

Introduction:

Synonymous with function and performance, the Right Angle Multi DomiLED series is perfectly suited for a variety of cross-industrial applications due to its small package outline, durability and superior brightness.



- High brightness tri-color surface mount LED.
- Each color can be individually controlled
- 120° viewing angle.
- Small package outline (LxWxH) of 6.2 x 1.4 x 2.15 mm.
- Qualified according to JEDEC moisture sensitivity Level 2.
- Compatible to IR reflow soldering.
- Environmental friendly; RoHS compliance.
- Superior Corrosion Resistant.
- Compliance to automotive standard; AEC-Q102.

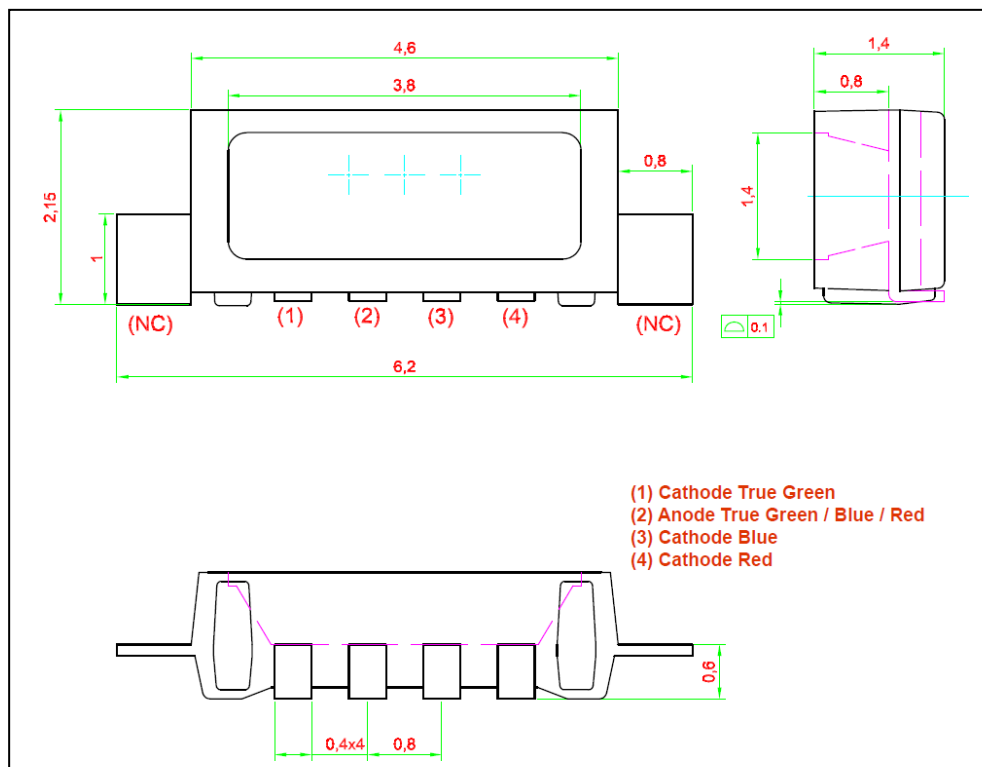


Figure 1: Right Angle Multi DomiLED, DSRTB-FKG Package Dimension

Standard Soldering Process:

The Right Angle Multi 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.

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

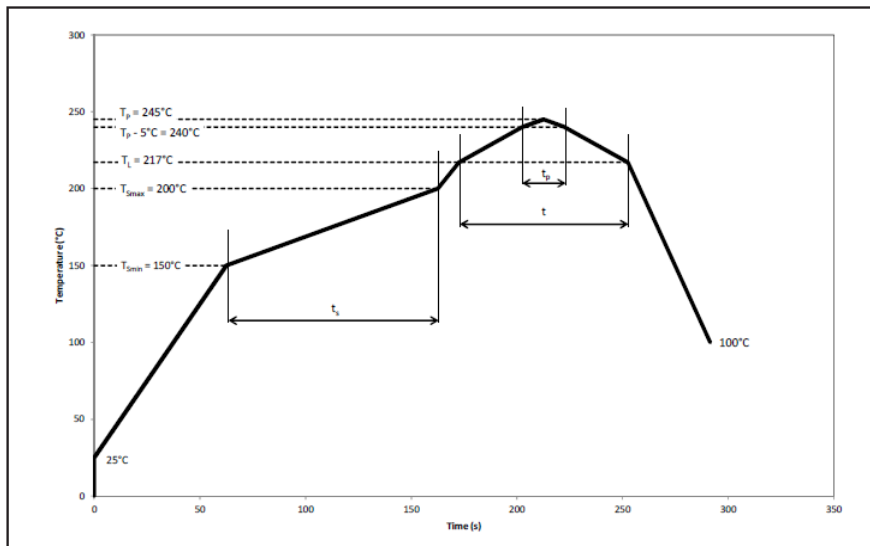


Figure 2: Recommended Pb Free IR-Reflow Soldering Profile

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

Surface Mounting – Factors to Consider:

This application note provides a guideline for the surface mounting of Right Angle Multi 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
- > Solder quality check

Solder Pad Size

The recommended solder pad design is as illustrated in the data-sheet.

The primary thermal path is through NC lead at both side of LED package. Heat from the LED chip is directly conducted via the NC soldering terminals to the external environment. Hence, the copper area on PCB for NC lead must be large enough to maximize the heat dissipation efficiency.

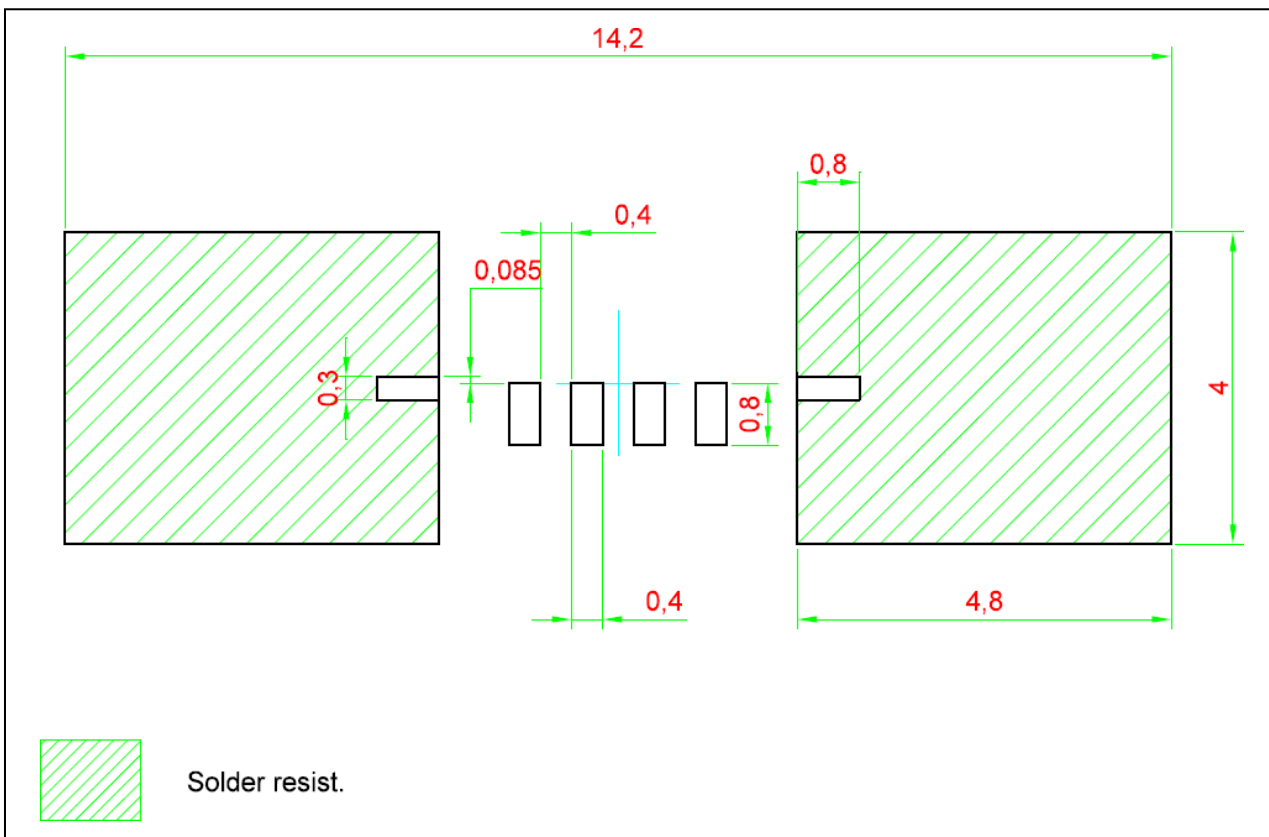


Figure 3: Recommended solder pad size

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.

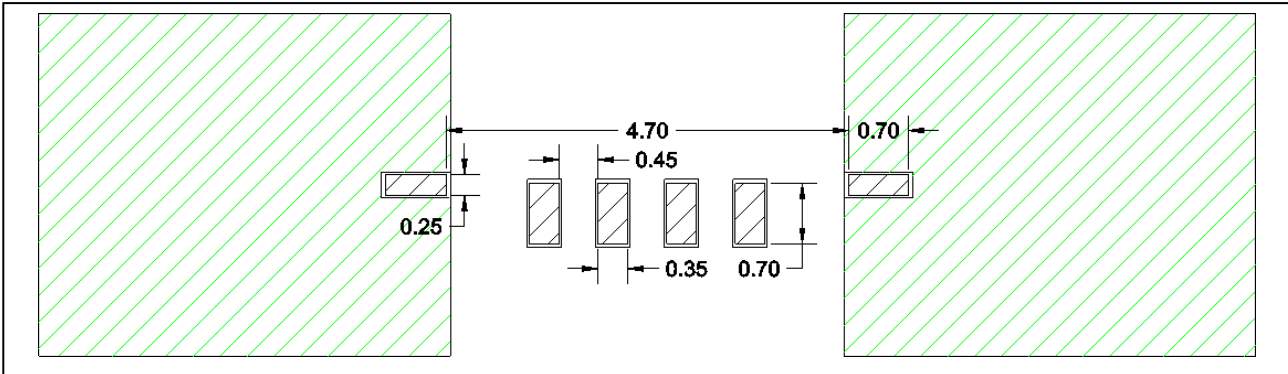


Figure 4: Recommended solder stencil size

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 Right Angle Multi 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.

Solder Quality Check after SMT Process

For Right Angle Multi DomiLED, the primary soldering surfaces are at the bottom of the LED component. The solder fillet can be observed easily at the back of the LED package. Below pictures is the example of LED lead with good solderability.

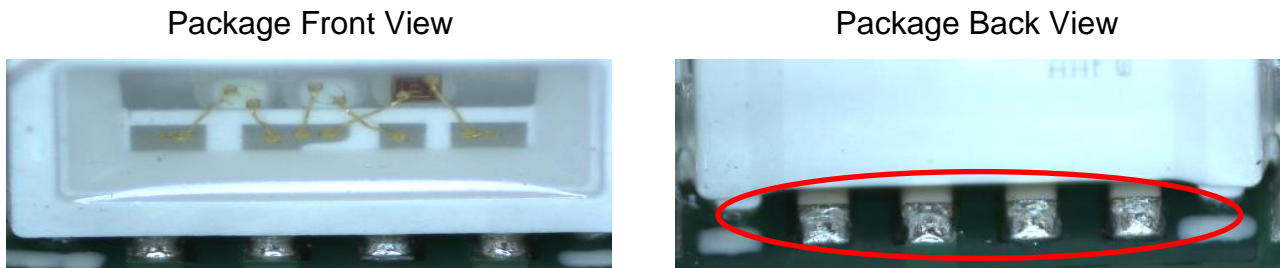


Figure 5: Example of good solder formation on lead

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.