

**Introduction:**

Primax is a super high brightness surface mount LED on a compact package outline of 3.2 x 3.2 x 1.2mm. Its high intensity makes it an ideal choice for backlighting, signage, exterior automotive lighting and decorative lighting.

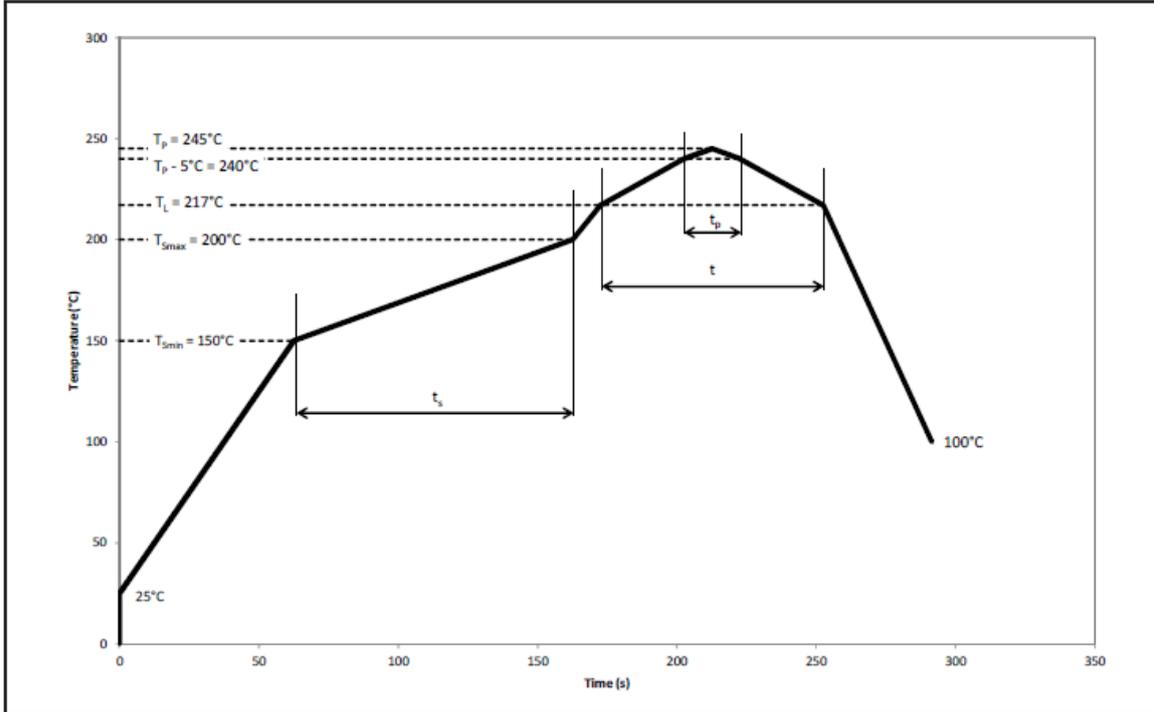


**Standard Soldering Process:**

The Primax component is designed to be compatible to the existing SMT process and standard IR-reflow. There is no special process or equipment required for the mounting of the components onto boards. Both the thermal and electrical connections are provided by the conventional mounting process. Therefore, there is no need to provide for additional process to take care for the thermal connection. This is significantly superior compared to other competitor parts.

**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<br>25°C to $T_{smin}$                    | -      | -                | 2           | 3    | °C/s |
| Time $t_s$<br>$T_{smin}$ to $T_{smax}$                           | $t_s$  | 60               | 100         | 120  | s    |
| Ramp-up rate to peak<br>$T_L$ to $T_p$                           | -      | -                | 2           | 3    | °C/s |
| Liquidous temperature  | $T_L$  | -                | 217         | -    | °C   |
| Time above liquidous<br>temperature                              | $t$    | 60               | 80          | 150  | s    |
| Peak temperature   | $T_p$  | -                | 245         | 260  | °C   |
| Time within 5°C of the specified<br>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    |

### **Manual Soldering Process:**

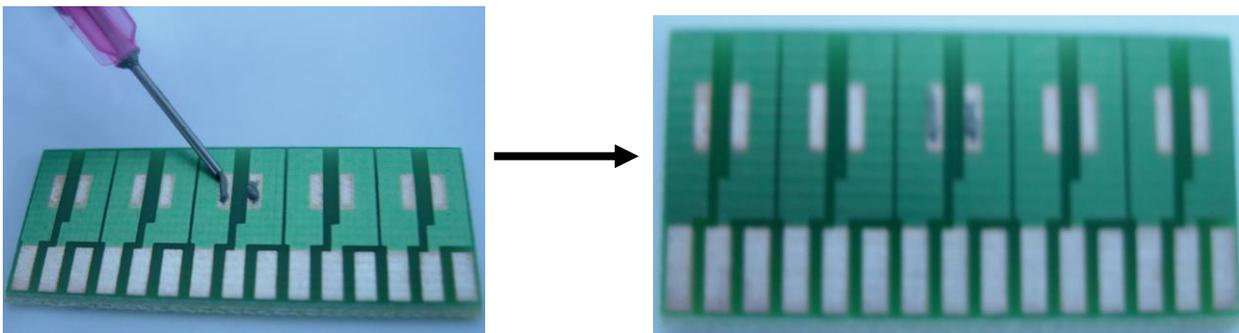
In cases of engineering evaluations, manual soldering may be required. Dominant generally do not recommend such process as the process control is typically poor. Spikes of over temperature or prolong time of exposure to high heat may damage the component.

Primax is unique as the soldering terminals are located at the bottom side of the component. There are no soldering surfaces available at the side of the component.

This application note intends to provide guidelines for manual soldering technique for Primax by using hot air blow. Using this method, solder paste is first applied onto the board. The solder paste that may be used is common to that used in the SMT industry. Once the paste is applied, Primax may be placed into position. A hot air gun is then used to blow heated air onto the component in order to melt the solder paste and provide for connection. The hot air gun is set to approximately 350°C and is kept at a distance of approximately 1cm from the component. The hot air blow is carried out for about 10 to 15 seconds to complete the soldering.

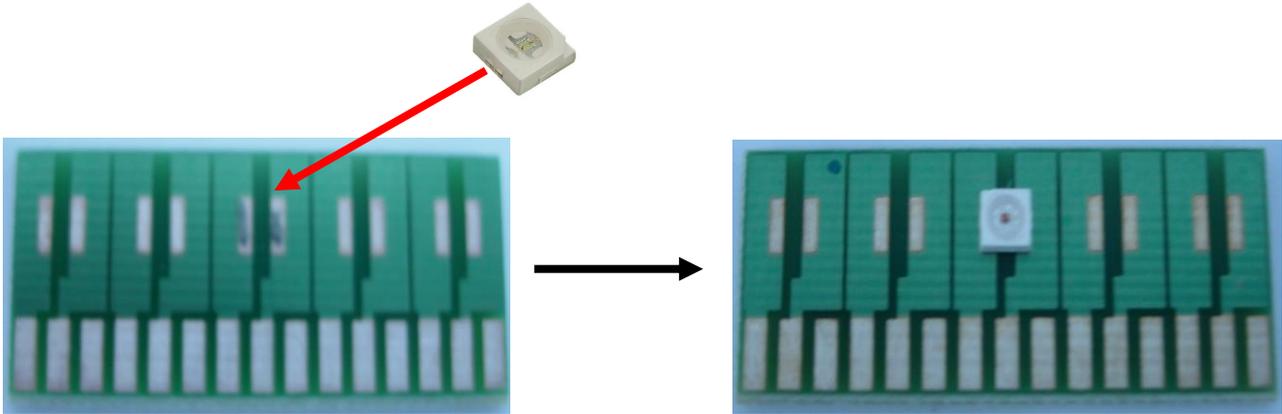
Please refer to the following illustrations for the process steps.

**Figure 1: Apply specific amount of solder paste to the PC board**



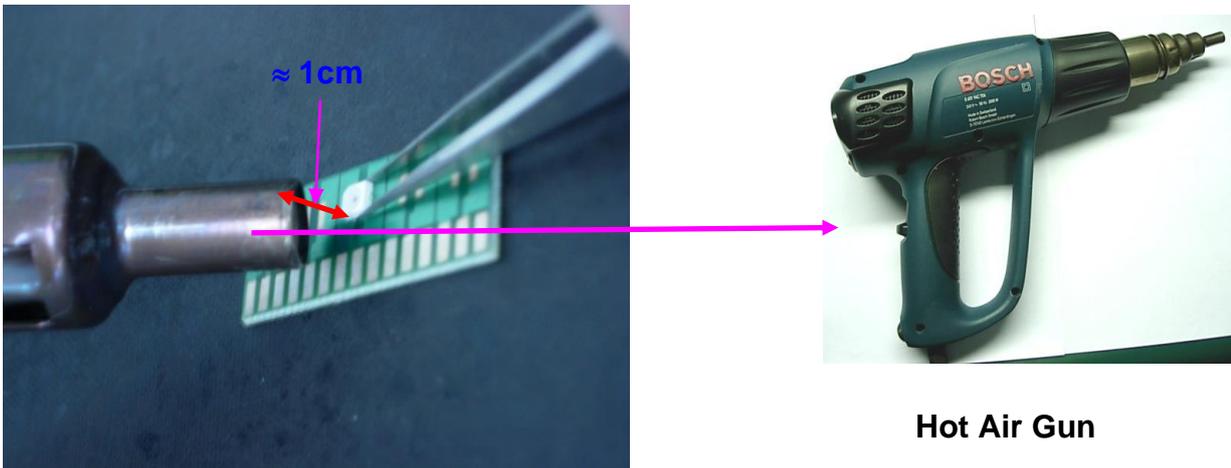
Then place the component onto the board. Please refer to figure 2.

**Figure 2: The component is attached to the PCB.**



Finally use hot air gun set at 350°C to blow it at a distance of approximately 1cm. This will take about 10 to 15 seconds for the solder paste to melt and form the connections. Please refer to figure 3.

**Figure 3: Use hot air gun to blow it for 10 to 15 seconds.**



**Summary Of Process Flow:**

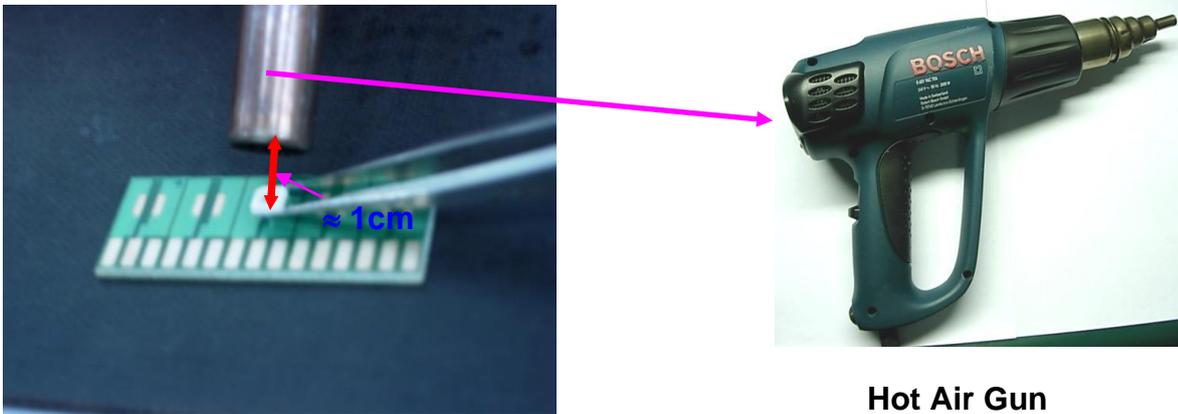


**Manual De-Soldering Process:**

As like soldering process, hot air blow is using to de-solder Primax. Using this method, a hot air gun is then used to blow heated air onto the component in order to disconnect the connection. The hot air gun is set to approximately 350°C and is kept at a distance of approximately 1cm from the component. The hot air blow is carried out for about 10 to 15 seconds to complete the de-soldering process.

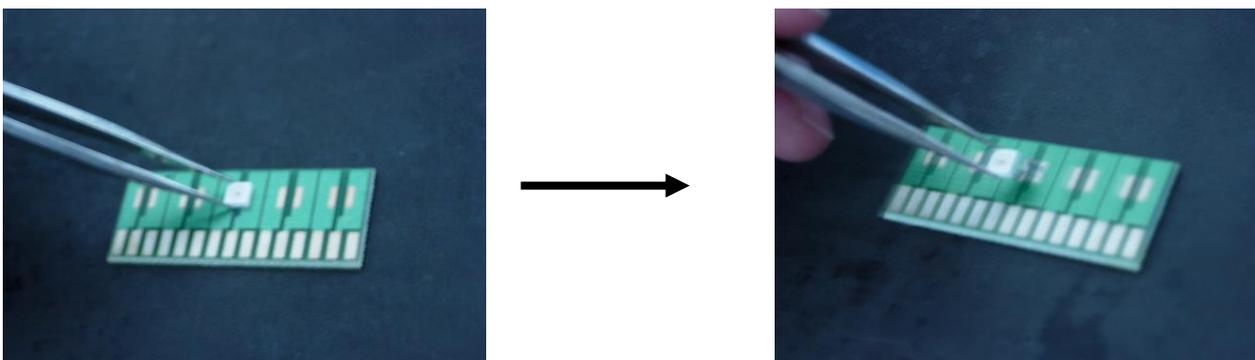
Please refer to the following illustrations for the process steps.

**Figure 4: Use hot air gun to blow it for 10 to 15 seconds.**



Use hot air gun set at 350°C to blow it at a distance of approximately 1cm. This will take about 10 to 15 seconds to disconnect the connections.

**Figure 5: Use tweezers to take up SMD LED from PCB.**



**Summary Of Process Flow:**

