

# Thermal Design System For Chip- and Board-level Electronic Components

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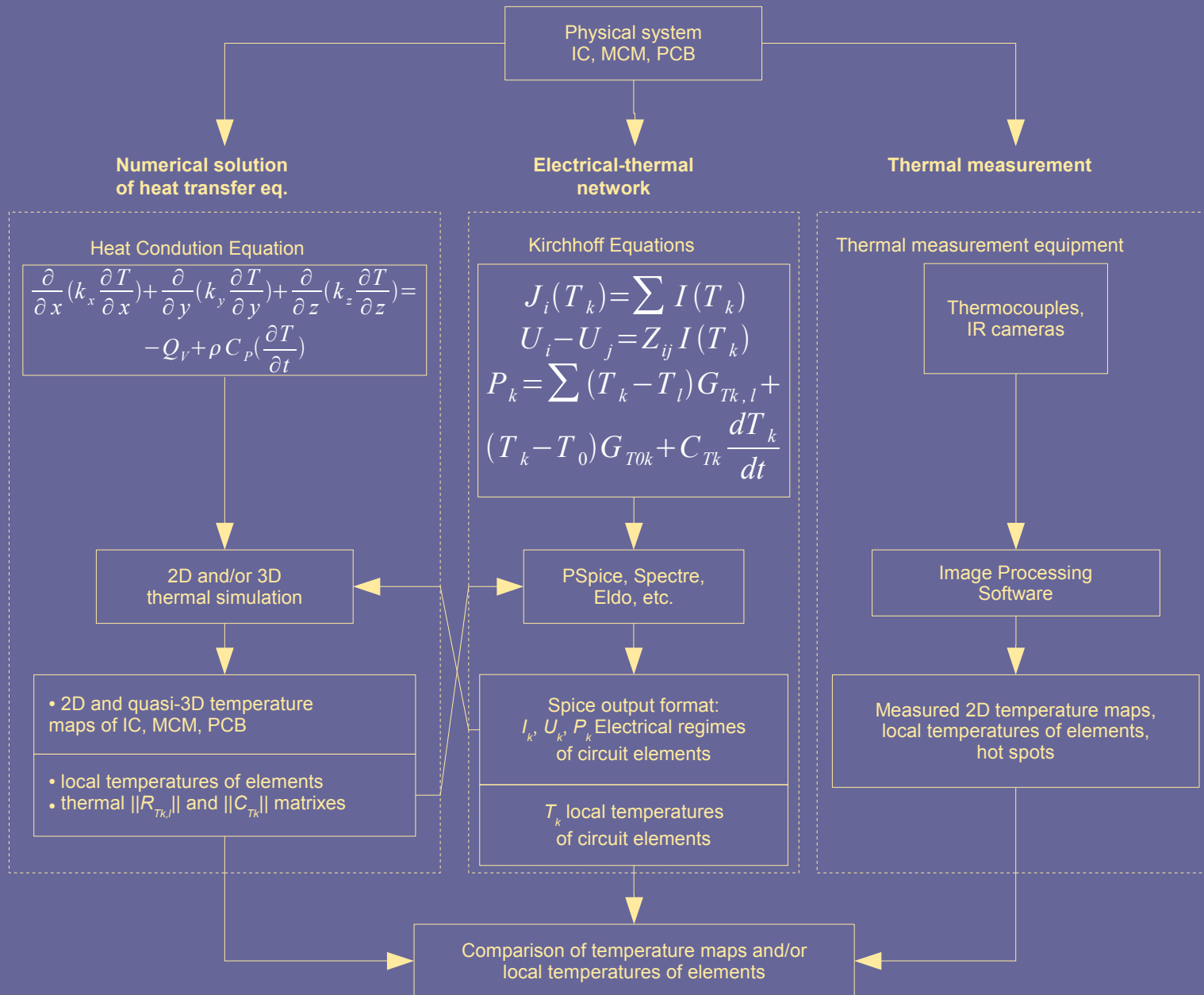
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# Two major approaches for electro-thermal simulation

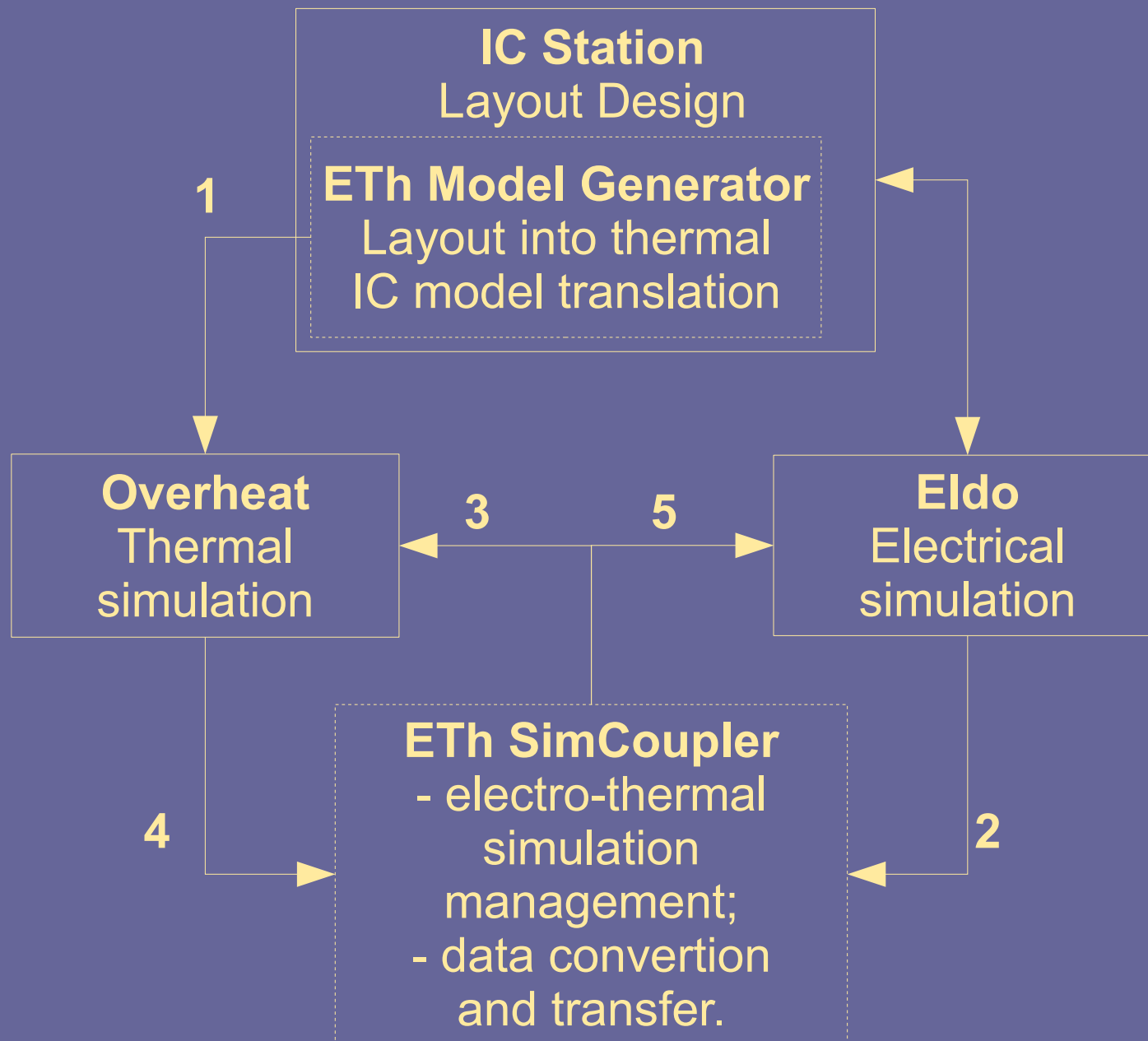
- Relaxation method
  - Direct method



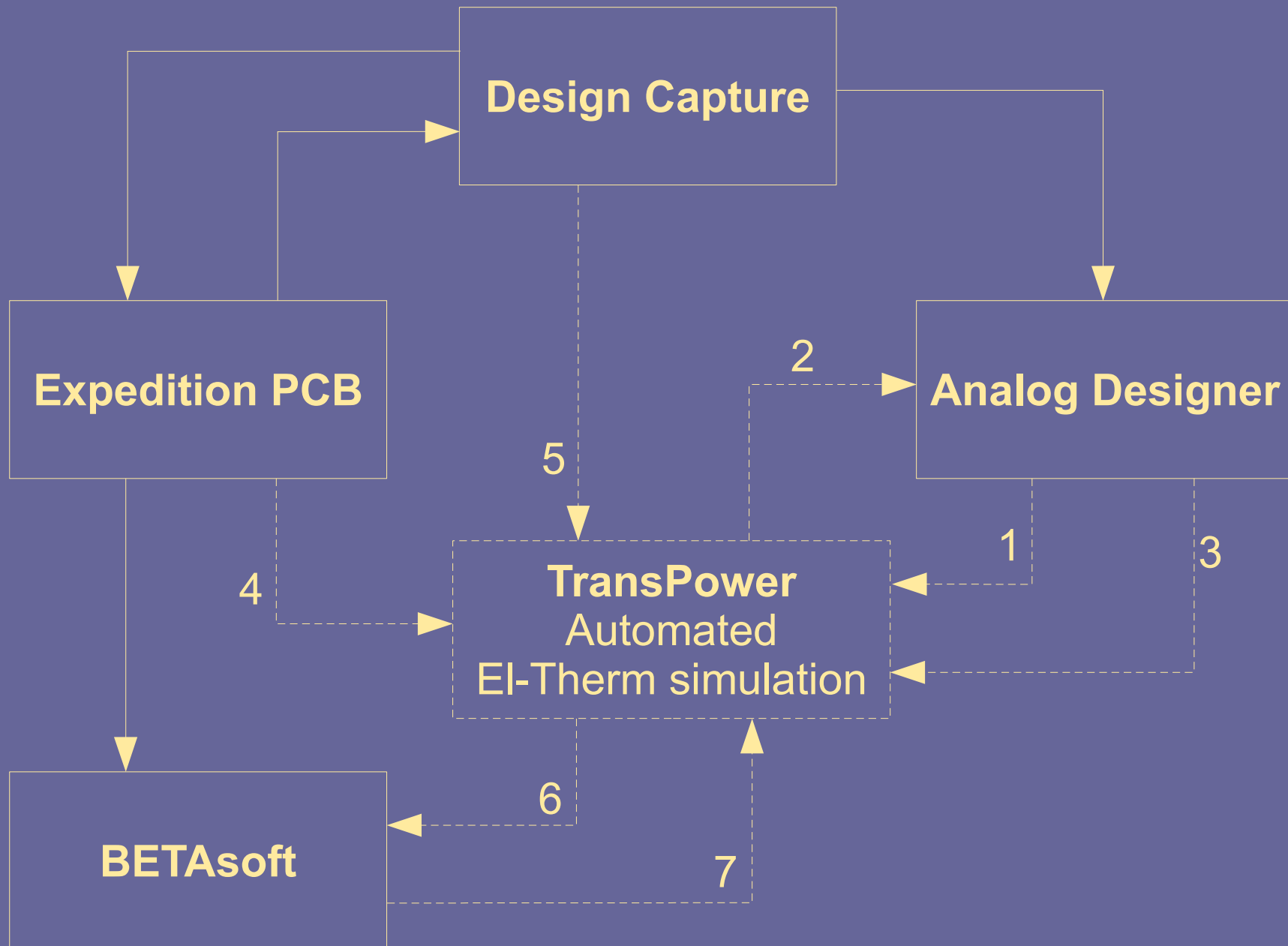
# General thermal design schema



# Thermal design subsystem for chip level

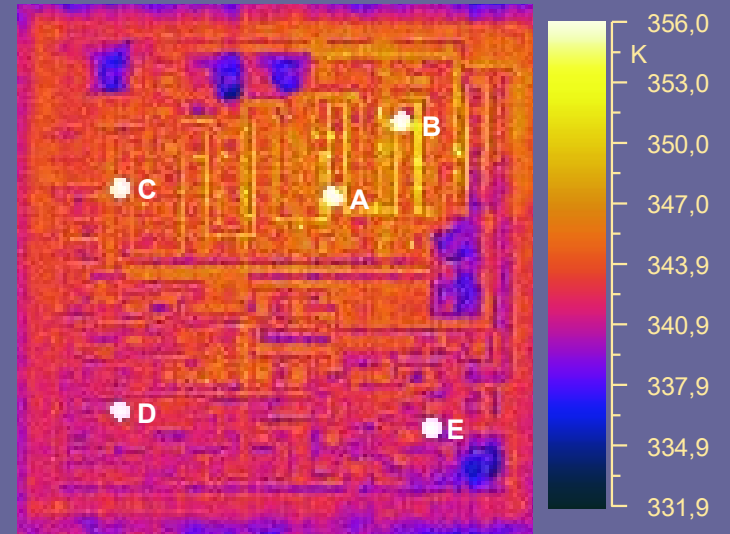
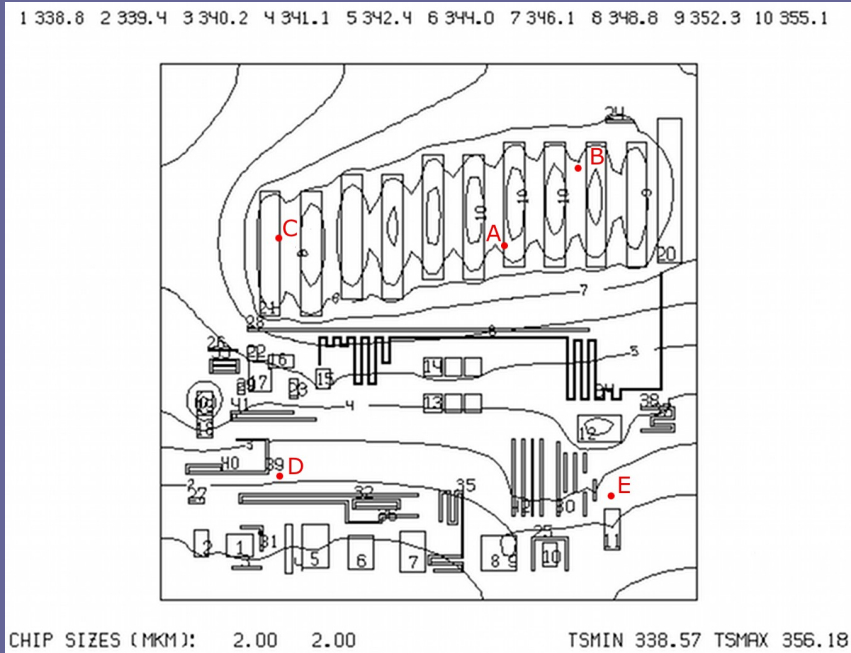


# Thermal design subsystem for board level

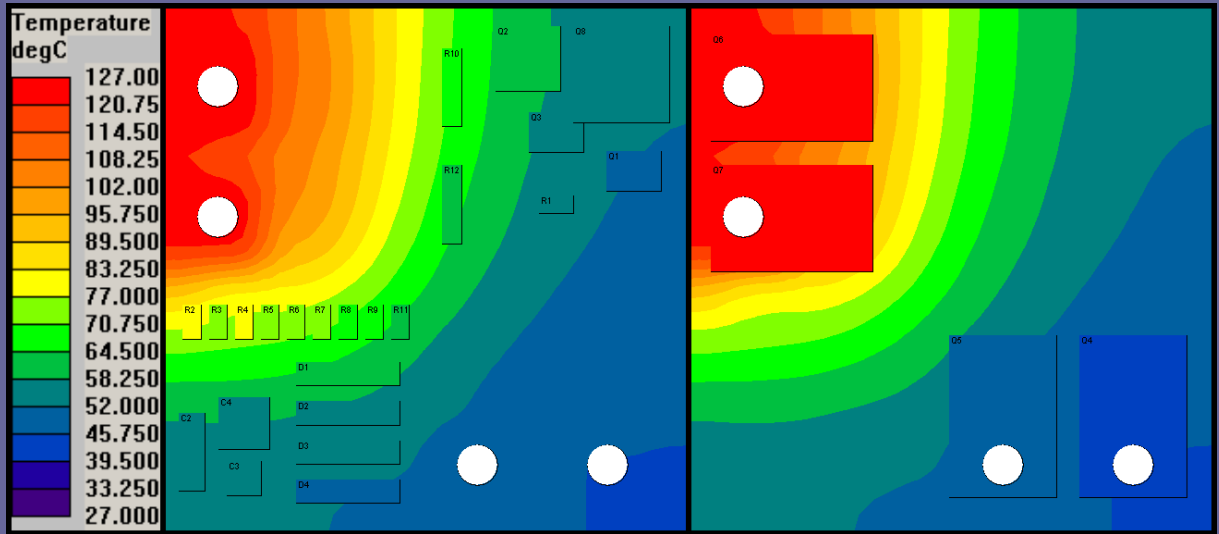
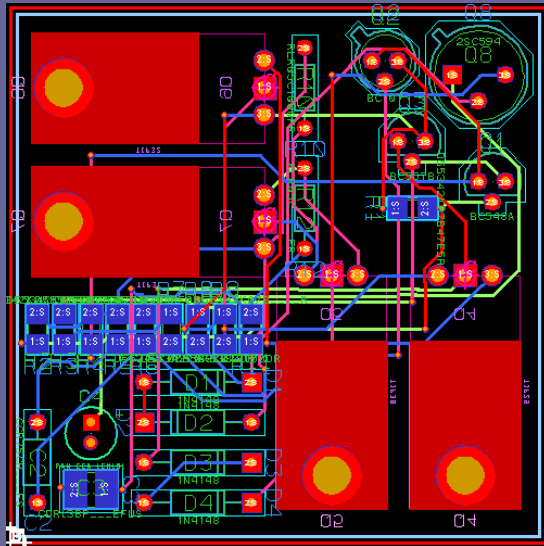


# Application examples

IC K142EN9



Audio power amplifier PCB



# Conclusions

- The more effective computational schema of solving the electro-thermal problem combined the relaxation and direct method was implemented for chip and board level in the thermal CAD system.
- In comparison with existing versions of IC and PCB Design Systems the electro-thermal simulation procedure is fully automated, human made steps and errors are excluded.
- The temperature measurement based on IR thermal imaging technique verifies the design results to obtain comprehensive and accurate temperature data under realistic operating conditions.

