User Guide for SILERGY Website Online Simulation

1 What can you do with Online Simulation

Online Simulation is a helpful tool for product design using SILERGY regulators. It provides comprehensive and professional design guidance to help accelerate product design.

With Online Simulation, you can:

- Create power circuits that are suitable for your application circuits.

- Select and customize the external component values to optimize your design，such as inductors, capacitors, and compensation values.

- Input application conditions to estimate the core performance such as efficiency, inductor current, and others.

- Simulate with programmed input and output conditions to get the performance of start-up, steady states, transient, and loop stability, and view waveforms of critical nodes such as ripple, switching waveforms, stability margin, and others.

- Generate a design report and a bill of materials (BOM) for your design.

- Get PCB layout guidelines and Gerber files.

2 How to use the Online Simulation

Online Simulation provides a simple and easy-to-operate UI interface. Only by pressing the corresponding key, the functions that customized scheme, simulation, performance estimation, and report generation achieved.

2.1 Get Ready

Before start, the right solution suit for your application needs to find.

The filter of Online Simulation can help you find, or you can access the design directly from the product pages.
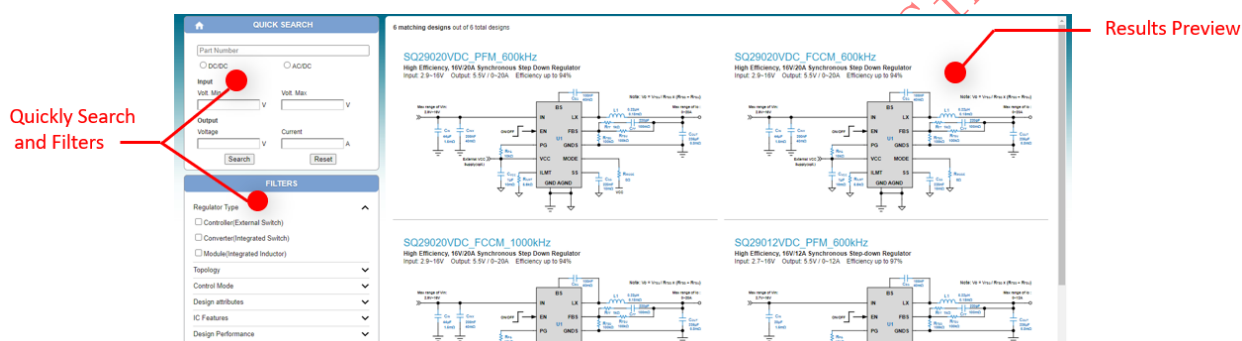

Fig.1   Filter of Online Simulation

For the best display, Microsoft Edge or Chrome browser is the recommended one.

2.2 Scheme Customization

Here the scheme customization is divided into four labels for convenience.

2.2.1 Schematic Parameters Customization

The schematic is the base part. The components parameters of bill of material (BOM), charts of performance estimation, and the simulation section are all derived from it.

Custom the external component values to optimize your design, such as inductors, capacitors, and compensation values. After clicking the component, you can get the detailed data to view as Fig.2. Then parameters can be select from the library or edit freely shown in Fig.3.

Tips:

1)   The browser will cache your selection until you restart the browser or clear the data.

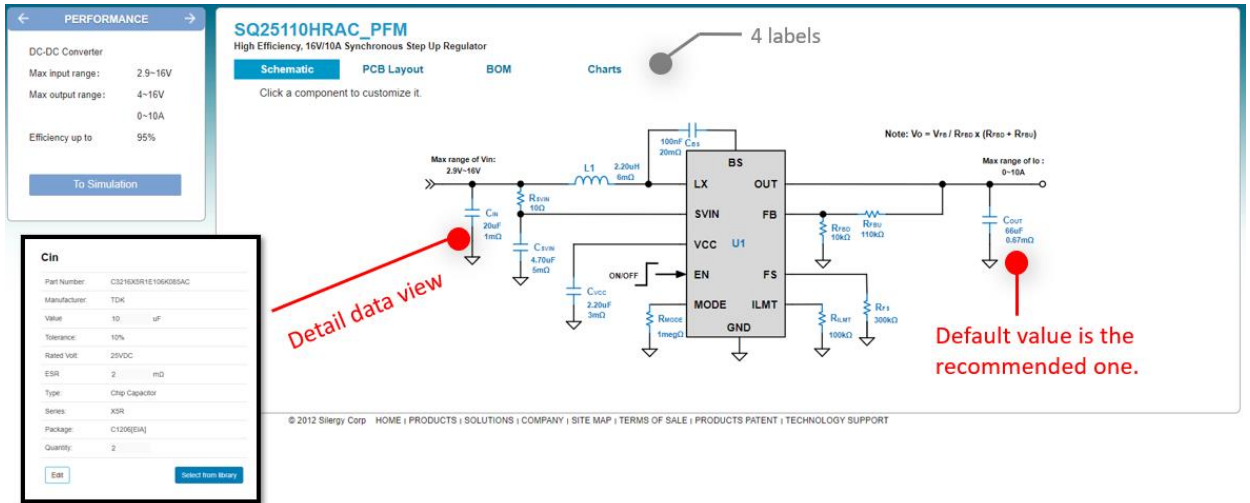2)   The default value is the recommended one and highlight in the component library.
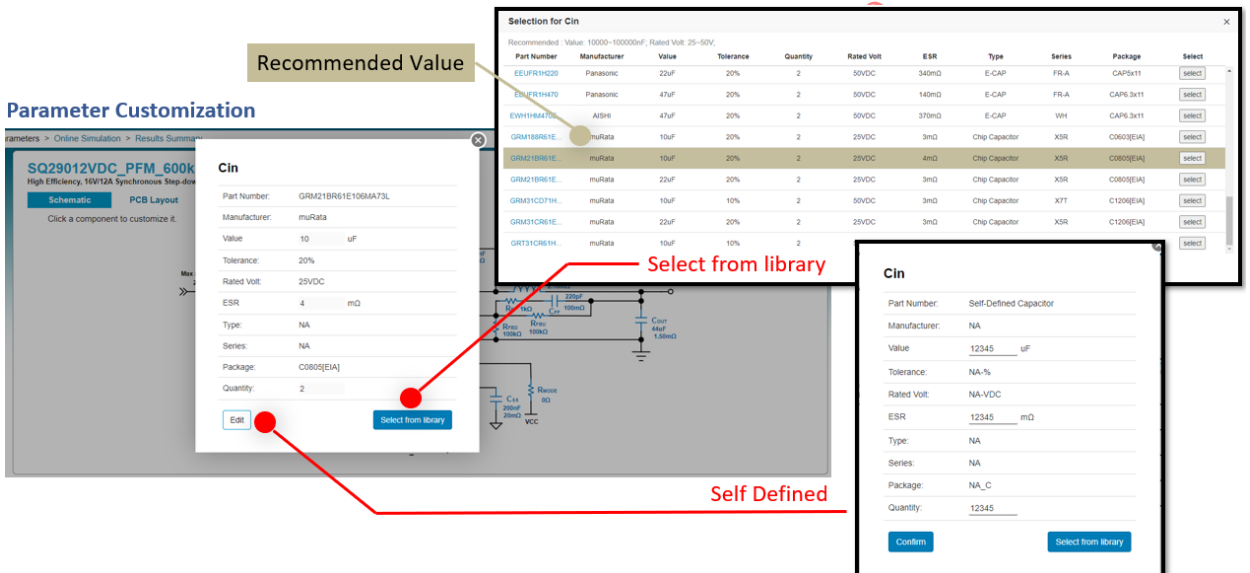
Fig.2　　Schematic part

Fig.3　　Parameter customization

2.2.2 PCB Layout

PCB section provides recommended PCB layout suggestions. Through 3D view, layered display, and graphic interpretation, you can more clearly understand the precautions of PCB layout.
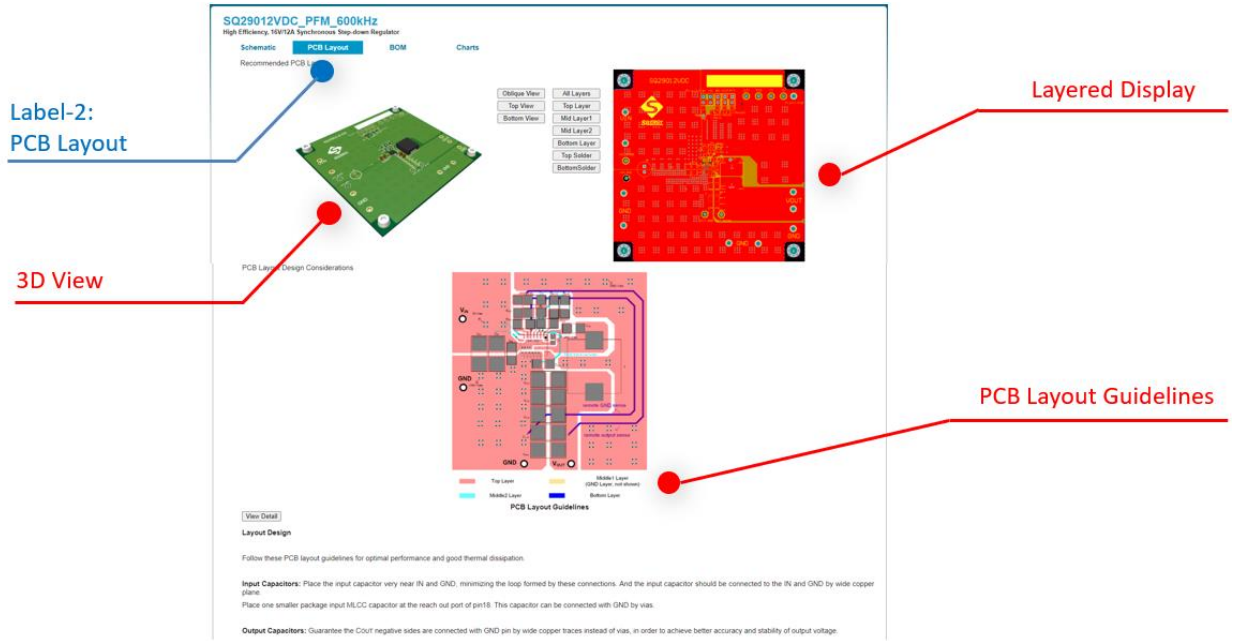
Fig.4   PCB layout section

2.2.3 BOM Section

BOM is associated with the schematic diagram. One-click can download it conveniently. If components reselected here, the schematic diagram varied following.
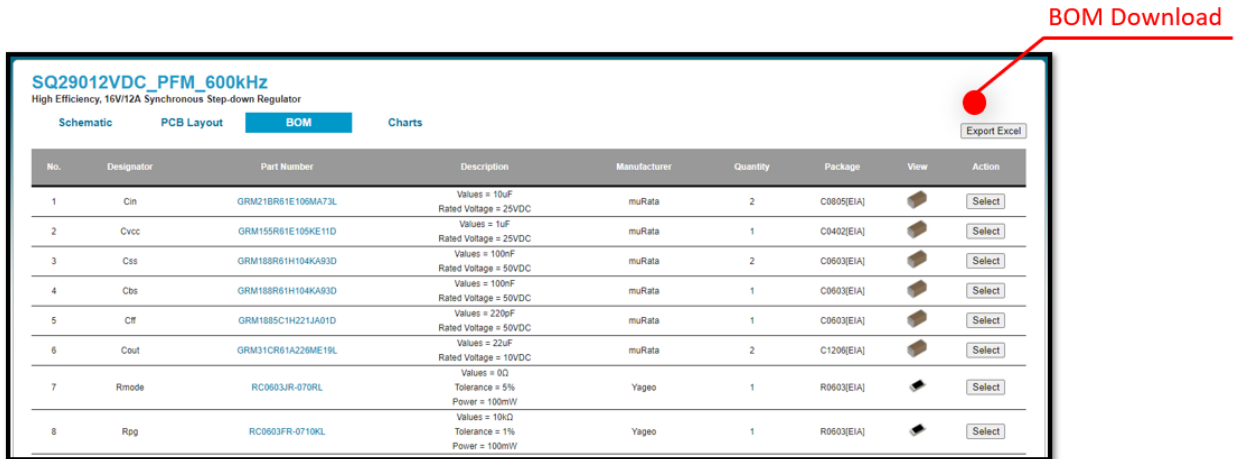

Fig.5   BOM section

2.2.4 Charts of Performance Estimation

Click the button to get the performance estimation as Fig.6. Input application conditions to estimate the critical performance based on your customized parameters.
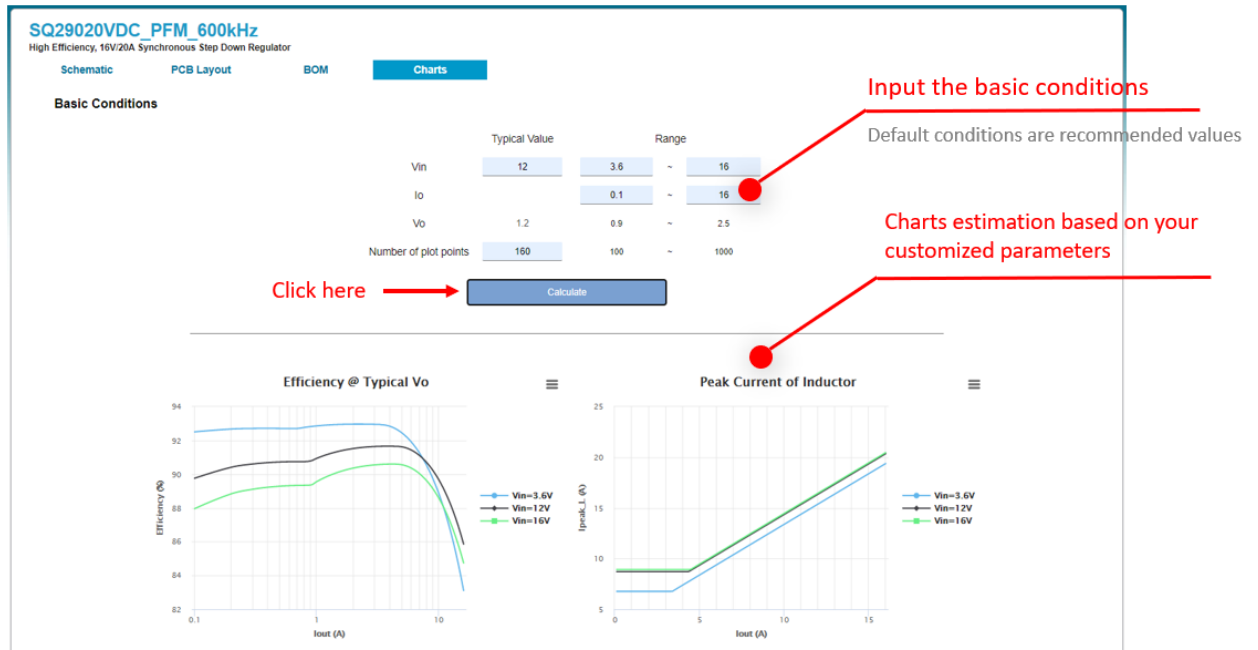
Fig.6   Performance estimation

2.3 Simulation

2.3.1 Simulation Conditions Setting

The simulation is according to the customed parameters and the conditions set here. Simulation modes and nodes to display needs to be select firstly. The 'Replot' button helps quickly redraw waveforms with only nodes varied.
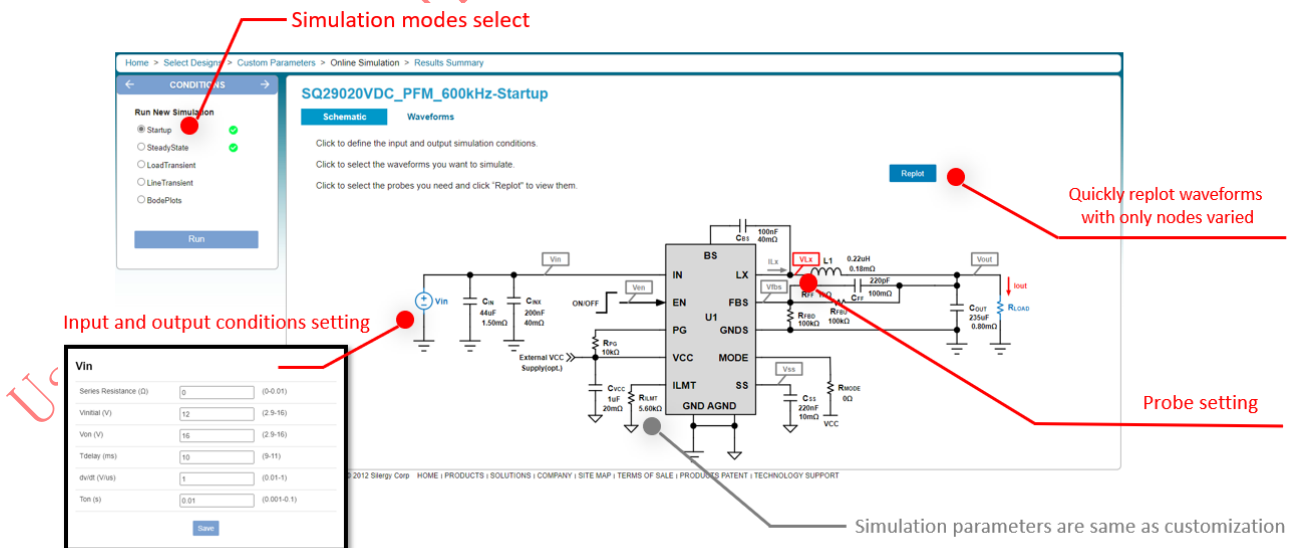

Fig.7   Simulation setting

2.3.2 Waveform View

As shown in Fig.8, waveforms and data can be viewed intuitively. Similar to an oscilloscope, the waveform display window has two Y-axes and one x-axis. Four waveforms can display at the same time. Right hold and stretch can zoom in the waveform locally. When the input condition is changed, the waveform buffer will disappear.
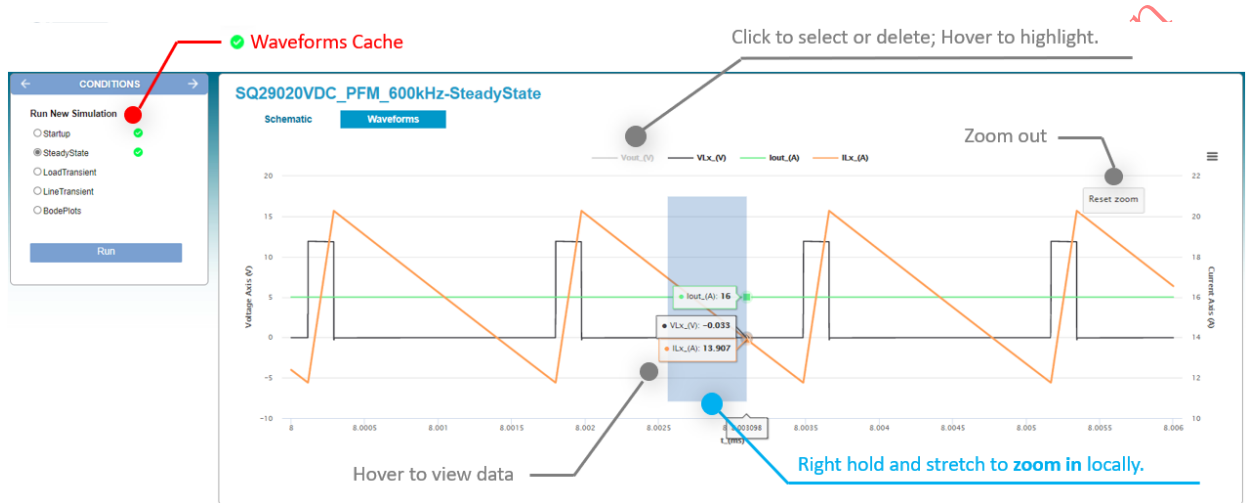

Fig.8   Waveform view

2.4 Download

The download page enters through the button → on the simulation page.

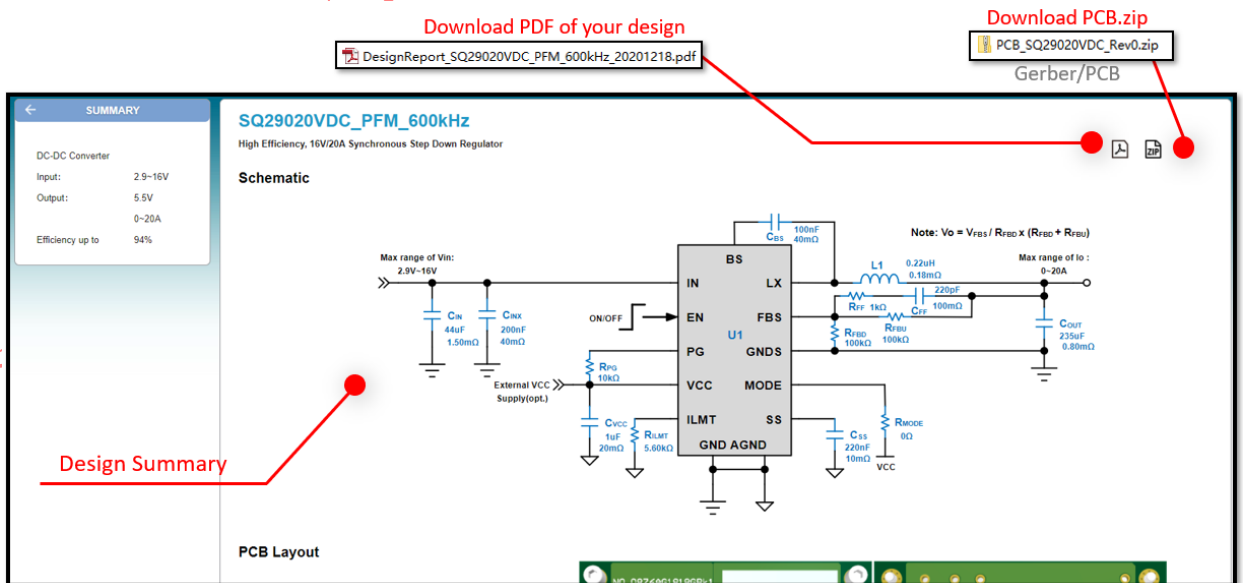One click generates a design report for your design and downloads the PCB data.

Fig.9   Data download

3 Warning and Notice

3.1 Charts Setting Warning

3.1.1 Typical Value Warning

The typical value should between the minimum and maximum recommended value as shown right. If NOT, the following warning will appear. The minimum and maximum recommended values also can be changed.

Some typical values, which unable to modify, are calculated by internal relations. Such as the typical value of Vo varied by the feedback resistors, which are usually R_{FBU}, R_{FBD}.

Fig.10   Examples-1: Typical Value Error

Fig.11   Typical value warning

3.1.2 Range Value Warning

The programable range should between the maximum application range as shown on the left. If NOT, the following warning will appear. The maximum application range comes from the chip's datasheet.

Some ranges, which unable to modify, are calculated by internal relations. Such as the range of Vo in example-2 calculates based on the maximum duty and the range values of Vin. The point range is fixed.
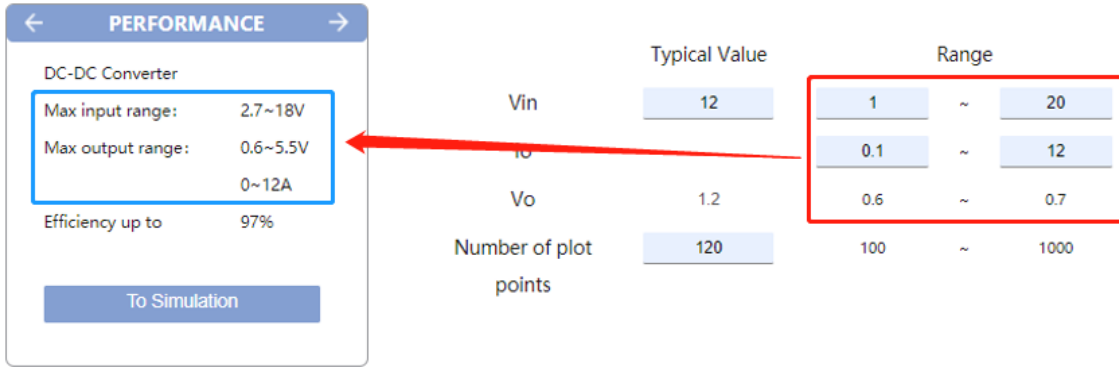
Fig.12   Example-2: Range Error

Fig.13   Range warning

3.2 Simulation Warning

3.2.1 Probe Warning

For better display, the select nodes should be 1~4. If more than 4, the waveform display may not be clear enough. For a quick test, you can reselect the nodes and click the 'Replot' button.
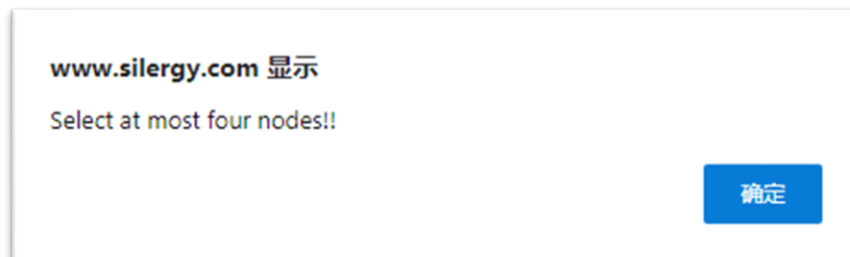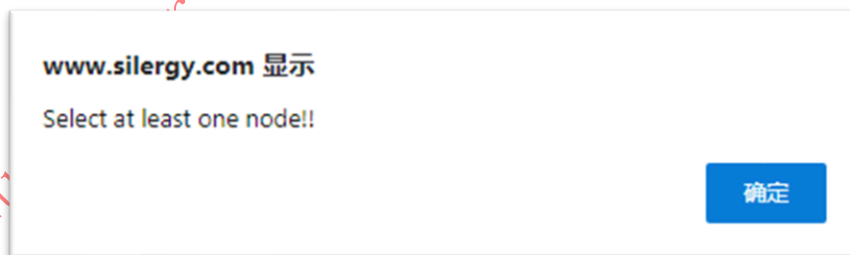

Fig.14   Probe Warning

3.2.2 Simulation Conditions Setting Warning

The input value to simulate should between the recommended range as shown right. If NOT, the following warning will appear.
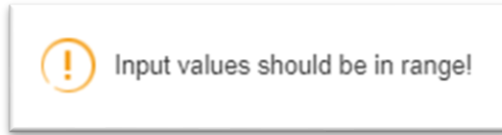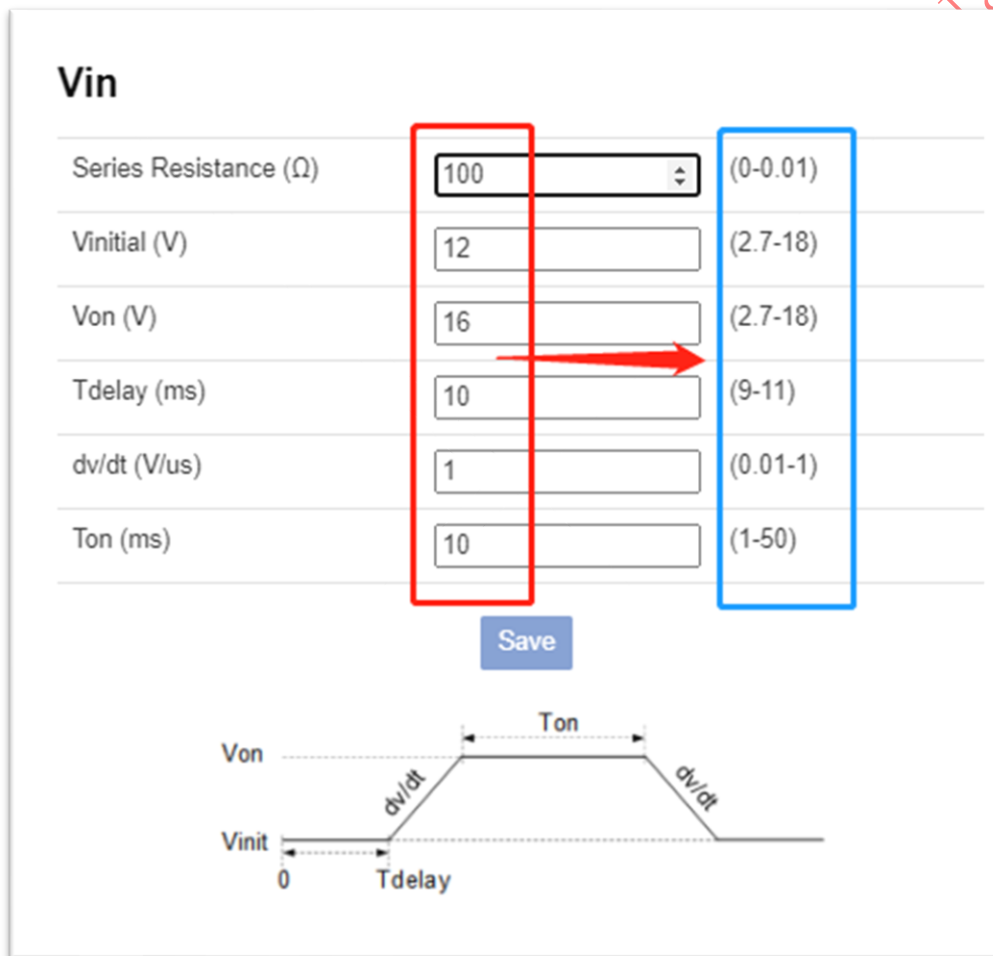

Fig.15   Simulation conditions setting warning

Fig.16   Example-3: input conditions setting error

4 Support

Welcome to try SILERGY Online Simulation! Any questions can contact us and hope to receive your comments.

Address: https://www.silergy.com/contact