Key Features

› Fast but accurate online power loss and temperature simulation powered by PLECS engine
› Easy to use with clear flow and user interface, quick to share and archive with deep-link
› 19 topologies for discs and modules, multi-selection of up to 5 products for easy comparison
› New control algorithms including Discontinuous PWM and new parameter of load type selection
› Sophisticated load cycle simulation using interpolated or discontinuous load profile with number of cycles
› New products such as IGBT7 and SiC modules available, more are coming…
## New Features

### New DPWM Control Algorithms

- New: DPWM0, DPWM1, DPWM2 and DPWM3 control algorithms (DC-AC 3-Phase 2-Level topology)
- Coming soon:
  - DPWMMIN and DPWMMAX
  - For more topologies

### Load Type Selection

- New: Selection between inductive and capacitive loads
- Available for all DC-AC topologies
New Load Cycle Features

› Uploading load cycle profile (excel) of up to 200 line

› Selection simulation behaviors between temperature ripple or average temperature

› Save individual load profile setting under “My Design”

› New: interpolated or discontinuous load profiles

› New: possibility to repeat the load profile cycles (up to 10 cycles)
IPOSIM – Online Power Simulation Tool
New Features

Live since June 15

- Advanced parameter-sweep simulations:
  - $T_j$ & power losses versus $I_{rms}$
  - Maximum allowed $I_{rms}$ versus switching frequency $f_{sw}$

- Advanced scope functions: cursors, zoom-in/out

- Load cycle for more topologies including AC-DC

- More topologies including Automotive and more products with new technologies

- Optimized flow separation for device selection and application data settings
1. myInfineon Registration
   - new account required since old Transim accounts will not be transferred to the new IPOSIM platform

2. Getting Started
   - Documents
   - Videos

3. Steps by step guide with hyperlinks
1. Click on icon on top of the page: “Register for myInfineon”

2. An overlay will pop-up to enter Email & company

3. An Email will be sent out (Double Opt-in) to activate your account

4. Click on link in Email and finalize registration
IPOSIM: Infineon Power Simulation Tool

Step By Step Guide

1. Step 1: register first
   Please register here to myInfineon. Here you will find exclusive information to speed up your projects.

2. Step 2: login & select
   Login and select your target application including the preferred circuit topology.

3. Step 3: choose your devices
   Based on your input the tool will provide the best recommended products in a tabular form.

4. Step 4: define your parameters
   In this step you define the input requirements for steady-state or load cycle simulation.

5. Step 5: simulate & compare
   Check the simulation results. Click on the diagrams to zoom in and assess the details.

6. Step 6: learn & get support
   Download our Getting Started guide, watch a tutorial video or contact support if needed.
IPOSIM: Infineon Power Simulation Tool
Step 1: Select Your Topology

<table>
<thead>
<tr>
<th>AC/DC Applications</th>
<th>AC/AC Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Single Phase</strong></td>
<td><strong>Single Phase</strong></td>
</tr>
<tr>
<td>B2U - Two-pulse bridge uncontrolled</td>
<td>W1C - phase control</td>
</tr>
<tr>
<td>B2C - Two-pulse bridge fully controlled</td>
<td>W3C - phase control</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Three Phase</strong></th>
<th><strong>Example: Inverter topologies</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>BSU - Six-pulse bridge uncontrolled</td>
<td></td>
</tr>
<tr>
<td>B6C - Six-pulse bridge fully controlled</td>
<td></td>
</tr>
<tr>
<td>M3.2U - Double three-pulse star uncontrolled</td>
<td></td>
</tr>
<tr>
<td>M3.2C - Double three-pulse star fully controlled</td>
<td></td>
</tr>
<tr>
<td>M6U - Six-pulse star uncontrolled</td>
<td></td>
</tr>
<tr>
<td>M6C - Six-pulse star fully controlled</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DC/DC Application</th>
<th>DC/AC Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boost</td>
<td><strong>Single Phase</strong></td>
</tr>
<tr>
<td>Buck</td>
<td>Three Phase - 2 Level</td>
</tr>
<tr>
<td>DC decoupling</td>
<td>Three Phase - 2 Level (Automotive)</td>
</tr>
<tr>
<td></td>
<td>Three Phase - 2 Level (Stack solution)</td>
</tr>
<tr>
<td></td>
<td>Three Phase - 3 Level NPC1</td>
</tr>
<tr>
<td></td>
<td>Three Phase - 3 Level NPC2</td>
</tr>
<tr>
<td></td>
<td>Three Phase - 3 Level ANPC</td>
</tr>
</tbody>
</table>
IPOSIM: Infineon Power Simulation Tool

Step 2: Choose Your Devices

1. Set filtering parameters
2. Circuit topology
3. Search
4. Product List with sorting function
IPOSIM: Infineon Power Simulation Tool

Step 3: Set Your Application Data

1. Set operation parameters, enable load cycle

2. Set other application data:
   - cooling condition
   - Rgon,off
   - Load cycle

Selected Topology: DC/AC Applications - Three Phase - 2 Level

Circuit & Control

- Control Algorithm: Sine-Triangle
- DC Link Voltage (Vdc): 650 V
- Output Current (Iout): 50 Arms
- Output Frequency: 50 Hz
- Switching Frequency: 2000 Hz
- Modulation Index: 1
- Power Factor cos(φ): 0.8
- Load Type: Inductive Load

Do you want to define a load cycle?
IPOSIM: Infineon Power Simulation Tool
Step 4: Simulate Electrical & Thermal (PLECS)

1. Example: IGBT modules

2. Temperature ripple

3. Click diagram for more scope functions

Steady-State Analysis

FP50R12KT4P_B11
FS100R12W2T7_
## IPOSIM: Infineon Power Simulation Tool

### Step 4.1: Compare Simulation Results

<table>
<thead>
<tr>
<th></th>
<th>FP50R12KT4P_B11</th>
<th>FS100R12W2T7_B11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch parameters</td>
<td>▼</td>
<td>▼</td>
</tr>
<tr>
<td>Diode Parameters</td>
<td>▼</td>
<td>▼</td>
</tr>
<tr>
<td>Cooling Condition</td>
<td>▼</td>
<td>▼</td>
</tr>
<tr>
<td>Simulation Results</td>
<td>▲</td>
<td>▲</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Maximum Junction Temperature</th>
<th>FP50R12KT4P_B11</th>
<th>FS100R12W2T7_B11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch</td>
<td>91.5°C</td>
<td>75.9°C</td>
</tr>
<tr>
<td>Diode</td>
<td>59.3°C</td>
<td>59.7°C</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Switching Losses</th>
<th>FP50R12KT4P_B11</th>
<th>FS100R12W2T7_B11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch</td>
<td>10.7W</td>
<td>7.6W</td>
</tr>
<tr>
<td>Diode</td>
<td>1.7W</td>
<td>2.0W</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conduction Losses</th>
<th>FP50R12KT4P_B11</th>
<th>FS100R12W2T7_B11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch</td>
<td>40.4W</td>
<td>24.3W</td>
</tr>
<tr>
<td>Diode</td>
<td>6.5W</td>
<td>5.1W</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Losses</th>
<th>FP50R12KT4P_B11</th>
<th>FS100R12W2T7_B11</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switch</td>
<td>51.1W</td>
<td>32.0W</td>
</tr>
<tr>
<td>Diode</td>
<td>8.2W</td>
<td>7.1W</td>
</tr>
</tbody>
</table>
IPOSIM: Infineon Power Simulation Tool
Step 5: Download Results

Selected Topology: DC/AC Applications - Three Phase - 2 Level

Design Summary

- Complete Design Summary

Datasheets

- FP50R12KT4P_B11
- FS100R12W2T7_B11

Share your design by copy-paste

› Copy the browser URL and share it with anybody to re-execute the simulation with same configuration.

IPOSIM – Online Power Simulation Tool
Load Cycle Example: DC-AC 3-Phase 2-Level

› Constant inputs: VDC = 650 V, fsw = 2 kHz, Modulation Index = 1
› Load Profile with 3 cycles repeated

Deep-link to recall the simulation:
Results:

- **Output Frequency**
  - Graph shows variation over time.

- **Output Current (rms)**
  - Graph shows variation over time.

- **Power Factor cos(φ)**
  - Graph shows variation over time.

- **Temperature [°C]**
  - Graph shows temperature variation over time.

- **Power losses [W]**
  - Graph shows power loss variation over time.
IPOSIM – Online Power Simulation Tool
Scope Functions: Cursors, Zoom-In/Out

1. Zoom-in by dragging with mouse
2. Click to switch on cursors to measure signals
3. Click lock to freeze the cursor distance for better measurement experience
IPOSIM – Online Power Simulation Tool
Parameter Sweep: Ploss,average / Tj versus Irms

› Find out the maximum allowed Irm current @ given condition
› Start immediately after steady state simulation
› Deep-link to recall the simulation:

Selected Topology: DC/AC Applications - Th

Input Requirements

<table>
<thead>
<tr>
<th>Control Algorithm</th>
<th>Sine-Triangle</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC Link Voltage (Vdc)</td>
<td>650 V</td>
</tr>
<tr>
<td>Blocking Voltage</td>
<td>1200 V</td>
</tr>
</tbody>
</table>

Simulate parameter-sweep
Previous
Next

Ploss,average / Tj vs current Irms

Confirm
IPOSIM – Online Power Simulation Tool
Parameter Sweep: Ploss,average / Tj versus Irms

Results

Parameter-sweep simulation

1. Tj versus Irms @ given condition

2. Average power losses versus Irms @ given condition
## IPOSIM – Online Power Simulation Tool
### Tips & Tricks

| Low Output Frequencies | 0-Hz Simulation not implemented, down to 0.1 Hz available  
|                        | Load cycle simulation: for more accuracy put enough duration of low frequency section, e.g.: minimum of 10s for \( f_{out} \) = 0.1 Hz |
| Save & Share | Save your designs under My Designs incl. load cycle settings  
|               | Copy / paste browser URL (deep-link) to share your designs |
| Result Diagrams | Click result diagrams to enlarge  
|                 | Discover signals with scope functions such as cursors, zoom-in/out |
| Too High Tj | Our thermal models of the products are not designed for overheated \( T_j \)  
|               | In case of \( T_j \) > 200 °C, check your input requirements, cooling condition or change to a bigger module |
| Solve artifacts | browser caching issues after new version updates  
|                 | • key combination [Ctrl] + [F5] to reset browser cache  
|                 | • or manually clear the browser caching |
| More features offline | Upgrade to industry leading PLECS engine, available at our partner’s website: [www.plexim.com](http://www.plexim.com) |
Support

› www.infineon.com/support

Support Page

Support is available in English, German and Mandarin from our talented team of experts.

Live Chat Online
在线支持

Technical Assistance Center
技术支持中心（TAC）

Call us Toll Free
免费热线联系我们

› Start chat session with our support team
› Get product support from our technical experts
› Call us toll-free 24/7

Find an answer to your question

Please state your question (with at least 3 words)

FAQ
1. Radar chips [CN] [DE]
2. Technical Support [CN] [DE]
3. Chip Card and Security Distis [CN] [DE]
4. Product Counterfeit Step 1 [CN] [DE]
5. Supplier Service, Supplier Page, page registration [CN] [DE]
6. Green Products [CN] [DE]

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