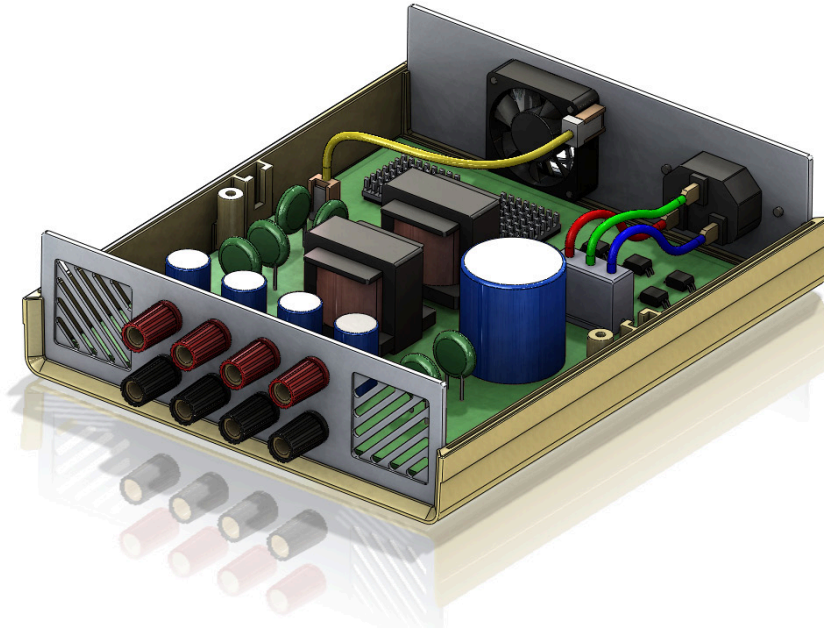


SOLIDWORKS FLOW SIMULATION: ELECTRONIC COOLING MODULE

The complete electronic cooling simulation tool



Flow Simulation For Every Engineer

SolidWorks® Flow Simulation software is a powerful computational fluid dynamics (CFD) tool that enables you to quickly and easily simulate fluid flow, heat transfer, and fluid forces that are critical to the success of your design.

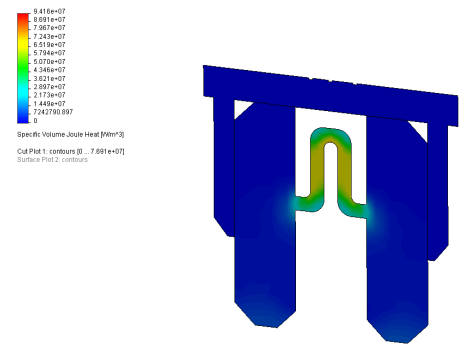
Electronic Cooling Module

The Electronic Cooling Module for SolidWorks® Flow Simulation evaluates standard components' thermal properties and cooling requirements. Comprising of both analysis productivity tools and enhanced simulation functionality, the Electronic Cooling Module is a key tool for designers of electronic packaging.

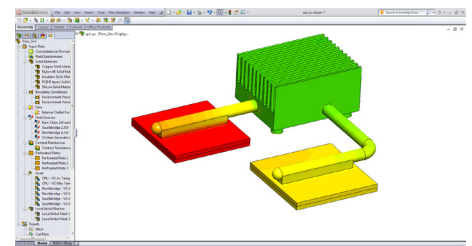
- **Engineering Challenges** - The Electronic Cooling Module for SolidWorks® Flow Simulation gives engineers great tools to tackle the tough challenges in electronic packaging design.
- **Airflow Optimization** - Ensuring the correct volume of cooling flow to all the components is a key engineering challenge. Optimising the airflow can require movement of the electronic components and/or creating air baffles and ducts.
- **Product Thermal Design** - The overall thermal behavior must be understood to ensure correct product performance. This should include heat up cool down cycles as well as the maximum temperature under load.

SolidWorks Flow Simulation takes the complexity out of computational fluid dynamics for today's designers and engineers. The electronic cooling module encompasses industry specific tools, practices and simulation methodologies. Together they deliver unrivaled ease of use, power and productivity.

- **Heatsink Selection/Design** - Selecting the correct heatsink can be crucial in the operational life of the component to be cooled. The correct heatsink can only be determined with the knowledge of the overall airflow and the thermal impacts of the components on the PCB
- **PCB Thermal Simulation** - Studying the PCB in isolation allows the designer to evaluate component placement, use of heat pipes, thermal pads and interface materials.
- **Fan Selection** - Optimising the fan selection and placement can have a dramatic impact on the overall thermal performance of a design.
- **Industry Specific Tools** - Aimed squarely at the mechanical engineer designing enclosures for electronic components, the Electronic Cooling Module provides great ease of use with great simulation power.
- **Joule Heating** - Joule heating calculates the steady-state direct electric current in electro-conductive solids and is automatically included in heat transfer calculations.
- **Two Resistor Components** - The two resistor compact model is a test-based on an approved JEDEC standard. They represent a significant increase in accuracy for prediction of absolute results as compared to the traditional single-resistor metrics of mono-chip electronic packages.
- **Heat Pipes** - A simple and pragmatic method for modelling a predominant cooling approach in laptops and other space constrained or conduction cooled designs.
- **PCB Generators** - Allows you to obtain the bi-axial thermal conductivity values automatically derived from the PCB structure and the properties of the specified conductor and dielectric materials. A simple and standard approach for determining the physical properties of multi-layer PCB's
- **Engineering Database** - The engineering data base has been greatly enlarged to include a broad range of new Solids, Fans, Thermoelectric Coolers, and Two-Resistor Components. A library of interface materials and solids representing typical IC Packages has also been added.



Understand resistive component behavior with Joule heating



Model heat pipes simply and effectively

The Electronic Cooling Module enables design engineers to quickly and accurately model complex electronic systems for thermal analysis. With its combination of ease of use and industry specific tools, the Electronic Cooling Module ensures maximum analysis productivity with enhanced simulation fidelity.

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