



Using Excelitas SPICE models in Altium®

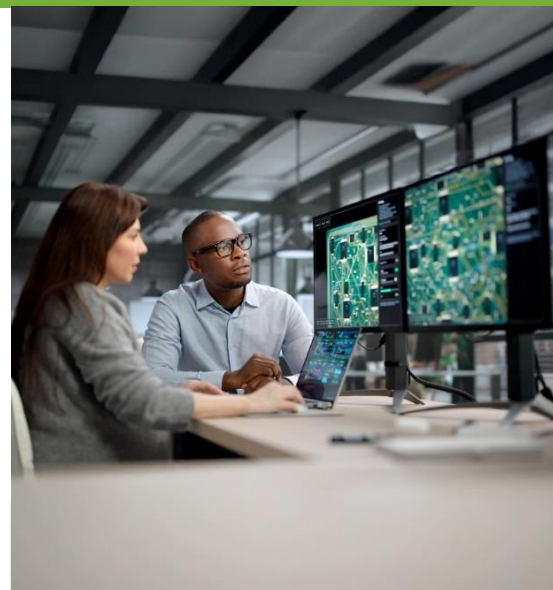
INTRODUCTION

SPICE models help engineers simulate the photodiode circuits before building the hardware and show how they behave in real conditions. Circuit designers can quickly estimate the gain, bandwidth, and noise. This help to reduce design errors and saves development time.

Excelitas has made available SPICE models for its portfolio of photodetectors. Two variants of the model are available for each series depending on your needs.

The **Enhanced model** (4 pins) has a separated electrical and optical channel and is capable of continuous wave simulation.

The **Standard model** (2 pins) is a simpler model that combines both electrical and optical channel together.



USER GUIDE

August 2026

AUTHORS

Jean-Francis Germain, Applications
Specialist

Albert Noudeviwa, Ph.D, R&D Scientist



AVAILABLE MODELS

The list of currently available models is found in Table 1. The models should be available for download on each product webpage. If the model is not available or you need a model for a different product, please contact us.

SERIES	ENHANCED VERSION	STANDARD VERSION
C30617 (InGaAs PIN Photodiode, 100 μm)	SW0073-1	SW0073-2
C30645 (InGaAs APD, 80 μm)	SW0071-1	SW0071-2
C30662 (InGaAs APD, 200 μm)	SW0070-1	SW0070-2
C30737LH-230-90 (Si APD, 230 μm)	SW0072-1	SW0072-2

Table 1 Available SPICE models per product series



CIRCUIT REQUIREMENTS

The electrical circuit in Altium® must have at a minimum the following elements:

- High voltage source
- Pulse voltage source (optical power emulation) 1 nV for 1 nW
- Load resistor
- Device model (enhanced 4 pins or standard 2 pins model)

FIGURE 1 – CIRCUIT REQUIREMENTS FOR ENHANCED 4-PINS MODEL

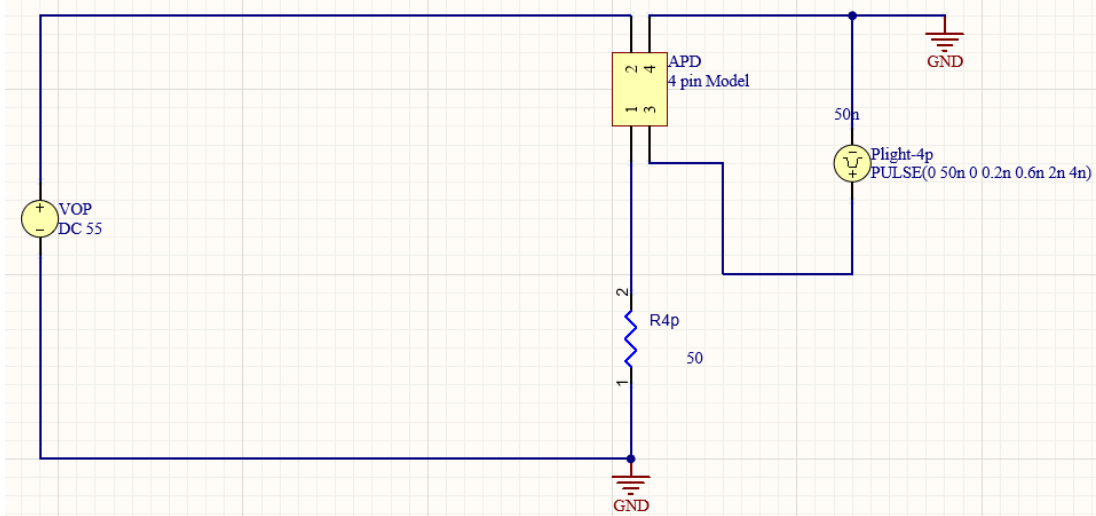
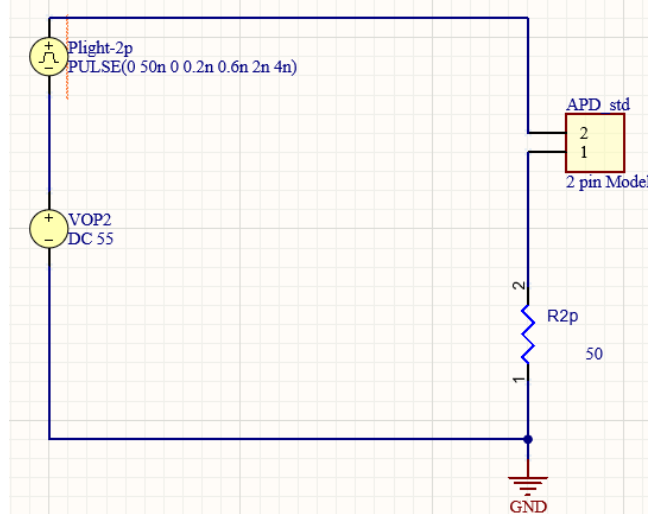


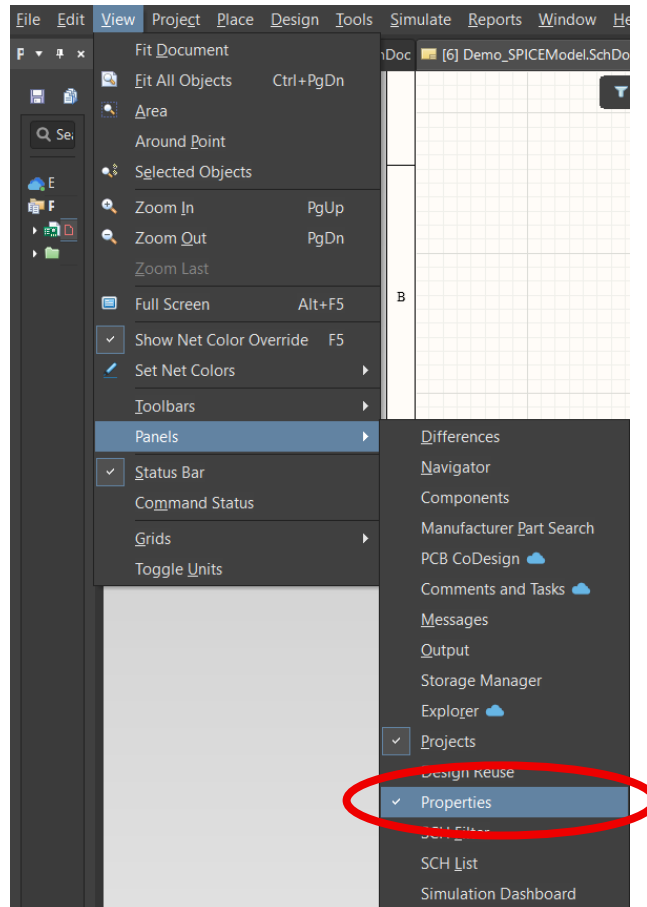
FIGURE 2 – CIRCUIT REQUIREMENTS FOR STANDARD 2-PINS MODEL



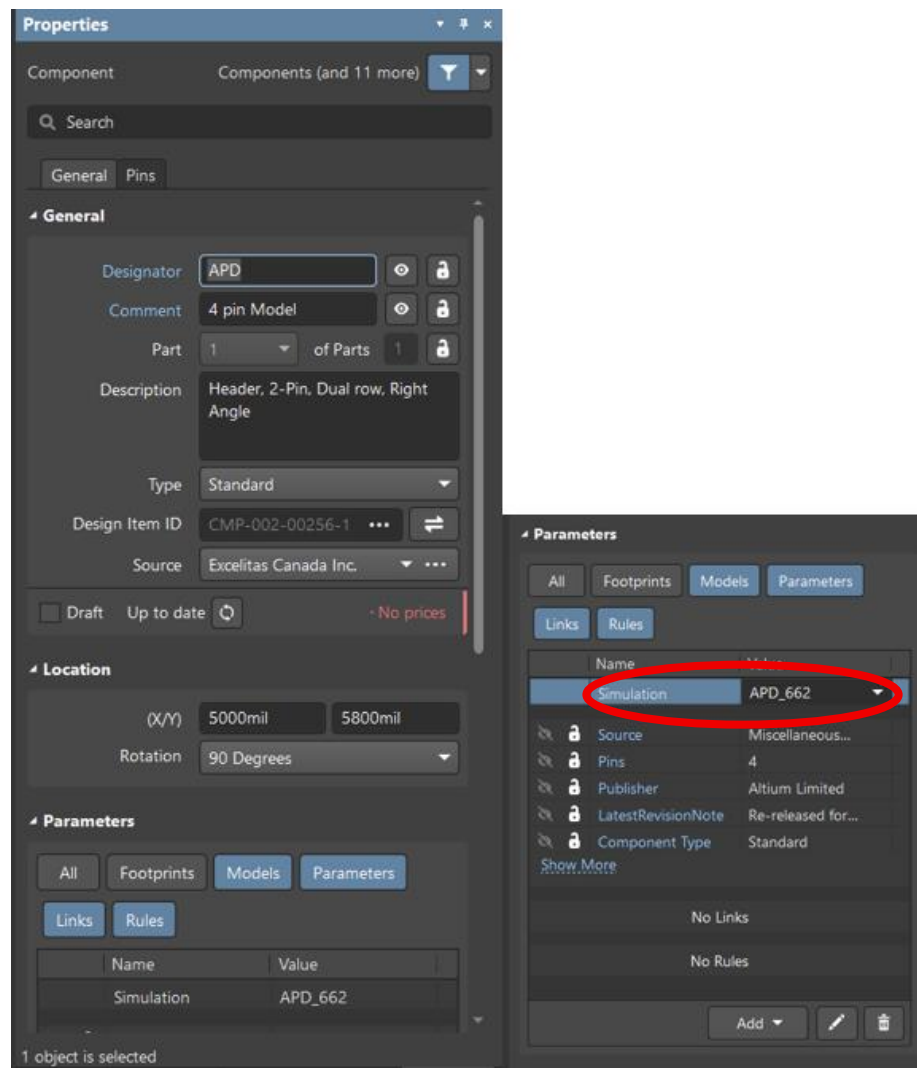
MODEL CONFIGURATION

To configure the model, follow the steps below in Altium®.

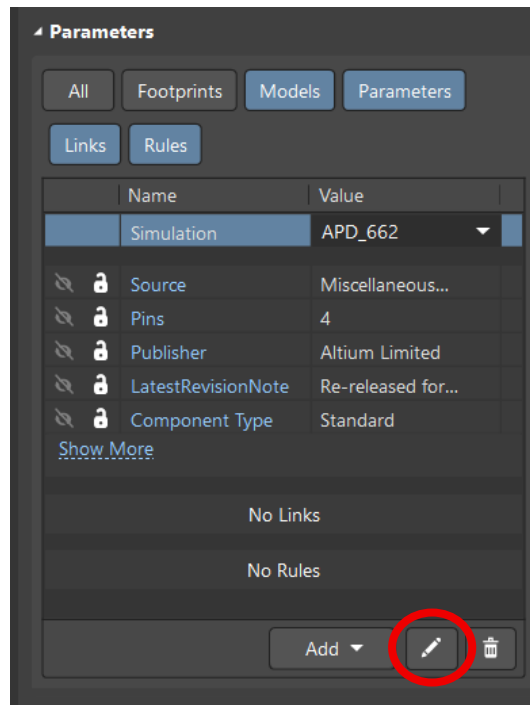
1. Select the device.
2. Open the properties panel.



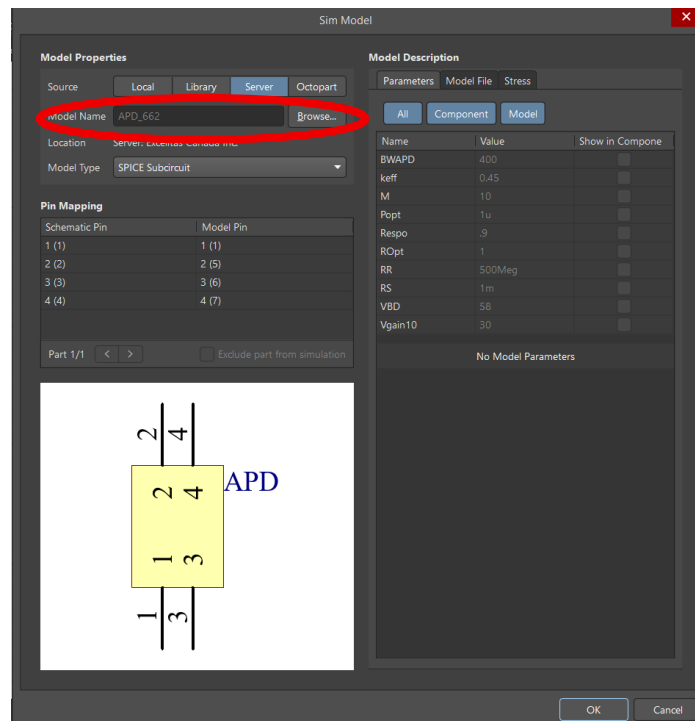
3. Select the simulation model.



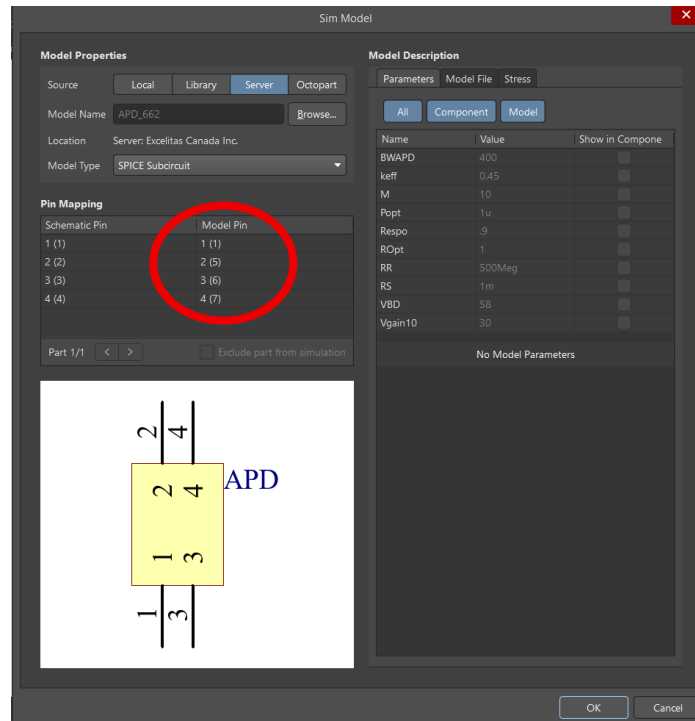
4. Edit model.



5. Select the model on your device storage.



6. Address the pins according to Table 2 for the applicable version.



7. Accept the changes. You may then start your simulation.

APPLICABLE VERSION	SCHEMATIC PIN	MODEL PIN
Standard (2-pins) Enhanced (4-pins)	1	1
Standard (2-pins) Enhanced (4-pins)	2	5
Enhanced (4-pins)	3	6
Enhanced (4-pins)	4	7

Table 2 Pin Mapping



