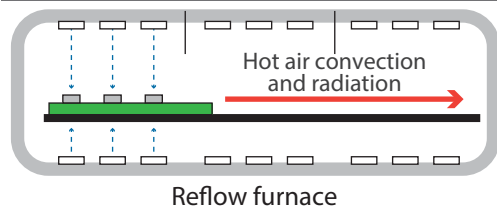


# Predicting Temperature Changes and Chip Standing Phenomenon for a Printed Board During Reflow Process

HeatDesigner and SC/Tetra used to analyze the reflow process for a printed board assembly

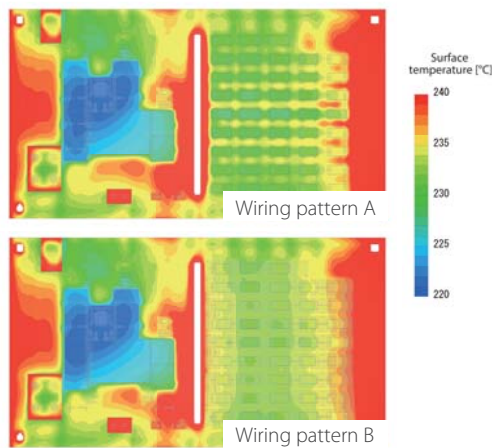
## Simulating Temperature Changes on a Printed Board During Reflow Process Using HeatDesigner

### Analysis model

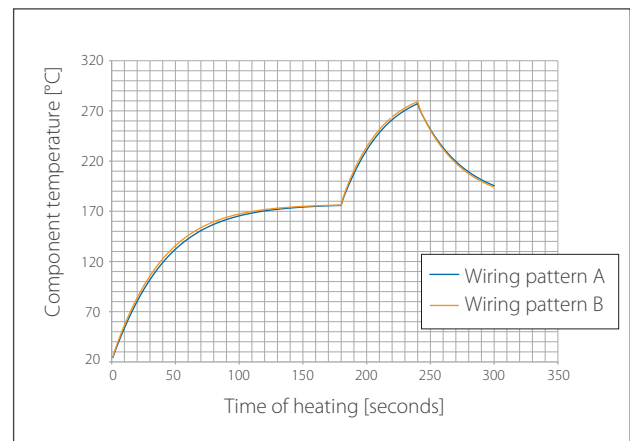


A transient thermal fluid analysis is conducted, simulating hot air convection, radiation and heating within the reflow furnace  
Wiring patterns, component allocations, and material changes can be evaluated.

### Analysis results



Temperature distribution on printed board after 200 seconds

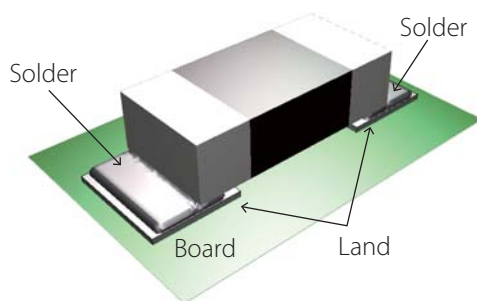


Chip resistor temperature changes as function of time

▶▶ Printed board temperature is affected by wiring patterns and component allocation.

## Simulating Chip Standing Phenomenon Using SC/Tetra

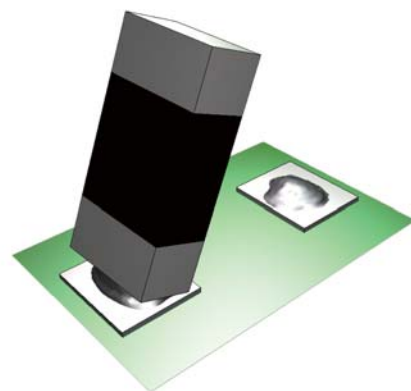
### Analysis model



Chip resistor (0402 size)

Time dependent behavior of molten solder is analyzed using the VOF (Volume Of Fluid) method. If the solder is misaligned, the chip resistor can translate and rotate due to the force from the molten solder.

### Analysis results



### Notes

Analysis results show the occurrence of the chip standing phenomenon (known as Manhattan phenomenon), due to the force generated by the solder acting on the chip resistor. The effects of soldering time, amount of solder, and positions of the chip resistor can be evaluated using the simulation.