National Instruments Multisim
Part IV

Manipulating and maneuvering within the environment
Our source schematic
What to do?

• In the beginning, we have a blank canvas, a possibility of all things (both good and bad)
• Pick a point, and just run with it!
How to approach?

• I tend to start with my main focus point. In this case, I chose the transistors as that focus, and worked my way out from there
  – The next several slides are of the process to get to the transistors
  – Remember that it usually starts with the last part placed from a previous project (in my case, I used the diodes last...)
Select a Component

Database: Master Database
Group: Diodes
Family: DIODES_VIRTUAL, DIODE

Component: 1N914

Symbol (ANSI)

Function: Small Signal Diode
Model manufacturer/ID: National / 1N4148
Footprint manufacturer/type: IPC-2221A/2222 / DO-35

Components: 37
Searching:
Select a Component

Database: Master Database
Group:
- Diodes
- Transistors
- Analog
- TTL
- CMOS
- MCU
- Advanced_Peripherals
- Misc Digital
- Mixed
- Indicators
- Power
- Misc
- RF
- Electro_Mechanical
- NI_Components

Component:
- 1N914
- 1BH62
- 1DH62
- 1GH62
- 1JH62
- 1LH62
- 1N4001GP
- 1N4002GP
- 1N4003GP
- 1N4004GP
- 1N4005GP
- 1N4006GP
- 1N4007GP
- 1N4009
- 1N4148
- 1S1553
- 1S1554
- 1S1555
- 1S1830
- 1S1834
- 1S1835
- 1S1885

Symbol (ANSI)

Function:
Small Signal Diode

Model manufacturer/ID:
National / 1N4148

Footprint manufacturer/type:
IPC-2221A/2222 / DO-35

Hyperlink:
Select a Component

Database: Master Database

Group: Transistors

Family:
- Select all families
- TRANSISTORS_VIRTUAL
- BJT_NPN
- BJT_PNP
- BJT_ARRAY
- DARLINGTON_NPN
- DARLINGTON_PNP
- MOS_3TEN
- MOS_3TEP
- JFET_N
- JFET_P
- POWER_MOS_N
- POWER_MOS_P
- THERMAL_MODELS

Component: 2N2222A

Symbol (ANSI)

Function:

Model manufacturer/ID:
- Zetex / Q2N2222A

Footprint manufacturer/type:
- Generic / TO-18

Hyperlink:
Are there other components?

- At this juncture, we are simply putting the components down
  - Neatness does not count
  - Placement can be anywhere

- Since the schematic does not give values, I placed the correct number of components but did not worry about the values
What’s the next step?

• At this time, we now need to relocate parts for schematic purposes, as well as rotate for duplication of same.

• Will also go about changing the properties to match what is on the schematic
• Parts rotated but not necessarily placed where needed.
  – First slide shows all the parts rotated for orientation
  – Second slide shows them moved closer to final drawing
• Once parts are basically where they need to be, start placing lines to connect and complete
  – Parts can still be moved even with lines connected
    • You may have some issues about the way they look, but that is easily corrected once you are done
  – More than one part can be moved at a time as well
    • Select the ones you want to move by holding down the left mouse button and then enclosing them within the resultant box
Parts placed and time to edit

• Components can be altered as to what they say in values, reference designators and notes
• Can even change resistors without ever altering the circuit connections!
  – Started with the source as it was on the top of the page. Does not matter where you begin, but just make sure you pay attention...
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<thead>
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<th>Fault</th>
<th>Pins</th>
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Digital Power (VCC)

Label
- Use schematic global setting
- Show labels
- Show values
- Show initial conditions
- Show tolerance
- Show RefDes
- Show attributes
- Show footprint pin names
- Show symbol pin names

Display
- Use symbol pin name font global setting
- Use footprint pin name font global setting

Fault
- Reset text position

Value

Pins

[OK]  [Cancel]  [Info]  [Help]
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- Use symbol pin name font global setting
- Use footprint pin name font global setting
- Reset text position

[OK] [Cancel] [Info] [Help]
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</table>

- **Capacitance (C):** 10u F
- **Tolerance:** 0%
- **Component type:**

**Hyperlink:**

**Additional SPICE simulation parameters**

- **Initial conditions:** 0 V

**Layout settings**

- **Footprint:**
- **Manufacturer:**

**Buttons:** Replace, OK, Cancel, Info, Help
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To copy the entire drawing into something like Word, follow this procedure:

- CTRL+A to select the entire workspace
- CTRL+C to copy it
- Switch to the Word document
- CTRL+V to paste it into said document
Two compared side-by-side

Pretty close, don’t you agree?
Questions?

• Call us at 1-800-243-6446 or 1-216-781-9400
• E-mail us at faculty@cie-wc.edu

• This presentation happily constructed and commented by Bruce Coscia