The design guideline for contention when using PI5C680X

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Introduction

The PI5C6800 and PI5C6801 (figure 1) are 10-bit bus switches with low on-state resistance, ultra low quiescent power (0.2uA typical) and are hot swappable.

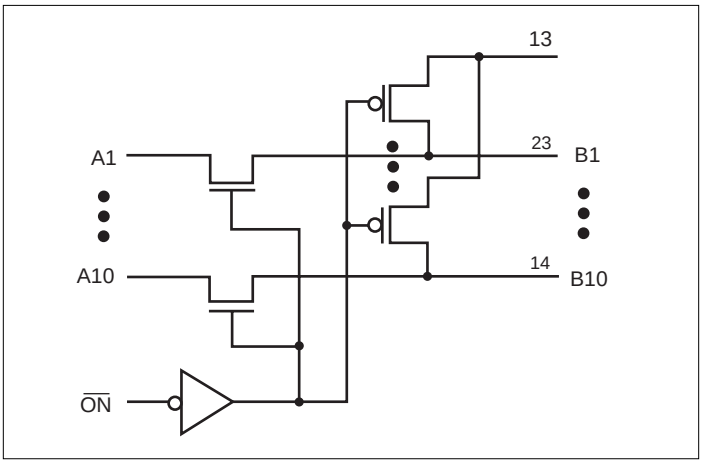

Figure 1. The logic diagram of PI5C6800 and PI5C6801

The design guideline for contention

When using PI5C680X as a 2:1 Mux in figure 2, the outputs of these two PI5C680X are connected together. If both of the PI5C680X switches were set to "on" state at the same time, a contention will occur and the signal high at input A will short to input B through these switches. Since the R-on resistance for each switch is only 5ohm, the contention current could damage these switches.

Conclusion

When using two PI5C680x switches as 2:1 Mux, avoid setting these two switches to the "on" state at the same time. If both switches are On then a contention will occur that might damage the system. The designer needs to verify that the enable pins to these two switches are complementary of each other so that only one switch will turn at any time.

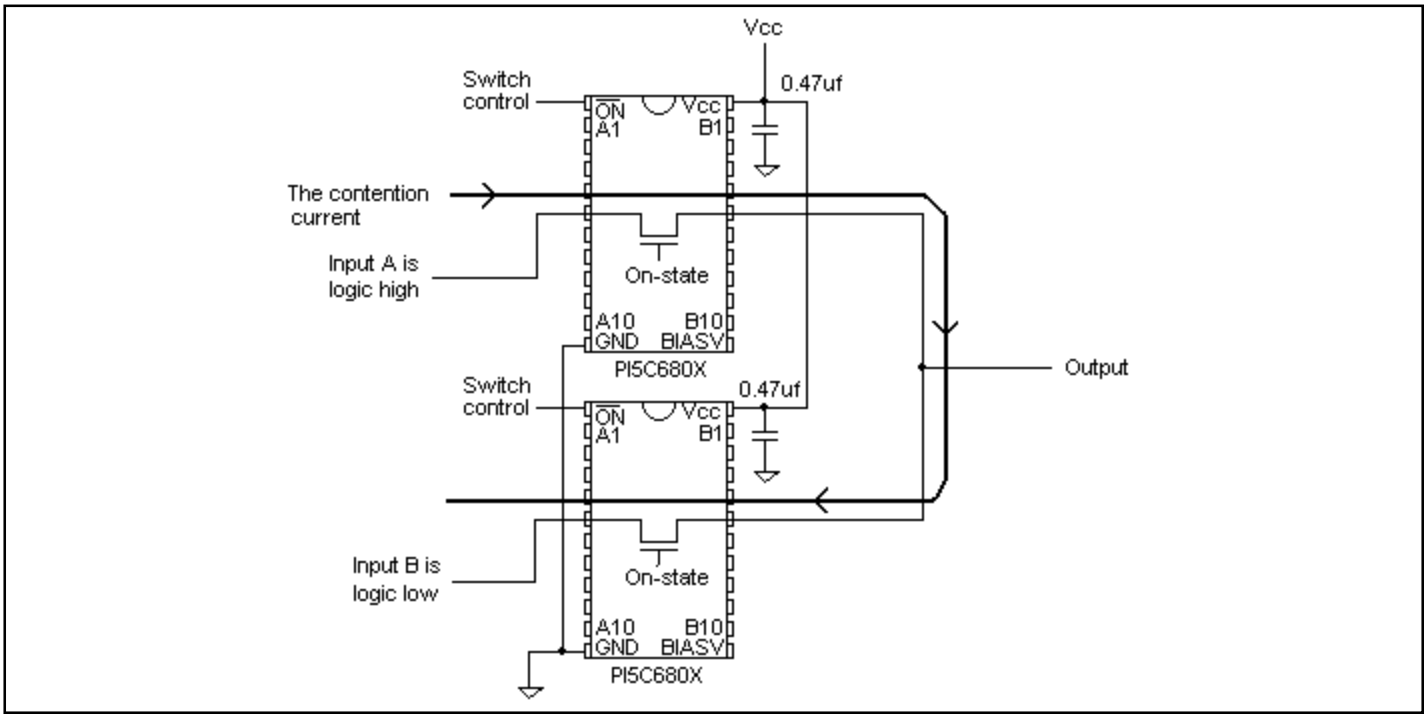

Figure 2. The Contention Situation when using PI5C680X Switches as 2:1 Mux