Be smart. Prototype online.

Prototyping Made Easy with Infineon's Online Engineering Tools

www.infineon.com/tools

Digital Demand Generation
Jianan Shen
Online Engineering & Marketing Manager
2019-Jan-11
## Agenda

1. **Online Engineering Tools Overview**
2. **How to select a product? Use our Product Finders!**
3. **How to select a solution? Use our Solution Finder!**
4. **How to check a solution? Use our Design Tools!**
5. **How to get support? Use www.infineon.com/support**
Agenda

1. Online Engineering Tools Overview
2. How to select a product? Use our Product Finders!
3. How to select a solution? Use our Solution Finder!
4. How to check a solution? Use our Design Tools!
5. How to get support? Use www.infineon.com/support
Online Tools Overview

www.infineon.com/tools

Aware
(Interest)

Select
(Learn)

Check
(Evaluate)

Buy Sample
(Purchase)

Design-in
(Justify)

Purchase Volume
(Use)

After Sales
(Get help)

7 minutes

Infineon Toolbox: focus on Design-in

www.infineon.com/tools

How to select a Product?

How to select a Solution?

How to check the Solution?

Product Finders (e.g., IGBT, MOSFET, IPM, Gate Driver, Simulation Models, etc.)

Use our Solution Finder (e.g.: Motor Control, SMPS, LED Lighting, PoL)

Simulation Tools (e.g., IPOSIM, Infineon Designer, XENSIV)

Download: datasheet, simulation model, BOM, circuit schematic, evaluation board
Online Tools Overview

www.infineon.com/tools

16 Product Finders

Hardware Design

Software Design

Solution Finder

Copyright © Infineon Technologies AG 2019. All rights reserved. Infineon Proprietary
Agenda

1. Online Engineering Tools Overview
2. How to select a product? Use our Product Finders!
3. How to select a solution? Use our Solution Finder!
4. How to check a solution? Use our Design Tools!
5. How to get support? Use www.infineon.com/support
Online Tools Overview
www.infineon.com/tools

How to select a Product?

- MOSFET Finder
- Parameter Selection
  - Breakdown Voltage
  - Drain Current I_d (max)
  - Rds(on) (RMS)
  - Gate Charge Q_g
- Feature Selection
  - Type
  - Technology

Product Finders (e.g., IGBT, MOSFET, IPM, Gate Driver, Simulation Models, etc.)

How to select a Solution?

- Use our Solution Finder
  (e.g.: Motor Control, SMPS, LED Lighting, PoL)

How to check the Solution?

- Simulation Tools (e.g., IPOSIM, Infineon Designer, XENSIV)

Download: datasheet, simulation model, BOM, circuit schematic, evaluation board
Product Finder Overview
www.infineon.com/tools

Design Tools

<table>
<thead>
<tr>
<th>Thermal Simulation</th>
<th>Electrical Simulation</th>
<th>Sensor Simulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>IPOSIM</td>
<td>Discrete IGBT Motor Drive Simulator</td>
<td>Infineon Designer Digital Prototyping</td>
</tr>
<tr>
<td>IPM Motor Drive Simulator</td>
<td>Discrete IGBT Simulator</td>
<td>Power Desk SupIRBuck DC-DC POL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Power Supply Simulation Tool</td>
</tr>
</tbody>
</table>

New Solution Finder for Motor control and drives

Evaluation Boards & Designs

Simulation Models (SPICE, S-parameters, SABER)

Software Development Kit for XMC™ (DWE™)

Software Development Kit for TriCare™

Parametric Product Finders

<table>
<thead>
<tr>
<th>Power Discretes &amp; Modules</th>
<th>Mixed Signal &amp; MCU</th>
<th>Security &amp; Smart Card</th>
<th>RF &amp; Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>IGBT Discretes</td>
<td>Gate Drivers</td>
<td>Security &amp; Smart Card Solutions</td>
<td>ESD Protection</td>
</tr>
<tr>
<td>MOSFETs</td>
<td>Smart Switches</td>
<td>Magnetic Sensor</td>
<td>Other Products</td>
</tr>
<tr>
<td>IPM</td>
<td>Voltage Regulators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bipolar Discretes</td>
<td>Microcontrollers (MCU)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bipolar Modules</td>
<td>Transceivers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diodes (Rectifiers)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Parametric Finder Example

IGBT Discrete Finder

1. Other Product Finders

2. Select IGBT parameters

3. IGBT features

4. Availability & package

5. Compare selected products

6. Start simulation

7. Select Driver

Copyright © Infineon Technologies AG 2019. All rights reserved. Infineon Proprietary
## Compare Selected Products

### Product comparison

<table>
<thead>
<tr>
<th>Product</th>
<th>Product Type 1</th>
<th>Product Type 2</th>
<th>Product Type 3</th>
<th>Product Type 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPN</td>
<td>IKQ100N60T</td>
<td>IKW50N60ET</td>
<td>IKW30N60T</td>
<td>IKW50N60H3</td>
</tr>
<tr>
<td>Product Status</td>
<td>active and preferred</td>
<td>active and preferred</td>
<td>active and preferred</td>
<td>active and preferred</td>
</tr>
<tr>
<td>Order online</td>
<td><img src="https://example.com" alt="Buy Online" /></td>
<td><img src="https://example.com" alt="Buy Online" /></td>
<td><img src="https://example.com" alt="Buy Online" /></td>
<td><img src="https://example.com" alt="Buy Online" /></td>
</tr>
<tr>
<td>Package</td>
<td>TO-247PLUSH-3</td>
<td>PQ-TD247-3-A1</td>
<td>TO-247</td>
<td>TO-247</td>
</tr>
<tr>
<td>Online Simulation</td>
<td><img src="https://example.com" alt="Simulate Online" /></td>
<td><img src="https://example.com" alt="Simulate Online" /></td>
<td><img src="https://example.com" alt="Simulate Online" /></td>
<td><img src="https://example.com" alt="Simulate Online" /></td>
</tr>
<tr>
<td>Voltage Class max</td>
<td>600 V</td>
<td>600 V</td>
<td>600 V</td>
<td>600 V</td>
</tr>
<tr>
<td>Driver Selection</td>
<td><img src="https://example.com" alt="Select Driver" /></td>
<td><img src="https://example.com" alt="Select Driver" /></td>
<td><img src="https://example.com" alt="Select Driver" /></td>
<td><img src="https://example.com" alt="Select Driver" /></td>
</tr>
<tr>
<td>Switching Frequency min</td>
<td>2 kHz</td>
<td>18 kHz</td>
<td>2 kHz</td>
<td>20 kHz</td>
</tr>
<tr>
<td>Switching Frequency max</td>
<td>20 kHz</td>
<td>60 khz</td>
<td>20 kHz</td>
<td>100 kHz</td>
</tr>
<tr>
<td>Ic @ 25°C max</td>
<td>160 A</td>
<td>64 A</td>
<td>45 A</td>
<td>100 A</td>
</tr>
<tr>
<td>Ic pulsed max</td>
<td>400 A</td>
<td>150 A</td>
<td>90 A</td>
<td>200 A</td>
</tr>
<tr>
<td>tsoC</td>
<td>5 μs</td>
<td>5 μs</td>
<td>5 μs</td>
<td>5 μs</td>
</tr>
</tbody>
</table>

**Copyright © Infineon Technologies AG 2019. All rights reserved. Infineon Proprietary**
Simulate Products Online with PLECS

https://plex.infineon.com/plexim/igbtmotor.html?Parts=IKW30N60T

1. Set application parameters
2. Select product
3. Start simulation
4. Display simulation results
Widget available on every MOSFET product pages

IPP90R800C3

Description:
900V CoolMOS™ C3 is Infineon's third series of CoolMOS™ with market entry in 2001. C3 is the "working horse" of the portfolio.

Summary of Features:
- Low specific on-state resistance (R_on*A)
- Very low energy storage in output capacitance (E_oss) @400V
- Low gate charge (Q_g)
- Fieldproven CoolMOS™ quality
- CoolMOS™ technology has been manufactured by Infineon since 1993

Benefits:
- High efficiency and power density
- Outstanding cost/performance
- High reliability
- Ease-of-use

MOSFET Widget
Agenda

1. Online Engineering Tools Overview
2. How to select a product? Use our Product Finders!
3. How to select a solution? Use our Solution Finder!
4. How to check a solution? Use our Design Tools!
5. How to get support? Use www.infineon.com/support
Online Tools Overview

www.infineon.com/tools

How to select a Product?

- MOSFET Finder
- Product Finders (e.g., IGBT, MOSFET, IPM, Gate Driver, Simulation Models, etc.)

How to select a Solution?

- Use our Solution Finder
  (e.g.: Motor Control, SMPS, LED Lighting, PoL)

How to check the Solution?

- Simulation Tools (e.g., IPOSIM, Infineon Designer, XENSIV)

Download: datasheet, simulation model, BOM, circuit schematic, evaluation board
Solution Finder
Where to find?

› Direct link:  www.infineon.com/solutionfinder
› Design Tools:  www.infineon.com/tools

Through Application Pages

Tools & Software

Solution Finder – your guide to a successful design

Use our Solution Finder to quickly and easily find component projects. Simply select your application and the online diagrams, which you can customize to your needs.

You can already access 400 solutions for motor control for lighting, power supplies and other applications.

› Start now
Solution Finder Demo: Overview & Select Industry

› www.infineon.com/solutionfinder

1. Selection guidance

Solution Finder

In total: 764 solutions
Please choose your industry by clicking on the respective picture

Select Industry

Select Application  Select Load  Set Parameters  Compare Solutions  Check Solutions  Buy Solution

1. Industry Selection

Consumer (340 solutions)

Industrial / Commercial (48 solutions)

Automotive (50 solutions)

Data Processing (326 solutions)

2. Navigation

Previous  Next

3. Navigation

Previous  Next

Copyright © Infineon Technologies AG 2019. All rights reserved. Infineon Proprietary
Solution Finder – Demo: Select Application
www.infineon.com/solutionfinder

Select Industry | Select Application | Select Load | Set Parameters | Compare Solutions | Check Solutions | Buy Solution

Filtered: 326 solutions
Please choose your application by clicking on the respective picture

Your Selection
- Data Processing
  - Server

1. Selection history

2. Select application

Server (91 solutions)
PC (6 solutions)
Telecom (86 solutions)
UPS (1 solution)
Storage (71 solutions)
Datacom (71 solutions)
Solution Finder – Demo: Select Load
www.infineon.com/solutionfinder

1. Choose your load category
   - Motor control and drives
   - Power Supplies
   - Lighting

2. Choose your load type
   - AC-DC Converter
     - 20 solutions
     - An AC-DC converter is an electronic circuit or system that converts power from an AC source to DC loads. We offer semiconductor solutions for switched-mode power supply in consumer, computing, communications and industrial applications. They can be discrete, semi integrated and fully
   - DC-DC Converter
     - 71 solutions
     - A DC-DC converter is an electronic circuit or electromechanical device that converts a source of direct current (DC) from one voltage level to another. It is a type of electric power converter. We offer DC-DC converters fitting a broad range of consumer, computing, communications, industrial and

3. Load type description
Solution Finder – Demo: Set Parameters
www.infineon.com/solutionfinder
Solution Finder – Demo: Compare Solutions
www.infineon.com/solutionfinder

1. List of suggested solutions
2. Integration level
3. Trade-off ratings
4. Actions
5. List of alternative products

---

<table>
<thead>
<tr>
<th>Integration Level</th>
<th>Category &amp; Product</th>
<th>Chip Count</th>
<th>Footprint [mm²]</th>
<th>Design Target</th>
<th>Price Indication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Integrated driver/power stage</td>
<td>1 x XMC1352-TD38XK0200 AB</td>
<td>5</td>
<td>1020.08</td>
<td>Easy to design</td>
<td>$$$</td>
</tr>
<tr>
<td>Discrete</td>
<td>Controller 1 x XMC1352-TD38XK0200 AB</td>
<td>11</td>
<td>1117.65</td>
<td>Flexible to design</td>
<td>$$</td>
</tr>
</tbody>
</table>

---

Please click on one of the category tabs above to change the products

<table>
<thead>
<tr>
<th>Intelligent Power Modules (IPM)</th>
<th>Controller</th>
<th>Intelligent Power Modules (IPM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>Datasheet</td>
<td>Simulation</td>
</tr>
<tr>
<td>IBCM1660DG</td>
<td>Download</td>
<td>yes</td>
</tr>
</tbody>
</table>

---

Copyright © Infineon Technologies AG 2019. All rights reserved. Infineon Proprietary
Solution Finder – Demo: Check Solutions
www.infineon.com/solutionfinder

1. System simulation
2. Circuit & parameters
3. Simulation results
4. Simulation diagram & status
5. Selected & available products
Solution Finder – Demo: Buy Solutions
www.infineon.com/solutionfinder

1. Selected solution
2. Actions to report, partner and buy
3. Solution architecture
4. Evaluation board (detailed BOM)
# Agenda

<table>
<thead>
<tr>
<th>1</th>
<th>Online Engineering Tools Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>How to select a product? Use our Product Finders!</td>
</tr>
<tr>
<td>3</td>
<td>How to select a solution? Use our Solution Finder!</td>
</tr>
<tr>
<td>4</td>
<td>How to check a solution? Use our Design Tools!</td>
</tr>
<tr>
<td>5</td>
<td>How to get support? Use <a href="http://www.infineon.com/support">www.infineon.com/support</a></td>
</tr>
</tbody>
</table>
Online Tools Overview
www.infineon.com/tools

How to select a Product?

- MOSFET Finder
- Parameter Selection: Breakdown Voltage, Drain Current, Technology, Gate Charge
- Feature Selection: Select Type

Product Finders (e.g., IGBT, MOSFET, IPM, Gate Driver, Simulation Models, etc.)

How to select a Solution?

- Use our Solution Finder
  - Select Industry: Motor Control, SMPS, LED Lighting, PoL
  - Select Application: Control
  - Select Load: Motor

Simulation Tools (e.g., IPOSIM, Infineon Designer, XENSIV)

How to check the Solution?

- Simulation Tools (e.g., IPOSIM, Infineon Designer, XENSIV)

Download: datasheet, simulation model, BOM, circuit schematic, evaluation board

7 minutes
Infineon Toolbox: focus on Design-in
www.infineon.com/tools

Coming soon
Online Simulation provides tailored simulation engines for different customer use cases

- **Power**
- **Mixed-signal & Control**
- **RF**
- **Sensor**

**Check**
- What is the overall efficiency?
- Does the design not overheat?
- Is my design stable?
- Does my software run w/o errors?
- Does the magnet switch at the right position?

**Design Tool**
- **Offline**
  - EasyAPE PRO (ATV Body Power)
  - IPOSIM (IGBT Modules & Bipolar Disk)
  - Motor Simulator (IGBT, IPM)
  - PowerEsim (SMPS)
- **Online**
  - Infineon Designer (Mosfet, Driver, MCU)
  - PowerDesk (PoL)
  - IfxSPICE, SIMetrix, PSpice, LTSpice
  - Sensor Tools (3D, Angle & Hall sensors)

**Diagram**
- Secure & Safeguard
- Power Management
- Sense → Compute → Actuate

**Select**
- Product Block-Diagram

**Features**
- Easy
- Green
- Safe
1. myInfineon Registration
   - Customers: need new account since old Transim accounts will not be transferred

2. Getting Started
   - Documents
   - Videos

3. Steps by step guide with hyperlinks
IPOSIM Step by Step Guide

Direct Link: https://iposim.infineon.com

1. **Step 1: select your topology**
   - Here you select your target application and preferred circuit topology.

2. **Step 2: define your input**
   - In this step you define the input requirements for steady-state or load cycle simulation.

3. **Step 3: select your device**
   - Based on your input the tool will provide the best suited products in a tabular form.

4. **Step 4: simulate thermally**
   - Check the simulation results. Click on the diagrams to zoom in and assess the details.

5. **Step 5: compare results**
   - Here you compare the losses and calculated temperature of the selected products.

6. **Step 6: download results**
   - Download your simulation results in a easy to re-use tabular form.
Infineon Designer - Online Digital Prototyping Engine (www.infineon.com/ifxdesigner)

Great user experience
› Full-featured circuit editor
› Multiple platforms (IE, Safari, Chrome, Firefox, etc.)
› No installation
› Unlimited licenses
› Fast simulation due powerful server configuration

Features
› Accurate transient and system efficiency simulation of products and applications
› Fast parameter configuration with interpreter window
› Digital/analog co-simulation
› 430+ application circuits (lighting, power supplies, motor control, computing PoL)
Infineon Designer Use Cases: Online Analog-Digital Co-Simulation with Code Debugger

1. Select **XMC1200 circuit**

   - Example circuit: 32-bit MCU XMC1200 controlling the RGB color walk with constant brightness

2. Choose simulation mode

3. Co-simulate MCU software with analog circuit
**Infineon Designer Use Cases: Digital Twin**

**24V Arduino Shield PROFET™+ 24V Family**

- **Unique Value Proposition**
  - Customer explore the board by “click & play”, w/o reading through manuals & datasheets
  - Customer adapt the soft board (hardware & software) to his own application needs prior to Buy Online

- **Full Hardware & Software Design**
  - HW: Arduino Shield
  - SW: DAVE
  - Online Circuit: TINA SPICE
  - Engine: DesignSoft
  - Hosting: Infineon & DesignSoft

**Software**

**Hardware**

**Online Virtualization**

1. SW Debugger
2. HW Oscilloscope

Copyright © Infineon Technologies AG 2019. All rights reserved. Infineon Proprietary
Infineon Designer Highlights: Full-featured Circuit Editor

› Login with myInfineon account
› Create your circuit from scratch or based on existing Infineon example circuits
Infineon Designer Highlights:
Design Tool - Parameter Setting & Calculation

1. Wanna try it out? Click on analysis
2. Double click on green window to design
3. If you like what you see, buy online
4. Enjoy other circuits

Design Tool

- Easier parameter setting
- Quicker calculation & circuit configuration with defined formulas
Agenda

1. Online Engineering Tools Overview
2. How to select a product? Use our Product Finders!
3. How to select a solution? Use our Solution Finder!
4. How to check a solution? Use our Design Tools!
5. How to get support? Use www.infineon.com/support
Technical Support

Please visit www.infineon.com/support

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

- 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. Technical Support [CN] [DE]
2. Chip Card and Security Dists [CN] [DE]
3. HiRel Discretes for special applications, e.g. Aero and Space [CN] [DE]
4. Supplier Service, Supplier Page, page registration [CN] [DE]
5. Use Infineon Designer for Simulation and Development of your Circuit [CN] [DE]
6. How to login to myinfineon [CN] [DE]
Online Tools Overview
www.infineon.com/tools

How to select a Product?
› 16 Product Finders
› Based on parametric search
› Suitable for known product type and parameters

How to select a Solution?
› Solution Finder
› Based on system block diagrams
› Provide system understanding of Infineon products
› Easy to use
› Combine parametric search and system simulation

How to check the Solution?
› Infineon Designer Spice Simulation:
  ✓ Full-featured circuit editor
  ✓ Transient and steady state analysis
  ✓ 430+ application circuits
› IPOSIM/PLECS Thermal Simulation:
  ✓ quick and easy
  ✓ thermal, efficiency and loss calculation

Product Finders (MOSFET, IGBT, Gate Driver, etc.)

Use our Solution Finder (Motor Control, Power Supplies, etc.)

Simulation Tools (Infineon Designer, IPOSIM, PLECS)
Resource List  https://www.infineon.com/tools

Finder Tools
›  Infineon Solution Finder
›  Infineon Product Finder
›  Infineon Evaluation Board Finder
›  Infineon Simulation Models

Hardware Simulation Tools
Thermal design
›  Infineon IPOSIM Power Simulation for Power Modules and Disk Devices
›  Infineon Power Simulation for Integrated Power Modules (IPM) powered by PLECS
›  Infineon Power Simulation for discrete IGBTs powered by PLECS

Electrical & software design
›  Infineon Designer powered by TINACloud
›  PowerEsim Simulation for Switched-Mode Power Supply (SMPS)

Magnetic design
›  Infineon Magnetic Sensor Design Tools

Software Development Tools
›  DAVE™ Development Platform for XMC™ 32-bit Industrial Microcontroller based on ARM® Cortex®-M
›  TriCore™ Development Tools for AURIX™ 32-bit Automotive Microcontroller based on TriCore™

Infineon Support & Distribution Partners
›  Technical Assistance Center
›  Forums
›  Newsletter
›  Orderable Part Number (OPN) Finder
›  Where to Buy your Products
›  Contact & Locations
Disclaimer

The information given in this training materials is given as a hint for the implementation of the Infineon Technologies component only and shall not be regarded as any description or warranty of a certain functionality, condition or quality of the Infineon Technologies component.

Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind (including without limitation warranties of non-infringement of intellectual property rights of any third party) with respect to any and all information given in this training material.
Part of your life. Part of tomorrow.