Handling and soldering

General Precautions With Moisture-Sensitive Devices

Plastic and COB-assembled ICs are sensitive to temperature shocks and especially to reflow soldering (the popcorn effect).
The cause of the popcorn effect is the enclosed moisture which can lead to cracks in the package with a sudden rise in temperature. All shapes and sizes of package for surface-mounted components are sensitive to this effect; the sensitivity increases with the thermal stress from the respective soldering process.

Components delivered without any form of protection against moisture should therefore either be baked or stored permanently in a dry environment, in both cases until immediately prior to soldering. The user is responsible for the qualification of the preparation and further processing of the ICs. The iC-Haus guarantee does not cover damage which may occur during processing, such as that caused by the popcorn effect during soldering.

Optionally, iC-Haus can deliver devices sealed in damp-proof bags with a drying agent and moisture indicator. Even in the case of unfavorable storage conditions, such as temperatures of up to 40 °C and 90% relative humidity (RH), devices in dry packs can be stored for at least 12 months from their sealing date. If the indicated residual moisture inside the dry pack exceeds 10% RH, the devices should be baked before soldering.

Assembly Hints / Preconditioning

Standard Plastic SMD-Package Models

After opening the dry pack, devices must be mounted within the time specified on the label (in factory conditions of maximum 30 °C / 60% RH) or must be stored at < 10% RH. Devices require baking before mounting if the Humidity Indicator Card shows > 10% when read at 23 °C ±5 °C or if the conditions mentioned above are not met. Devices may be baked for 48 hours at 125 °C using high-temperature device containers.

Tape-and-Reel

These containers cannot be subjected to high temperature. Reference IPC/JEDEC J-STD-033 for bake procedure.

COB-Package Models

After opening the dry pack, devices must be mounted within 8 hours (in factory conditions of maximum 30 °C / 60% RH) or must be stored at < 10% RH. Devices require baking before mounting if the Humidity Indicator Card shows > 10% when read at 23 °C ±5 °C or if the conditions mentioned above are not met. Devices may be baked for 72 hours at 100 °C using high-temperature device containers (trays).

Repetitive or excessive baking may reduce the solderability and shall be avoided.

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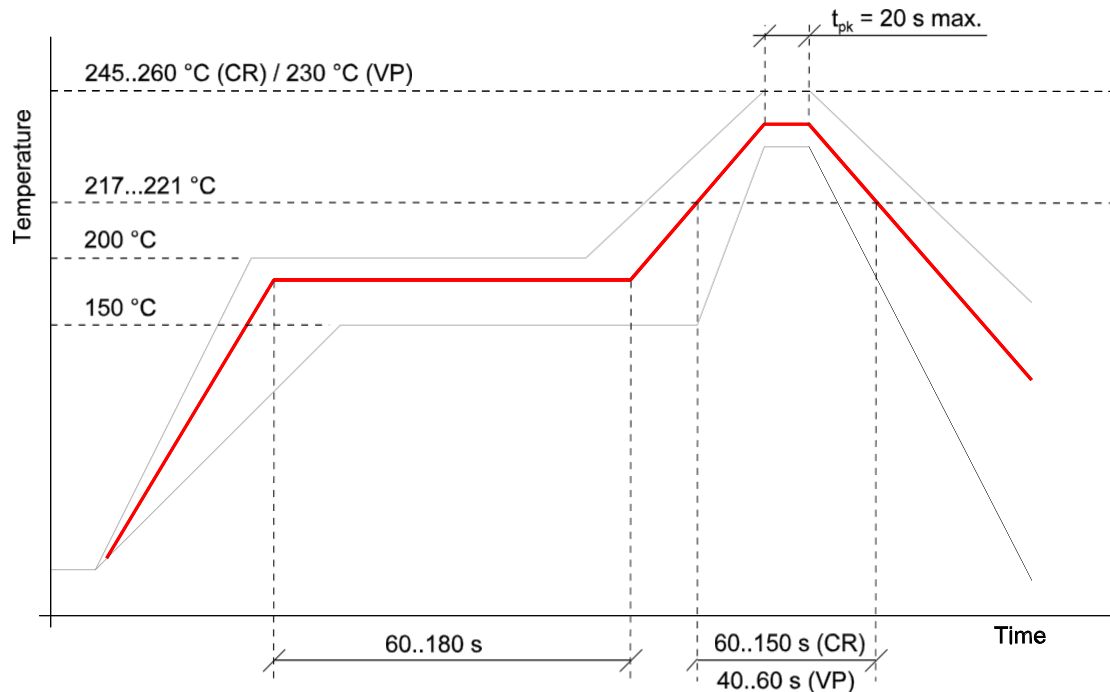
Recommended Lead free Reflow Soldering Conditions following IPC/JEDEC J-STD-020



	maximum
Temperature maintained between 150 and 200 °C	180 s
Temperature maintained above 217 °C	
Convection Reflow (CR)	150 s
Vapor Phase (VP)	60 s
Ramp-Up Rate	+3 °C/s
Peak Temperature (t_{pk})	
Convection Reflow (CR) [1)]	245 to 260 °C
Vapor Phase (VP)	230 °C
Time to Peak Temperature	8 min
Time within 5 °C of actual Peak Temperature	20 s
Ramp-Down Rate	-6 °C/s

1) Stated on the outer package label. Depends on MSL and body size. See also J-STD-020 for details.

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