**Verification of PI7C8958 IBIS model**

1. **Introduction:**

To verify the correlation between the ibis model and hspice model, we need to do some simulations:

1. **IO(PCI, 3.3V Supply Voltage):**

The frequency of signal is **25MHz**:

1. **Pull-Down(Without Package):**

PI7C8958-PCI

**VOUT**

**SCL\_C**

**SDA\_C**

**R**

**SCL\_C**

**SDA\_C**

A

**SCL\_C**

**SDA\_C**

**C**

**SCL\_C**

**SDA\_C**

**Input Signals**

**SCL\_C**

**SDA\_C**

PAD

**SCL\_C**

**SDA\_C**

**VIN**

**SCL\_C**

**SDA\_C**

…..

**SCL\_C**

**SDA\_C**

1. Add 50Ω **pull-down** resistor and **without** capacitance to the output;
2. Add **5p pull-down** capacitance and **without** resistor to the output;
3. Add 50Ω **pull-down** resistor and **5pF pull-down** capacitance to the output;
4. **Pull-Up(Without Package):**

PI7C8958-PCI

**VOUT**

**SCL\_C**

**SDA\_C**

**R**

**SCL\_C**

**SDA\_C**

A

**SCL\_C**

**SDA\_C**

**C**

**SCL\_C**

**SDA\_C**

**Input Signals**

**SCL\_C**

**SDA\_C**

**VIN**

**SCL\_C**

**SDA\_C**

**VDDIO**

**SCL\_C**

**SDA\_C**

PAD

**SCL\_C**

**SDA\_C**

…..

**SCL\_C**

**SDA\_C**

1. Add 50Ω **pull-up** resistor and **without** capacitance to the output;
2. Add 50Ω **pull-up** resistor and **5pF pull-down** capacitance to the output;
3. **With Package:**

PI7C8958-PCI

**VOUT**

**SCL\_C**

**SDA\_C**

A

**SCL\_C**

**SDA\_C**

**Input Signals**

**SCL\_C**

**SDA\_C**

**VIN**

**SCL\_C**

**SDA\_C**

PAD

**SCL\_C**

**SDA\_C**

…..

**SCL\_C**

**SDA\_C**

Package

(Including **RLC** Parameters)

**SCL\_C**

**SDA\_C**

1. **Without** resistor and capacitance to the output;
2. **OUTPUT(UART, 3.3V Supply Voltage):**

The frequency of signal is **25MHz**:

1. **Pull-Down:**

PI7C8958-UART

**VOUT**

**SCL\_C**

**SDA\_C**

**R**

**SCL\_C**

**SDA\_C**

IN

**SCL\_C**

**SDA\_C**

**C**

**SCL\_C**

**SDA\_C**

**Input Signals**

**SCL\_C**

**SDA\_C**

PAD

**SCL\_C**

**SDA\_C**

**VIN**

**SCL\_C**

**SDA\_C**

…..

**SCL\_C**

**SDA\_C**

1. Add 50Ω **pull-down** resistor and **without** capacitance to the output;
2. Add **5p pull-down** capacitance and **without** resistor to the output;
3. Add 50Ω **pull-down** resistor and **5pF pull-down** capacitance to the output;
4. **Pull-Up:**

PI7C8958-UART

**VOUT**

**SCL\_C**

**SDA\_C**

**R**

**SCL\_C**

**SDA\_C**

IN

**SCL\_C**

**SDA\_C**

**C**

**SCL\_C**

**SDA\_C**

**Input Signals**

**SCL\_C**

**SDA\_C**

**VIN**

**SCL\_C**

**SDA\_C**

**VDDIO**

**SCL\_C**

**SDA\_C**

PAD

**SCL\_C**

**SDA\_C**

…..

**SCL\_C**

**SDA\_C**

1. Add 50Ω **pull-up** resistor and **without** capacitance to the output;
2. Add 50Ω **pull-up** resistor and **5pF pull-down** capacitance to the output;
3. **With Package:**

PI7C8958-UART

**VOUT**

**SCL\_C**

**SDA\_C**

IN

**SCL\_C**

**SDA\_C**

**Input Signals**

**SCL\_C**

**SDA\_C**

**VIN**

**SCL\_C**

**SDA\_C**

PAD

**SCL\_C**

**SDA\_C**

…..

**SCL\_C**

**SDA\_C**

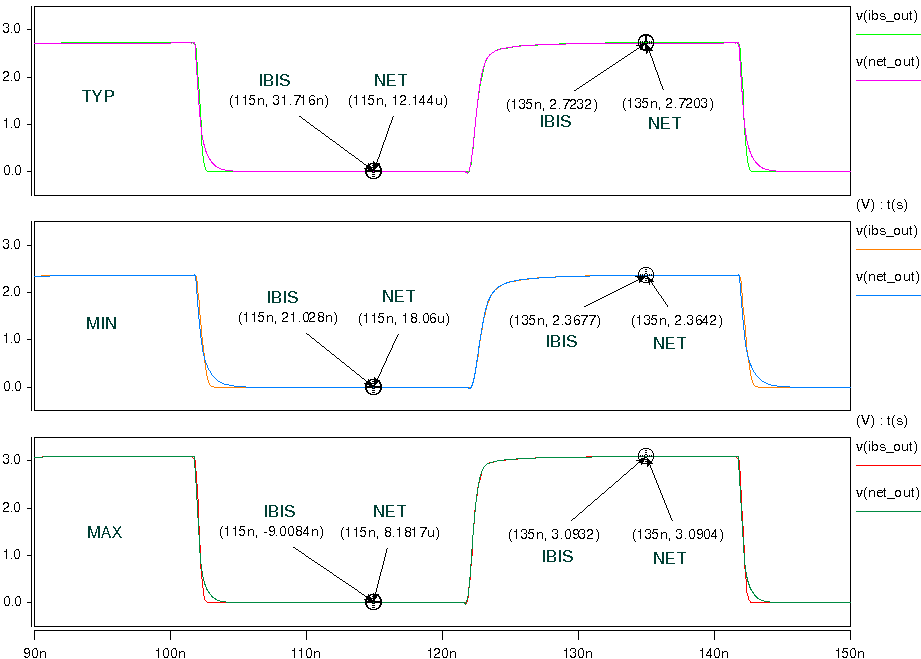
Package

(Including **RLC** Parameters)

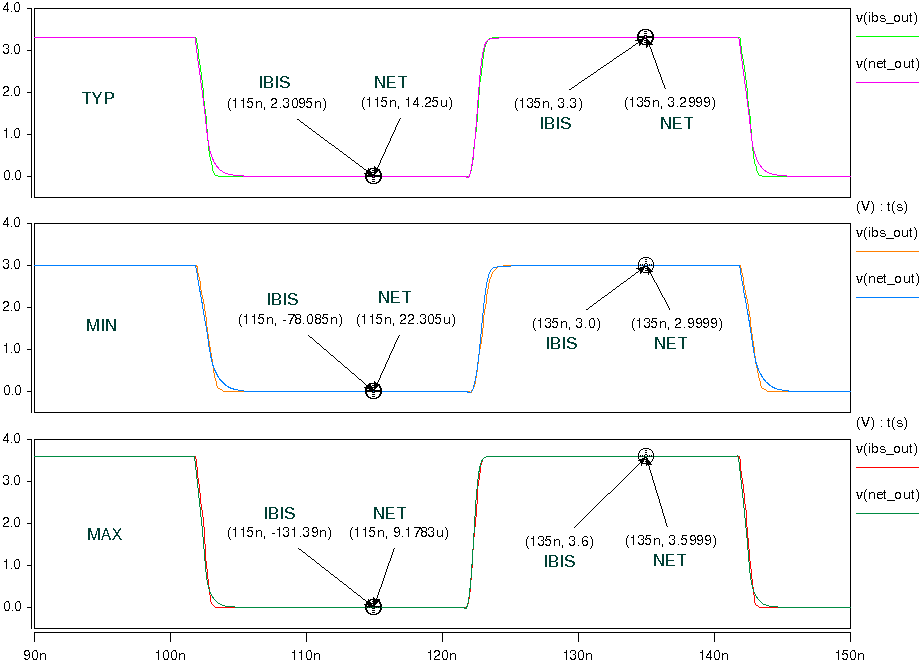
**SCL\_C**

**SDA\_C**

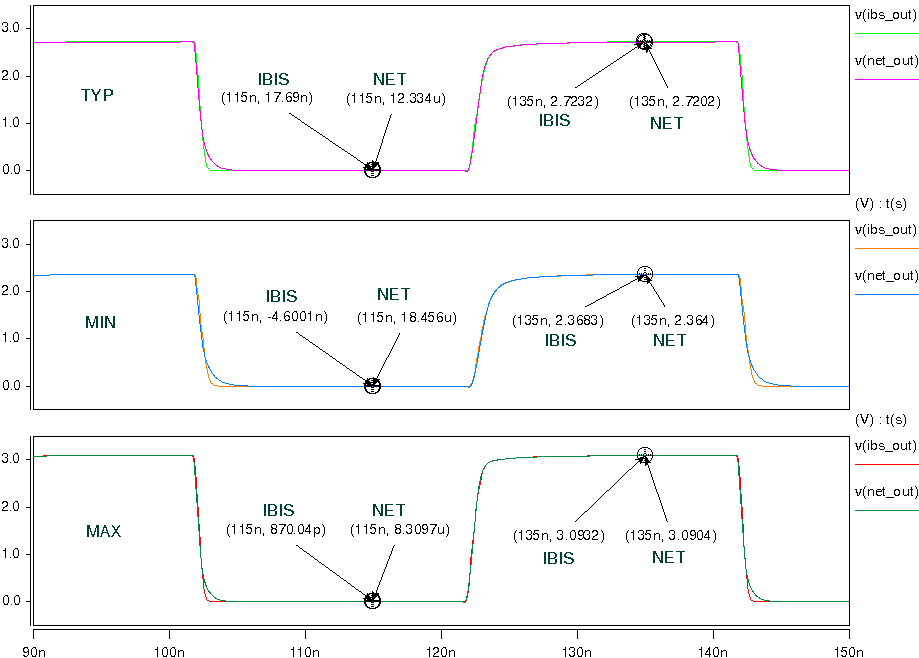
1. **Without** resistor and capacitance to the output;
2. **Conclusion:**
3. For **IO(PCI)** and **OUTPUT(UART)**, the simulation results of IBIS model can match quite well with the HSPICE model at different simulating conditions.
4. **Simulation Result:**
5. **IO(PCI, 3.3V Supply Voltage):**
6. **Pull-Down:**
7. Add 50Ω **pull-down** resistor and **without** capacitance to the output;



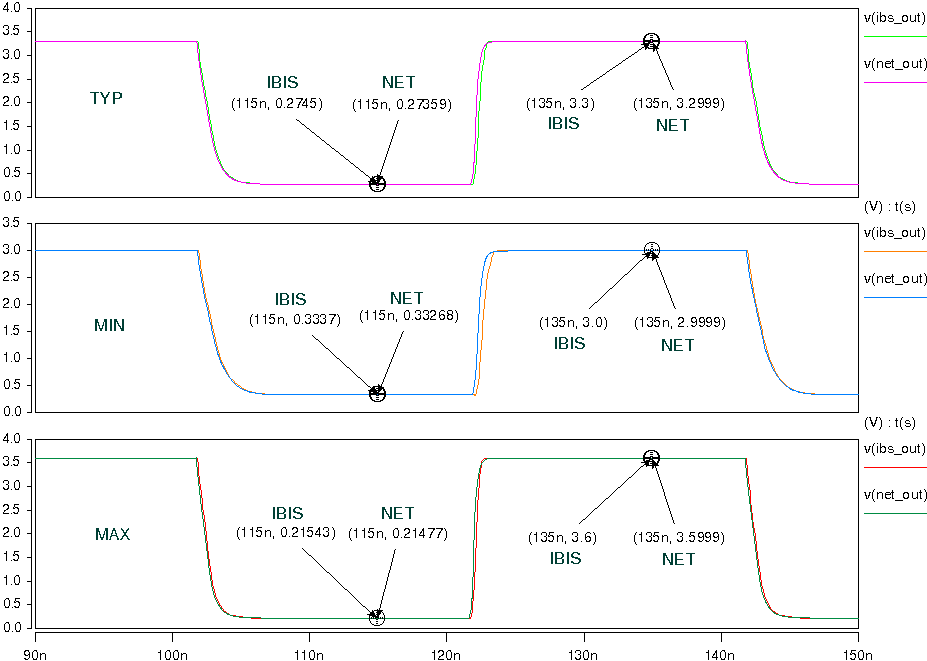
1. Add **5p pull-down** capacitance and **without** resistor to the output;



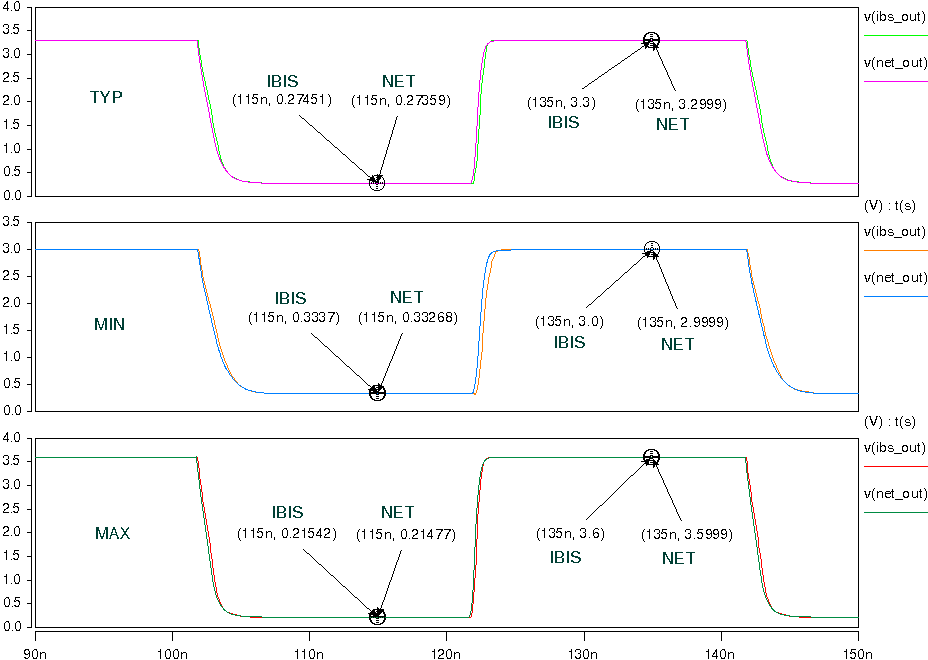
1. Add 50Ω **pull-down** resistor and **5pF pull-down** capacitance to the output;



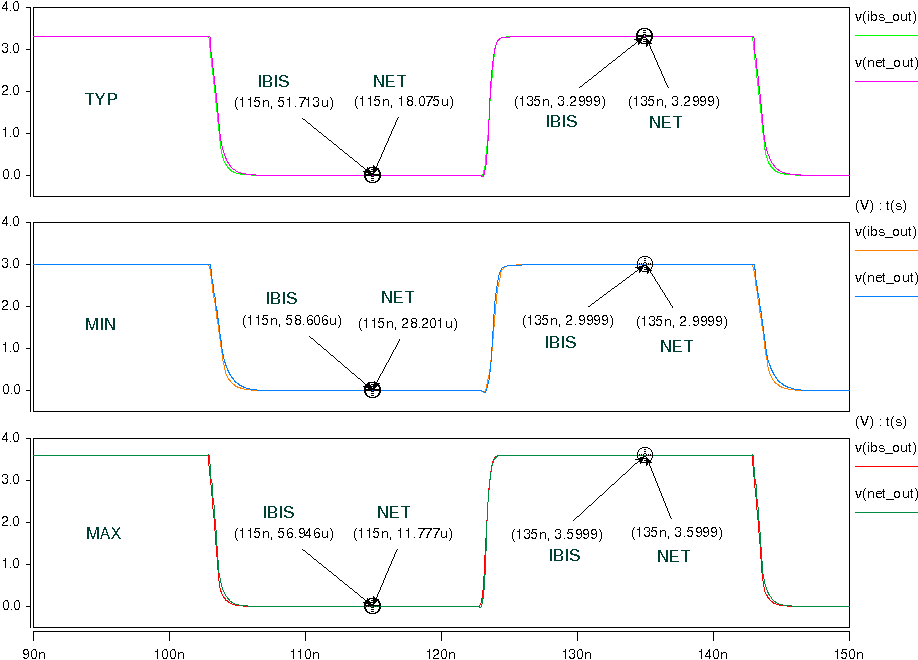
1. **Pull-Up:**
2. Add 50Ω **pull-up** resistor and **without** capacitance to the output;



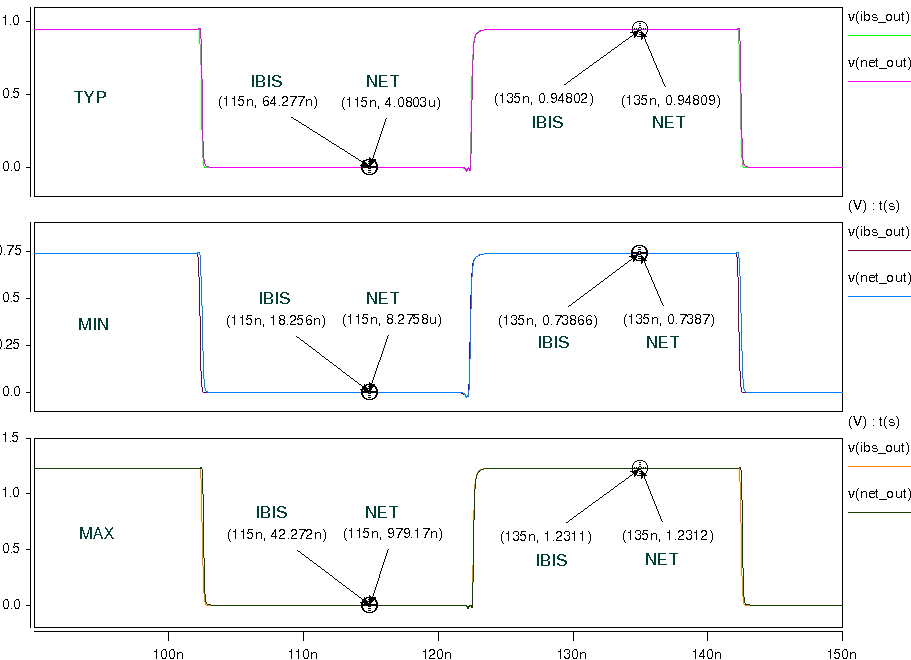
1. Add 50Ω **pull-up** resistor and **5pF pull-down** capacitance to the output;



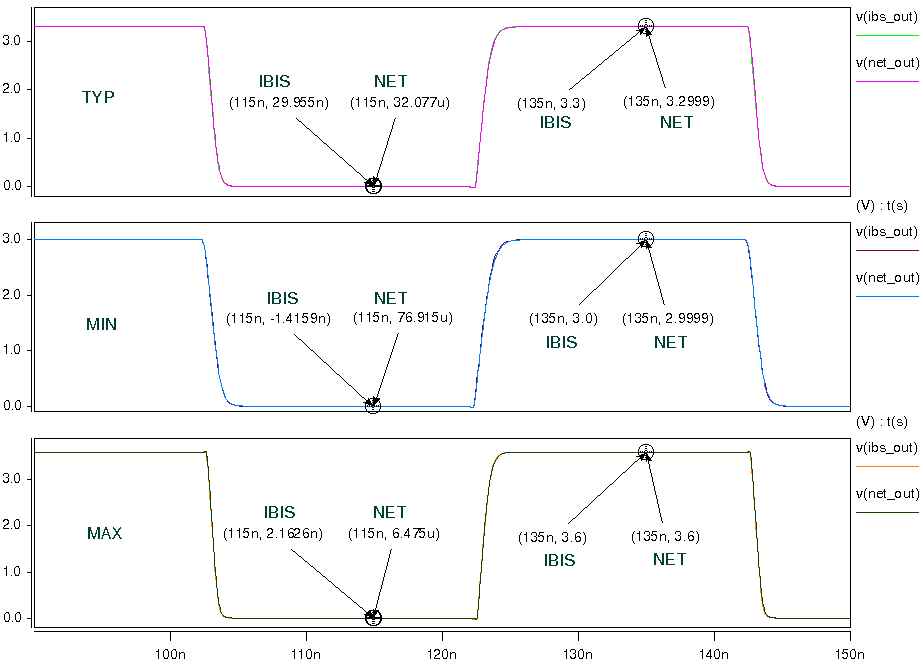
1. **With Package:**
2. Without resistor and capacitance to the output;



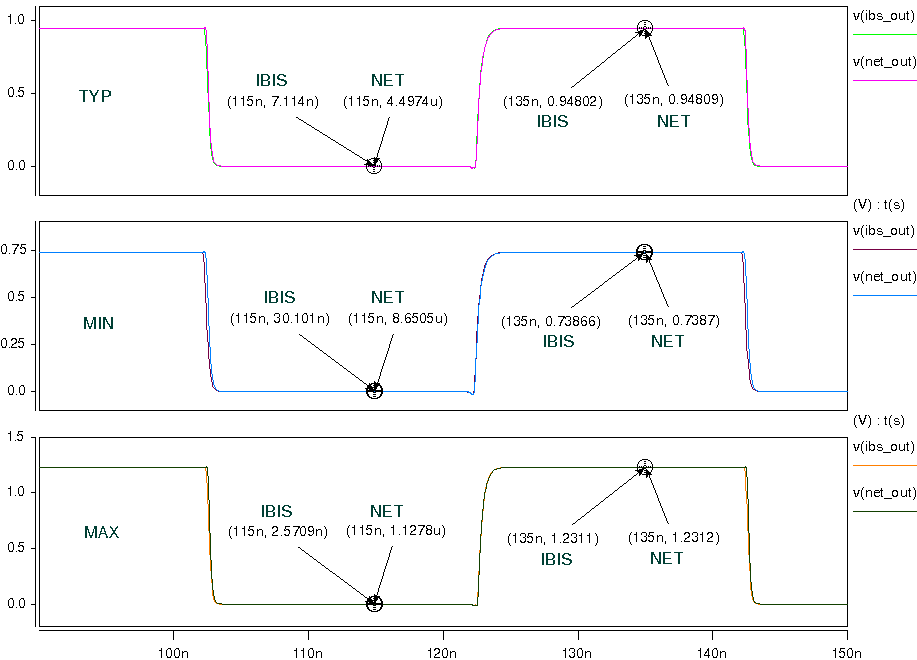
1. **OUTPUT(UART, 3.3V Supply Voltage):**
2. **Pull-Down:**
3. Add 50Ω **pull-down** resistor and **without** capacitance to the output;



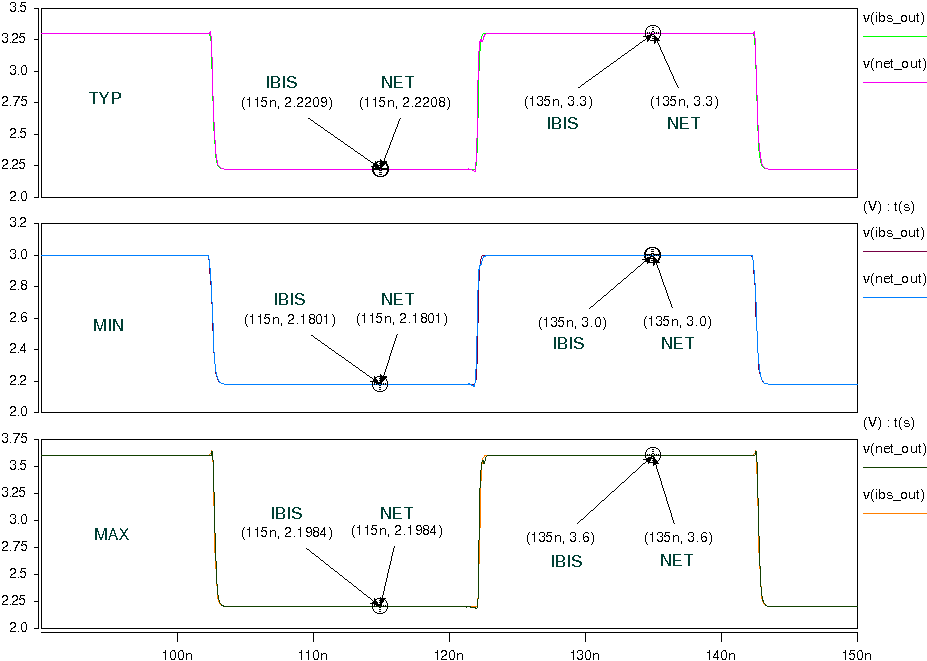
1. Add **5p pull-down** capacitance and **without** resistor to the output;



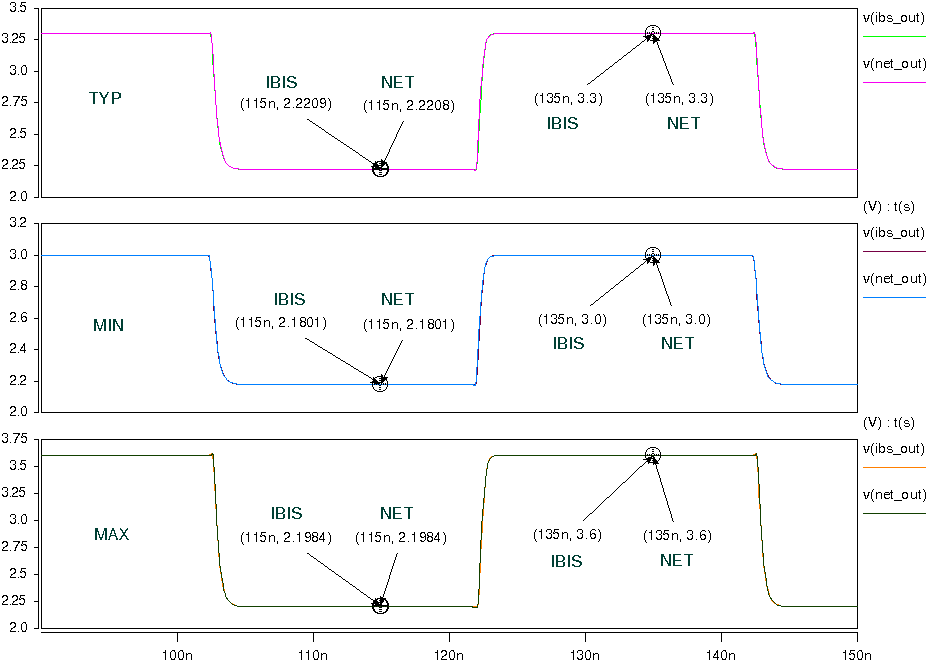
1. Add 50Ω **pull-down** resistor and **5pF pull-down** capacitance to the output;



1. **Pull-Up:**
2. Add 50Ω **pull-up** resistor and **without** capacitance to the output;



1. Add 50Ω **pull-up** resistor and **5pF pull-down** capacitance to the output;



1. **With Package:**
2. **Without** resistor and capacitance to the output;

