

Reflow Oven

The reflow oven is simply an infrared oven capable of achieving and holding temperatures required for melting solder paste. It offers a quick and simple solution to soldering down very fine SMD (surface mount components) (QFN, BGA, SOIC, etc) without having to use a soldering iron, microscope, and a very steady hand.

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- Operation



What's it good for

The reflow oven is useful for soldering LOTS of fine pitch components such as:

- QFN
- LQFP
- BGA
- SOIC
- 0805, 0102, etc...
- TSOP

very quickly. If you only have a few SMD passives like resistors or capacitors then it will NOT be worth the time to get the oven ready. If however you have a device with lots of small pins (like a microcontroller) and/or lots of SMD components you should strongly consider the oven as a good time saving tool. If you also need to make several copies of the same board see [Making Stencils](#) for a fast way of accurately applying solder paste.



The reflow oven is **not** very good for large through hole (PTH) components. Mostly because you may find it difficult to fill the plated through hole with enough solder paste to completely fill the hole and properly bind the post of the component to the hole. You will be better off using the reflow oven to first take care of all the SMD components then hand soldering any remaining PTH components.

Setup

Setting the Temperature Profile

Things to consider when setting the temperature profile settings:

- What is the copper weight (usually 0.5oz)?
- How large is the PCB?
- Does the PCB have a Ground Plane?
- Do any components have a center pad?
- Do any components have a heat-sink?
- Do any components have multiple connections to the Ground plane
- Do your Vias that connect to the ground or power planes have thermal relief cut-aways?
- Does your PCB have large copper pours under any components?
- Are there any components that are temperature sensitive (check datasheet)
- Are all the components rated for the same temperature range (eg: commercial, industrial, automotive, military grade components)

Setting the Cooling Period

Many of the same questions that had to be taken into consideration in the setting the temperature profile section will also effect the cooling section since large copper areas will hold heat longer and hence require longer cooling periods.

Ensuring good stenciling

Please see process page [Solder Stenciling](#) for proper guidelines on proper application of solder paste with a stencil.

Operation



Never take the board out of the oven until the cooling cycle is complete. Doing so may not only burn you, it will also likely confuse the machine and make the next run more difficult. (The machine is a bit a cheep and only takes temperature measurements at the end of the cycle and saves it for the start temperature of the next cycle. Hence opening the drawer will rapidly cool the compartment and confuse the temperature measurements.