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A heat capacitive PCB

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The paper describes a new concept for cooling electronic applications where the heat capacity of the PCB is enhanced. This is done by the utilization of commercial phase change material (PCM) embedded in an epoxy resin matrix in the PCB construction.

The basic idea of the concept is described in Fig.1 which depicts the schematics of a PCB structure with a component (device) installed on its surface and a PCM epoxy matrix as heat reservoir installed in its inner part ("a"). During phase change, part of the dissipated heat is absorbed by the PCB which results into a lower operational temperature for the component and longer time for the system to reach steady state ("b"). When the device is turned off, the stored energy is released to the environment ("c").

Benchmark measurements between conventional and heat capacitive PCBs as well as basic reliability tests will be shown. Further possibilities for technology development and applications will also be discussed.

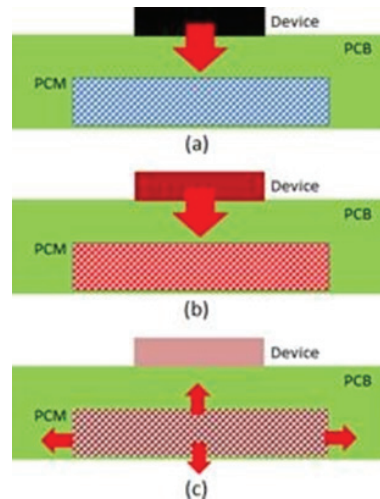


Figure 1: Heat capacitive PCB

Speaker Biography

Jonathan Silvano de Sousa studied physics at the Technical University of Vienna, Austria. He has extensive experience in the printed circuit board and semiconductor industries. Since 2014, he has been heading the research in heat management in the R&D department at AT&S.

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