Qualification flow charts versus soldering temperature resistance

- As per Jedec-IPC standard requirements
  the Soldering resistance test is the first step of reliability flow for SMD packages and devices qualification.

- Typical Qualification Flow
  - Preconditioning and MSL test (*)
  - Electrical test and accoustic microscope adhesion control
    - Thermal cycling
    - Hot Temperature Storage
    - Pressure Pot Storage
    - Bias & Temperature storage…

(*) Moisture Sensitivity Level ,
test to control effect of humidity inside components during board soldering.

Moisture Sensitivity Level (MSL)

- All Lead-free Surface Mount Devices have been requalified according to the Jedec compliant soldering profiles following JEDEC STD-020B requirements and criteria :

  245°C profile applied to large packages (>350mm^3) and

  250°C applied to small packages (<350mm^3)

- As an anticipation to Jedec J-std020C all small devices are evaluated with 260°C reflow profile.

- In specific cases, a drop in MSL classification may be observed.

  According Jedec Standard J-std033A , MSL level is indicated on packaging label.

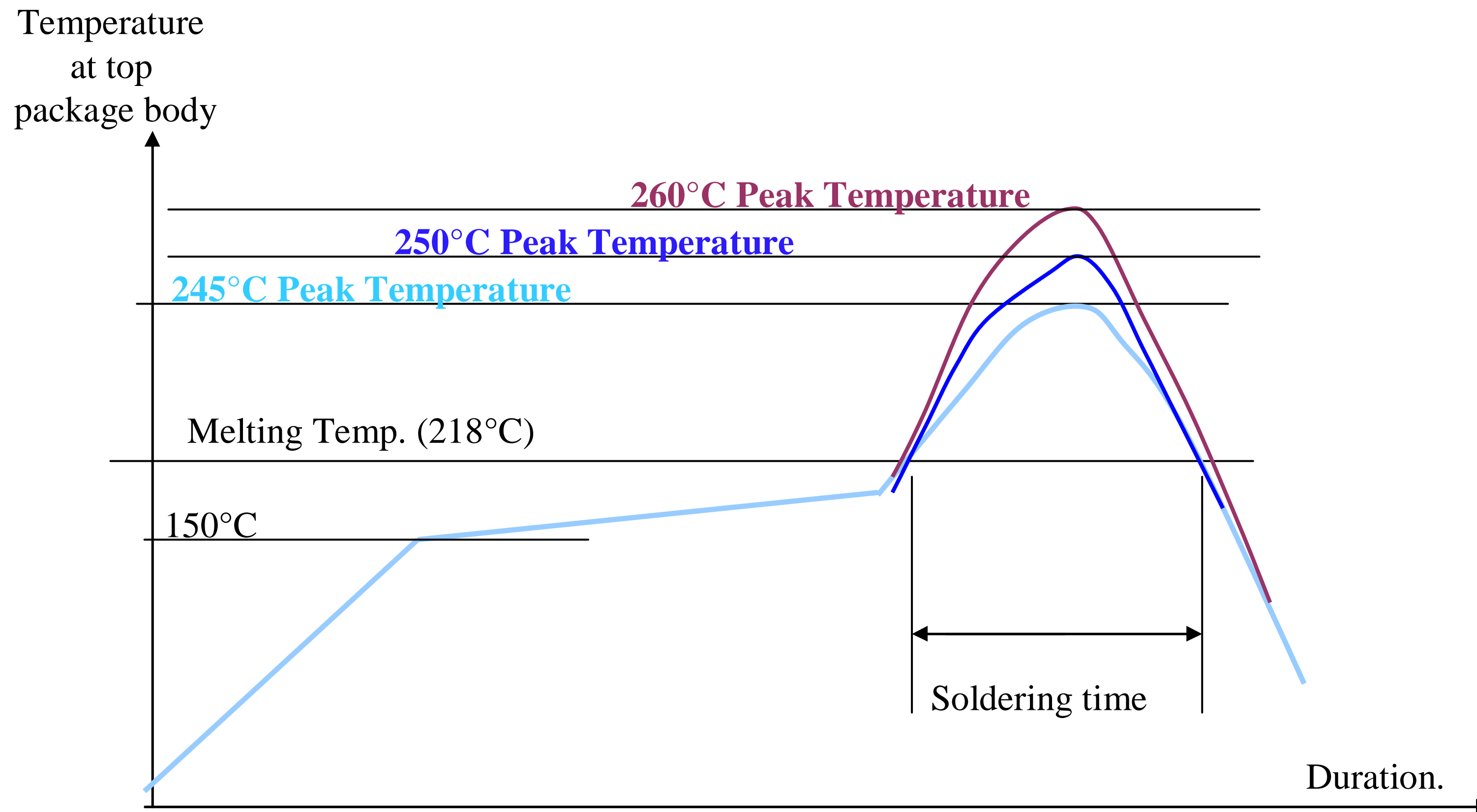
- **Dry-Pack conditions**: Refer to specification # 0033575 (DAMP-PROOF PACKING FOR SMD PACKAGES)

Moisture Sensitivity Level (MSL)
new Jedec Standard

- New release of J-STD020 standard is expected
  in Q3-2004
- It will include a 260°C reflow profile :
  - for small package : ST is already prepared to this change
  - for large but thin packages : impact under evaluation

- The validation of packages with new the standard is expected to take several months if requalifications are necessary.
  To be confirmed after J-Std020C publication.

Reflowing profiles for components reliability assessment



Reflow profiles based on Jedec-IPC J-STD020B standard
Reflow parameters following mid of Jedec profile range

Reflowing profiles for components reliability assessment

E3-profile 260°C for small packages vs. J-STD 020B –250°C