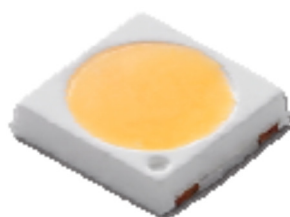


PLW3030AE Series 3030

Low Power LED

Product Datasheet



Description

Plessey PLW3030AE 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 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 (65°C)
- 3 and 5-step MacAdam colour space
- 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 ANSI C78.377-2008	
		Min.	Max.
PLW3030AE-2700	Warm White 2700K	2580K	2870K
PLW3030AE-3000	Warm White 3000K	2870K	3220K
PLW3030AE-3500	Warm White 3500K	3220K	3710K
PLW3030AE-4000	Neutral White 4000K	3710K	4260K
PLW3030AE-5000	Cool White 5000K	4745K	5311K
PLW3030AE-5700	Cool White 5700K	5310K	6020K
PLW3030AE-6500	Cool White 6500K	6020K	7040K

Ordering Information

Name	Order Code	Min. Flux	Forward Voltage Range
PLW3030AE-2700	PLW3030AEW27000	2A	V0 – V4
PLW3030AE-3000	PLW3030AEW30000		
PLW3030AE-3500	PLW3030AEW35000		
PLW3030AE-4000	PLW3030AEN40000	3A	
PLW3030AE-5000	PLW3030AEC50000		
PLW3030AE-5700	PLW3030AEC57000		
PLW3030AE-6500	PLW3030AEC65000		

Absolute Maximum Ratings

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

Parameter	Symbol	Min.	Max.	Unit
DC Forward Current	I_F	-	200	mA
Peak Pulse Forward Current ^[1]	I_{FP}	-	300	mA
Power Dissipation	P_d	-	660	mW
Storage Temperature	T_{stg}	-40	+100	$^{\circ}\text{C}$
Junction Temperature	T_j		+120	$^{\circ}\text{C}$

^[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 ^[1]	V_F	$I_F = 65\text{mA}$	2.5	-	3.0	V
Reverse Current	I_R	$V_R = 5\text{V}$	-	-	10	μA
Colour Rendering Index ^[2]	R_a	$I_F = 65\text{mA}$	80	-	-	%
Colour Rendering Index ^[3]	R_9	$I_F = 65\text{mA}$	0	-	-	%
Thermal Resistance	R_{thj-sp}	$I_F = 65\text{mA}$	-	16	-	$^{\circ}\text{C/W}$
Half-Intensity Angle	$2\Theta_{1/2}$	$I_F = 65\text{mA}$	-	120	-	deg

[1] Forward Voltage, V_F , tolerance is $\pm 0.1\text{V}$

[2] Colour Rendering Index, R_a , tolerance is ± 2

[3] Colour Rendering Index, R_9 , tolerance is ± 6

Recommended Operating Conditions

In typical applications, for optimum LED performance

Parameter	Symbol	Min.	Max.	Unit
Operating Ambient Temperature	T_{opr}	-40	+85	$^{\circ}\text{C}$

Intensity Bin Groups

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

Group	Luminous flux ^[1] (lm)	
	Min.	Max.
2A	28.0	31.5
3A	31.5	33.5
4A	33.5	35.5
5A	35.5	38.0
6A	38.0	40.5
7A	40.5	45.0

[1] Tolerance $\pm 7\%$

Forward Voltage Bin Groups

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

Group	Forward Voltage ^[1] (V)	
	Min.	Max.
V0	2.5	2.6
V1	2.6	2.7
V2	2.7	2.8
V3	2.8	2.9
V4	2.9	3.0

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

Hot Chromaticity Binning - 65°C, (CIE tolerance ± 0.005)

2700K

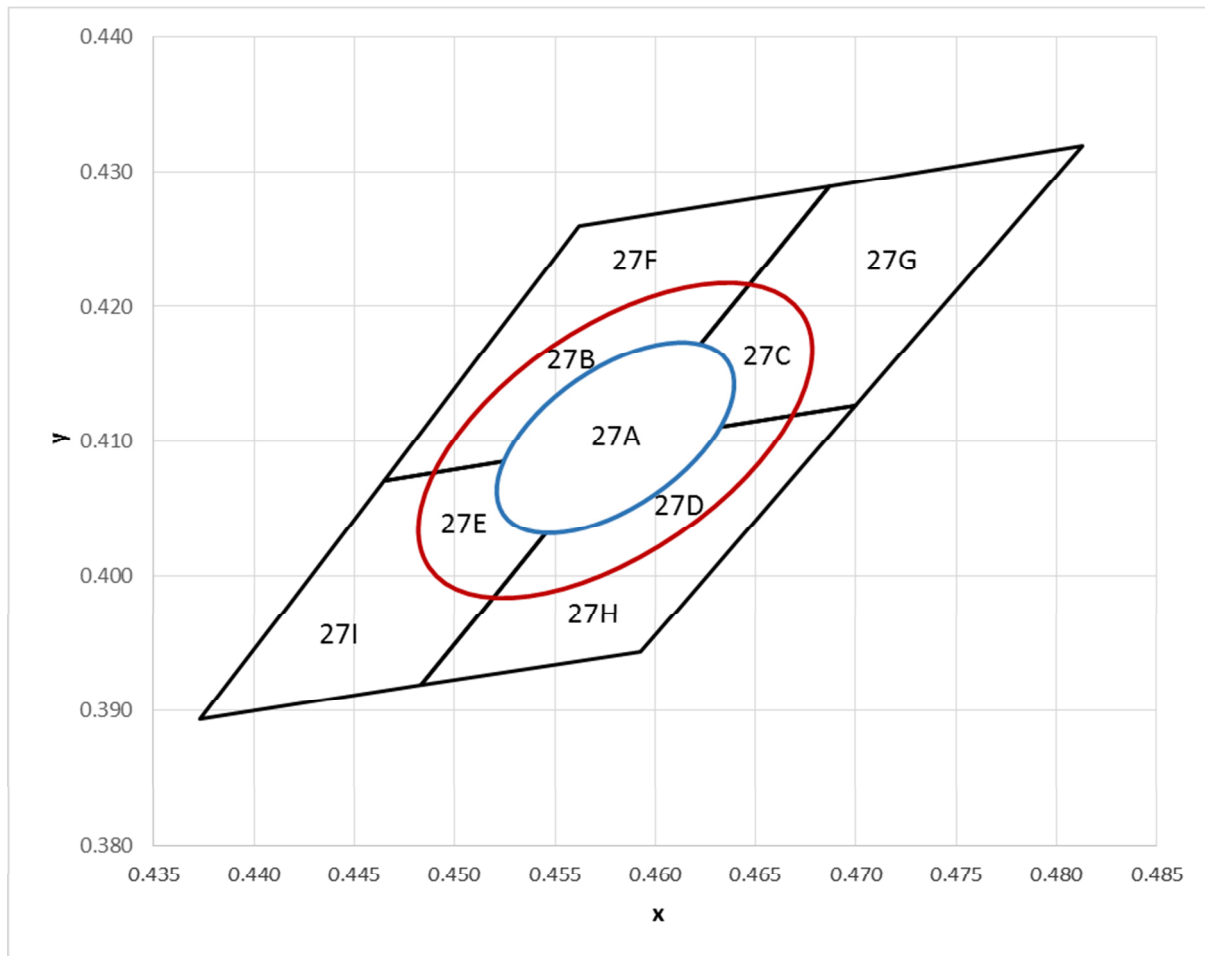


Figure 1(a) : Chromaticity space for PLW3030AE-2700 at 65°C - ANSI C78.377-2008

Nominal CCT (K)	Bin	Centre point		Major Axis		Rotation
		cx	cy	a	b	θ°
2700	3 step	0.4578	0.4101	0.00810	0.00420	53.70
	5 step			0.01350	0.00700	

Hot Chromaticity Binning - 65°C, (CIE tolerance ± 0.005)

3000K

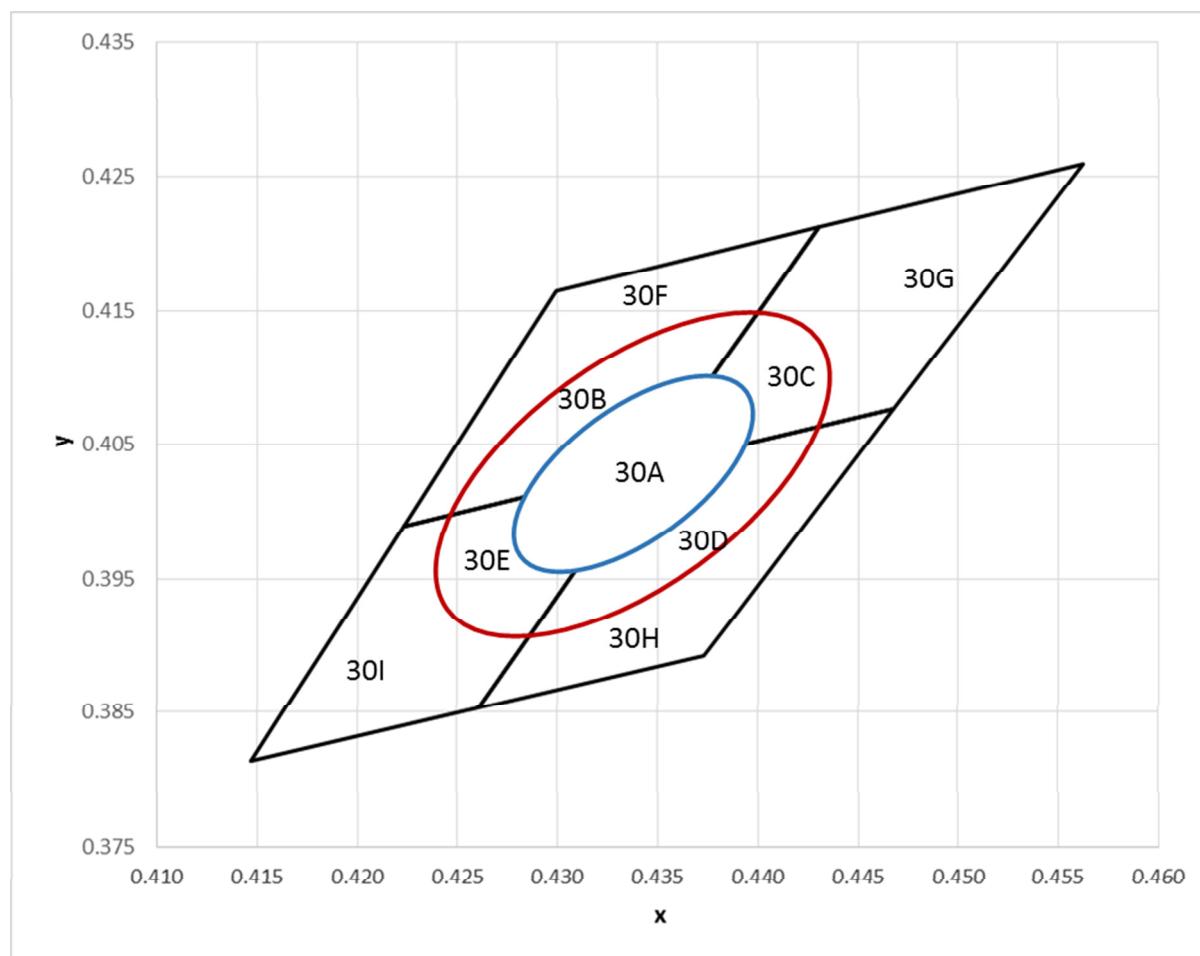


Figure 1(b) : Chromaticity space for PLW3030AE-3000 at 65°C - ANSI C78.377-2008

Nominal CCT (K)	Bin	Centre point		Major Axis		Rotation
		cx	cy	a	b	θ°
3000	3 step	0.4338	0.4030	0.00834	0.00408	53.22
	5 step			0.01390	0.00680	

Hot Chromaticity Binning - 65°C, (CIE tolerance ± 0.005)

3500K

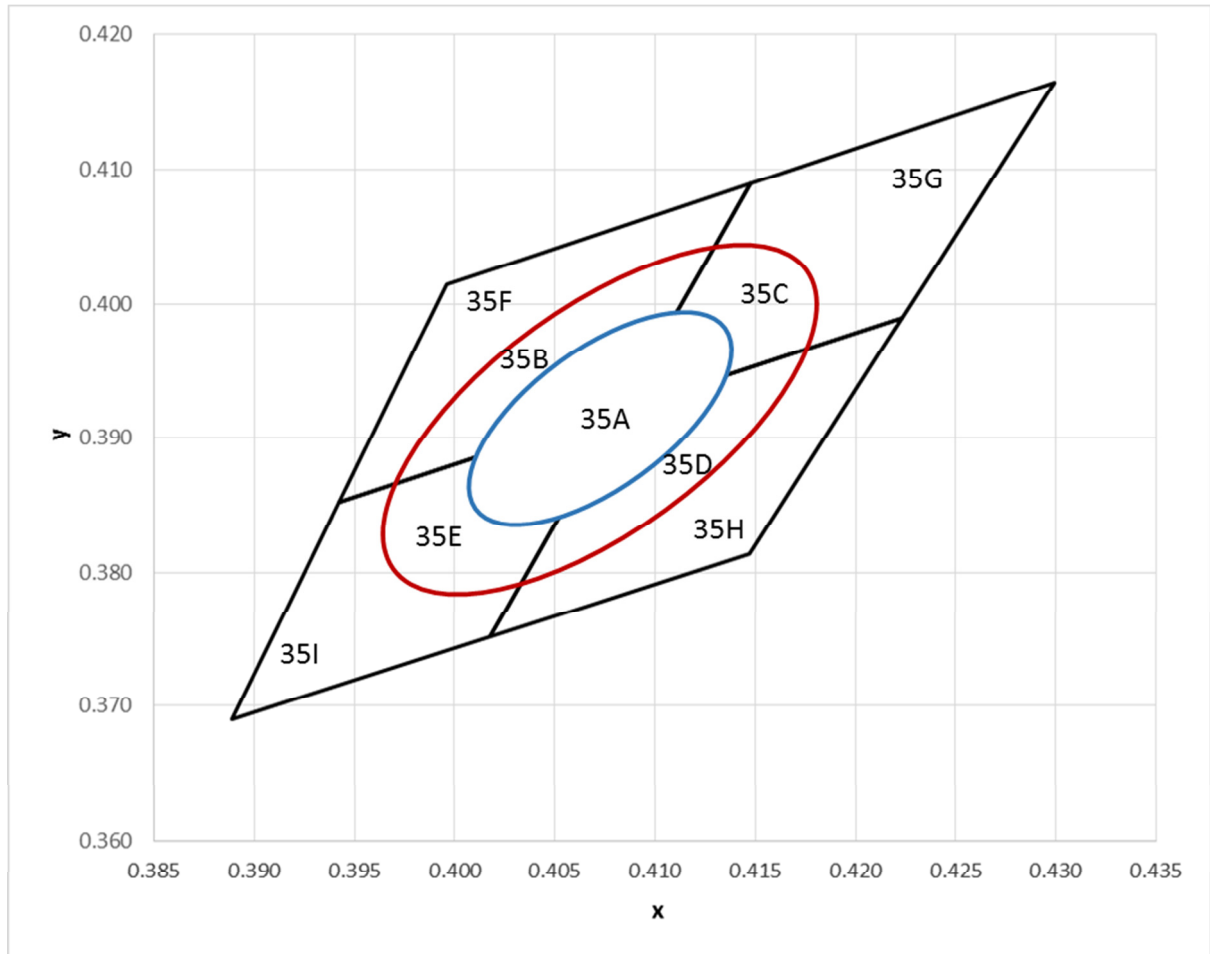


Figure 1(a) : Chromaticity space for PLW3030AE-3500 at 65°C - ANSI C78.377-2008

Nominal CCT (K)	Bin	Centre point		Major Axis		Rotation
		cx	cy	a	b	θ°
3500	3 step	0.4073	0.3917	0.00927	0.00414	53.22
	5 step			0.01545	0.00690	

Hot Chromaticity Binning - 65°C, (CIE tolerance ± 0.005)

4000K

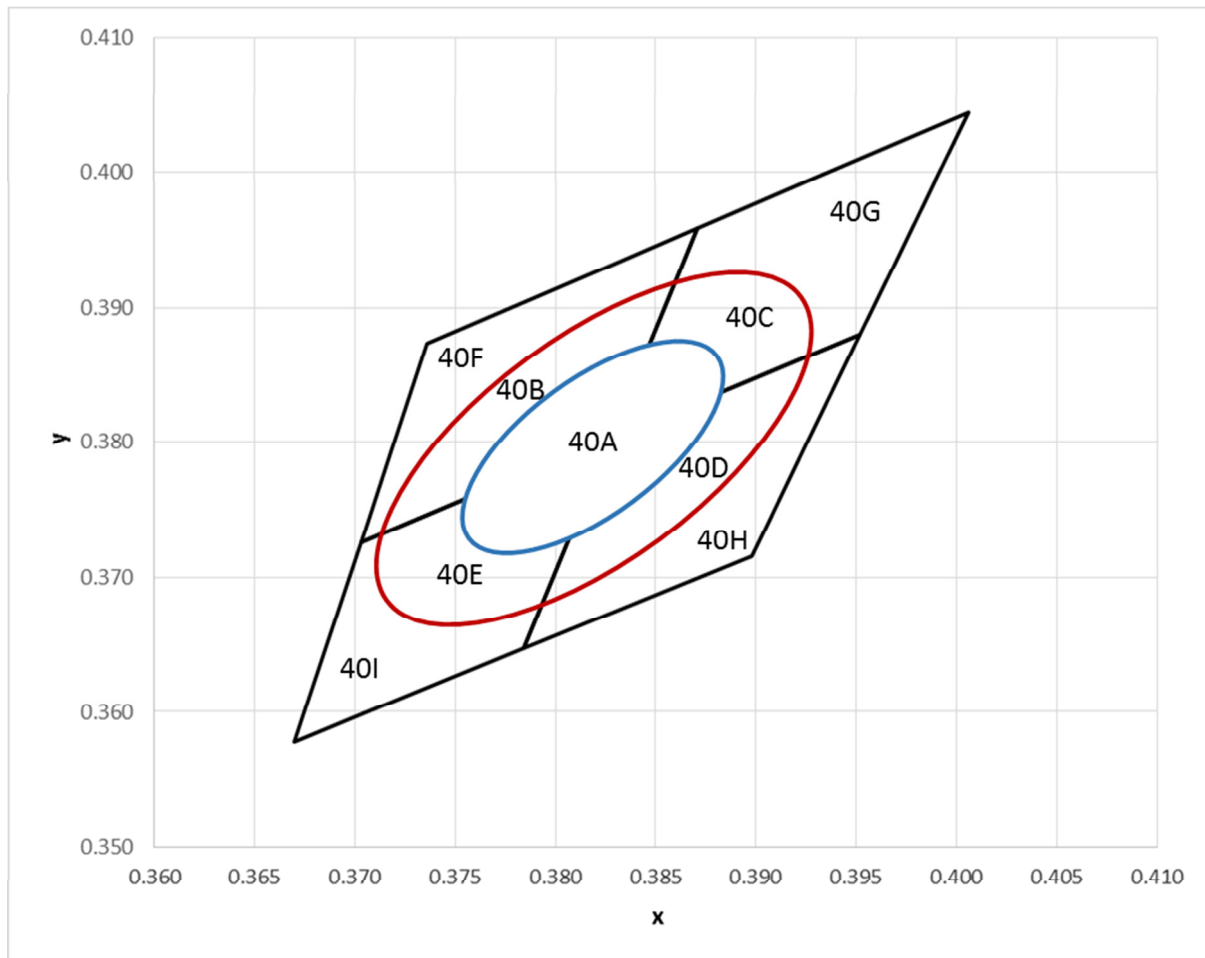


Figure 1(a) : Chromaticity space for PLW3030AE-4000 at 65°C - ANSI C78.377-2008

Nominal CCT (K)	Bin	Centre point		Major Axis		Rotation
		cx	cy	a	b	θ°
4000	3 step	0.3818	0.3797	0.00939	0.00402	53.72
	5 step			0.01565	0.00670	

Hot Chromaticity Binning - 65°C, (CIE tolerance ± 0.005)

5000K

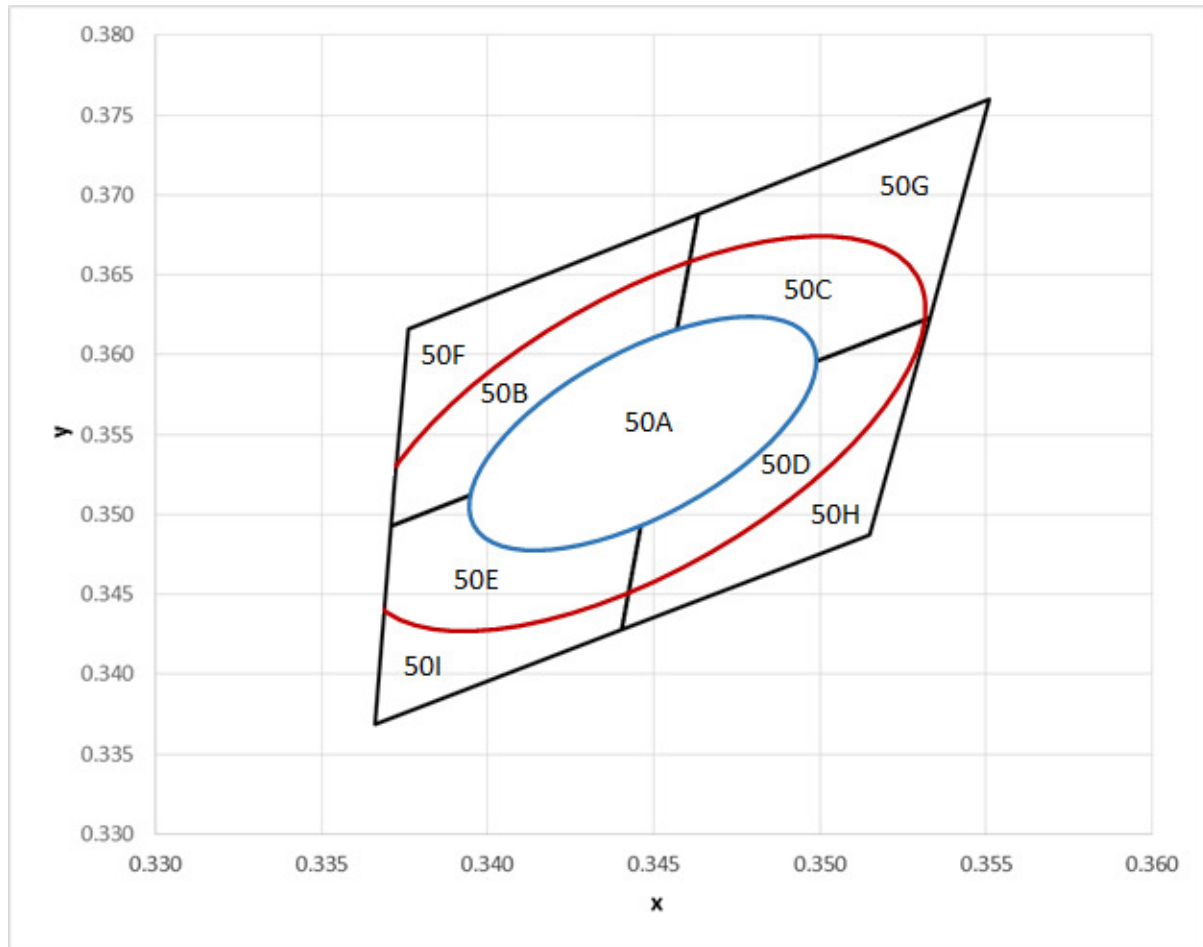


Figure 1(a) : Chromaticity space for PLW3030AE-5000 at 65°C - ANSI C78.377-2008

Nominal CCT (K)	Bin	Centre point		Major Axis		Rotation
		cx	cy	a	b	θ°
5000	3 step	0.3447	0.3553	0.00822	0.00354	59.62
	5 step			0.01370	0.00590	

Hot Chromaticity Binning - 65°C, (CIE tolerance ± 0.005)

5700K

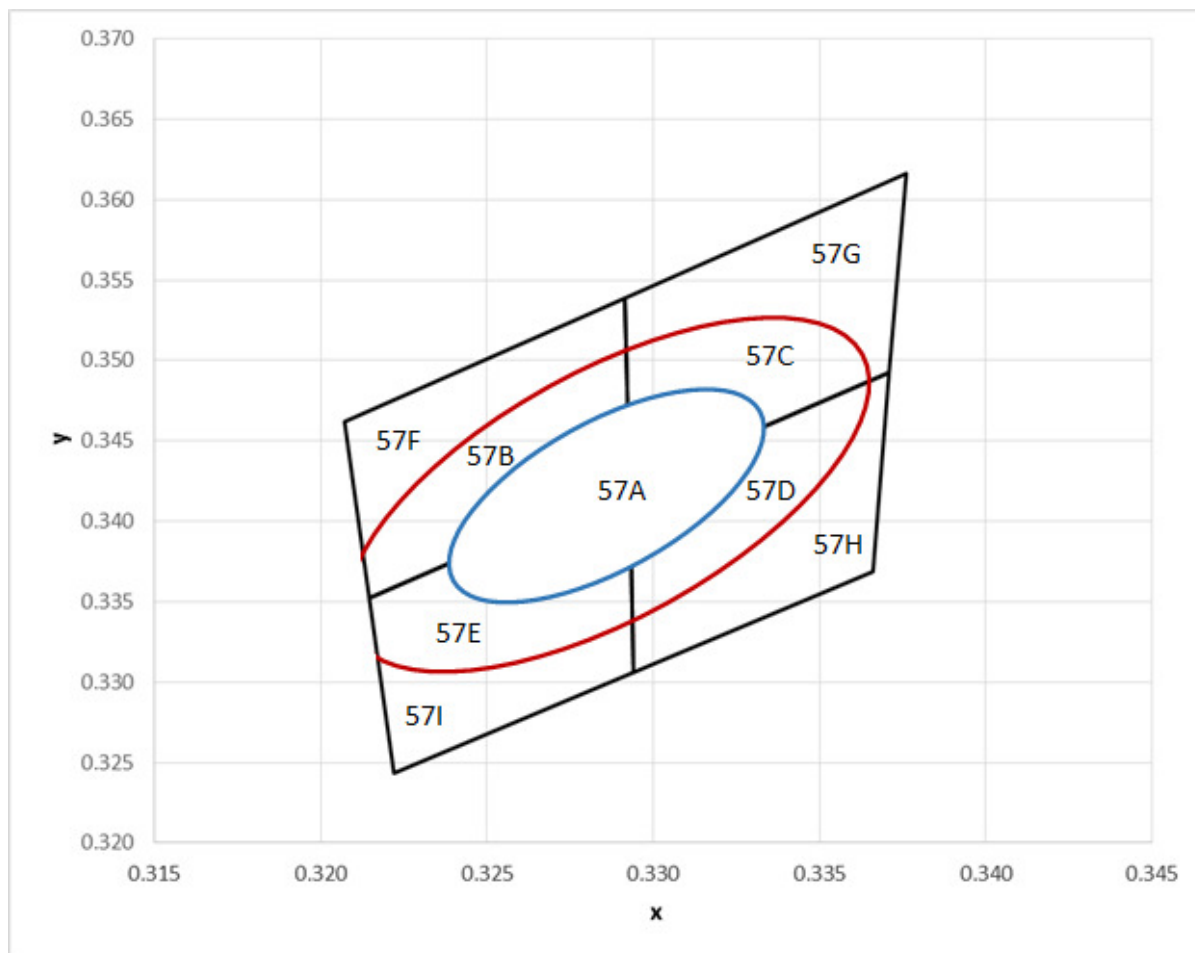


Figure 1(a) : Chromaticity space for PLW3030AE-5700 at 65°C - ANSI C78.377-2008

Nominal CCT (K)	Bin	Centre point		Major Axis		Rotation θ°
		cx	cy	a	b	
5700	3 step	0.3287	0.3417	0.00746	0.00320	59.09
	5 step			0.01243	0.00533	

Hot Chromaticity Binning - 65°C, (CIE tolerance ± 0.005)

6500K

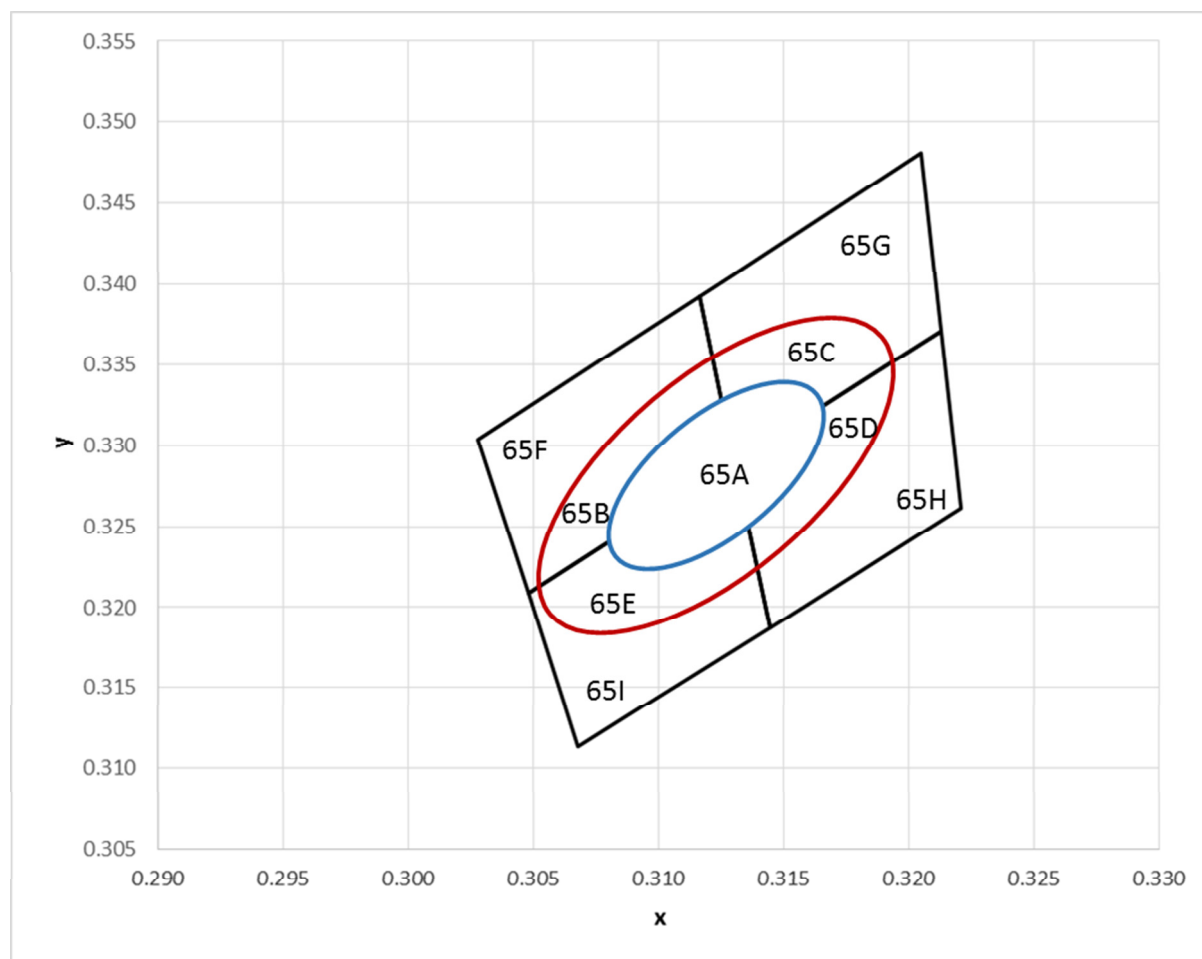


Figure 1(a) : Chromaticity space for PLW3030AE-6500 at 65°C - ANSI C78.377-2008

Nominal CCT (K)	Bin	Centre point		Major Axis		Rotation
		cx	cy	a	b	θ°
6500	3 step	0.3123	0.3282	0.00669	0.00285	58.57
	5 step			0.01115	0.00475	

Relative Spectral Emission

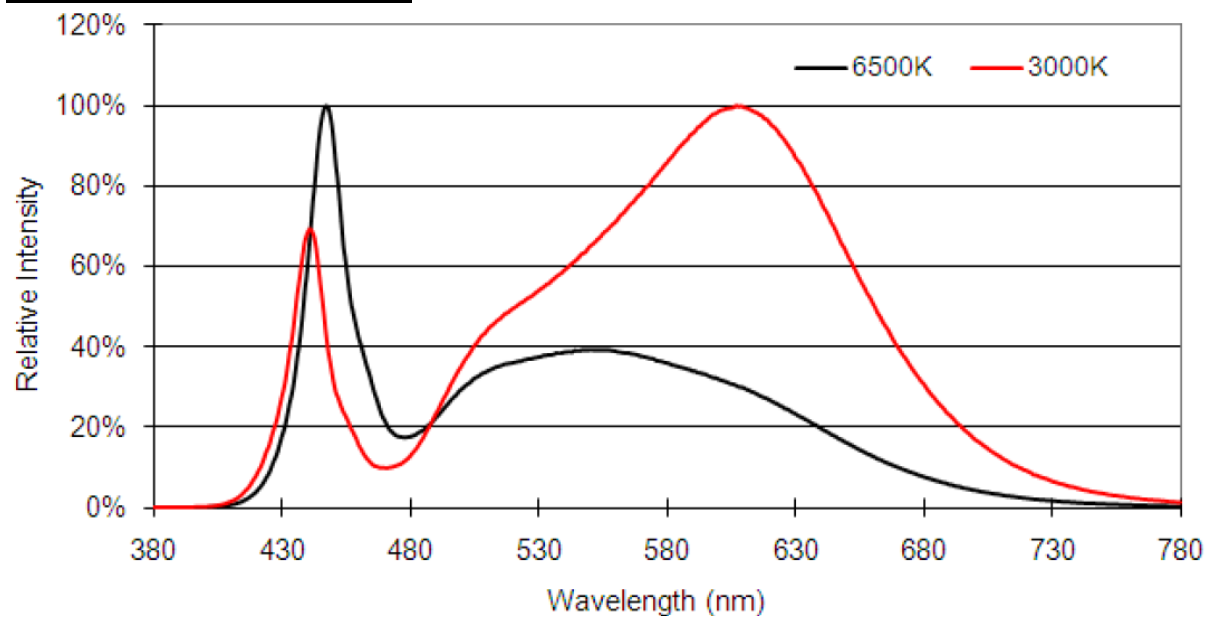


Figure 2: Relative Emission Intensity versus Wavelength

Angular Light Distribution

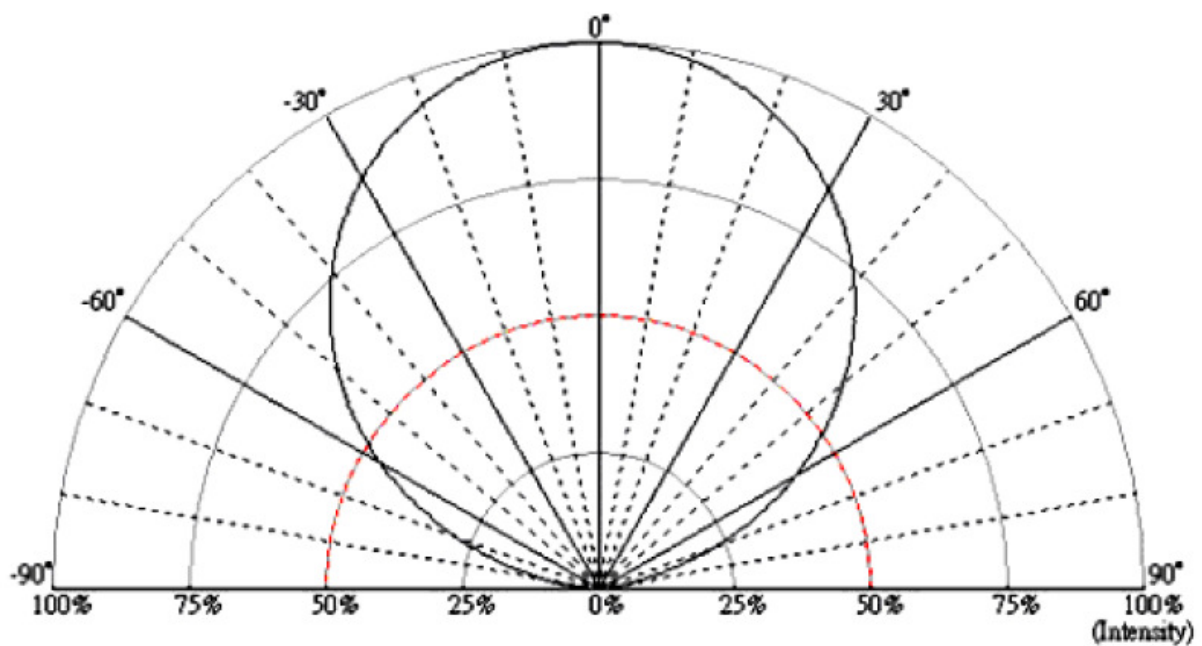


Figure 3: Angular distribution pattern of emitted light

Forward Current Characteristics

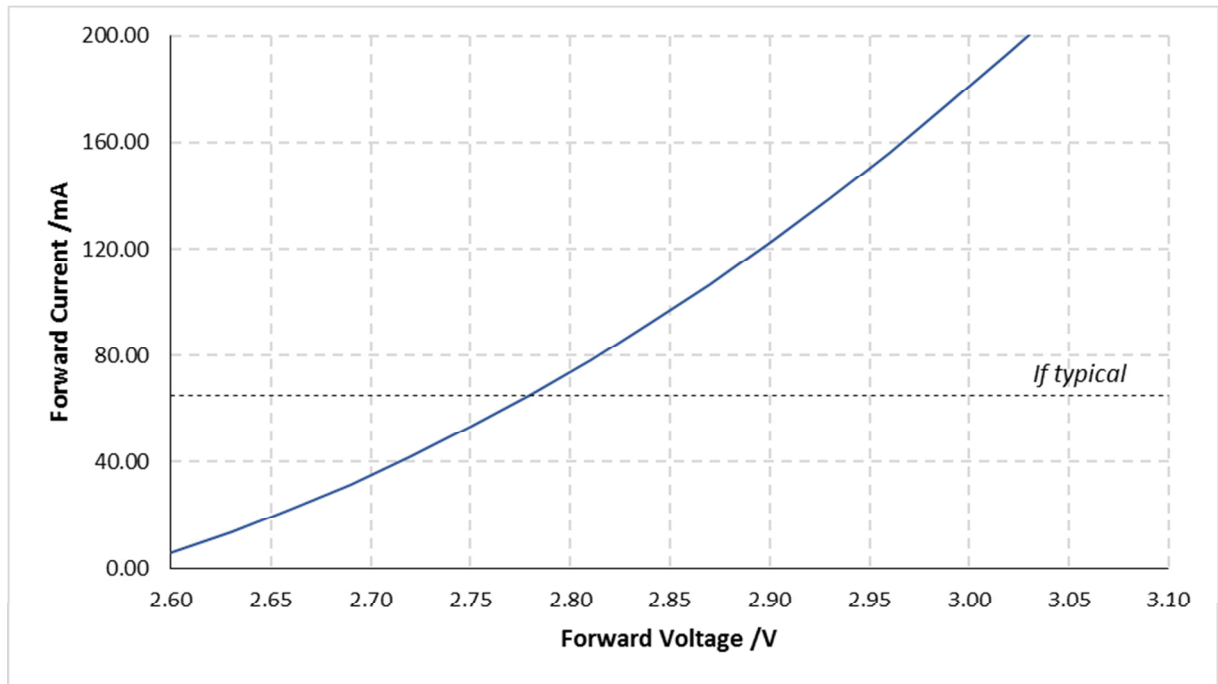


Figure 4: Typical forward current versus forward voltage ($T_a = +25^\circ\text{C}$)

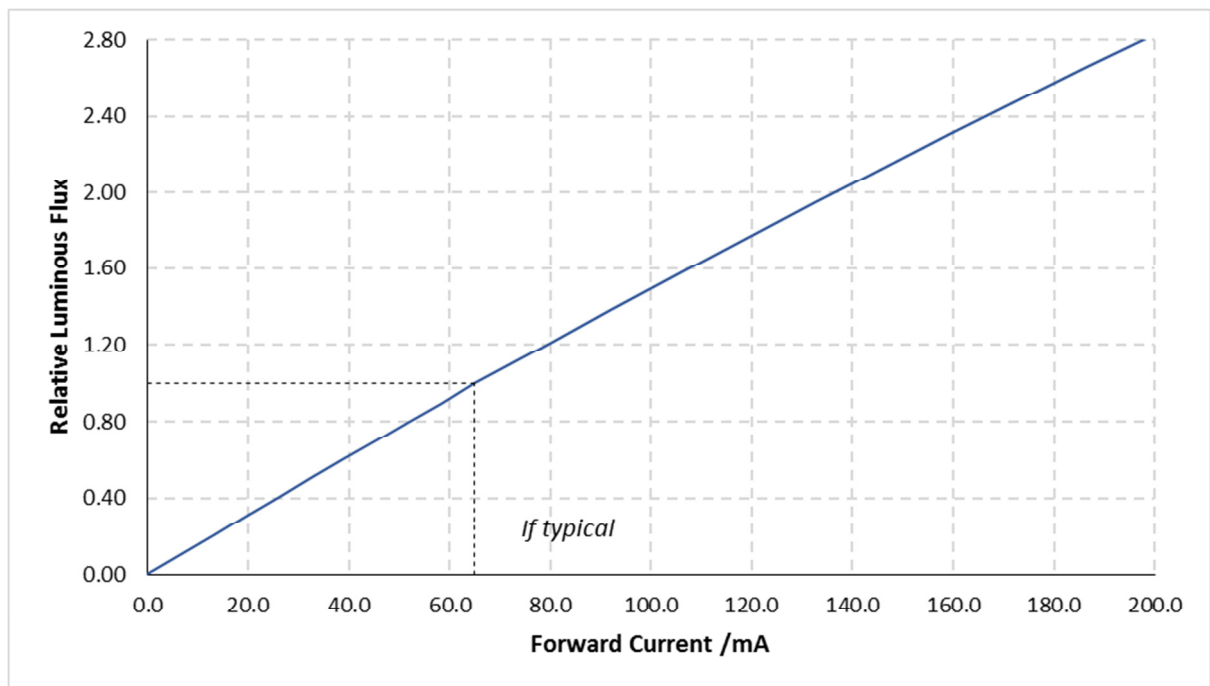


Figure 5: Relative luminous intensity versus forward current ($T_a = +25^\circ\text{C}$)

Temperature Characteristics

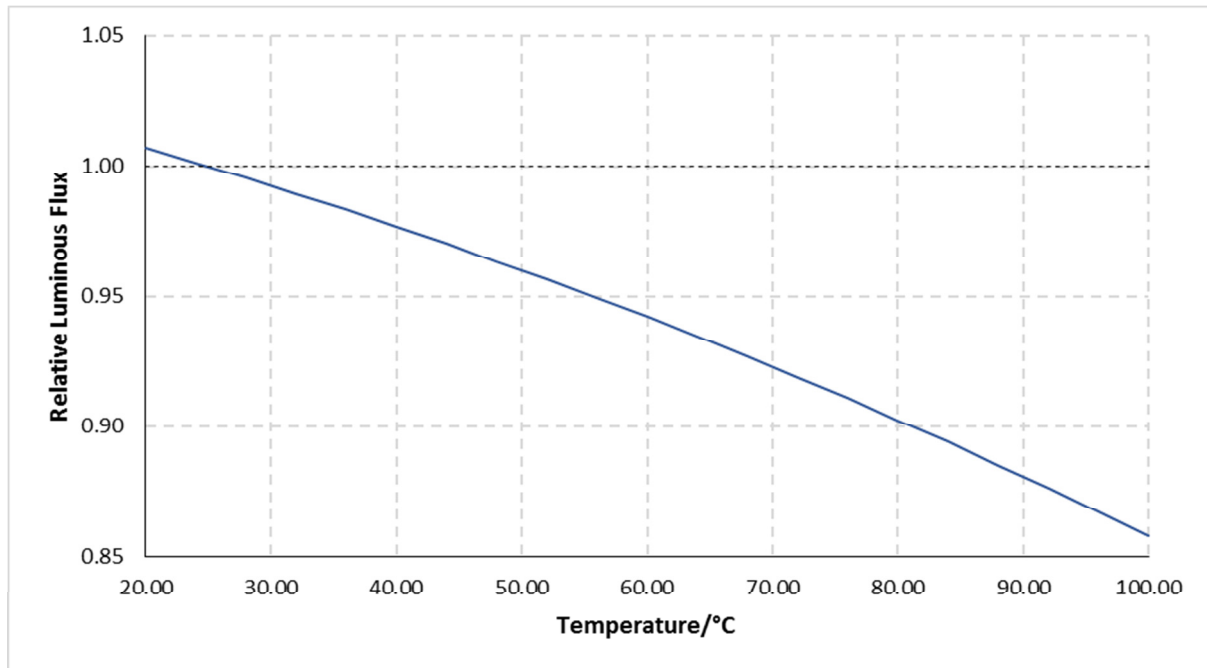


Figure 6: Relative luminous intensity versus ambient temperature ($I_F=65\text{mA}$)

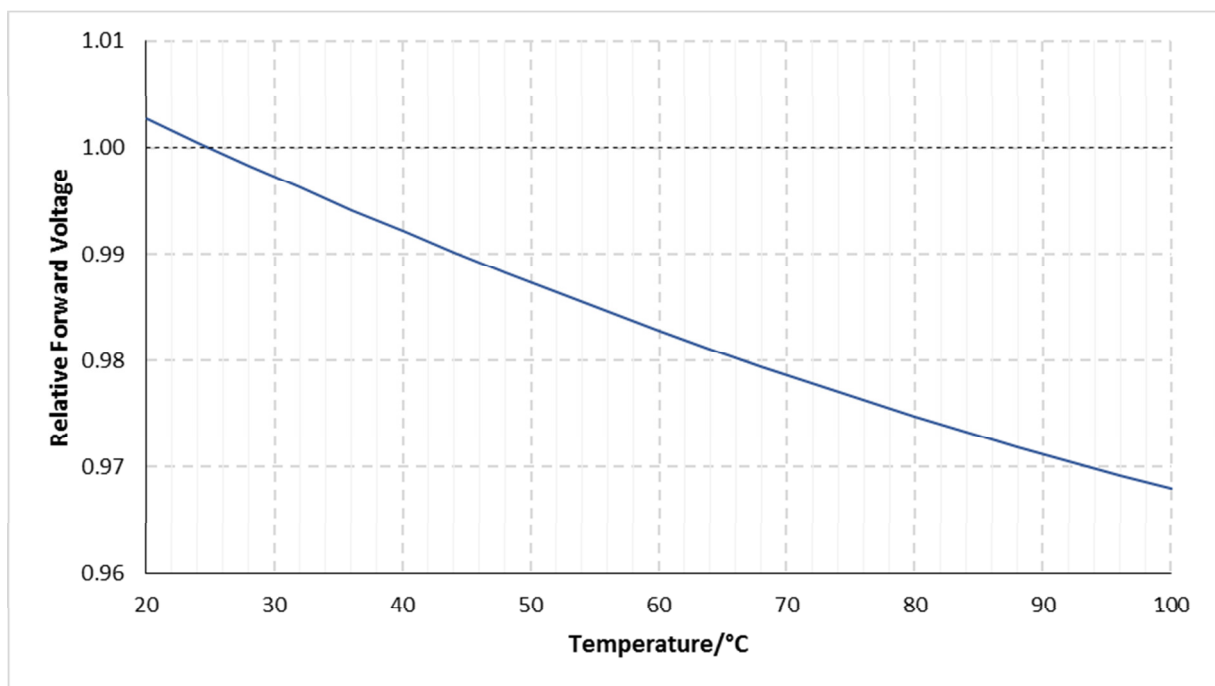
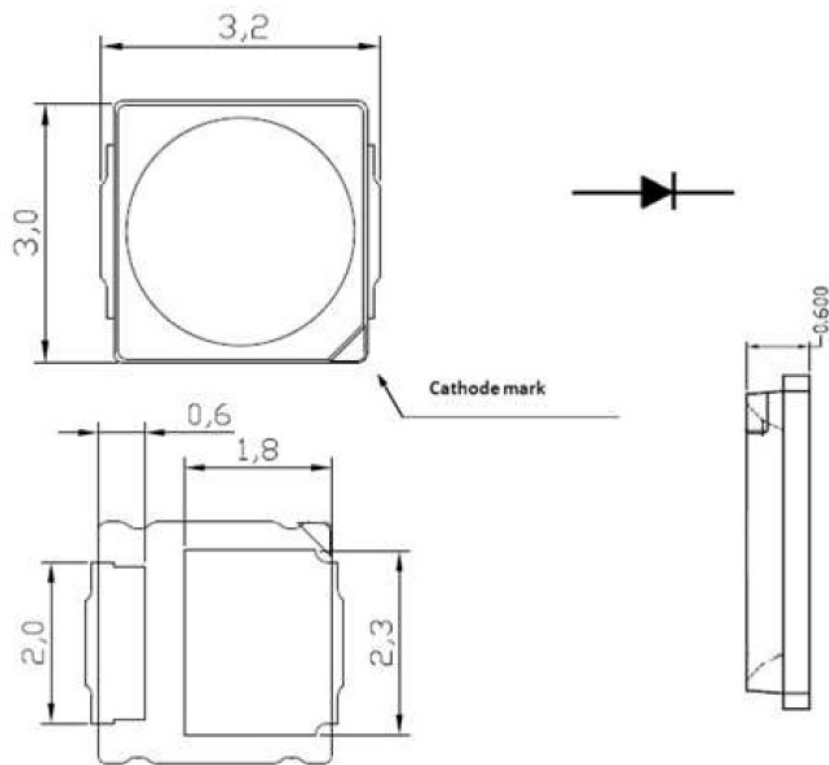
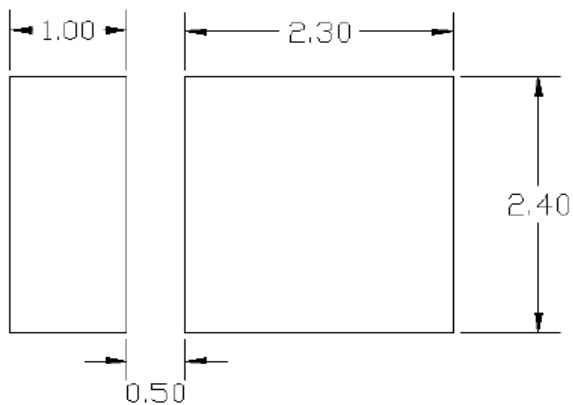


Figure 7: Forward voltage versus ambient temperature ($I_F=65\text{mA}$)

Package Outline Dimensions & Soldering Pattern



Unit: mm, Tolerance: ± 0.1 mm



All dimensions in mm

Figure 8: Mechanical drawings of the 3030 package & Solder Pads

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

Reflow Soldering Profile

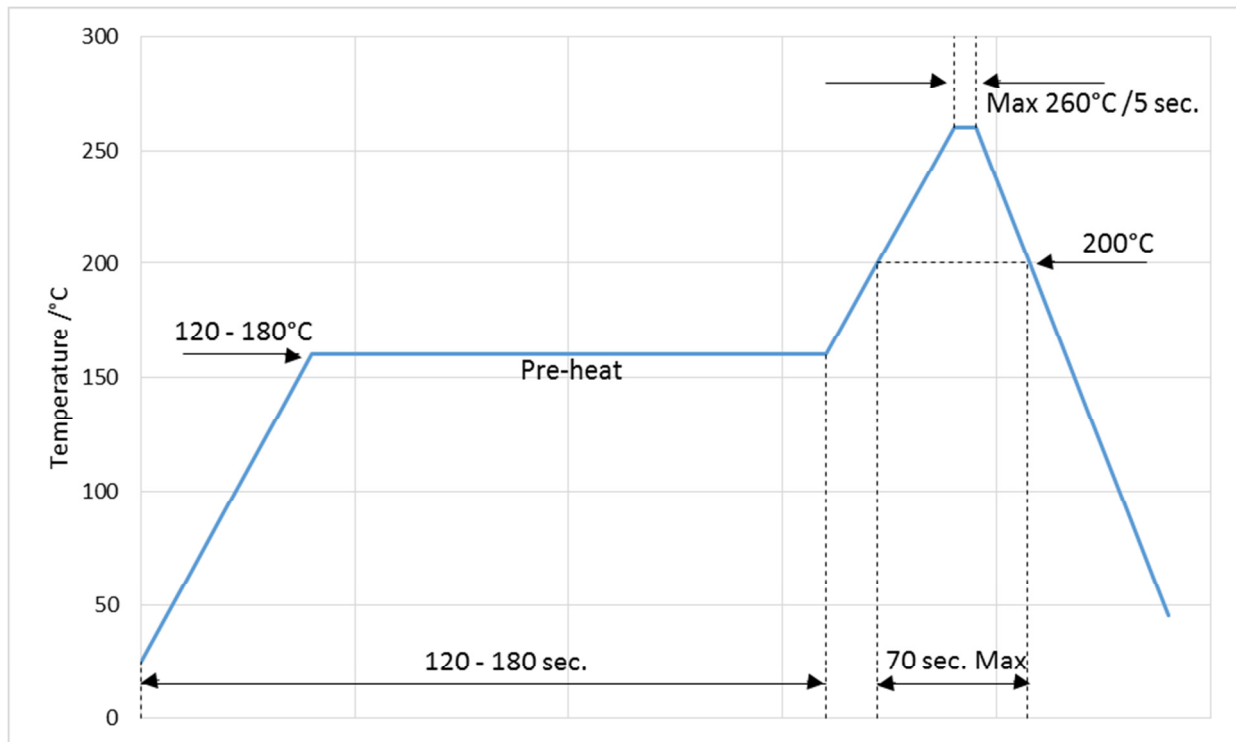


Figure 9: Reflow soldering profile

Reflow profile summary:

- Reflow soldering should not be done more than twice.
- Do not solder/reflow the same LED over two times.
- Reflow soldering:
 - Pre-heat 180 °C max , 180 sec. max.
 - Peak 260 °C max , 5 sec. max.

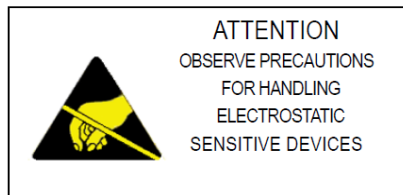
Hand soldering summary:

- Hand soldering should be performed only once.
- When soldering, do not put stress on the LEDs during heating
- The temperature of the iron must be $\leq +300^{\circ}\text{C}$ for 3 seconds

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

MSL	Floor Life		Soak Requirements	
	Time	Conditions	Time	Conditions
3	168 hours	$\leq +30^{\circ}\text{C}/60\%\text{RH}$	≥ 96 hours	$+60 \pm 5^{\circ}\text{C}/5\%\text{RH}$

Packing Information

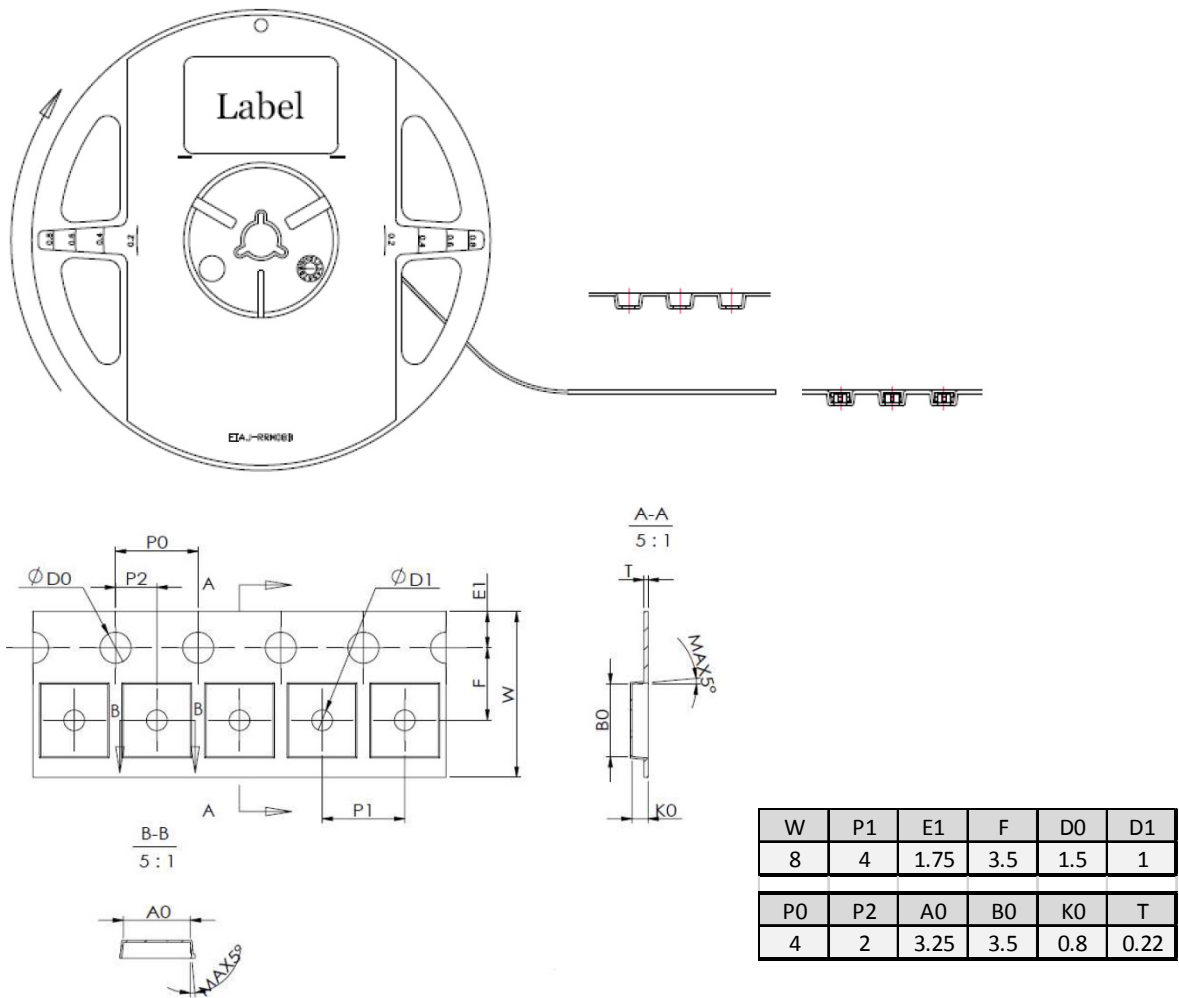


Figure 10: Reel specification (units in mm)

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