

Technical Note

Recommended Soldering Parameters

Introduction

This technical note defines the recommended soldering techniques and parameters for Micron Technology, Inc., products. Using these techniques and parameters will prevent damage to the semiconductor package through the soldering processes and help ensure product quality and reliability.

Convection Reflow Soldering Parameters

Surface mount technology (SMT) reflow parameters are primarily a function of solder paste chemistry and board technology. Therefore, Micron's first-order recommendation is to follow the solder paste supplier's soldering parameters, while not violating the maximum parameters that are listed in Table 1. These parameters apply for both mass SMT assembly and individual site rework. The following information describes Micron's convection reflow soldering parameters for mass SMT assembly and *reworked product*.

Micron floor-life recommendations, based on the moisture sensitivity level of the component, are designed to prevent component damage during reflow processing. The component packaging label notes the rated floor life for each type of component. The moisture sensitivity level is determined in accordance with the current version of J-STD-020, "Moisture/Reflow Sensitivity Classification for Non-Hermetic Solid State Surface Mount Devices."

Note: These guidelines also apply to component removal from board assemblies.

Table 1: Convection Reflow Soldering Parameters

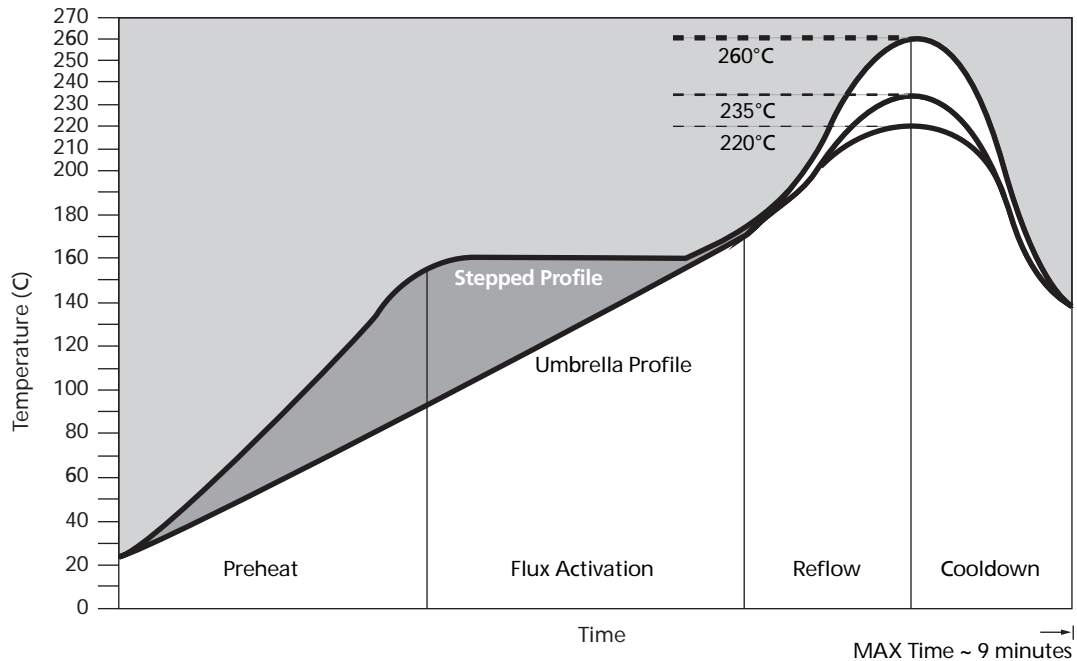
	Max Peak Temperature	Max Dwell Time at Peak	Max Heating Rate	Max Cooling Rate	Total Time in Chamber	Number of Reflow Cycles
SnPb ^{1, 2} soldering	235°C	30s	3°C/s	6°C/s	~9 min.	3
Pb-Free ³ soldering	260°C	30s	3°C/s	6°C/s	~9 min.	3

- Notes:
1. For standard SnPb alloys: 63% Sn, 37% Pb; 60% Sn, 40% Pb; and 62% Sn, 36% Pb, 2% Ag.
 2. Some legacy CMOS imaging products are limited to 220°C MAX peak temperature for convection reflow soldering and wave soldering. If a component is limited to 220°C MAX peak temperature, the floor-life recommendation will be listed on the packaging label. Please contact your local Micron sales representative for more information.
 3. Some Pb-free CMOS imaging products are limited to 235°C MAX peak temperature for convection reflow soldering and wave soldering. If a component is compatible with Pb-free processing temperatures, the floor life recommendation will be listed on the packaging label. Please contact your local Micron sales representative for more information.

Reflow Heating Profile

Figure 1 shows examples of reflow heating profiles for various maximum-peak temperatures.

Figure 1: Illustration of a Reflow Heating Profile



Wave Soldering Parameters

Table 2 shows recommended conditions for topside-mounted PCBs.

Table 2: Wave Soldering Parameters

Components must never be immersed in molten solder

	Max Peak Temperature	Max Dwell Time at Peak	Max Heating Rate	Max Cooling Rate
SnPb ^{1,2} soldering	235°C	30s	3°C/s	6°C/s
Pb-Free soldering ³	260°C	30s	3°C/s	6°C/s

- Notes:
1. For standard SnPb alloys: 63% Sn, 37% Pb; 60% Sn, 40% Pb; and 62% Sn, 36% Pb, 2% Ag.
 2. Some legacy CMOS imaging products are limited to 220°C MAX peak temperature for convection reflow soldering and wave soldering. If a component is limited to 220°C MAX peak temperature, the floor-life recommendation will be listed on the packaging label. Please contact your local Micron sales representative for more information.
 3. Some Pb-free CMOS imaging products are limited to 235°C MAX peak temperature for convection reflow soldering and wave soldering. If a component is compatible with Pb-free processing temperatures, the floor life recommendation will be listed on the packaging label. Please contact your local Micron sales representative for more information.

Hand Soldering Parameters

Table 3 shows recommended conditions for hand-soldered components. Typically, hand soldering is used only on leaded devices.

Table 3: Hand Soldering Parameters

	Max Solder Iron Tip Temperature	Max Contact Time with Component Lead	Number of Heat Cycles
SnPb ¹ soldering	300°C	20s	3
Pb-Free ² soldering	350°C	20s	3

- Notes:
1. For standard SnPb alloys; 63% Sn, 37% Pb; 60% Sn, 40% Pb; and 62% Sn, 36% Pb, 2% Ag.
 2. If a component is compatible with Pb-free processing temperatures, the floor-life recommendation will be listed on the packaging label.

Other Reflow Techniques

Infrared reflow or vapor-phase reflow are not recommended for Micron products.

Element Key

English names from the Periodic Table of Elements for symbols used in this document are:

- Sn = tin
- Pb = lead
- Ag = silver



8000 S. Federal Way, P.O. Box 6, Boise, ID 83707-0006, Tel: 208-368-3900
prodmtg@micron.com www.micron.com Customer Comment Line: 800-932-4992
Micron, the M logo, and the Micron logo are trademarks of Micron Technology, Inc.
All other trademarks are the property of their respective owners.