

# ADJD-xD00 / ADJD-xD01

## High Power White LED Module



## Data Sheet



### Description

Avago High Power White LED Module is a high performance device which can be operated at high driving current. It comes with a plug-and-play electrical connector.

The built-in heat sink and the mechanical mounting features simplify the thermal management of a lighting solution. This enables effective heat transfer and maintain LED junction below maximum allowed temperature.

The footprint of the top emitting package is 100mm x 18mm x 3.6mm with aperture of 96mm x 6mm.

The reflector cavity design maximized the light extraction.

### Features

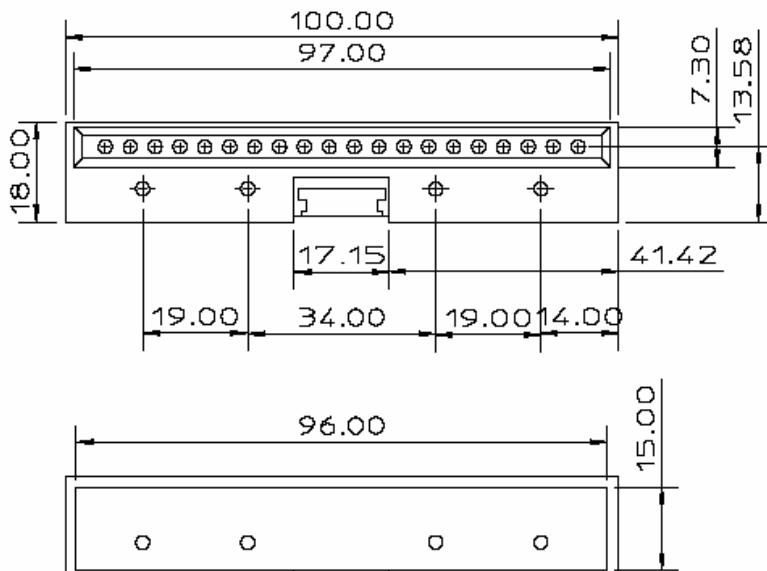
- High Flux Output
- Top Emitting
- Top Firing Package
- Integrated heatsink to simplify thermal management
- GLOBE TOP Silicone encapsulation for extra long product life
- Plug and Play mechanical mounting and electrical connection (connector interface)

### Applications

- Solid State Lighting

### Package Dimensions

ADJD-xD00 and ADJD-xD01 (Top Emitting)

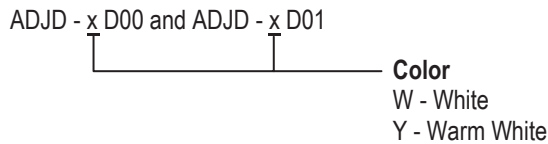


#### Notes:

1. All Dimensions are in millimeters.
2. Tolerance =  $\pm 0.2$  mm unless otherwise specified.

CAUTION: Avago ADJD-xD00 & ADJD-xD01 are Class 1 ESD. Please observe appropriate precautions during handling and processing. Refer to Avago Technologies Application Note AN-1142 for additional details.

## Part Numbering System



\*Note: ADJD-xD01 is part with recommended female connector: Molex 51146-0800

## Absolute Maximum Ratings (T<sub>j</sub> = 25°C)

Parameter	ADJD-xD00 and ADJD-xD01	Unit
DC forward current [1, 2, 3]	50	mA
Power dissipation	4	W
Maximum junction temperature T <sub>j max</sub>	120	°C
Operating board temperature, T <sub>B</sub> range [4]	- 40 to + 85	°C
Storage temperature range	- 40 to + 120	°C

Note:

1. Per individual string.
2. Derate linearly as shown in Figure 4.
3. Operation at current below 20mA is not recommended.
4. Board temperature, T<sub>B</sub> = temperature of the metal core PCB at the center back of the unit.

## Electrical Characteristics (T<sub>j</sub> = 25°C)

Part Number	Color	Forward Current, I <sub>F</sub> (mA) [1]	Forward Voltage, V <sub>F</sub> (V) [1, 2]			Temperature Coefficient of V <sub>F</sub> , ΔV <sub>F</sub> /ΔT <sub>j</sub> (mV/°C) [1]
			Min.	Typ.	Max.	Typ.
ADJD-WD00 ADJD-WD01	Cool White	50	15.0	17.5	20.0	-5.0
ADJD-YD00 ADJD-YD01	Warm White	50	15.0	17.5	20.0	-7.0

Note:

1. Per individual string.
2. Tested at current pulse duration of 200 μs.

## Optical Characteristics (T<sub>j</sub> = 25°C) [1]

Part Number	Color	Forward Current, I <sub>F</sub> (mA)	Chromaticity Coordinates [1, 2]		Luminous Flux, φ <sub>v</sub> (lm) [1, 3, 4]			Correlated Color Temperature (CCT)	Luminous Efficiency, η <sub>e</sub> (lm/W) [5]
			x	y	Min.	Typ.	Max.	Typ.	Typ.
ADJD-WD00 ADJD-WD01	Cool White	50	0.33	0.35	150	170	250	5600	50
ADJD-YD00 ADJD-YD01	Warm White	50	0.45	0.41	120	150	200	2800	40

Notes:

1. Tested at current pulse duration of 200 μs.
2. The chromaticity coordinates are derived from the CIE Chromaticity Diagram and represent the perceived color of the device. The values are average for all LEDs in the product.
3. φ<sub>v</sub> is the total luminous flux output as measured with an integrating sphere at current pulse duration of 200 μs.
4. φ<sub>v</sub> tolerance ± 15%.
5. Luminous flux over electrical power ratio.

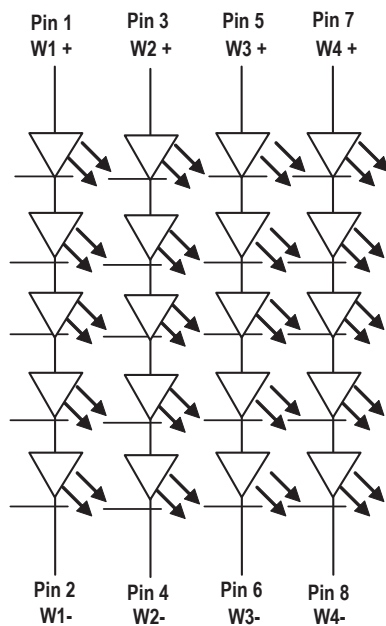
## Thermal Resistance (From Junction to Board)

Part Number	Thermal Resistance, Junction to Board, $R_{\theta_{J-B}}$ [1] (°C/W) Typ.
ADJD-xD00 and ADJD-xD01	9

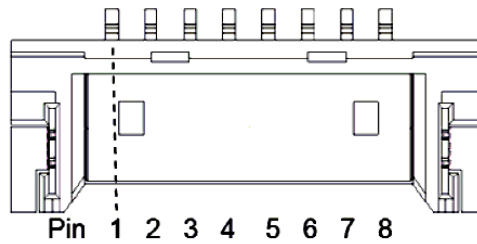
Notes:

1. Thermal resistance is defined as the increase of junction temperature with reference to TB per 1W of total electrical power that is applied to the entire unit.
2. TB = temperature of the metal core PCB at the center back of the unit.

## Electrical Configuration



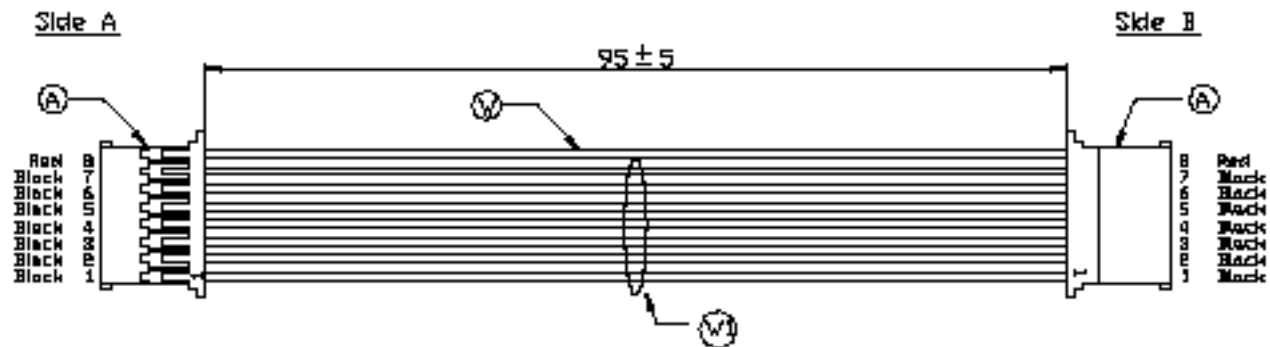
## Male Connector



Connector and Pin Configuration

Pin Number	Configuration
1	W1+
2	W1-
3	W2+
4	W2-
5	W3+
6	W3-
7	W4+
8	W4-

Recommended female connector: Molex 51146-0800



Item	Material Description	Qty	Maker / Supplier
W	Hook up wire UL1571 28AWG STR-Red	1	PIW
W1	Hook up wire UL1571 28AWG STR-Black	7	
A	Terminal : 50641-B041	16	MOLEX
	Housing : 51146-0800	2	

\*Note: This cable is only applicable for ADJD-xD01

## Flux Bin Limit (for reference only)

### ADJD-WD00 / 01

Bin ID	Luminous Flux $\phi_v$ (lm) <sup>[1]</sup>	
	Min.	Max.
A	150	195
B	195	250

### ADJD-YD00 / 01

Bin ID	Luminous Flux $\phi_v$ (lm) <sup>[1]</sup>	
	Min.	Max.
A	120	155
B	155	200

Notes:

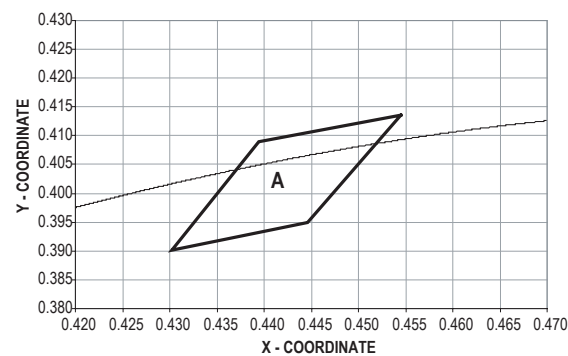
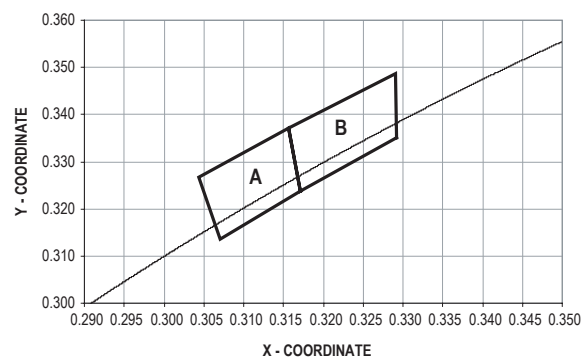
1. The luminous flux used for intensity binning is by lighting up all channels together at maximum rated current.
2. Bin categories are established for classification of products. Products may not be available in all categories. Please contact your Avago representative for information on current available bins.

## Color Bin Selections

ADJD-WD00 ADJD-WD01 COOL WHITE		Color Limits (Chromaticity Coordinates)			
Bin A	X	0.3171	0.3070	0.3043	0.3156
	Y	0.3238	0.3136	0.3268	0.3372
Bin B	X	0.3292	0.3171	0.3156	0.3290
	Y	0.3351	0.3238	0.3372	0.3486

ADJD-YD00 ADJD-YD01 WARM WHITE		Color Limits (Chromaticity Coordinates)			
Bin A	X	0.4545	0.4394	0.4302	0.4446
	Y	0.4135	0.4090	0.3901	0.3950

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



Note:

1. The chromaticity coordinate used for binning the product is obtained when all channels are lighted up together at maximum rated current.
2. 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.

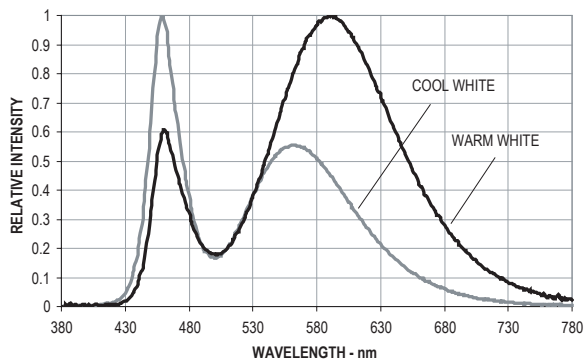


Figure 1. Relative Intensity vs. Wavelength

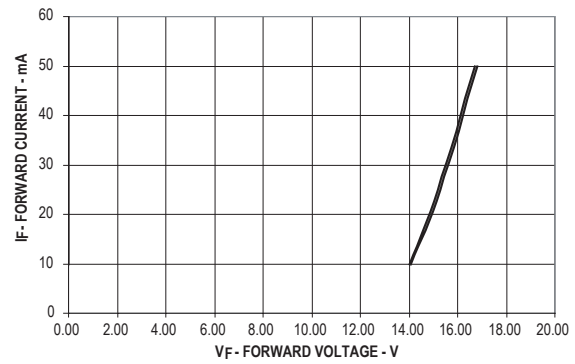


Figure 2. Forward Current vs Forward Voltage

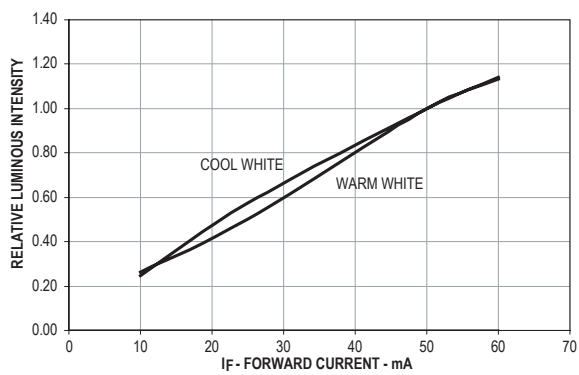


Figure 3. Relative luminous flux vs. forward current @  $T_j = 25^\circ\text{C}$

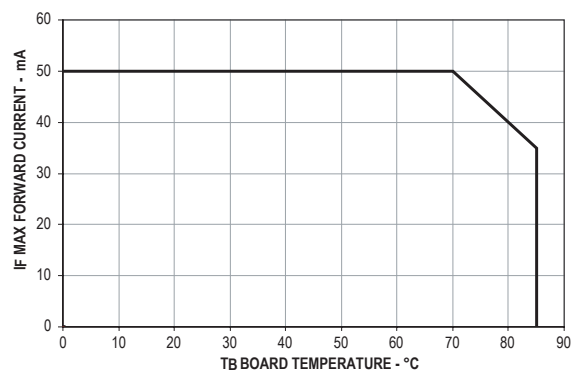


Figure 4. Maximum forward current vs. board temperature

Note: Board temperature,  $T_B$  = Temperature of the metal core PCB at the bottom of the LED.

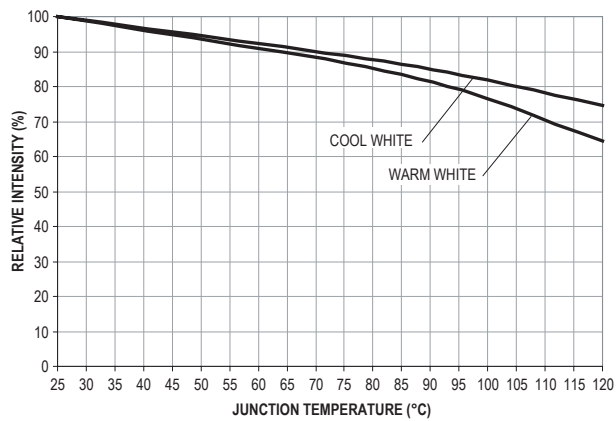


Figure 5. Relative LOP vs Junction Temperature

## Handling Cautions

1. 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 metal reflector or metal body.

Please refer to Avago Application Note AN-5288 for detail and recommendation.

2. When attaching the product to the heat sink, a thermally conductive compound is necessary as the interface between the metal core PCB of the product and the heat sink to ensure sufficient heat dissipation.

Please refer to Avago Application Note AN-5284 for detail and recommendation.

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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