Ansys Electronics Reliability Overview

Minimize EMI/EMC Risk

Meet or Exceed Power/Signal Integrity Goals

Withstand severe shock/drop/vibe events

Ansys Electronics Reliability solutions help engineers address critical electrical, thermal and mechanical challenges early and throughout the product design process. Utilizing an integrated product workflow featuring Ansys HFSS, Icepak, LS-DYNA, Mechanical, SIwave and Sherlock, engineers can ensure the reliability of their electronics systems before prototype.
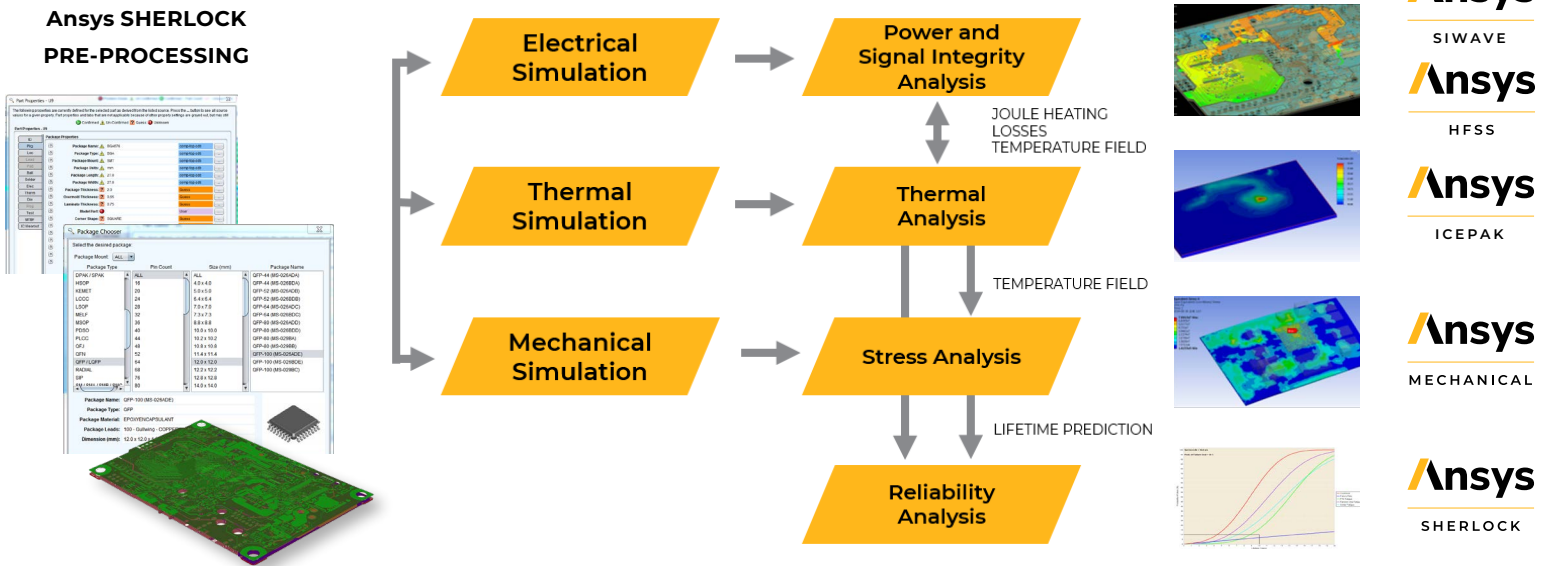
Using our integrated product workflow, engineers can predict EMI and EMC issues, solder joint fatigue failures, random and harmonic vibration concerns, at-risk components during shock, drop and thermal cycling and much more.

PRODUCT MATRIX

Capability	Applications	Ansys SpaceClaim	Ansys Mechanical/ Ansys LS-DYNA	Ansys Sherlock	Ansys Icepak	Ansys SIwave, HFSS	Ansys GRANTA	Ansys Minerva	Ansys optiSLang	Ansys Twin Builder
Electrical Reliability	Signal Integrity, Power Integrity, EMI Simulations					●				
	DCIR Simulations					●				
Thermal Reliability	Steady-State and Transient Thermal Analyses		●		●					
	Fluid-Flow and Conjugate-Heat Transfer				●					
Mechanical Reliability	Geometry Modeling, Meshing	●	●	●						
	Static analyses, Thermal analyses, Shock and Vibration		●	●						
	Impact and Drop Test		●							
Reliability Physics Analysis	ECAD to MCAD Conversion, MCAE Mesh creation, Material Mapping		●	●						
	DFMEA analyses, Physics of Failure Mechanisms			●						
	2D, 3D, Histograms, Contours, Scores			●						
Comprehensive Multiphysics	Multiphysics Analysis Support	●	●	●	●	●			●	●
	Optimization Studies, Process and Data Management							●	●	
	Materials Selection and Materials Intelligence						●			
	Systems-Level Modeling and Simulation									●

Learn more about Ansys products at: www.ansys.com/products

PRODUCT WORKFLOW

Ansys SHERLOCK
PRE-PROCESSING

Electrical Simulation → Power and Signal Integrity Analysis

JOULE HEATING LOSSES
TEMPERATURE FIELD

Thermal Simulation → Thermal Analysis

TEMPERATURE FIELD

Mechanical Simulation → Stress Analysis

LIFETIME PREDICTION

Reliability Analysis

Ansys SIWAVE

Ansys HFSS

Ansys ICEPAK

Ansys MECHANICAL

Ansys SHERLOCK

CAPABILITIES

PART & MATERIAL INFORMATION

Using Ansys Sherlock, users can leverage an embedded parts library that contains over 500,000 parts to create accurate models for meshing and simulation. Further, Ansys Sherlock and Granta libraries contain a wide range of materials data, as well as selection and data management tools that allow users to explore the range of materials solutions available for their product designs.

POWERFUL SIMULATION PRE-PROCESSING

Ansys tools provide a broad range of pre-processing solutions, including geometry extraction from ECAD layouts, powerful geometry defeaturing and meshing tools, as well as the ability to model PCBs and package substrates using a suite of class-leading techniques, such as trace mapping, reinforcements and trace modeling. Additionally, the Ansys EDB format allows for a single ECAD file format across a variety of simulation workflows.

ELECTRICAL RELIABILITY

Using Ansys HFSS and SIwave, users can assess signal integrity, power integrity, electromagnetic interference, EMI, EMC, ESD, EOS and electromigration risks.

THERMAL RELIABILITY

Ansys Icepak uses precise geometries and electrical inputs to accurately predict temperature rise and assess the merits of different cooling strategies.

MECHANICAL RELIABILITY

Ansys Mechanical and Sherlock simulate single or repeated mechanical events such as vibration, shock, thermal cycling and static loading to determine potential product failure risks.

PREDICTING TIME TO FAILURE

Using the Physics of Failure (PoF) approach, Ansys Sherlock determines how long before a product fails and why it failed.