**Verification of PI6C49X0202 IBIS model**

1. **Introduction:**

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

**The frequency of signal is 50MHz:**

vin clk 0 pulse ( 0 1.8 0 .2n .2n 1.8n 20n)

1. **Pull-Down Output:**

PI6C49X0202

**VOUT**

**SCL\_C**

**SDA\_C**

**R**

**SCL\_C**

**SDA\_C**

CLK

**SCL\_C**

**SDA\_C**

**C**

**SCL\_C**

**SDA\_C**

**Input Signals**

**SCL\_C**

**SDA\_C**

Q0

**SCL\_C**

**SDA\_C**

**VIN**

**SCL\_C**

**SDA\_C**

Q1

**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 Output:**

PI6C49X0202

**VOUT**

**SCL\_C**

**SDA\_C**

**R**

**SCL\_C**

**SDA\_C**

CLK

**SCL\_C**

**SDA\_C**

**C**

**SCL\_C**

**SDA\_C**

**Input Signals**

**SCL\_C**

**SDA\_C**

Q0

**SCL\_C**

**SDA\_C**

**VIN**

**SCL\_C**

**SDA\_C**

Q1

**SCL\_C**

**SDA\_C**

**VDDO**

**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 3.9 inches Trace Output:**

PI6C49X0202

**VOUT**

**SCL\_C**

**SDA\_C**

**R**

**SCL\_C**

**SDA\_C**

CLK

**SCL\_C**

**SDA\_C**

**C**

**SCL\_C**

**SDA\_C**

**Input Signals**

**SCL\_C**

**SDA\_C**

Q0

**SCL\_C**

**SDA\_C**

**VIN**

**SCL\_C**

**SDA\_C**

Q1

**SCL\_C**

**SDA\_C**

**Trace**

**SCL\_C**

**SDA\_C**

1. Add **33Ω** resistor, **3.9inch trace** and **without** capacitance to the output;
2. Add **33Ω** resistor, **3.9inch trace** and **5pF** **pull-down** capacitance to the output;
3. **Conclusion:**
4. For OUTPUT, the simulation results of IBIS model can match very well with the HSPICE model at different simulating conditions.
5. **Simulation Result:**
6. **Pull-Down Output:**

PI6C49X0202

**VOUT**

**SCL\_C**

**SDA\_C**

**R**

**SCL\_C**

**SDA\_C**

CLK

**SCL\_C**

**SDA\_C**

**C**

**SCL\_C**

**SDA\_C**

**Input Signals**

**SCL\_C**

**SDA\_C**

Q0

**SCL\_C**

**SDA\_C**

**VIN**

**SCL\_C**

**SDA\_C**

Q1

**SCL\_C**

**SDA\_C**

1. 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 Output:**

PI6C49X0202

**VOUT**

**SCL\_C**

**SDA\_C**

**R**

**SCL\_C**

**SDA\_C**

CLK

**SCL\_C**

**SDA\_C**

**C**

**SCL\_C**

**SDA\_C**

**Input Signals**

**SCL\_C**

**SDA\_C**

Q0

**SCL\_C**

**SDA\_C**

**VIN**

**SCL\_C**

**SDA\_C**

Q1

**SCL\_C**

**SDA\_C**

**VDDO**

**SCL\_C**

**SDA\_C**

1. 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 3.9 inches Trace Output:**

PI6C49X0202

**VOUT**

**SCL\_C**

**SDA\_C**

**R**

**SCL\_C**

**SDA\_C**

CLK

**SCL\_C**

**SDA\_C**

**C**

**SCL\_C**

**SDA\_C**

**Input Signals**

**SCL\_C**

**SDA\_C**

Q0

**SCL\_C**

**SDA\_C**

**VIN**

**SCL\_C**

**SDA\_C**

Q1

**SCL\_C**

**SDA\_C**

**Trace**

**SCL\_C**

**SDA\_C**

1. Add **33Ω** resistor, **4inch trace** and **without** capacitance to the output;



1. Add **33Ω** resistor, **4inch trace** and **5pF** **pull-down** capacitance to the output;

