ASMC-PxB9-Txxxx
Envisium Power PLCC-4 Surface Mount LED
Data Sheet

Features

- **Industry standard PLCC-4 (Plastic Leaded Chip Carrier)**
- **High reliability LED package**
- **Mid-Power intensity brightness with optimum flux performance using TS AlInGaP dice technologies**
- **Available in Red, Red Orange and Amber colors**
- **High optical efficiency**
- **Higher ambient temperature at the same current possible compared to PLCC-2**
- **Super wide viewing angle at 120°**
- **Available in 8 mm carrier tape on 7-inch reel**
- **Compatible with both IR and TTW soldering process**

Applications

- **Interior automotive**
  – Instrument panel backlighting
  – Central console backlighting
  – Navigation and audio system
  – Push button backlighting
- **Exterior automotive**
  – Turn signals
  – Side repeaters
  – CHMSL
  – Rear combination lamp
  – Puddle light
- **Electronic signs and signals**
  – Channel lettering
  – Contour lighting
  – Indoor variable message sign
- **Office automation, home appliances, industrial equipment**
  – Front panel backlighting
  – Push button backlighting
  – Display backlighting

Envisium

Envisium is the premier class of mid-Power LEDs from Agilent and Lumileds utilizing the very best solid-state lighting technologies from these two industry leaders. Envisium LEDs offer unparalleled performance, engineering and design flexibility. For the very first time, customers have options for mid-power LEDs.

Description

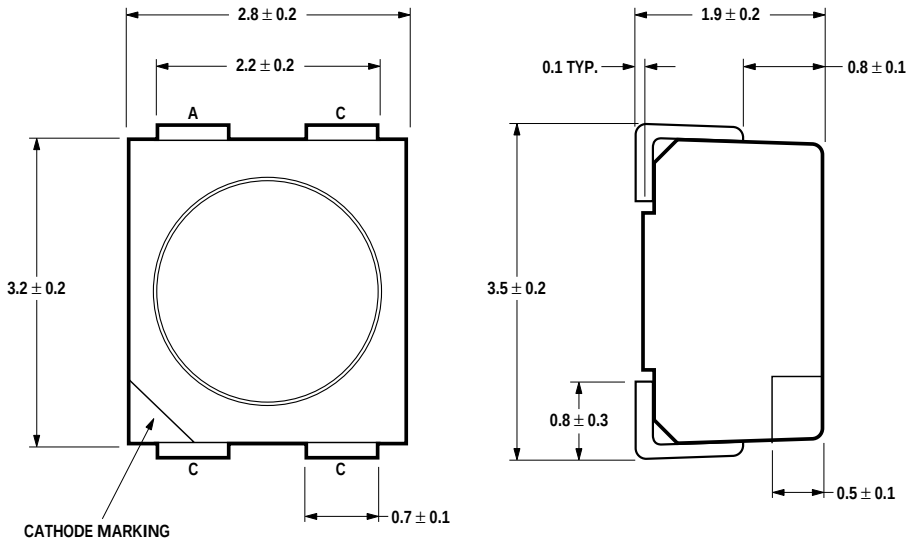
The Envisium Power PLCC-4 SMT LED is an extension of Agilent's PLCC-4 SMT LEDs. The package can be driven at high current due to its superior package design. The product is able to dissipate the heat more efficiently compared to the conventional PLCC-2 SMT LEDs. These LEDs produce higher light output with better flux performance compared to the conventional PLCC-4 SMT LEDs.

The Envisium Power PLCC-4 SMT LEDs are designed for higher reliability, better performance, and operate under a wide range of environmental conditions. The performance characteristics of these new mid-power LEDs make them uniquely suitable for use in harsh conditions such as in automotive applications, and in electronics signs and signals.

To facilitate easy pick and place assembly, the LEDs are packed in EIA-compliant tape and reel. Every reel is shipped in single intensity and color bin (except for red), to provide close uniformity. These LEDs are compatible with the IR solder reflow process. Due to the high reliability feature of these products, they also can be mounted using through-the-wave soldering process.

The Envisium Power PLCC-4 SMT LED is available in 3 colors, red, red-orange and amber.

Package Dimensions



NOTE: ALL DIMENSIONS IN mm.

Device Selection Guide

Color	Part Number	Intensity Bin	Min. I_V (mcd)	Max. I_V (mcd)	Total Flux Φ_V (mlm)[2,3] Typ.	Test Current (mA)	Dice Technology
Red	ASMC-PRB9-TV005	V1	630.00	1000.00	2600.00	50	AlInGaP
		V2	790.00	1260.00	3300.00		
		W1	1000.00	1600.00	-		
Red Orange	ASMC-PHB9-TW005	W1	1000.00	1600.00	4300.00	50	AlInGaP
		W2	1200.00	2020.00	5000.00		
		X1	1580.00	2500.00	-		
Amber	ASMC-PAB9-TV005	V1	630.00	1000.00	3000.00	50	AlInGaP
		V2	790.00	1260.00	3800.00		
		W1	1000.00	1600.00	-		

Notes:

1. The luminous intensity, I_V, is measured at the mechanical axis of the lamp package. The actual peak of the spatial radiation pattern may not be aligned with this axis.
2. Φ_V is the total luminous flux output as measured with an integrating sphere after the device has stabilized.
3. Flux tested at mono pulse conditions.

Part Numbering System

ASMC - PX_1 B9 - TX_2 X_3 X_4 X_5

- X_5 — **Packaging Option**
- X_4 — **Color Bin Selection**
- X_3 — **Intensity Bin Limit**
- X_2 — **Intensity Bin Selection**
- X_1 — **LED Chip Color**

Absolute Maximum Ratings (T_A = 25°C)

Parameters	ASMC-PxB9-Txxxx
DC Forward Current[1]	70 mA[3,4]
Peak Forward Current[2]	200 mA
Power Dissipation	240 mW
Reverse Voltage	5 V
Junction Temperature	125°C
Operating Temperature	-40°C to +100°C
Storage Temperature	-40°C to +100°C

Notes:
1. Derate linearly as shown in figure 4.
2. Duty factor = 10%, Frequency = 1 kHz.
3. Drive current between 10 mA and 70 mA is recommended for best long-term performance.
4. Operation at currents below 5 mA is not recommended.

Optical Characteristics (T_A = 25°C)

Color	Part Number	Dice Technology	Peak Wavelength λ_{PEAK} (nm)	Dominant Wavelength λ_D[1] (nm)	Viewing Angle $2\theta_{1/2}$[2] (Degrees)	Luminous Efficacy η_V[3] (lm/W)	Luminous Intensity / Total Flux I_V (mcd) / Φ_V[4,5] (lm)
			Typ.	Typ.	Typ.	Typ.	Typ.
Red	ASMC-PRB9-Txxx5	AlInGaP	639.0	630.0	120	155	0.30
Red Orange	ASMC-PHB9-Txxx5	AlInGaP	623.0	617.0	120	263	0.29
Amber	ASMC-PAB9-Txxx5	AlInGaP	594.0	592.0	120	500	0.26

Notes:
1. The dominant wavelength, λ_D, is derived from the CIE Chromaticity Diagram and represents the color of the device.
2. $\theta_{1/2}$ is the off-axis angle where the luminous intensity is 1/2 the peak intensity.
3. Radiant intensity, Ie in watts/steradian, may be calculated from the equation Ie = I_V/η_V, where I_V is the luminous intensity in candelas and η_V is the luminous efficacy in lumens/watt.
4. Φ_V is the total luminous flux output as measured with an integrating sphere after the device has stabilized.
5. Flux tested at mono pulse conditions.

Electrical Characteristics (T_A = 25°C)

	Forward Voltage V_F (Volts) @ I_F = 50 mA		Reverse Voltage V_R @ 100 μA
Part Number	Typ.	Max.	Min.
ASMC-PxB9-Txxx5	2.8	3.4	5

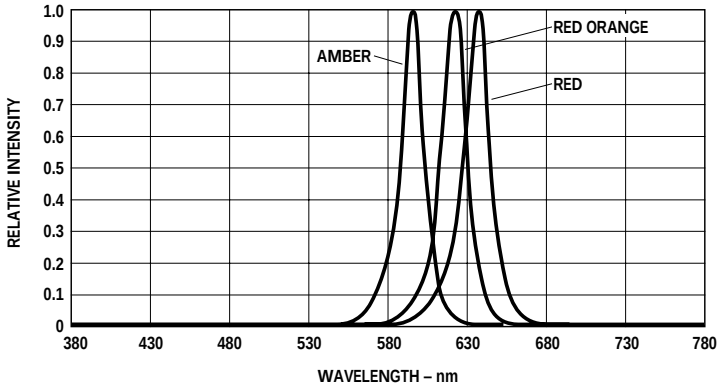


Figure 1. Relative intensity vs. wavelength.

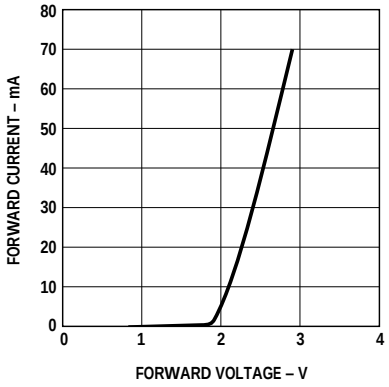


Figure 2. Forward current vs. forward voltage.

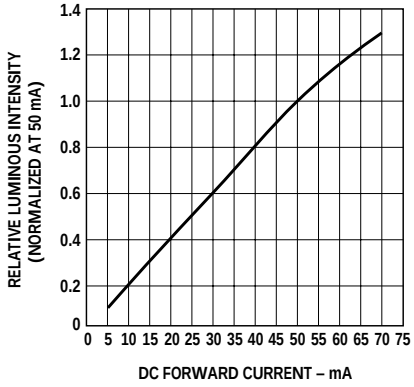


Figure 3. Relative intensity vs. forward current.

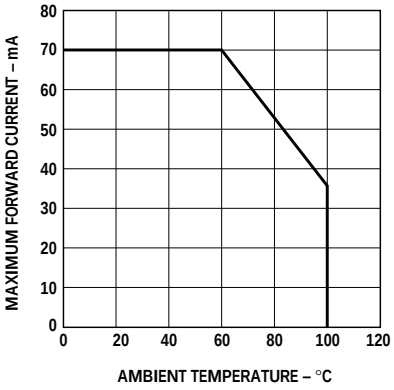


Figure 4. Maximum forward current vs. ambient temperature. Derated based on T_JMAX = 125°C, RθJA = 300°C/W.

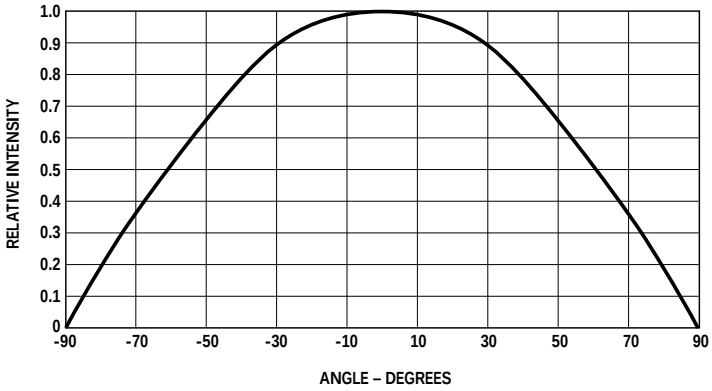


Figure 5. Radiation pattern.

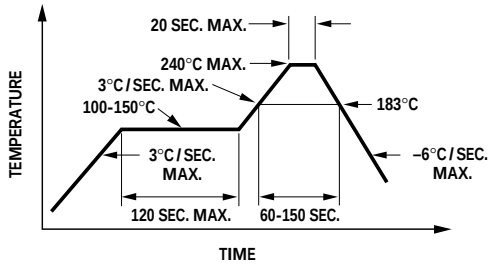
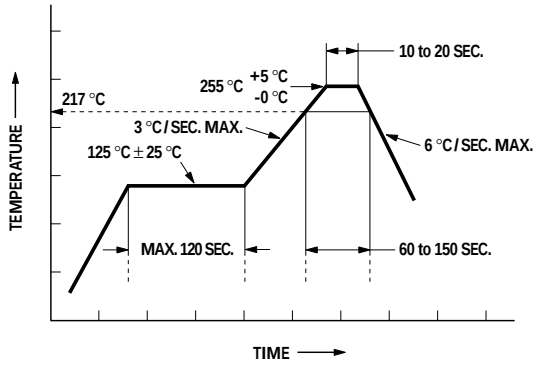
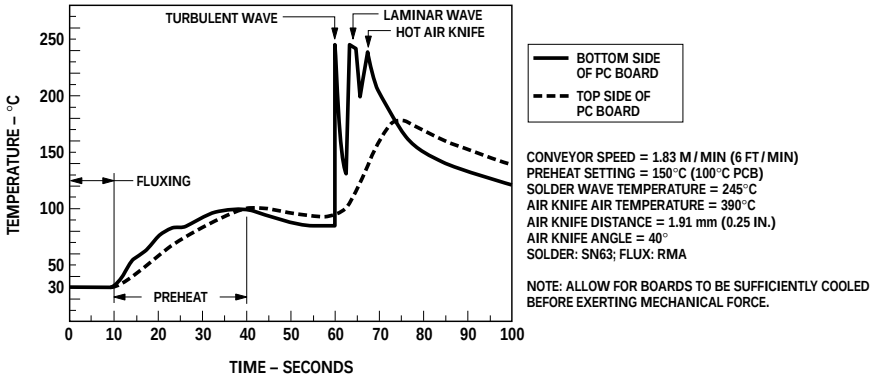


Figure 6a. Recommended Sn-Pb reflow soldering profile.



*** THE TIME FROM 25 °C TO PEAK TEMPERATURE = 6 MINUTES MAX.**

Figure 6b. Recommended Pb-free reflow soldering profile.



CONVEYOR SPEED = 1.83 M / MIN (6 FT / MIN)
PREHEAT SETTING = 150°C (100°C PCB)
SOLDER WAVE TEMPERATURE = 245°C
AIR KNIFE AIR TEMPERATURE = 390°C
AIR KNIFE DISTANCE = 1.91 mm (0.25 IN.)
AIR KNIFE ANGLE = 40°
SOLDER: SN63; FLUX: RMA

NOTE: ALLOW FOR BOARDS TO BE SUFFICIENTLY COOLED BEFORE EXERTING MECHANICAL FORCE.

Figure 7. Recommended wave soldering profile.

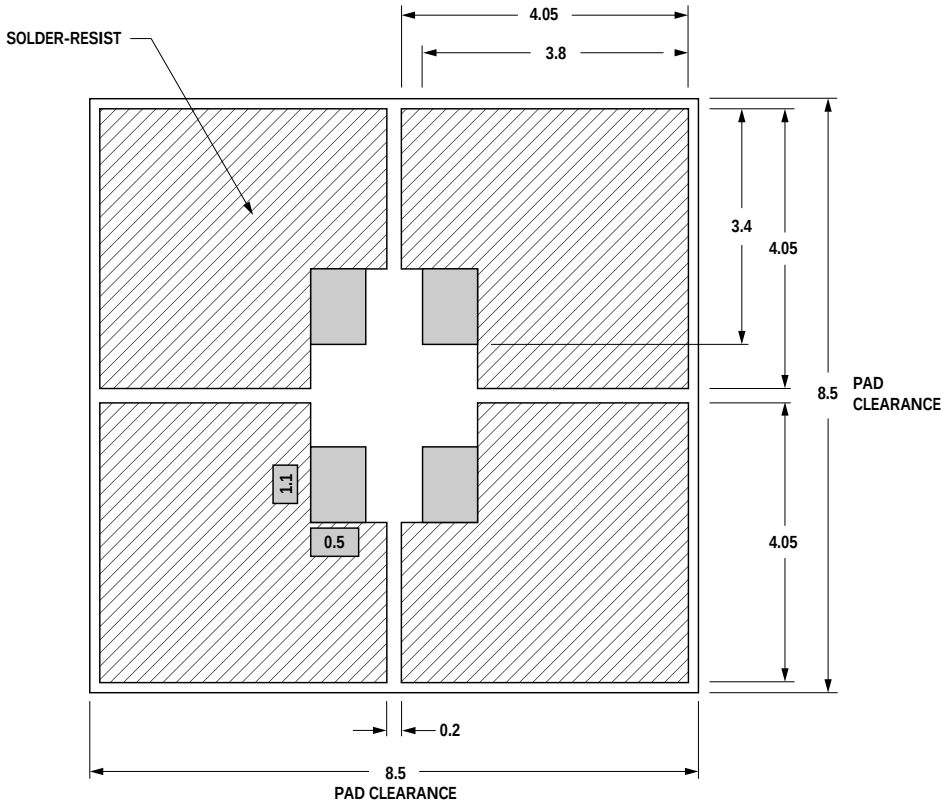


Figure 8. Recommended soldering pad pattern.

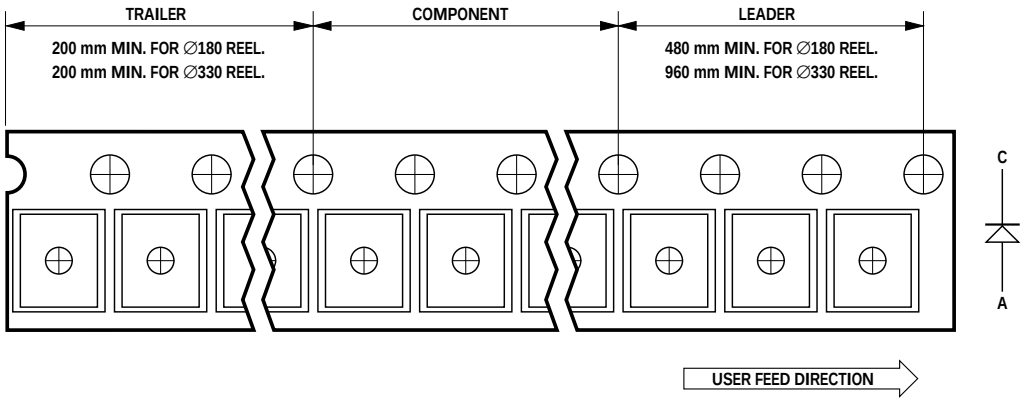


Figure 9. Tape leader and trailer dimensions.

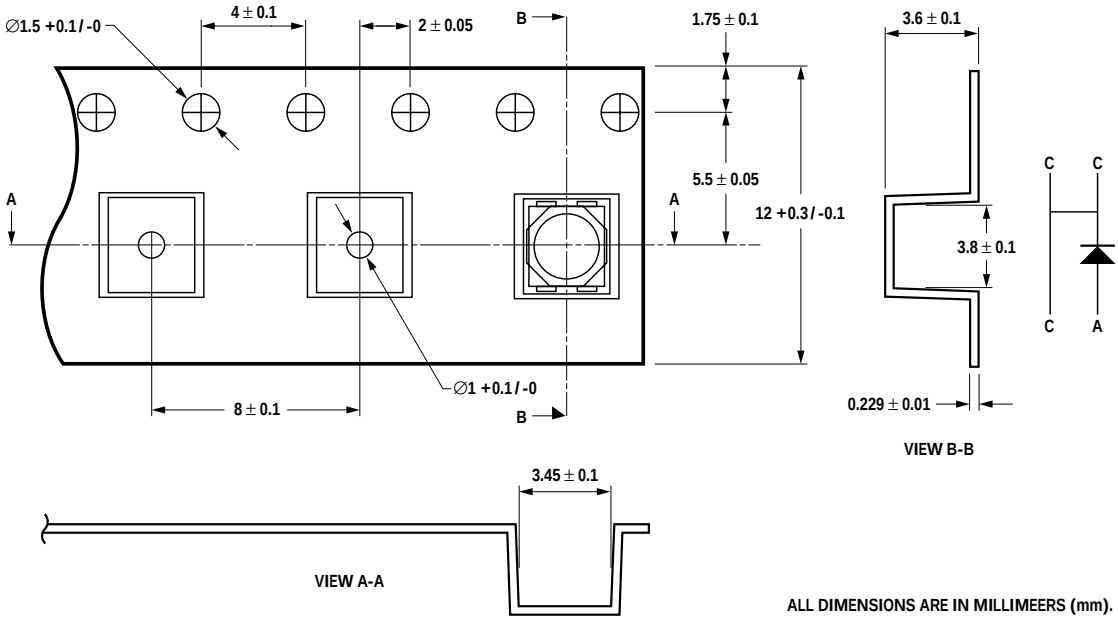


Figure 10. Tape dimensions.

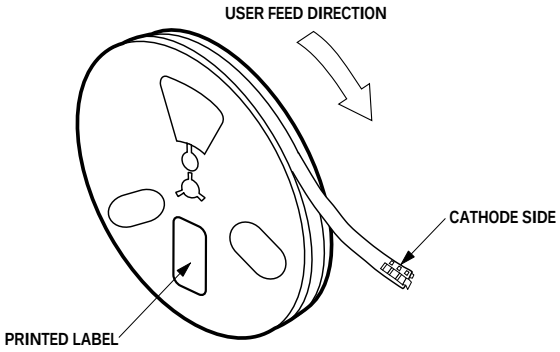


Figure 11. Reeling orientation.

Intensity Bin Select (X_2X_3)
Individual reel will contain parts from one half bin only

X_2	Min I_V Bin

X_3	
0	Full Distribution
3	3 half bins starting from $X_6$1
4	4 half bins starting from $X_6$1
5	5 half bins starting from $X_6$1
7	3 half bins starting from $X_6$2
8	4 half bins starting from $X_6$2
9	5 half bins starting from $X_6$2

Intensity Bin Limits & Typical Flux

Bin ID	Min. (mcd)	Max. (mcd)
V1	715.00	900.00
V2	900.00	1125.00
W1	1125.00	1400.00
W2	1400.00	1800.00
X1	1800.00	2240.00
X2	2240.00	2850.00

Tolerance of each bin limit = ±12%.

Color Bin Select (X_4)
Individual reel will contain parts from one full bin only.

X_4	
0	Full Distribution
A	1 and 2 only
B	2 and 3 only
C	3 and 4 only
D	4 and 5 only
E	5 and 6 only
G	1, 2 and 3 only
H	2, 3 and 4 only
J	3, 4 and 5 only
K	4, 5 and 6 only
M	1, 2, 3 and 4 only
N	2, 3, 4 and 5 only
P	3, 4, 5 and 6 only
R	1, 2, 3, 4, and 5 only
S	2, 3, 4, 5 and 6 only

Color Bin Limits

Amber / Yellow	Min. (nm)	Max. (nm)
1	582.0	584.5
2	584.5	587.0
3	587.0	589.5
4	589.5	592.0
5	592.0	594.5
6	594.5	597.0

Red Orange	Min. (nm)	Max. (nm)
1	611.0	616.0
2	616.0	620.0

Red	Min. (nm)	Max. (nm)
Full Distribution		

Tolerance of each bin limit = ± 1 nm.

Packaging Option (X_5)

Option	Test Current	Package Type	Reel Size
5	50 mA	Top Mount	7 inch

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For product information and a complete list of distributors, please go to our web site.

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Data subject to change.

January 30, 2005
5989-2308EN

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