

## Introduction

This application note describes recommended practices and guidelines for the successful assembly of ferrite surface mount components using automated solder-reflow techniques.

## Handling and Storage Precautions

Appropriate handling precautions should be observed. The typical shelf life of these components is 2 years. However, corrosive, salty or high humidity atmospheres can have an adverse effect on the solder-ability of contacts. Excessive manual handling of the components is not recommended.

## General Soldering Guidelines

When the device is heated to a high temperature, failure to complete soldering within a short time could result in device failure. Therefore, always observe the following instructions to minimize the thermal stress to the devices.

- Always preheat the device (failure to do so can cause excessive thermal shock and stress that can result in damage to the device).
- Limit the temperature in the reflow stage.
- After completing the soldering process, allow the devices to cool naturally for at least five minutes. Gradual cooling should be used, as the use of forced cooling will increase the temperature gradient and may result in latent failure due to mechanical stress.
- Avoid any mechanical stress or shock to the solder joints and devices during cooling.

## Stencil Selection

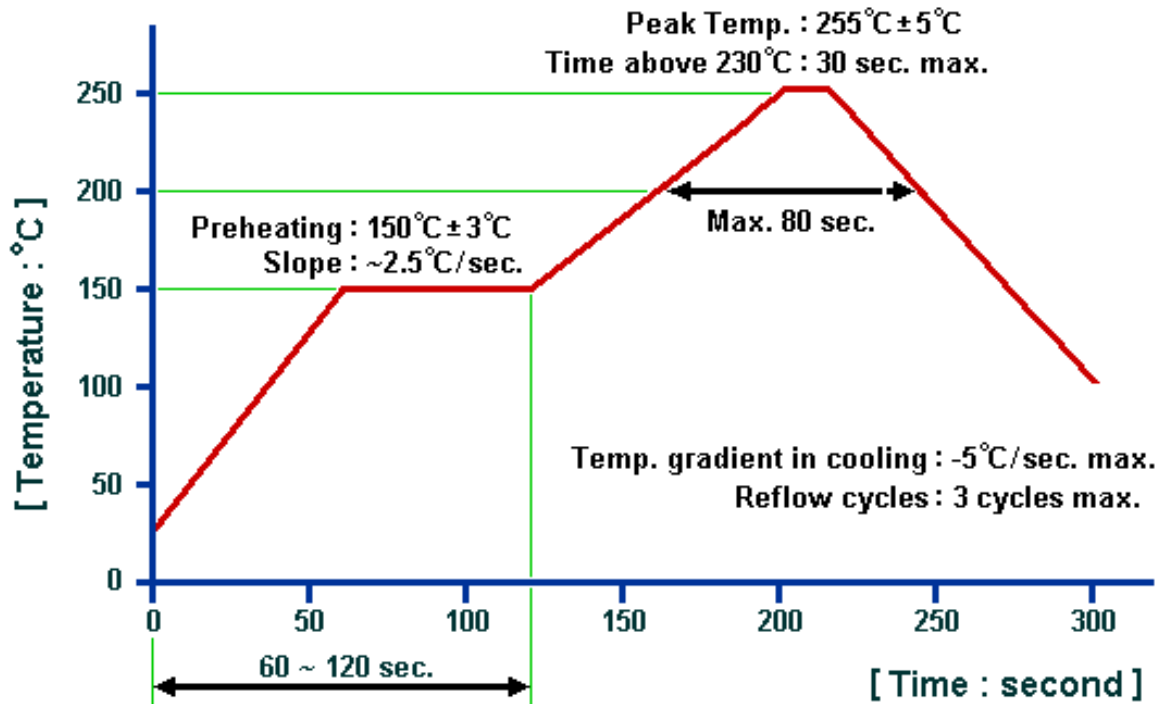
A stencil should be used to apply the optimal amount of solder paste to the pads of the PCB footprint. The amount and thickness of solder paste will directly affect the quality of the joint and are critical to ensure proper solder connection between the base of the package and the board. A stencil 0.1mm to 0.2mm thick is recommended for most applications.

## Solder Pad Layout

Each ferrite surface mount data sheet recommends a solder pad layout based on IPC standards. Deviation from these recommended layouts can adversely affect the solder joint strength and integrity.

## Reflow Profile

The following figure shows a typical convection reflow profile of temperature versus time. The profile reflects the three distinct heating stages, or zones (preheat, reflow, and cooling) recommended in automated reflow processes to ensure reliable solder joints. The profile may vary among soldering systems. Factors that can affect the profile include the density and types of components on the board, type of solder used, and type of board or substrate material.



## Rework Guidelines

Removal of the circulator/ Isolator from board assemblies is most easily achieved using localized heat to the contact points while applying a lifting force to the component. The heat applied to the circulator during board removal should not exceed the recommended peak temperature and time at peak Temperature.

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