Notes for ECE310LIB library elements for proper simulation

1. ECE310 Library was designed to accommodate discrete electronics components including diodes, opamps, and transistors. Following elements are available for SPICE simulation in Cadence.

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*/          OPAMPs
*/                  - LM741
*/          DIODEs
*/                  - 1N4001  50V ,1A,GP Diode/Rectifier
*/                  - 1N4002  100V,1A,GP Diode/Rectifier
*/                  - 1N4003  200V,1A,GP Diode/Rectifier
*/                  - 1N4004  300V,1A,GP Diode/Rectifier
*/                  - 1N4005  600V,1A,GP Diode/Rectifier
*/                  - 1N4006  800V,1A,GP Diode/Rectifier
*/                  - 1N4007  1000V,1A,GP Diode/Rectifier
*/                  - 1N5231  5.1V Zener diode
*/                  - 1N5226  3.3V Zener diode
*/                  - 1N5233  6.0V Zener diode
*/                  - 1N4761A          75.0V Zener diode
*/          MOSFETs 3-PORT
*/                  - ZVN2106A          NMOS
*/                  - ZVP2106A          PMOS
*/          MOSFETs 4-PORT
*/                  - CD4007N          NMOS
*/                  - CD4007P          PMOS
*/          BJTs
*/                  - 2N2222A          NPN
*/                  - 2N3904  PNP
```
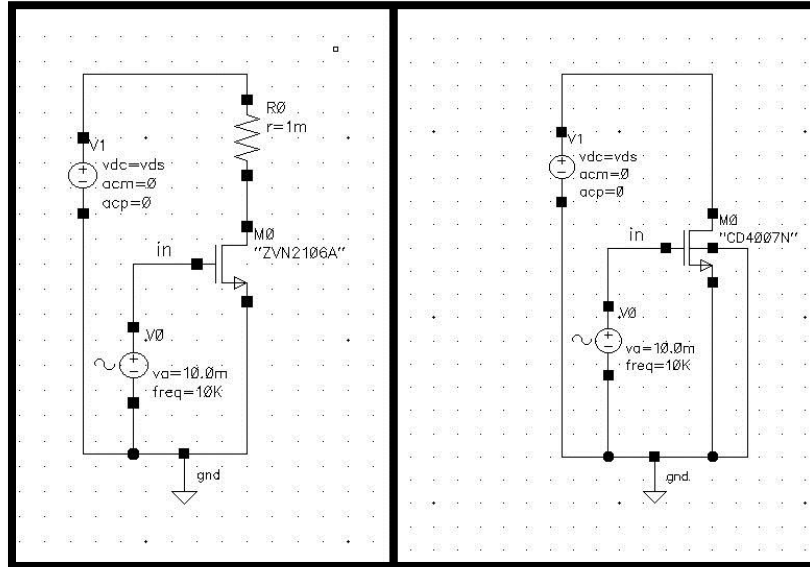
2. mentsThere are two types of discrete MOSFET transistors; 3 port (transistors ZVN2106A and ZVP2106A) and 4 port (transistors CD4007N and CD4007P) models. MOS3_N and MOS3_P cells are used for 3 port MOSFETS, and MOS4_N and MOS4_P cells are used for 4 port MOSFETS, as shown below.
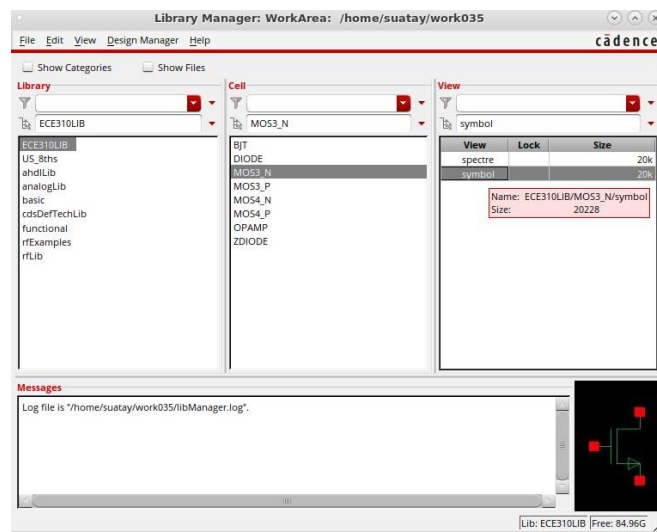
3. When doing SPICE simulation, IDS current of 3 port MOSFET devices could not be plotted directly (due to how the library cells MOS3_N and MOS3_P were build). Thus, it is necessary to add a small resistor (i.e. 1mOhm) in series to drain or source side of the transistor as shown in following figure to monitor drain or source current. This is not the case for the 4 port devices.

MOS3_N   MOS4_N

4. …