ROHM Solution Simulator
Hands-on User's Manual Rev.2

February, 2020

AER62-D1-0002-2

ROHM Solution Simulator Hands-on

Choose Simulation Circuit

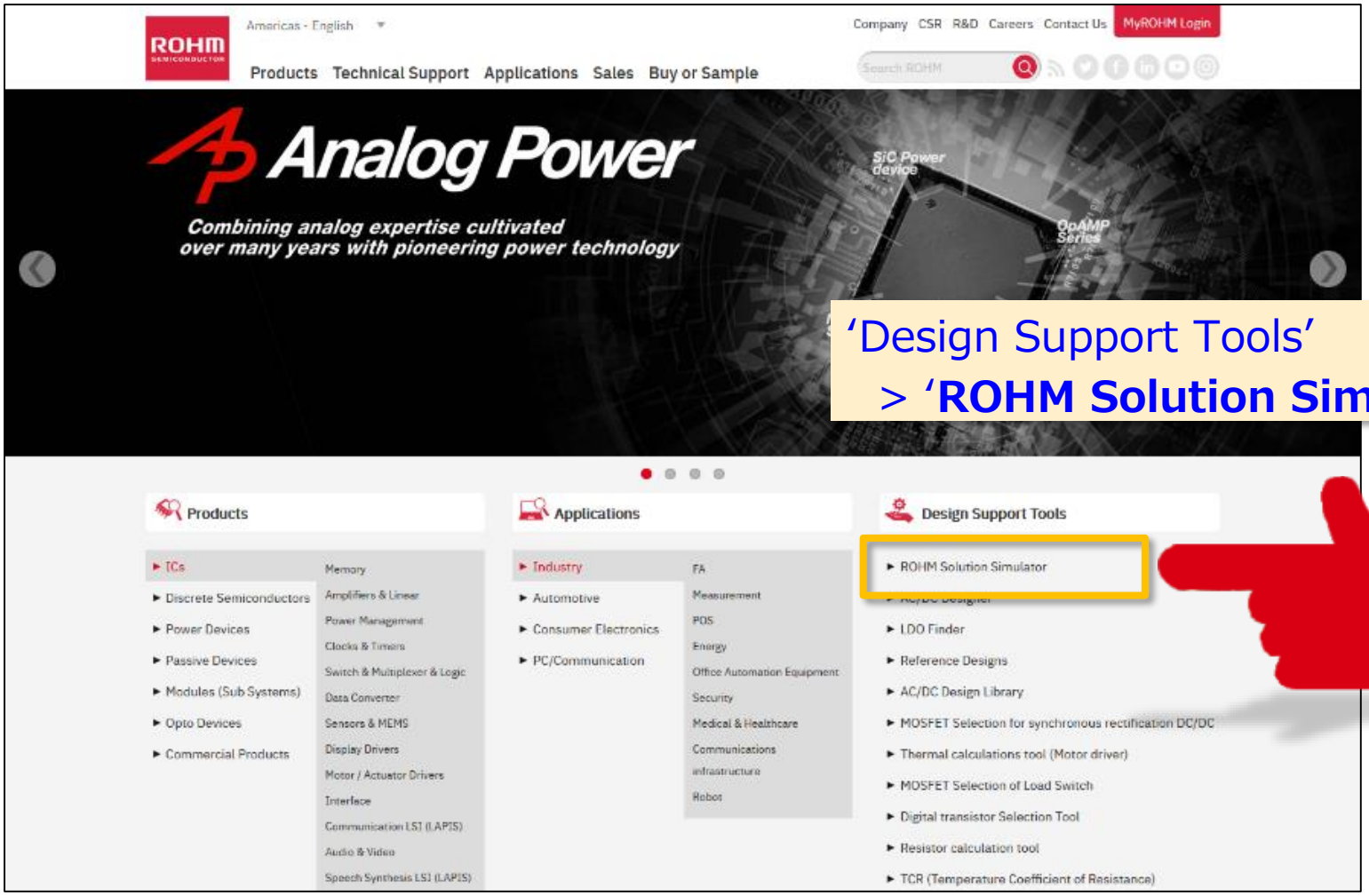
Execute Simulation

Customize Simulation

Export Schematics

Order Samples

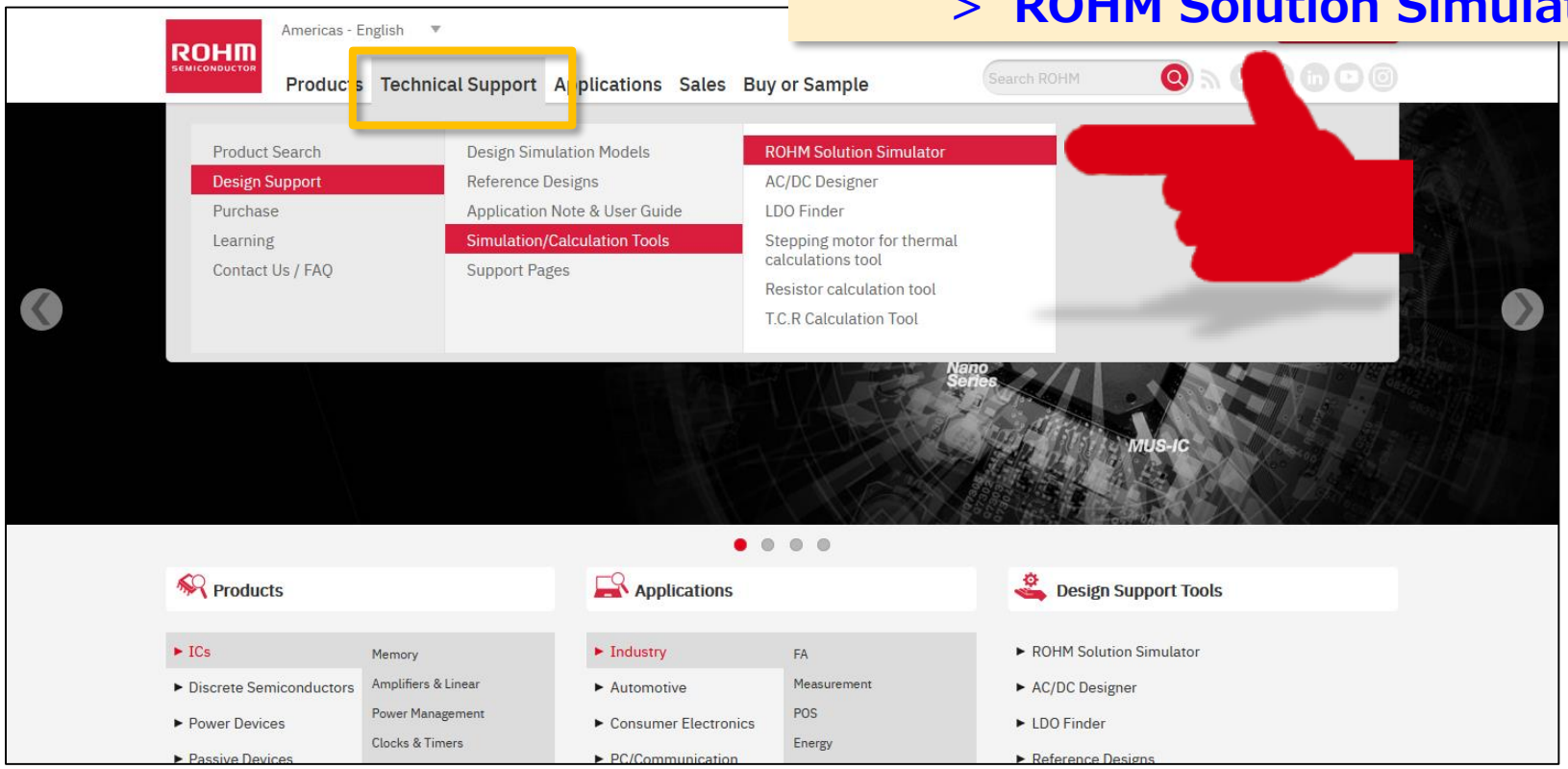
1.Link from ROHM Web Top Page



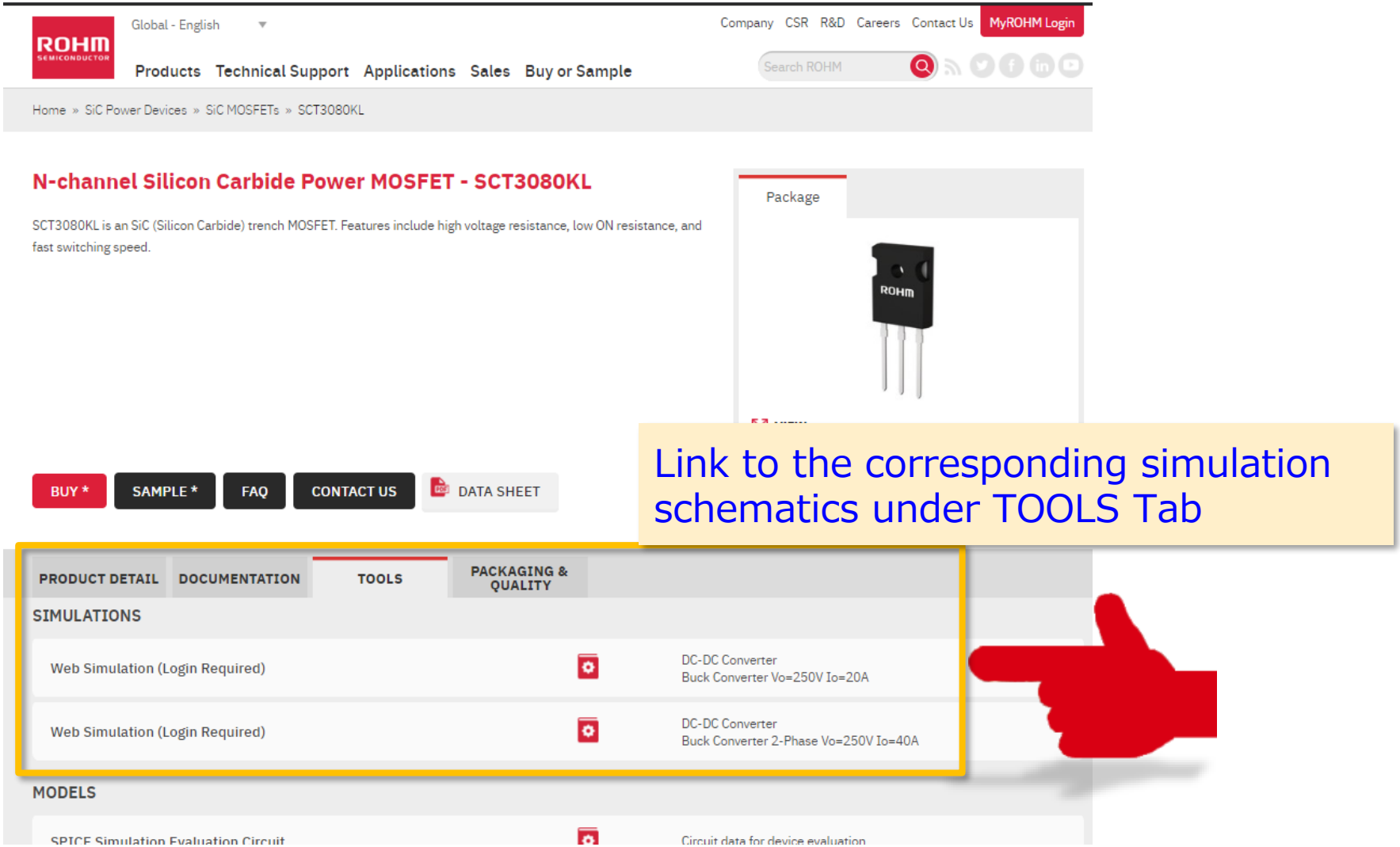
'Design Support Tools'
> '**ROHM Solution Simulator**'

2. From ‘Technical Support’ pull-down

‘Technical Support’
> ‘Design Support’
> ‘Simulation/Calculation Tools’
> ‘**ROHM Solution Simulator**’

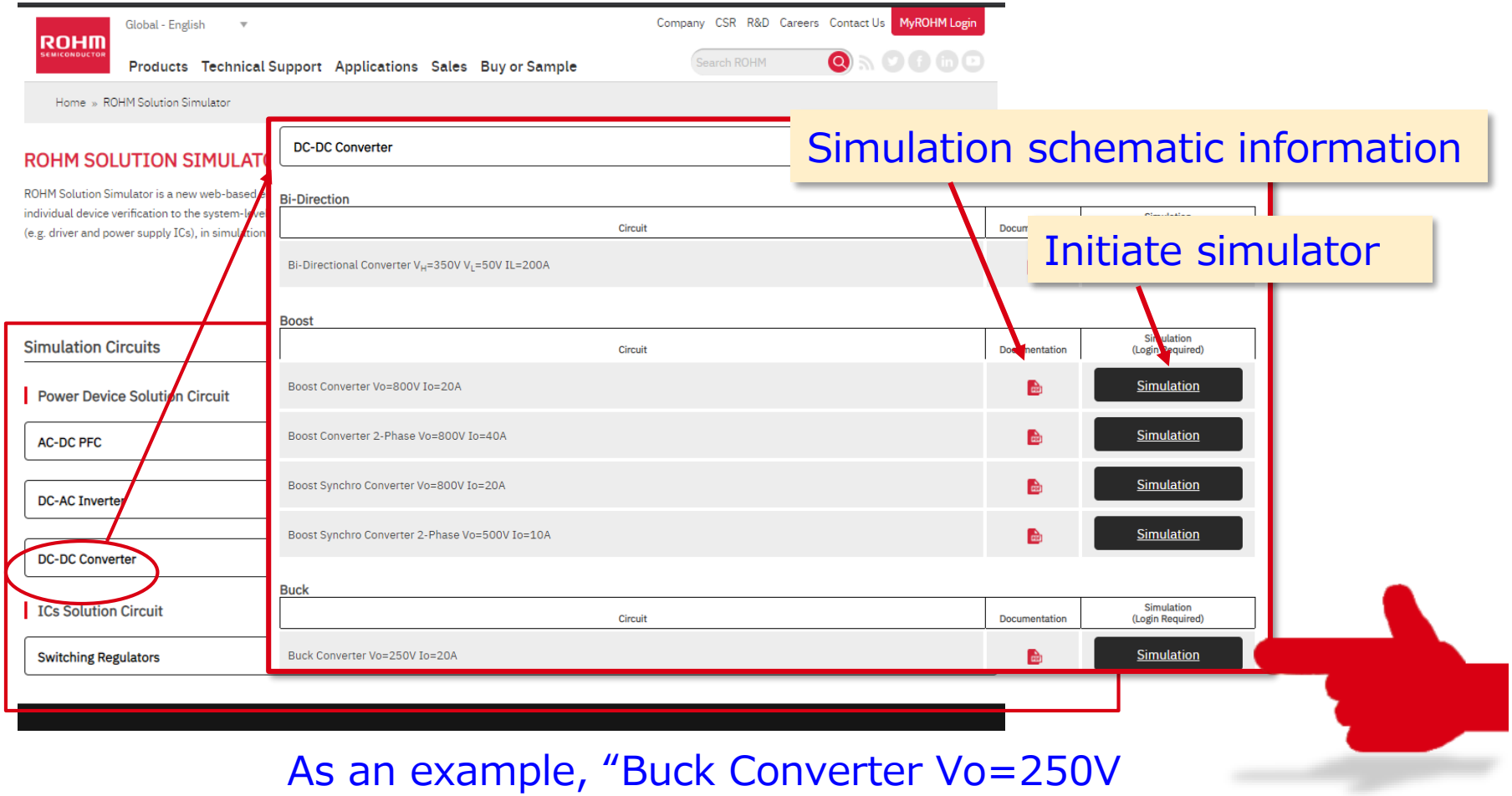


3. From Product Pages



ROHM Solution Simulator Page (1/2)

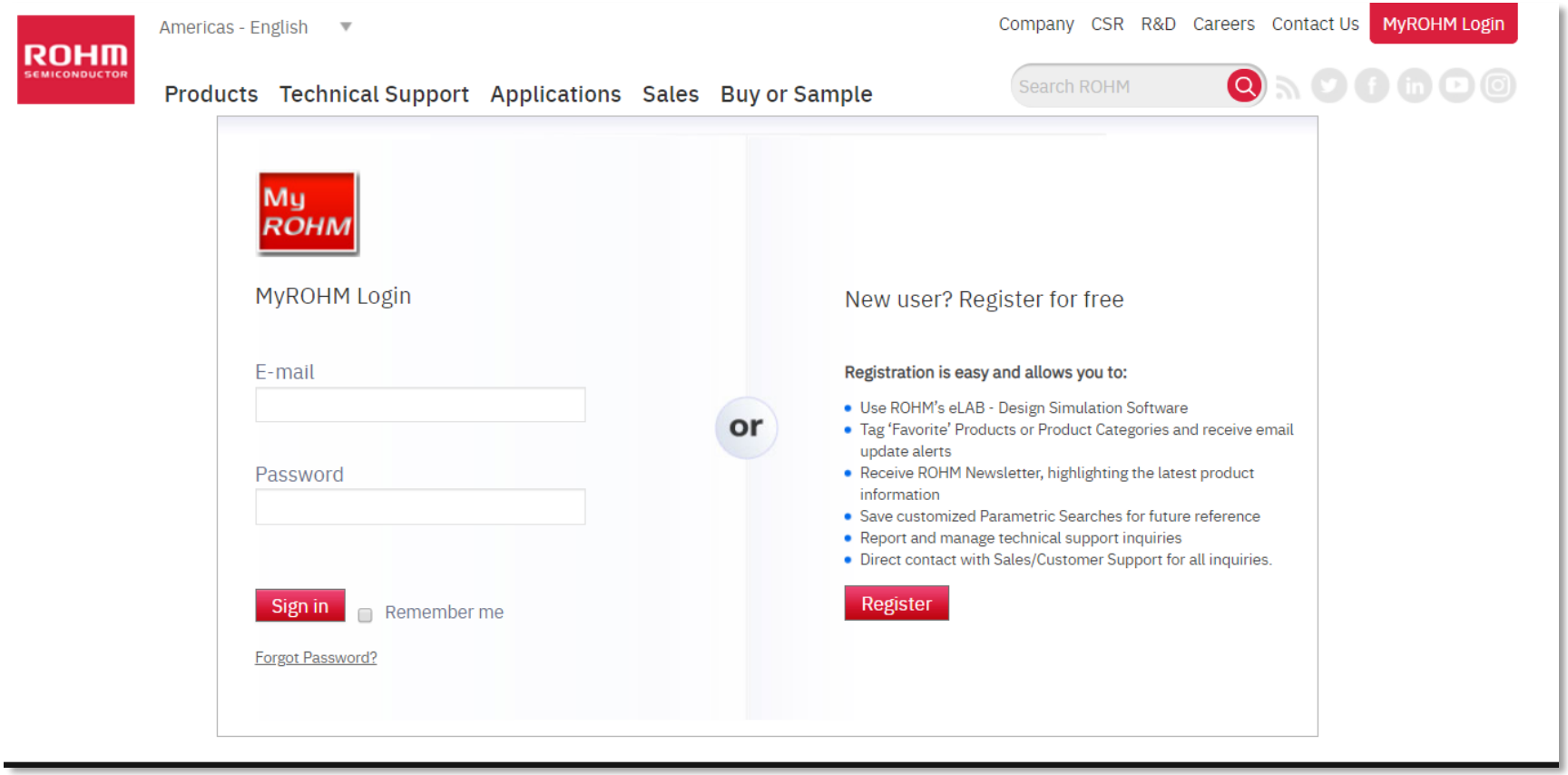
Simulation schematics are categorized and you can choose one from the menu of a variety of circuit topology



As an example, “Buck Converter Vo=250V Io=20A” from DC-DC Converter is chosen

Login to My ROHM Account

to initiate ROHM Solution Simulator



Choose Simulation Circuit

Execute Simulation

Customize Simulation

Export Schematics

Order Samples

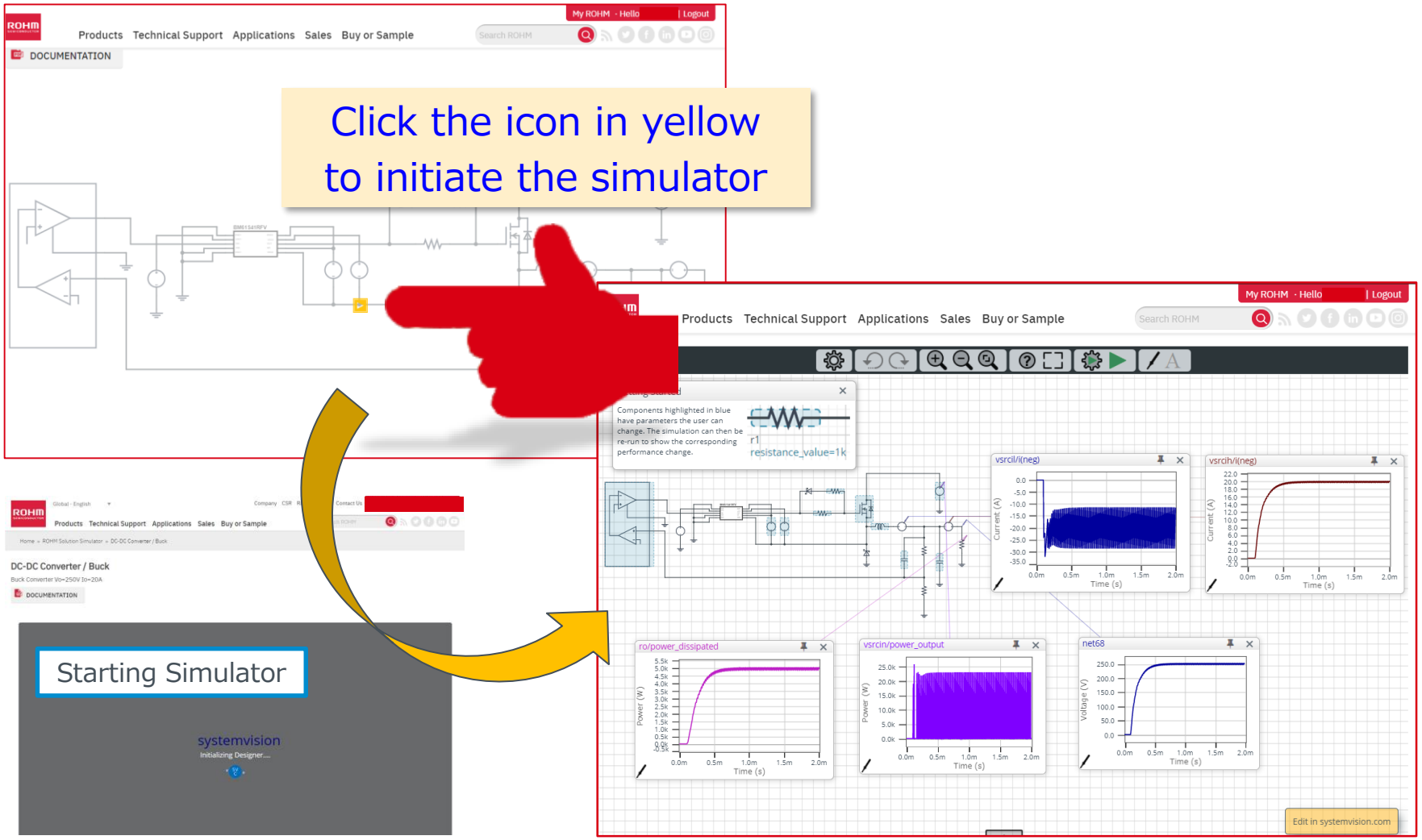
Execute Simulation

- Learn ROHM Solution Simulator through the cases

- **Open Schematics on the simulator**
- **User interface and basic operations**
- **Simulation setup and simulate**
- **Simulation result and waveforms**
  - **How to use the Wavebox**
  - **How to use the Waveform Viewer**

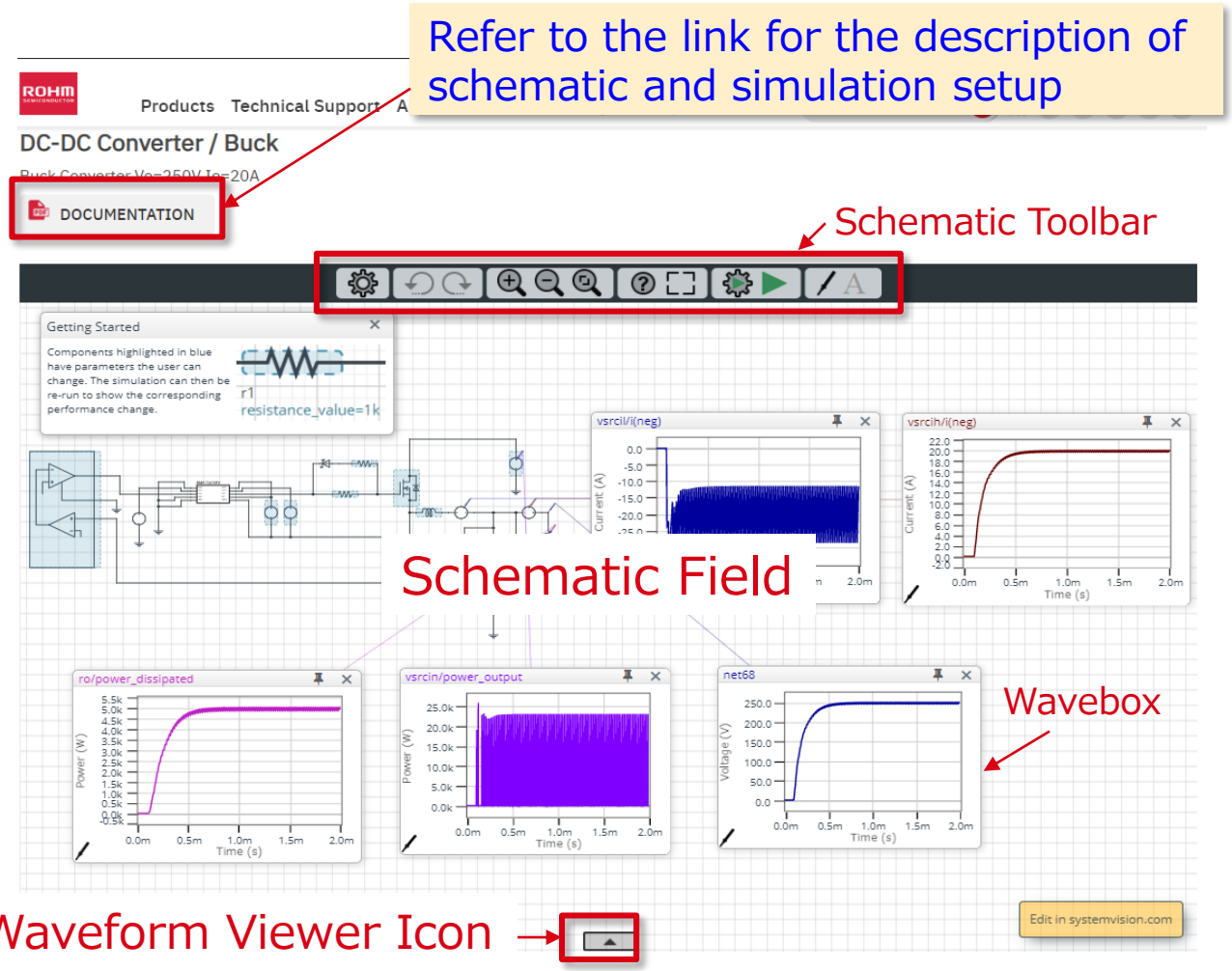
Open Schematics on the simulator 1/2

The schematic image shows up when login to My ROHM Account

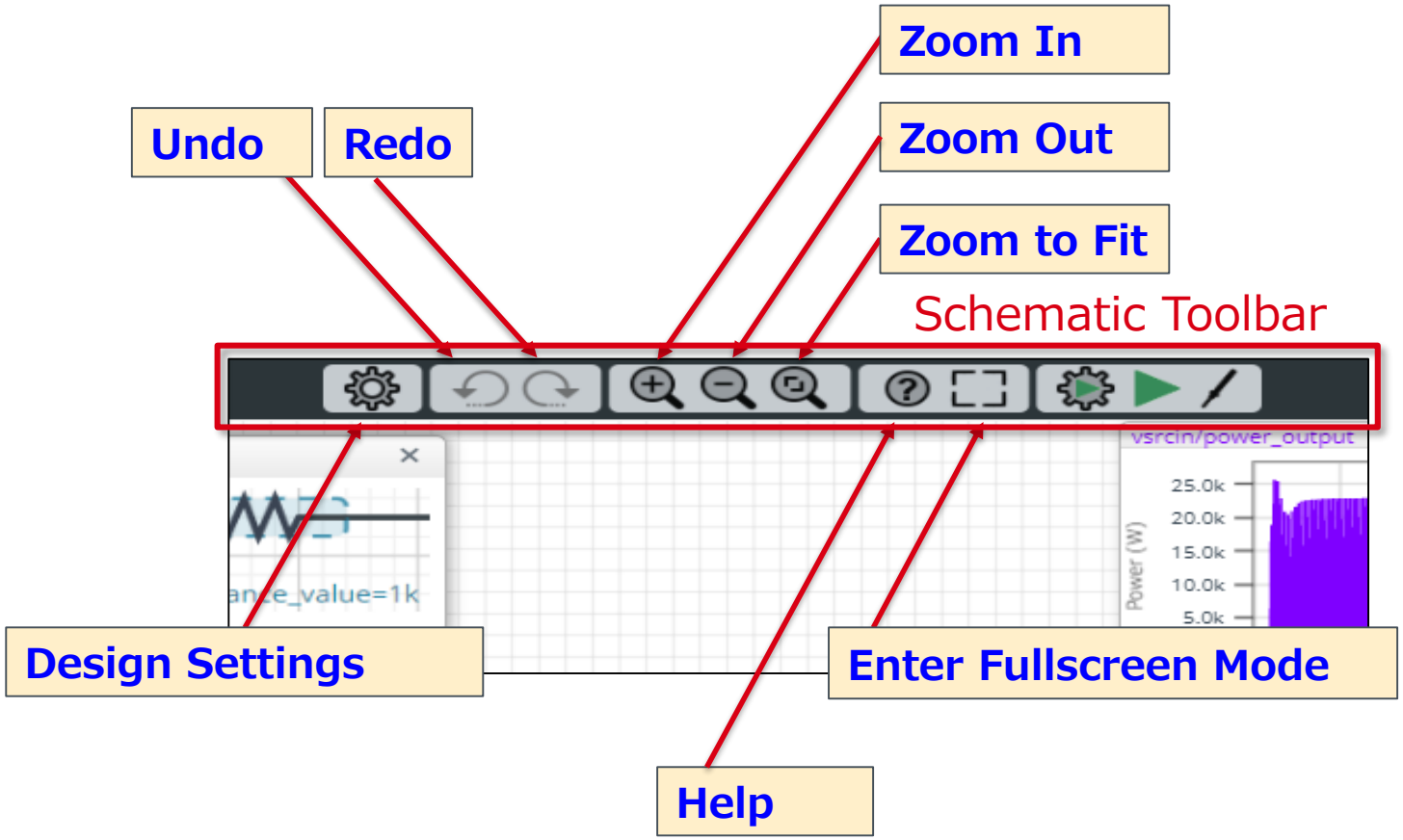


Open Schematics on the simulator 2/2

ROHM Solution Simulator User Interface



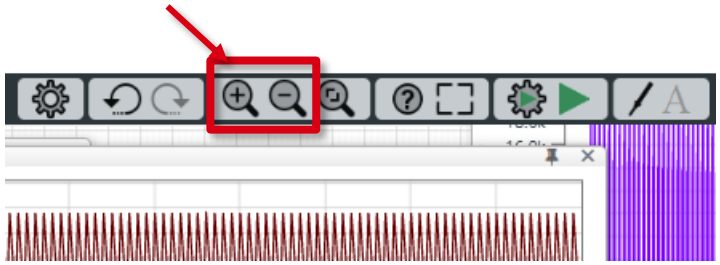
Schematic Toolbar icon and functions



User interface and basic operation(2/4)

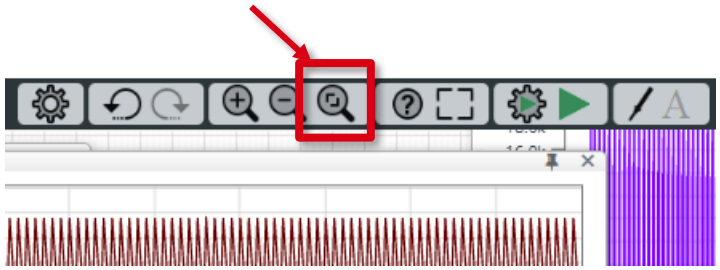
Zoom in/out

- Click Zoom in or out.



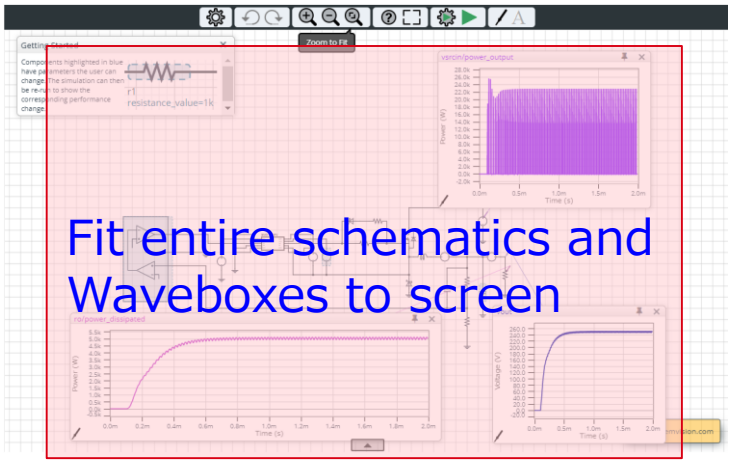
Zoom to Fit

- Click Zoom to Fit.



- Mouse wheel or touch pad work

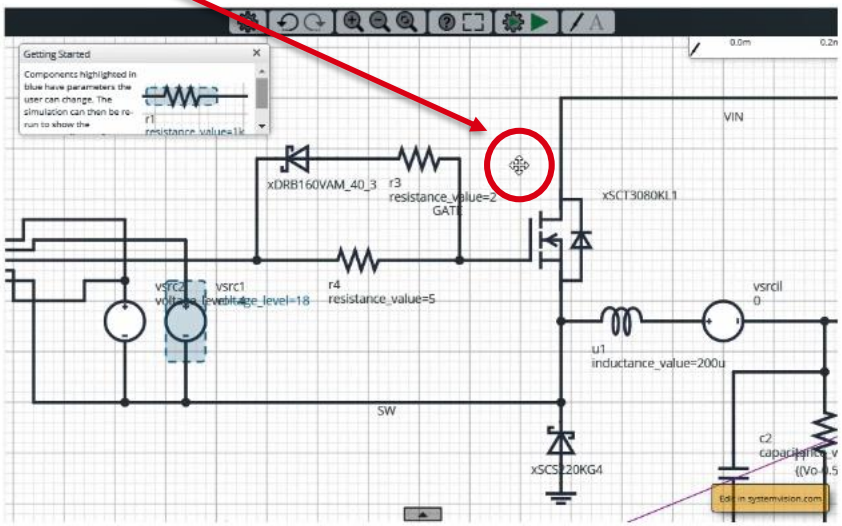
	Zoom In	Zoom Out
Mouse wheel	Up	Down
2finger swipe on touch pad	Down	Up



User interface and basic operation(3/4)

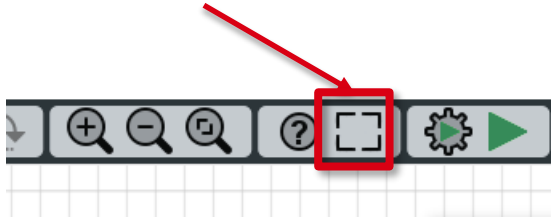
Drag schematics

Click on the schematic field
Drag the cursor to move the schematic drawings. The mouse cursor will change while dragging the schematic.

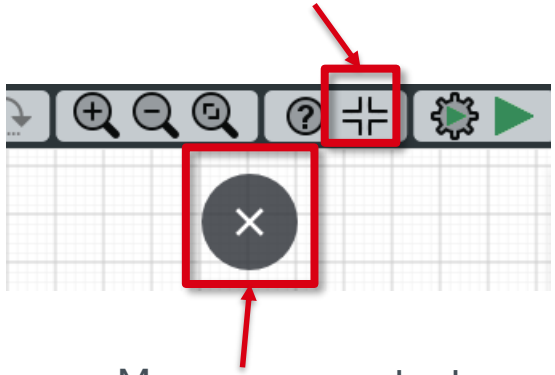


Full screen mode

- Go full screen



- Leave full screen

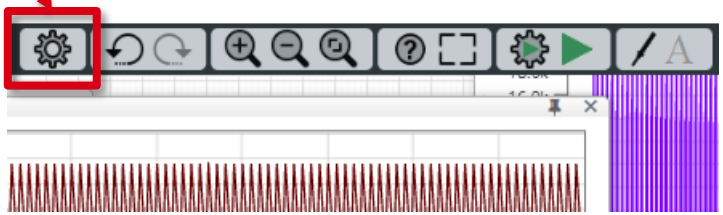


- Move mouse to top, and this icon shows up. Click it to leave full screen.
- ESC Key does the same

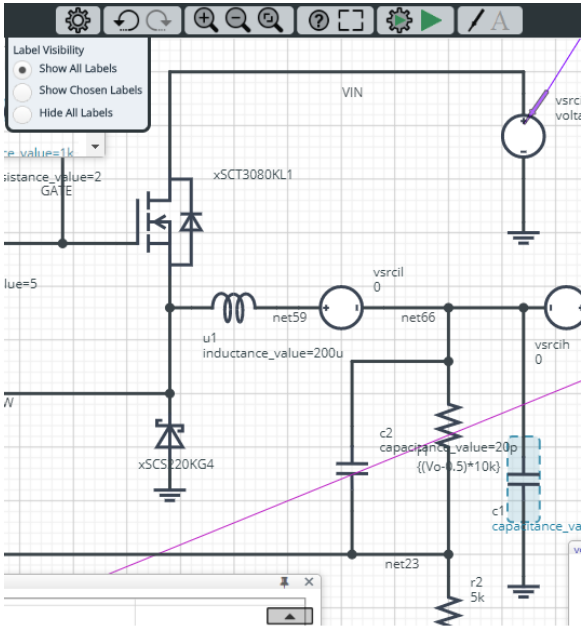
User interface and basic operation (4/4)

Design Settings

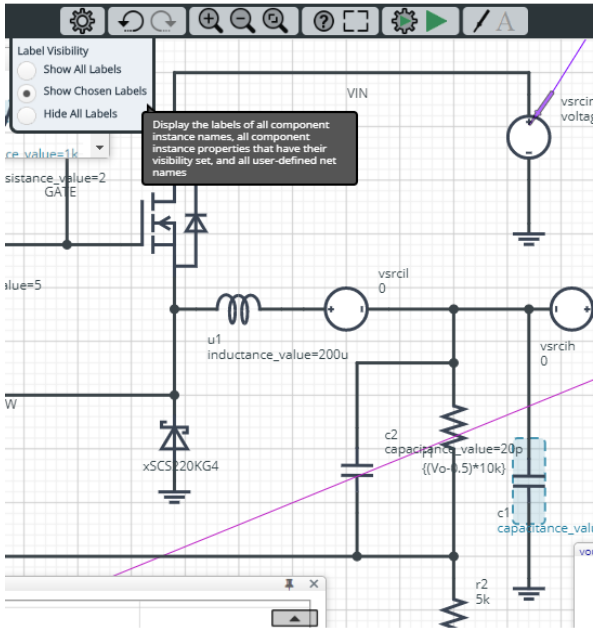
- Change visibility of schematic label



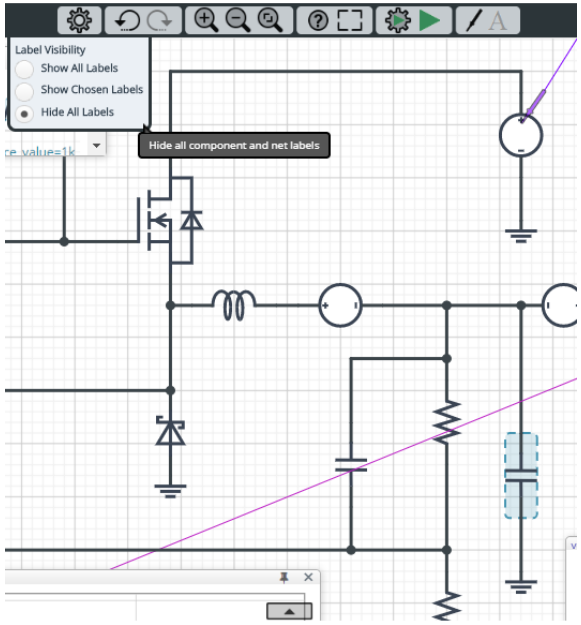
Show All Labels



Show Chosen Labels

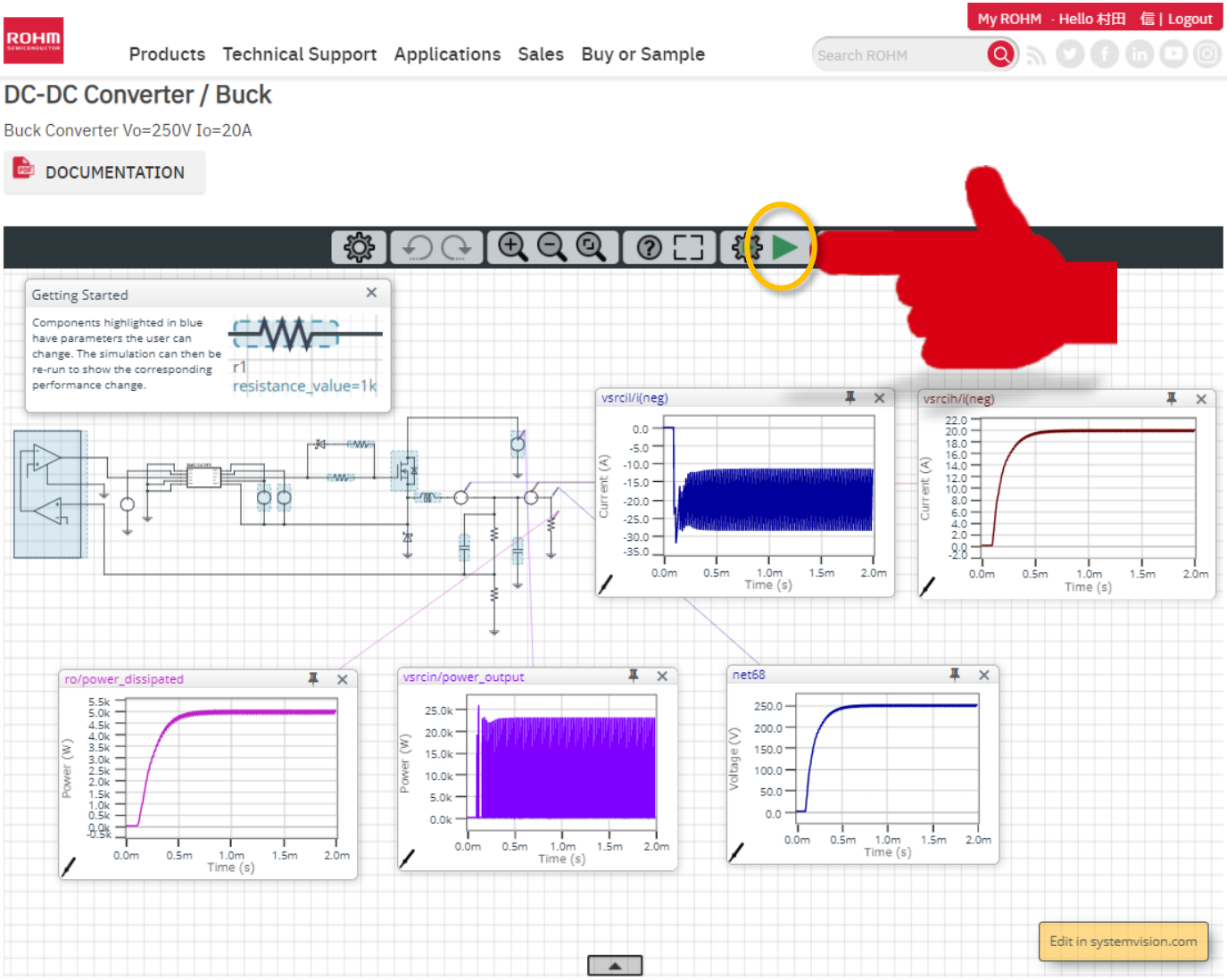


Hide all labels



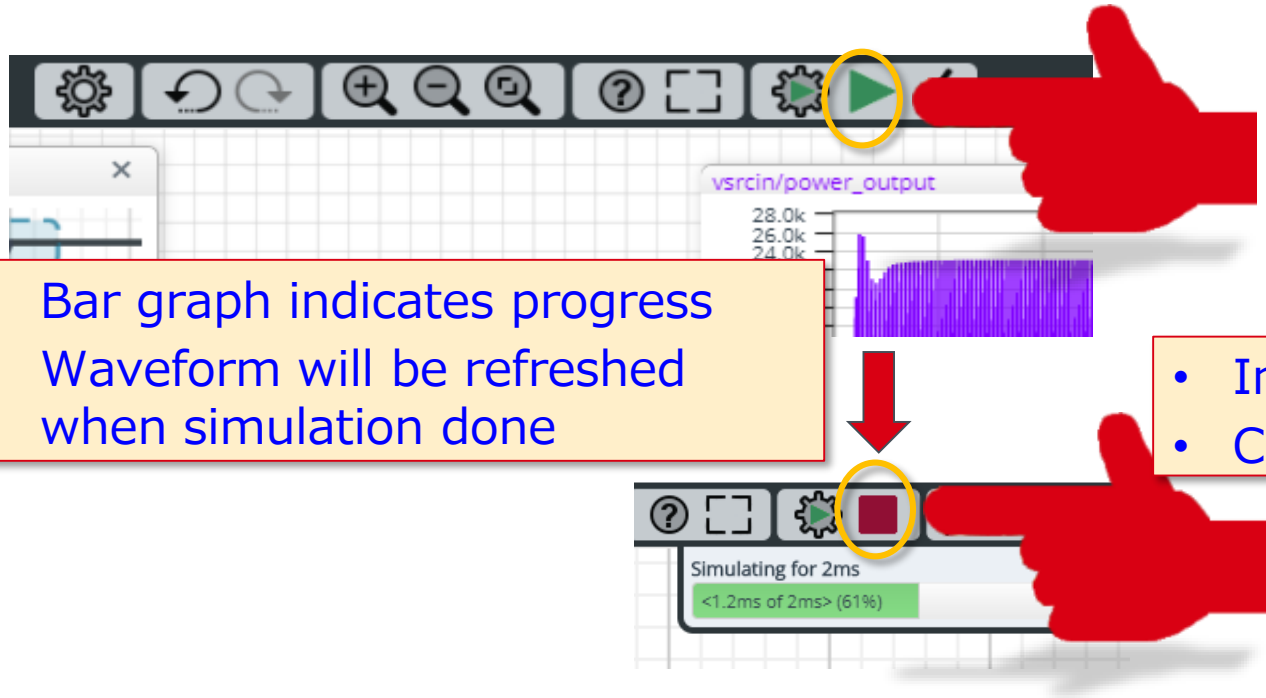
Simulation setup and execution (1/3)

Click Run to simulate



Simulation setup and execution (2/3)

Run / Terminate simulation



- Bar graph indicates progress
- Waveform will be refreshed when simulation done

- Interrupt simulation
- Cannot resume

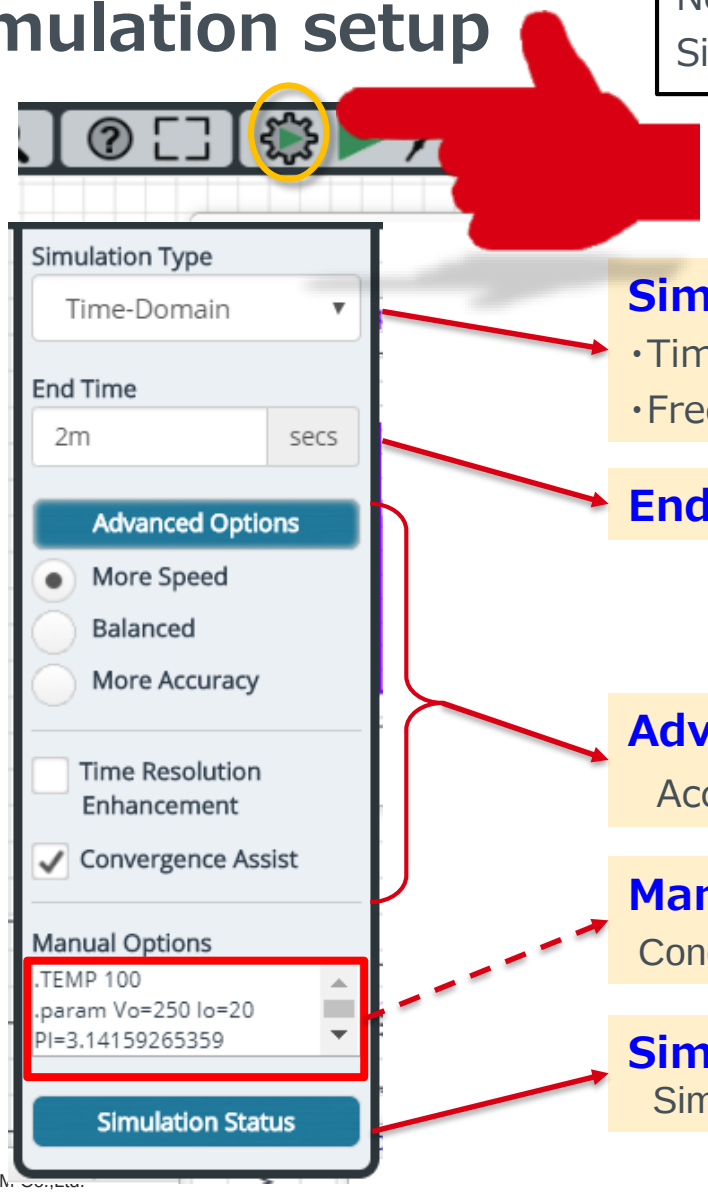
Restrictions

- Fixed schematics, no connection change or adding component
- Able to change designated component constant, or to swap power device
- Maximum simulation time 60 minutes

Simulation setup and execution (3/3)

Simulation setup

Note:
Simulation setup is predefined in the schematics.



Simulation Type (do not change)
・Time-Domain (transient analysis)
・Frequency-Domain (frequency analysis)

End Time : Simulation time

Advanced Options :
Accuracy and speed trade-off option

Manual Options :
Condition descriptions

Simulation Status :
Simulation logs

Simulation result and waveforms

You can display waveforms of designated connection nodes or components using viewer tools.

- Display waveforms
- Waveform analysis
- Export waveforms (csv files)

How to use Wavebox

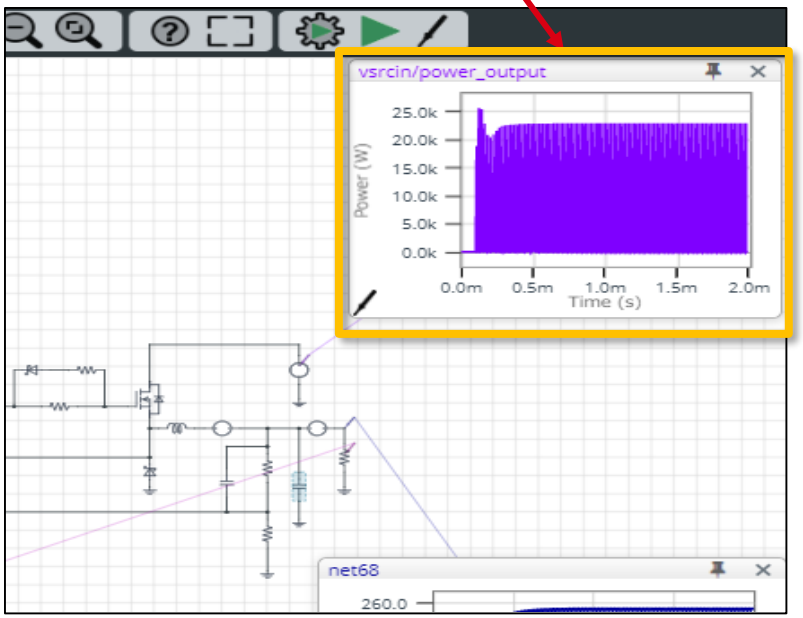
How to use Waveform Viewer

How to display waveforms

- Probe signals of the nodes or components on the schematics
- Use Wavebox and Waveform Viewer to display waveforms

Wavebox

・Shows waveform where the probe icon is placed



Waveform Viewer

- Multiple waveforms in a window
- Waveform analyzers
- Compare waveforms
- Generate a link to Waveform Viewer

You can display waveforms of designated connection nodes or components using viewer tools.

- Display waveforms
- Waveform analysis
- Export waveforms (csv files)

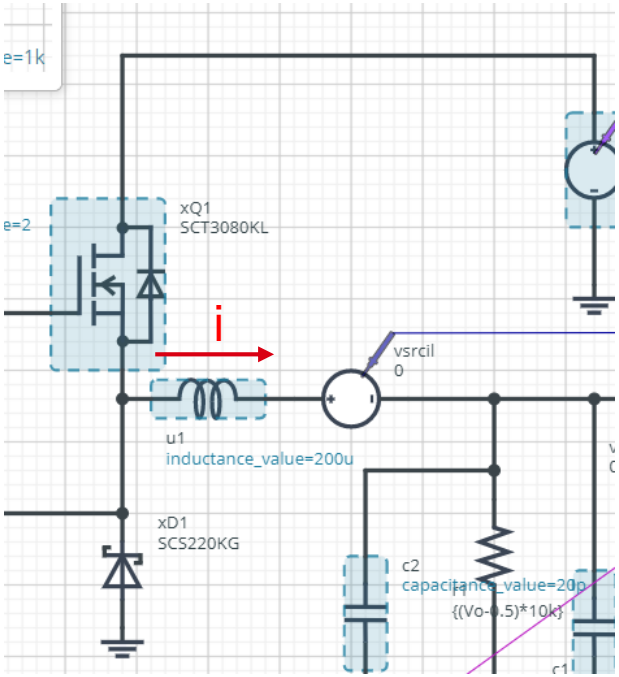
How to use Wavebox

How to use Waveform Viewer

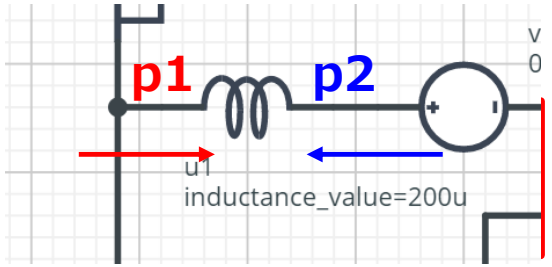
How to use Wavebox (1/10)

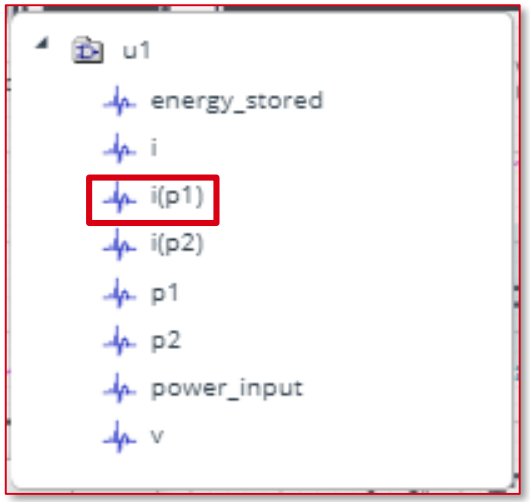
(Case #1) Indicate the waveform of Inductor u1 current i(p1)

- Place Wavebox at u1
- Indicate current i(p1)



- i(terminal) represent the current through the terminal

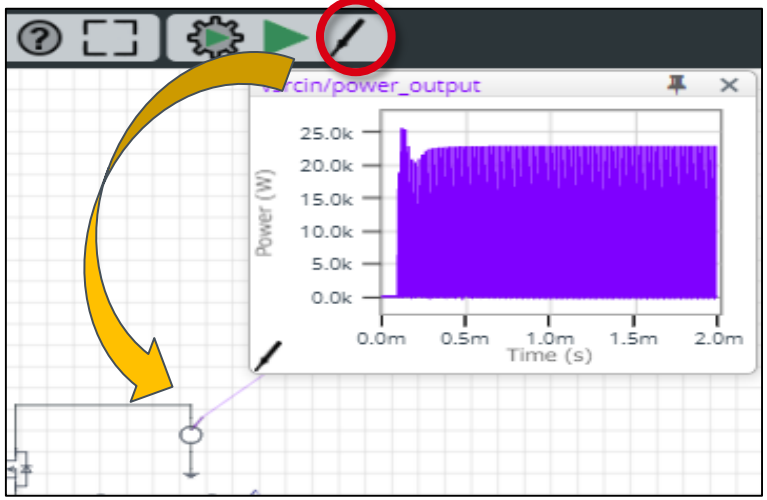




How to use Wavebox (2/10)

How to place / delete Wavebox?

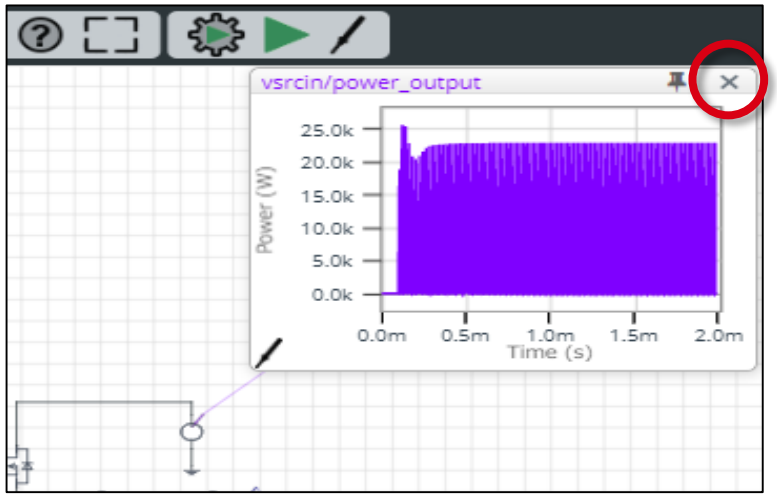
Click waveform probe icon, drag cursor to a wire or over a component, and click



<Tips>

- Replace probe then Wavebox renews waveforms at the location
- Free to move Wavebox in the schematic field

Click x mark to delete Wavebox



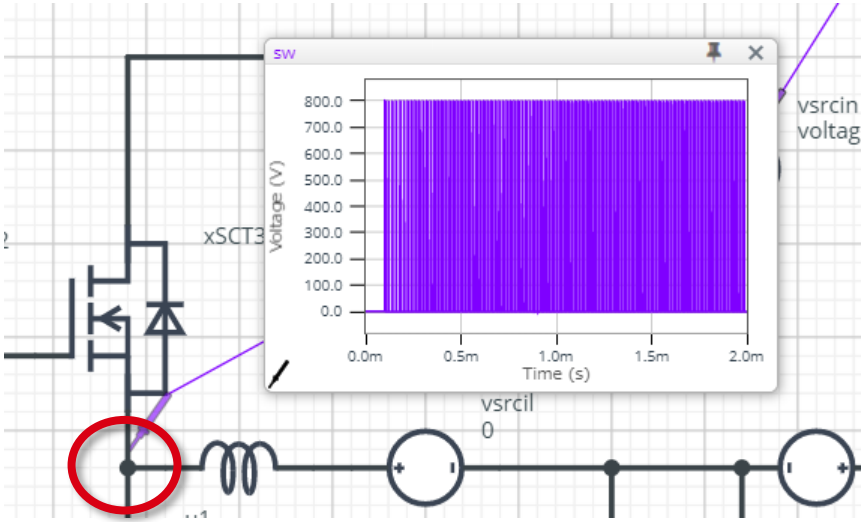
<Tips>

- Grab the corner of Wavebox to change its size

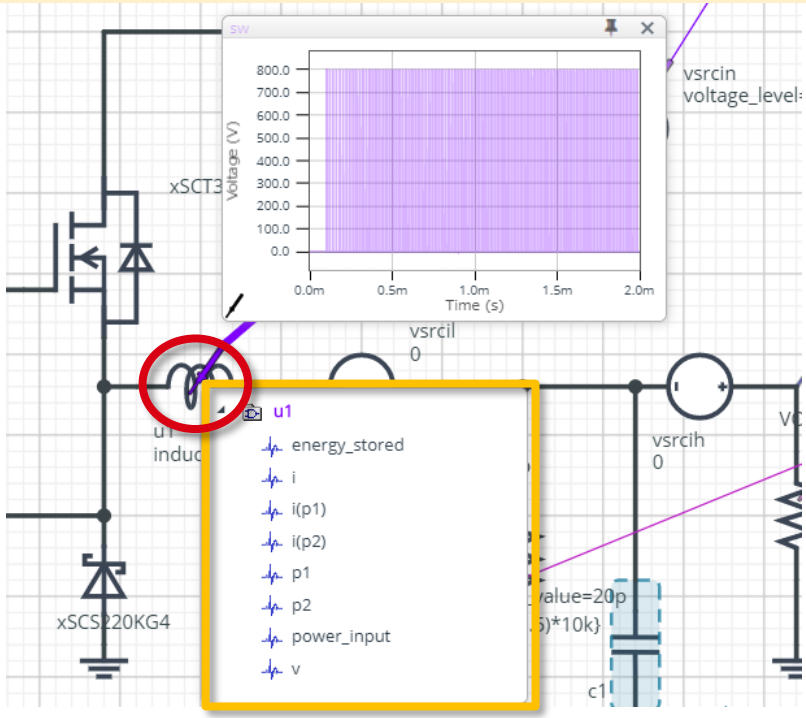
How to use Wavebox (3/10)

How to show a waveform in Wavebox

Probe on a wire > voltage

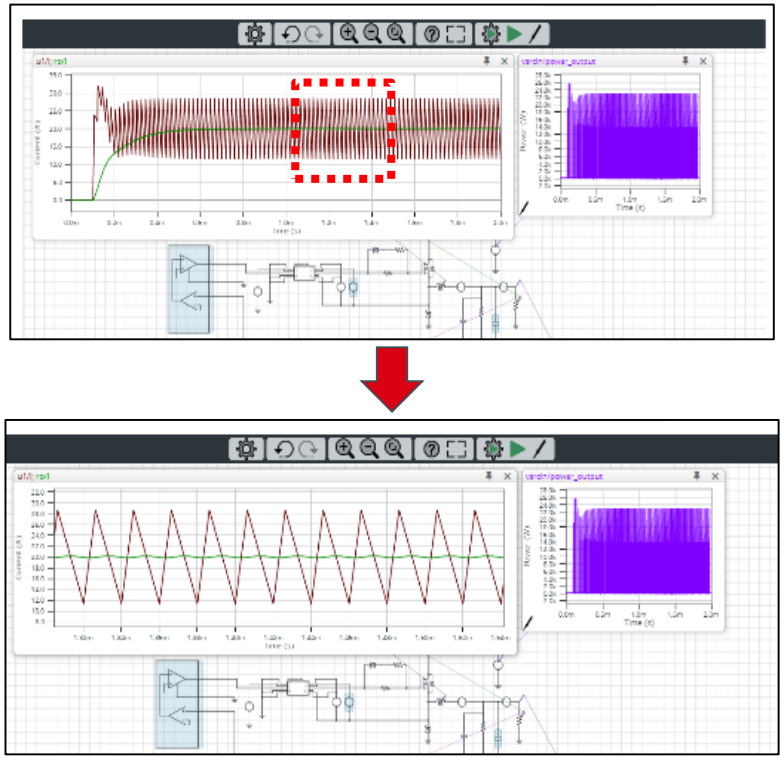


Probe on a component
>chose a signal from the pull-down



Zoom in / Zoom out waveforms

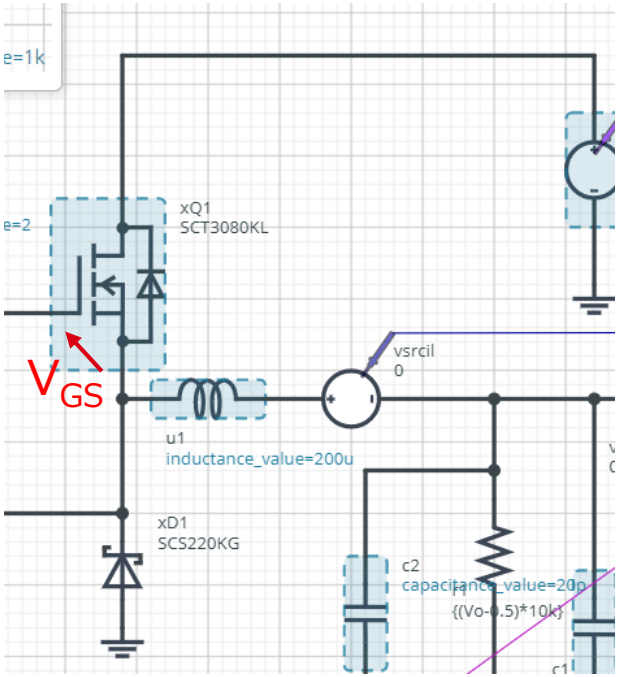
Zoom In :
Drag mouse in desired area



Zoom Out :
Right click > ‘View All’

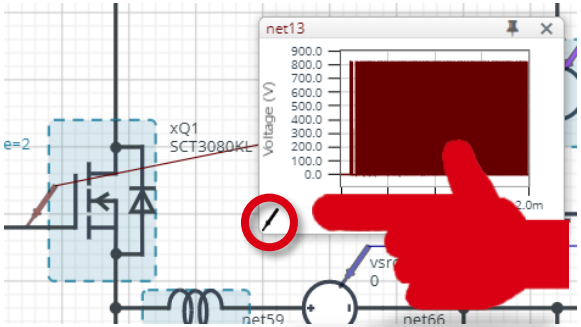
How to use Wavebox (5/10)

(Case #2) Display the waveform of xSCT3080KL1 V_{GS}

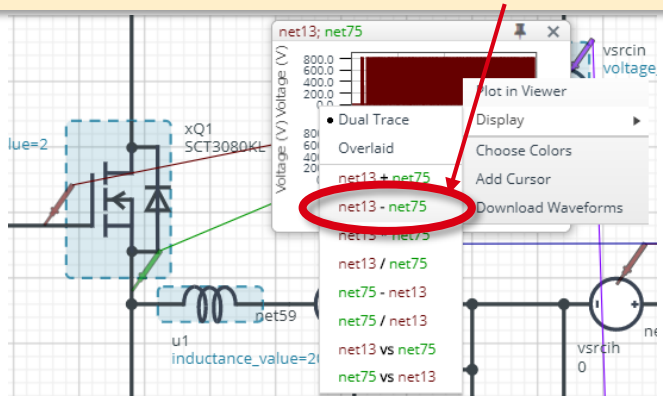


Differential probe with Wavebox

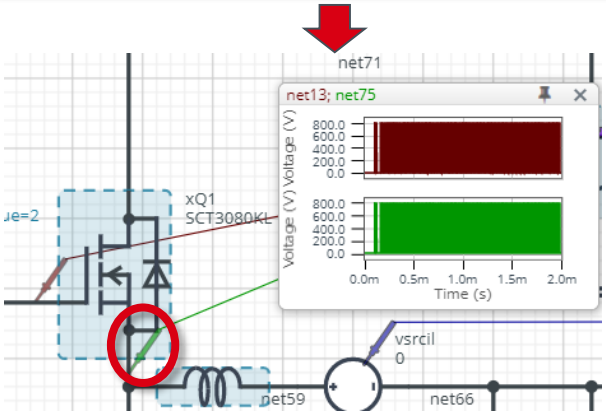
Probe xQ1 gate to open Wabebox

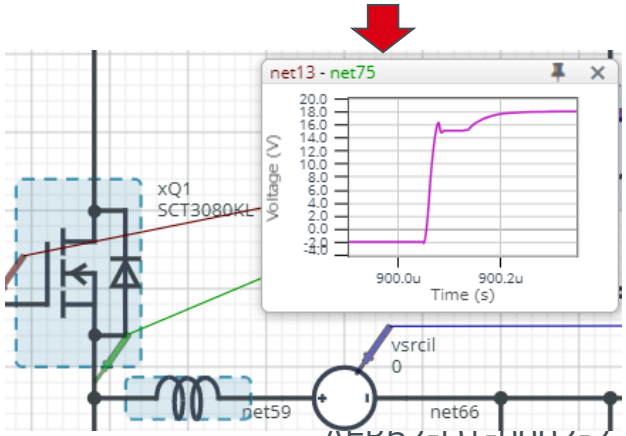


Right click on the graph area
> ‘Display’ > ‘net13-net75’



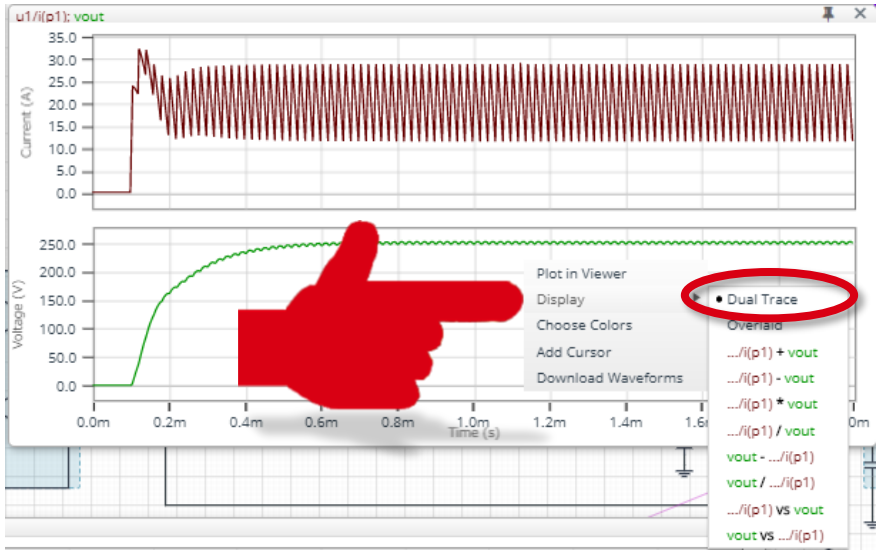
Drag & drop the probe icon at left bottom of window to the xQ1 source



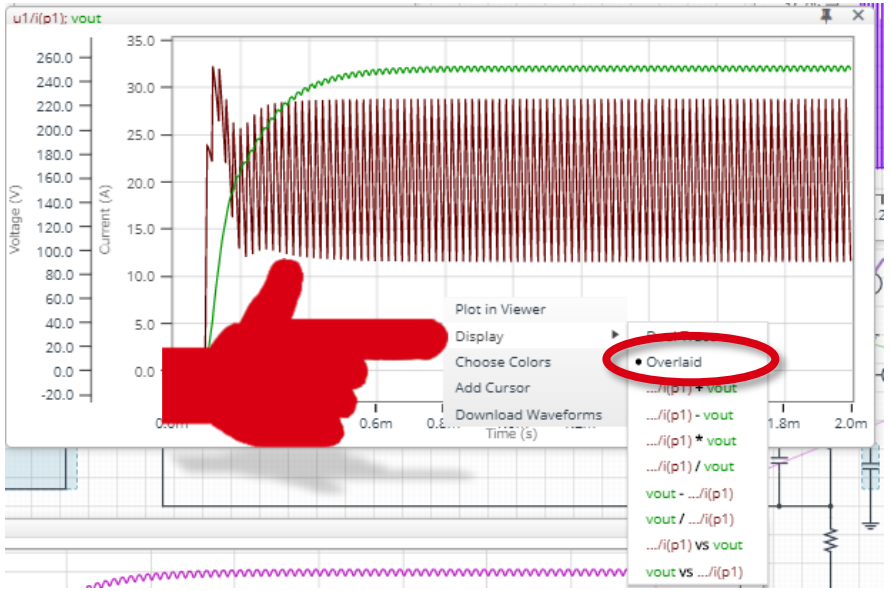


Display two waveforms in a Wavebox

Display > Dual Trace

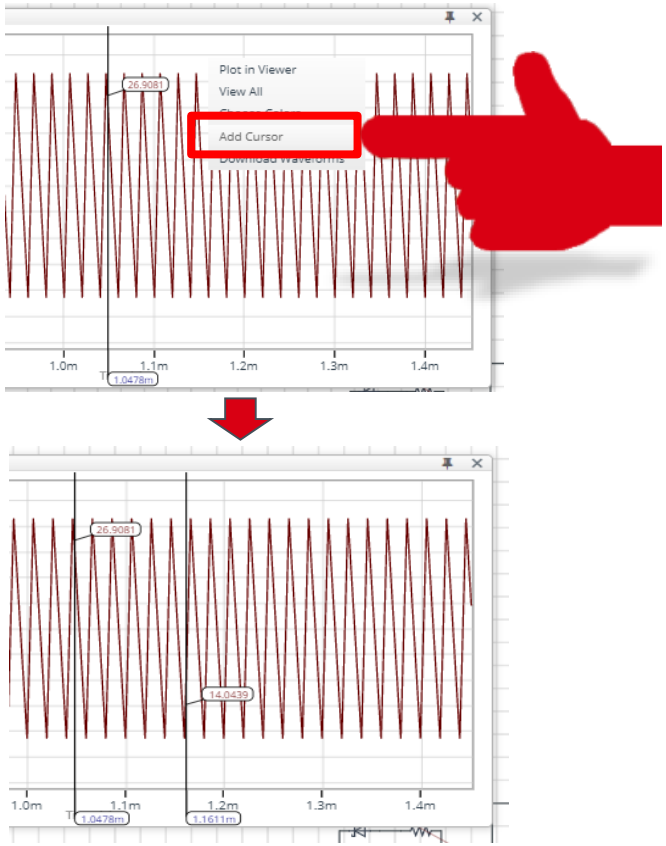


Display > Overlaid



How to use Wavebox (8/10)

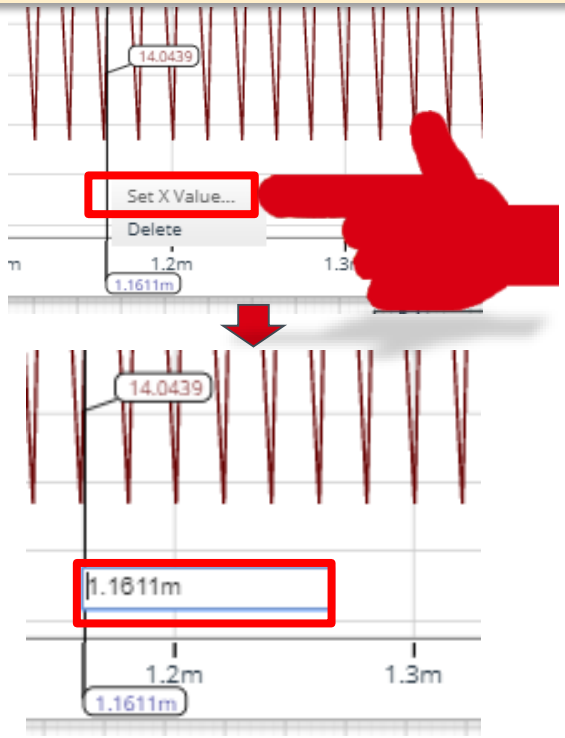
Add Cursor : Right click on Waveform > Add Cursor



Move Cursor: Put mouse over the cursor, drag it to move

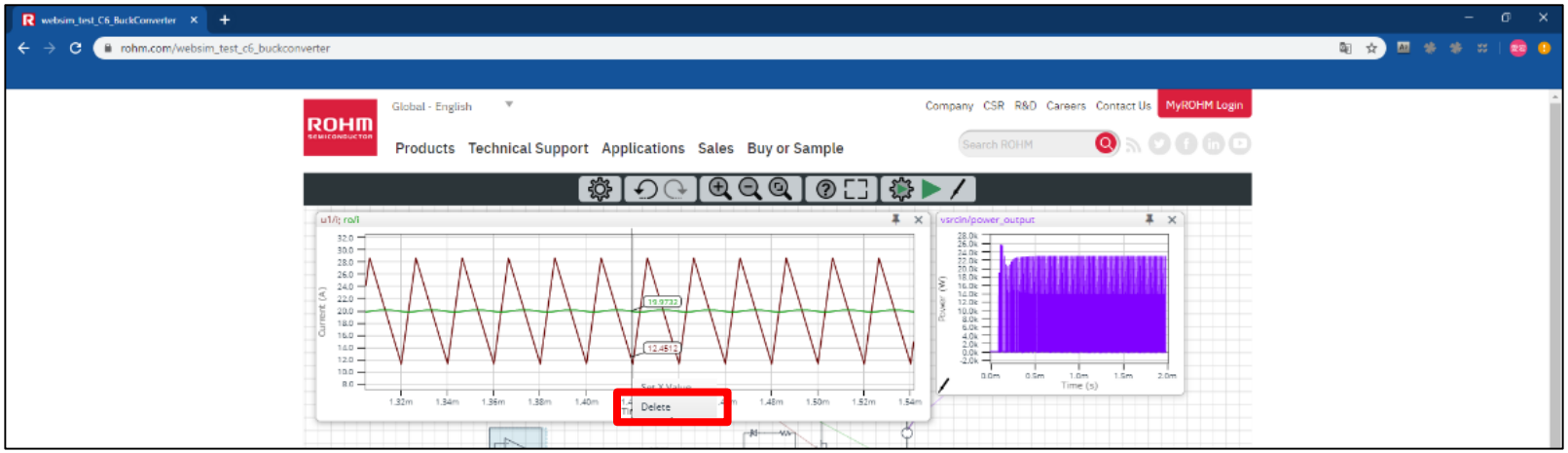
Or

Right click on the cursor >Set X Value > input value



How to use Wavebox (9/10)

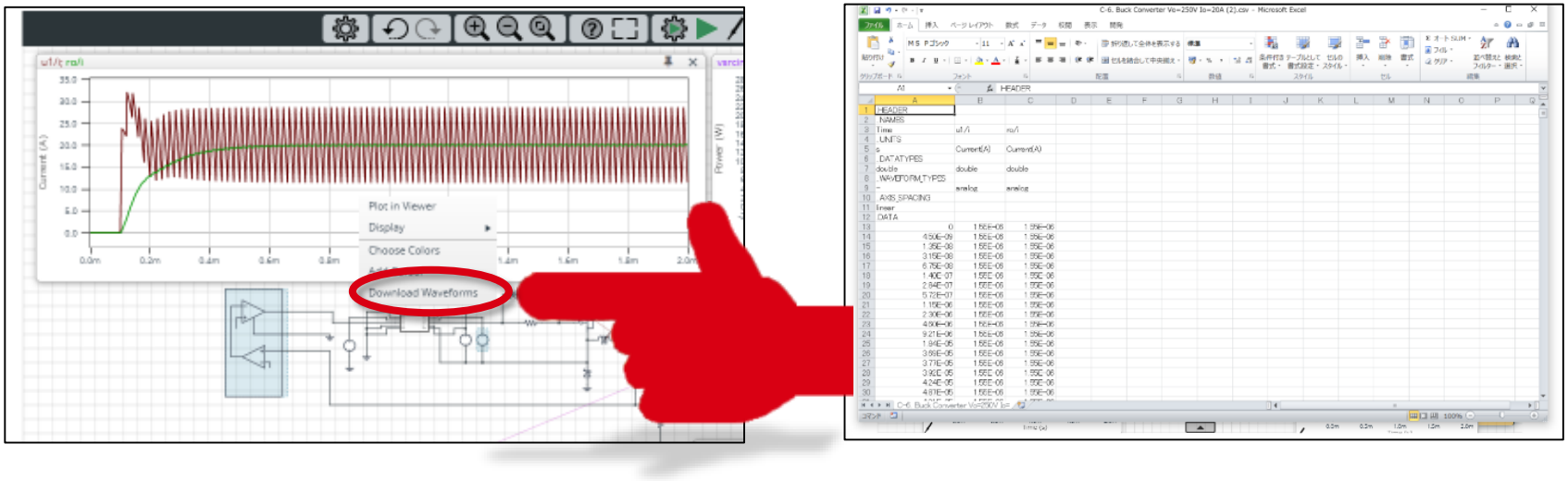
Delete Cursor: Right Click on Cursor > Delete



How to use Wavebox (10/10)

Download waveform in CSV file format

Right Click on a Wavebox > Download Waveforms



You can display waveforms of designated connection nodes or components using viewer tools.

- Display waveforms
- Waveform analysis
- Export waveforms (csv files)

How to use Wavebox

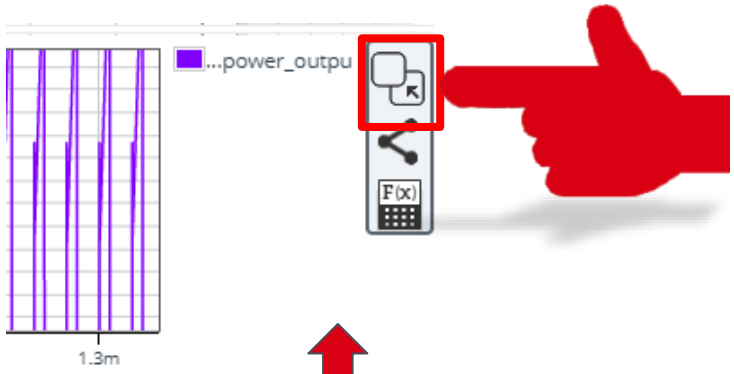
How to use Waveform Viewer

How to use Waveform Viewer (1/11)

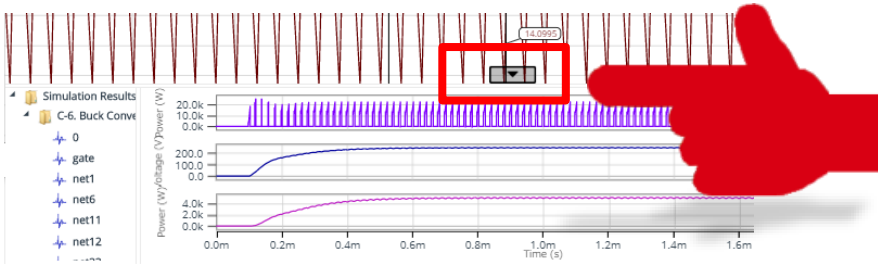
Basic operations

Display Waveform Viewer

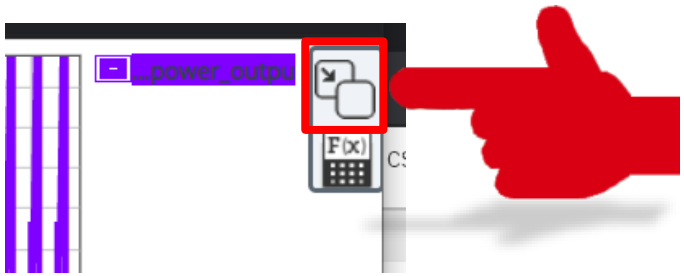
Display in a separate window



Hide Waveform Viewer



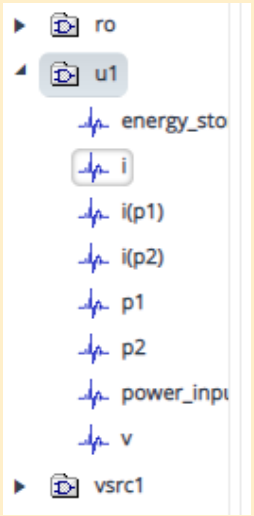
Merge viewer to the original window



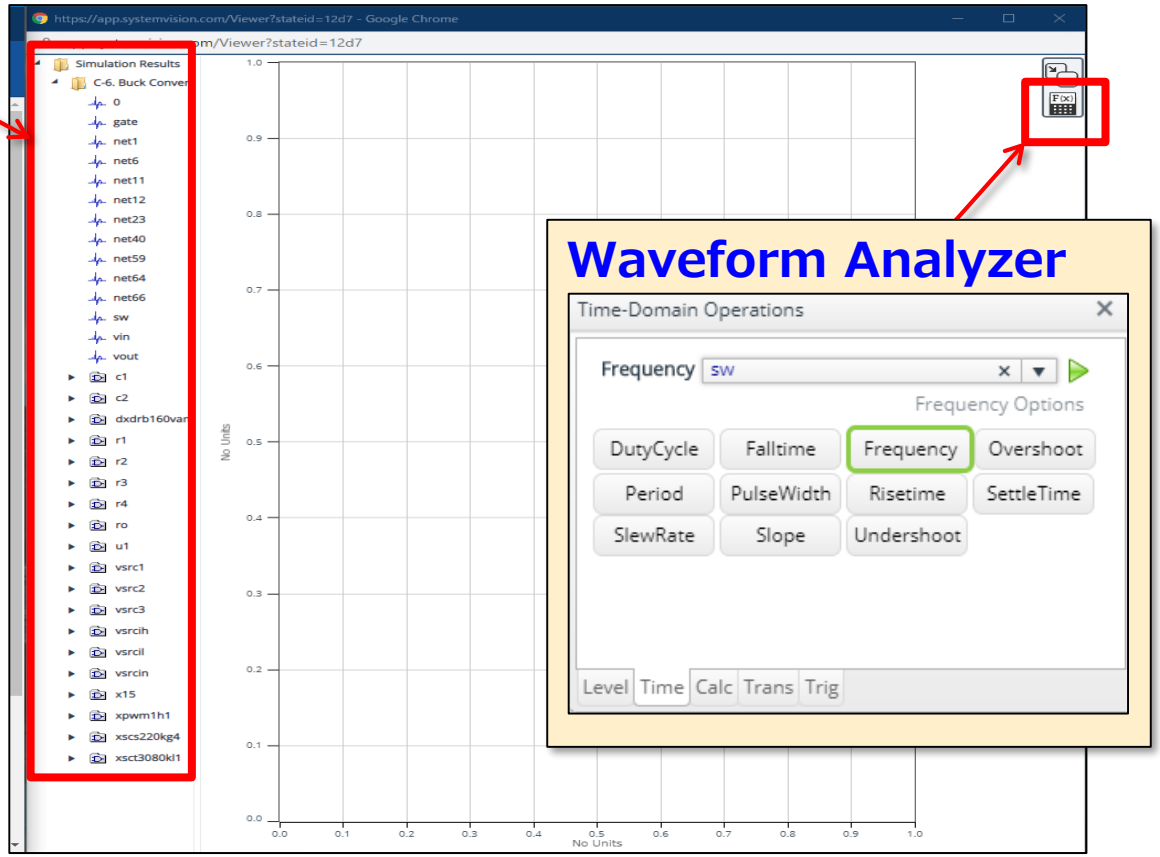
Waveform Viewer Window

Simulation Results

List of wires and components in the Schematics



Previous simulation data



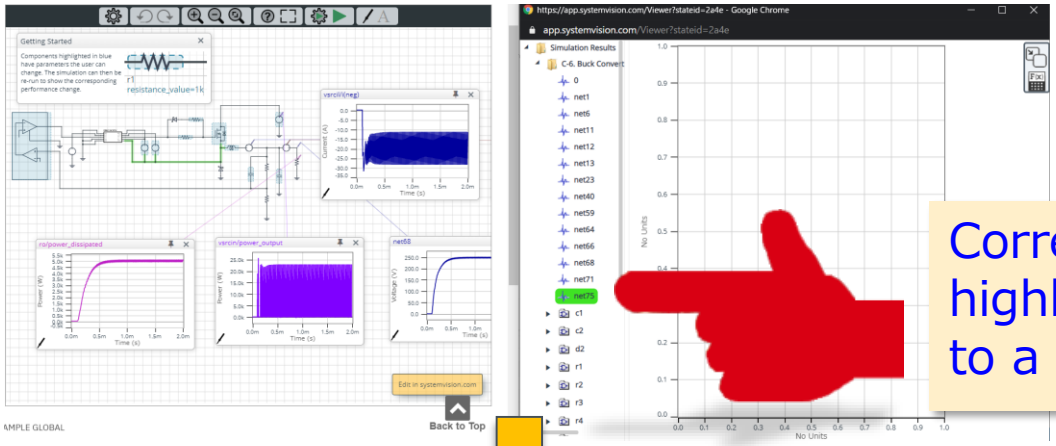
How to use Waveform Viewer (3/11)

(Case #3) Display the inductor u1 current i(p1), xQ1 source voltage net75 and output voltage net68 waveforms respectively in the Waveform Viewer

- Display Waveform Viewer
- Choose the signals from Simulation Results, and display waveforms in the Waveform Viewer

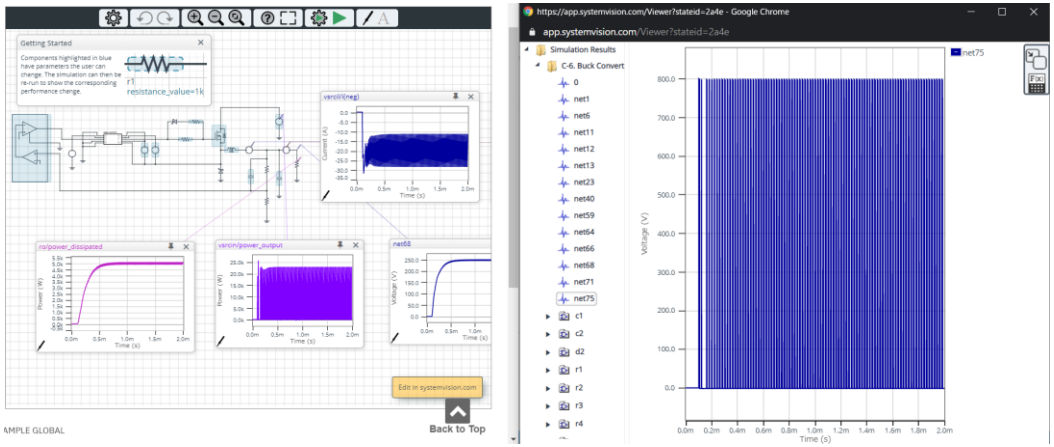
How to use Waveform Viewer (4/11)

1. Drag ‘net75’ signal from Simulation Result and drop it on the graph area to display the waveform.



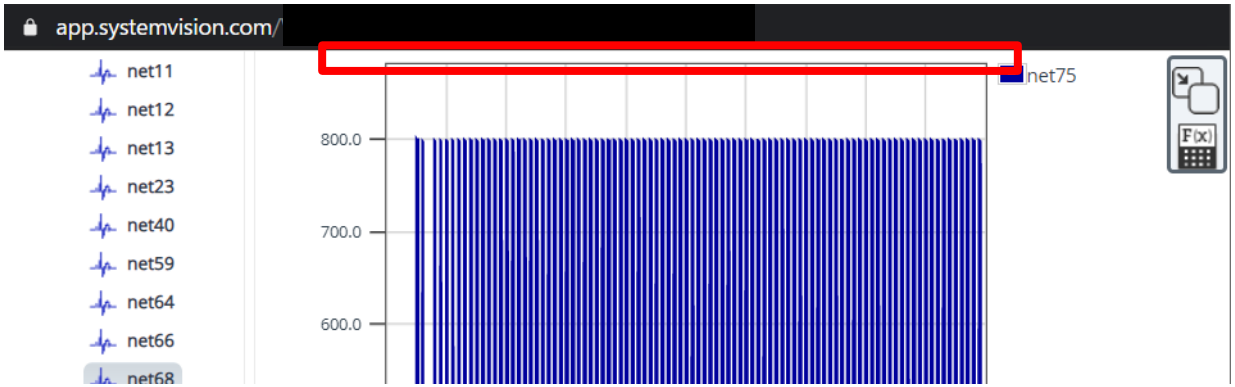
Corresponding connection is highlighted when mouse over to a signal name

2. The waveform will be displayed

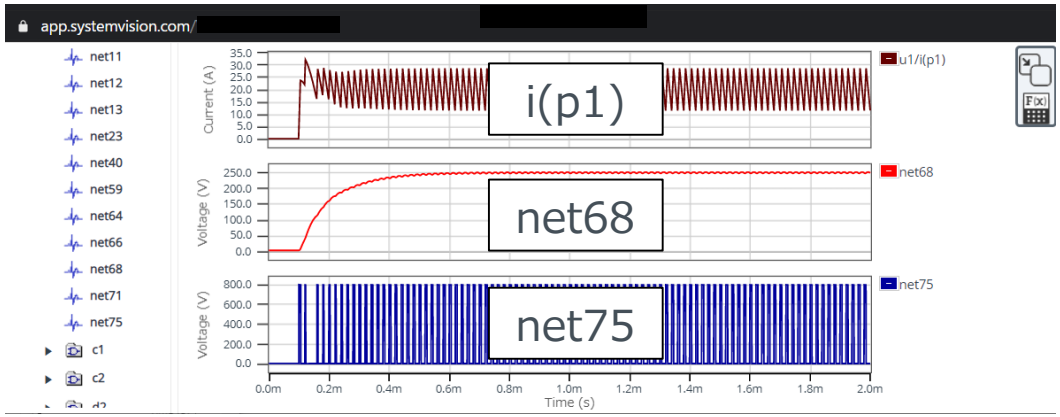


How to use Waveform Viewer (5/11)

3. Add net68 waveform. Drop the signal outside of a graph area to separate waveforms (shown below), or drop it on the designated graph area to overlay waveforms.

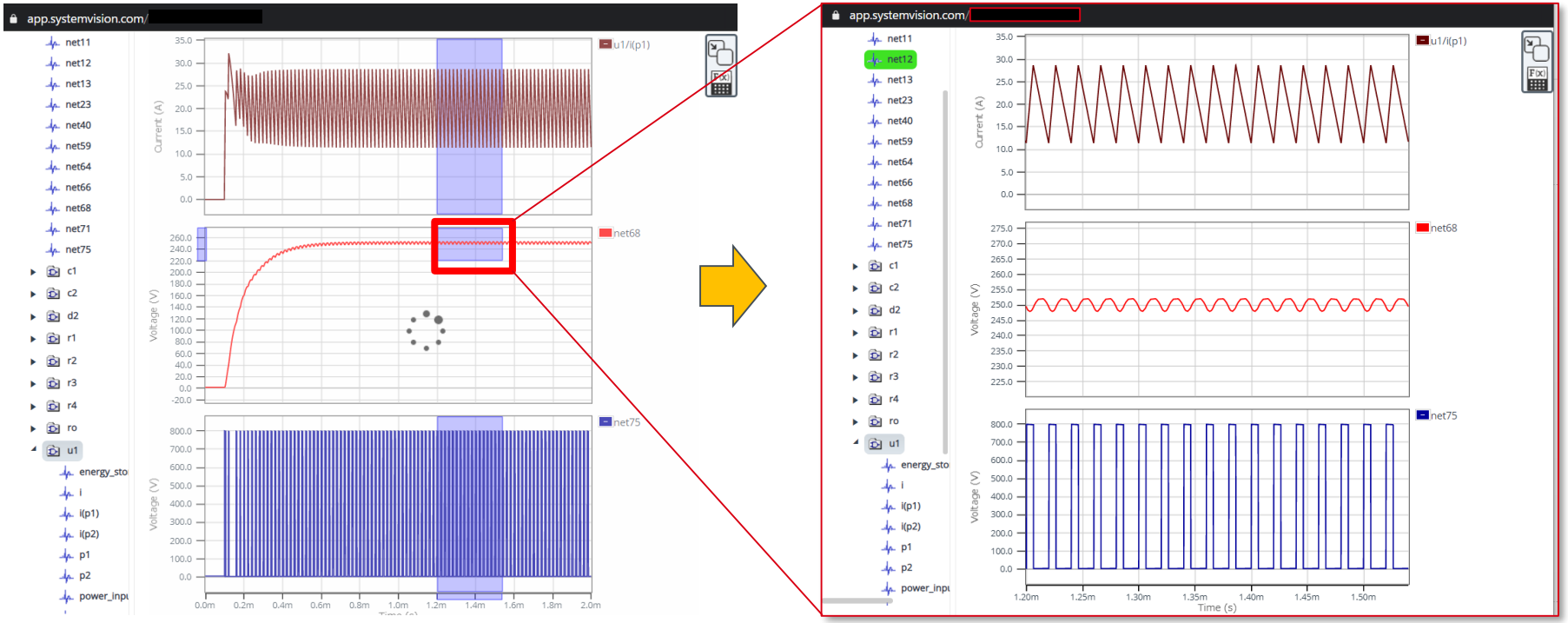


4. Add i(p1) of the Inductor u1, and display the waveforms as follows.



How to use Waveform Viewer (6/11)

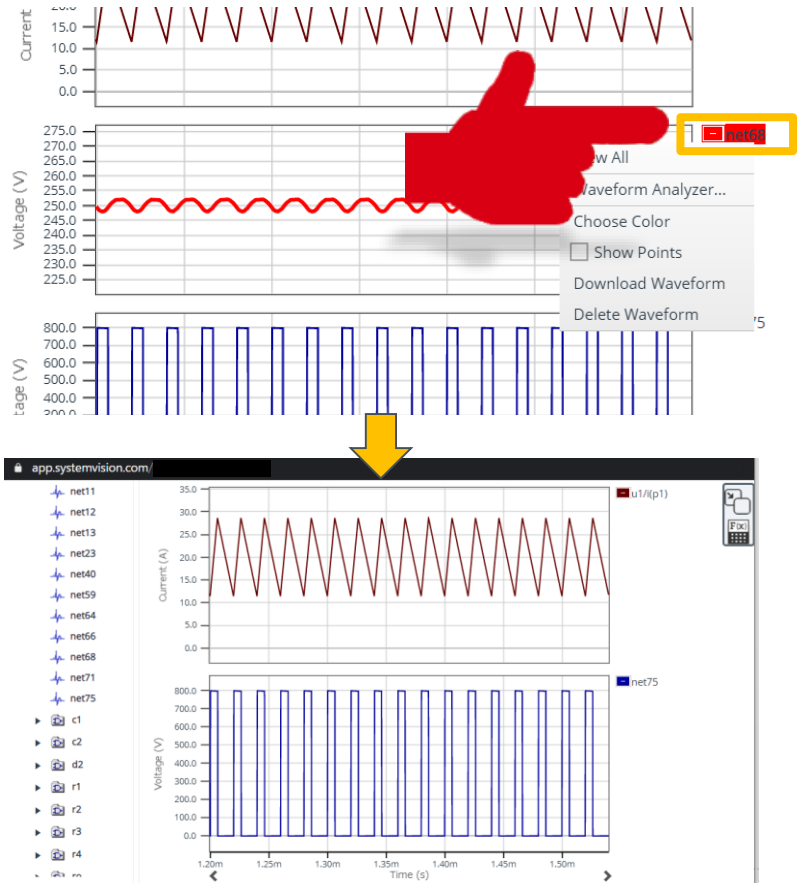
Zoom In / Zoom Out:
- Same as Wavebox's operations



How to use Waveform Viewer (7/11)

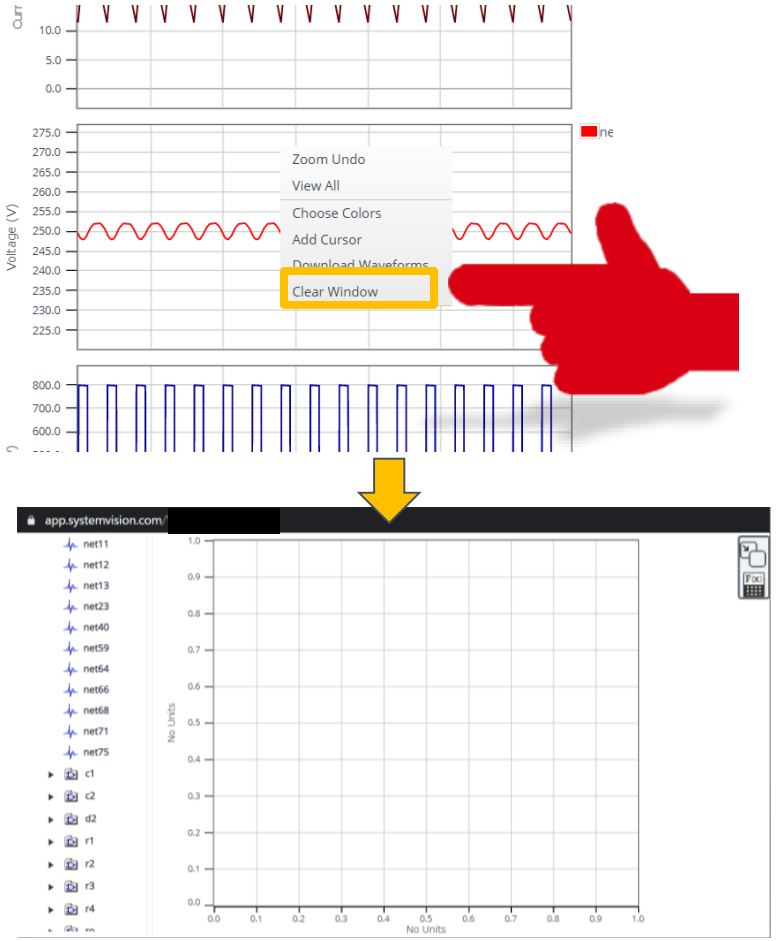
Delete a waveform

Right click on a signal name to be deleted > ‘Delete Waveform’



Delete all waveforms

Right click > ‘Clear Window’



How to use Waveform Viewer (8/11)

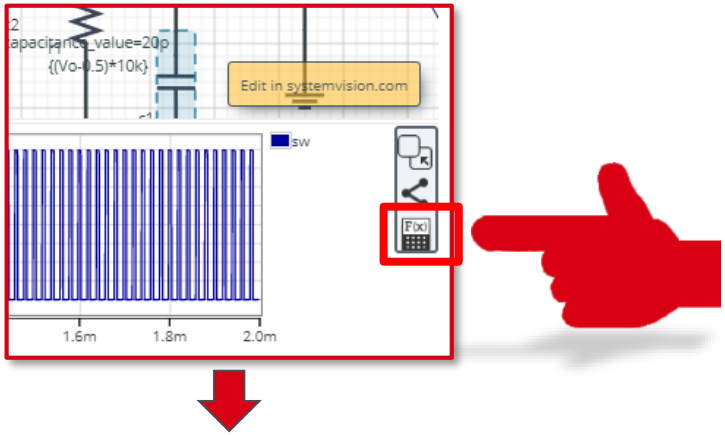
(Case #4) Measure toggle frequency of the net75 signal using Waveform Analyzer

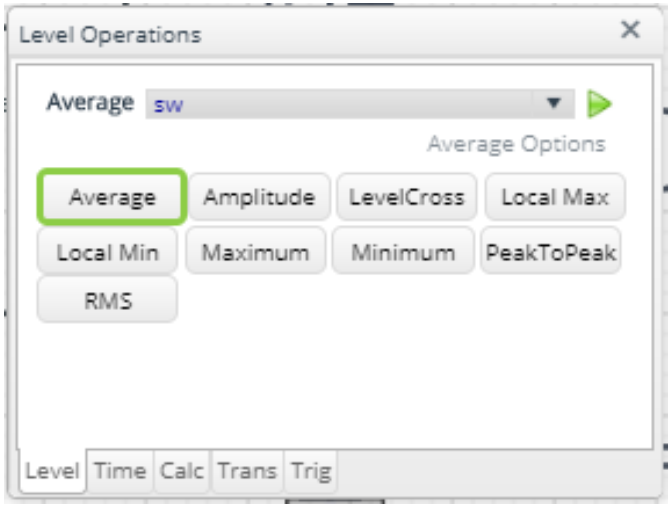
- Open Waveform Viewer
- Display net75 signal waveform
- Initiate Waveform Analyzer
- Choose ‘Frequency’ from ’Time’ tab
- Select net75 from the drop-box and measure the frequency

How to use Waveform Viewer (9/11)

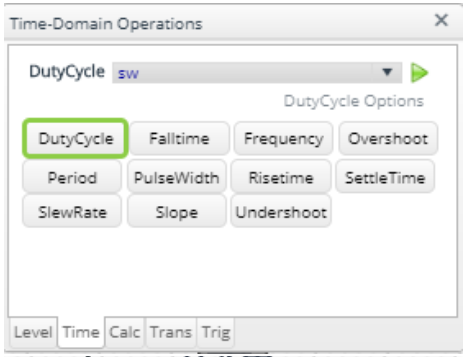
Use Waveform Analyzer

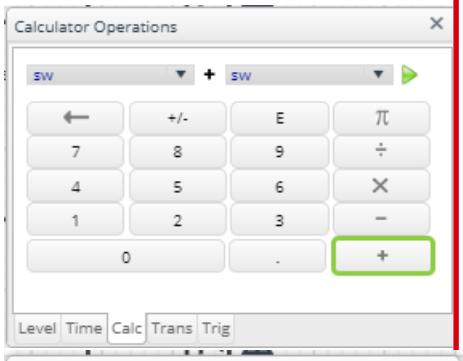
- Initiate Waveform Analyzer

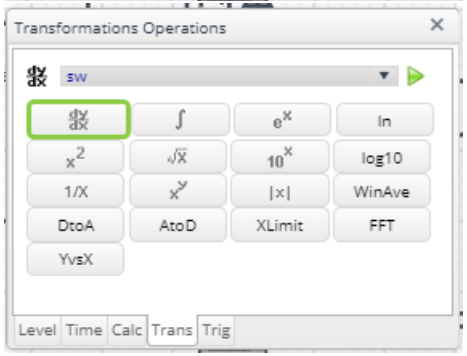


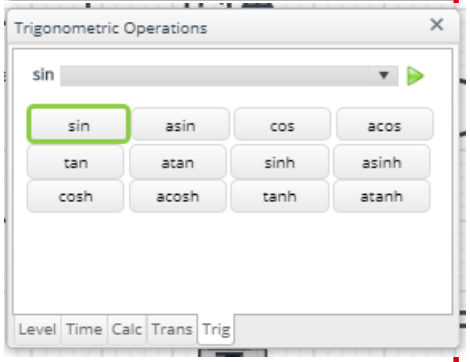


<Variety of analysis/calculation menu>







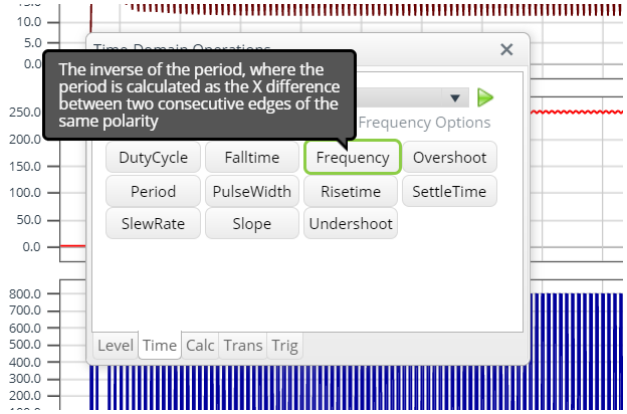


- Click x on top /right corner to end

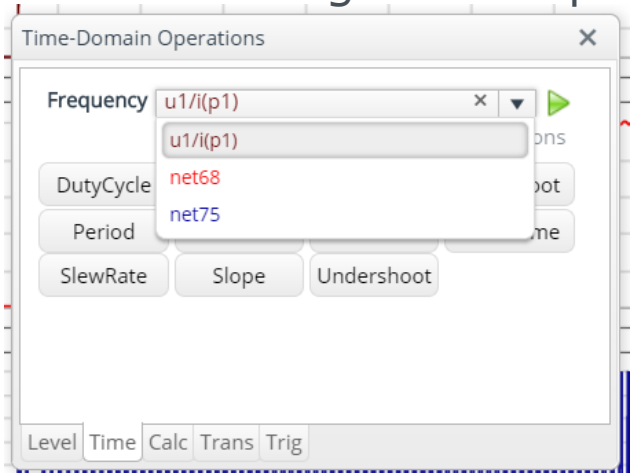
How to use Waveform Viewer (10/11)

Measure signal frequency with Waveform Analyzer

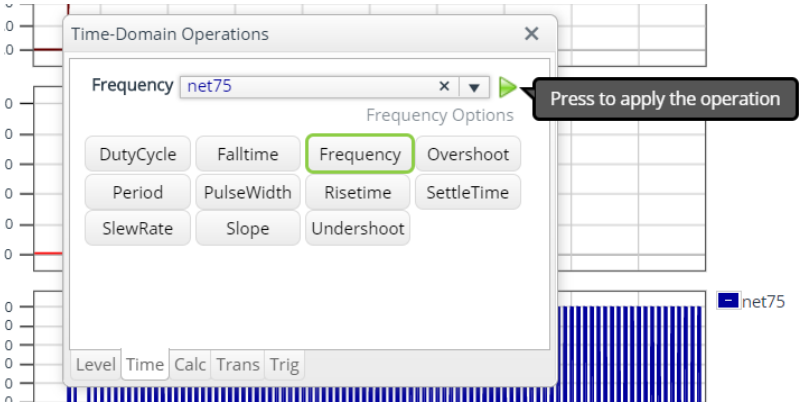
1. Select function
   'Time' tab > 'Frequency'



2. Select a signal from pull-down



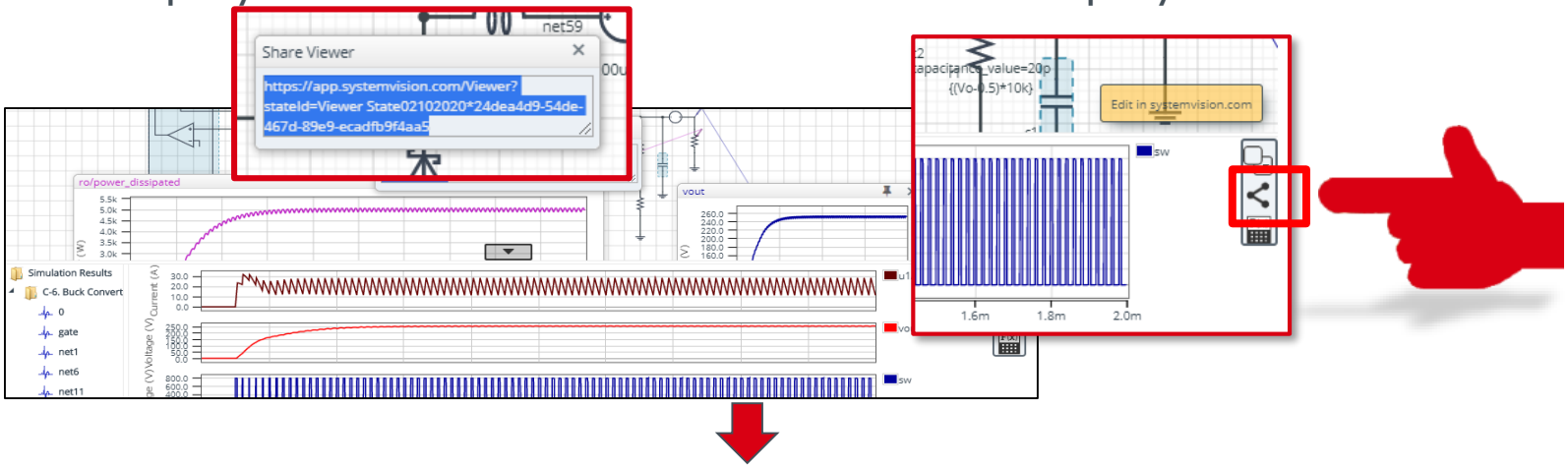
3. Apply



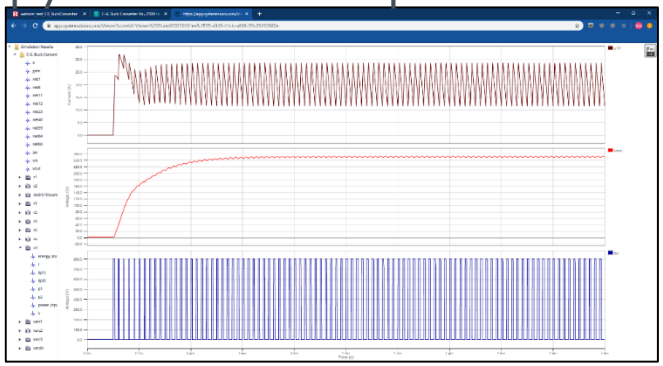
How to use Waveform Viewer (11/11)

Share the Waveform Viewer to others

1. Use the Waveform Viewer in a single window
2. Display URL: Click Share Viewer icon > Display the URL



3. Copy the URL and paste to another browser



- Anyone can see the waveform with the URL

Choose Simulation Circuit

Execute Simulation

Customize Simulation

Export Schematics

Order Samples

Customize Simulation (1/5)

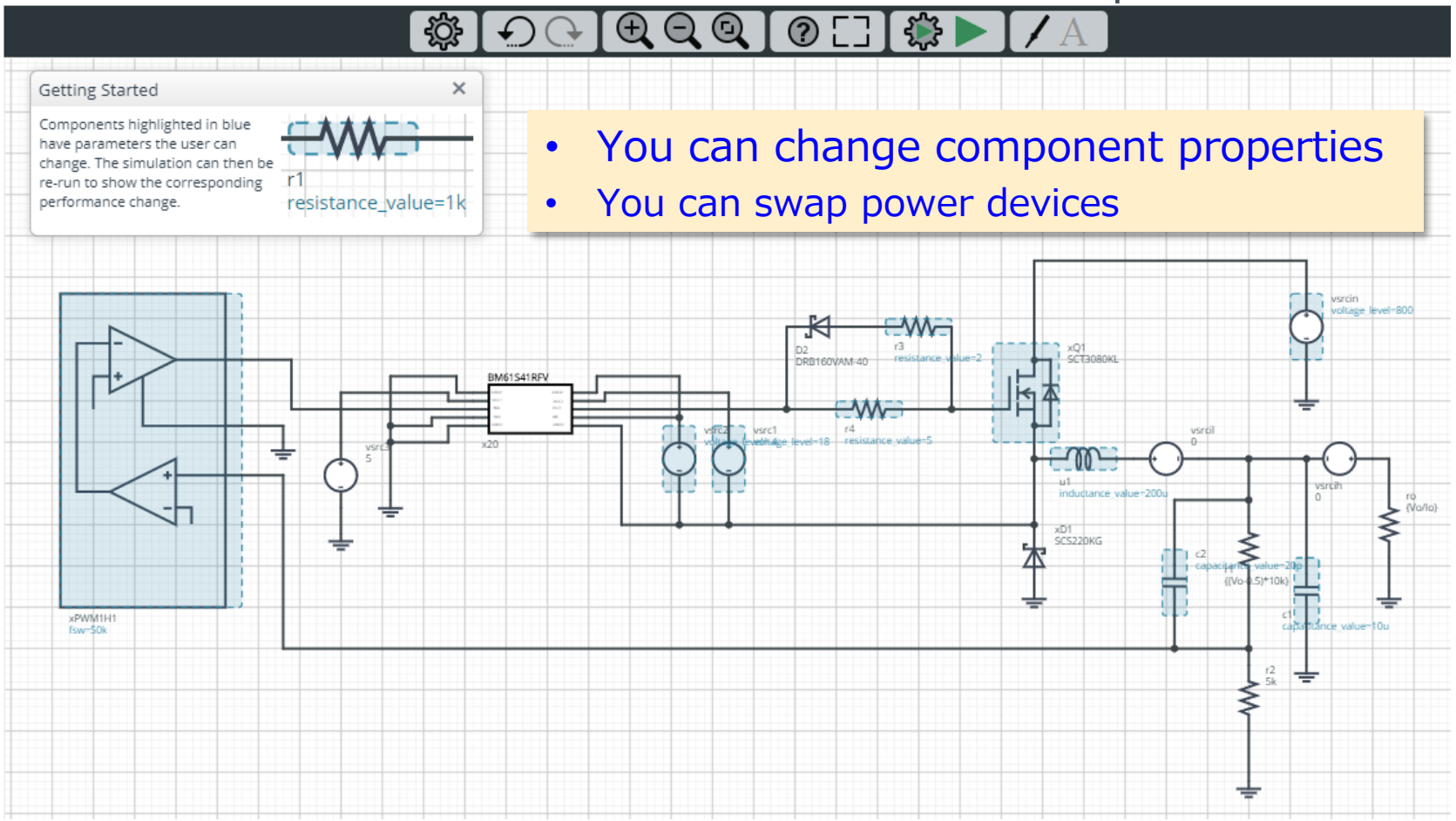
(Case #5) Change the PWM frequency and run simulation. Compare the simulation result before/after the change.

- Change PWM-1H switching frequency (FSW) from 50KHz to 25kHz
- Run simulation
- Compare the net75 frequency using the Waveform Analyzer

Customize Simulation (2/5)

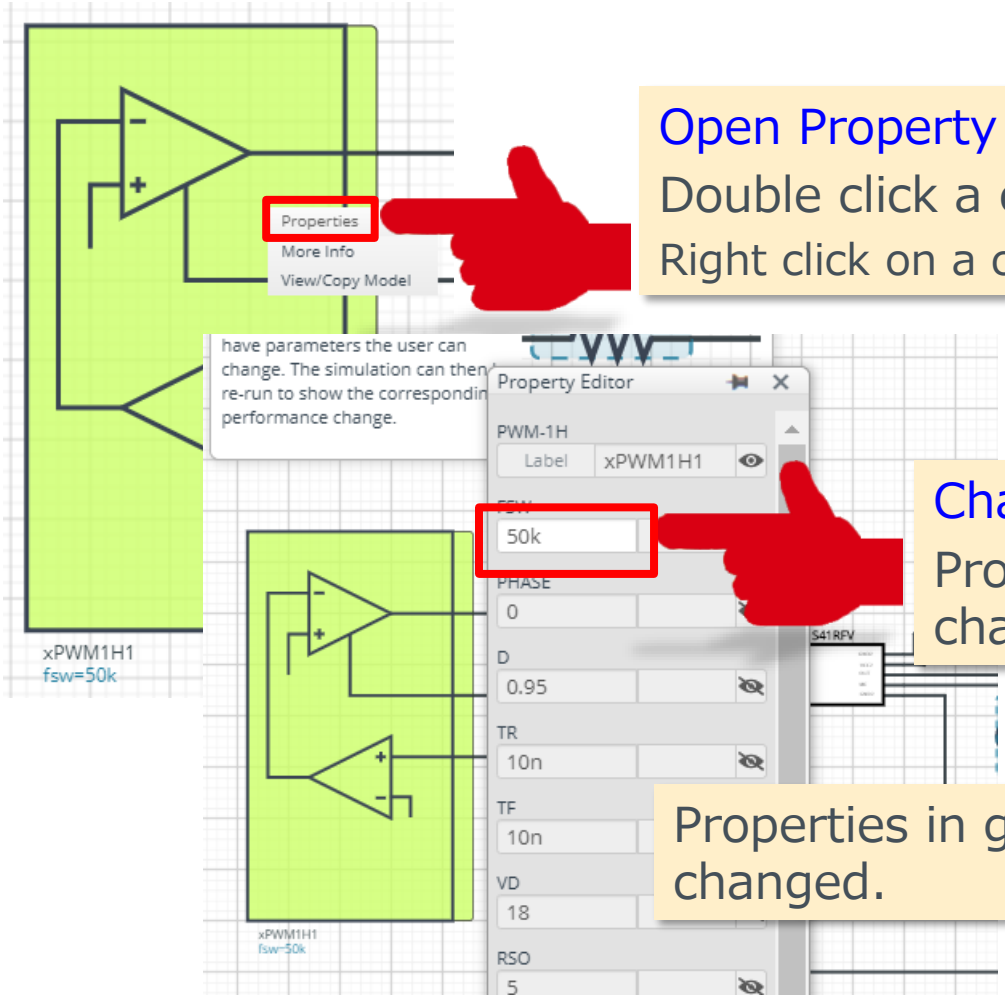
Component shown in blue has variable parameters

You can run simulation with different circuit parameters



Customize Simulation (3/5)

How to change parameters : Property Editor



Open Property Editor:

Double click a component, or

Right click on a component > ‘Properties’

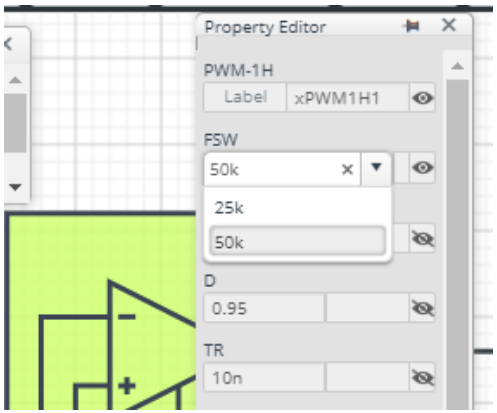
Change properties:

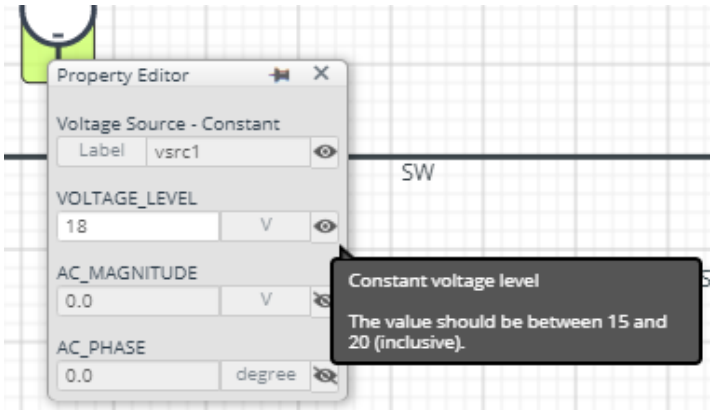
Properties in white can be changed.

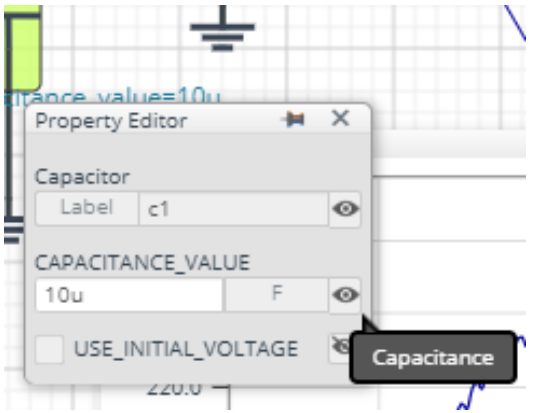
Properties in gray cannot be changed.

Customize Simulation (4/5)

You will see instruction how to change properties when mouseover.



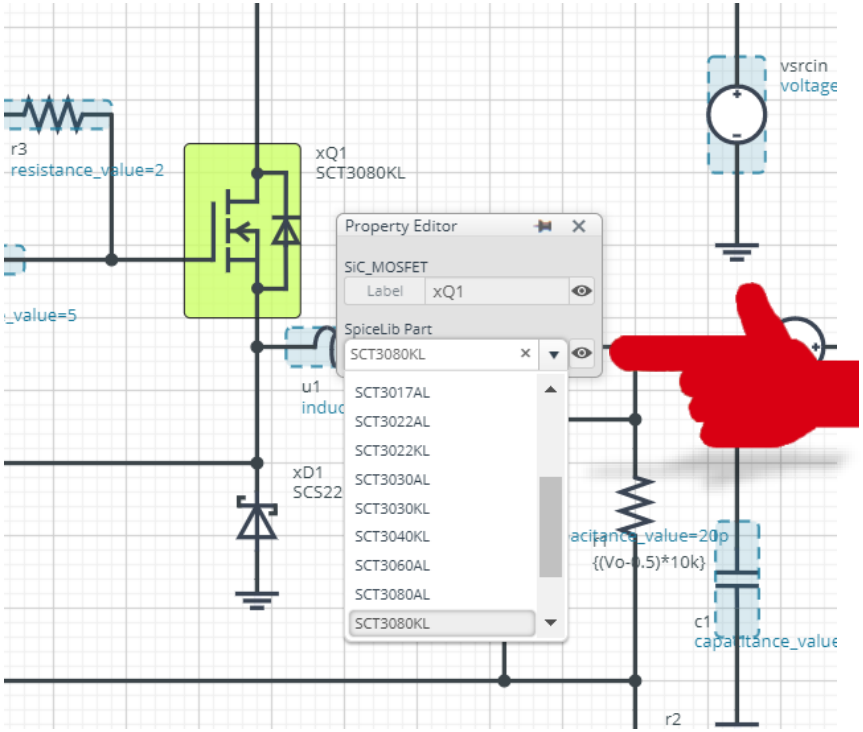




Customize Simulation (5/5)

How to swap power devices:

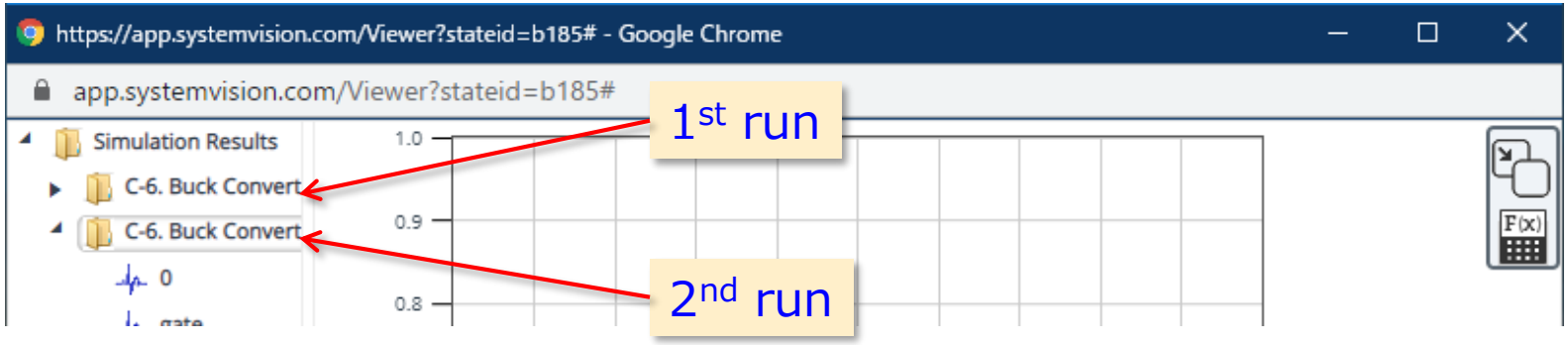
- You will find alternative choices of transistors or diodes on the property editor if available, and can easily evaluate device characteristics with the same circuit topology.



Change properties:
Select one from pull-down

Compare Simulation Results before/after

1. Change parameters
2. Run Simulation
3. Open the Waveform Viewer
4. Display net75 waveform from 1st run and 2nd run of simulation
5. Measure frequencies with the waveform analyzer



ROHM Solution Simulator Hands-on

Choose Simulation Circuit

Execute Simulation

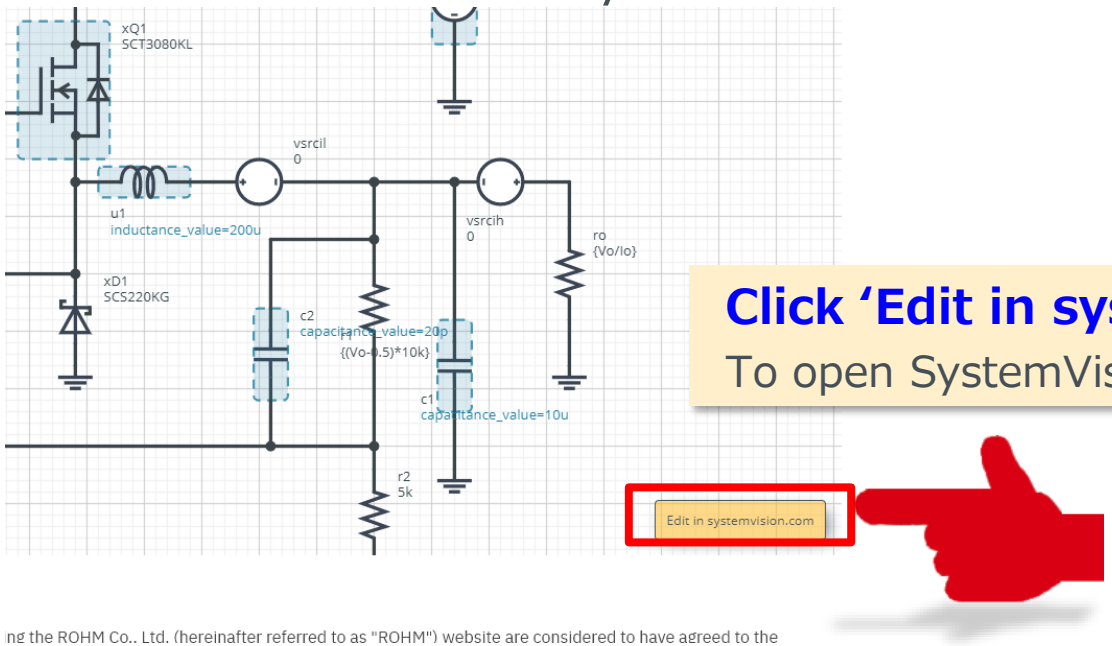
Customize Simulation

Export Schematics

Order Samples

Export Schematics to SystemVision® Cloud (1/2)

- You will need to change the schematic connections or parameters of a given simulation circuit on the website. To do so, you can export schematics to SystemVision®Cloud, and edit schematics as you like.



Click 'Edit in systemVision.com'
To open SystemVision®Cloud

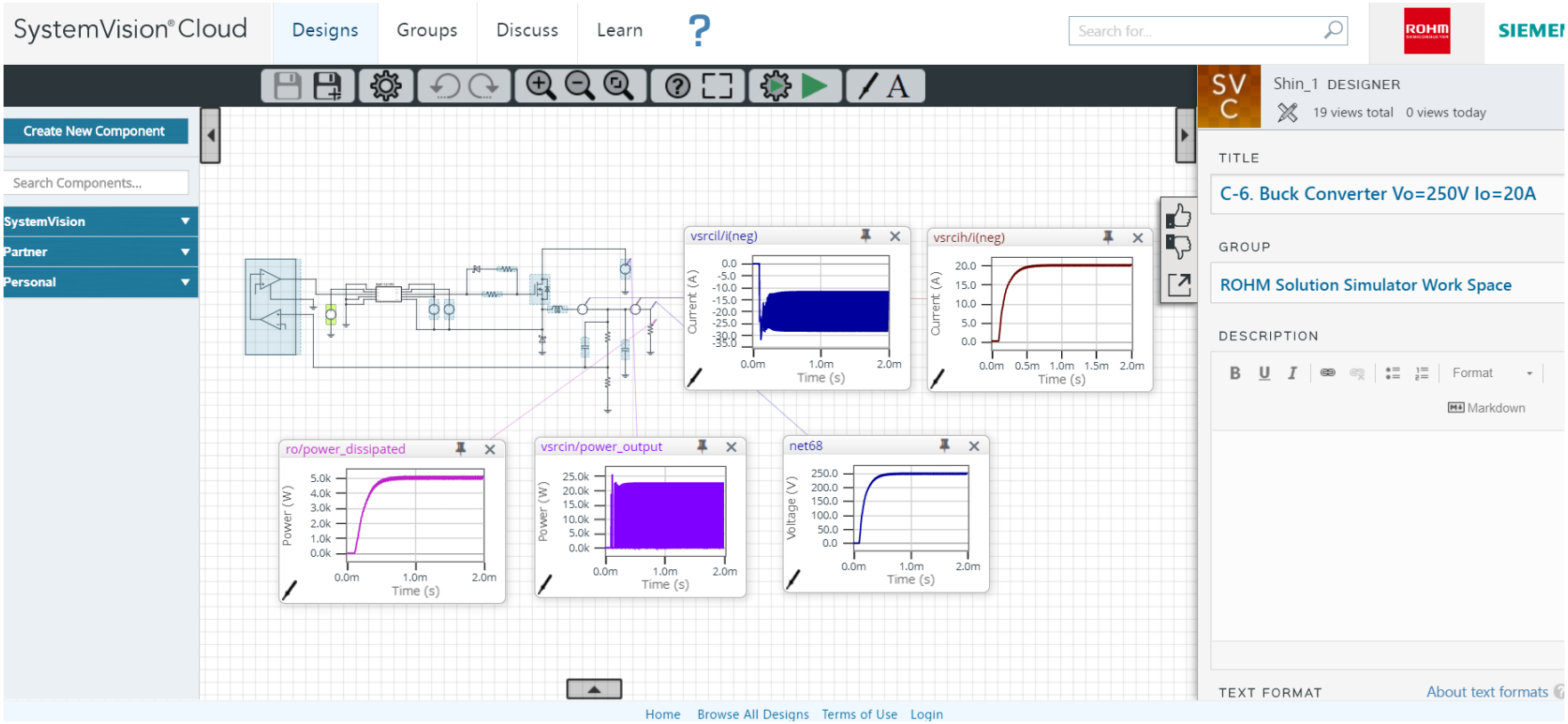
ng the ROHM Co.. Ltd. (hereinafter referred to as "ROHM") website are considered to have agreed to the

- For more details about SystemVision®Cloud, please visit https://www.systemvision.com.

Export Schematics to SystemVision® Cloud (2/2)

If you have SystemVision®Cloud account, you will see the schematics in your SystemVision®cloud simulator. You can change schematic connection or device properties.

You need to save the schematic to one of your workgroups with ‘SaveAs’ to run simulation.



Choose Simulation Circuit

Execute Simulation

Customize Simulation

Export Schematics

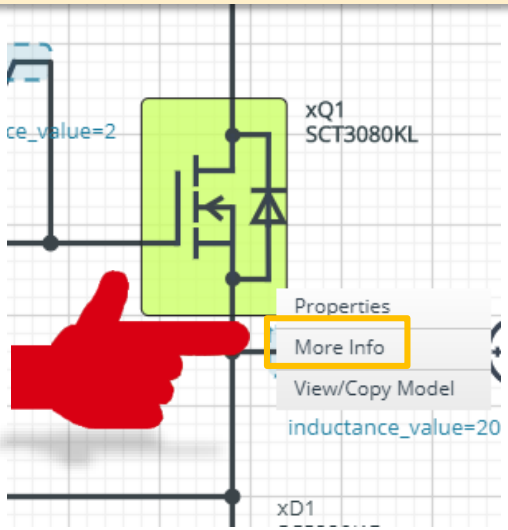
Order Samples

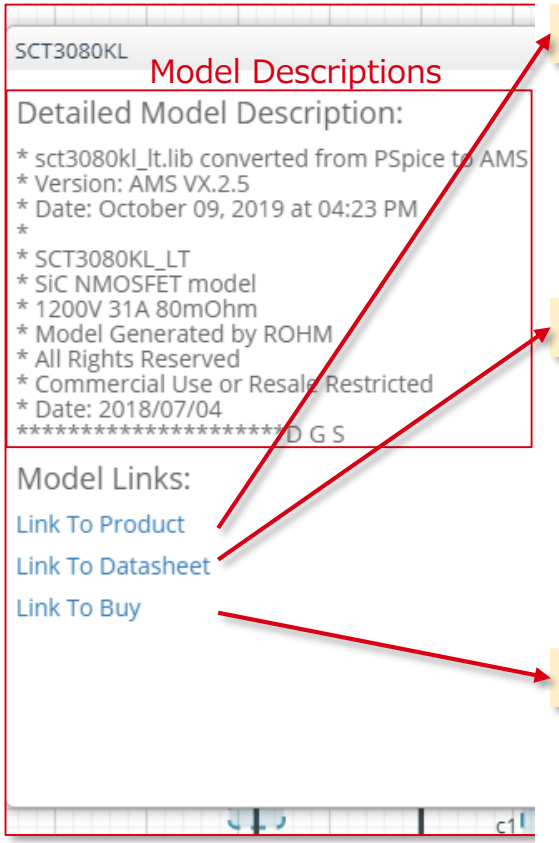
How to order samples:

You will find links to the corresponding product page, datasheet and the sample order page in ‘More Info’

Right click > ‘More Info’

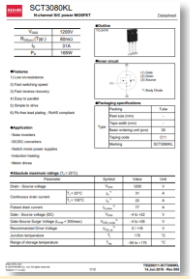
More Info window will show up



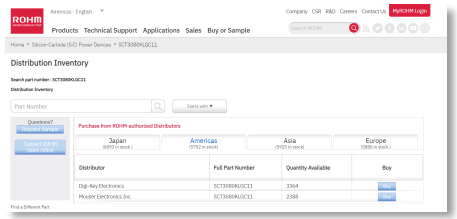


Product Page

Product Datasheet

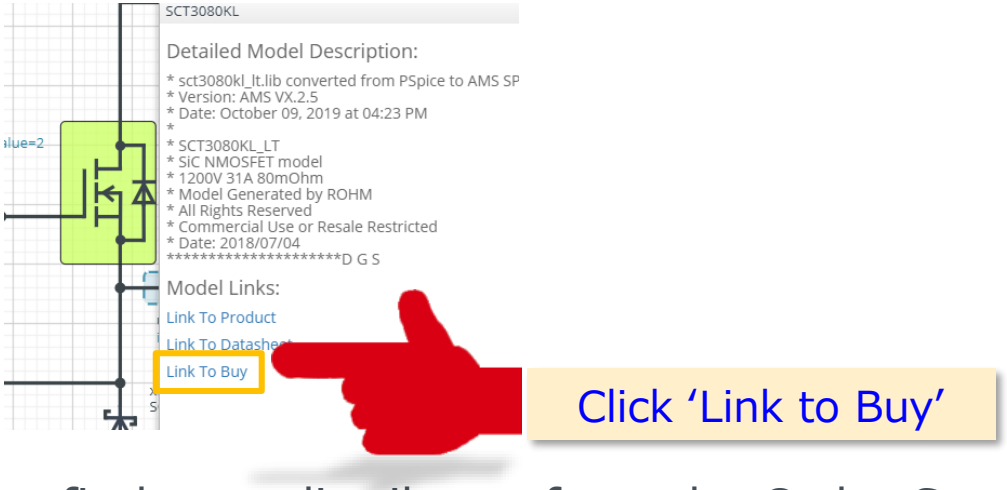


Sample Order Page

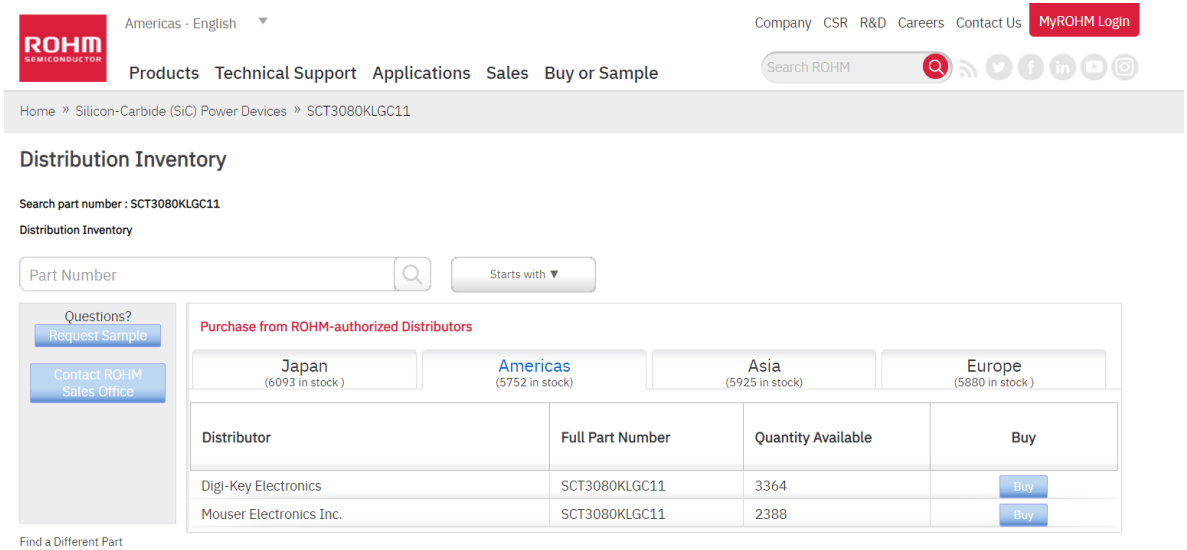


Order Samples (2/2)

Link to distributors:



- Please find your distributor from the Order Sample page.



Rev.	Date	Changes	Comments
2	February 26th, 2020	New release	

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(2) violation of this material.