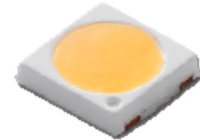


# 3030 LED

## PLW3030AA Series

### Product Datasheet



### Description

Plessey PLW3030AA SMT LEDs are designed for linear tubes, spot lights, bulb replacements and other general lighting applications. The light is emitted close to a Lambertian distribution and hence this SMT package is naturally suitable for backlighting panels and symbols. The LEDs are packed in reels containing 3000 or 1000 pieces; each individual reel will be shipped in single intensity and colour bin, to provide close uniformity.

### Features

- 3030 footprint (3.2 x 3.0 x 0.6mm)
- Hot colour binning (85°C)
- High reliability PLCC packaging
- Diffused pale yellow resin
- 120 degree wide viewing angle

### Applications

- Decoration Lighting
- Instrument panel backlighting
- Illumination symbols
- General lighting
- Signage lighting

Variant	Colour	CCT	
		Min.	Max.
PLW3030AA-2700	Warm White 2700K	2580K	2870K
PLW3030AA-3000	Warm White 3000K	2870K	3220K
PLW3030AA-3500	Warm White 3500K	3220K	3710K
PLW3030AA-4000	Neutral White 4000K	3710K	4260K
PLW3030AA-5000	Neutral White 5000K	4745K	5310K
PLW3030AA-5700	Cool White 5700K	5310K	6020K
PLW3030AA-6500	Cool White 6500K	6020K	7040K

## Absolute Maximum Ratings

$T_{amb} = +25^{\circ}\text{C}$  unless otherwise stated

Parameter	Symbol	Minimum	Maximum	Unit
DC Forward Current	$I_F$	-	265	mA
Peak Pulse Forward Current <sup>[1]</sup>	$I_{FP}$	-	530	mA
Power Dissipation	$P_d$	-	0.9	W
Storage Temperature	$T_{stg}$	-40	+100	$^{\circ}\text{C}$
Junction Temperature	$T_j$	-40	+125	$^{\circ}\text{C}$

<sup>[1]</sup> Pulse width  $\leq 10\text{ms}$ , duty cycle  $\leq 10\%$

## Electro-optical Characteristics

$T_{amb} = +25^{\circ}\text{C}$  unless otherwise stated

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	$V_F$	$I_F = 65\text{mA}$	2.8	2.85	3.1	V
Reverse Current	$I_R$	$V_R = 5\text{V}$	-	-	10	$\mu\text{A}$
Colour Rendering Index	CRI	$I_F = 65\text{mA}$	80			%
Thermal Resistance	$R_{thj-sp}$		-	16	-	K/W
Half-Intensity Angle	$2\Theta_{1/2}$	$I_F = 65\text{mA}$	-	120	-	deg

## Recommended Operating Conditions

In typical applications, for optimum LED performance

Parameter	Symbol	Minimum	Maximum	Unit
Operating Ambient Temperature	$T_{opr}$	-40	+100	$^{\circ}\text{C}$

## Ordering Information

Name	Order Code	Luminous Flux Range	Forward Voltage Range
PLW3030AA-2700	PLW3030AAW27000	1A, 2A	V1-V3
PLW3030AA-3000	PLW3030AAW30000		
PLW3030AA-3500	PLW3030AAW35000		
PLW3030AA-4000	PLW3030AAN40000	2A, 3A	
PLW3030AA-5000	PLW3030AAN50000		
PLW3030AA-5700	PLW3030AAC57000		
PLW3030AA-6500	PLW3030AAC65000		

### Intensity Bin Groups

$I_F = 65\text{mA}$ ,  $T_{\text{amb}} = +25^\circ\text{C}$ , unless otherwise stated

Group	Luminous flux <sup>[1]</sup> (lm)	
	Min.	Max.
1A	25	28
2A	28	31
3A	31	36

<sup>[1]</sup> Tolerance  $\pm 7\%$

### Forward Voltage Bin Groups

$I_F = 65\text{mA}$ ,  $T_{\text{amb}} = +25^\circ\text{C}$ , unless otherwise stated

Group	$V_F$ <sup>[1]</sup> (V)	
	Min.	Max.
V1	2.8	2.9
V2	2.9	3.0
V3	3.0	3.1

<sup>[1]</sup> Tolerance  $\pm 0.1\text{V}$

### Hot Chromaticity Binning

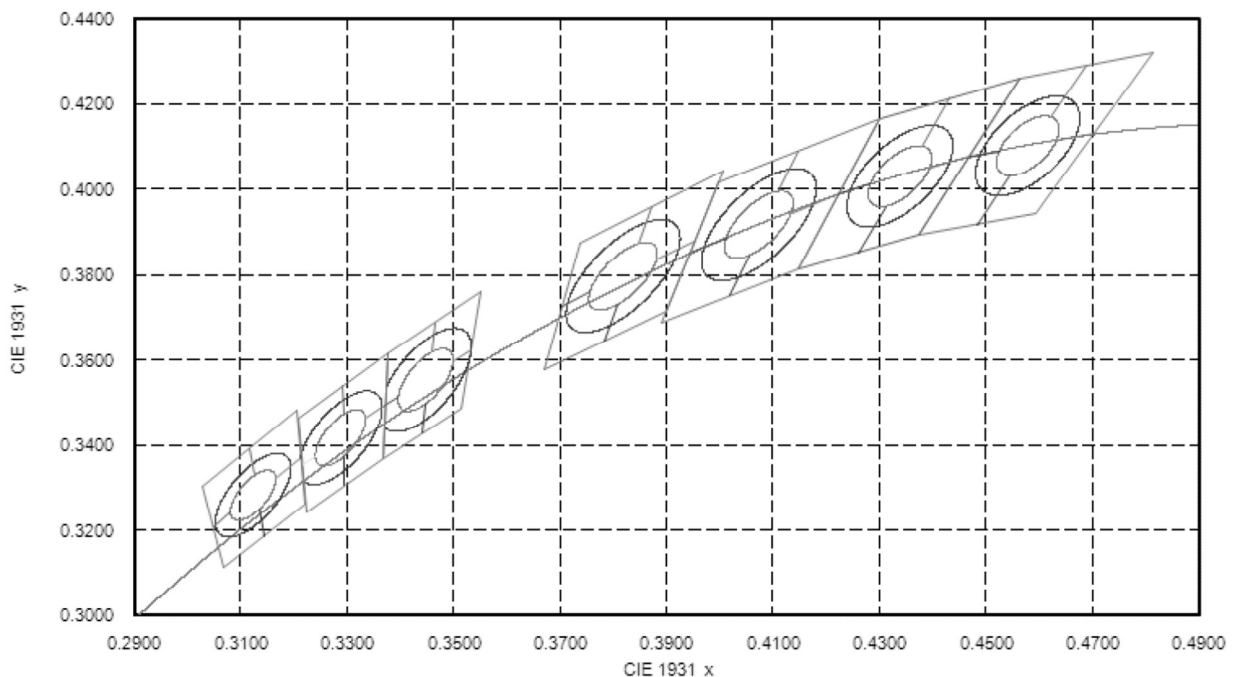


Figure 1. Colour Chromaticity Binning at  $85^\circ\text{C}$  and  $I_F = 65\text{mA}$ .

### Relative Spectral Emission

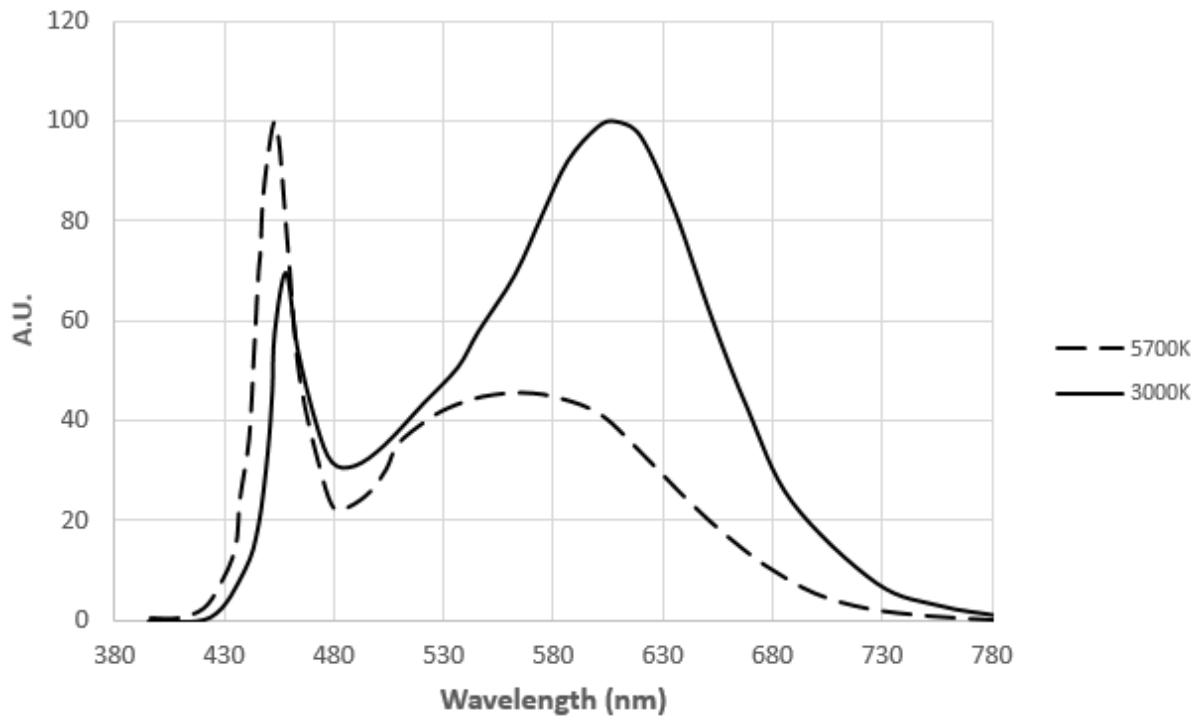


Figure 2. Normalised spectral power distribution (3000K & 5700K)  
 Note: The relative spectral emission corresponds to a random LED sample

### Angular Light Distribution

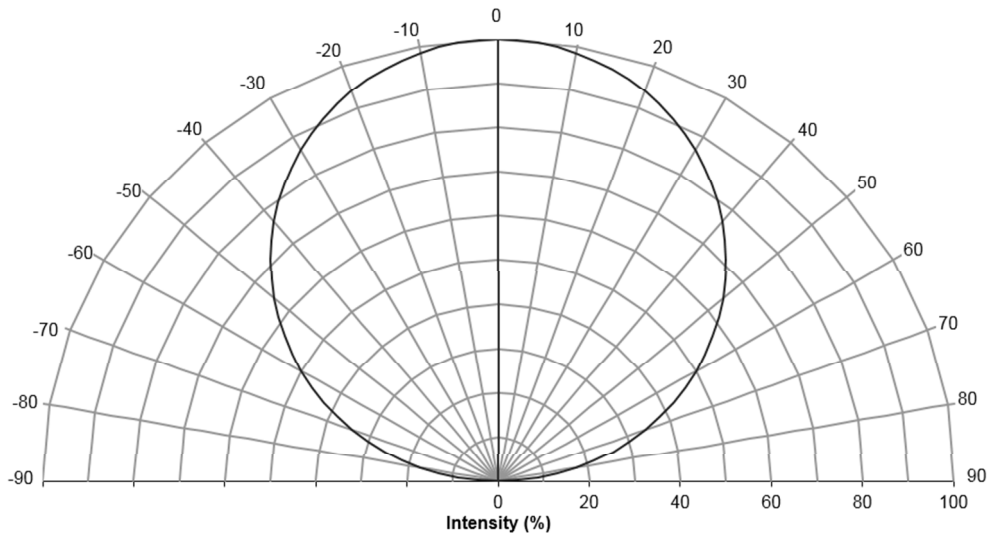


Figure 3. Angular distribution pattern of emitted light

## Colour Chromaticity – Warm White 2700K

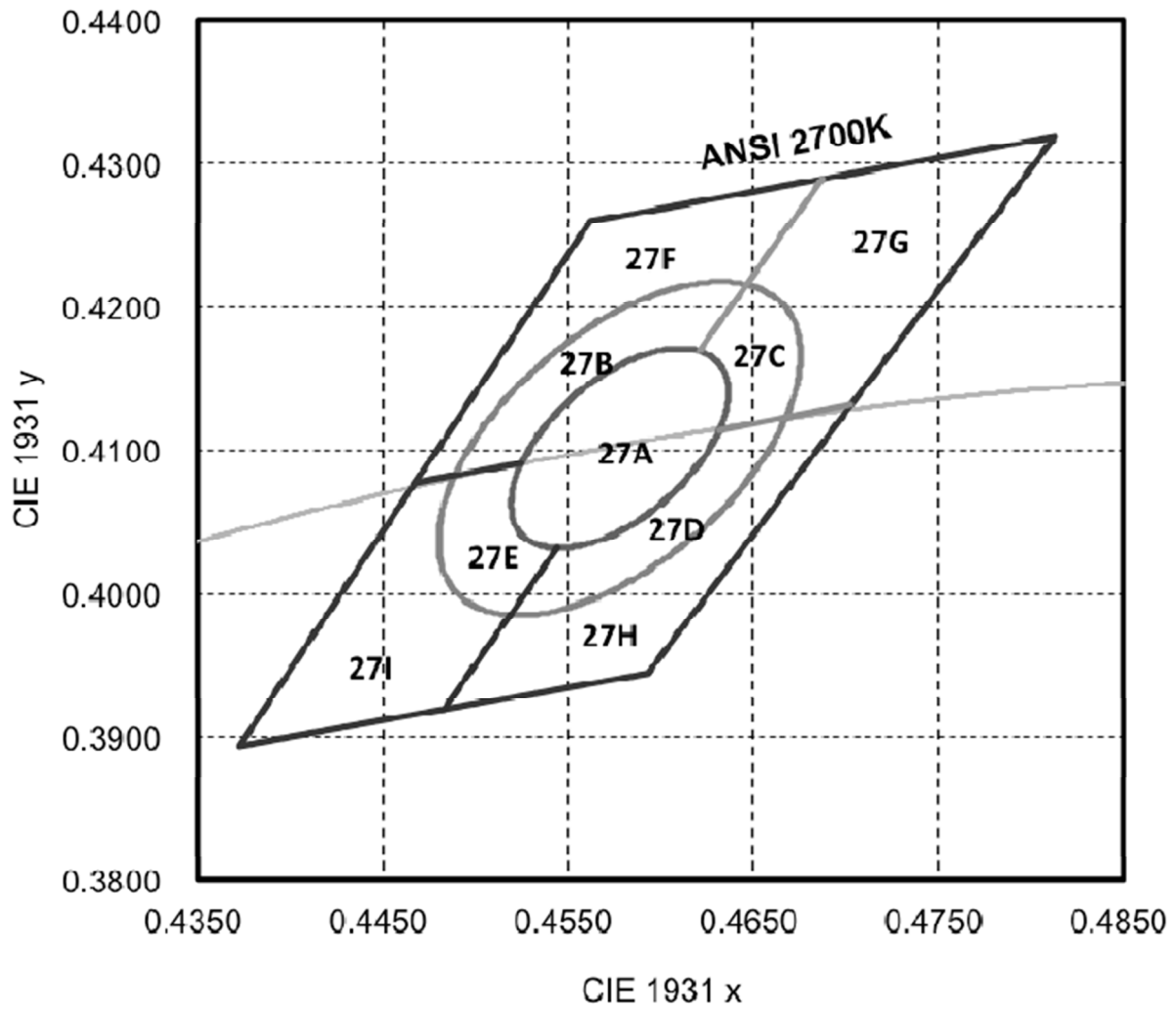


Figure 4A. CIE1931 chromaticity diagram (ANSI standard C78.377-2008)

nom. ANSI CCT	colour space	centre point		ellipse axis		Ellipse rotation angle
		x	y	a	b	
2700K	3SDCM	0.4578	0.4101	0.00810	0.00420	53.7°
	5SDCM			0.01350	0.00700	

### Colour Chromaticity – Warm White 3000K

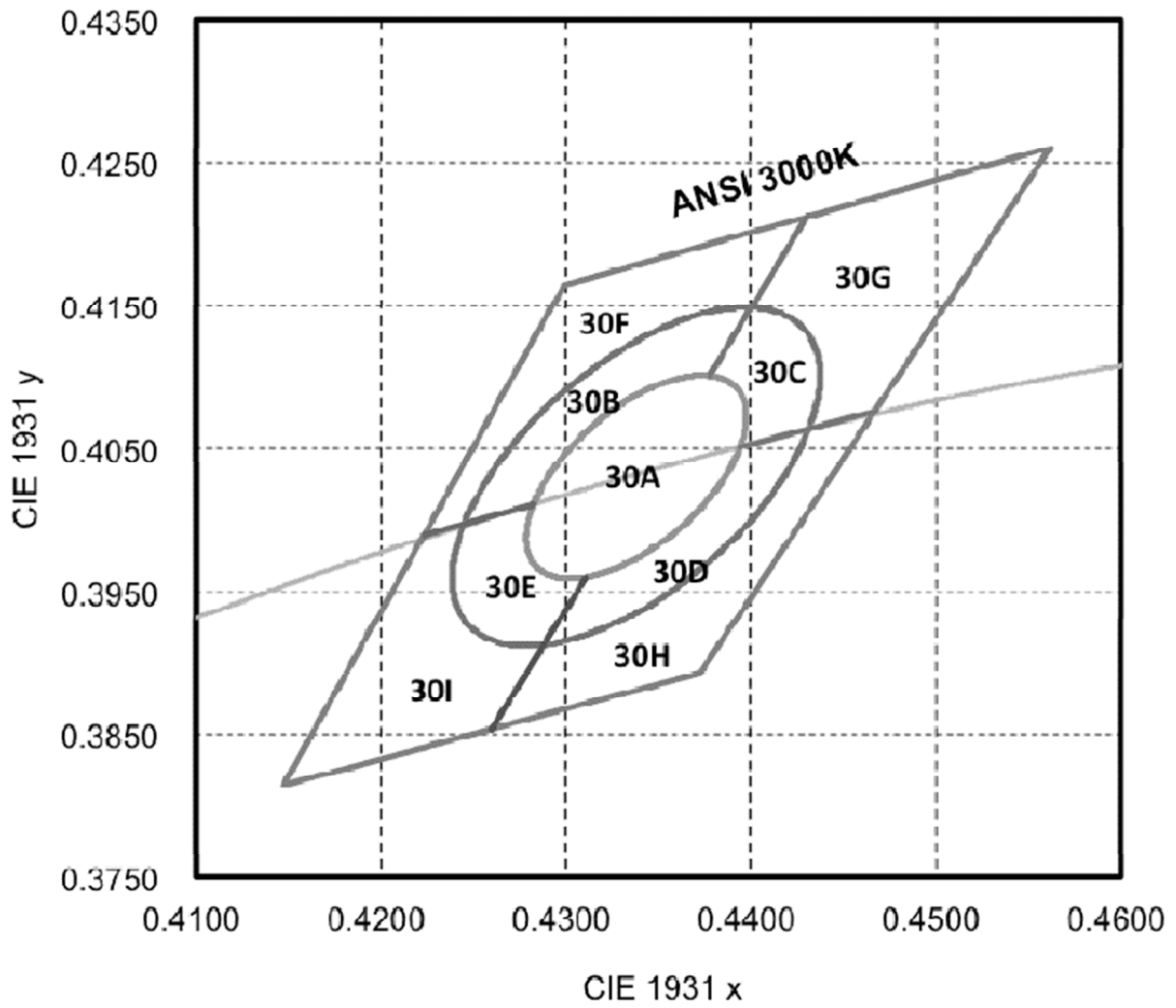


Figure 4B. CIE1931 chromaticity diagram (ANSI standard C78.377-2008)

nom. ANSI CCT	colour space	centre point		ellipse axis		Ellipse rotation angle
		x	y	a	b	
3000K	3SDCM	0.4338	0.4030	0.00834	0.00408	53.22°
	5SDCM			0.01390	0.00680	

### Colour Chromaticity – Warm White 3500K

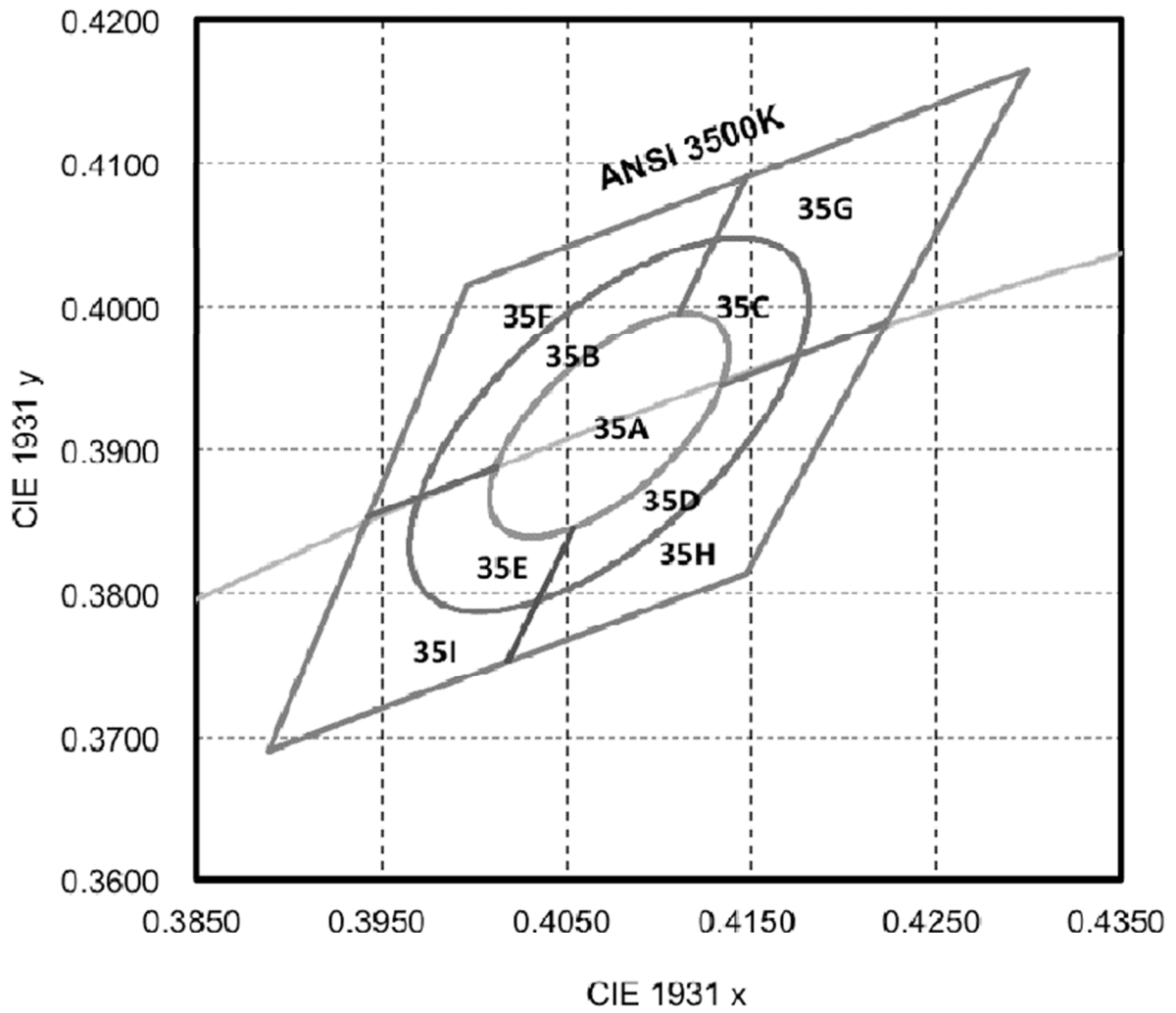


Figure 4C. CIE1931 chromaticity diagram (ANSI standard C78.377-2008)

nom. ANSI CCT	colour space	centre point		ellipse axis		Ellipse rotation angle
		x	y	a	b	
3500K	3SDCM	0.4073	0.3917	0.00927	0.00414	53.22°
	5SDCM			0.01545	0.00690	

## Colour Chromaticity – Neutral White 4000K

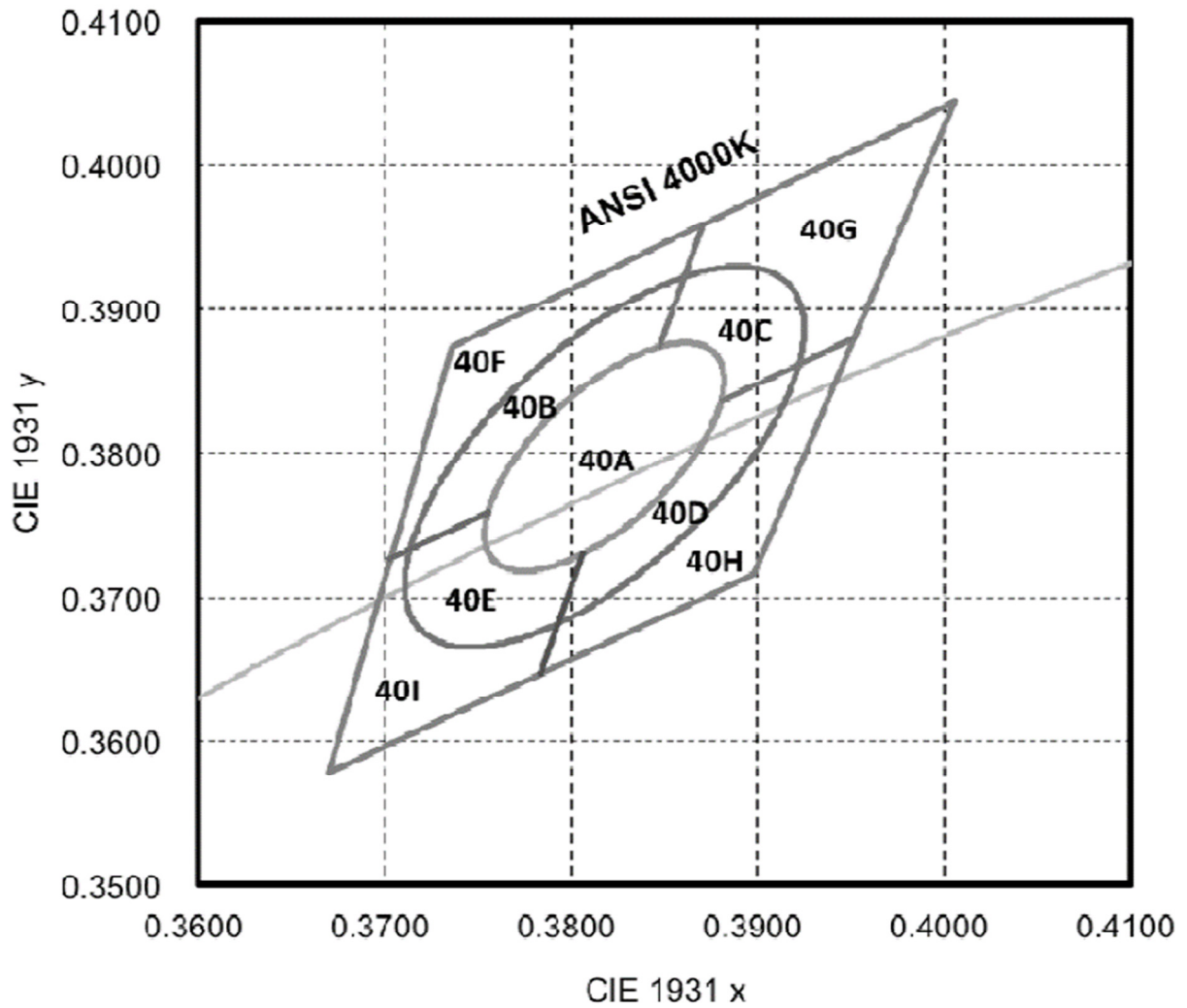


Figure 4D. CIE1931 chromaticity diagram (ANSI standard C78.377-2008)

nom. ANSI CCT	colour space	centre point		ellipse axis		Ellipse rotation angle
		x	y	a	b	
4000K	3SDCM	0.3818	0.3797	0.00939	0.00402	53.72°
	5SDCM			0.01565	0.00670	



### Colour Chromaticity – Neutral White 5000K

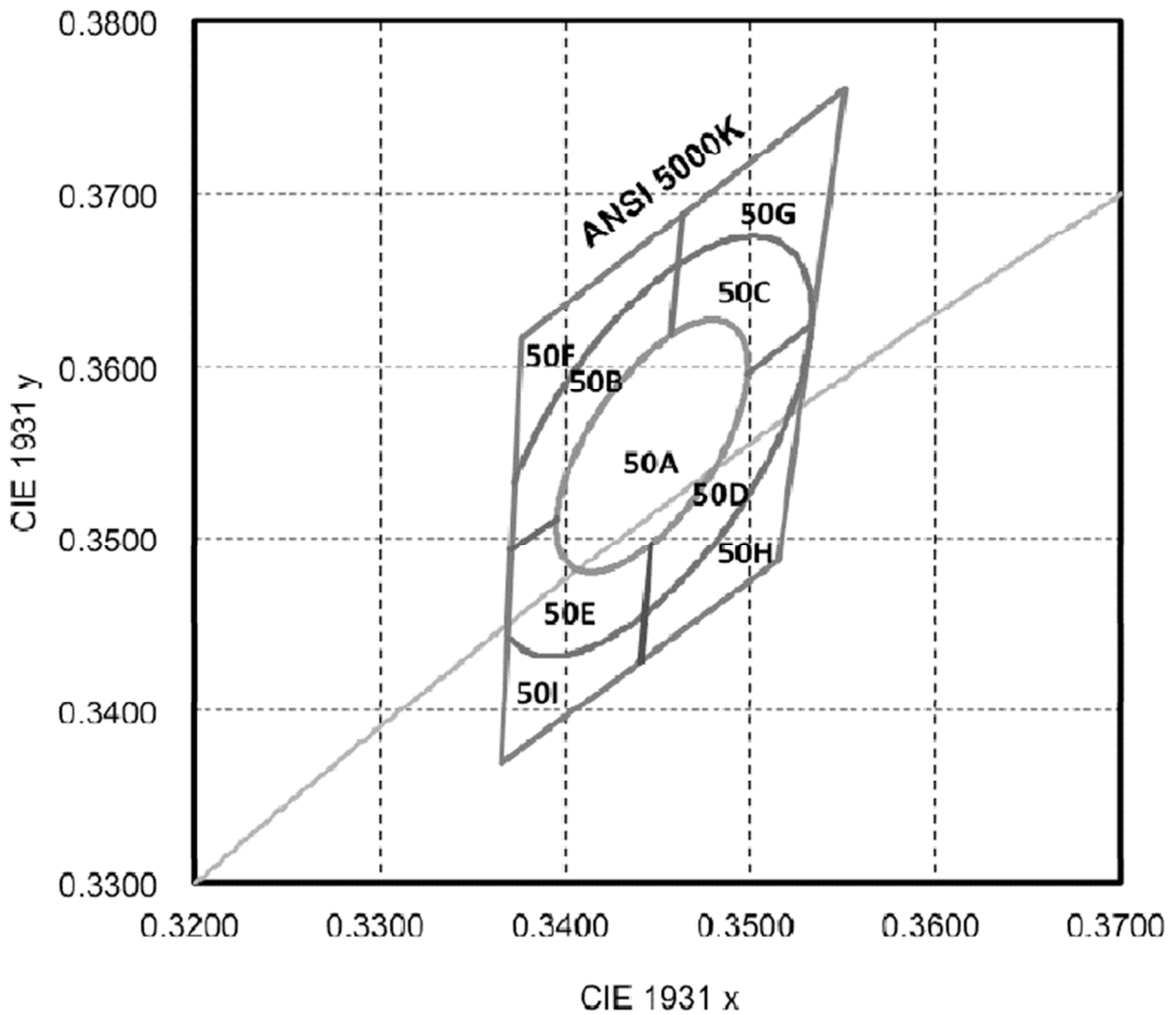


Figure 4E. CIE1931 chromaticity diagram (ANSI standard C78.377-2008)

nom. ANSI CCT	colour space	centre point		ellipse axis		Ellipse rotation angle
		x	y	a	b	
5000K	3SDCM	0.3447	0.3553	0.00822	0.00354	59.62°
	5SDCM			0.01370	0.00590	

### Colour Chromaticity – Cool White 5700K

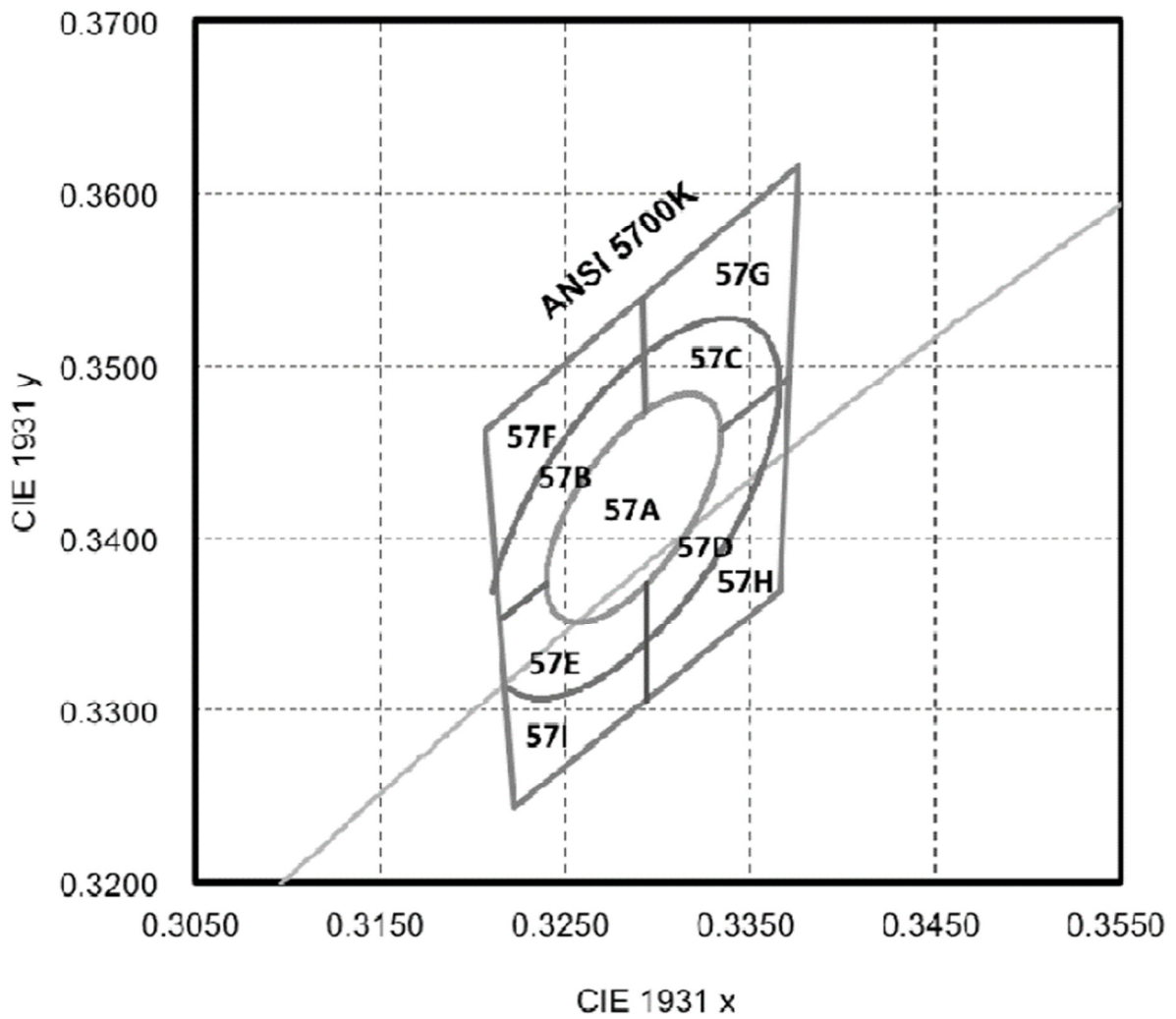


Figure 4F. CIE1931 chromaticity diagram (ANSI standard C78.377-2008)

nom. ANSI CCT	colour space	centre point		ellipse axis		Ellipse rotation angle
		x	y	a	b	
5700K	3SDCM	0.3287	0.3417	0.00746	0.00320	59.09°
	5SDCM			0.01243	0.00533	

### Colour Chromaticity – Cool White 6500K

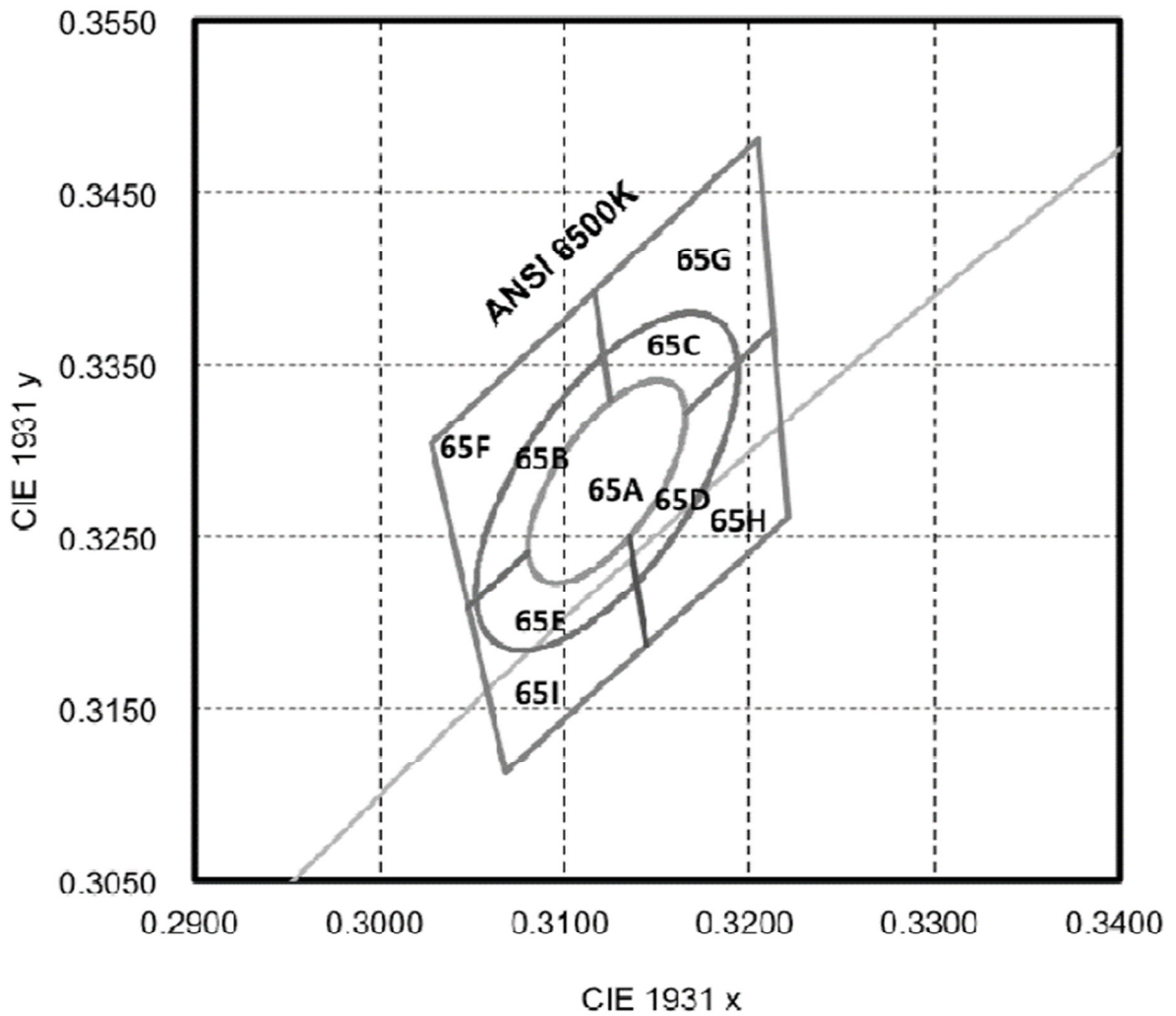


Figure 4G. CIE1931 chromaticity diagram (ANSI standard C78.377-2008)

nom. ANSI CCT	colour space	centre point		ellipse axis		Ellipse rotation angle
		x	y	a	b	
6500K	3SDCM	0.3123	0.3282	0.00669	0.00285	58.57°
	5SDCM			0.01115	0.00475	

### Forward Current Characteristics

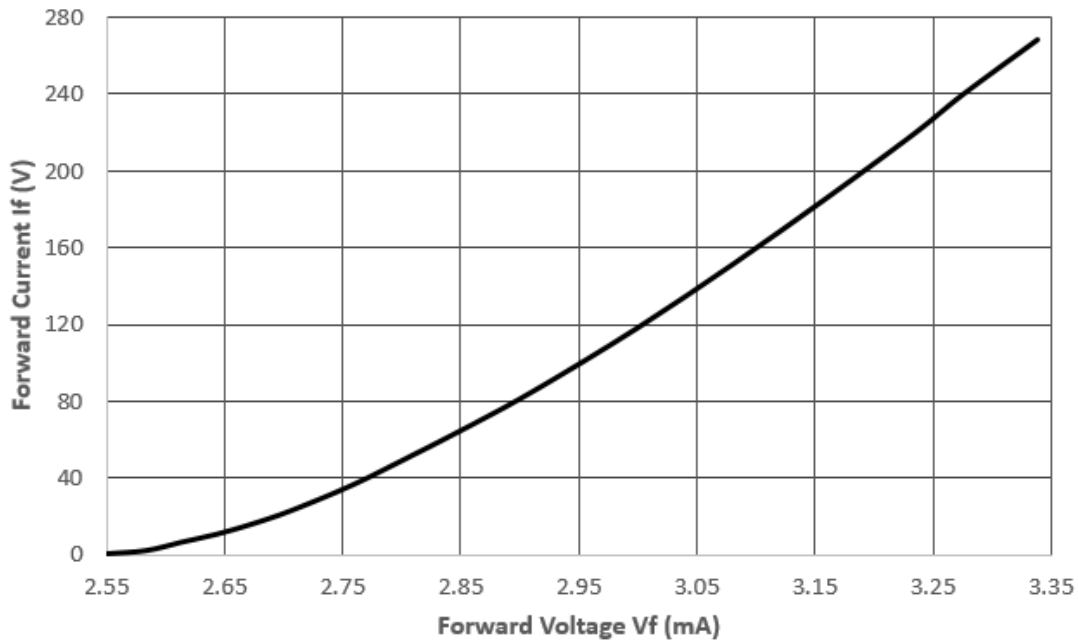


Figure 5. Typical forward current versus forward voltage ( $T_a=+25C$ )

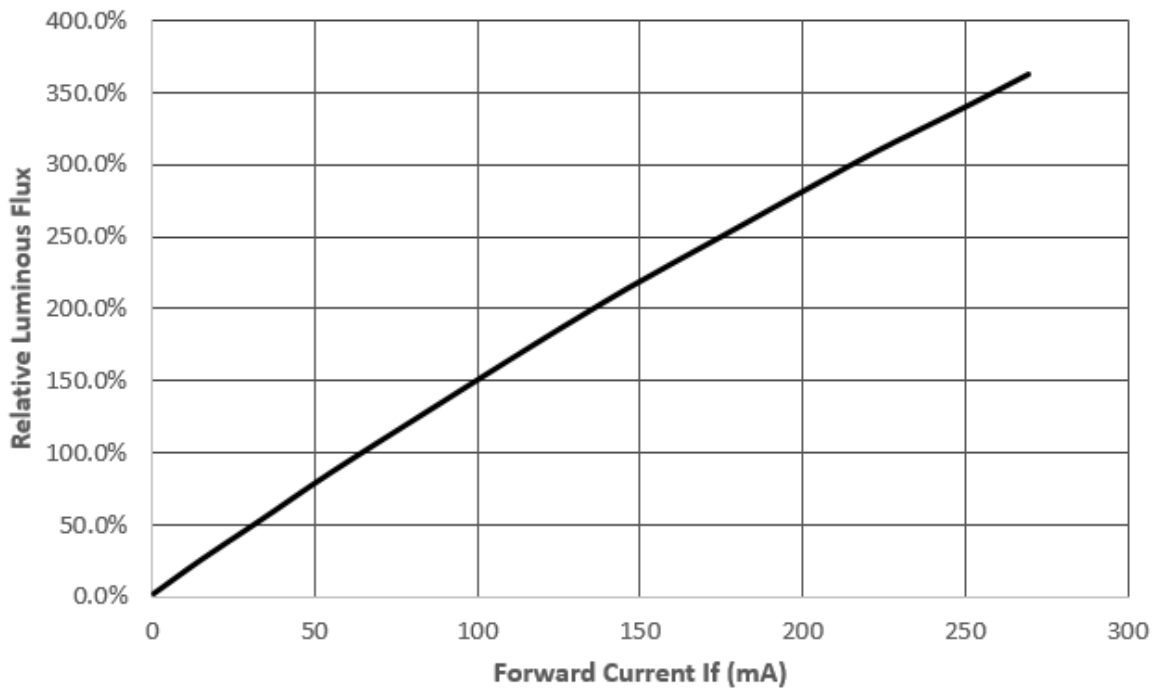


Figure 6. Relative luminous flux versus forward current ( $T_a=+25C$ )

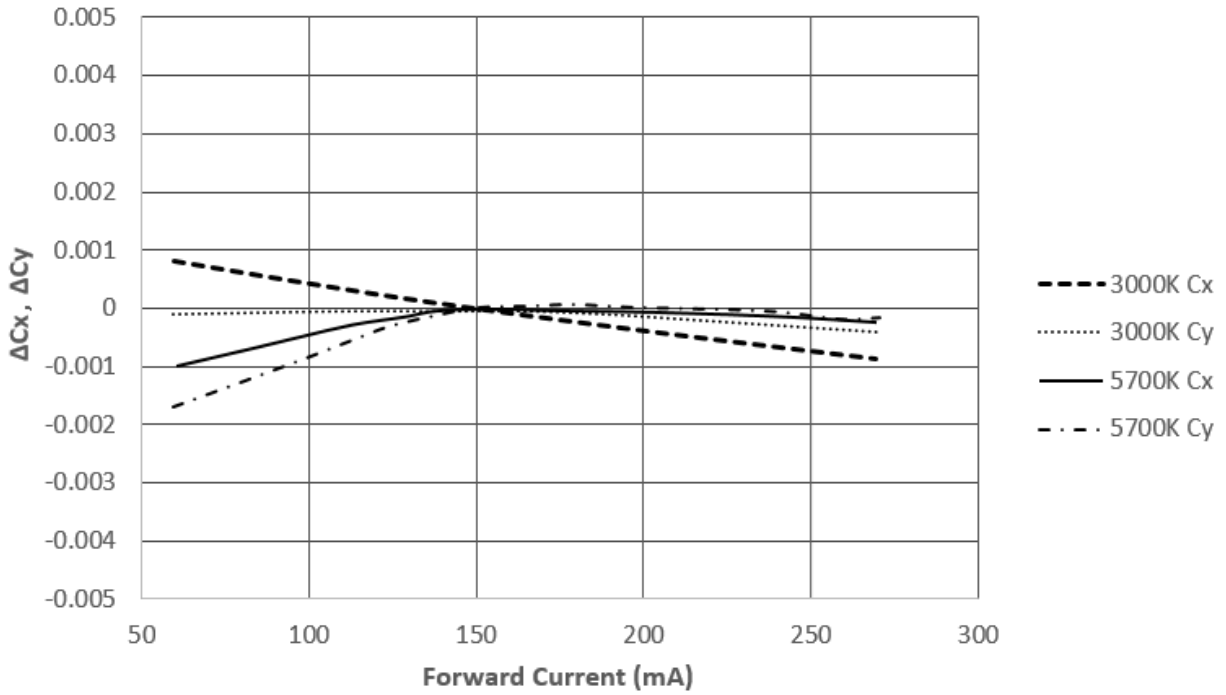


Figure 7. Colour-shift ( $\Delta C_x$ ,  $\Delta C_y$ ) versus forward current ( $T_a=+25C$ , 3000K & 5700K)

### Temperature Characteristics

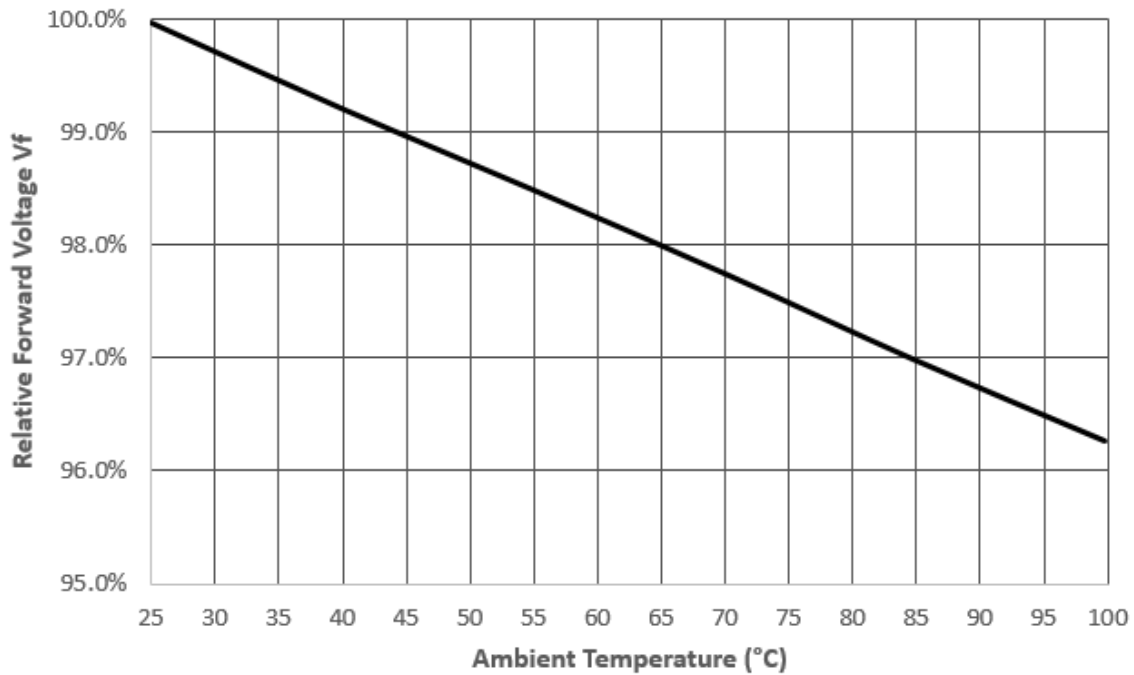


Figure 8. Typical forward voltage versus ambient temperature ( $I_f=65mA$ )

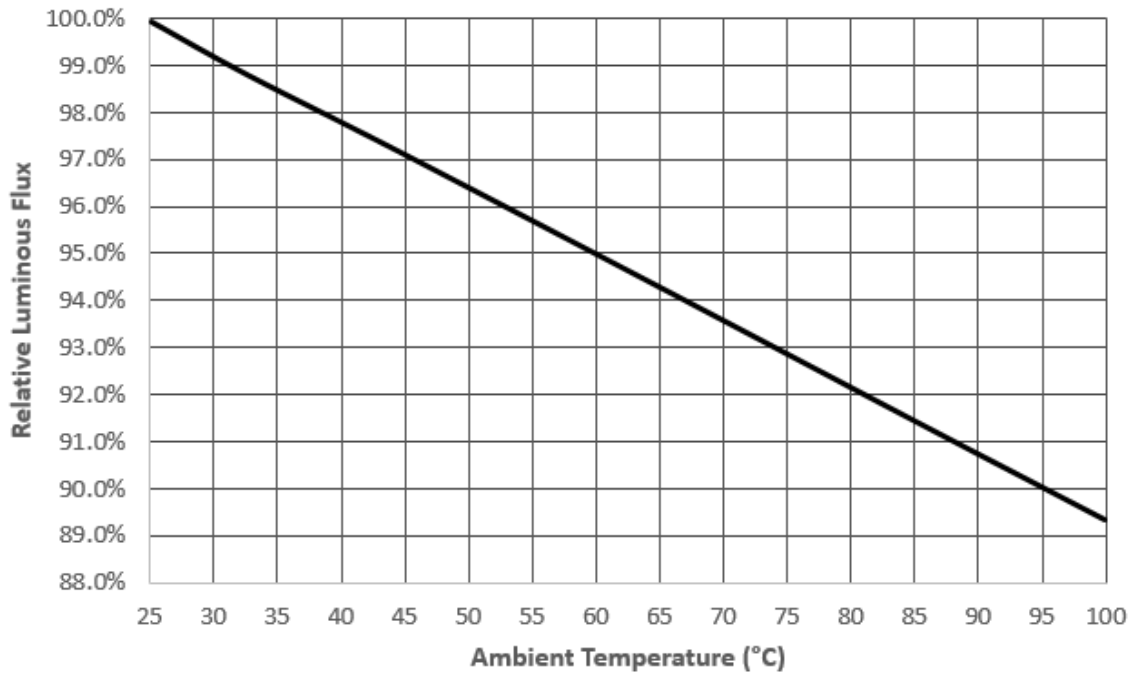


Figure 9. Relative luminous flux versus ambient temperature ( $I_F=65mA$ )

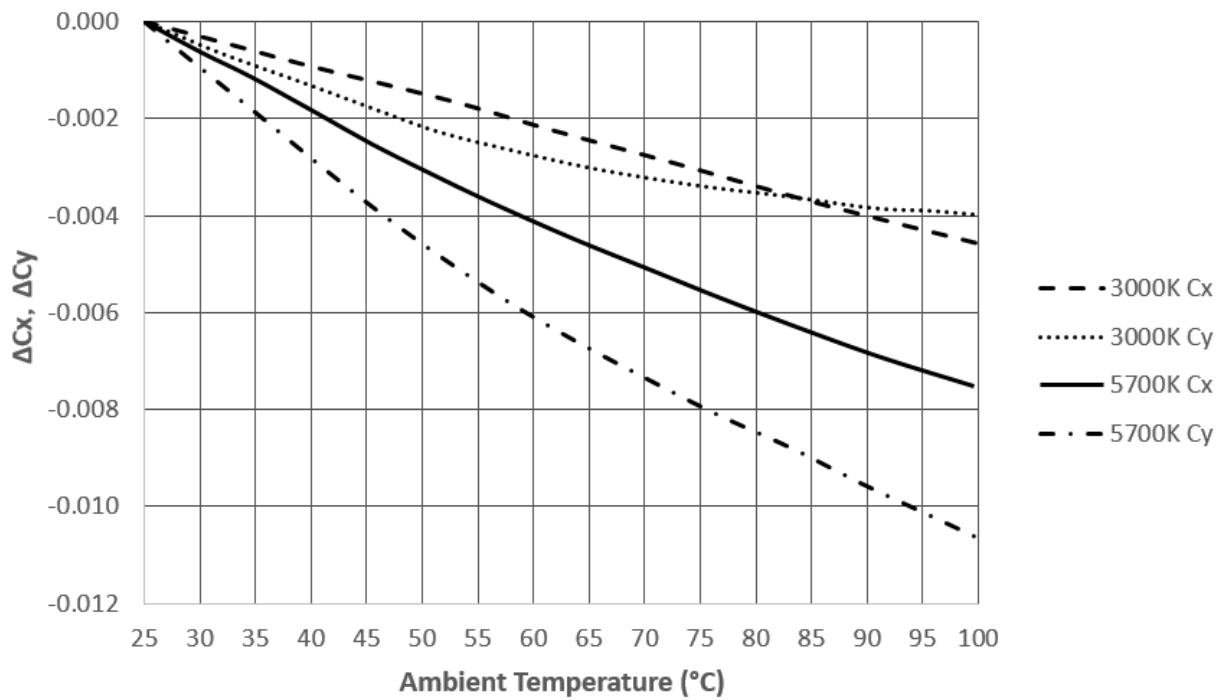


Figure 10. Colour-shift ( $\Delta C_x, \Delta C_y$ ) versus temperature ( $I_F=65mA, 3000K \& 5700K$ )

### Package Outline Dimensions

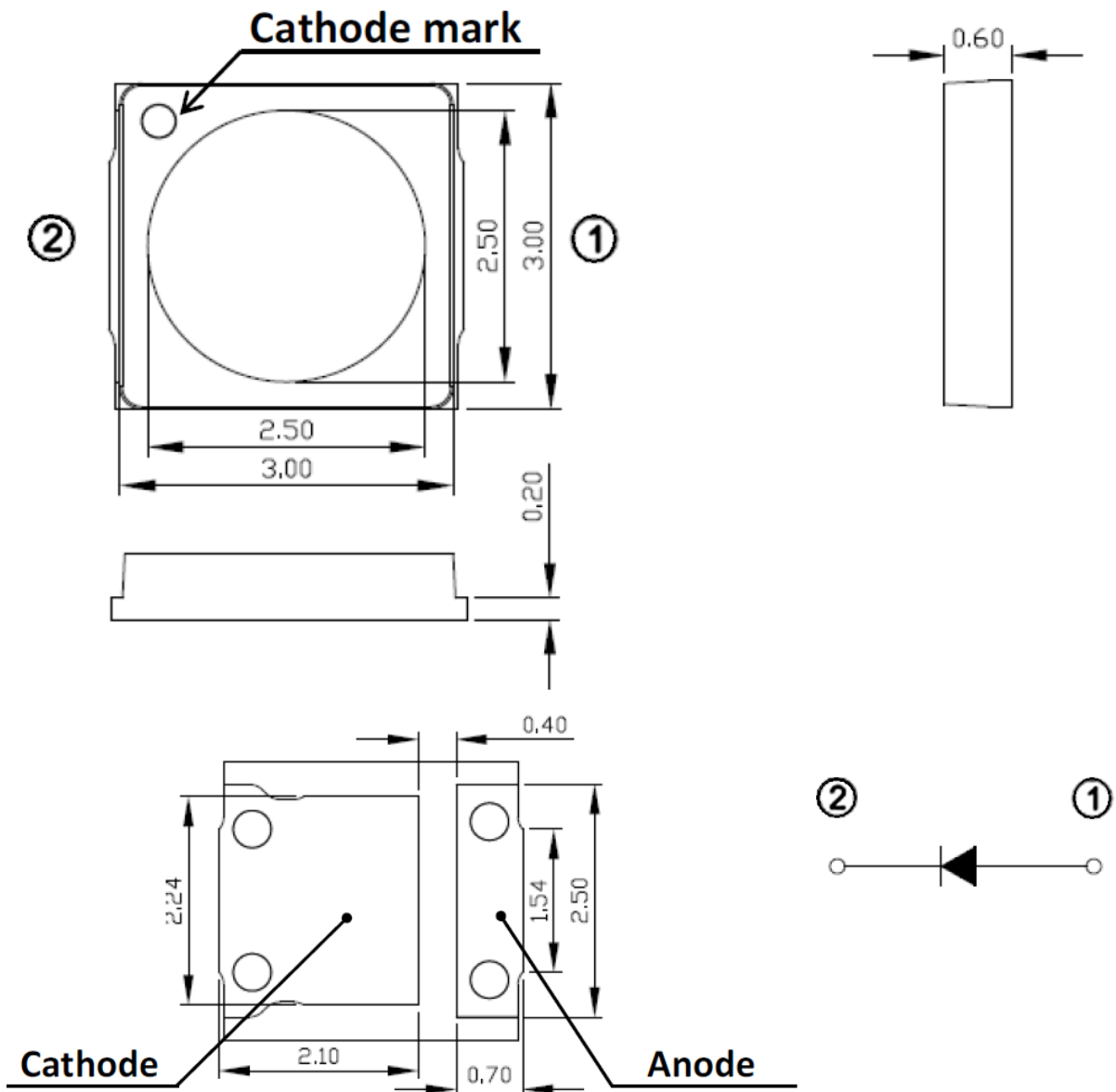


Figure 11. Mechanical drawings of the 3030 package (unit is in mm with  $\pm 0.1$  mm tolerance)

## Recommended Solder Pad

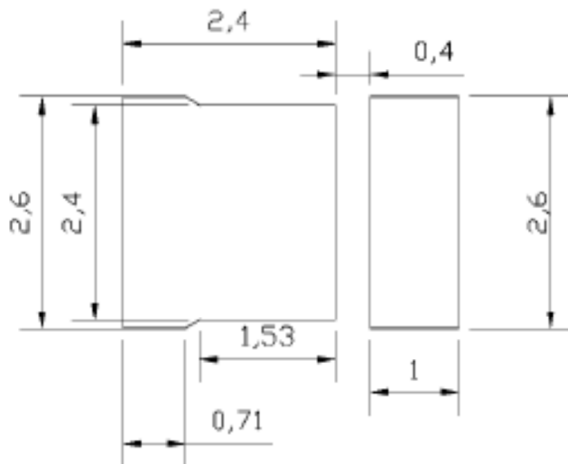


Figure 12. Diagram of soldering pad (unit in mm)

Note: Increased PCB Cu area will reduce the  $T_j$  and increase reliability

## Reflow Soldering Profile

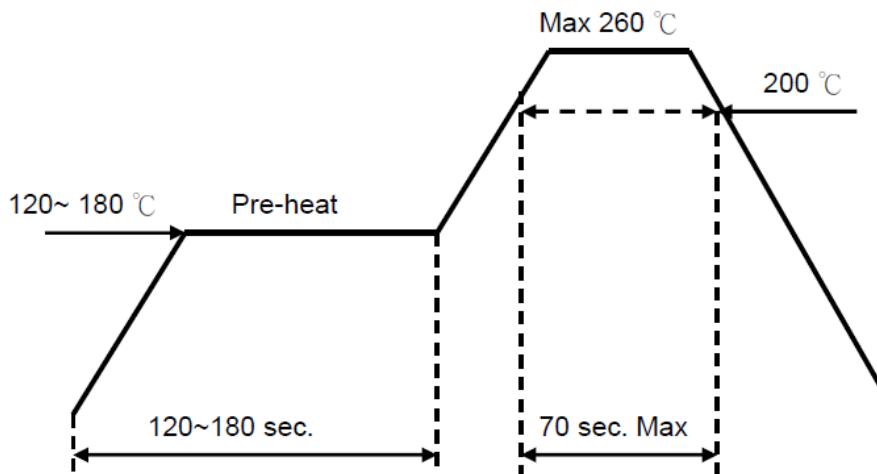


Figure 13. Reflow soldering profile

1. Reflow soldering should not be done more than twice
2. When soldering, do not put stress on the LEDs during heating

### Soldering iron

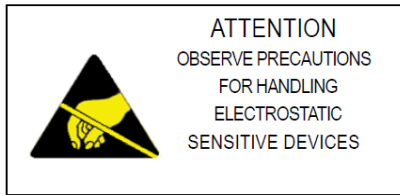
1. When hand soldering, the temperature of the iron must be  $\leq +350^{\circ}\text{C}$  for 3 seconds
2. Hand soldering should be performed only once.



## Handling Instructions

Plessey LEDs are not designed to operate with reverse bias.

Precautions are required to prevent reverse bias in applications and during handling.



## Moisture Sensitivity

JEDEC Level	Floor life		Bake	
	Time	Conditions	Time	Conditions
3	168 hours	$\leq +30^{\circ}\text{C} / 60\% \text{ RH}$	$\geq 82$ hours	$+60^{\circ}\text{C} \pm 5^{\circ}\text{C} / 5\% \text{ RH}$

## Packing Information

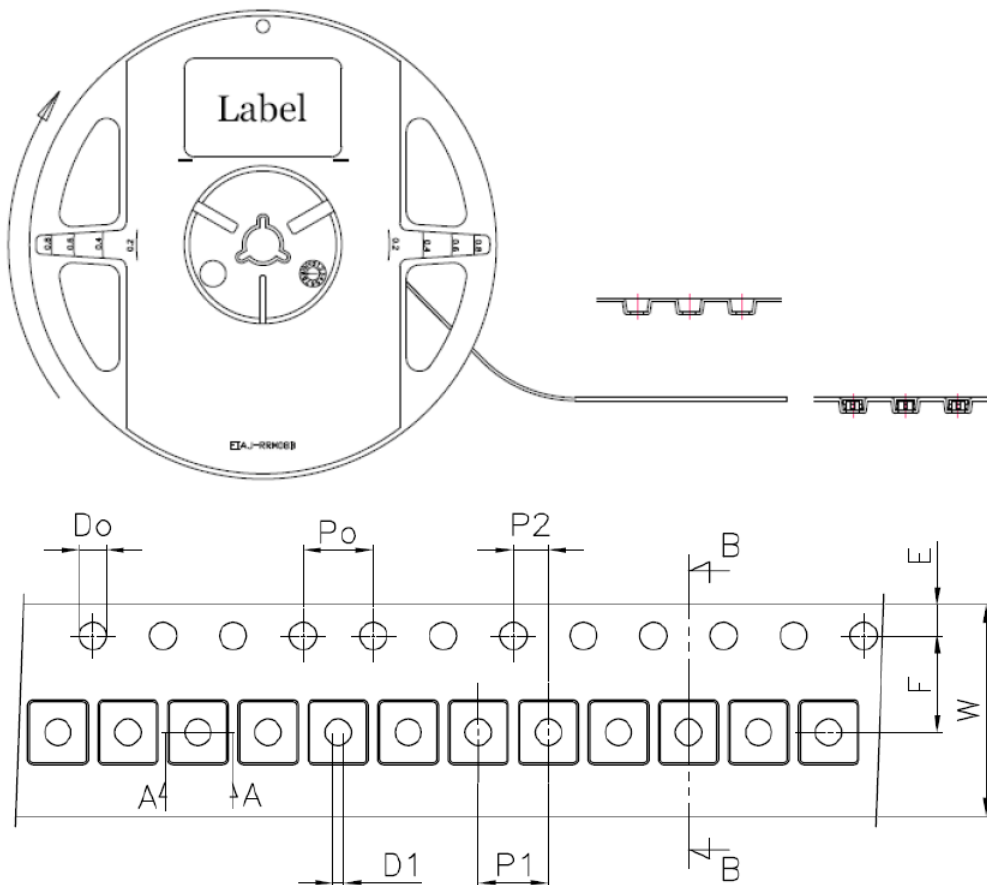


Figure 14. Reel specification (unit in mm)

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