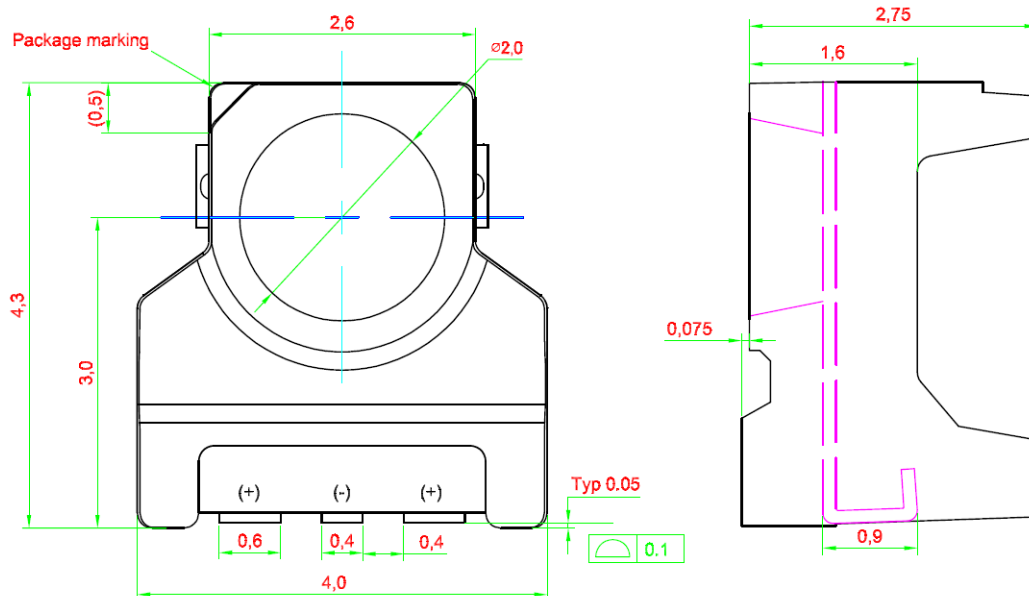


**Introduction:**

Power Right Angle DomiLED features a package with excellent luminous efficiency in high optimization in its optical design and provides stable SMT process to avoid topping issue.

- Super high brightness surface mount LED.
- 120° viewing angle.
- Compact package outline (LxWxH) of 4.0 x 4.3 x 2.75 mm.
- Qualified according to JEDEC moisture sensitivity Level 2.
- Low thermal resistance.
- Superior corrosion robustness.
- Compatible to IR reflow soldering.
- Compliance to automotive standard; AEC-Q102.
- Environmental friendly; RoHS compliance.
- Desired for sideway illumination.



**Figure 1: Power Right Angle DomiLED, D3x-xKG Package Dimension**

**Standard Soldering Process:**

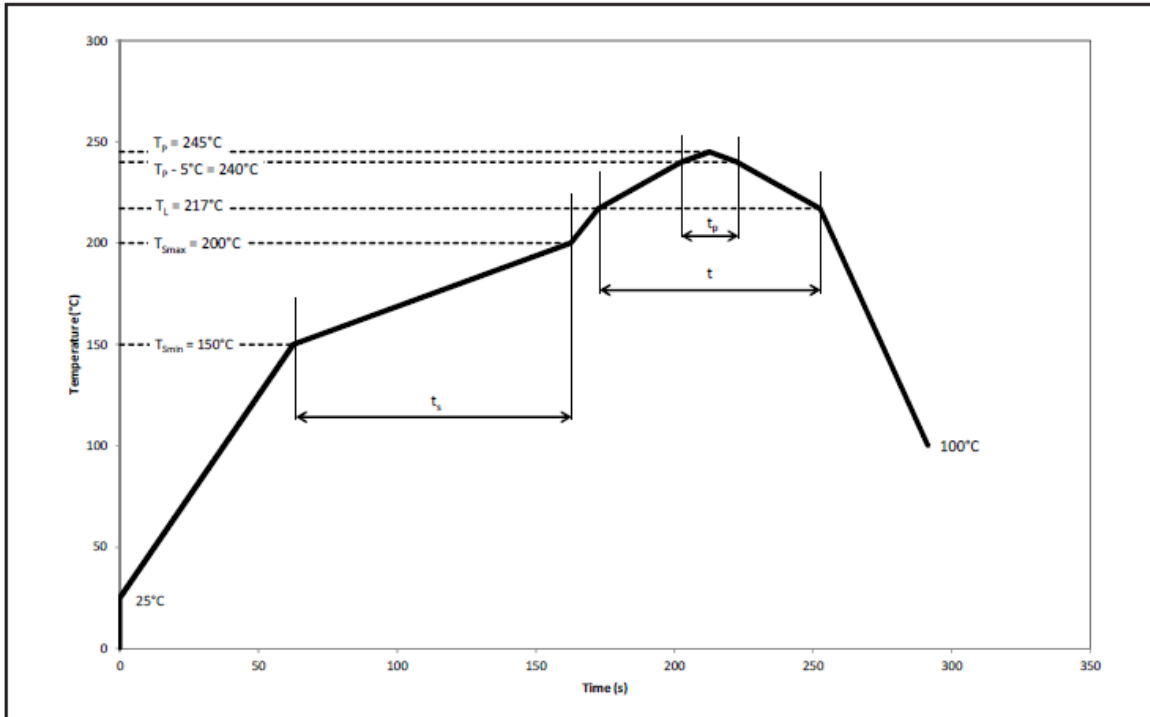
The Power Right Angle DomiLED package soldering surfaces are plated with gold (Au) and are therefore RoHs compliant. The component is designed to be compatible to the existing industry SMT process and IR-reflow.

However, due to the unique design, all the soldering terminals are located at the bottom surface of the component. This greatly reduces the space required and also enhances the thermal dissipation capability of the component. Heat from the LED chip is directly conducted via the soldering terminals to the external environment. Thermal path is kept to the very minimum.

As for the soldering process, the component is qualified for Pb-free soldering profile. The profiles is as per described in the datasheet.

**Recommended IR Reflow Profile:**

Product complies to MSL Level 2 acc. to JEDEC J-STD-020E



Profile Feature	Symbol	Pb-Free Assembly			Unit
		Min.	Recommended	Max.	
Ramp-up rate to preheat 25°C to T <sub>smin</sub>	-	-	2	3	°C/s
Time t <sub>s</sub> T <sub>smin</sub> to T <sub>smax</sub>	t <sub>s</sub>	60	100	120	s
Ramp-up rate to peak T <sub>L</sub> to T <sub>p</sub>	-	-	2	3	°C/s
Liquidous temperature	T <sub>L</sub>	-	217	-	°C
Time above liquidous temperature	t	60	80	150	s
Peak temperature	T <sub>p</sub>	-	245	260	°C
Time within 5°C of the specified peak temperature T <sub>p</sub> - 5°C	T <sub>p</sub>	10	20	30	s
Ramp-down rate T <sub>p</sub> to 100°C	-	-	3	6	°C/s
Time 25°C to T <sub>p</sub>	-	-	-	480	s

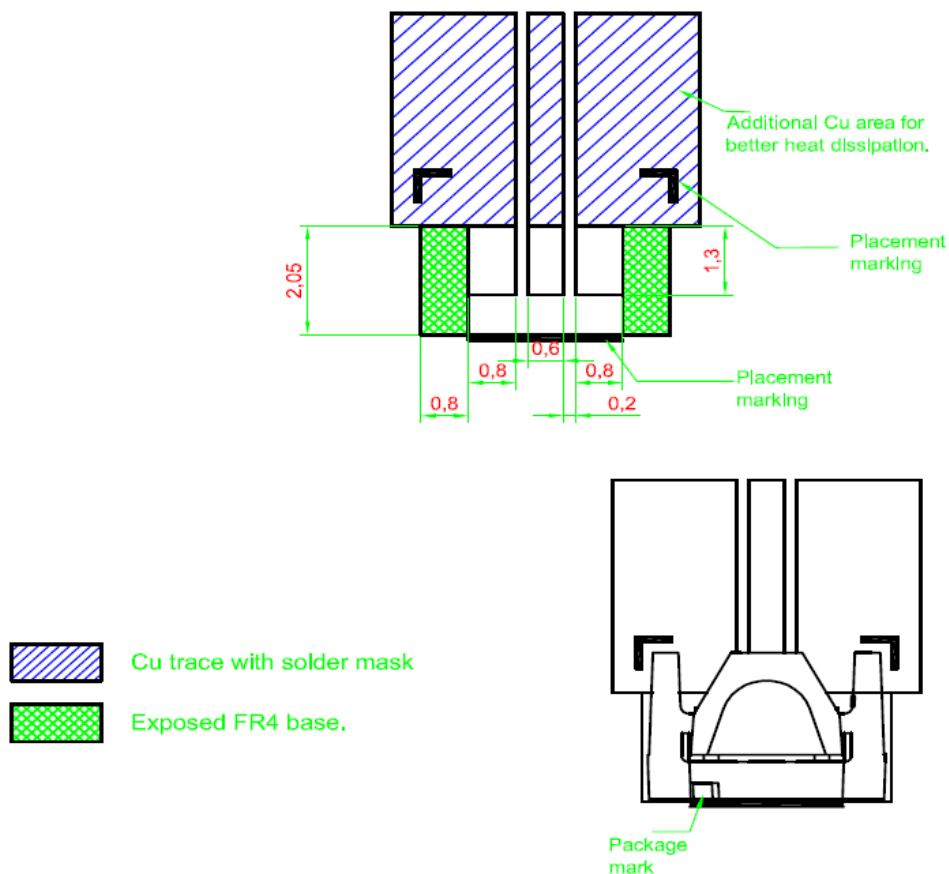
### Surface Mounting – Factors to Consider:

This application note provides a guideline for the surface mounting of Power Right Angle DomiLED. The following parameters have to be considered in order to optimize the surface mounting performance.

- > Solder pad size
- > Solder stencil size
- > Solder paste thickness
- > Pipette
- > Placement condition

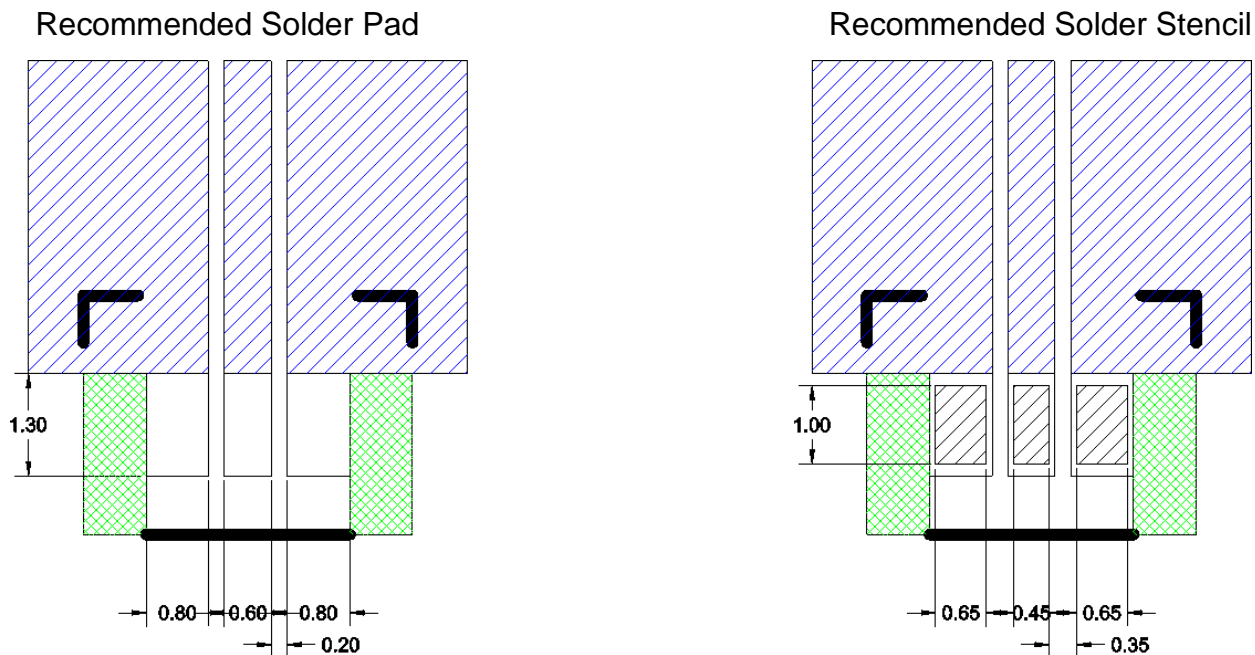
### Solder Pad Size

The recommended solder pad design is as illustrated in the data-sheet. The Component Placement Marking on PCB is recommended to allow accurate component placement by SMT machine vision system from the top direction. There should be an exposed FR4 base area (without solder mask) as shown in green hash legend in the diagram. This solder mask exclusion area allows proper seating of the LED component body to the top surface of PCB and to enhance component solderability during reflow soldering.



## Solder Stencil Size

In order to minimize solder bridging problems, it is common to design stencil aperture size smaller than the recommended solder pad. Excessive amount of solder paste deployed will result to tilted parts and inaccurate placement position. It is recommended that the aperture is reduced to 80% of the recommended solder pad design.



## Solder Paste Thickness

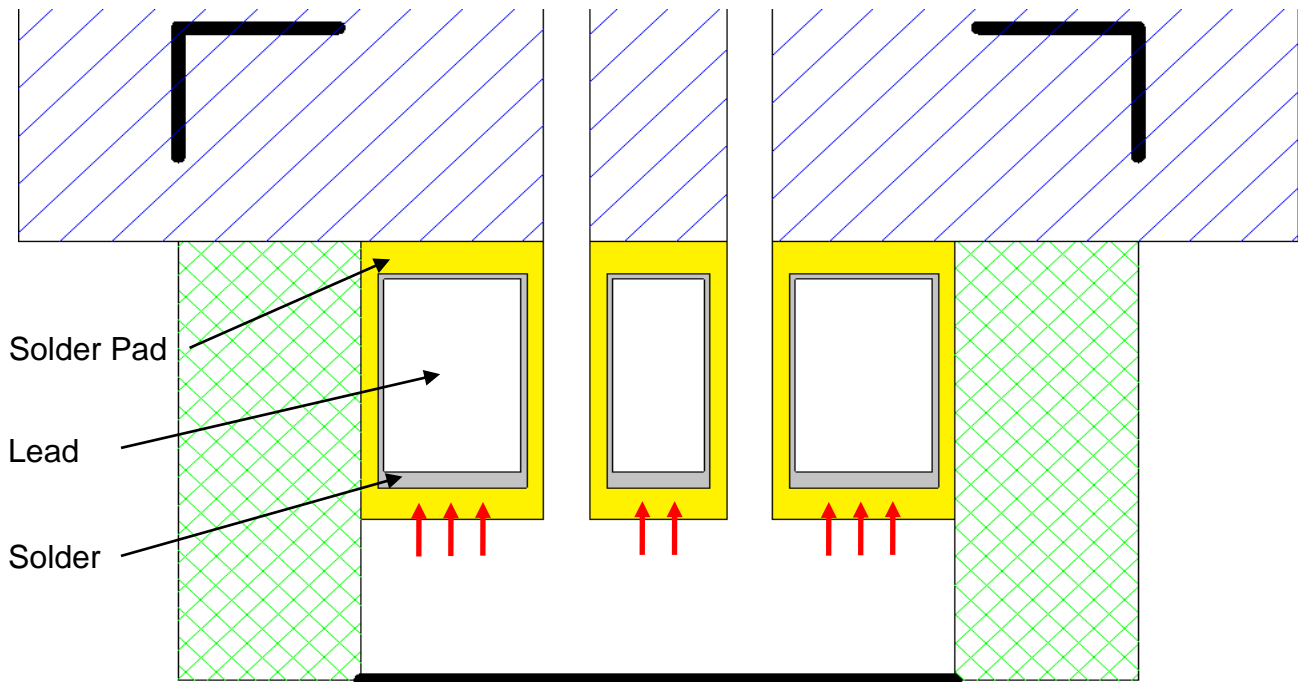
We recommend using minimum solder paste in order to achieve a good solder formation. A solder paste thickness of 0.125 mm will be optimum.

## Pipette

Pick and place machine should be able to process Power Right Angle DomiLED devices with the required placement accuracy. Care should be observed that the surface of the pipette which is in contact with the LED is flat and smooth. Parameter settings for the pick and place process should also be evaluated to ensure no damage to the LEDs. For recommended pipette design, please refer to our *Recommended Pick and Place Tools for LEDs from DOMINANT Opto Technologies* application note.

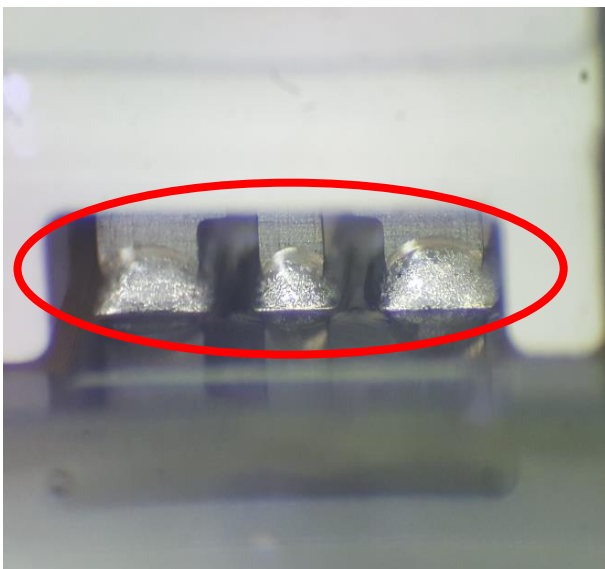
### Optimum LED Placement Location

Base on Dominant internal SMT assessment, the landing position of the LED component on solder paste play significant role in determining the drift & rotation angle of component after IR reflow soldering. It is recommended that the position of the Power Right Angle DomiLED lead should be in the most positive Y-direction from the center of the printed solder as shown in Figure 2 with red arrow. This will provide consistent placement accuracy with minimal movement offset and angle offset after reflow soldering.

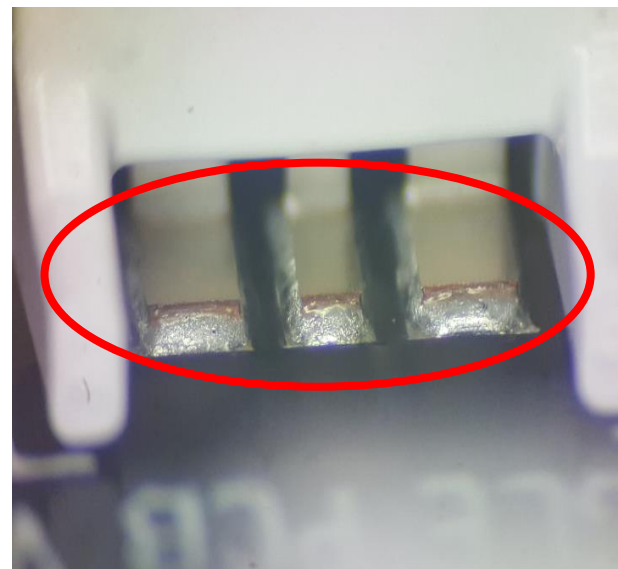


**Figure 2:** Recommended placement position

Package Front View



Package Back View



**Figure 3:** Example of good solder formation on lead

### **Solder Paste Type**

Dominant has tested the SAC305 solder paste with satisfactory results. However, since application environments vary widely, we recommend that customers perform their own solder paste evaluation in order to ensure it is suitable for the targeted application.