

MULTILAYER CERAMIC CHIP CAPACITORS

SOLDERING GUIDELINES

Surface mount passive components may be soldered to P.C.B. and substrates using any of these methods:

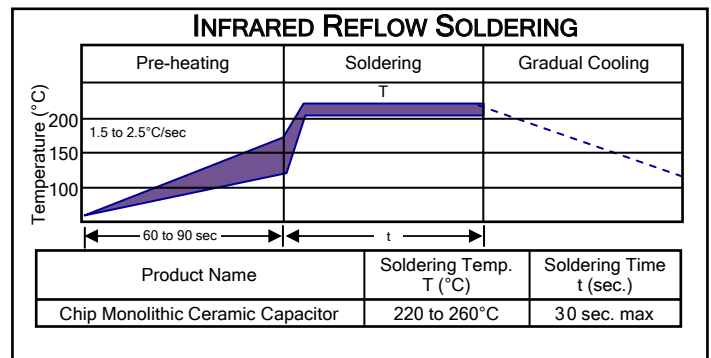
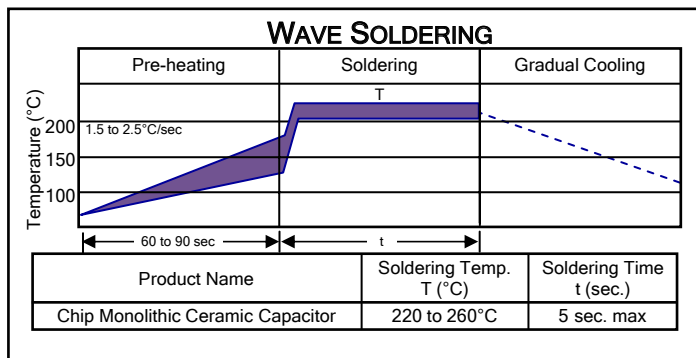
- Wave/dual wave
- Vapor phase reflow
- Bubble solder immersion
- Infrared reflow
- Hot air/convection reflow
- Other(laser, etc.).

Ceramic devices, particularly chip capacitors, generally have poor ability to withstand heat shock. Thermal shock may result during soldering and is a natural material characteristic. Chip capacitor failure mechanisms resulting from excessive thermal shock may include:

- Micro cracks in the ceramic
- Electrical shorts.
- Insulation resistance degradation in accelerated life test conditions.

Users of ceramic chip components can minimize thermal shock by employing a basic process prior to soldering (Recommendation: Preheat the ceramic chip components and board to within 100°C of the soldering temperature.) The time to preheat should be a minimum or one (1) minute.

In addition, the recommended soldering profile process time-temperature profile for components should be followed.

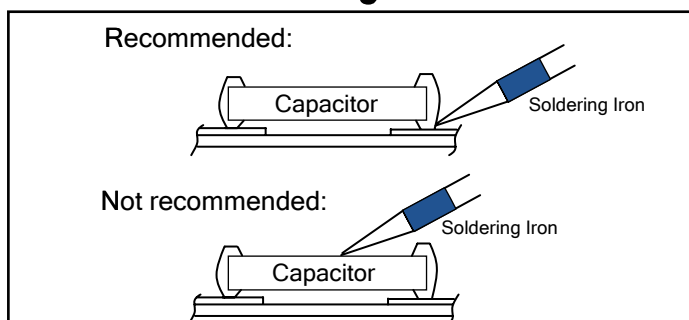


Vapor phase reflow soldering techniques may be used to attach many surface mount components onto a P.C.B. or substrate at one time. Solder temperatures are controlled precisely due to the known boiling point of the liquid.

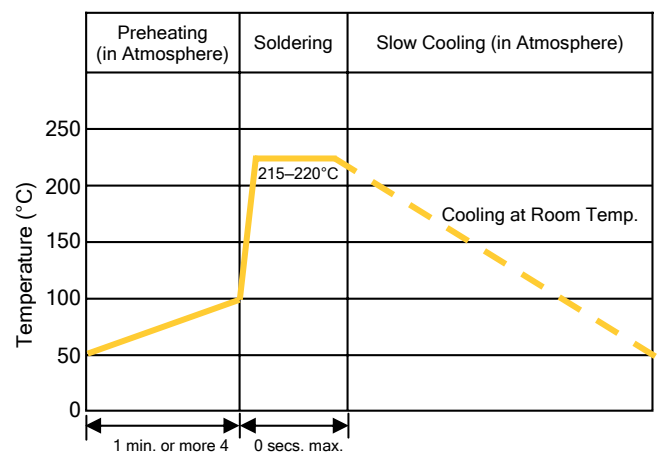
Vapor phase soldering involves condensation heating, whereby the latent heat of the vaporized liquid is released as the vapor condenses on metallization of the parts to be soldered. The phase change from liquid to vapor is rapid and occurs on all exposed surfaces of the part, resulting in uniform heating.

Pro-Cap surface mount capacitors can be successfully attached to a P.C.B. or substrate using the vapor phase reflow technique. Due to the lower soldering temperature, the effect of heat on the components is not severe.

Soldering Iron



The soldering iron method is used primarily for rework or bread boarding. It is important that the solder iron tip *not touch* the ceramic body. The iron should be applied only to the termination-solder fillet. (Recommendation: The soldering iron shall be of the nichrome wire heater type with a maximum diameter of 3.0mm.)



Product Name	Soldering Iron Tip Temp.	Soldering Time	Iron Output
Chip Monolithic Ceramic Capacitor	280°C 5	sec. max	30W max.