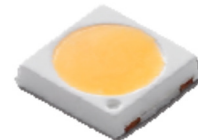


3030 LED

PLW3030DA Series

Product Datasheet



Description

Plessey PLW3030DA 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.
PLW3030DA-2700	Warm White 2700K	2580K	2870K
PLW3030DA-3000	Warm White 3000K	2870K	3220K
PLW3030DA-3500	Warm White 3500K	3220K	3710K
PLW3030DA-4000	Neutral White 4000K	3710K	4260K
PLW3030DA-5000	Neutral White 5000K	4260K	5310K
PLW3030DA-5700	Cool White 5700K	5310K	6020K
PLW3030DA-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 ^[1]	I_{FP}	-	530	mA
Power Dissipation	P_d	-	1.8	W
Storage Temperature	T_{stg}	-40	+100	$^{\circ}\text{C}$
Junction Temperature	T_j	-40	+125	$^{\circ}\text{C}$

^[1] 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	$I_F = 150\text{mA}$	5.8	6.15	6.6	V
Reverse Current	I_R	$V_R = 5\text{V}$	-	-	10	μA
Colour Rendering Index	CRI	$I_F = 150\text{mA}$	80			%
Thermal Resistance	R_{thj-sp}		-	8	-	K/W
Half-Intensity Angle	$2\Theta_{1/2}$	$I_F = 150\text{mA}$	-	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
PLW3030DA-2700	PLW3030DAW27000	1A, 2A, 3A	V1-V4
PLW3030DA-3000	PLW3030DAW30000		
PLW3030DA-3500	PLW3030DAW35000		
PLW3030DA-4000	PLW3030DAN40000	2A, 3A, 4A	
PLW3030DA-5000	PLW3030DAN50000		
PLW3030DA-5700	PLW3030DAC57000		
PLW3030DA-6500	PLW3030DAC65000		

Intensity Bin Groups

$I_F = 150\text{mA}$, $T_{\text{amb}} = +25^\circ\text{C}$, unless otherwise stated

Group	Luminous flux ^[1] (lm)	
	Min.	Max.
1A	106.3	116.9
2A	116.9	128.6
3A	128.6	141.5
4A	141.5	155.7

^[1] Tolerance $\pm 7\%$

Forward Voltage Bin Groups

$I_F = 150\text{mA}$, $T_{\text{amb}} = +25^\circ\text{C}$, unless otherwise stated

Group	V_F ^[1] (V)	
	Min.	Max.
V1	5.8	6.0
V2	6.0	6.2
V3	6.2	6.4
V4	6.4	6.6

^[1] Tolerance $\pm 0.1\text{V}$

Hot Chromaticity Binning

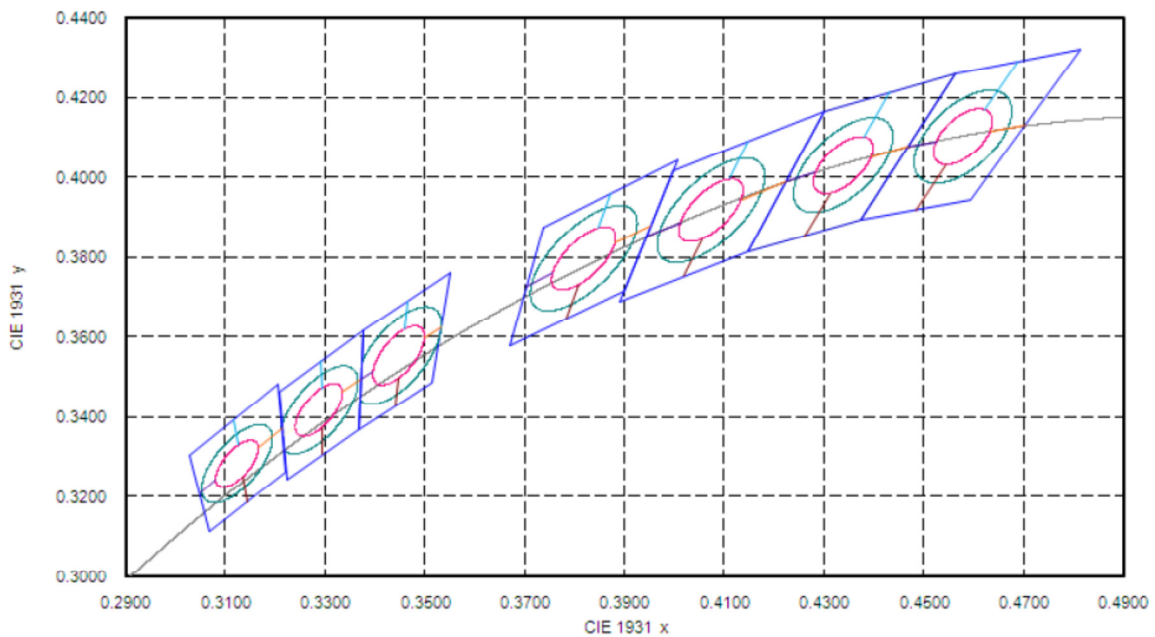


Figure 1. Colour Chromaticity Binning at 85°C

Relative Spectral Emission

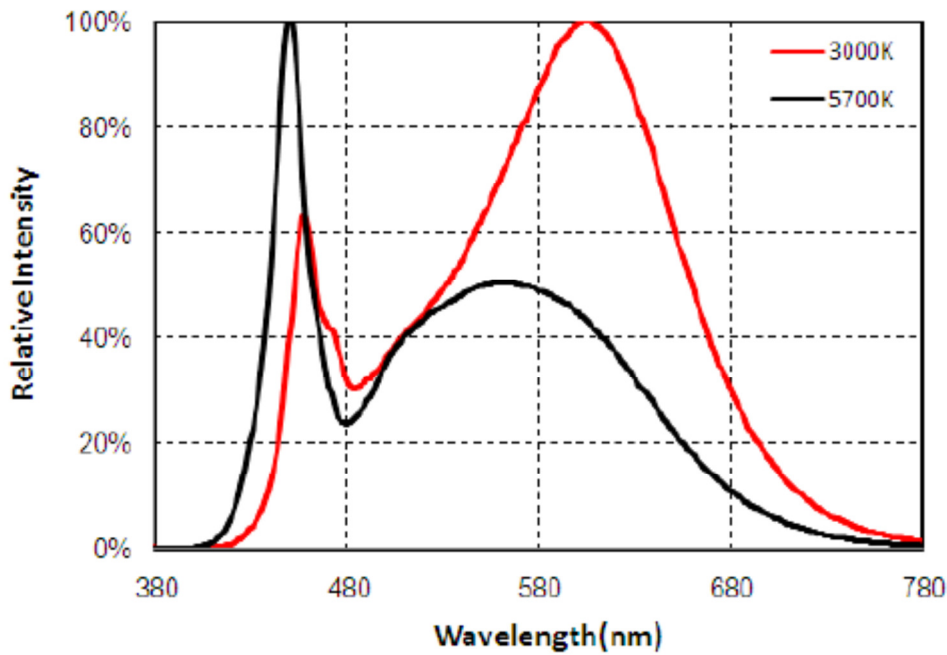


Figure 2. Normalised spectral power distribution (3000K & 5700K)
 Note: The relative spectral emission corresponds to a random LED sample

Angular Light Distribution

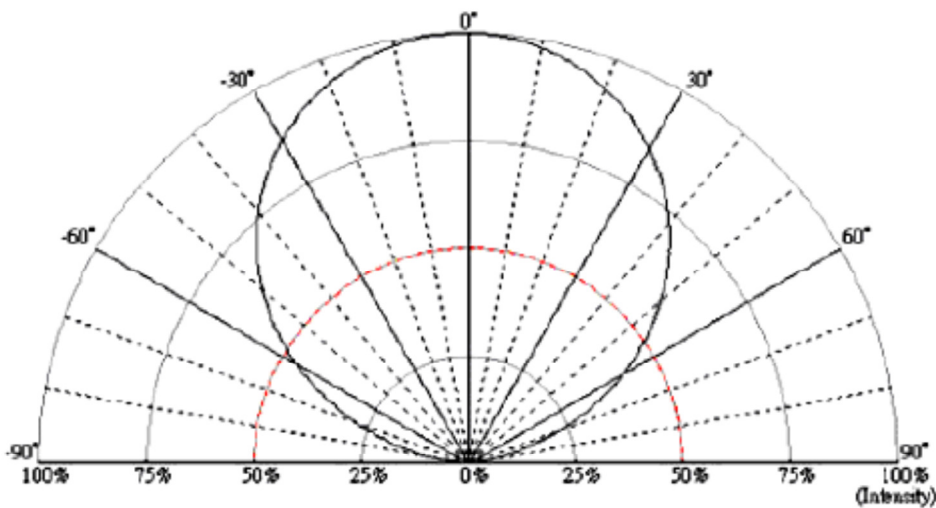


Figure 3. Angular distribution pattern of emitted light

Colour Chromaticity – Warm White 2700K

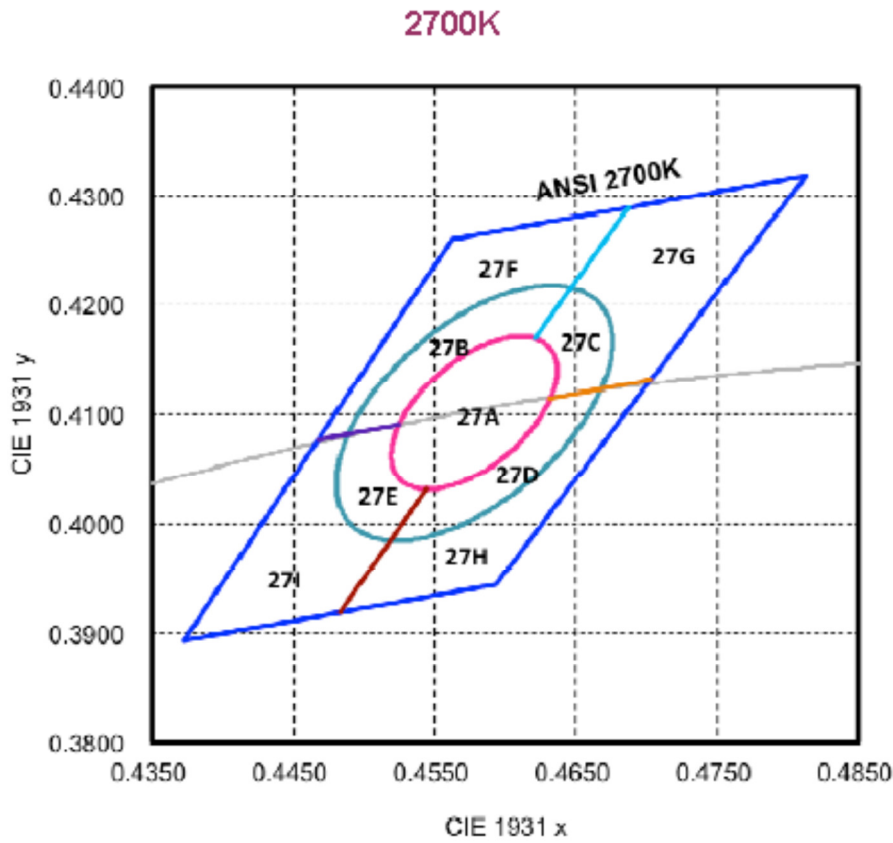


Figure 4A. CIE1931 chromaticity diagram (ANSI standard C78.377-2008)

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

3000K

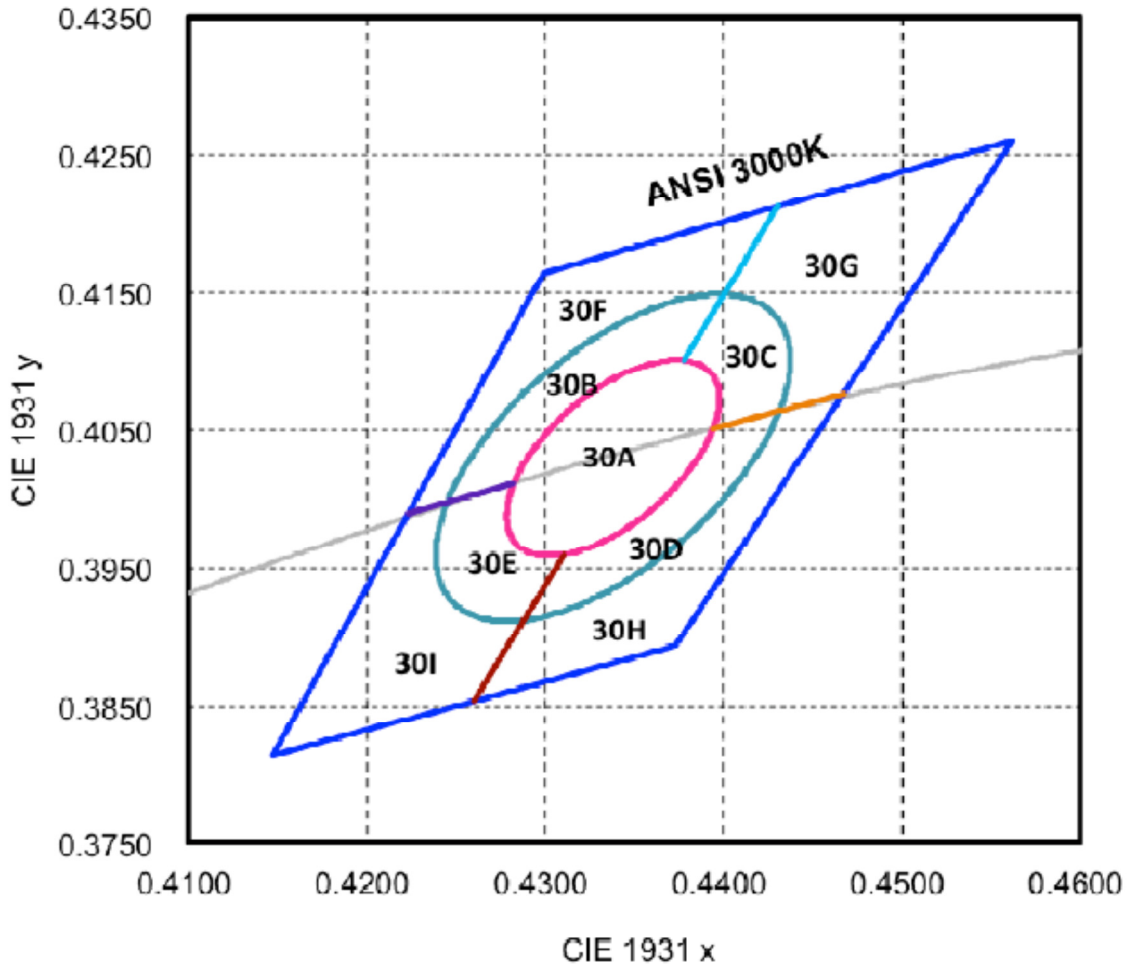


Figure 4B. CIE1931 chromaticity diagram (ANSI standard C78.377-2008)

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

3500K

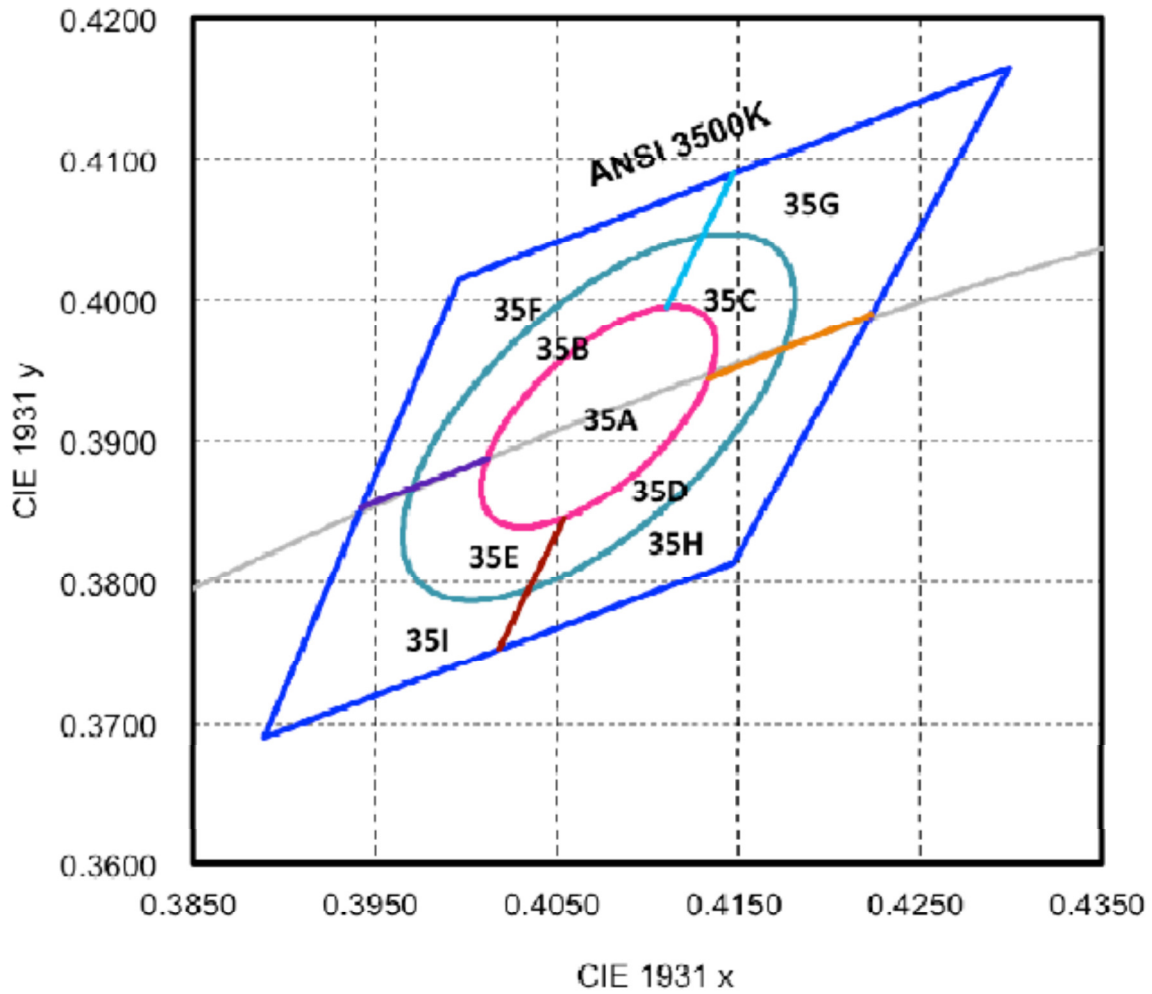


Figure 4C. CIE1931 chromaticity diagram (ANSI standard C78.377-2008)

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

4000K

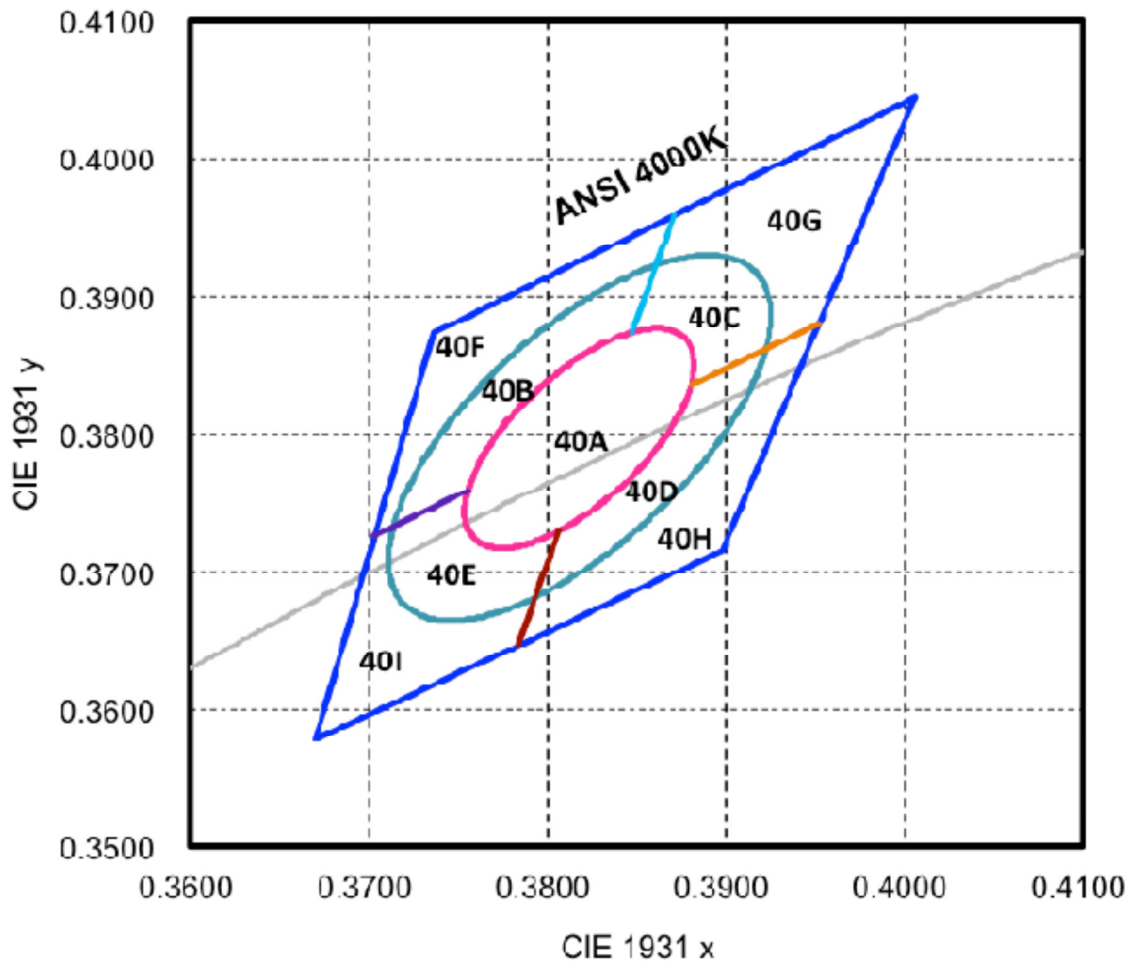


Figure 4D. CIE1931 chromaticity diagram (ANSI standard C78.377-2008)

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

5000K

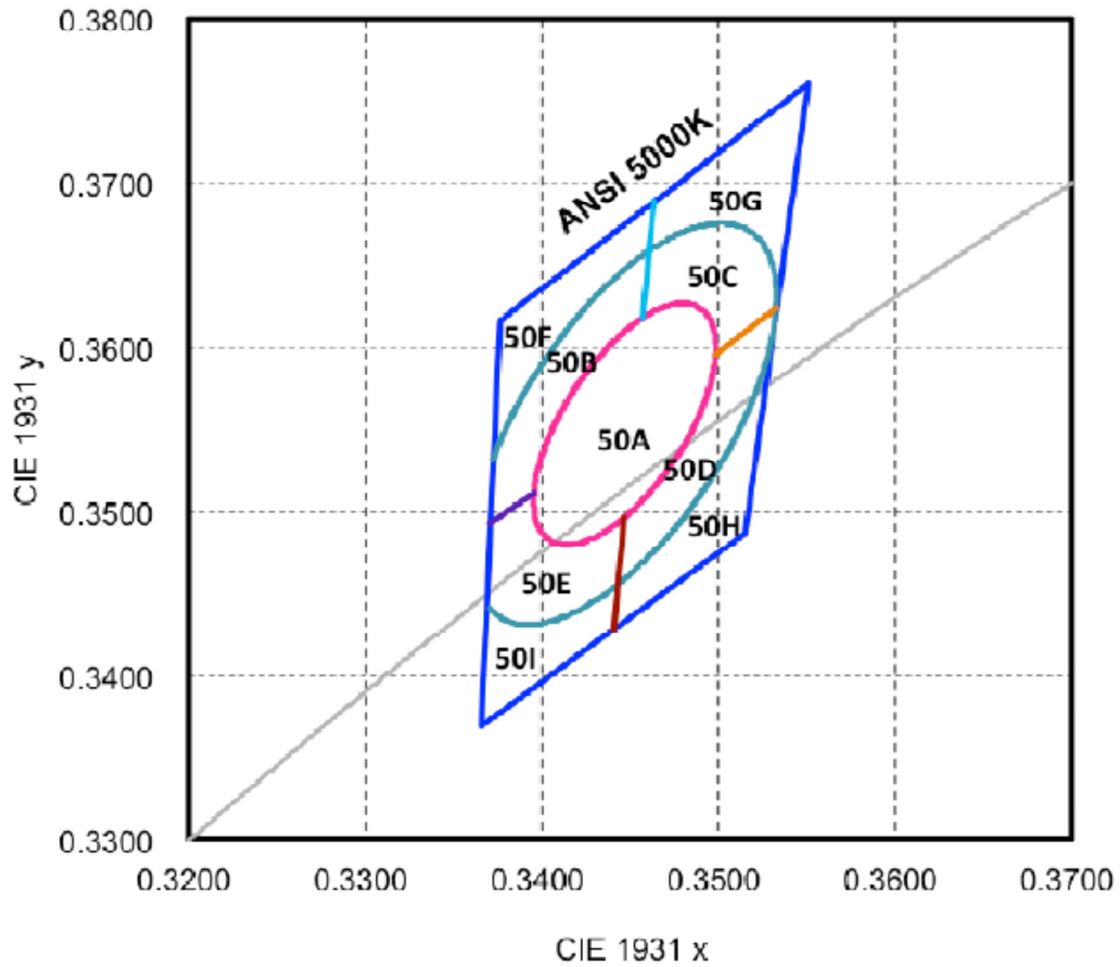


Figure 4E. CIE1931 chromaticity diagram (ANSI standard C78.377-2008)

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

5700K

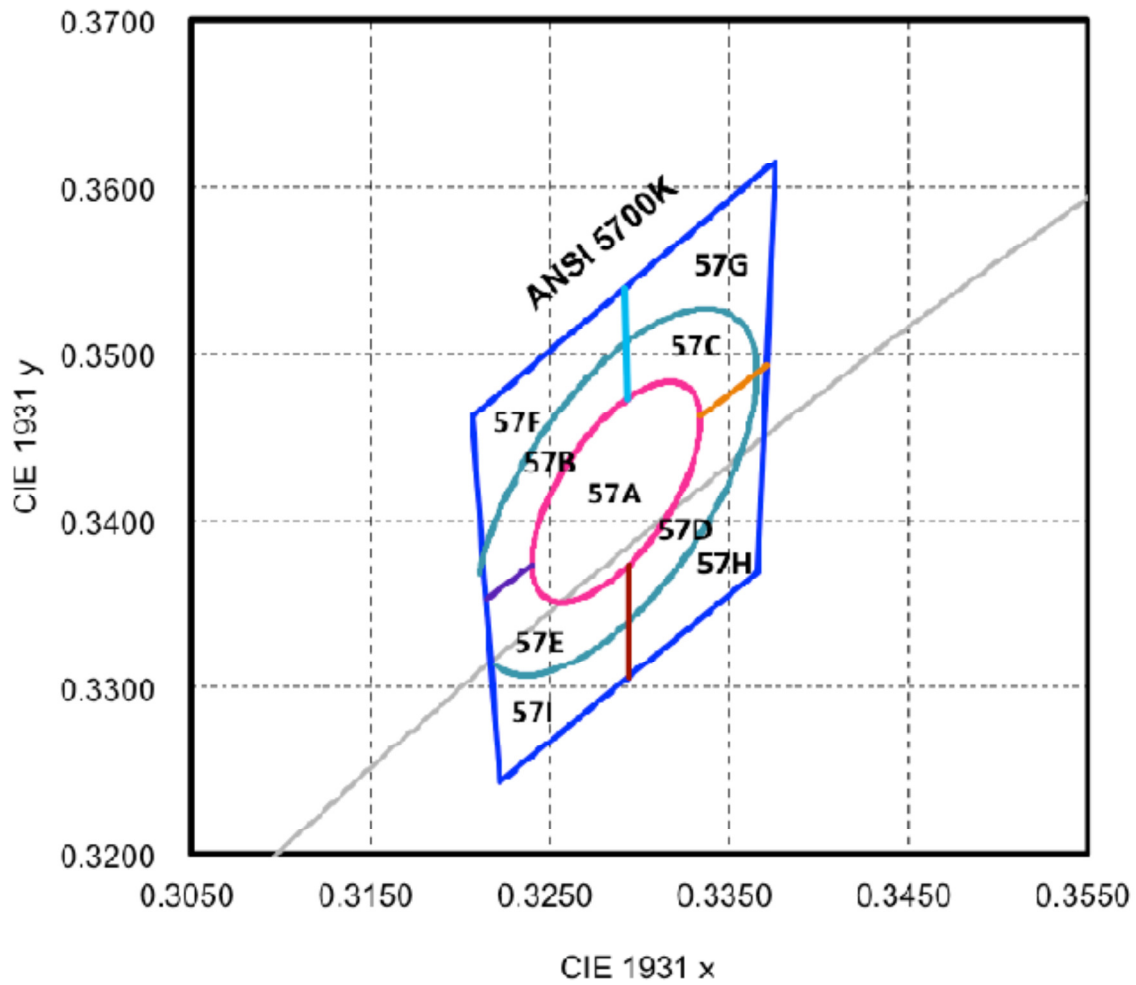


Figure 4F. CIE1931 chromaticity diagram (ANSI standard C78.377-2008)

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

6500K

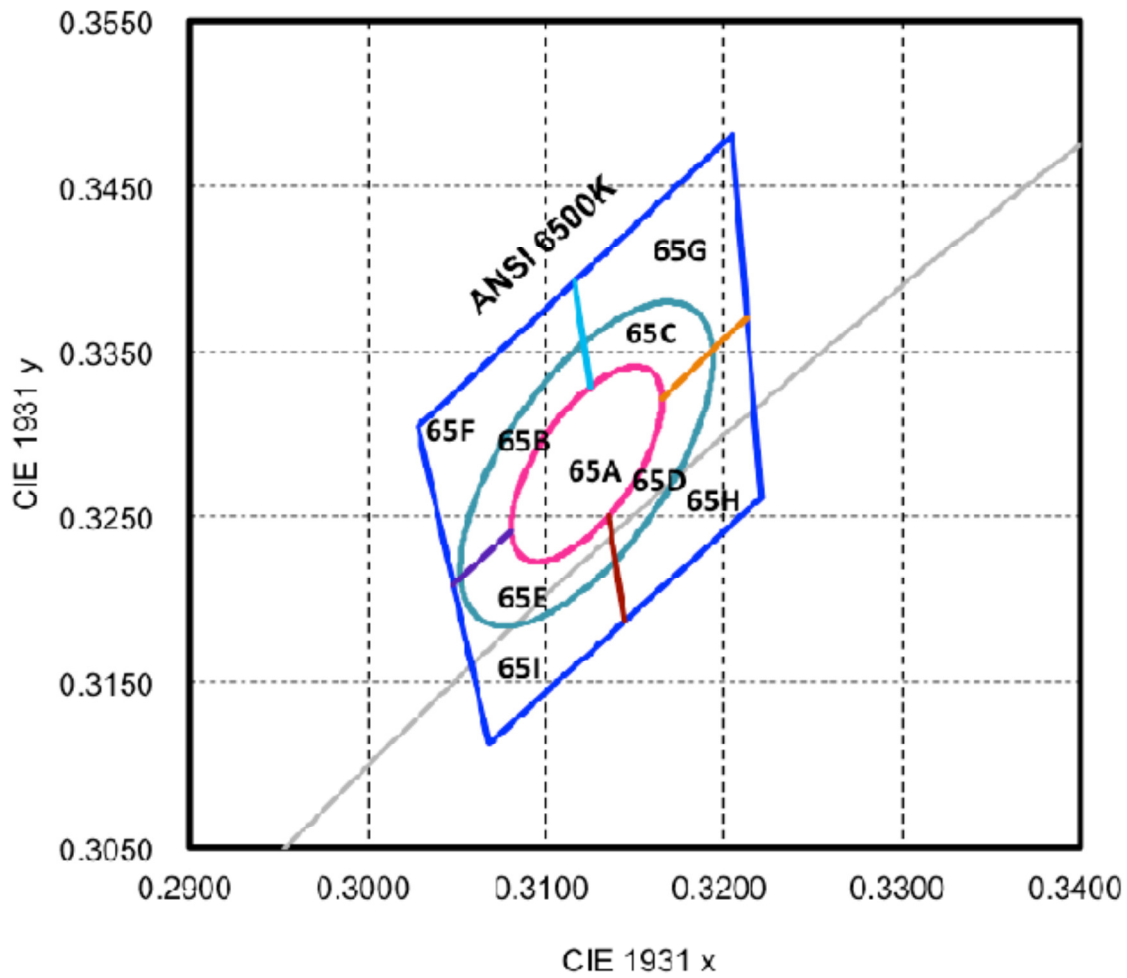


Figure 4G. CIE1931 chromaticity diagram (ANSI standard C78.377-2008)

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

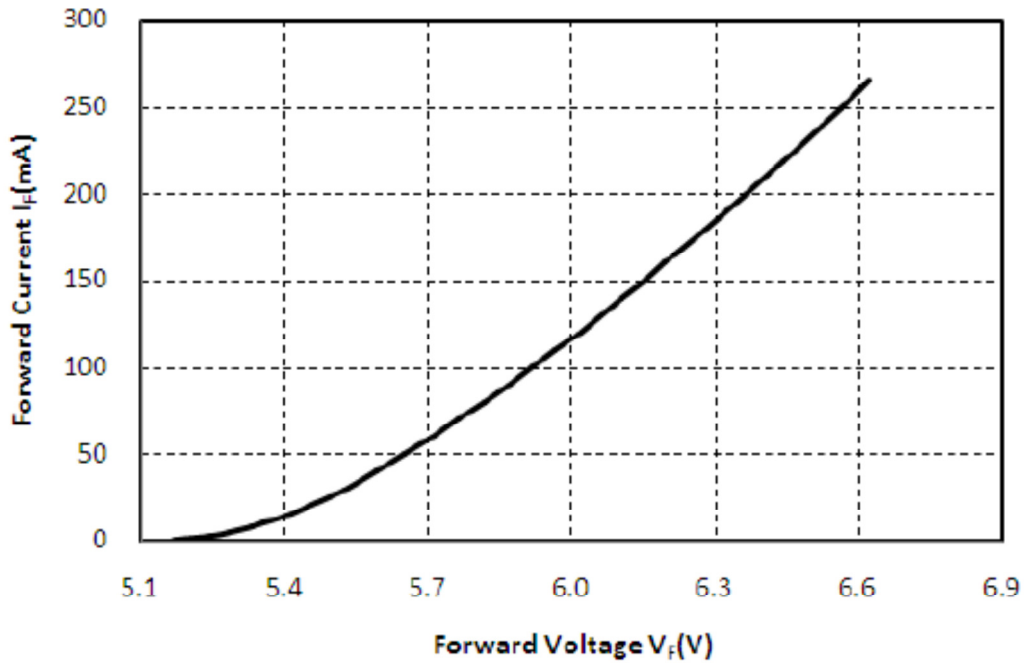


Figure 5. Typical forward current versus forward voltage ($T_a=+25C$)

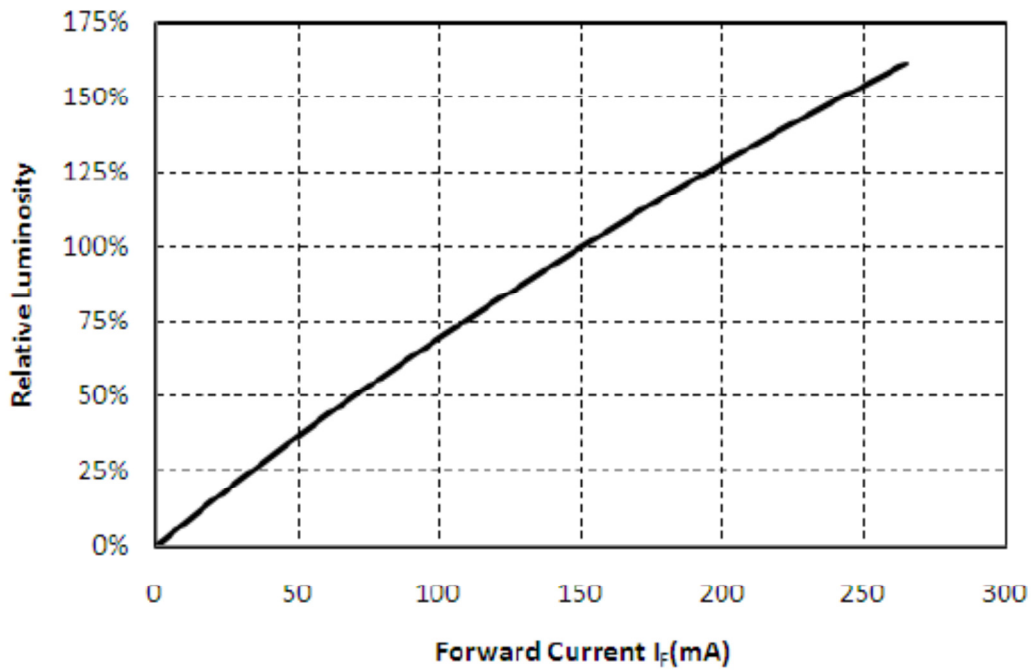


Figure 6. Relative luminous flux versus forward current ($T_a=+25C$)

Temperature Characteristics

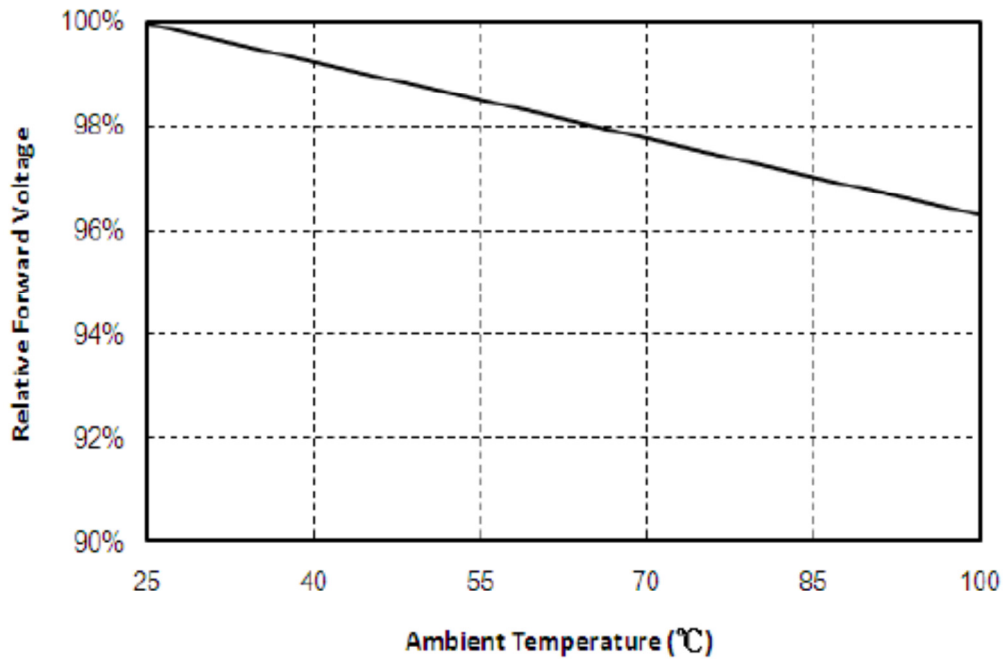


Figure 7. Typical forward voltage versus ambient temperature ($I_f = 150\text{mA}$)

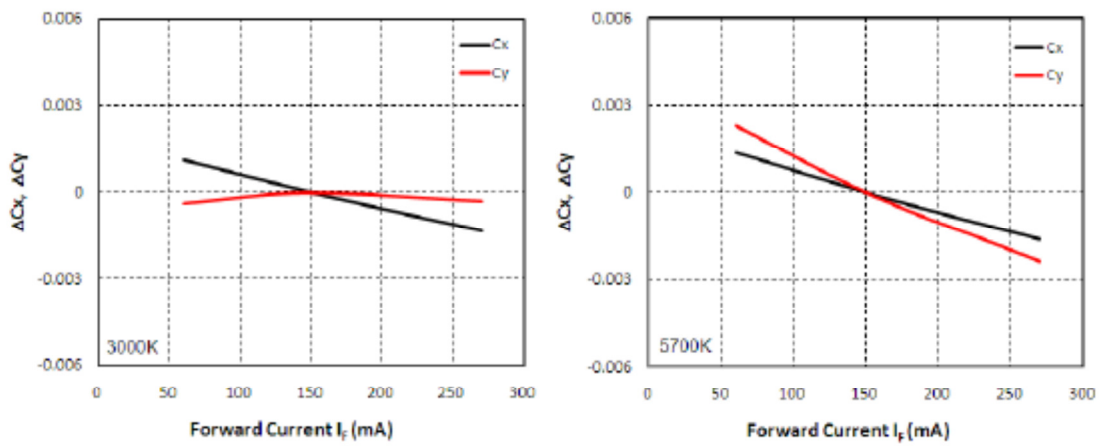


Figure 8. Forward Current versus Chromaticity (3000K & 5700K)

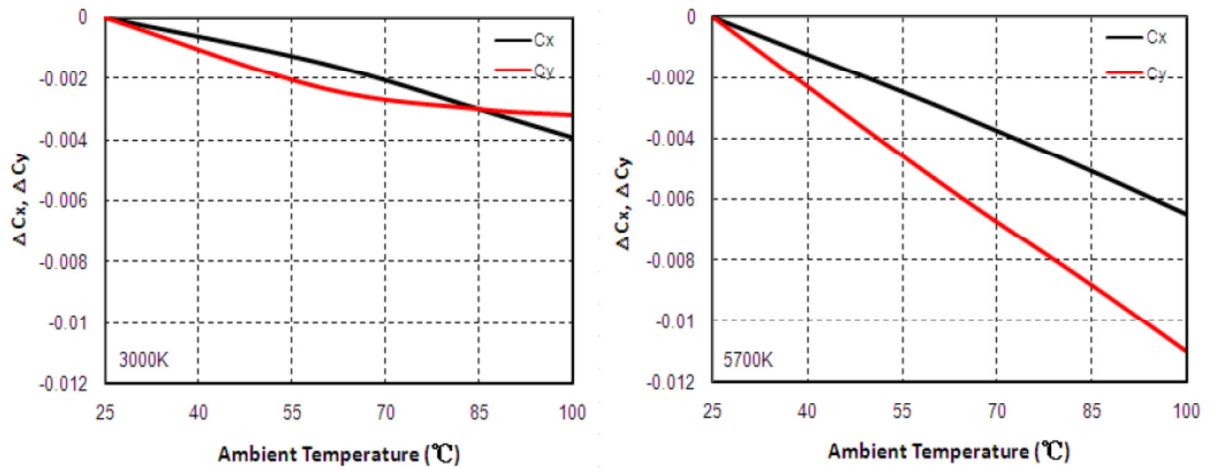


Figure 9. Chromaticity coordinates versus ambient temperature

Package Outline Dimensions

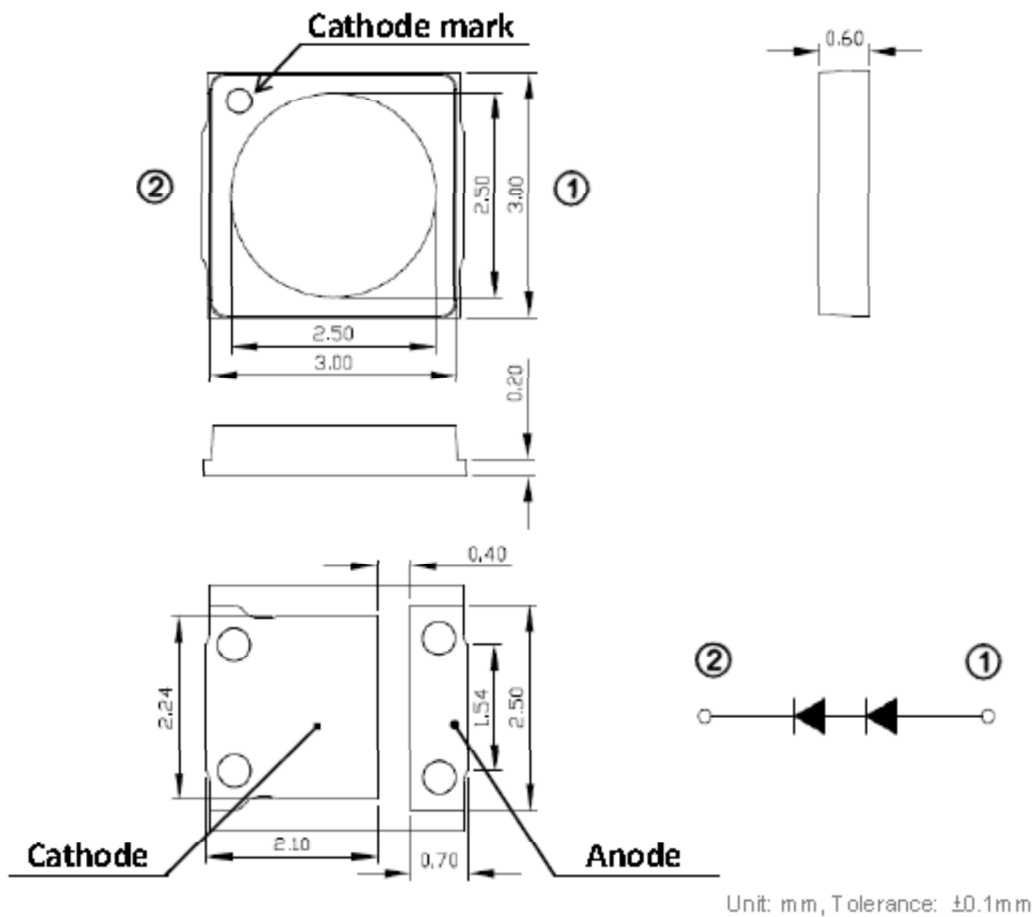


Figure 10. Mechanical drawings of the 3030 package

Recommended Solder Pad

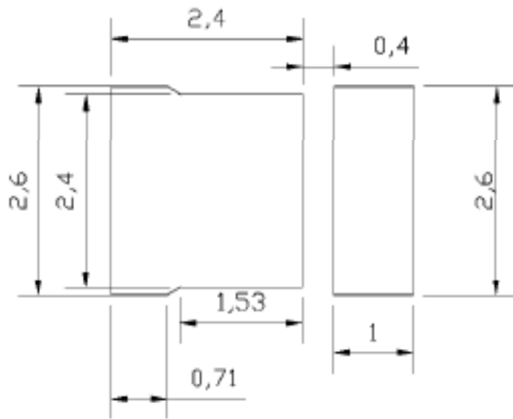


Figure 11. Diagram of soldering pad (unit in mm)

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

Reflow Soldering Profile

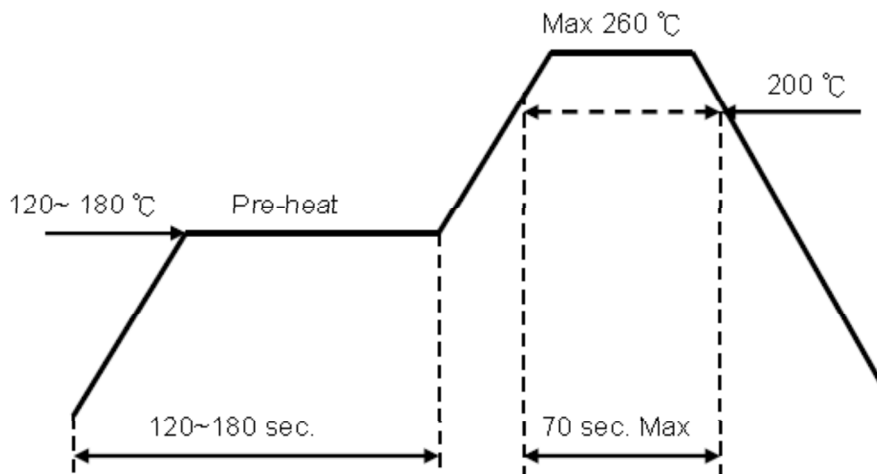


Figure 12. Reflow soldering profile

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	$\leq +30^{\circ}\text{C} / 60\% \text{ RH}$	≥ 82 hours	$+60^{\circ}\text{C} \pm 5^{\circ}\text{C} / 5\% \text{ RH}$

Packing Information

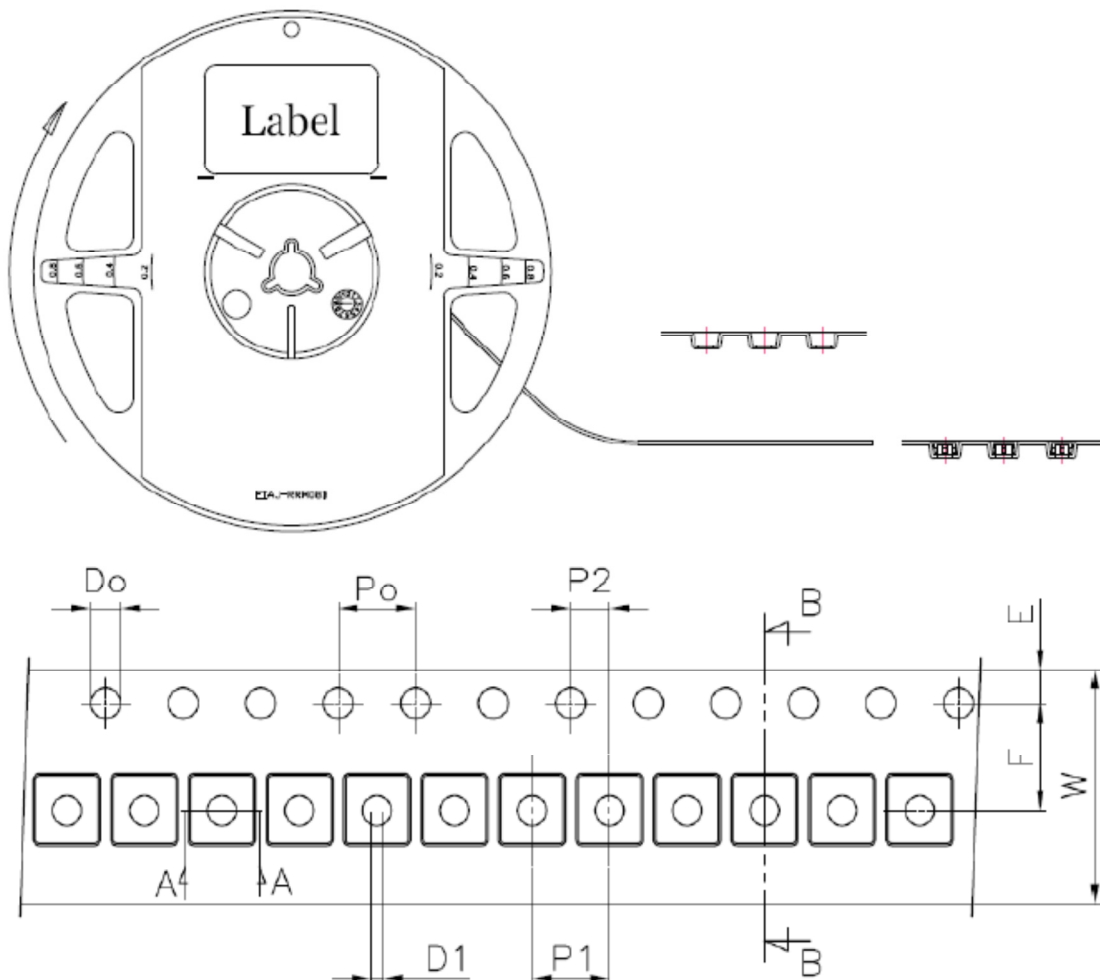


Figure 14. Reel specification (unit in mm)

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