

RAJ2810024H12HPD

PSPICE Model Readme

Targeted simulator: Cadence OrCAD

Intelligent Power Device for automotive applications

This document discusses the PSPICE model for the RAJ2810024H12HPD including the features support and not supported by the model. To download the model, see the RAJ2810024H12HPD product page.

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1. Model Features

This PSPICE model is intended to give typical DC performance characteristics under external circuit configurations using compatible simulation platforms – such as Cadence OrCAD. Also, can use other software which can load pspice model, but in this file used Cadence OrCAD for simulation.

1.1 Device Performance Features Supported

The following are the device performance features that are supported by this model:

- Typical static behavior
- Overvoltage protection for output pin & sense output
- Supply undervoltage shutdown
- Proportional load current sensing
- Capacitive Load Switching mode
- Inductive Load Switching mode
- Short circuit to VCC
- Over Current detection ※OC detection is included by model but this function is tentative, and the details of OC detection function should refer to Chip.

1.2 Device Performance Features Limited

The following are the device performance features that are not supported by this model:

- Over temperature function
- Operating current
- Reverse battery protection

2. Downloading and Running on Cadence OrCAD

Download the RAJ2810024H12HPD PSPIEC model first and save the file to a local directory for your simulations. PSPICE model at least include the library file (xxx.lib) and Symbol file (xxx.OLB)

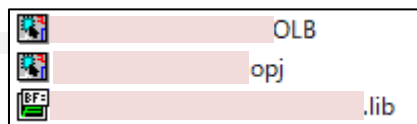


Figure.1 An example of PSPICE model package

If use exist bench simulation click [Open Project] on start page and chose the [xxx.opj] file from PSPICE model package. Or can also build a new project use own setting.

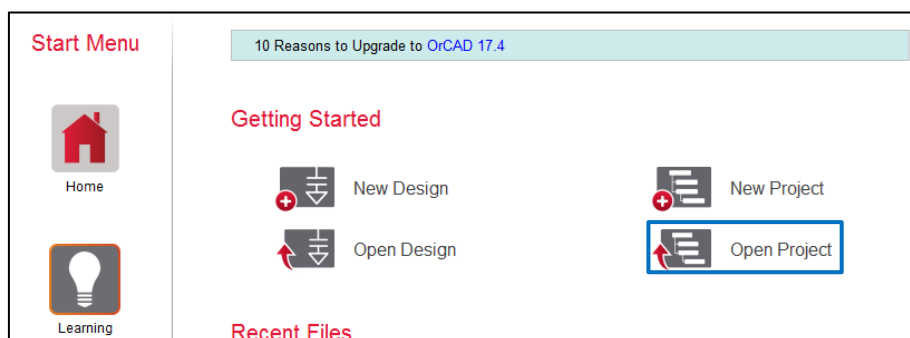


Figure.2 Start page of OrCAD

Load project successfully, chose a schematic of simulation bench under [xxx.dsn] by double click.
And will move to the schematic page.
If build a new project need to build a new schematic page for simulation.
For example, double click Figure.3 [PAGE1]

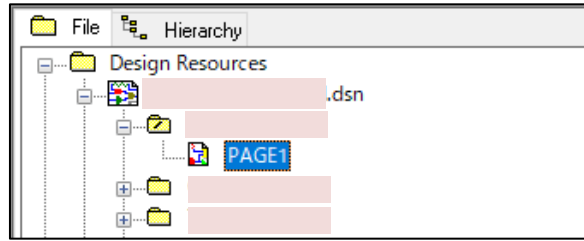


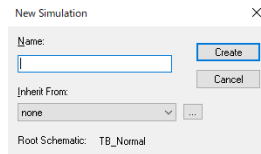
Figure.3 Design Resources list

First time need to build simulation and add PSPICE model library. Click New Simulation Profile button [📄]



Figure.4 New simulation button

Input simulation name and click [Create]



Simulation Setting window will open. Select tab [Configuration Files]=> Category [Library]=> [Browse...]

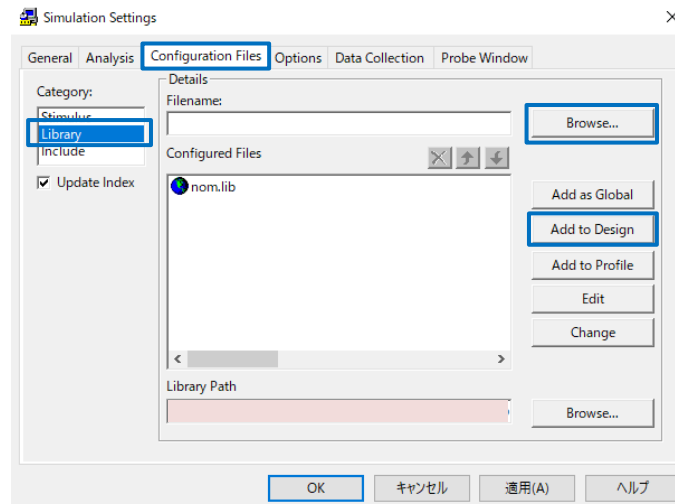


Figure.5 Simulation Setting

Select the PSPICE model file [xxx.lib] from the directory where release the model package. Then return to Figure.5 window and click [Add to design] => [OK]

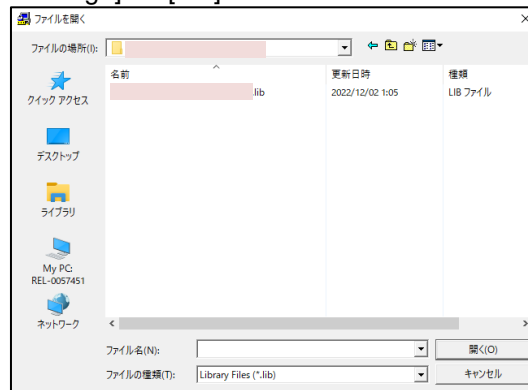


Figure.6 select PSPICE model file

After Library setting, exist simulation bench can run simulation normally. If build a new schematic need to complete the simulation circuit. Below shows a basic simulation circuit as an example.

3. Simulation Circuit example

Except Pin.8 and Pin.9 in used to show Tj and Tch could be open, other all pins of IC need to be connected to avoid errors during net listing as Figure.7 shows. Pin3, pin4 connect to DC voltage sources. Pin1 pin2, pin5, pin6, pin7 connected to GND pass by a resistance.

※There are two ways to control Tj, one is use OrCAD simulation setting. When Pin.8(Tj terminal) open, simulation setting temperature can be read. Or can use an external source connect to Pin.8. And Tj will be controlled by input voltage. Pin.9 is used to read Tch and unnecessary to be connected.

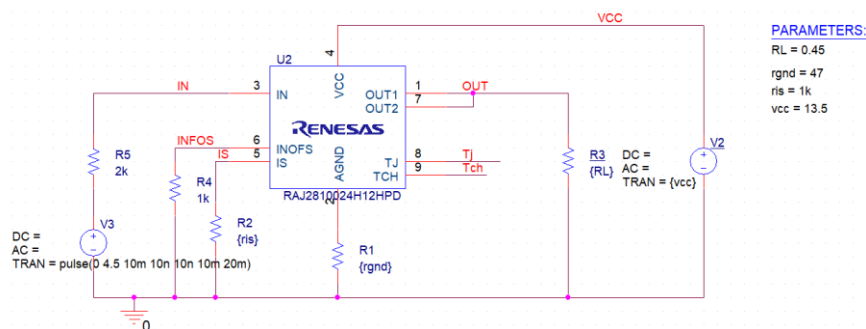


Figure.7 Simulation Circuit

Figure.8 shows the simulation result of Figure.7 circuit

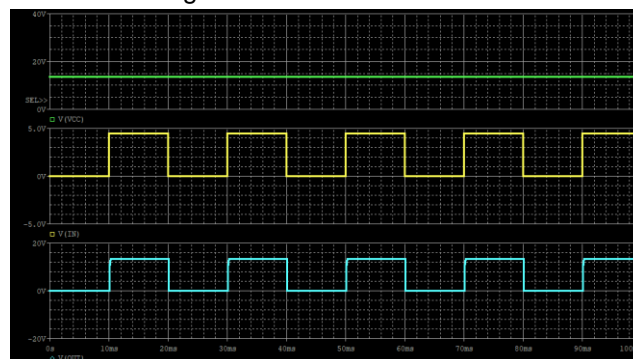


Figure.8 Simulation result

Revision History

Rev.	Date	Description	
		Page	Summary
1.0	2024/02/22	-	Initial release

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Corporate Headquarters

TOYOSU FORESIA, 3-2-24 Toyosu,
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