

S2080 Jitter Test Report 34 x 34 3.2 Gbps Differential Crosspoint Switch

APPLICATION NOTE

Introduction

This document is intended to assist customers in using AMCC's S2080 34 x 34 port 3.2 Gbps Differential Crosspoint Switch. Eye diagrams are presented showing jitter performance with only one input/output pair switching (best case crosstalk condition) and are contrasted with eye diagrams where all inputs and outputs are active (worst case crosstalk condition). This document should be used in conjunction with the S2080 product device specification. Contact your local AMCC Field Applications Engineer or Regional Sales Manager to discuss any questions or concerns you may have.

Test Data

Typical jitter data is presented for two cases: only one input/output pair active and for all inputs and outputs active. This shows the amount of jitter variation that can be expected due to crosstalk within the device. Results are summarized below in Table 1. For each case the data rate was varied between 1.0 Gbps and 4.0 Gbps. As expected, the performance is slightly degraded by crosstalk. In all cases, however, the eye opening is greater than 0.9 UI, even up to 4.0 Gbps.

Table 1. Jitter testing results for crosstalk and non crosstalk

Data Rate (Gbps)	Eye Opening (UI) No Crosstalk - only one input active, one output active	Eye Opening (UI) Crosstalk - all inputs and outputs active
1.0	0.993	0.988
1.5	0.993	0.970
2.5	0.975	0.963
3.2	0.965	0.942
4.0	0.936	0.932

The Test conditions were as follows:

Power supply voltage: 3.3 V
Temperature: 25 °C
Data Pattern: 2^7-1
S2080 Output Swing setting #6: 1400 mV

Eye diagrams are presented below. Figures 1a) through 1e) show the eye opening for the no crosstalk case. Figures 2a) through 2e) show the eye opening under crosstalk conditions (all inputs and outputs active).

Case 1: No crosstalk - only one input active, one output active.

Figure 1a. Eye diagram at 1.0 Gbps w/ no crosstalk.

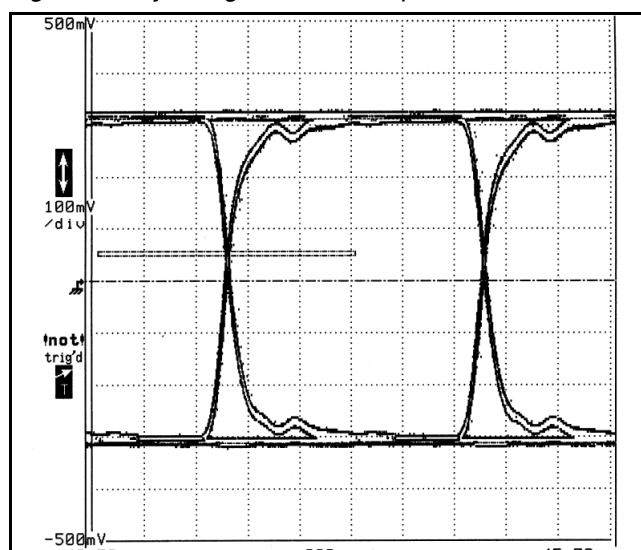


Figure 1b. Eye diagram at 1.5 Gbps w/ no crosstalk.

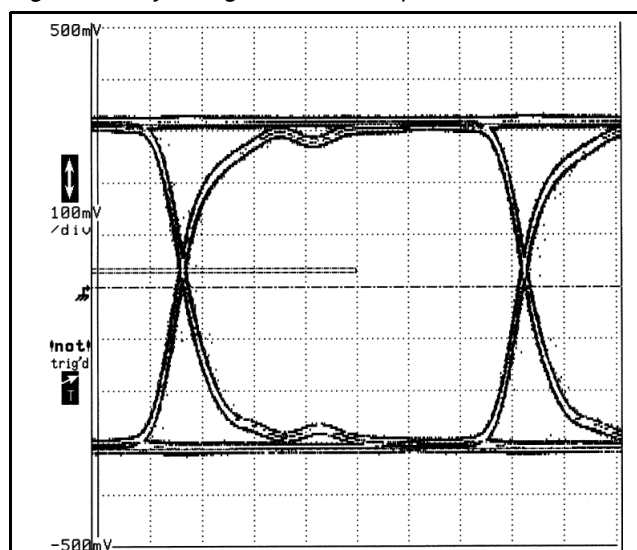


Figure 1c. Eye diagram at 2.5 Gbps w/ no crosstalk.

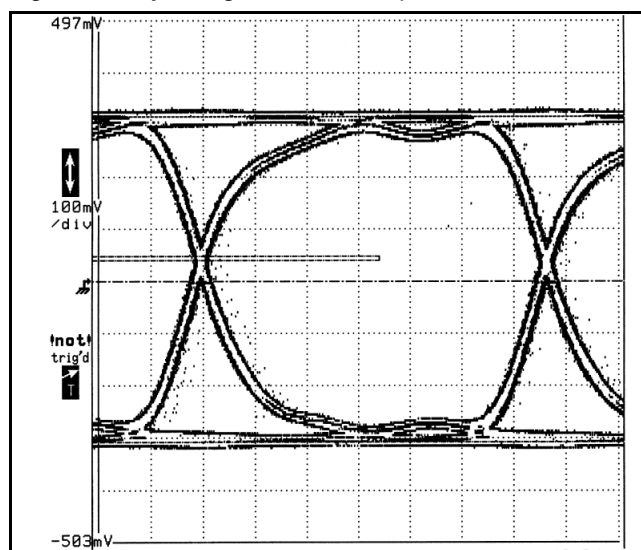


Figure 1d. Eye diagram at 3.2 Gbps w/ no crosstalk.

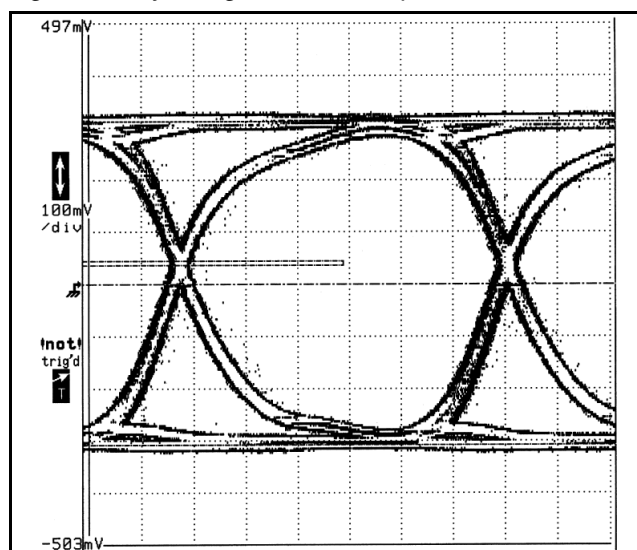
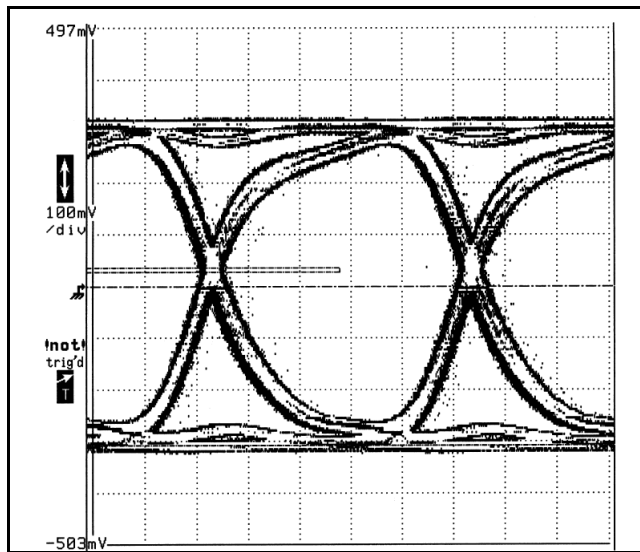


Figure 1e. Eye diagram at 4.0 Gbps w/ no crosstalk.



Case 2: Worst case crosstalk - all inputs and outputs active.

Figure 2a. Eye diagram at 1.0 Gbps w/ crosstalk.

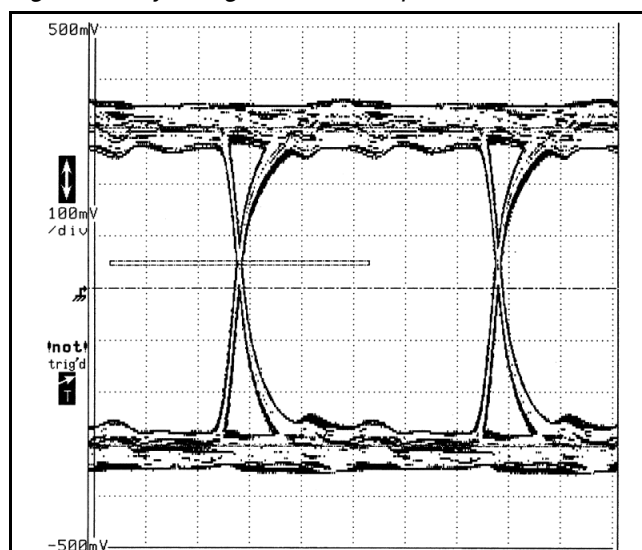


Figure 2b. Eye diagram at 1.5 Gbps w/ crosstalk.

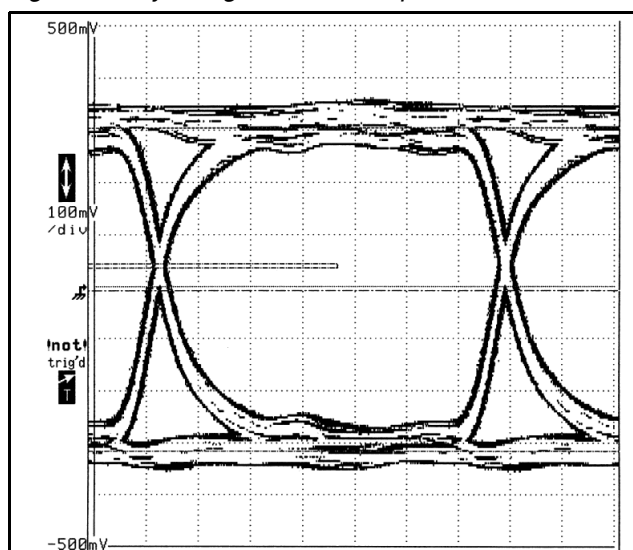


Figure 2c. Eye diagram at 2.5 Gbps w/ crosstalk.

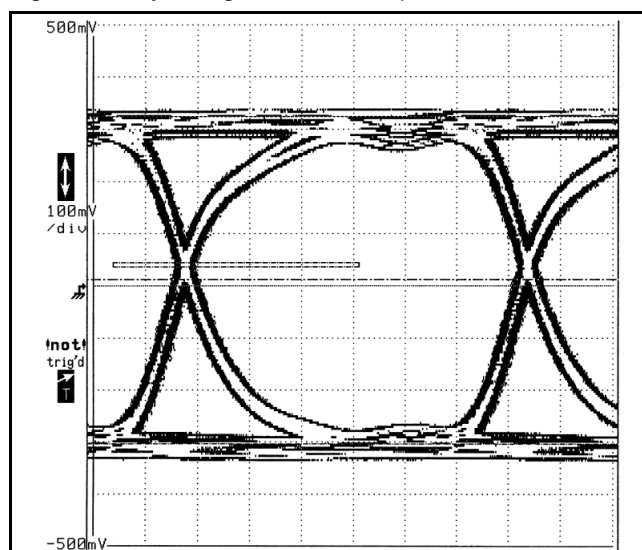


Figure 2d. Eye diagram at 3.2 Gbps w/ crosstalk.

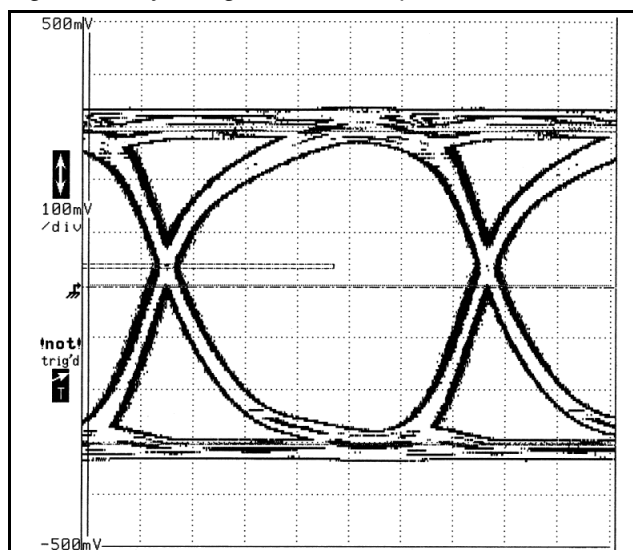
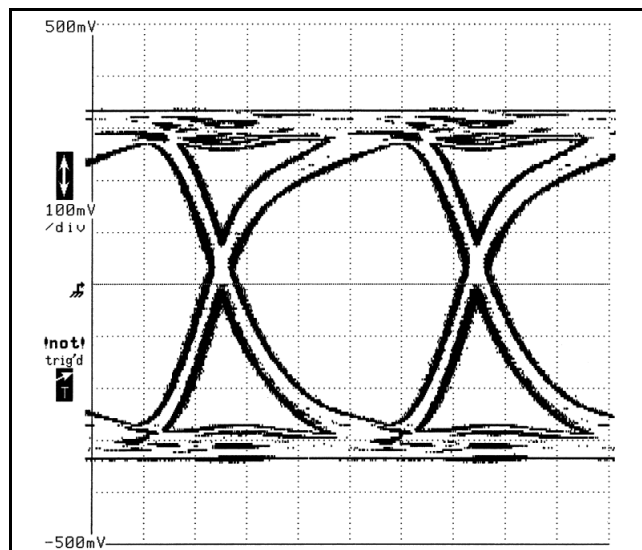


Figure 2e. Eye diagram at 4.0 Gbps w/ crosstalk.





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