# Simcenter Flotherm Package Creator

Create clean, CAD-based detailed thermal models of the most common chip package families in minutes, eliminating mistakes and saving days of effort.

**Benefits**

- All major chip package families covered

- Produces error-free CAD-based models

- All material and thermal attributes are attached, ready for use in Simcenter™ Flotherm™ XT and Simcenter FLOEFD™ (as part of the Electronic Cooling Center)

- Enhances accuracy in junction temperature prediction

- Wizard-based with defaults to speed model creation, with full undo and redo functionality

- Utilizes JEDEC standard outlines

**Summary**

Electronics are increasing the complexity of products across all industry sectors, including automotive and transportation, aerospace and defence, electronics and semiconductor, and consumer products. While product complexity is increasing, the time and budget for product design is shrinking yet power densities are increasing. This makes it harder than ever to efficiently remove heat, which causes performance and reliability problems, and can cause safety concerns. Simcenter Flotherm Package Creator helps thermal engineers create accurate detailed thermal models in minutes, supporting fast, high-fidelity thermal design, allowing companies to close the thermal design activity faster, and with no printed circuit board re-spins.

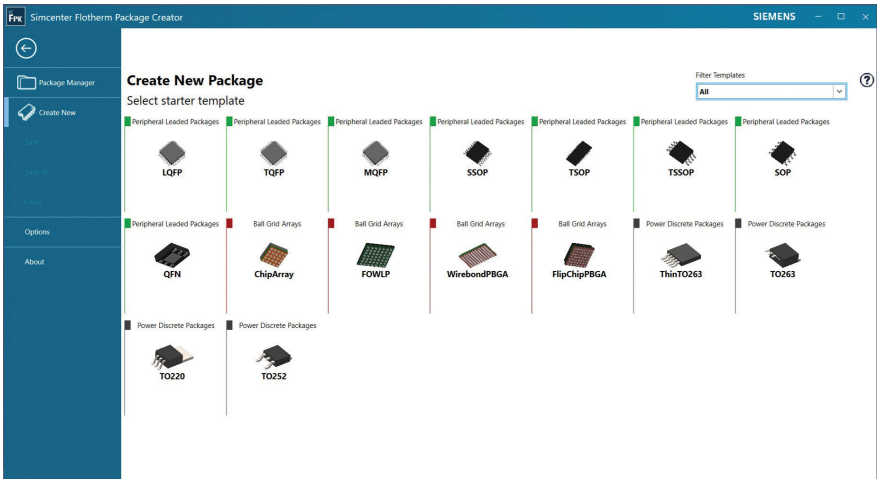**Simcenter Flotherm Package Creator offers the solution**

Package Creator provides support for 16 of the most common chip package families. With Package Creator you can create a model in just minutes, or seconds if you accept the default settings. Package creator models can be imported directly

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**Benefits** *continued*

- Supports on-die power maps and Includes fine detail, like bond wires and on-die metallization

- Calibrate Package Creator models using Simcenter Micred T3STER and Simcenter Micred Power Tester to achieve greater than 99% accuracy in temperature prediction in time and space

- Packages designs that have been saved can be read back in, modified, and saved to update a package model or create another package of the same family



Simcenter Flotherm Package Creator – Package Types

into Simcenter Flotherm XT, whereupon they are converted into Parasolid™-based CAD. The models are parametric and automatic creation means the CAD geometry is free from errors, requiring no clean-up before use. Simply plug and play!

Semiconductor companies and packaging houses can use Package Creator to create models for their customers, while system integrators and other end user companies can use Package Creator to create thermal models of packages where these are not available through the supply chain.

**Package Families Supported**

**Peripheral Packages:**
- LQFP, TQFP, MQFP, SSOP, TSOP, TSSOP, SOP, QFN

**Ball Grid Arrays:**
- FOWLP, Wirebond PBGA, Flip Chip PBGA, Chip Array

**Power Discrete Packages:**
- Thin TO263, TO263, TO220, TO252



Selecting JEDEC Outline in Package Creator



Example template for creating a package model

## Wizard-based Workflow

Package Creator's wizard-based workflow walks you through the steps of creating a package, starting with choosing the package style and giving the package a name, a thermal power and optionally a die size if this is known. Default values are automatically provided for all other parameters, which can be changed in the wizard.

## SmartPart™-based Construction

The wizard gives access to the various geometric features that make up the construction of the chosen package family. These features, such as the die, bond wires, die attach, etc. are SmartParts internal to Package Creator, providing parametric definitions of these features. Some features, can be modelled in different levels of detail. Bond wires, for example, can be represented in full geometric detail of every wire or a compact representation of each bond wire region. The die can be a single power, or a power map specified as a table or imported from a file.
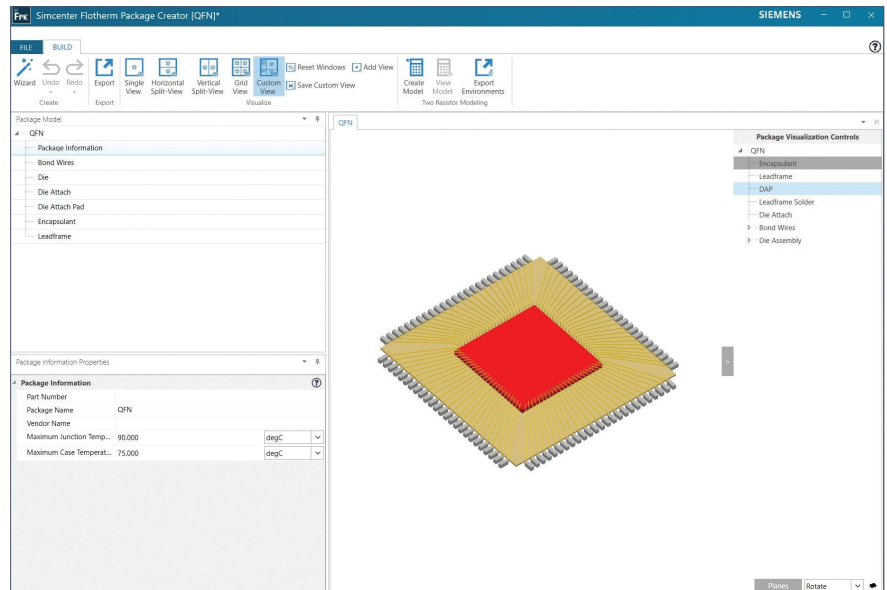


QFN Package with Encapsulant hidden, showing Bond Wire properties

## Detailed Model Thermal Calibration

Thermal transient response of the actual part in different environments can be measured with Simcenter Micred T3STER and Simcenter Micred Power Tester hardware. Using Simcenter Flotherm XT Ultra version with additional calibration license, detailed thermal models can be automatically calibrated against the measurement data, tuning model parameters so it matches the response of the actual part, to provide greater than 99% model accuracy in both space and time.
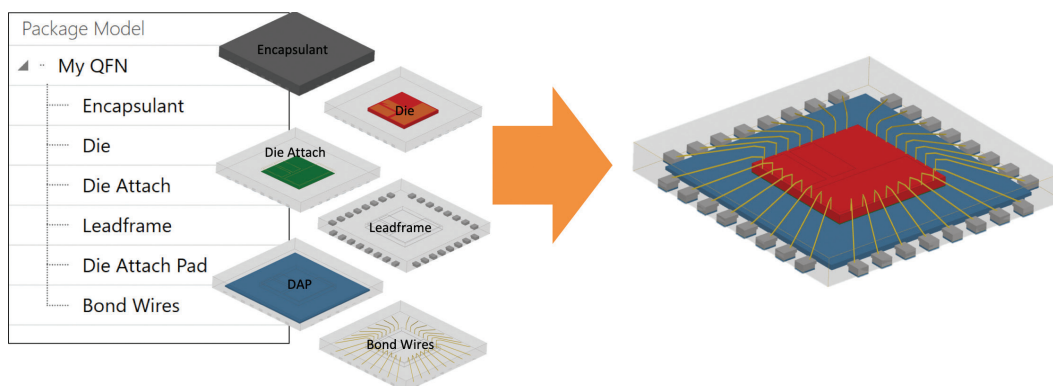


Package Creator SmartParts

## Material Library

Package Creator has its own material library. It is possible to add other libraries including the full library from Flotherm XT. Materials can be cloned and modified, and new materials added. Materials can have isotropic, biaxial or orthotropic thermal conductivities, with all options supporting thermal conductivity of a function of temperature defined via a table providing full flexibility.



MQFP

FLIPCHIP PBGA

WIREBOND PBGA
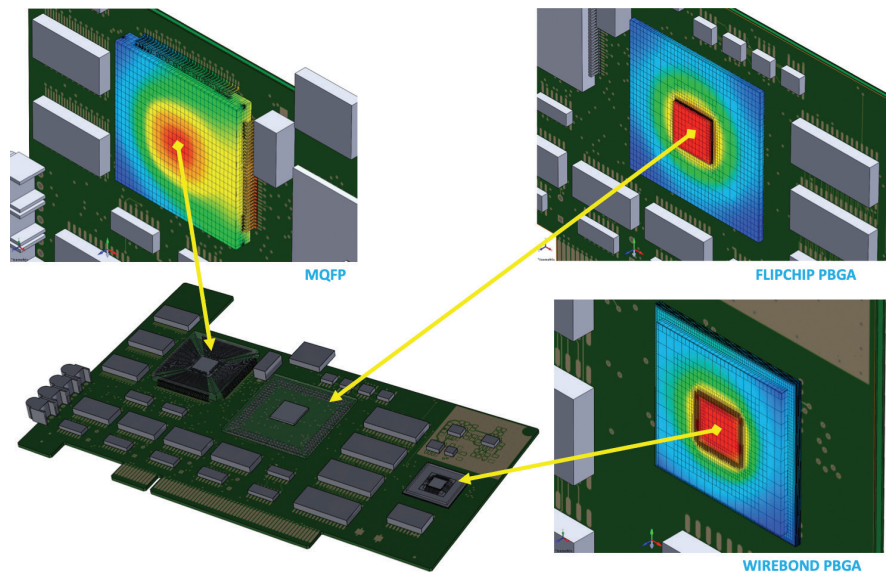
Multiple types of package models created using Simcenter Flotherm Package Creator for a PCB thermal analysis in Simcenter Flotherm XT