

EdiPower® II CAC Series Datasheet



Features :

- LED light engine
- High power operation
- Instant on
- Long lifetime

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General Information

Introduction

EdiPower® II CAC series can provide different operating powers. They serve as optical engine and can be utilized in general lighting and special lighting applications, such as MR16 and GU10. Furthermore, the high CRI options allow the customers to optimize the effect in various fields such as interior architecture.

Ordering Code Format

<u>2</u> X1	<u>P</u> X2	<u>CA</u> X3	<u>xx</u> X4	<u>xW</u> X5	<u>xx</u> X6	<u>P 2 x</u> X7	<u>xxx</u> X8
X1	X2	X3	X4	X5	X6	X7	X8
Type	Component	Series	Wattage	Color			
2	Emitter	P	EdiPower®	CA	CA Series	04 07	4W 7W CW NW WW Cool White Neutral White Warm White
X6	X7	X8					
Internal code	PCB Board	Serial Number					
-	-	P21	13x13	-	-		
		P22	16x16				

Absolute Maximum Ratings (T_j=25°C)

Parameter	Symbol	Value	Units
DC Forward Current ¹	I _F	2PCA04xW27P2100x : 100 2PCA07xW27P2200x : 200	mA
Max Forward Current	I _F	2PCA04xW27P2100x : 150 2PCA07xW27P2200x : 375	mA
Reverse Voltage ²	V _R	Note 2	V
LED junction Temperature ³	T _j	150	°C
Operating Temperature	-	-40 ~ +110	°C
Storage Temperature	-	-40 ~ +120	°C
ESD Sensitivity (HBM)	V _B	2,000	V
Isolation Voltage	-	1,000	V
Thermal Measurement Point (T _p)	-	<85	°C

Notes:

1. DC forward current should not exceed LED's operating current; the current tolerance should be kept within a range of 5%.
2. LEDs are not designed to be driven in reverse bias.
3. Proper current derating must be observed to maintain junction temperature below the maximum at all time.

Characteristics

Parameter	Symbol	Value	Units
Viewing Angle	2θ _{1/2}	105~120	Degree
Forward voltage	V _F	36~38.4	V
CCT	-	CW : 5,000-10,000 NW : 3,800-5,000 WW : 2,670-3,800	K
Thermal resistance (Typ.)	Rθ _{J-B}	2PCA04xW27P2100x : 20 2PCA07xW27P2200x : 15	°C/W
ΔV _F /ΔT (Typ.)	-	2PCA04xW27P2100x : -12 to -20 2PCA07xW27P2200x : -10 to -18	mV/°C
CRI (Min.)	-	80	-

Notes:

1. 2θ_{1/2} is the off-axis angle where the luminous intensity is half of the axial luminous intensity.
2. CCT is measured with an accuracy of ± 5%.
3. Color rendering index CRI Tolerance : ± 2.

Luminous Flux Characteristic

Luminous Flux Characteristics $T_j=25^{\circ}\text{C}$

Wattage (W)	Color	Typ. Luminous Flux(lm) $T_j=85^{\circ}\text{C}$	Typ. Luminous Flux(lm) $T_j=25^{\circ}\text{C}$	Typ. Forward Voltage V_f (V)	Forward Current (mA)	Order Code
3-8W	2700K	360	405	36.8	100	2PCA04WW27P21001
		510	570	38.8	150	
	3000K	370	415	36.8	100	
		520	585	38.8	150	
	3500K	390	435	36.8	100	2PCA04NW27P21001
		545	610	38.8	150	
	4000K	390	435	36.8	100	
		545	610	38.8	150	
	5000K	405	455	36.8	100	2PCA04CW27P21001
		560	625	38.8	150	
	5700K	400	450	36.8	100	
		565	635	38.8	150	
7-15W	2700K	725	815	36.2	200	2PCA07WW27P22001
		1200	1345	39.6	375	
	3000K	755	845	36.2	200	
		1245	1395	39.6	375	
	3500K	765	860	36.2	200	2PCA07NW27P22001
		1265	1420	39.6	375	
	4000K	815	915	36.2	200	
		1365	1530	39.6	375	
	5000K	830	930	36.2	200	2PCA07CW27P22001
		1390	1560	39.6	375	
	5700K	825	925	36.2	200	
		1380	1550	39.6	375	
	6500K	820	920	36.2	200	2PCA07CW27P22001
		1385	1555	39.6	375	

Notes:

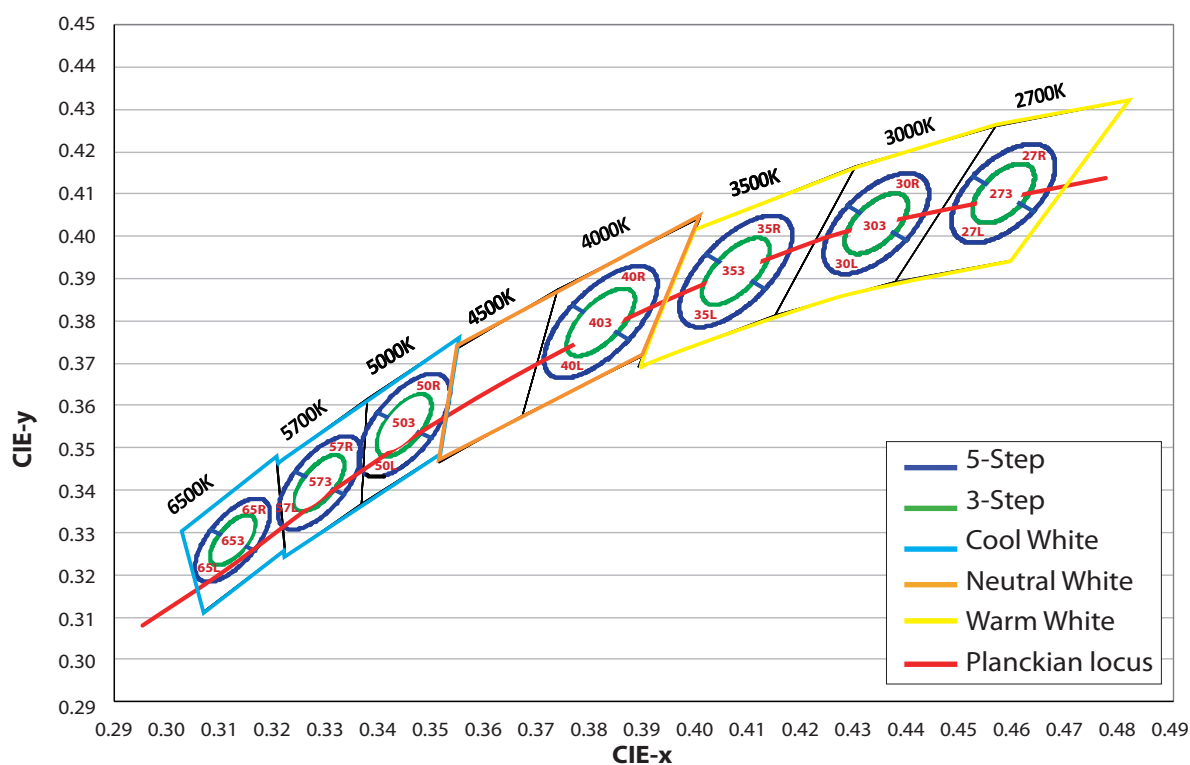
1. Forward Voltage has $\pm 3.6\text{V}$ tolerance.
2. The emphasised value with bold font showed at forward current means the DC forward current value.

Chromaticity coordinates($T_c=85^{\circ}\text{C}$)

Color region stay within Macadam "3-Step/5-step" ellipse from the chromaticity center.

The chromaticity center refers to ANSI C78.377:2008.

Please refer to ANSI C78.377 for the chromaticity center.

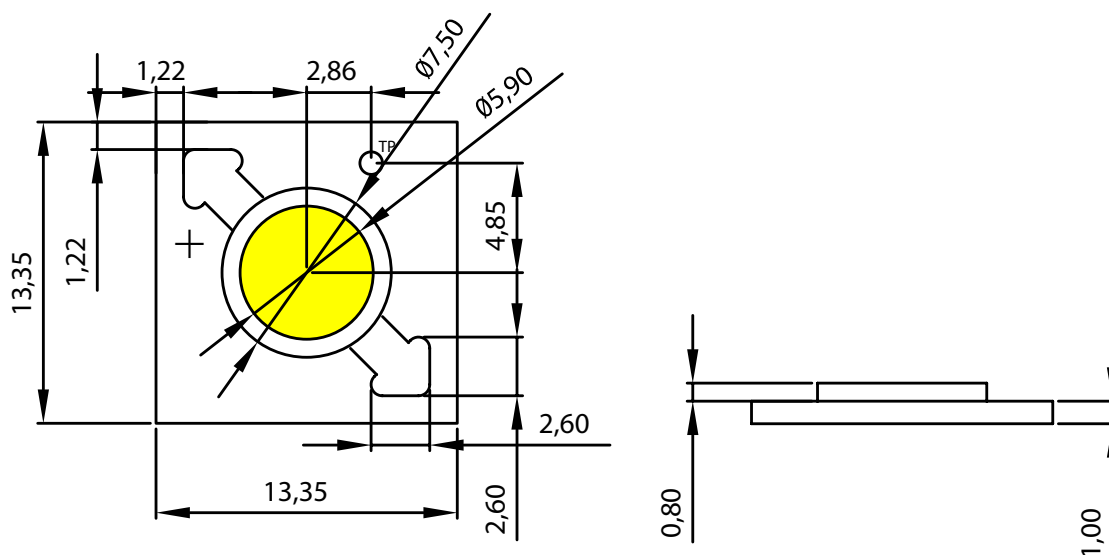


CCT	Steps	Cx	Cy	a	b	theta
2700K	5	0.4578	0.4101	0.01350	0.00700	53.70
3000K	5	0.4338	0.4030	0.01390	0.00680	53.22
3500K	5	0.4073	0.3917	0.01545	0.00690	54.00
4000K	5	0.3818	0.3797	0.01565	0.00670	53.72
5000K	5	0.3447	0.3553	0.01370	0.00590	59.62
5700K	5	0.3287	0.3417	0.01243	0.00533	59.09
6500K	5	0.3123	0.3282	0.01115	0.00475	58.57

CCT	Steps	Cx	Cy	a	b	theta
2700K	3	0.4578	0.4101	0.00810	0.00420	53.70
3000K	3	0.4338	0.4030	0.00834	0.00408	53.22
3500K	3	0.4073	0.3917	0.00927	0.00414	54.00
4000K	3	0.3818	0.3797	0.00939	0.00402	53.72
5000K	3	0.3447	0.3553	0.00822	0.00354	59.62
5700K	3	0.3287	0.3417	0.00746	0.00320	59.09
6500K	3	0.3123	0.3282	0.00669	0.00285	58.57

Mechanical Dimensions

2PCA04xW27Pxx001 Emitter Dimensions



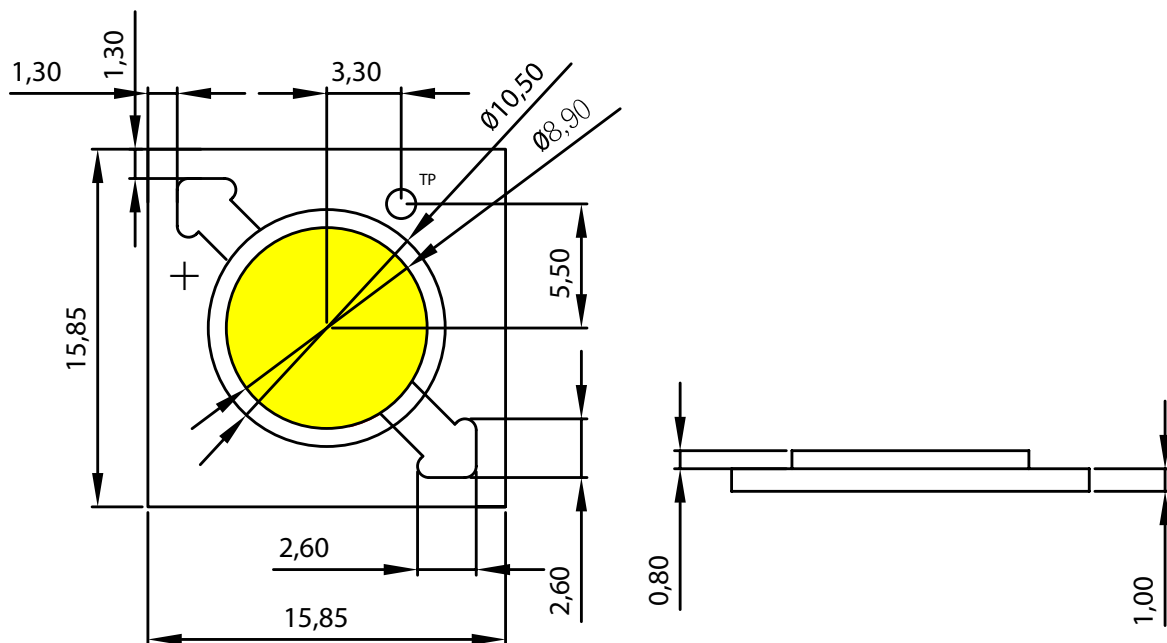
Notes :

1. Unit : mm
2. Tolerance : ± 0.2 mm
3. Drawings are not to scale
4. T_p : Thermal measurement point

2PCA04xW27Pxx001 Emitter Circuit Layout



2PCA07xW27Pxx001 Emitter Dimensions



Notes :

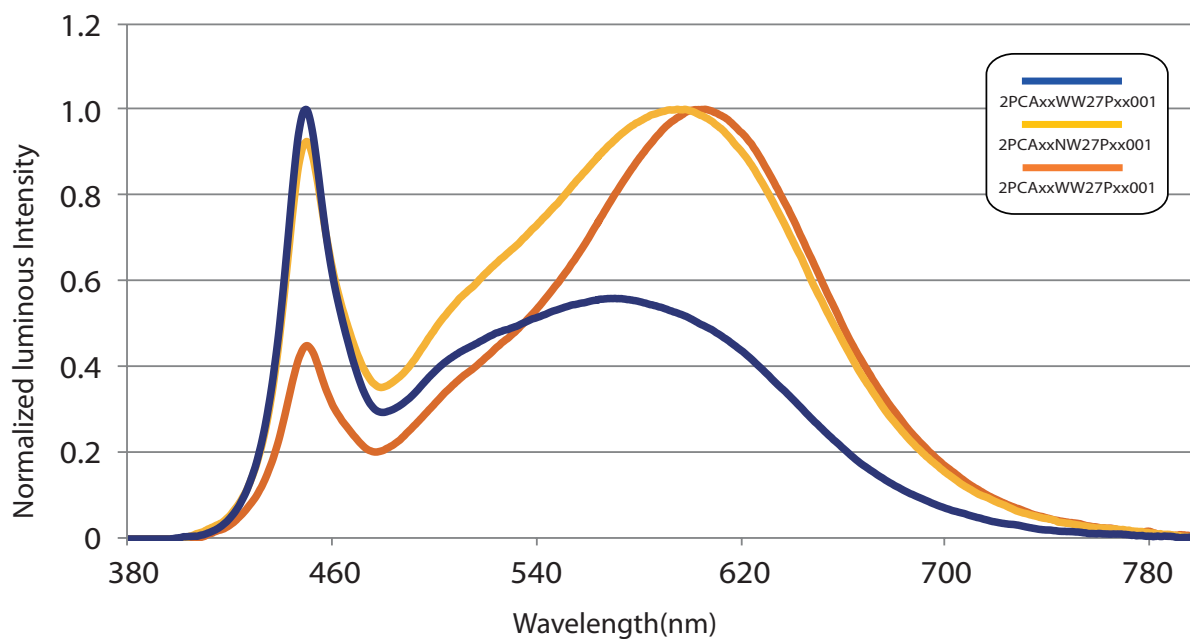
1. Unit : mm
2. Tolerance : ± 0.2 mm
3. Drawings are not to scale
4. T_p : Thermal measurement point

2PCA07xW27Pxx001 Emitter Circuit Layout



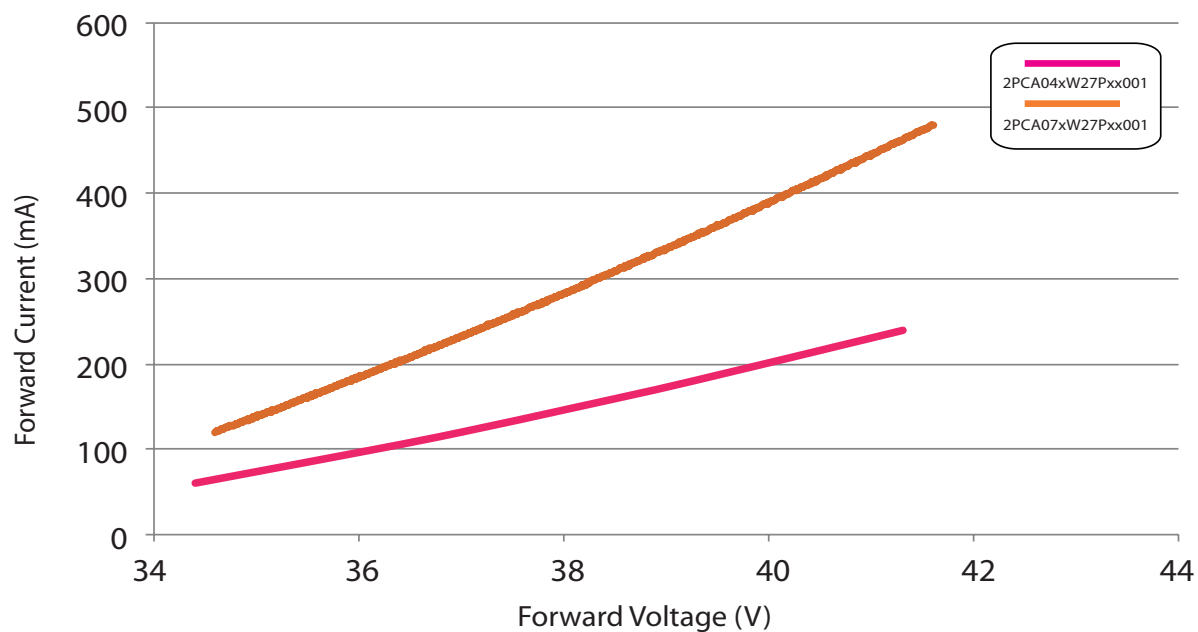
Characteristic curve

Color Spectrum



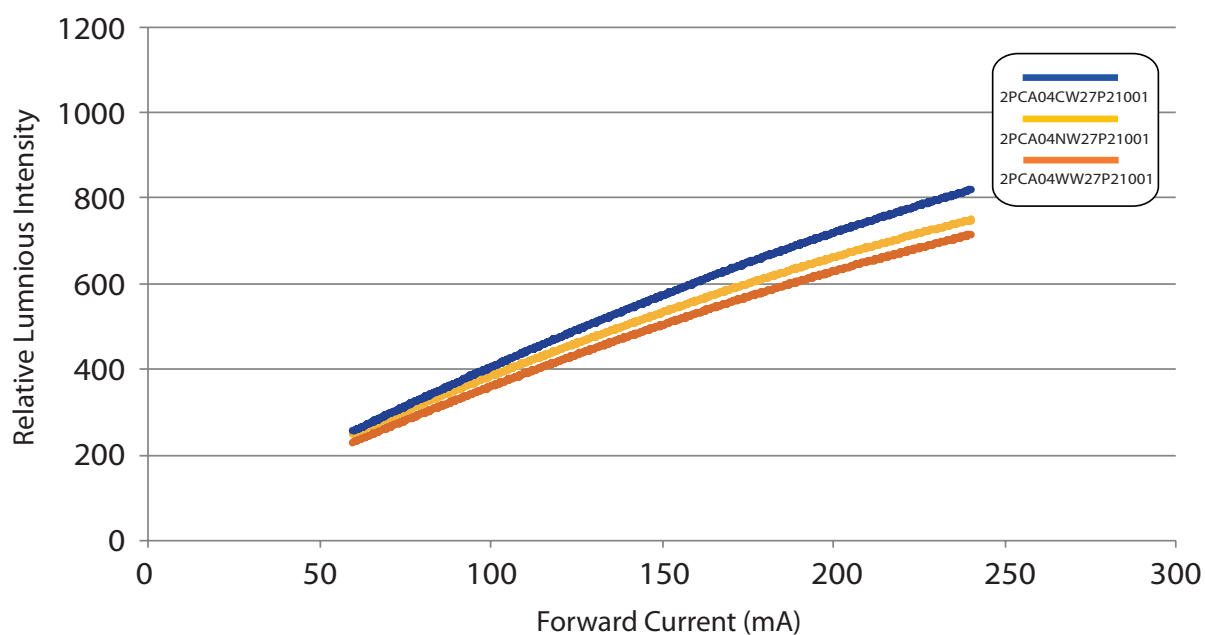
Color Spectrum at a typical CCT for EdiPower® II CAC series

Forward Current vs. Forward Voltage



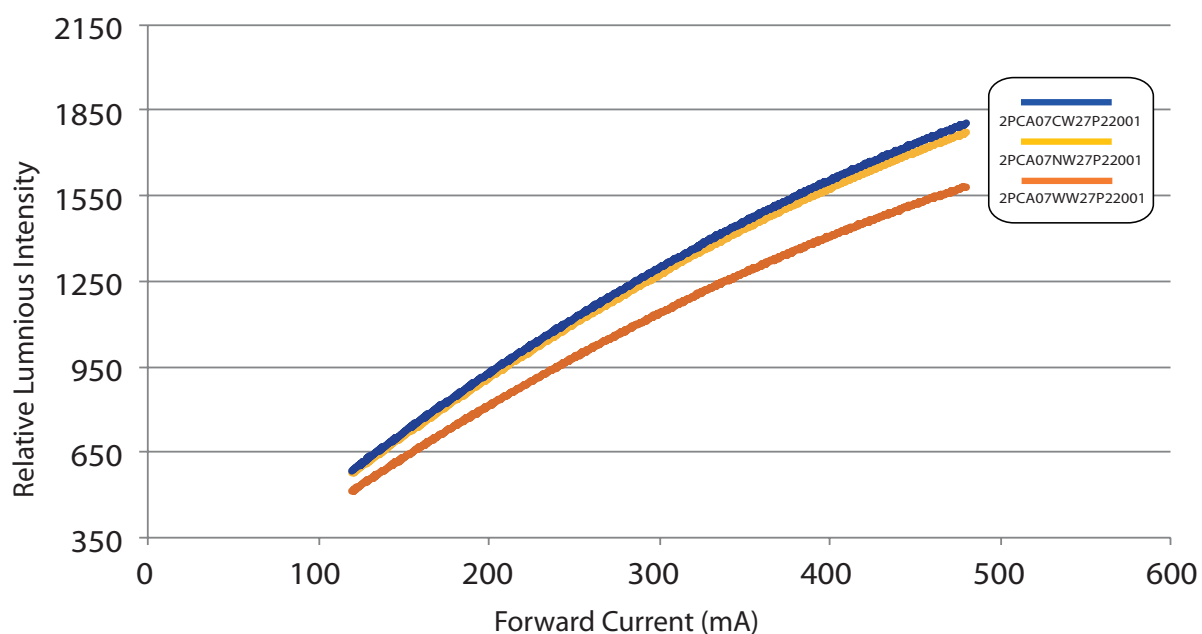
Forward Current vs. Forward Voltage for EdiPower® II CAC series

Relative Intensity vs. Forward Current (4W)



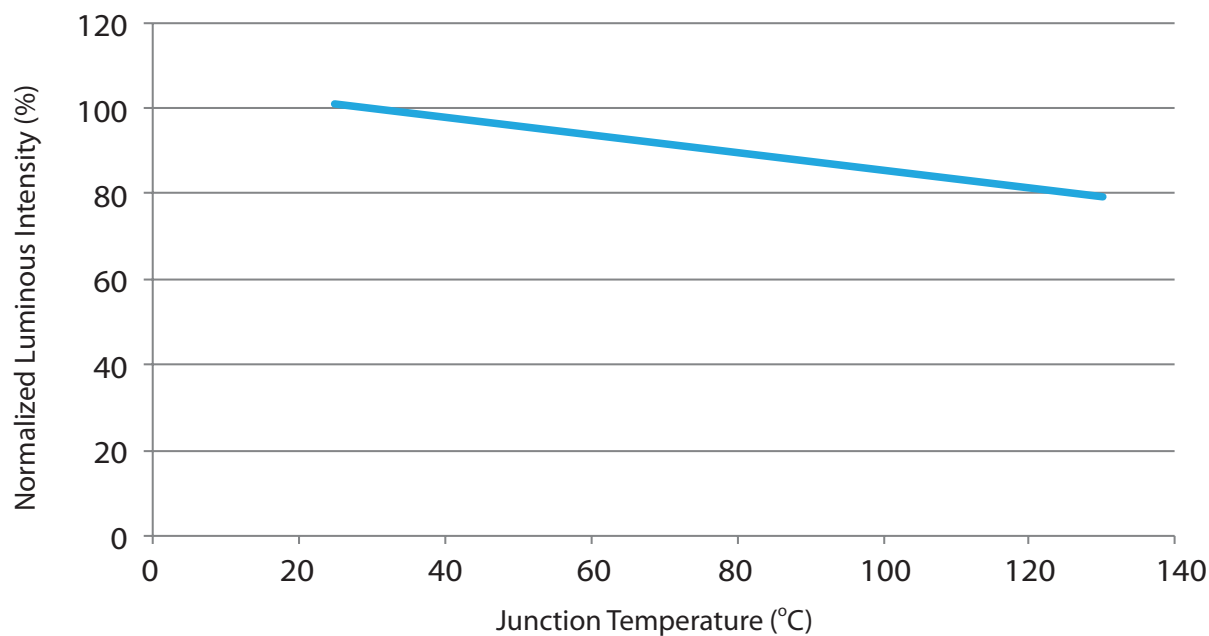
Forward Current vs. Luminous Intensity for EdiPower® II CAC 4W series

Relative Intensity vs. Forward Current (7W)



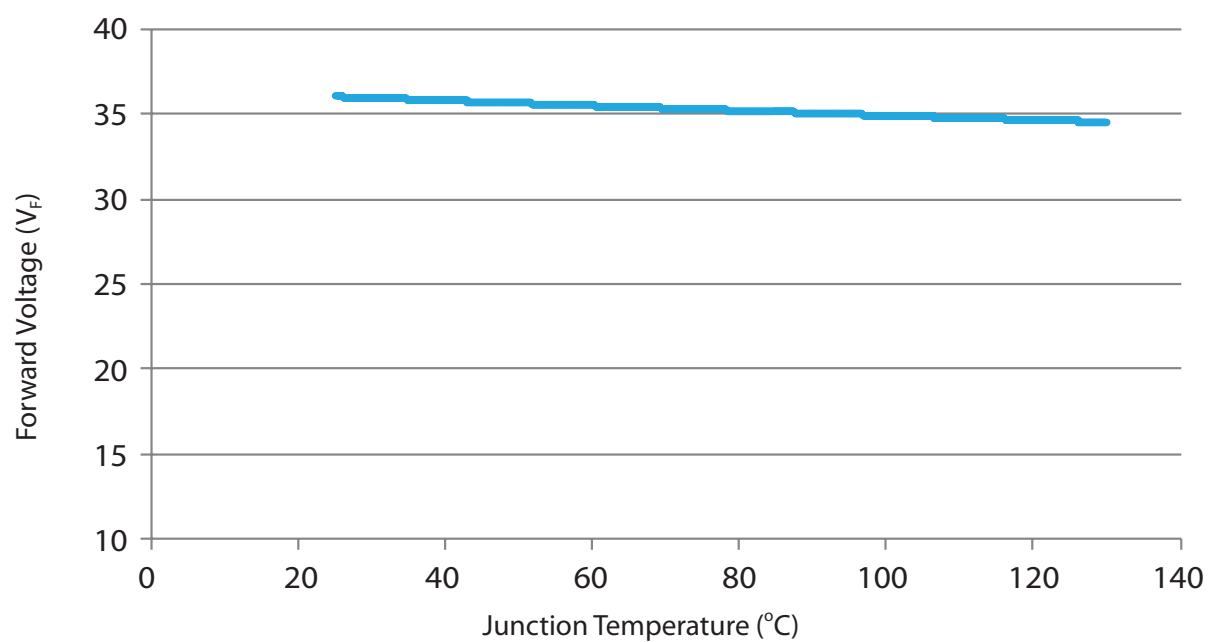
Forward Current vs. Luminous Intensity for EdiPower® II CAC 7W series

Luminous Flux vs. Junction Temperature



Luminous flux vs. junction temperature for EdiPower® II CAC series

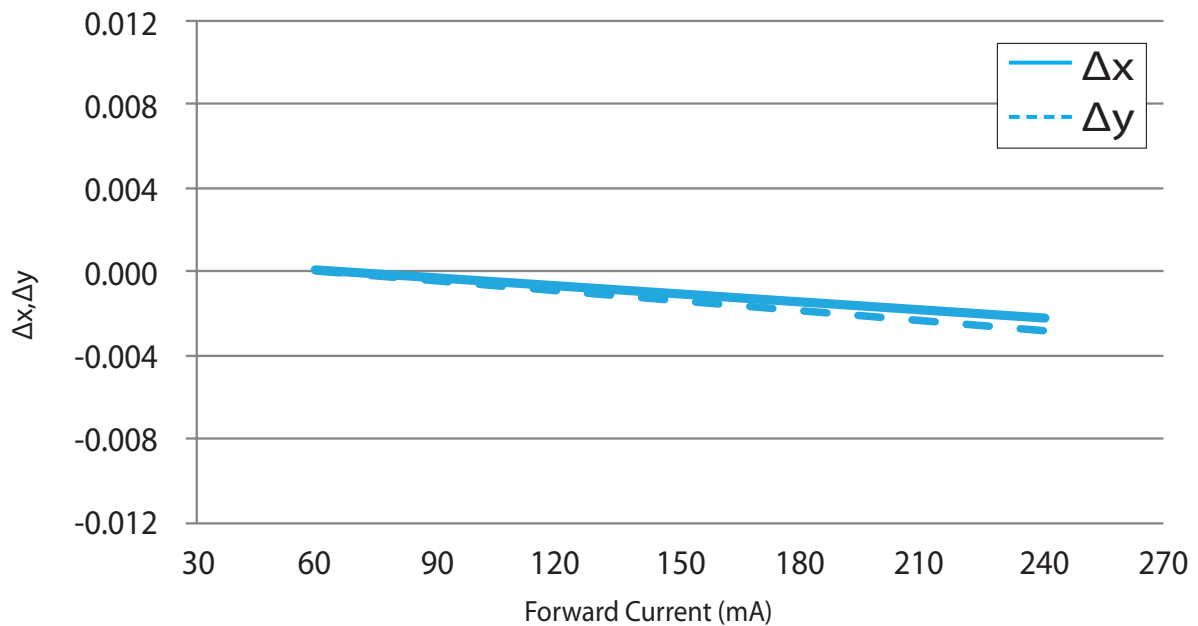
Forward Voltage vs. Junction Temperature



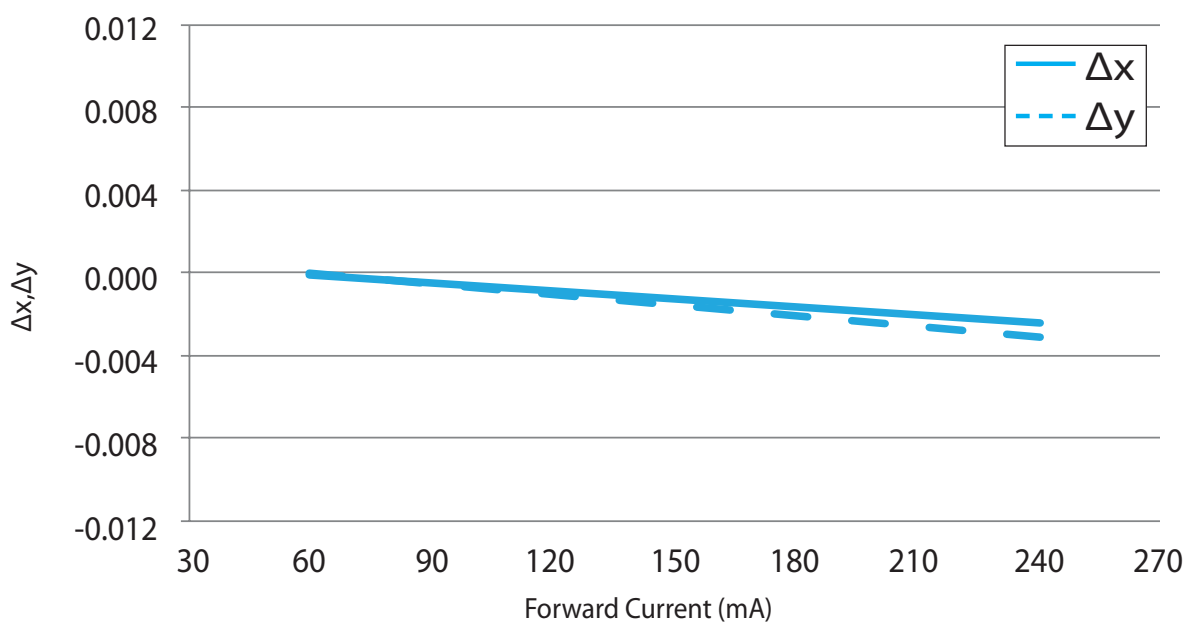
Forward voltage vs. junction temperature for EdiPower® II CAC series

The trend of $\Delta x, \Delta y$ vs. Forward Current characteristic curve 2PCA07xW27Pxx001 resembles curve 2PCA04xW27Pxx001.

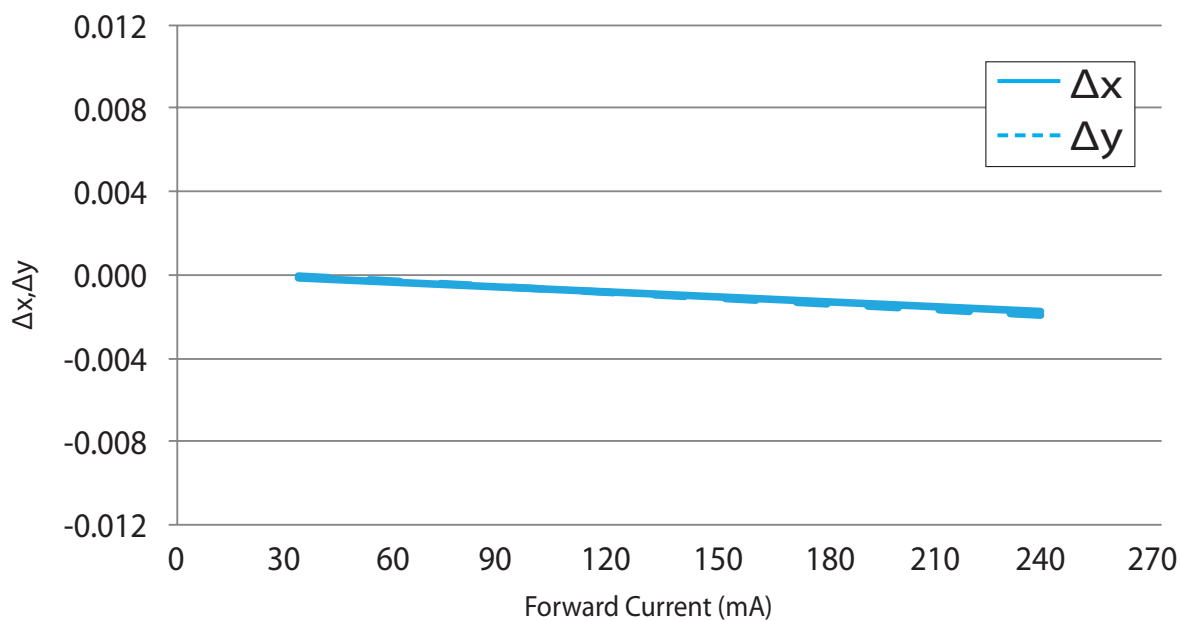
$\Delta x, \Delta y$ vs. Forward Current



$\Delta x, \Delta y$ vs. Forward Current for 2PCA04CW27Pxx001

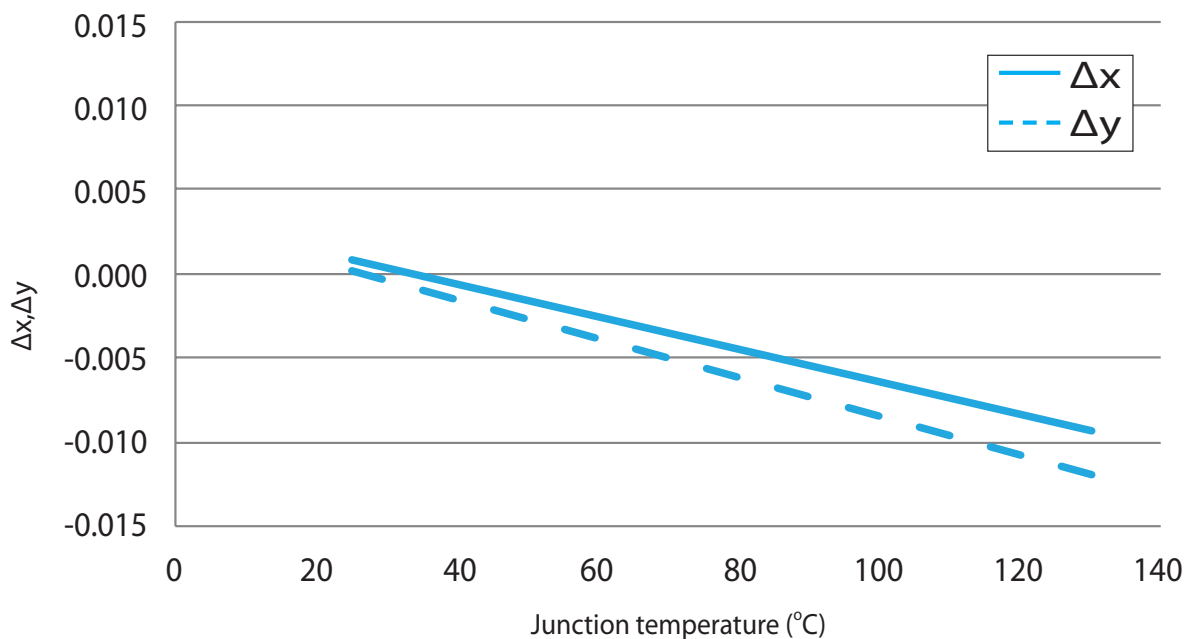


$\Delta x, \Delta y$ vs. Forward Current for 2PCA04NW27Pxx001

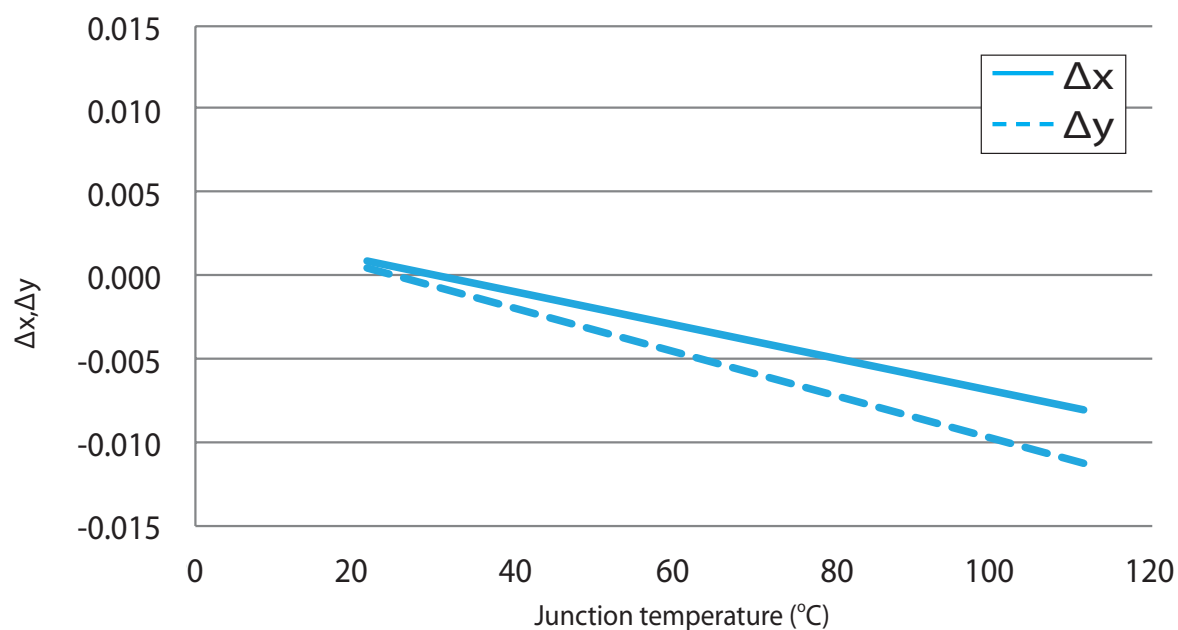


$\Delta x, \Delta y$ vs. Forward Current for 2PCA04WW27Pxx001

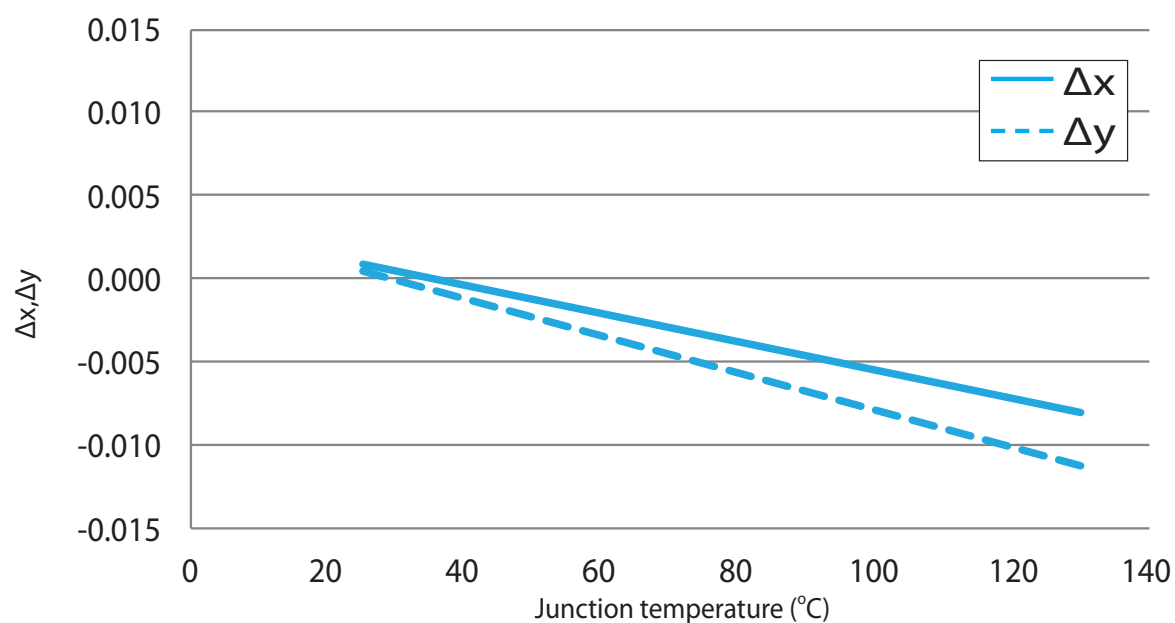
$\Delta x, \Delta y$ vs. Junction Temperature



$\Delta x, \Delta y$ vs. Junction temperature for 2PCAxxCW27Pxx001



Δx, Δy vs. Junction temperature for 2PCAxxNW27Pxx001



Δx, Δy vs. Junction temperature for 2PCAxxWW27Pxx001

Reliability

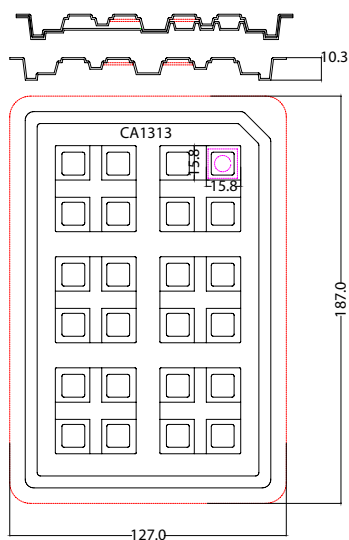
NO .	Test Item	Test Condition	Remark
1	Temperature Cycle	-40°C~100°C 30, 30, mins	100 Cycle
2	Thermal Shock	-40°C~100°C 15, 15 mins ≤ 10 sec	100 Cycle
3	Moisture Resistance	25°C~65°C 90% RH 24 hrs / 1 cycle	10 Cycle
4	High-Temperature Storage	T _A =100°C	1,000 hrs
5	Humidity Heat Storage	T _A =85°C RH=85%	1,000 hrs
6	Low-Temperature Storage	T _A =-40°C	1,000 hrs
7	Operation Life test	25°C	6,000 hrs
8	High Temperature Operation Life test	85°C	1,000 hrs
9	High Humidity Heat Life Test	85°C, 85%RH	1,000 hrs
10	ON/OFF Test	30 sec ON, 30 sec OFF	1.5W times

Failure Criteria

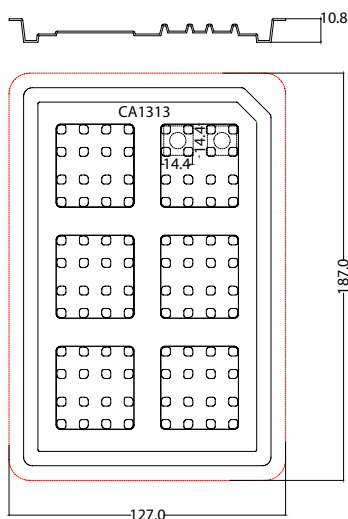
Item	Criteria for Judgment	
	Min.	Max.
Lumen Maintenance	85%	-
$\Delta u'v'$	-	0.006
Forward Voltage	-	Initial Data x 1.1
Reverse Current	-	10 μ A
Resistance to Soldering Heat	No dead lamps or visual damage	

Product Packaging Information

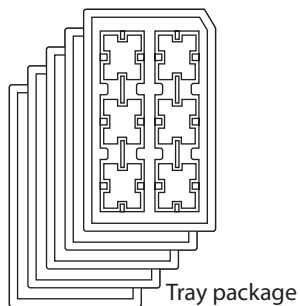
2PCA04xW27Pxx001



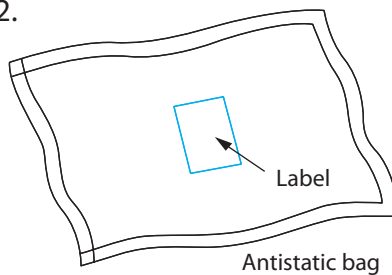
Tray package dimension.



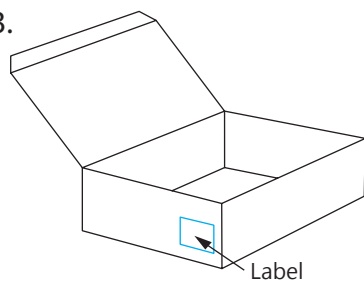
1.



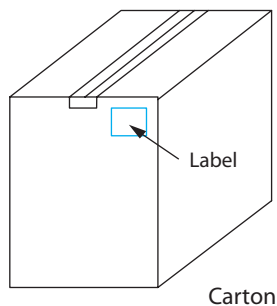
2.



3.



4.

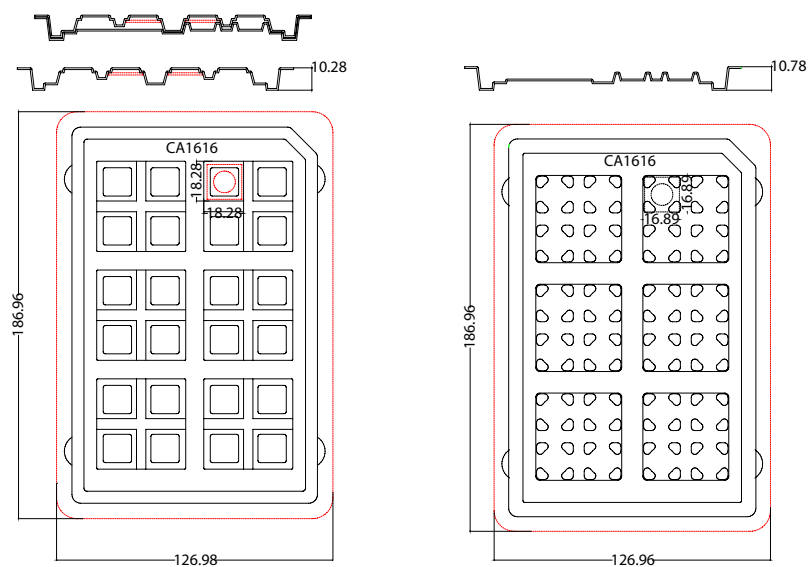


Packaging items for CAC Series

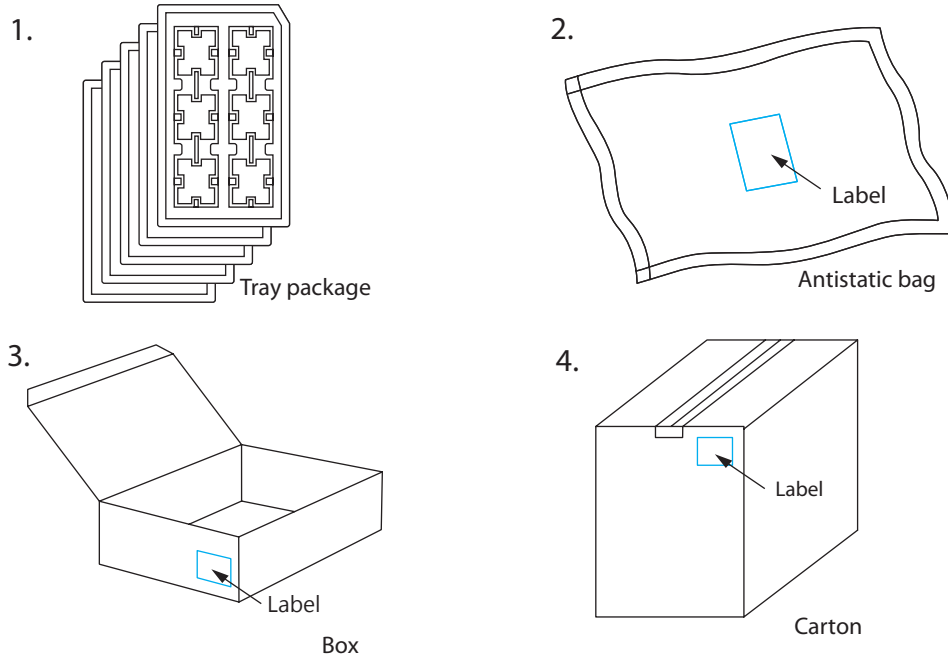
Notes:

1. All dimensions are in mm.
2. 4W: 24pcs emitters in a full tray.
3. There are 5 trays in a bag.
4. There are 10 bags in a box.
5. There are 10 boxes in a carton.
6. A bag contains one humidity indicator card and drying agent.

2PCA07xW27Pxx001



Tray package dimension.



Packaging items for CAC Series

Notes:

1. All dimensions are in mm.
2. 7W: 24pcs emitters in a full tray.
3. There are 5 trays in a bag.
4. There are 10 bags in a box.
5. There are 10 boxes in a carton.
6. A bag contains one humidity indicator card and drying agent.

Revision History

Versions	Description	Release Date
1	Establish order code information	2014/04/16
2	1. Update Reliability 2. Revise Chromaticity coordinates	2014/09/04

About Edison Opto

Edison Opto is a leading manufacturer of high power LED and a solution provider experienced in LDMS. LDMS is an integrated program derived from the four essential technologies in LED lighting applications- Thermal Management, Electrical Scheme, Mechanical Refinement, Optical Optimization, to provide customer with various LED components and modules. More Information about the company and our products can be found at www.edison-opto.com

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