Application Note 52

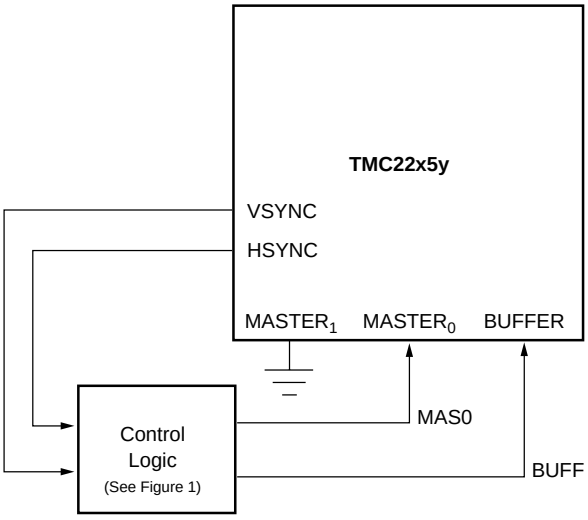
Configuring the TMC22x5y to Pass Closed Caption Data

This application note explains how to setup the TMC22x5y decoder to pass closed caption data.

The TMC22x5y decoder treats video lines 21 and 22, which could contain closed caption data, like active video. A simple solution is to use the master pins (88, 87) to set the decoder to simple (bandsplit) mode when lines 21 and 22 enter the decoder. Also, the buffer pin (50) can switch between the two buffer setups that control the different offsets and gains of the data. Table 1 shows the master decoder control options. This allows a change in Yoffset that can compensate for pedestal removal, the luma gain to be modified by approximately 92.5% , and Ugain and Vgain to be set to 0.

With the detection of VSYNC and counting HSYNC, control logic can generate the pulses for the master, and buffer pins on the TMC22x5y. The pulses should switch in the same relative positions inside the mixed blanking interval before and after active video (See Figures 1 and 2). Note that for a three line comb the data inside the decoder is delayed by one line. Therefore, the master and buffer control signals also need to be delayed by one line when entering the decoder. Figure 2 is the timing for passing closed caption data on video line 21.

Block Diagram



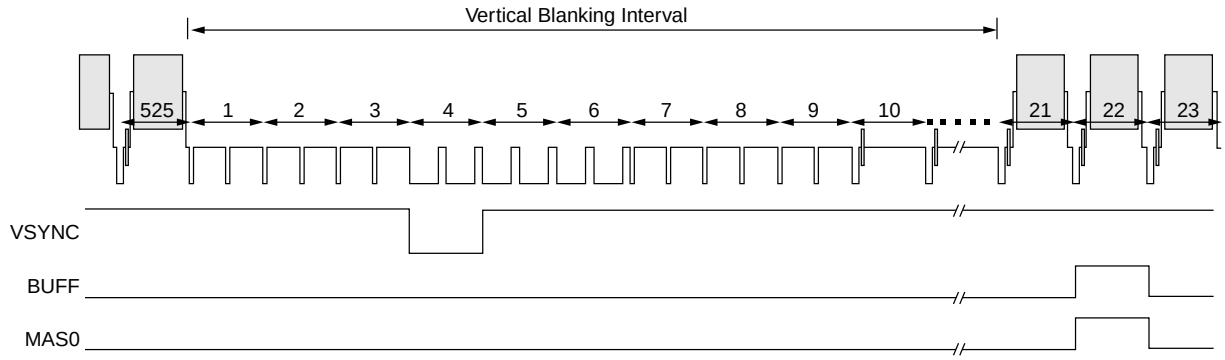


Figure 1. Relative timing for closed caption data on line 21

Table 1. Master decoder control

$MASTER_{1-0}$	Function
00	Adaptive comb decoder
01	Simple bandsplit decoder
10	Non-adaptive comb filter
11	Flat notched luma and simple bandsplit chroma

The following register map shows how to setup the decoder to take in NTSC composite and output NTSC YUV data while passing closed caption data. Note that buffer 1 has the parameters that will be applied to the closed caption data lines.

Register Map

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0-	D8	01	00	A1	20	28	00	10	40	00	34	00	80	04	64	08
1-	5A	56	2E	D2	23	3C	00	2C	1B	90	13	49	F0	01	00	00
2-	40	F8	E0	43	24	25	07	2C	0E	00	00	40	F0	01	00	00
3-	40	00	00	00	10	00	00	00	00	00	00	00	00	00	00	00

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