SCF-133187-01-DA-R1
Single Ended Impedance Measurements

Justin McAllister
Samtec, Inc. – Harrisburg Design Center
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Objective:

Measure the differential trace impedances of a SCF-133187-01-DA-R1 flexible interconnect sample.

Method:

One sample was tested. The sample tested contains two Q strips, each with three banks. J1 consists of three terminals, two of which are QTH-060-01-X-D-A with the third being a QTH-040-01-X-D-DP-A. J2 consists of three sockets, two of which are QSH-060-01-X-D-A with the third being a QSH-040-01-X-D-DP-A. The impedance measurements were made on select traces from each of the six banks.

Figure 1: SCF-133187-01-DA-R1 sample, socket J1

All impedance measurements were made using coaxial test cables attached via SMA connections to a QXH case 2 (SE, various signal to ground ratios) Final Inch test board.

The recorded impedance measurements were made using a filter risetime of 100ps which has an equivalent BW≈3.5GHz.

Results:

Single Ended Impedance

Table I: J1; t_r = 100ps

J1			
Trace	Z_{Diff_Min} (Ω)	Z_{Diff_Max} (Ω)	Z_{Diff_Mean} (Ω)
57	51.3	61.2	55.7
58	50.1	52.6	50.7
73	53.9	60.3	56.6
82	50.8	55.4	52.2
105	52.3	63.7	59.3
134	51.2	54.8	52.5
141	54.2	63.1	58.4
176	49.9	53.8	51.3
Min	49.9	N/A	50.7
Max	N/A	63.7	59.3
Mean	N/A	N/A	54.6

Table II: J2; t_r = 100ps

J2			
Trace	Z_{Diff_Min} (Ω)	Z_{Diff_Max} (Ω)	Z_{Diff_Mean} (Ω)
57	50.7	53.9	51.5
58	52.5	62.2	55.7
73	51.3	52.3	51.8
82	53.5	62.6	57.0
105	51.9	53.7	52.4
134	53.7	61.8	57.1
141	51.3	53.0	51.7
176	53.9	64.6	58.0
Min	50.7	N/A	51.5
Max	N/A	64.6	58.0
Mean	N/A	N/A	54.4

Conclusion:

Assuming the single ended specification to be 50Ω ± 10% both J1 and J2 have traces that fail. The mean single ended impedances measured ranged from 50.7Ω to 59.3Ω.

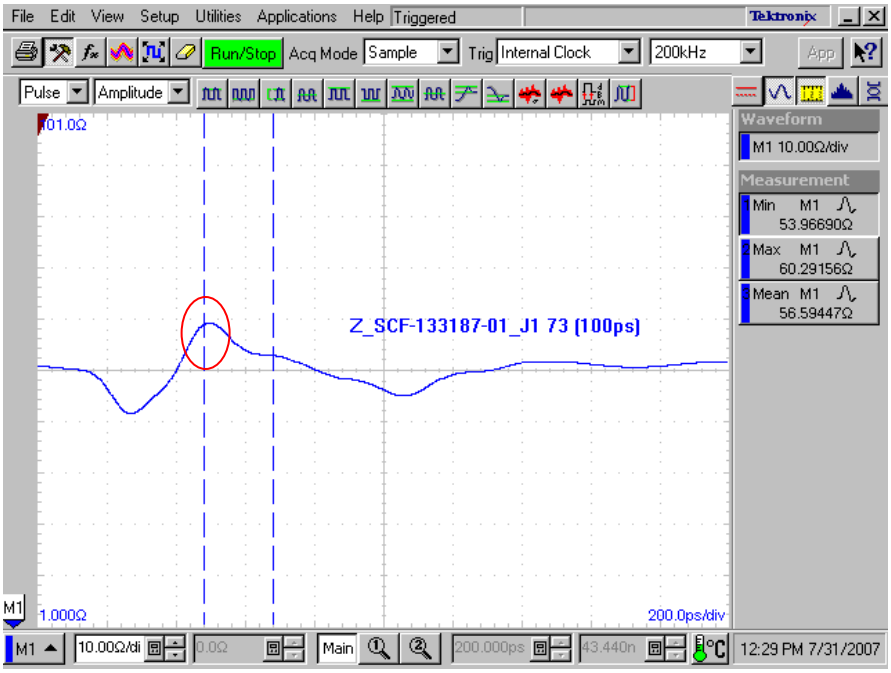

Figure 2: Typical Impedance Plot With BOR Not Under Ground Blade

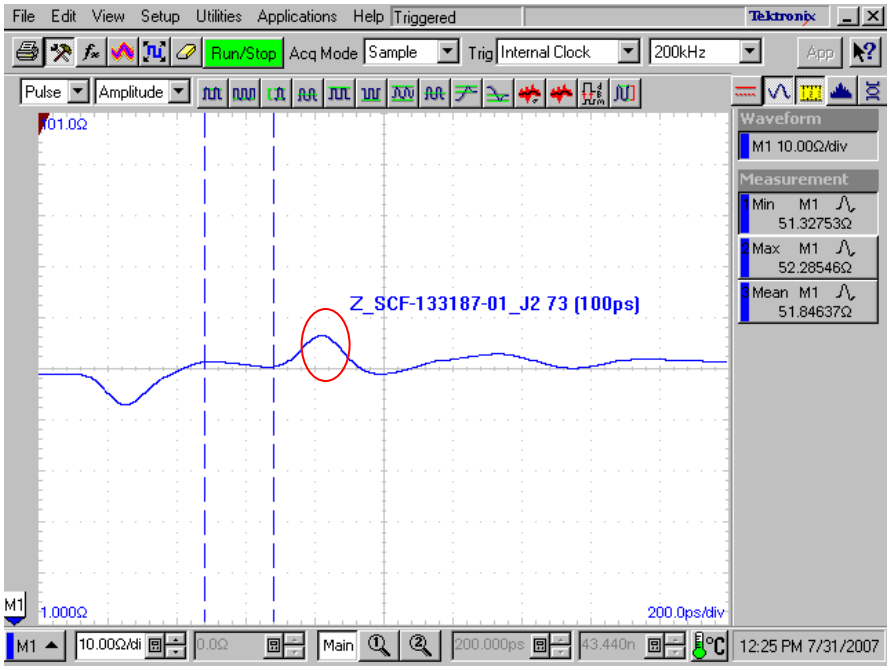

Figure 3: Typical Impedance Plot With BOR Under Ground Blade

Comments:

All traces that are routed under the ground blade of the attached connectors have high impedance at the footprint. This is most likely caused by the large inductive loop that is formed when the trace passes under the ground blade as the distance between signal and return path is increased. This inductive "spike" can be seen in Figure 2 at the front end, and although the signal rise time is degraded, it can also be seen on figure 3 at the end of the flex (both areas circled in red).