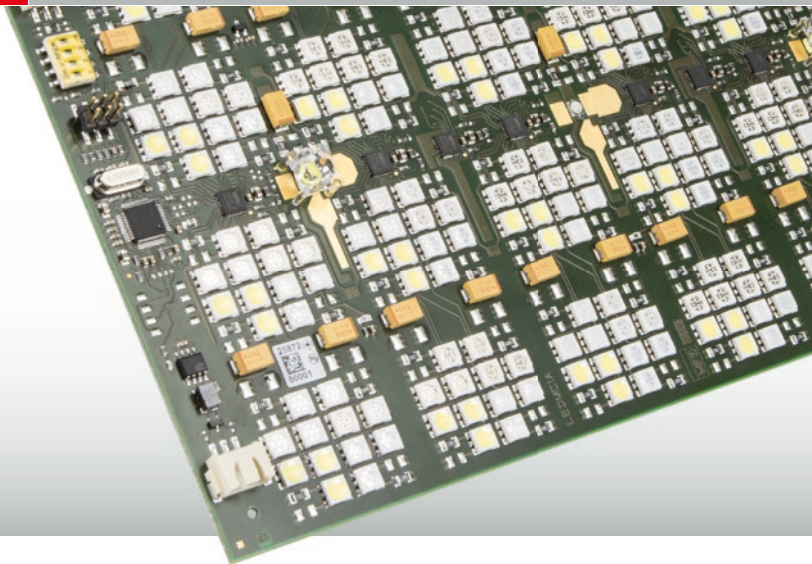


# The clever heat management concept:

From simulation, to prototypes, to a production-ready product



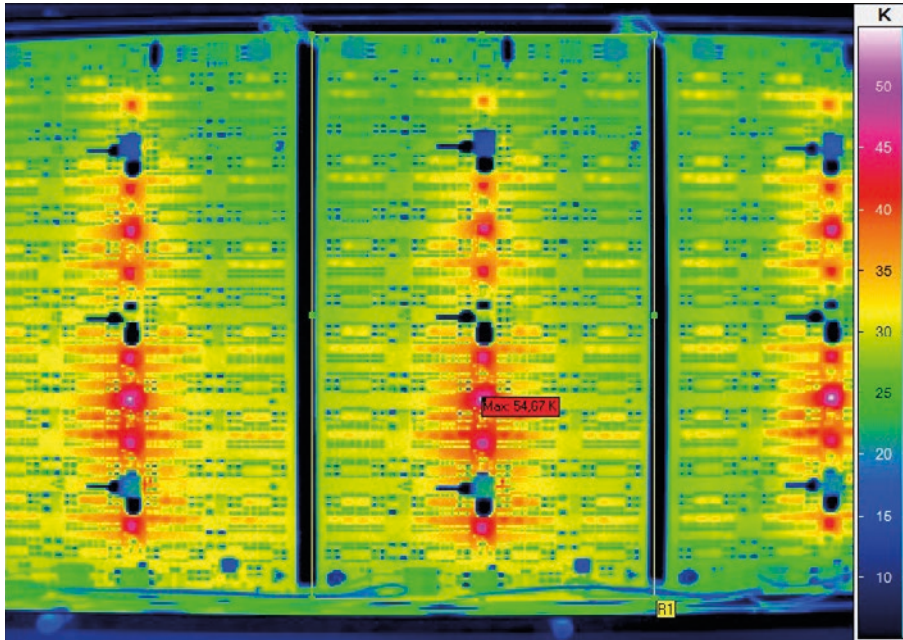
Increasing clock frequencies and ever-denser packing mean components and modules are always warm. There is demand for sophisticated thermal management for LED applications which ensures effective module heat dissipation. Thermal simulation is already used in the construction and development phases and is the basis for optimised circuit board construction and optimal layout.

Würth Elektronik has supported its customers to develop a fully-programmable high power LED light unit, and was able to target its knowledge of optimising layouts and improved and efficient LED heat dissipation:

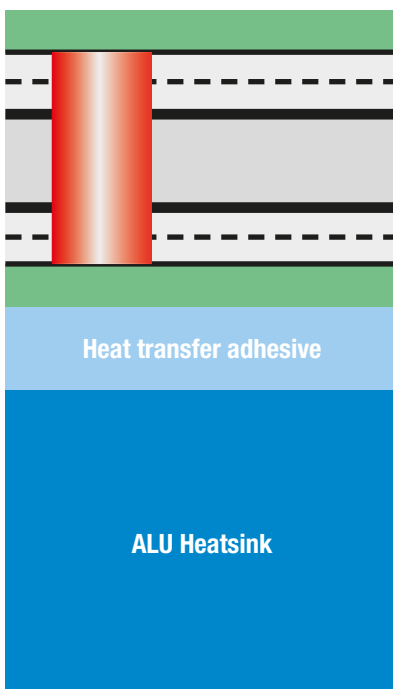
- Producing printed circuit boards prototypes
- Supporting for complete module production
- Analysing and improving modules
  - by customising layout with regards to copper distribution
  - by adapting the layer structure, reducing circuit board thickness and applying a heatsink
  - by using thermovias for rapid heat dissipation in the Z axis
- Ensuring correct functioning through thermal simulation
- Verifying heat management functions by means of thermography on improved prototype

**APPLICATION NOTE**

Issue 36



Recording with a thermal imaging camera: steady state temperature distribution



Stack-Up

**At a glance:**

- Structure: multilayer 4 layers glued to heatsink
- Optimised heat management by means of thermovias and heat splay in the inner layers
- Thermography with thermal imaging camera
- Thermal simulation with TRM simulation software