

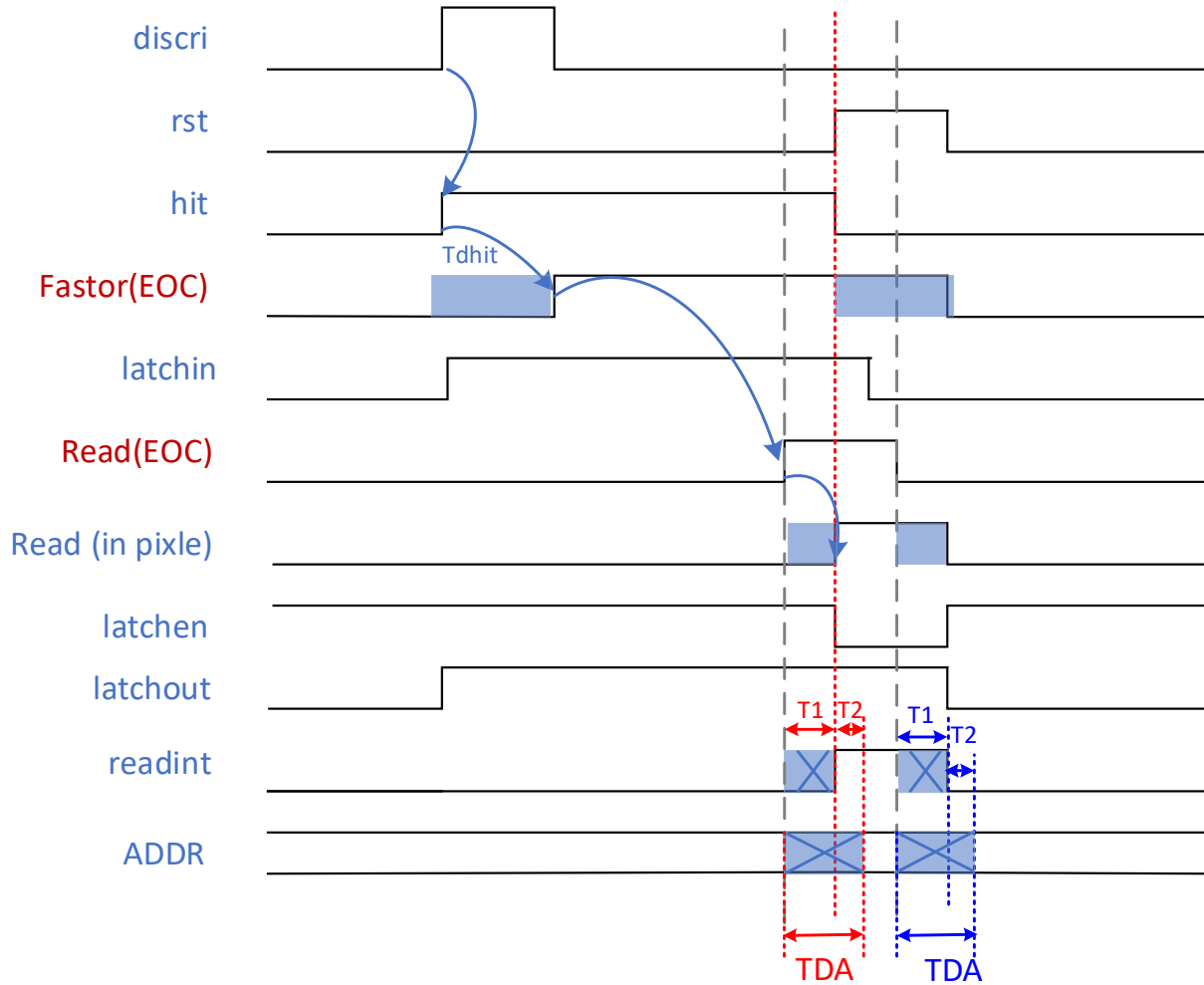


Discussion of Pixel Read Cycle

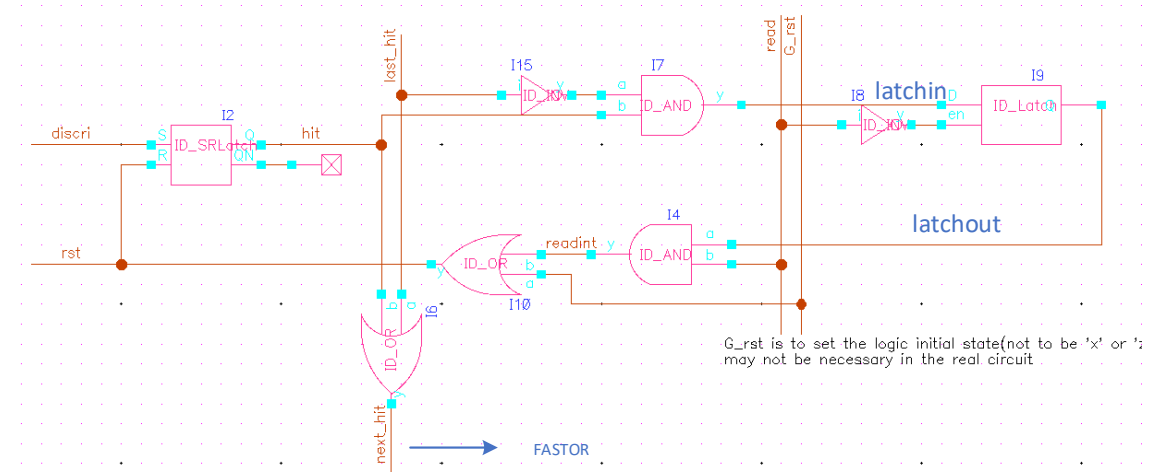
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2018.11.26

Pixel-digital



Timing sequence of signal read in Pixel



Digital read in Pixel

If $TDA < 40ns$, the cycle of read should be $50ns + 50ns$.

It requires $100ns$ for one pixel readout.



Satisfy Deadtime 500ns?

If the number of pixels need to be read out for double columns less than 5?

Evaluation1: The hit density is 120MHz/chip.

Evaluation 2: The average cluster size is 2.2 or 3 pixels.

For double column, 0.1172pixels/500ns

Hit pixel	Acumulated	Probabilty
0	0.889407	0.889407
1	0.993646	0.104239
2	0.999754	0.006108
3	0.999993	0.000239
4	1	6.99E-06
5	1	1.64E-07

Less than 5

cluster size average 2.2		
cluster size	累计概率	对应概率
0	0.110803	0.110803
1	0.35457	0.243767
2	0.622714	0.268144
3	0.819352	0.196639
4	0.927504	0.108151
5	0.97509	0.047587
6	0.992539	0.017448
7	0.998022	0.005484
8	0.99953	0.001508
9	0.999899	0.000369
10	0.99998	8.11E-05

cluster size average3		
cluster size	累计概率	对应概率
0	0.049787068	0.049787068
1	0.199148273	0.149361205
2	0.423190081	0.224041808
3	0.647231889	0.224041808
4	0.815263245	0.168031356
5	0.916082058	0.100818813
6	0.966491465	0.050409407
7	0.988095496	0.021604031
8	0.996197008	0.008101512
9	0.998897512	0.002700504
10	0.999707663	0.000810151

How to calculate the possibility of more than 5 pixels ?