MAGIC LED PLW111010 Series
Product Information

Description

Plessey MAGIC PLW111010 PLCC-2 SMT LEDs are designed for ambient decorative lighting and automotive interior applications. The light is emitted close to a Lambertian distribution and hence this SMT package is naturally suitable for backlighting instrument cluster panel and symbols. The LEDs are packed in reels containing 2000 pieces; every reel will be shipped in single intensity and colour bin, to provide close uniformity.

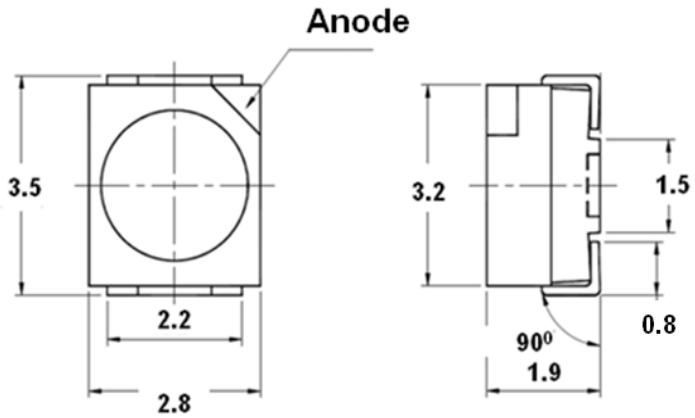
Features

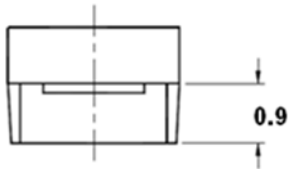
- Industry standard PLCC-2
- Diffused pale yellow resin
- High reliability LED package
- High brightness using GaN-on-Silicon technology
- Wide viewing angle at 120° (half maximum)
- JEDEC MSL 4

Applications

- Decoration lighting
- Instrument panel backlighting
- Illumination symbols
- Navigation and audio system backlighting

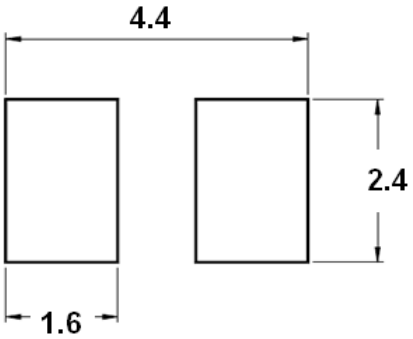
Package Outline and Recommended Solder Pad

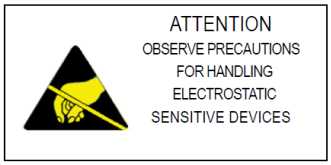




All dimensions are in millimetres with an accuracy of +/-0.2 millimetres

Encapsulation material: Yellow pale silicone resin





Recommended Soldering Pad Pattern

Note: Plessey LEDs are not designed to operate with reverse bias. Precautions are required to prevent reverse bias in applications and during handling. Reverse bias ESD is limited to 100 volts.

Electro-optical Characteristics (Ta = +25ºC)

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Forward Voltage	Vf	If=20mA	2.8	3.2	3.5	V
Reverse Current	Ir	Vr=5V	--	--	5	µA
Chromaticity Coordinates	x	If=20mA	0.26	--	0.39	
	y	If=20mA	0.23	--	0.41	
Half Intensity Angle	$2\Theta_{1/2}$	If=20mA	--	120	--	deg

Absolute Maximum Ratings (Ta = +25ºC)

Parameter	Symbol	Rating	Unit
DC Forward Current	If	25	mA
Peak Pulse Forward Current [1]	Ifp	50	mA
Reverse Voltage	Vr	5	V
Operating Temperature	Topr	-40 to +85	℃
Storage Temperature	Tstr	-40 to +100	℃

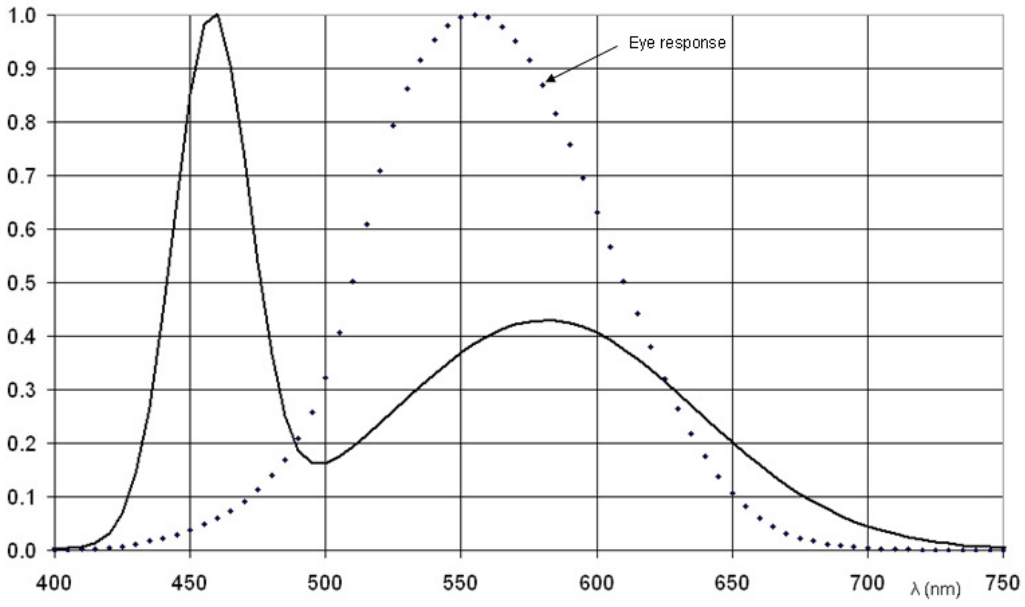
[1] Ifp conditions with pulse width ≤10ms and duty cycle ≤10%

Intensity Bin Groups

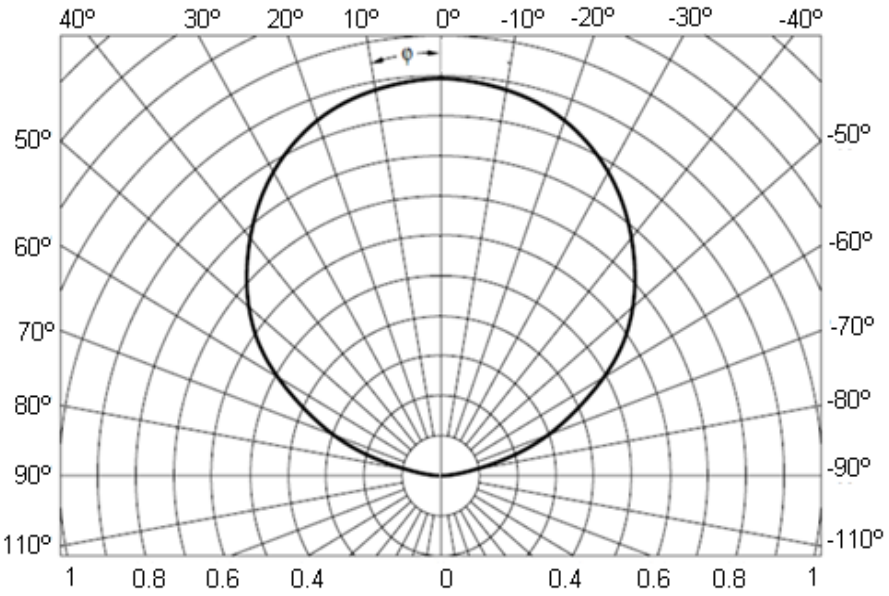
Group (If=20mA)	Luminous Intensity Iv [mcd]		Luminous Flux (typ.) ΦV [mlm]
	Min.	Max.	
1A	230	280	800
2A	280	360	1010
1B	360	450	1260
2B	450	560	1570
1C	560	700	1950
2C	700	870	2430
1D	870	1080	3030

The above luminous intensities are given with +/- 11% tolerance.

Relative Spectral Emission (Typical)



Angular light distribution



Color Chromaticity Groups

1NW		1SW		1SE		1NE	
x	y	x	y	x	y	x	y
0.2570	0.2638	0.2611	0.2548	0.2701	0.2700	0.2659	0.2791
0.2660	0.2790	0.2701	0.2699	0.2789	0.2853	0.2752	0.2940
0.2700	0.2700	0.2740	0.2610	0.2831	0.2760	0.2789	0.2853
0.2612	0.2547	0.2652	0.2457	0.2740	0.2611	0.2700	0.2701

2NW		2SW		2SE		2NE	
x	y	x	y		y		y
0.2652	0.2456	0.2692	0.2368	0.2781	0.2520	0.2741	0.2611
0.2740	0.2611	0.2781	0.2520	0.2871	0.2668	0.2830	0.2761
0.2782	0.2520	0.2822	0.2429	0.2910	0.2579	0.2871	0.2669
0.2692	0.2367	0.2732	0.2277	0.2821	0.2430	0.2782	0.2521

3NW		3SW		3SE		3NE	
x	y	x	y		y		y
0.2752	0.2940	0.2788	0.2853	0.2910	0.3003	0.2880	0.3099
0.2880	0.3099	0.2911	0.3002	0.3032	0.3144	0.3010	0.3259
0.2911	0.3002	0.2940	0.2901	0.3053	0.3035	0.3031	0.3145
0.2788	0.2853	0.2829	0.2761	0.2939	0.2903	0.2911	0.3002

4NW		4SW		4SE		4NE	
x	y	x	y		y		y
0.2829	0.2762	0.2871	0.2670	0.2971	0.2804	0.2940	0.2903
0.2939	0.2904	0.2971	0.2803	0.3074	0.2931	0.3053	0.3036
0.2972	0.2803	0.3000	0.2699	0.3092	0.2818	0.3073	0.2931
0.2871	0.2670	0.2909	0.2581	0.3000	0.2699	0.2971	0.2805

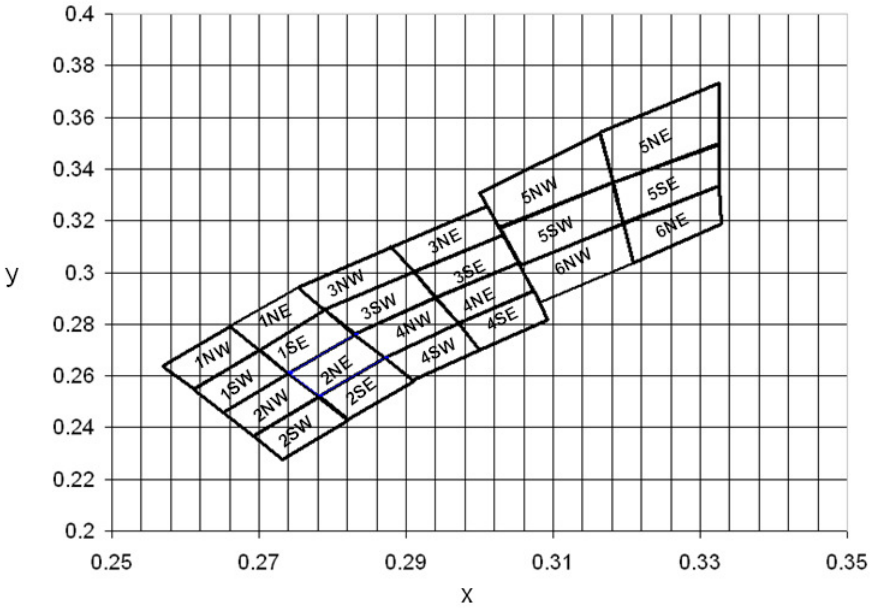
5NW		5SW		5SE		5NE	
x	y	x	y		y		y
0.3001	0.3310	0.3027	0.3173	0.3181	0.3348	0.3164	0.3541
0.3164	0.3540	0.3180	0.3348	0.3326	0.3496	0.3325	0.3733
0.3181	0.3346	0.3195	0.3189	0.3325	0.3337	0.3325	0.3497
0.3027	0.3172	0.3056	0.3027	0.3195	0.3188	0.3181	0.3348

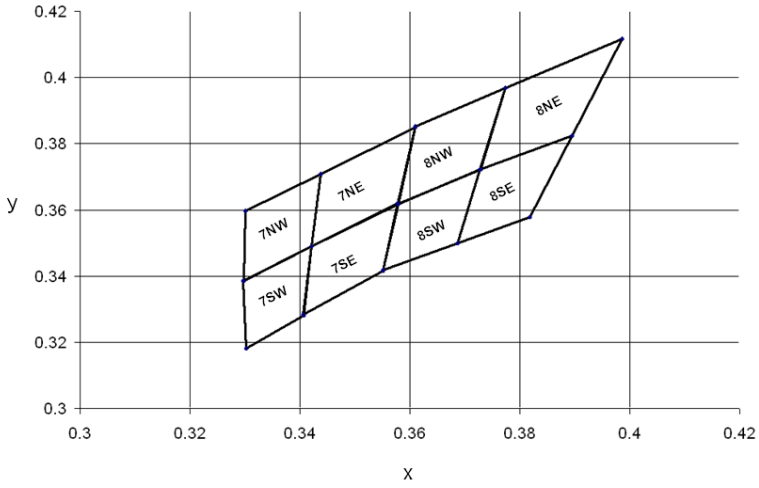
6NW		6NE	
x	y	x	y
0.3056	0.3027	0.3195	0.3190
0.3195	0.3190	0.3325	0.3336
0.3209	0.3037	0.3329	0.3186
0.3083	0.2885	0.3209	0.3036

7NW		8NW		7SW		8SW	
x	y	x	y	x	y	x	y
0.3300	0.3595	0.3610	0.3852	0.3297	0.3384	0.3579	0.3617
0.3438	0.3708	0.3774	0.3967	0.3421	0.3491	0.3727	0.3721
0.3421	0.3491	0.3729	0.3723	0.3408	0.3281	0.3687	0.3498
0.3298	0.3384	0.3577	0.3618	0.3303	0.3181	0.3552	0.3418
7NE		8NE		7SE		8SE	
x	y	x	y	x	y	x	y
0.3438	0.3708	0.3774	0.3967	0.3421	0.3491	0.3727	0.3721
0.3610	0.3850	0.3987	0.4116	0.3577	0.3620	0.3895	0.3823
0.3579	0.3617	0.3895	0.3823	0.3552	0.3416	0.3818	0.3579
0.3421	0.3491	0.3727	0.3723	0.3406	0.3283	0.3687	0.3500

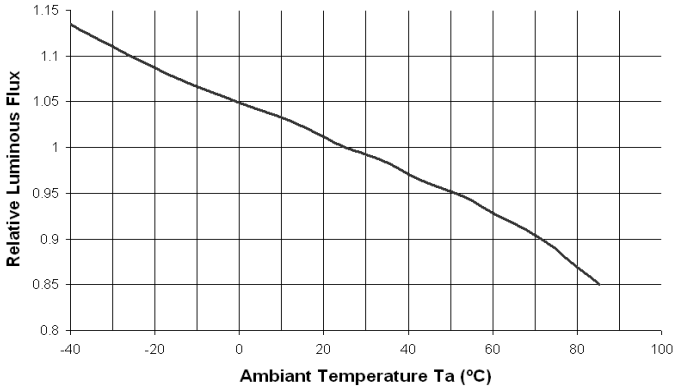
Chromaticity coordinates tolerance for each bin is +/-0.015

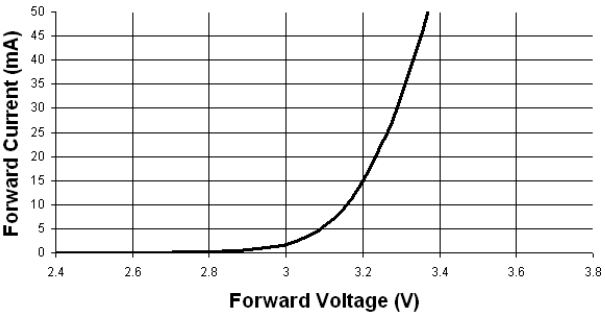
Chromaticity coordinate groups

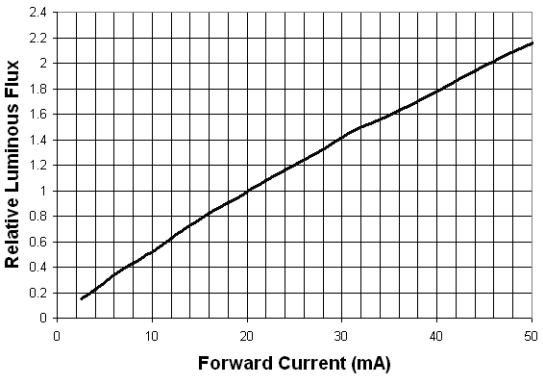


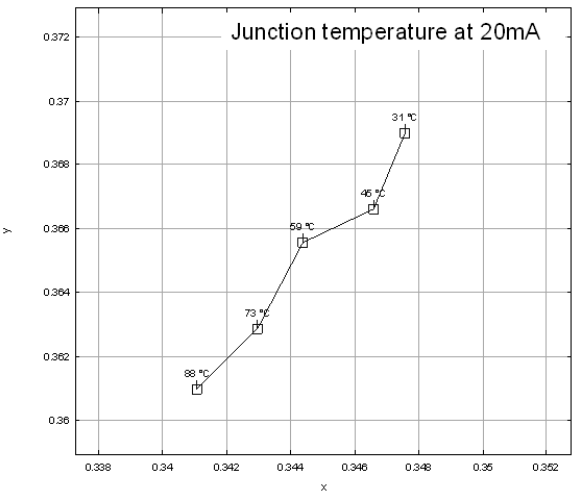


Characteristics curves



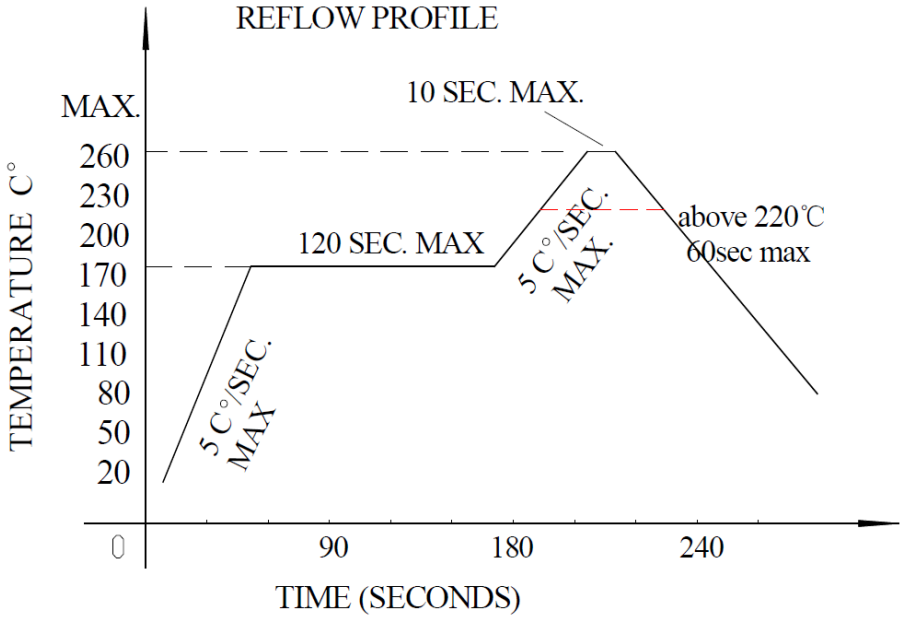






Reflow Soldering Profile

Reflow Soldering		Hand Soldering	
Pre-heat	160～180℃	Temperature	300℃ Max.
Pre-heat time	120 seconds Max.		
Peak temperature	260℃ Max.	Soldering time	3 second Max.
Soldering time	10 seconds Max.		(one time only)
Condition	Refer to Temperature-profile		



- Reflow soldering should not be done more than two times
- When soldering do not put stress on the LEDs during heating
- When hand soldering, the temperature of the iron must be kept under +300ºC, and at that temperature keep the soldering time under 3 sec.
- Hand soldering should be done only one time
- The rework must be completed within 5 sec under +260ºC
- The head of iron should not touch the resin

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