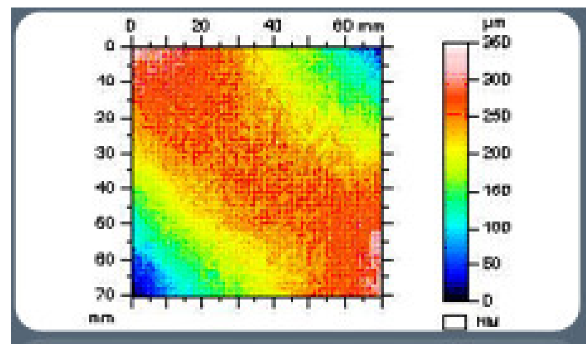
TDM

TOPOGRAPHY AND DEFORMATION MEASUREMENT

PCB topography and deformation testing is the necessary first step in the understanding of failure modes and reliability issues of assemblies under heat stress, such as reflow profiles or temperature profiles which are typical for the products' operation conditions.



- *Topography of a 70×70mm PCB, before assembly, at -20°C. The total warpage amplitude at this temperature is 350µm, or 0.5% of the PCBs x-y-dimension.*

In fact, the PCB topography measured in case of an assembly shows the PCB topography resulting from the overlap of the PCB internal stress and the influence of the components soldered on the PCB. During the cooling down period of the solder process, when the solder paste is already solid but the temperature is still decreasing, the deformations of the components will induce additional stress to the PCB, overlapping the purely PCB related stress. Therefore, the understanding of the detailed thermo-mechanical behavior of the assembly has to include topography and deformation studies under an identical representative thermal profile for :

- *the component alone,*
- *the PCB alone,*
- *and the assembly (PCB + components)*

TDM is the ideal instrument for those tasks :

- *Excellent thermal homogeneity on top and bottom sample side even on large samples, through independent top and bottom heating control*
- *Large sample capability*
- *Fast and easy topography acquisition on assemblies, i.e. on PCBs with various components in place*

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