Be smart. Prototype online.

# Infineon Designer Getting Started

Start here: www.infineon.com/ifxdesigner

2017-05-04

Get support: mailto:support@infineon.com

# Agenda

1. Infineon Designer Overview
2. Demo Examples
3. First steps: Learn about Basics incl. MOSFET Comparison
4. Advanced: Motor Control HW/SW Co-Simulation


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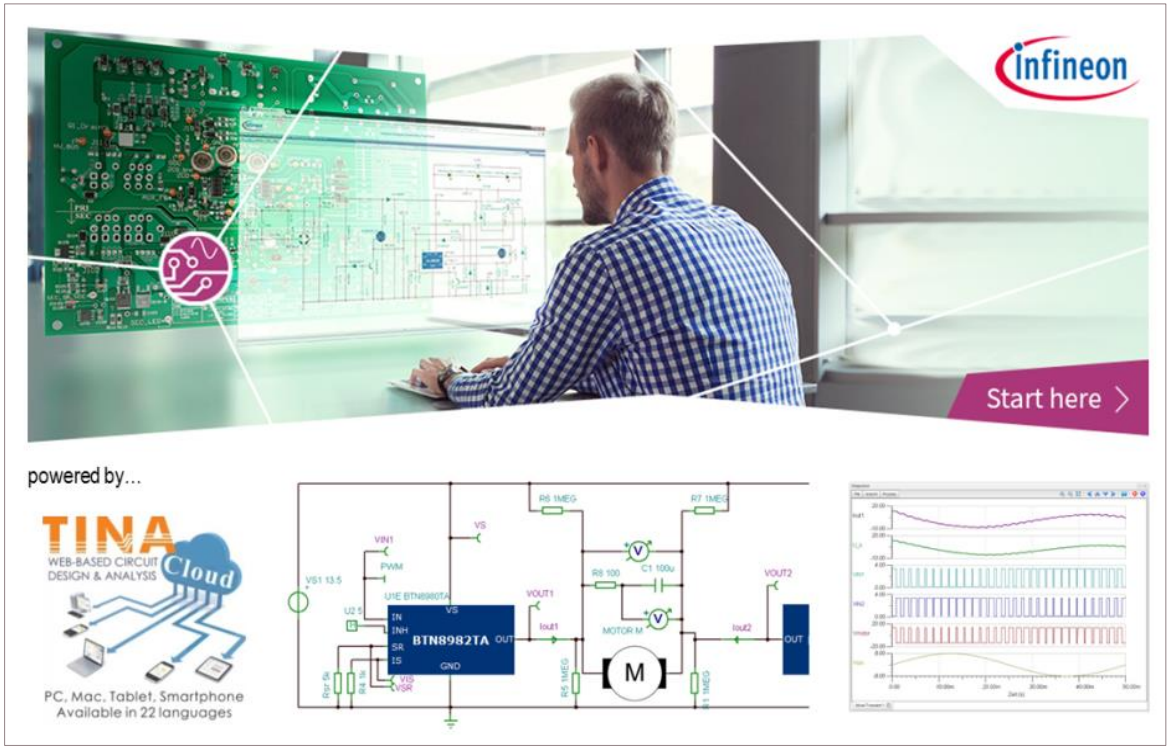
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# Infineon Designer (SPICE)

**Start here:** [www.infineon.com/ifxdesigner](www.infineon.com/ifxdesigner)



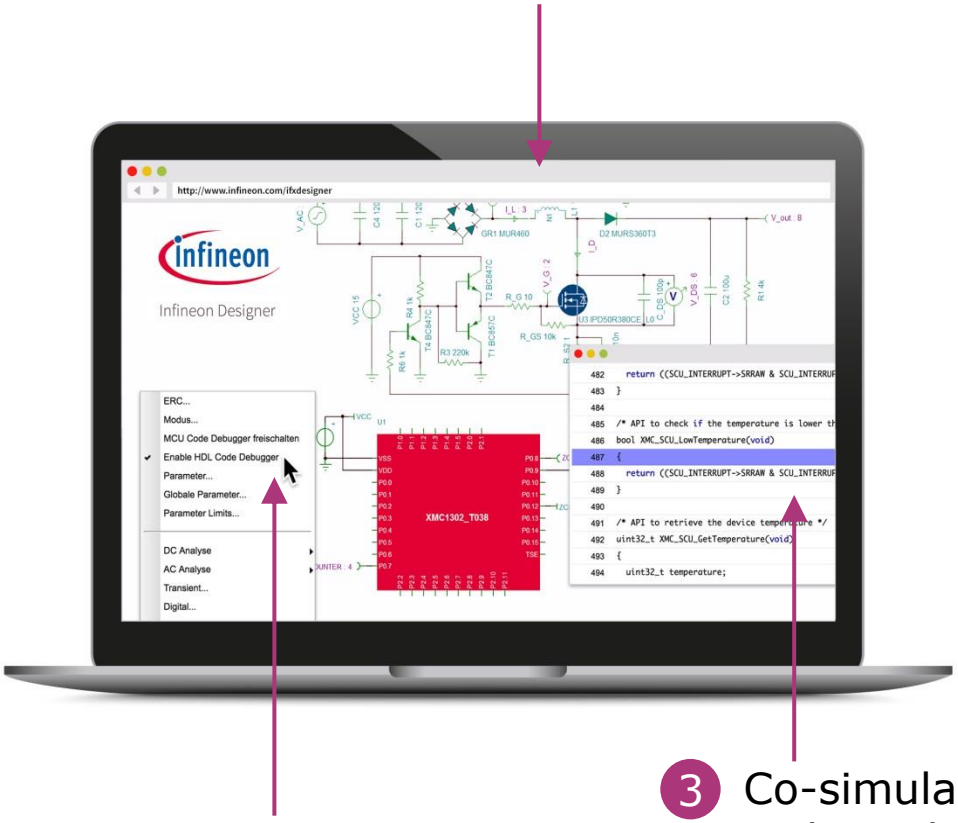

- Solution understanding and product selection
- 100+ application circuits (lighting, power supplies, motor control, Mobile RF front-end)
- Online analog-digital prototyping featuring
  - Multiple platforms (Chrome, Safari, etc.)
  - No installation
  - Unlimited licenses

- Very accurate simulation of products and applications
- Focus lies on functional and signal analysis including software execution
- Explore [more circuits]

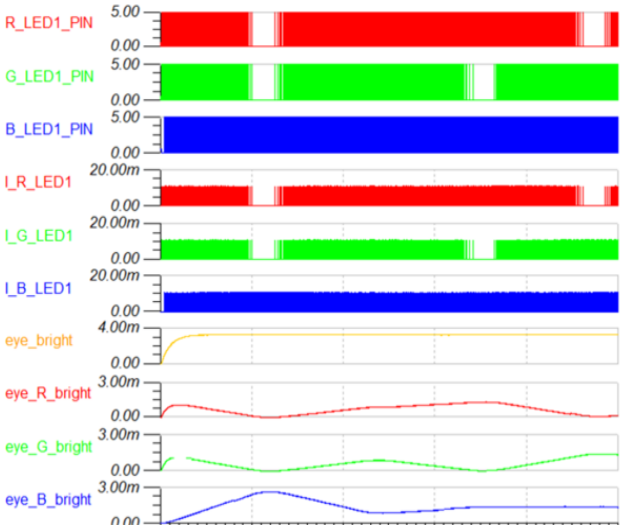

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# World's first online analog-digital debugger

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


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# Infineon Designer versions

## Infineon server

## DesignSoft server

Online

Offline

www.infineon.com/ifxdesigner

Simulate
Share



Design
Simulate
Share

Upgrade

www.tinacloud.com

TINA WEB-BASED CIRCUIT DESIGN & ANALYSIS Cloud

PC, Mac, Tablet, Smartphone
Available in 22 languages

Design
Simulate
Share

Online

Design
Simulate

TINA v10

Offline

Firewall

DesignSoft
Excellence in Computer Aided Design and Educational Software


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# Demo & examples

Getting started
- Learn about Infineon designer basics
- Simulate a simple inverted buck example

200 V boost converter with CoolMOS™ P6 and EiceDRIVER™ 2EDN
- Learn about 2EDN7524 functionality
- Simulate with different duty cycles

MOSFET performance comparison
- Compare MOSFET signal performance of various technologies
- Analyze power losses (switching and conduction)

Motor control with XMC™/DAVE™ software in the loop
- Explore the functions of a real evaluation board
- Run software together with hardware
- Step through the code in the online debugger
- Upload new code
- Install DAVE™ software development suite and alter your code


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# Infineon Designer example
## Getting started

### Infineon Designer: Getting Started

Infineon Designer is based on the easy to use multi-language TinaCloud environment. This is the online version of the popular TINA circuit simulation software now running in your browser without installation, on multiple platforms (PC, laptop, mobile, tablets, etc.). Analog circuits are modeled in Spice and can be co-simulated with digital systems using hardware description languages such as VHDL and Verilog.

#### How to select a device?

1) type Strg/CTRL-F and search for e.g. "U1"
2) the MOSFET device will turn red
3) click on the red symbol and open properties
4) click on "SubCkt-Type" to change the part
5) type the name into search or
6) use the pull-down to select a technology
7) click on OK and the part will change (may take a while)

#### How to search and display signals?

1) click on "Simulate Transient"
2) search with "Strg/CTRL-F" for "V_G" voltage pin turning red
3) click on the voltage pin and open properties
4) change the "IO state" to "Output" for display
5) Label "V_G:2" will be displayed as signal number 2
6) now simulate again and the signal will be displayed

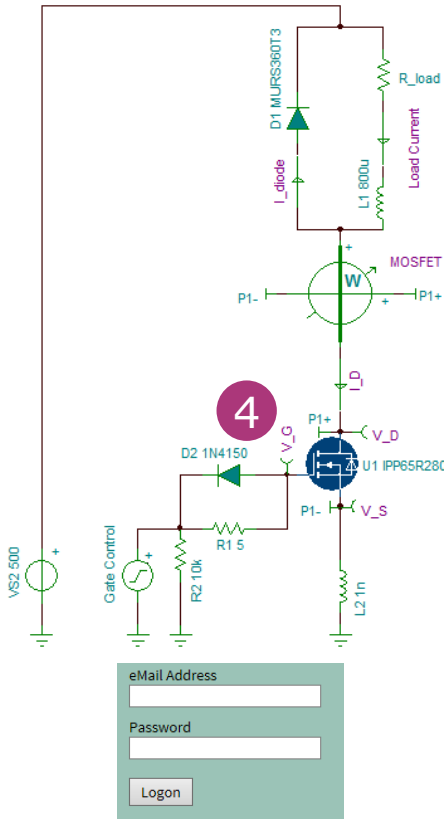
#### How to save & share circuits?

1) click on login in the menu above
2) File -> Open -> Infineon Examples
3) change the circuit and click on File -> Save as
4) the circuit will be saved in the "My Circuits" folder
5) File -> Share and copy the link -or-
6) send an Email to share your circuit

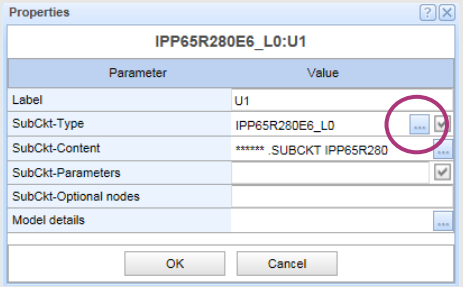
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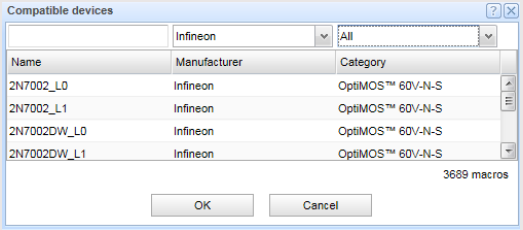

2 Simulate Transient




1. Open circuit getting started
2. Click on Simulate Transient
3. Learn about functions & signals in the diagram window
4. Click on the MOSFET symbol and click on "…" "SubCkt-type"




5. Select a new MOSFET from the drop-down menu

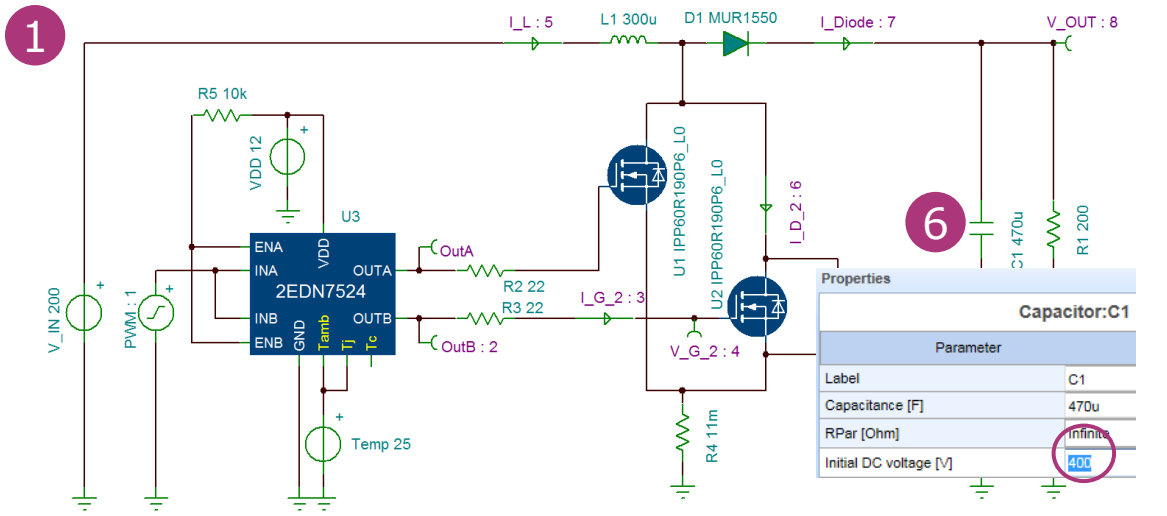


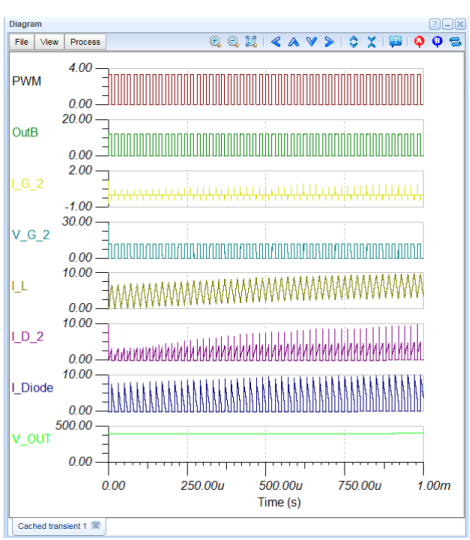

6. Login with your My Infineon account to save your circuit

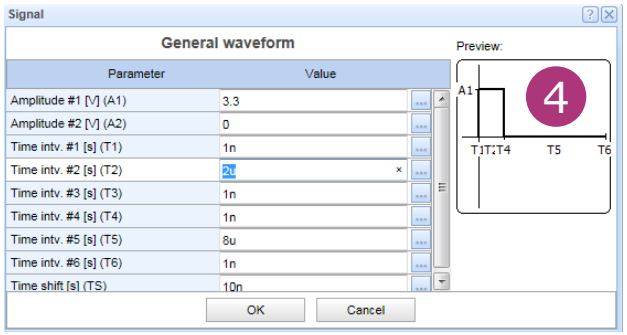

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# Infineon Designer example

## 200 V Boost Converter with CoolMOS™ P6 and EiceDRIVER™ 2EDN

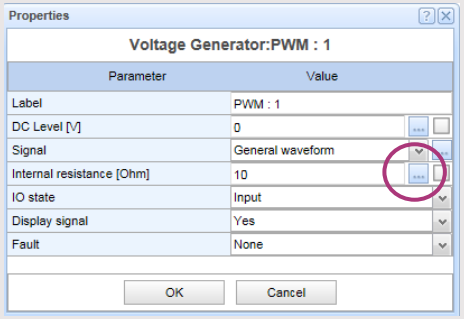



$$V_{OUT} = V_{IN} \bullet \frac{t_{on} + t_{off}}{t_{off}} = V_{IN} \bullet \frac{1}{1 - D}$$

1. Open 200 V boost converter circuit
2. Click on **Simulate Transient**
3. Learn about functions & signals in the diagram window
4. Click on the PWM generator symbol and change the duty cycle by clicking on "…" right of general waveform

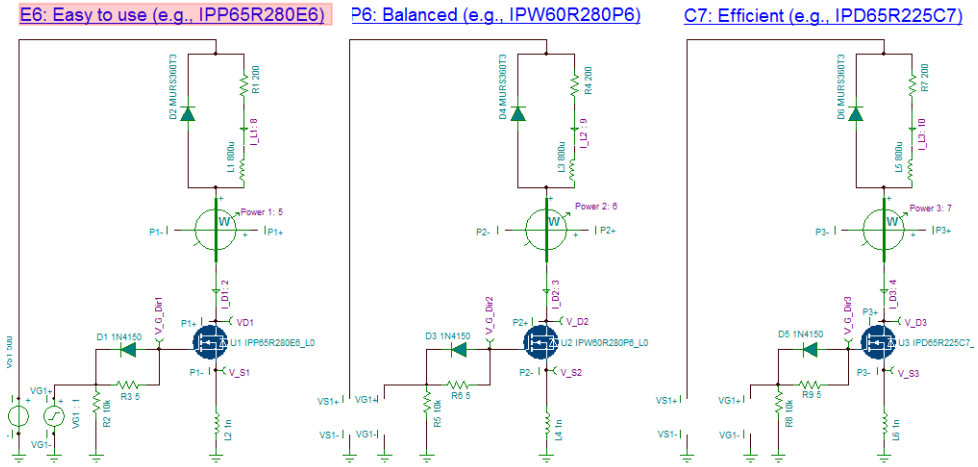



5. Simulate again and compare the new output voltage with the previous one
6. Hint: pre-charge the output capacitor C1 with a voltage close to the expected steady state one

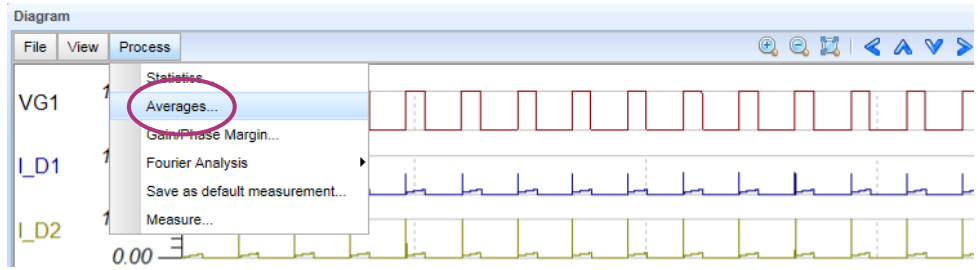

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# Infineon Designer example
# MOSFET performance comparison

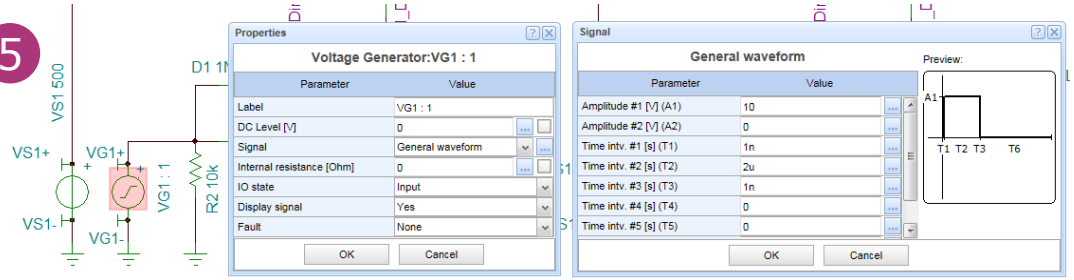
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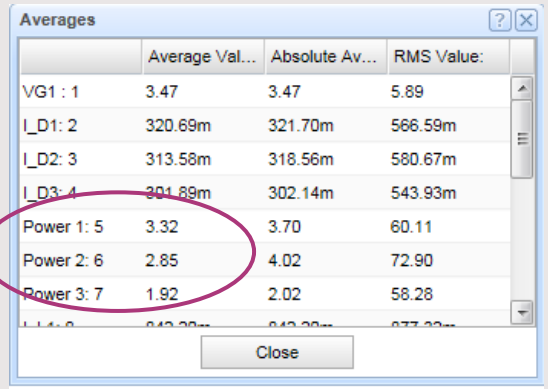

3




5




1. Open circuit MOSFET performance comparison
2. Click on **Simulate Transient**
3. Click on the menu item process → Averages in the diagram window




4. Compare the different power losses of the 3 MOSFETs
5. Change the PWM pattern of VG1 voltage generator and simulate again
6. Click on Buy online and compare the prices


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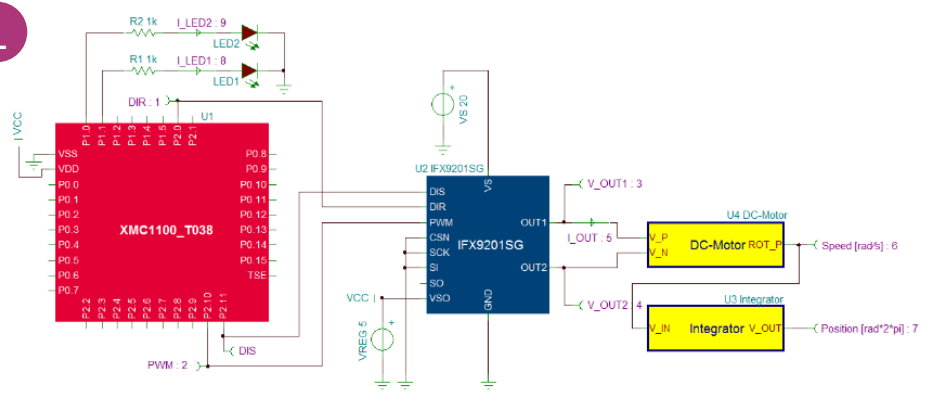
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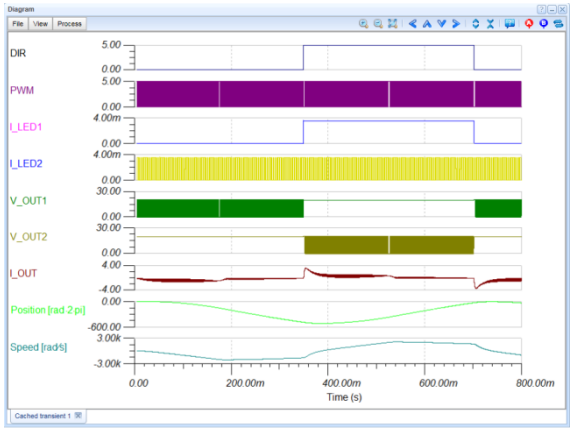
# Infineon Designer XMC™ software example H-bridge Kit 2Go (Part 1/3: circuit debugging)

1

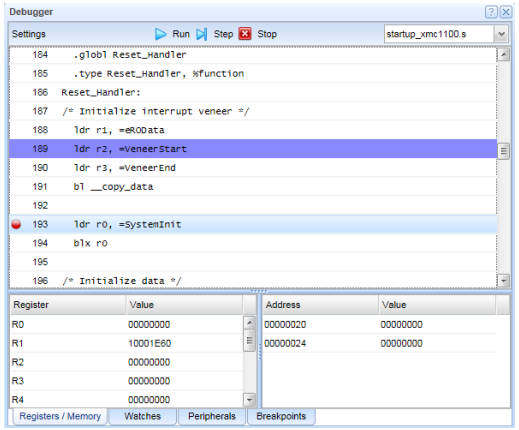



2 Simulate Transient

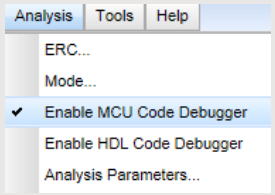
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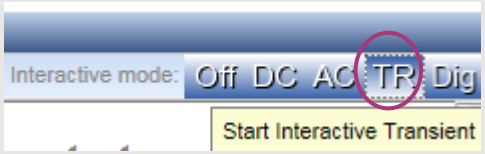

5




1. Open Design H-bridge Kit 2Go
2. Click on Simulate Transient
3. Learn about functions & signals in the diagram window
4. Enable MCU code debugger




5. Start Simulation in interactive mode and step through the code



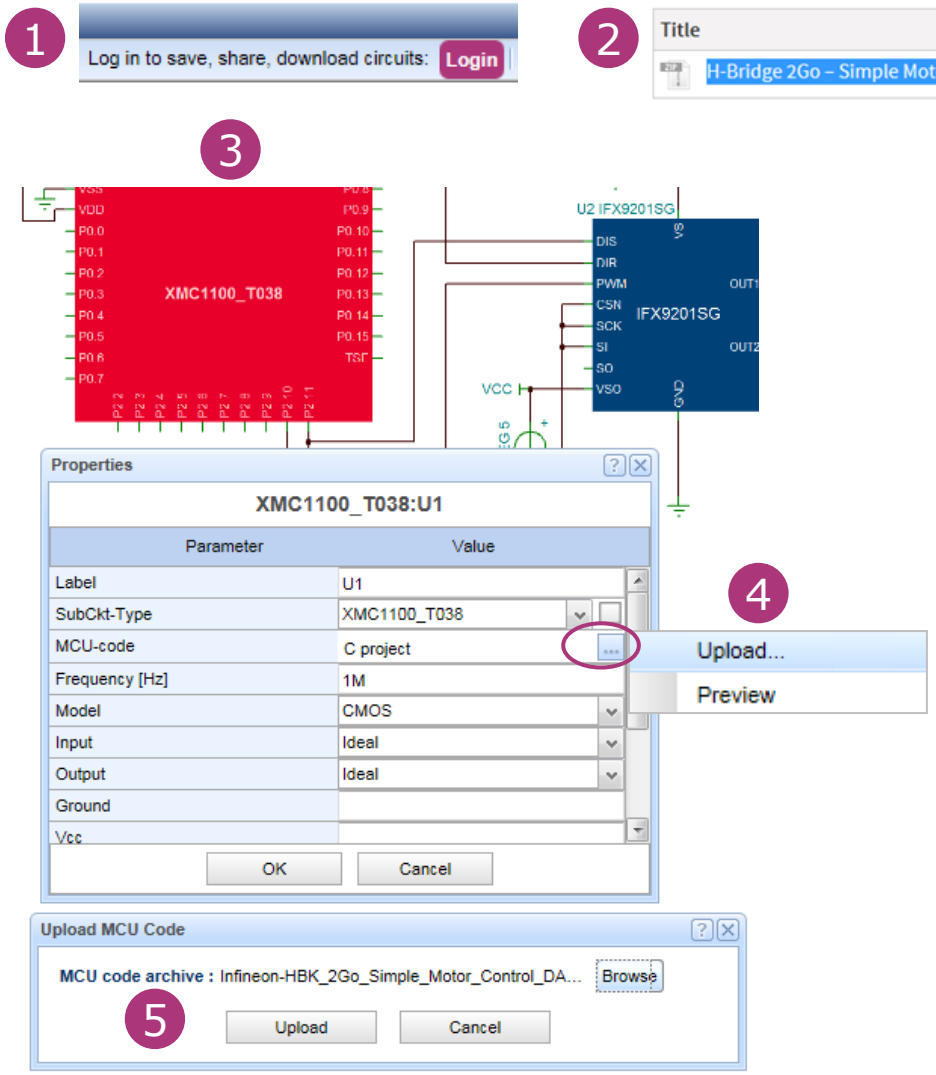

6. Purchase sample & board



Buy online


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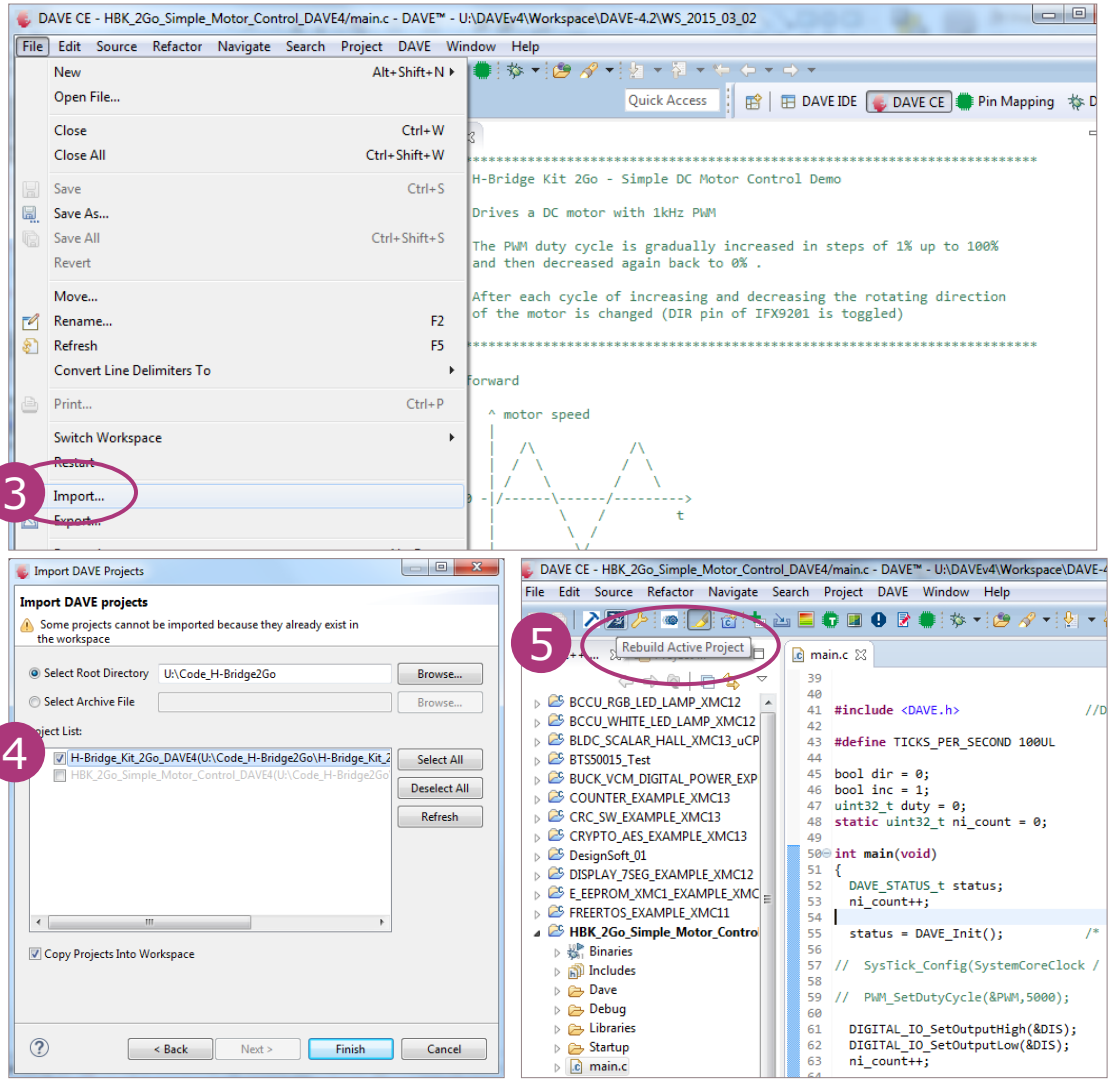
# Infineon Designer XMC™ software example H-bridge Kit 2Go (Part 2/3: software upload)




1. Open design H-bridge Kit 2Go and login with MyInfineon account
2. Download code .zip file H-bridge Kit 2Go – default simple example routine example from the H-bridge kit board page software & tools tab
3. Click on the red XMC1100 symbol and open the MCU code window by clicking on "…"
4. Browse to the.zip file and select it (contains files .elf, .hex and source files)
5. Upload the code Infineon-HBK_2Go_simple_motor_control_DAVE4.zip-SW-v01_00-EN.zip
6. Click on Simulate Transient
7. Check the results


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# Infineon Designer XMC™ software example H-bridge Kit 2Go (Part 3/3: software rebuild)




1. Download and install DAVE™ software development suite [DAVE™ for windows]
2. Download code .zip file [H-bridge Kit 2Go – default Simple example routine] example from the H-bridge kit board page [software & tools tab]
3. Start DAVE™ and import the unzipped project into your workspace with file → import → Infineon DAVE™ project
4. Click on next and browse to the folder with the project and select it
5. Change the code and rebuild
6. Go to your workspace directory and .zip the updated project folder
7. Got back to the schematic click on the red XMC1100 symbol and upload the MCU code


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