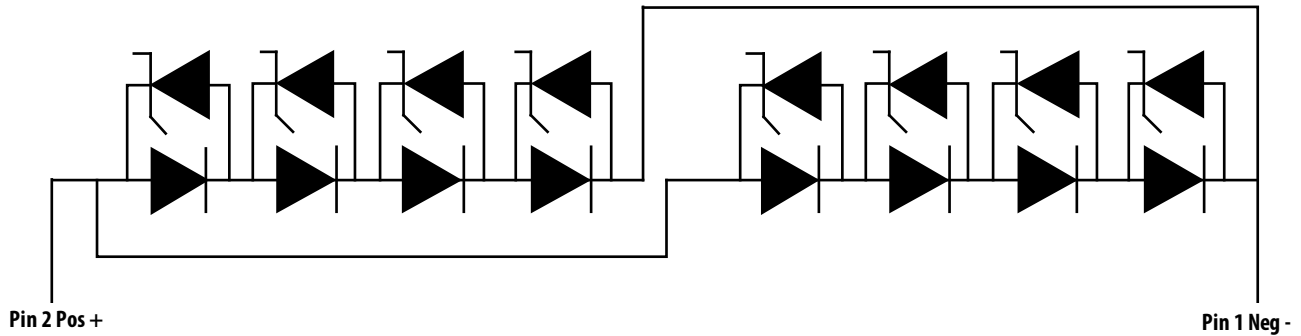
Pin Number <sup>[A]</sup>	Configuration
---------------------------	---------------

1	Neg-
2	Pos+

### ADJD-xM10 (4 LEDs)



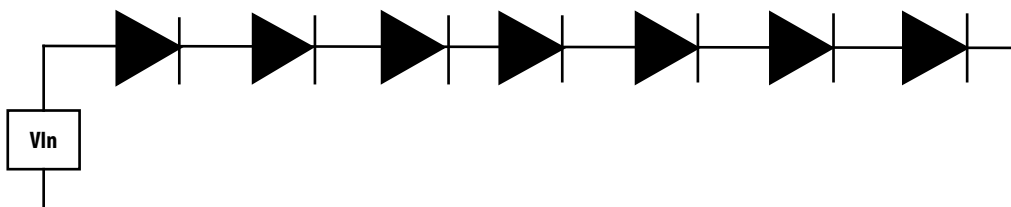
### ADJD-xMR3 (8 LEDs)



\*Note:

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

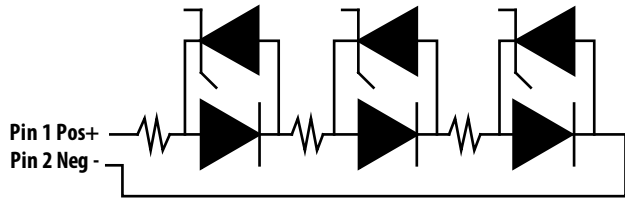
### ADJD-xMR0 (7 LEDs)



\*Note:

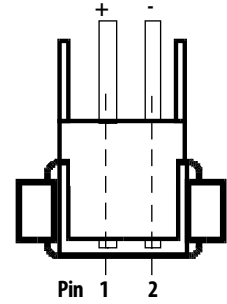
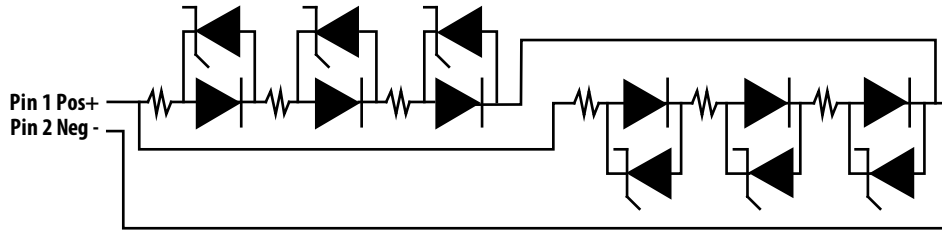
Connector is not applicable for ADJD-xMR0

**ADJD-xM01 (3 LEDs)**



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

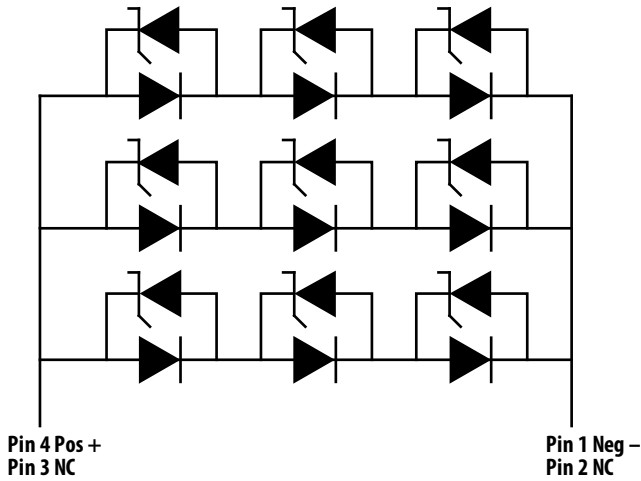
**ADJD-xM21 (6 LEDs)**



\*Note:

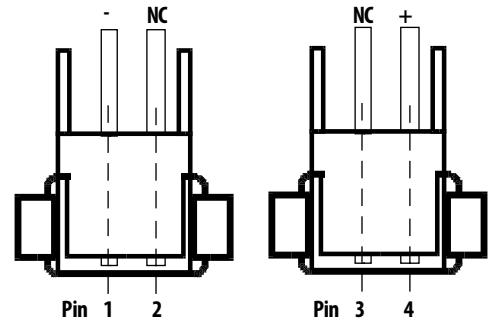
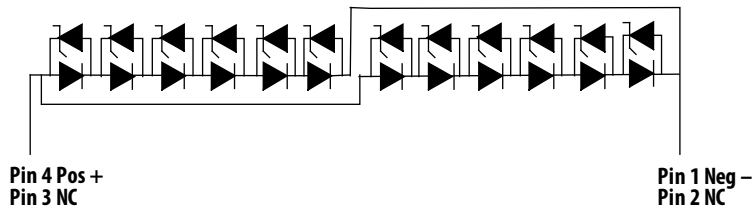
B. The above configuration is only applicable for ADJD-xM01 and ADJD-xM21

**ADJD-xM30 (9 LEDs)**



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

**ADJD-xM40 (12 LEDs)**

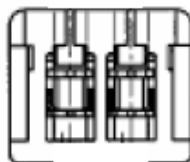


\*Note:

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

**Recommend Female Connector:**

Tyco 173977-2



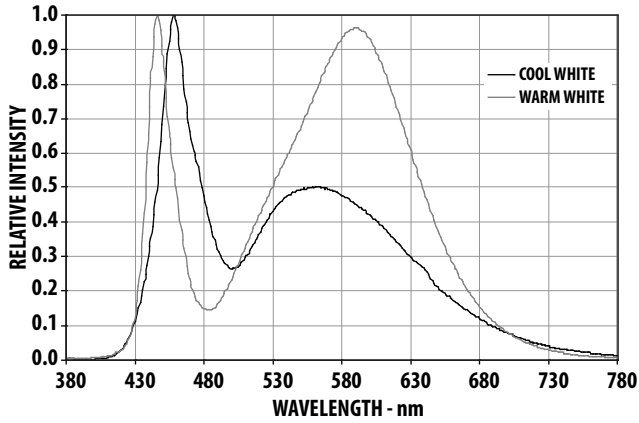


Figure 1. Relative Intensity vs. Wavelength

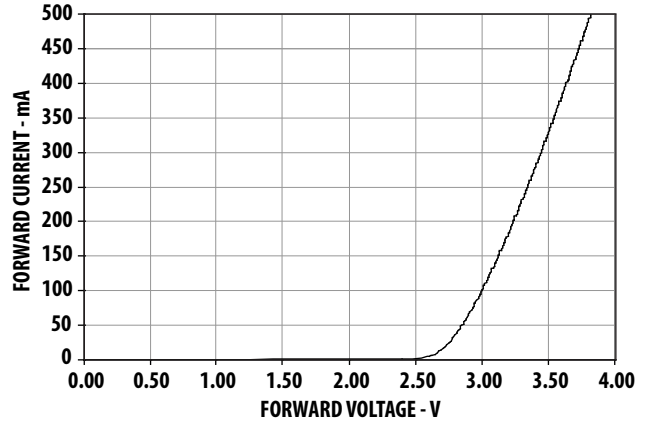


Figure 2. Forward Current vs. Forward Voltage

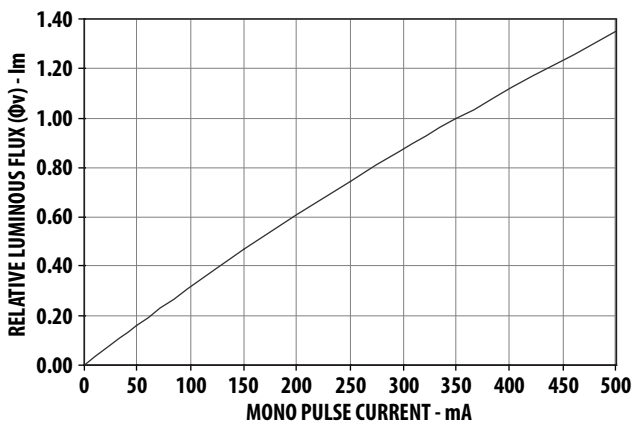


Figure 3. Relative Luminous Flux vs. Mono Pulse Current

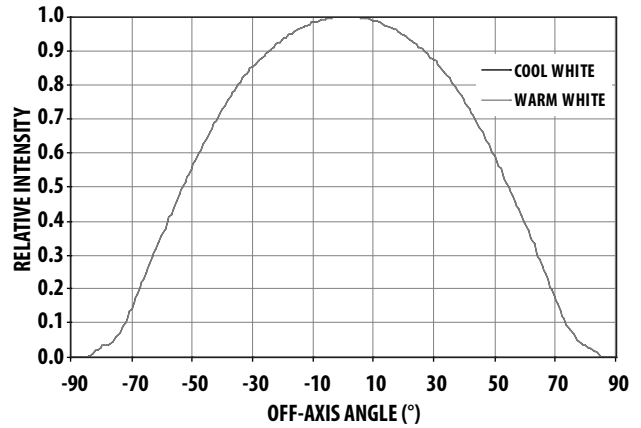


Figure 4. Radiation Pattern

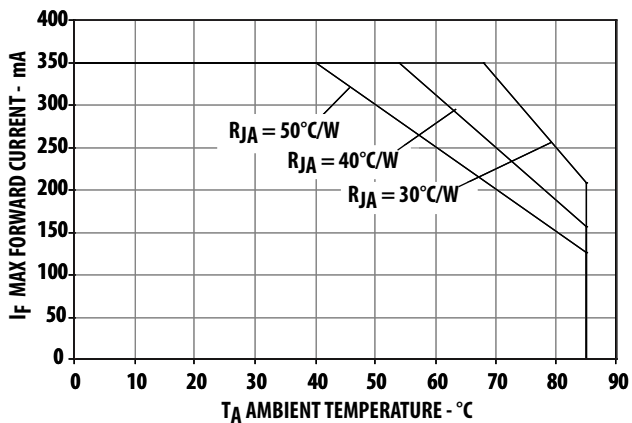


Figure 5. Maximum forward current vs. ambient temperature  
Derated based on  $T_{JMAX} = 110^\circ\text{C}$ ,  $R_{\theta JA} = 30^\circ\text{C/W}$  /  $40^\circ\text{C/W}$  and  $50^\circ\text{C/W}$

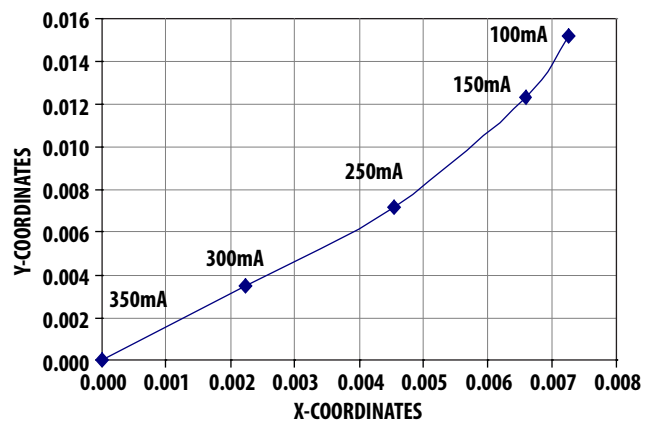


Figure 6. Chromaticity Shift vs. Current  
\*Note: (x,y) values @ 350mA reference to (0.0)



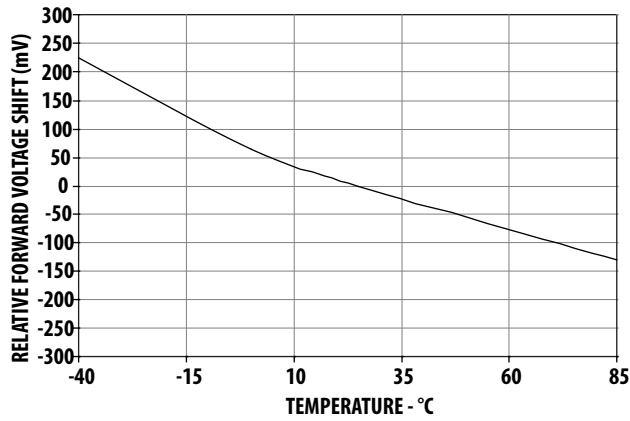


Figure 7. Temperature vs. relative forward voltage shift

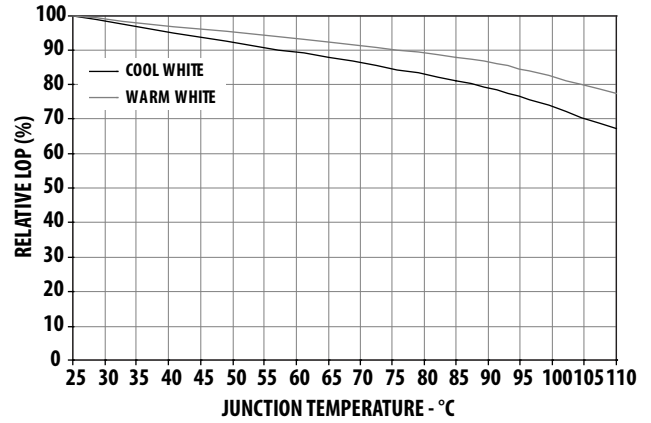


Figure 8. Relative LOP vs. junction temperature

Note: All parametric charts are only applicable for ASMT-Mx00 component level device only

### Flux Bin Limit<sup>[1]</sup> (For reference only) [x<sub>1</sub> x<sub>2</sub>]

Bin	Flux (lm) at 350mA	
	Min	Max
A	5.5	7.0
B	7.0	9.0
C	9.0	11.5
D	11.5	15.0
E	15.0	19.5
F	19.5	25.5
G	25.5	33.0
H	33.0	43.0
J	43.0	56.0
K	56.0	73.0

Tolerance for each bin limits is  $\pm 10\%$

Note:

- Flux Bin Limit is only applicable for ASMT-Mx00 component level device only

## Color Bin Selections [x3]

Individual reel will contain parts from one full bin only.

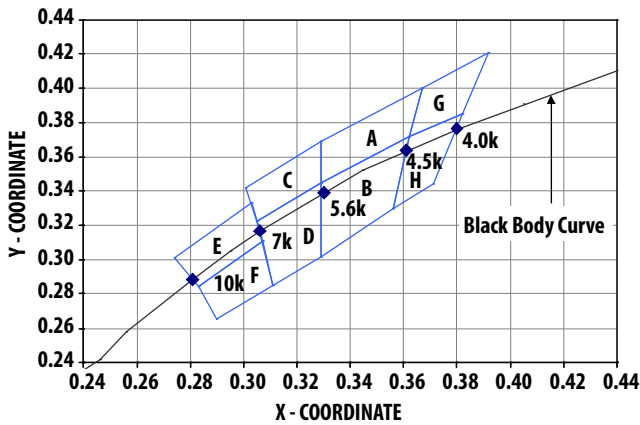
Cool White	
0	Full Distribution
A	A only
B	B only
C	C only
D	D only
E	E only
F	F only
G	G only
H	H only
Z	A and B only
Y	B and C only
W	C and D only
V	D and E only
U	E and F only
T	F and G only
S	G and H only
Q	A, B and C only
P	B, C and D only
N	C, D and E only
M	D, E and F only
L	E, F and G only
K	F, G and H only
J	Special Color Bin
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

Warm White	
0	Full Distribution
A	A only
B	B only
C	C only
D	D only
E	E only
F	F only
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
Q	A, B and C only
P	B, C and D only
N	C, D and E only
M	D, E and F only
J	Special Color Bin
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

## Primary Color Binning

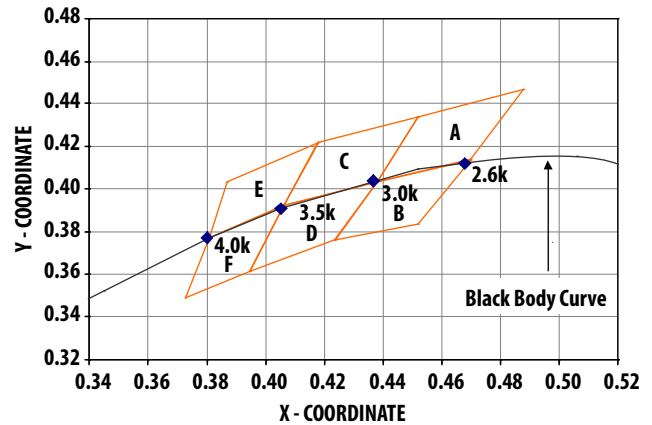
Cool White	Color Limits <sup>[1]</sup> (Chromaticity Coordinates)				
Bin A	X	0.367	0.362	0.329	0.329
	Y	0.400	0.372	0.345	0.369
Bin B	X	0.362	0.356	0.329	0.329
	Y	0.372	0.330	0.302	0.345
Bin C	X	0.329	0.329	0.305	0.301
	Y	0.369	0.345	0.322	0.342
Bin D	X	0.329	0.329	0.311	0.305
	Y	0.345	0.302	0.285	0.322
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

Tolerances  $\pm 0.01$



Warm White	Color Limits <sup>[1]</sup> (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

Tolerances  $\pm 0.01$



Note:

1. Color Limit and Color binning chart are only applicable for ASMT-Mx00 component level device only

## Sub-Color Binning

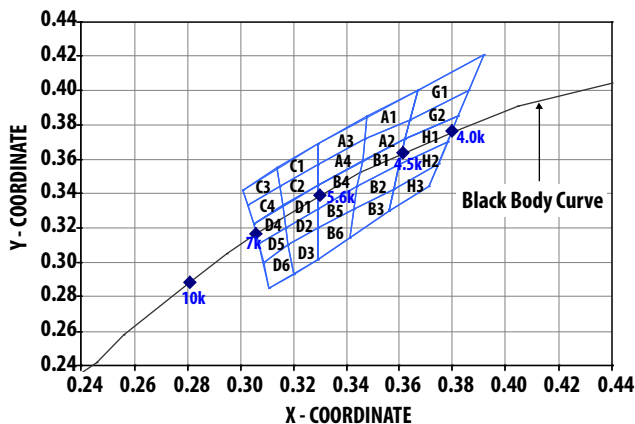
(Only Applicable for Color Bin A to Bin D and Bin G to Bin H)

### Color Limits<sup>[1]</sup>

Cool White (Chromaticity Coordinates)					
Bin A1	X	0.364	0.367	0.348	0.347
	Y	0.383	0.400	0.385	0.372
Bin A2	X	0.364	0.362	0.346	0.347
	Y	0.383	0.372	0.359	0.372
Bin A3	X	0.329	0.329	0.348	0.347
	Y	0.357	0.369	0.385	0.372
Bin A4	X	0.329	0.329	0.347	0.346
	Y	0.345	0.357	0.372	0.359
Bin B1	X	0.362	0.360	0.344	0.346
	Y	0.372	0.357	0.344	0.359
Bin B2	X	0.360	0.358	0.343	0.344
	Y	0.357	0.343	0.331	0.344
Bin B3	X	0.358	0.356	0.341	0.343
	Y	0.343	0.330	0.314	0.331
Bin B4	X	0.329	0.329	0.346	0.344
	Y	0.331	0.345	0.359	0.344
Bin B5	X	0.329	0.344	0.343	0.329
	Y	0.331	0.344	0.331	0.320
Bin B6	X	0.343	0.341	0.329	0.329
	Y	0.331	0.314	0.302	0.320
Bin C1	X	0.329	0.329	0.315	0.314
	Y	0.369	0.357	0.344	0.355
Bin C2	X	0.329	0.329	0.316	0.315
	Y	0.357	0.345	0.333	0.344
Bin C3	X	0.314	0.315	0.303	0.301
	Y	0.355	0.344	0.333	0.342
Bin C4	X	0.315	0.316	0.305	0.303
	Y	0.344	0.333	0.322	0.333

Cool White (Chromaticity Coordinates)					
Bin D1	X	0.329	0.329	0.317	0.316
	Y	0.345	0.331	0.320	0.333
Bin D2	X	0.329	0.329	0.318	0.317
	Y	0.331	0.320	0.310	0.320
Bin D3	X	0.329	0.329	0.320	0.318
	Y	0.320	0.302	0.293	0.310
Bin D4	X	0.316	0.317	0.307	0.305
	Y	0.333	0.320	0.311	0.322
Bin D5	X	0.317	0.318	0.309	0.307
	Y	0.320	0.310	0.300	0.311
Bin D6	X	0.318	0.320	0.311	0.309
	Y	0.310	0.293	0.285	0.300
Bin G1	X	0.392	0.386	0.364	0.367
	Y	0.421	0.400	0.383	0.400
Bin G2	X	0.386	0.382	0.362	0.364
	Y	0.400	0.385	0.372	0.383
Bin H1	X	0.382	0.378	0.360	0.362
	Y	0.385	0.370	0.357	0.372
Bin H2	X	0.378	0.375	0.358	0.360
	Y	0.370	0.358	0.343	0.357
Bin H3	X	0.375	0.371	0.356	0.358
	Y	0.358	0.344	0.330	0.343

Tolerances  $\pm 0.01$



Note:

- Color Limit and Color binning chart are only applicable for ASMT-Mx00 component level device only

## 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).

**DISCLAIMER:** AVAGO'S PRODUCTS AND SOFTWARE ARE NOT SPECIFICALLY DESIGNED, MANUFACTURED OR AUTHORIZED FOR SALE AS PARTS, COMPONENTS OR ASSEMBLIES FOR THE PLANNING, CONSTRUCTION, MAINTENANCE OR DIRECT OPERATION OF A NUCLEAR FACILITY OR FOR USE IN MEDICAL DEVICES OR APPLICATIONS. CUSTOMER IS SOLELY RESPONSIBLE, AND WAIVES ALL RIGHTS TO MAKE CLAIMS AGAINST AVAGO OR ITS SUPPLIERS, FOR ALL LOSS, DAMAGE, EXPENSE OR LIABILITY IN CONNECTION WITH SUCH USE.

For product information and a complete list of distributors, please go to our web site: [www.avagotech.com](http://www.avagotech.com)

Avago, Avago Technologies, and the A logo are trademarks of Avago Technologies Limited in the United States and other countries.  
Data subject to change. Copyright © 2005-2008 Avago Technologies Limited. All rights reserved.  
AV02-1120EN - April 9, 2008

**AVAGO**  
TECHNOLOGIES