

# Generation 2 CDM-6 COB

Warm-Dimming

White LED Arrays



## Features

- High flux densities exceeding 1080 lm from a 6 mm LES for directional lighting
- Superb efficacies up to 119 lm/W at 3000K, minimum 90 CRI
- 100 % factory tested at 85°C hot operating conditions
- Excellent beam uniformity with 10° narrow spot optics
- Halogen like and linear dimming profile options
- CCT tune range options from 1800K and 2000K to 2700K and 3000K
- 3 step binning for each CCT provides accurate color representation.
- Proprietary IC circuit provides smooth and flicker free dimming even at low level.
- Robust package design guarantees long lifetimes in demanding operating conditions.



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## Applications

- Spotlights/Track Lights
- Downlights
- Shop Lighting
- Hospitality Lighting
- Architectural and Specialty
- Residential Lighting



## Ordering Information

### Ordering Part Numbers

The following table lists the 18 V and 36 V products with typical flux and minimum flux measured at  $T_j = 85^\circ\text{C}$  with 20 ms Pulse mode. The values at  $25^\circ\text{C}$  are calculated and shown for reference only.

#### 18 V

CRI <sup>1</sup>	CCT	Output Flux (lm) <sup>2</sup>			Drive Current (mA)	Ordering Part Number <sup>3</sup>
		Typical (85°C)	Minimum (85°C)	Calculated Typical (25°C)		
>90	1800K	20	19	22	20	CDM-6-3018-90-18-DWZX-F3-3 CDM-6-3020-90-18-DWZX-F3-3
	2000K	21	20	24	20	
	3000K	1080	1005	1188	600	

#### 36 V

CRI <sup>1</sup>	CCT	Output Flux (lm) <sup>2</sup>			Drive Current (mA)	Ordering Part Number <sup>3</sup>
		Typical (85°C)	Minimum (85°C)	Calculated Typical (25°C)		
>90	1800K	50	47	55	20	CDM-6-2718-90-36-DWZX-F3-3 CDM-6-3018-90-36-DWZX-F3-3 CDM-6-3020-90-36-DWZX-F3-3
	2000K	52	48	57	20	
	2700K	1030	958	1133	300	
	3000K	1060	986	1166	300	

#### Notes:

1. Luminus maintains a +/- 2% tolerance on CRI measurements.
2. Luminus maintains a +/- 6% tolerance on flux measurements.
3. DWZX=DWZ1 for Halogen dimming profile and DWZ2 for Linear Dimming Profile.



## Part Number Nomenclature

All Luminus COB products are packaged and labeled with part numbers as outlined in the table on page 2. Luminus may include any smaller chromaticity bin that is contained in the larger bin as part of the ordered part. When shipped, each package will contain only a single flux and chromaticity bin. The part number designation is as follows:

CDM	6	MMNN	XX	VV	QQPP	FG	W
Product Family	LES <sup>1</sup>	CCT <sup>2</sup>	Minimum CRI <sup>3,4</sup>	Typical Voltage	Package Configurator <sup>5</sup>	Flux Bin	Chromaticity Bin
Chip on Board, Dimmable, Multi-die	6 mm LES diameter	See Note 2 below	90: CRI > 90	Volts (V) 36 or 18	DWZ1 DWZ2	See page 2	See page 4 for bins

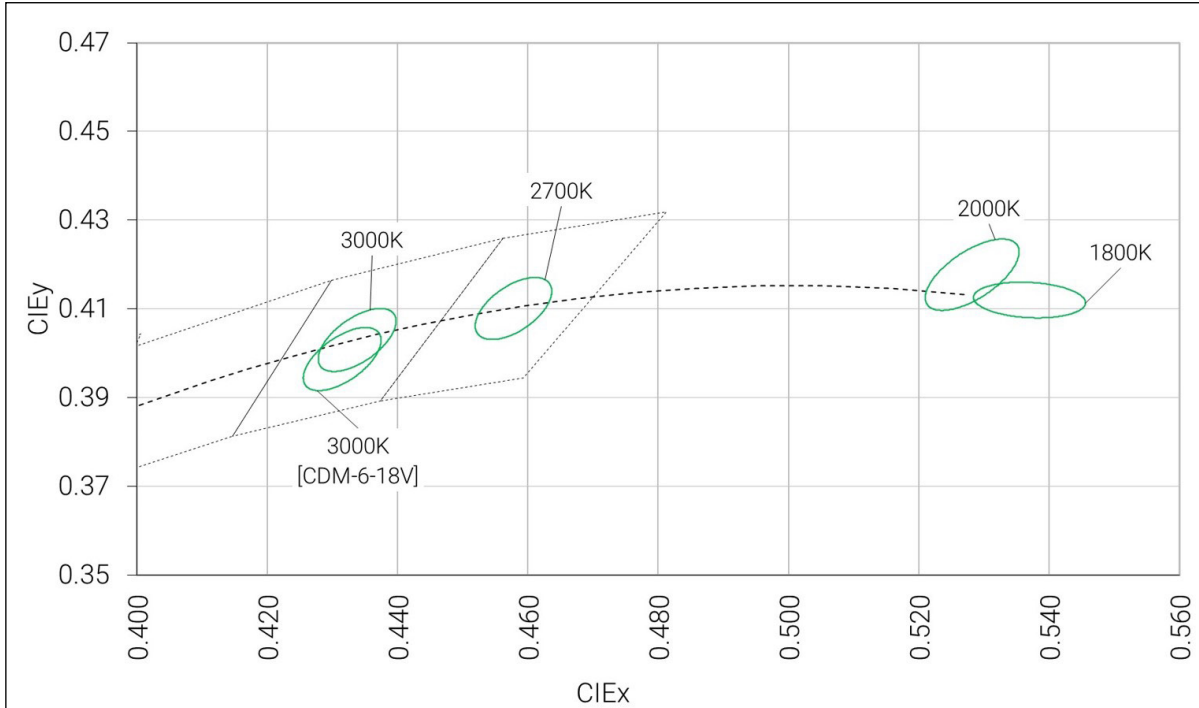
**Notes:**

1. Light Emitting Surface (LES) Diameter.
2. Correlated Color Temperatures (CCT). MM corresponds to the main CCT and NN refers to the dimmed CCT.  
18 = 1800K  
20 = 2000K  
27 = 2700K  
30 = 3000K
3. Minimum Color Rendering Index (CRI).
4. R9 value of 90 CRI products is >50 with a tolerance of +/- 5%.
5. DWZ1/2 is the configurator referring to Gen 2 Dimmable COB, 1 indicates a halogen-like dimming curve, 2 refers to a linear dimming curve.



## Binning Structure

Chromaticity Binning Diagram<sup>1,2</sup>



CCT	Center Point		Angle	3-step Bin	
	CIE <sub>x</sub>	CIE <sub>y</sub>	$\theta$ (°)	a	b
1800K	0.5370	0.4120	-5	0.0086	0.0040
2000K	0.5282	0.4177	49.9	0.0098	0.0045
2700K	0.4578	0.4101	53.7	0.0081	0.0042
3000K	0.4338	0.4030	53.2	0.0083	0.0041

**Notes:**

- LED chromaticity is measured and binned at 85°C junction temperature with the  $V_f$  and  $I_f$  condition of 18 V, 600 mA and 36 V, 300 mA respectively.
- Luminus maintains a tolerance of  $\pm 0.005$  on Chromaticity (CIE<sub>x</sub>, CIE<sub>y</sub>) measurement.



## Absolute Maximum Ratings

### 18 V

Parameter		Symbol	Value	Unit
Forward Current	Maximum	$I_{f\max}$	800	mA
Power Dissipation	Maximum	$P_{D\max}$	15.7	W
Operating Case Temperature	Maximum	$T_C$	105	°C
Junction Temperature	Maximum	$T_J$	140	°C

### 36 V

Parameter		Symbol	Value	Unit
Forward Current	Maximum	$I_{f\max}$	400	mA
Power Dissipation	Maximum	$P_{D\max}$	15.2	W
Operating Case Temperature	Maximum	$T_C$	105	°C
Junction Temperature	Maximum	$T_J$	140	°C

**Note:**

1. To prevent damage, do not exceed maximum operating conditions.



## Characteristics - 18 V<sup>1,2,3</sup>

Parameter		Symbol	Value	Unit
Light Emitting Surface Diameter <sup>4</sup>		LES	6.8	mm
Forward Voltage - Warm White Mode ( $I_f=20$ mA)	Minimum	$V_{f\ min}$	11.0	V
	Typical	$V_{f\ typ}$	12.0	
	Maximum	$V_{f\ max}$	13.0	
Forward Voltage - Cool White Mode ( $I_f=600$ mA) <sup>5</sup>	Minimum	$V_{f\ min}$	15.6	V
	Typical	$V_{f\ typ}$	17.6	
	Maximum	$V_{f\ max}$	19.6	
Viewing Angle		$2\theta_{1/2}$	120	°

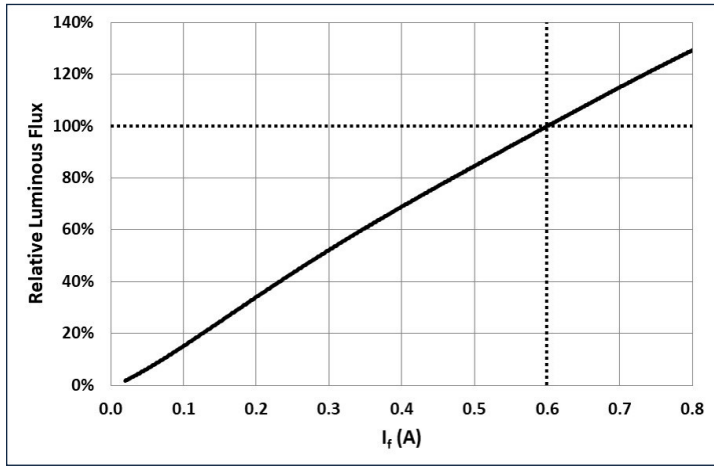
**Notes:**

1. All product operating specifications are subject to change without advance notice.
2. Device operation not recommended at drive currents less than 10% of 20 mA
3. Device measurements are taken at  $T_j = 85^\circ\text{C}$  with 20 ms Pulse mode.
4. The LES diameter is defined consistent with industry practices and aligned to optical characteristics. Please use ray files for all optics designs.
5. Voltage is specified at typical forward current. For voltage at higher drive current, refer to performance graphs.



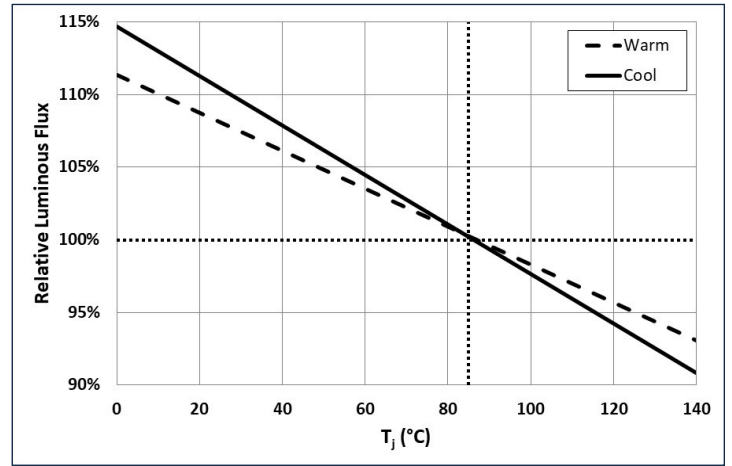
Relative Luminous Flux vs Forward Current

$T_j = 85^\circ\text{C}$



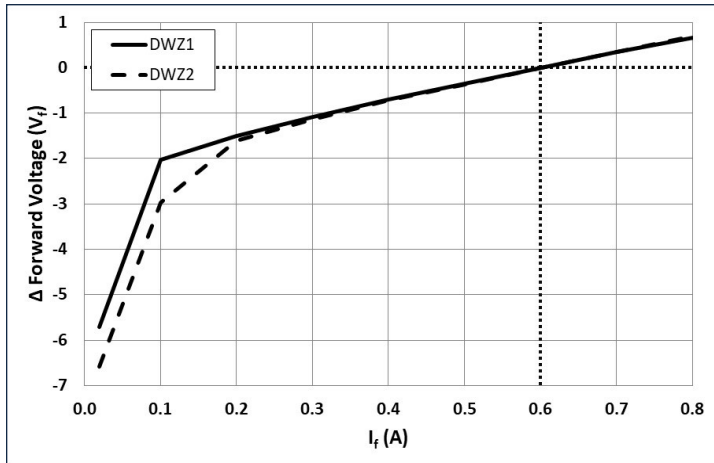
Relative Luminous Flux vs Temperature

$I_f = 600\text{ mA (Cool White)}, I_f = 20\text{ mA (Warm White)}$



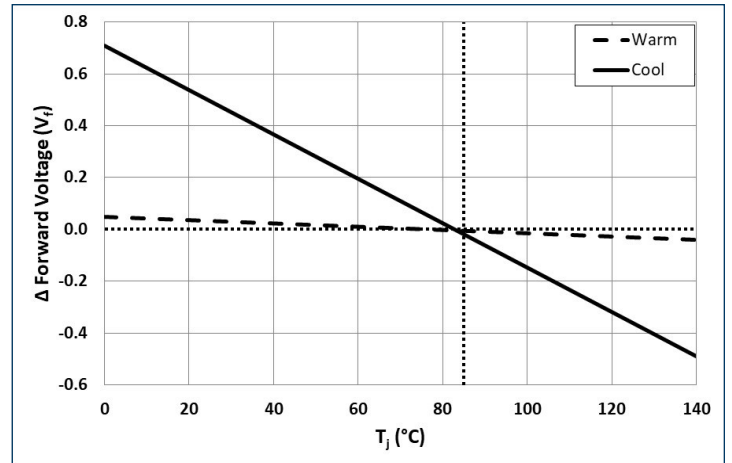
Forward Voltage vs Forward Current

$T_j = 85^\circ\text{C}$



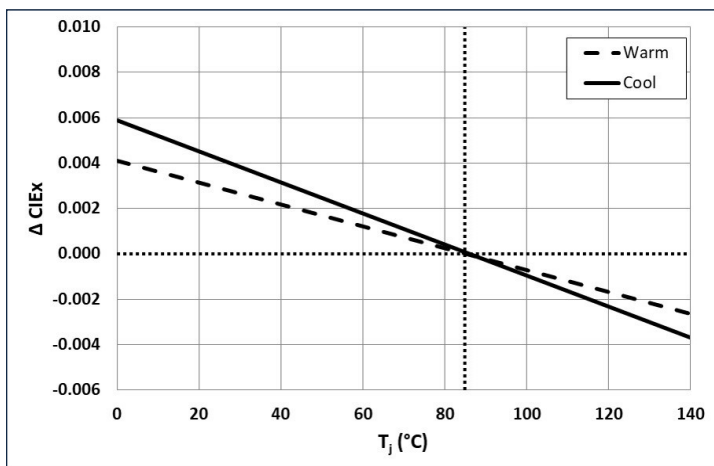
Forward Voltage vs Temperature

$I_f = 600\text{ mA (Cool White)}, I_f = 20\text{ mA (Warm White)}$



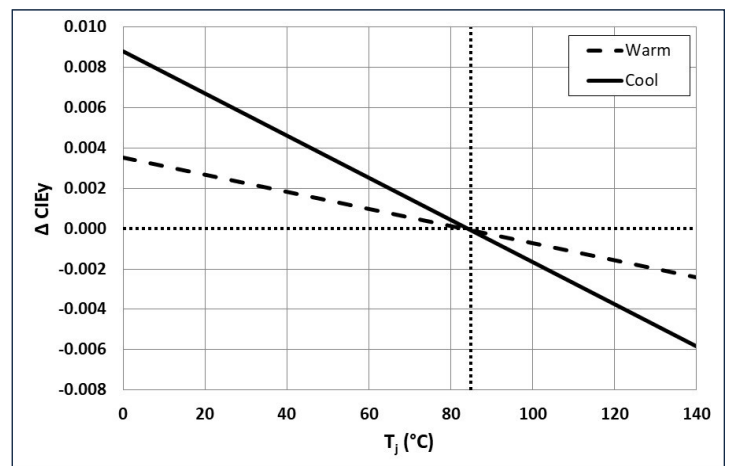
Relative Chromaticity vs Temperature

$I_f = 600\text{ mA (Cool White)}, I_f = 20\text{ mA (Warm White)}$



Relative Chromaticity vs Temperature

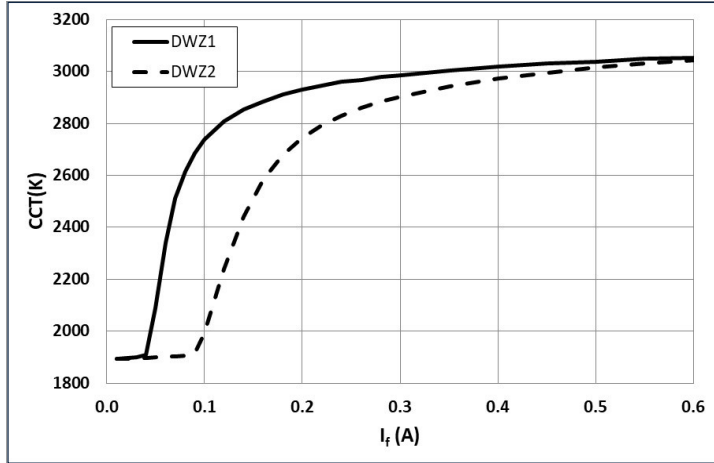
$I_f = 600\text{ mA (Cool White)}, I_f = 20\text{ mA (Warm White)}$



# Dimming Profile - 18 V

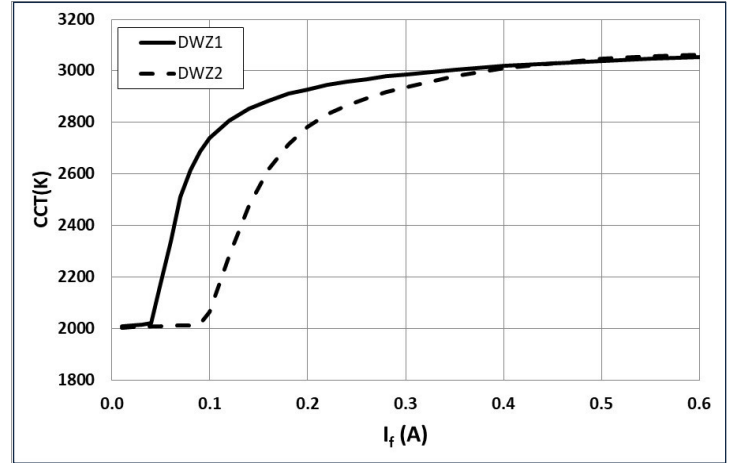
## Dimming Profile (3018, 90CRI)

$T_j = 85^\circ\text{C}$



## Dimming Profile (3020, 90CRI)

$T_j = 85^\circ\text{C}$







## Characteristics - 36 V<sup>1,2,3</sup>

Parameter		Symbol	Value	Unit
Light Emitting Sureface Diameter <sup>4</sup>		LES	6.8	mm
Forward Voltage - Warm White ( $I_f=20$ mA)	Minimum	$V_{f\ min}$	25.0	V
	Typical	$V_{f\ typ}$	27.0	
	Maximum	$V_{f\ max}$	29.0	
Forward Voltage - Cool White ( $I_f=300$ mA) <sup>5</sup>	Minimum	$V_{f\ min}$	33.0	V
	Typical	$V_{f\ typ}$	35.5	
	Maximum	$V_{f\ max}$	38.0	
Viewing Angle		$2\theta_{1/2}$	120	°

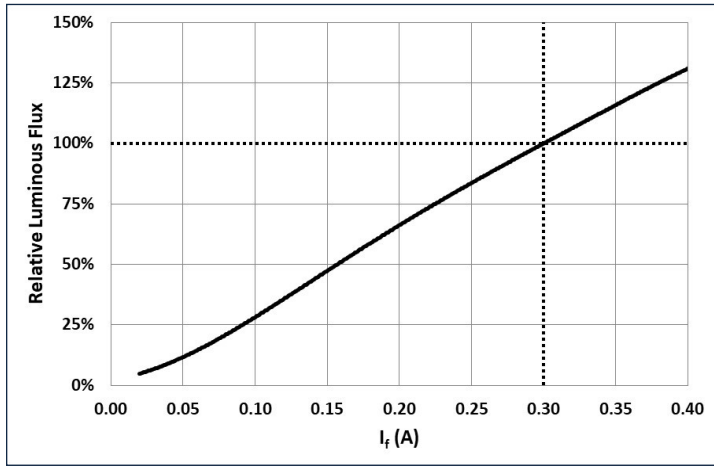
**Notes:**

1. All product operating specifications are subject to change without advance notice.
2. Device operation not recommended at drive currents less than 10% of 20 mA
3. Device measurements are taken at  $T_j = 85^\circ\text{C}$  with 20 ms Pulse mode.
4. The LES diameter is defined consistent with industry practices and aligned to optical characteristics. Please use ray files for all optics designs.
5. Voltage is specified at typical forward current. For voltage at higher drive current, refer to performance graphs.



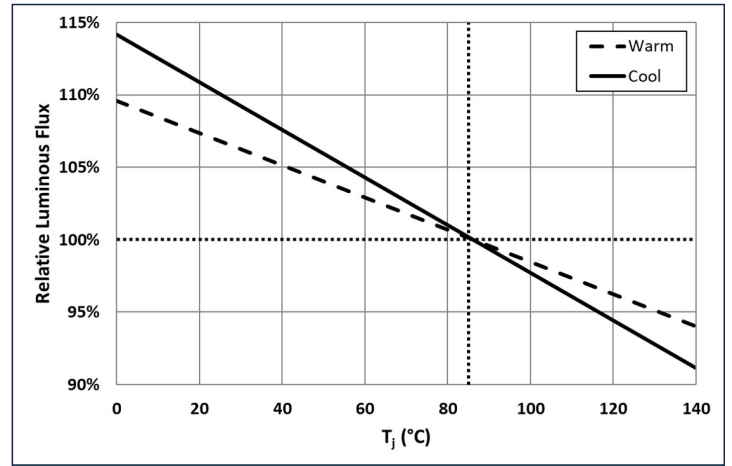
Relative Luminous Flux vs Forward Current

$T_j = 85^\circ\text{C}$



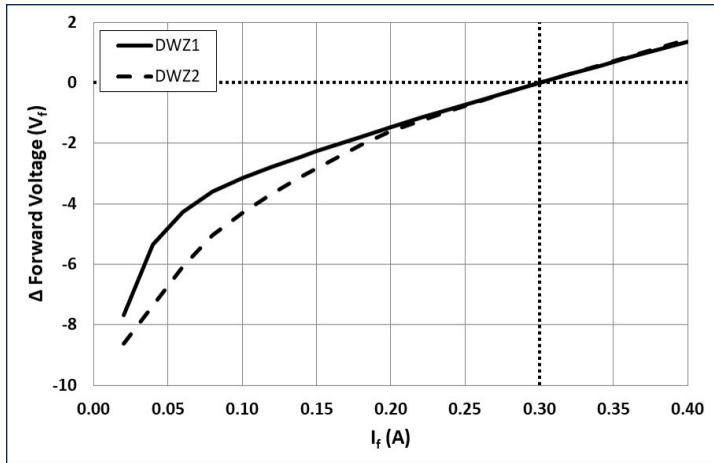
Relative Luminous Flux vs Temperature

$I_f = 300\text{ mA (Cool White)}, I_f = 20\text{ mA (Warm White)}$



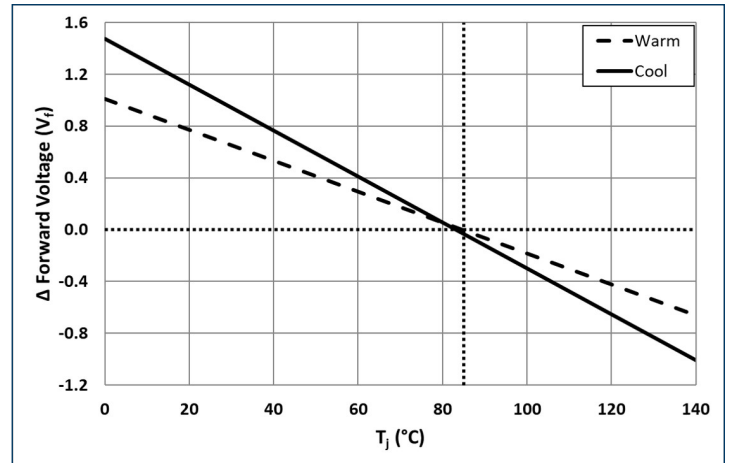
Forward Voltage vs Forward Current

$T_j = 85^\circ\text{C}$



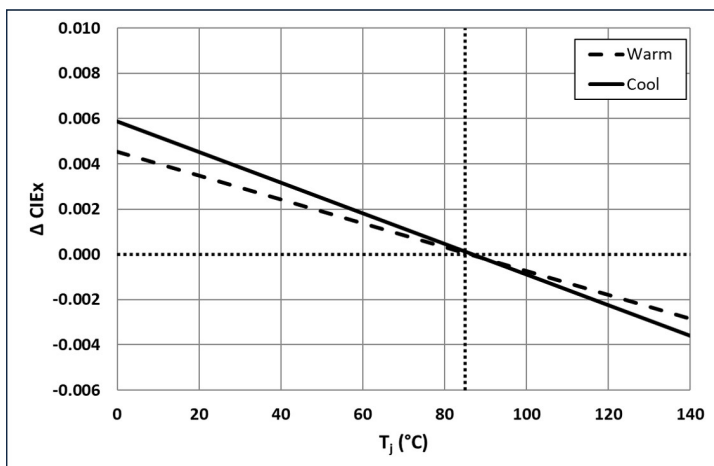
Forward Voltage vs Temperature

$I_f = 300\text{ mA (Cool White)}, I_f = 20\text{ mA (Warm White)}$



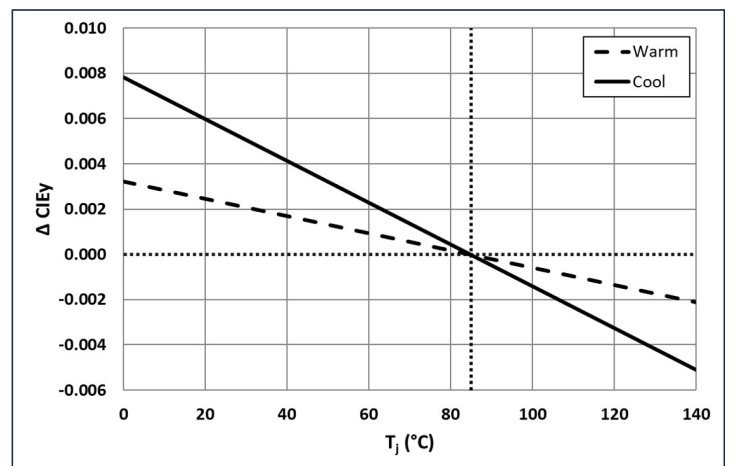
Relative Chromaticity vs Temperature

$I_f = 300\text{ mA (Cool White)}, I_f = 20\text{ mA (Warm White)}$



Relative Chromaticity vs Temperature

$I_f = 300\text{ mA (Cool White)}, I_f = 20\text{ mA (Warm White)}$

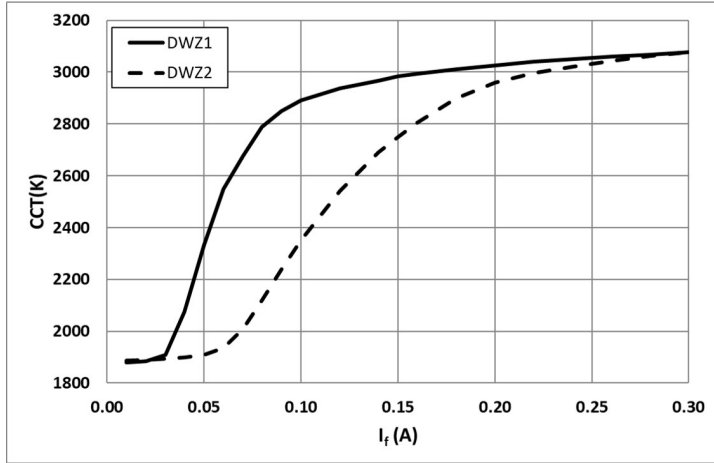




## Dimming Profile - 36 V

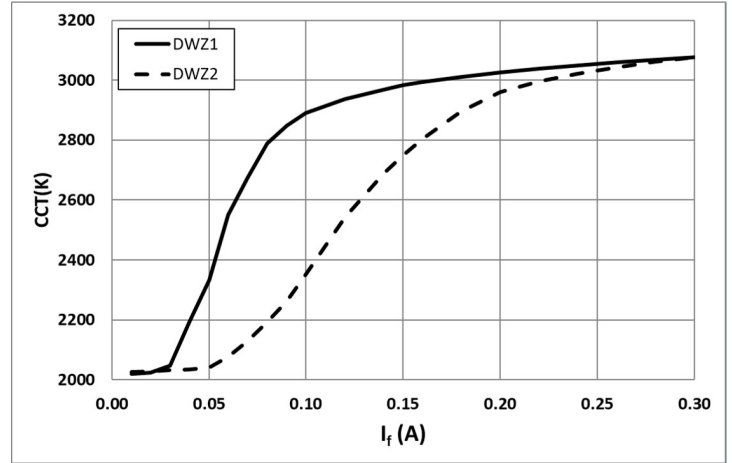
Dimming Profile (3018, 90CRI)

$T_j = 85^\circ\text{C}$



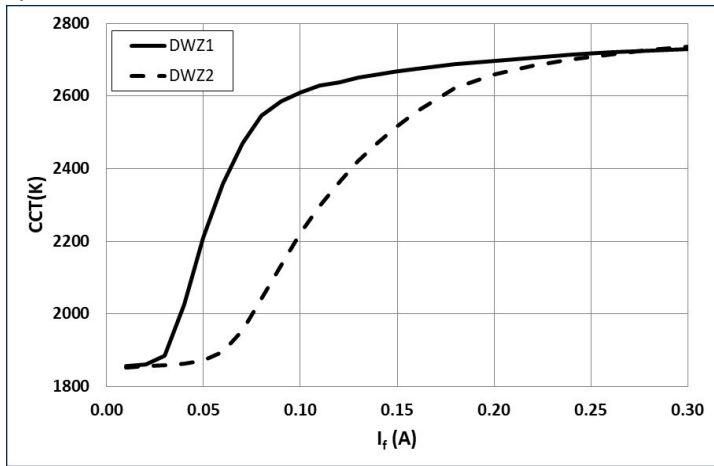
Dimming Profile (3020, 90CRI)

$T_j = 85^\circ\text{C}$



Dimming Profile (2718, 90CRI)

$T_j = 85^\circ\text{C}$

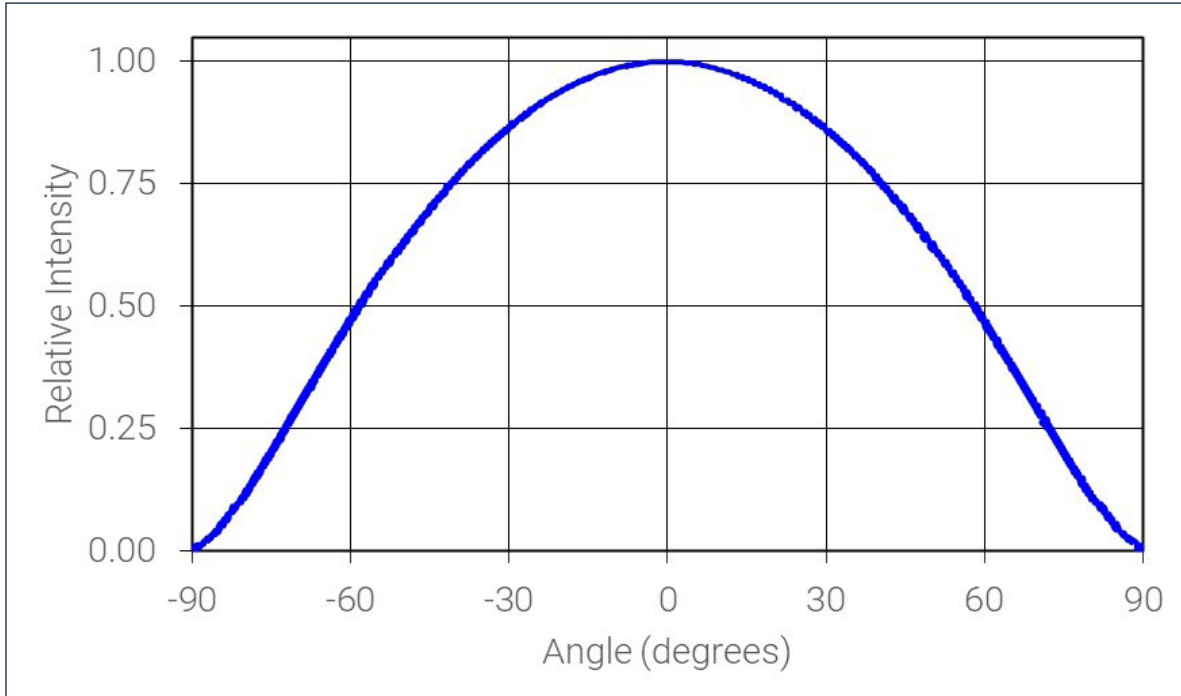




## Angular Distribution and Typical Spectrum - 18 V and 36 V

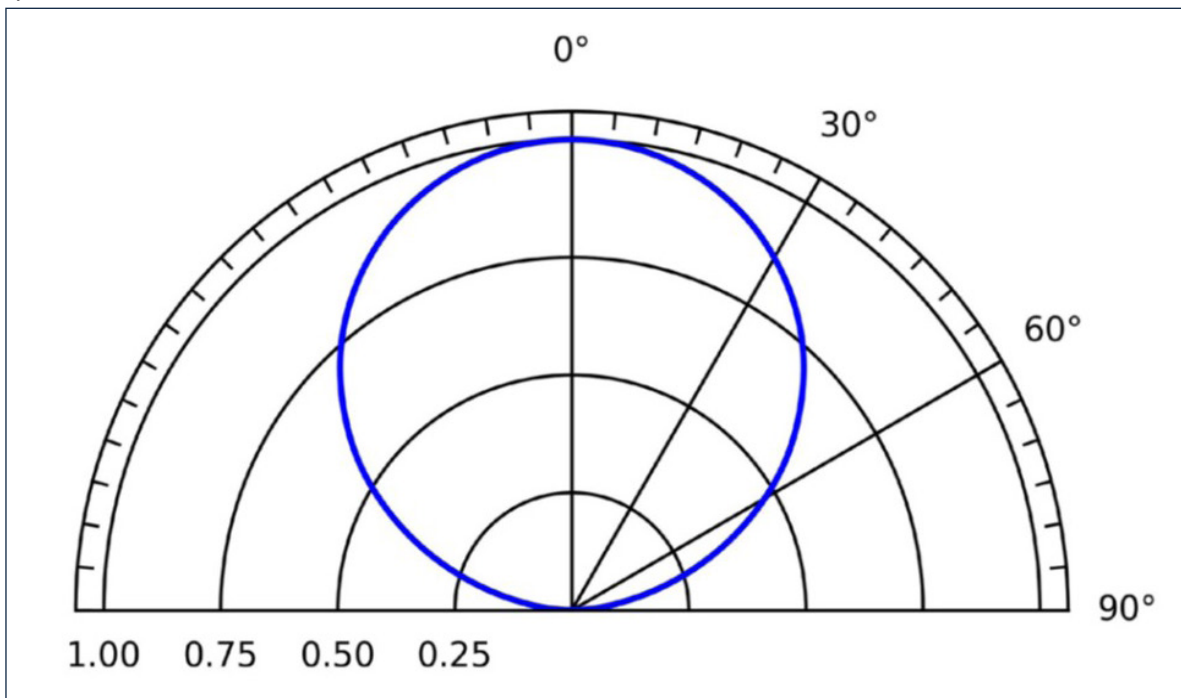
### Typical Angular Radiation Pattern

$T_j = 85^\circ\text{C}$  with 20 ms Pulse mode



### Typical Polar Radiation Pattern

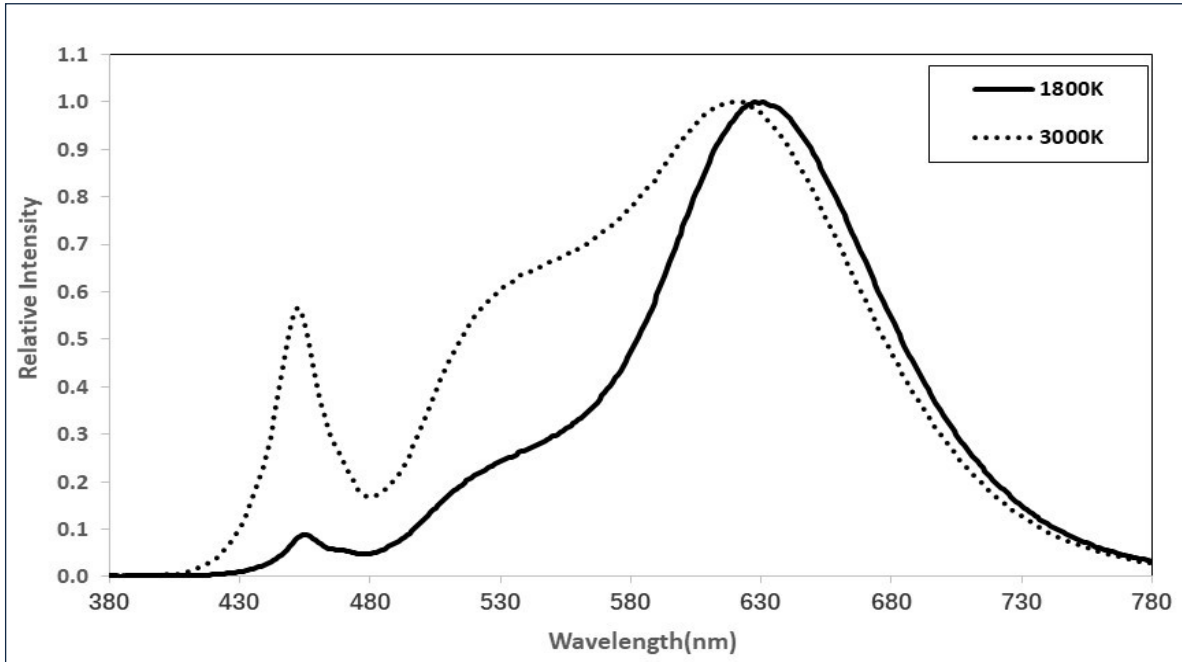
$T_j = 85^\circ\text{C}$  with 20 ms Pulse mode





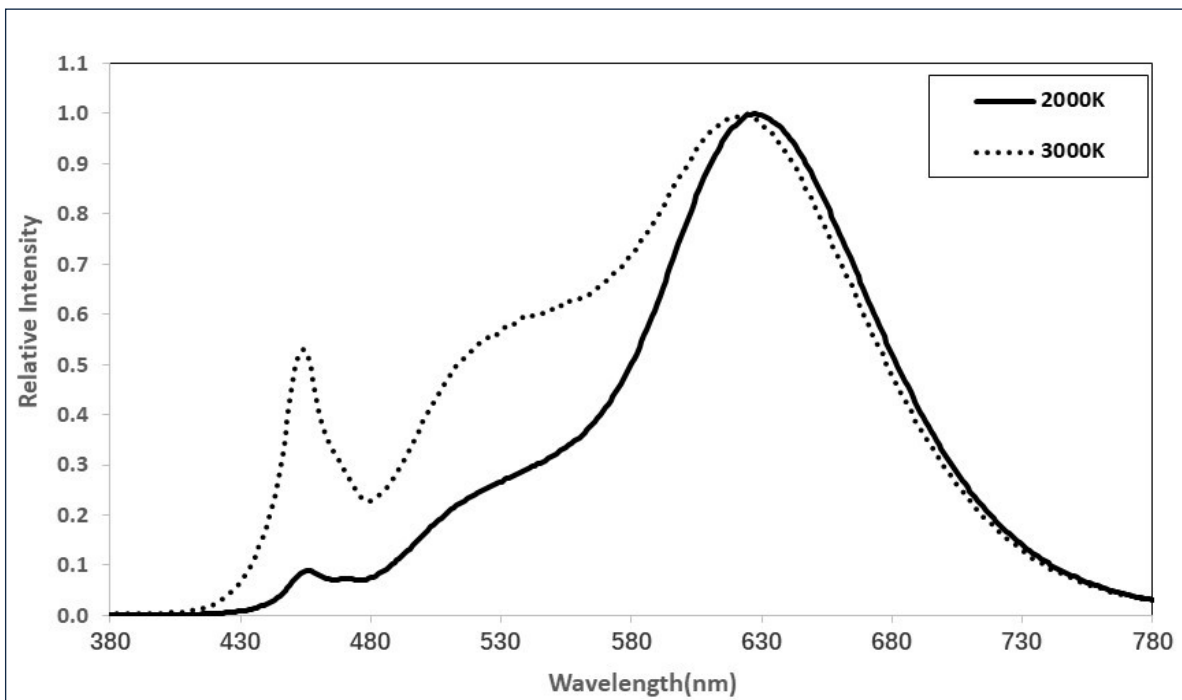
### Relative Spectral Power Distribution

$T_j = 85^\circ\text{C}$



### Relative Spectral Power Distribution

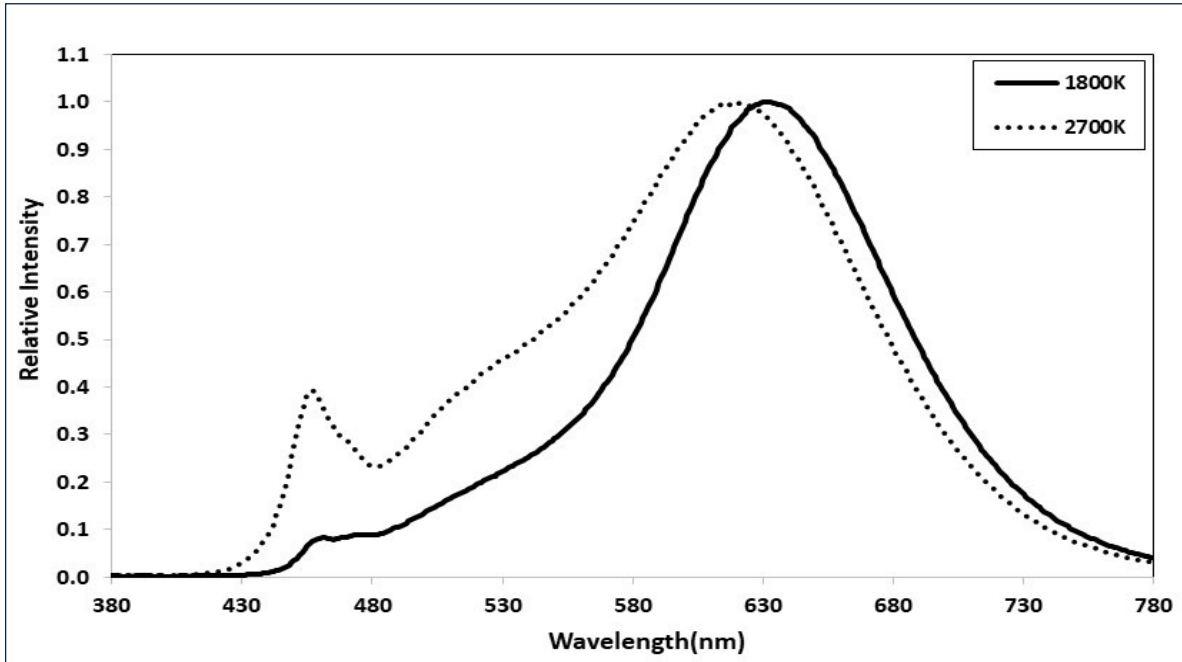
$T_j = 85^\circ\text{C}$





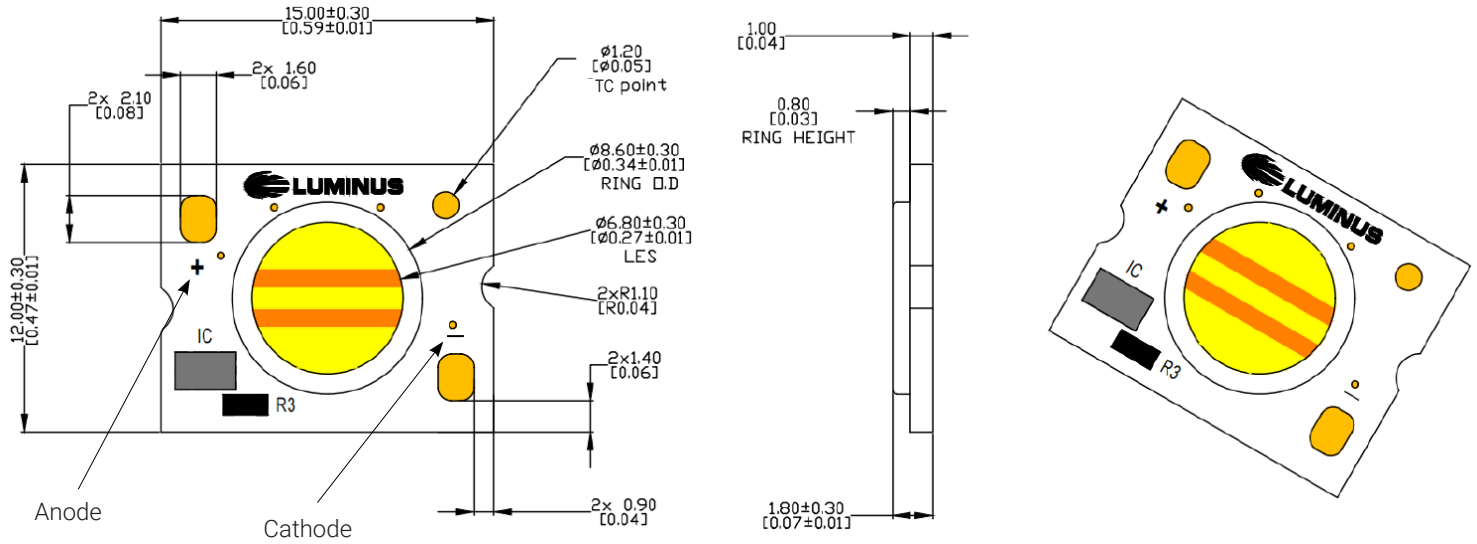
### Relative Spectral Power Distribution

$T_j = 85^\circ\text{C}$





## Mechanical Dimensions - DWZ1/2



**Note:**

1. Unless otherwise specified, tolerance is  $\pm 0.3$  mm.



## Shipping Tray Outline

### Packaging boxes



### Packing Configuration:

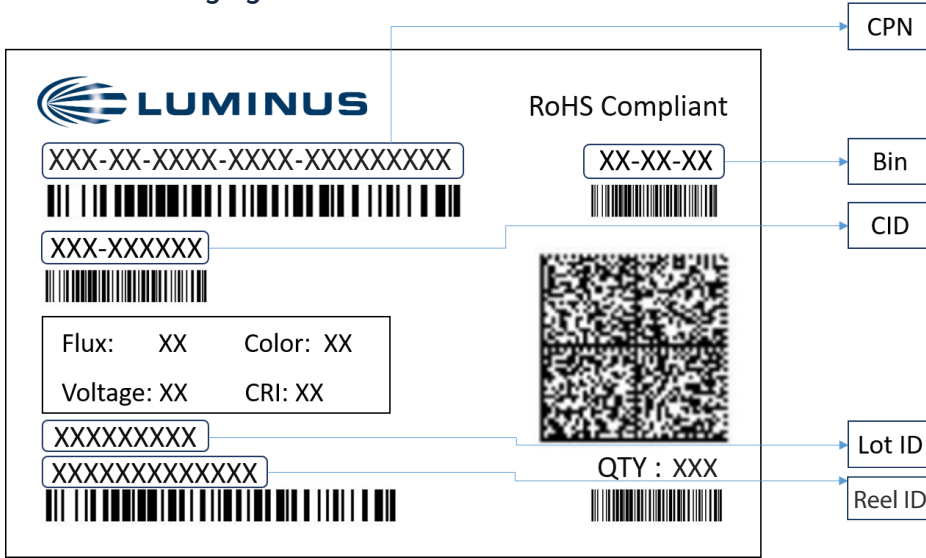
1. 80 devices per tray, with a maximum stack of 5 trays per pack
2. Each pack is placed in anti-static moisture barrier bag.





## Shipping Label

### Label on Packaging Box



### Label Fields:

- CPN: Luminus ordering part number
- CID: Customer's part number
- QTY: Quantity of parts per reel
- Flux: Bin as defined on page 2
- Voltage: Bin as defined on page 2
- Color: Bin as defined on page 4
- CRI: NA



## Revision History

Rev	Date	Description of Change
01	11/15/2024	Initial release