

Appendix A: VCS Memory Map

Hex Addr	Name	Bits Used 76543210	Description
00	VSYNC	.....x.	Vertical Sync
01	VLANK	xx.....x.	Vertical Blank / Latched Port Enable
02	WSYNC	strobe	Wait for Horizontal Blank
04	NUSIZ0	..xxxxxx	Number-size Player/Missile 0
05	NUSIZ1	..xxxxxx	Number-size Player/Missile 1
06	COLUP0	xxxxxxx.	Color – Player/Missile 0
07	COLUP1	xxxxxxx.	Color – Player/Missile 1
08	COLUPF	xxxxxxx.	Color – Playfield/Ball
09	COLUBK	xxxxxxx.	Color – Background
0A	CTRLPF	..xx.xxx	Control Playfield, Ball
0B	REFP0	....x...	Reflect Player 0
0C	REFP1	....x...	Reflect Player 1
0D	PF0	xxxx....	Playfield 0 (pixels 0-3)
0E	PF1	xxxxxxxx	Playfield 1 (pixels 4-11)
0F	PF2	xxxxxxxx	Playfield 2 (pixels 12-19)
10	RESP0	strobe	Reset Player 0
11	RESP1	strobe	Reset Player 1
12	RESM0	strobe	Reset Missile 0
13	RESM1	strobe	Reset Missile 1
14	RESBL	strobe	Reset Ball
15	AUDC0	....xxxx	Audio Control Channel 0
16	AUDC1	....xxxx	Audio Control Channel 1
17	AUDF0	....xxxx	Audio Frequency Channel 0
18	AUDF1	....xxxx	Audio Frequency Channel 1
19	AUDV0	....xxxx	Audio Volume Channel 0
1A	AUDV1	....xxxx	Audio Volume Channel 1
1B	GRP0	xxxxxxxx	Graphics Bitmap Player 0
1C	GRP1	xxxxxxxx	Graphics Bitmap Player 1

Hex Addr	Name	Bits Used 76543210	Description
1D	ENAM0	.....x.	Enable Missile 0
1E	ENAM1	.....x.	Enable Missile 1
1F	ENABL	.....x.	Enable Ball
20	HMP0	xxxx....	Horizontal Motion Player 0
21	HMP1	xxxx....	Horizontal Motion Player 1
22	HMM0	xxxx....	Horizontal Motion Missile 0
23	HMM1	xxxx....	Horizontal Motion Missile 1
24	HMBL	xxxx....	Horizontal Motion Ball
25	VDELP0	.....x	Vertical Delay Player 0
26	VDELP1	.....x	Vertical Delay Player 1
27	VDELBL	.....x	Vertical Delay Ball
28	RESMP0	.....x.	Reset Missile 0 to Player 0
29	RESMP1	.....x.	Reset Missile 1 to Player 1
2A	HMOVE	strobe	Apply Horizontal Motion (fine offsets)
2B	HMCLR	strobe	Clear Horizontal Motion Registers
2C	CXCLR	strobe	Clear Collision Latches
30	CXM0P	xx.....	Collision M0-P1, M0-P0
31	CXM1P	xx.....	Collision M1-P0, M1-P1
32	CXP0FB	xx.....	Collision P0-PF, P0-BL
33	CXP1FB	xx.....	Collision P1-PF, P1-BL
34	CXM0FB	xx.....	Collision M0-PF, M0-BL
35	CXM1FB	xx.....	Collision M1-PF, M1-BL
36	CXBLPF	x.....	Collision BL-PF
37	CXPPMM	xx.....	Collision P0-P1, M0-M1
38	INPT0	x.....	Dumped Input Port 0
39	INPT1	x.....	Dumped Input Port 1
3A	INPT2	x.....	Dumped Input Port 2
3B	INPT3	x.....	Dumped Input Port 3
3C	INPT4	x.....	Latched Input Port 4
3D	INPT5	x.....	Latched Input Port 5
80-FF	—	xxxxxxxx	128 Bytes RAM
0280	SWCHA	xxxxxxxx	Joysticks/Controllers

Hex Addr	Name	Bits Used 76543210	Description
0281	SWACNT	xxxxxxx	Port A DDR (Data Direction Register)
0282	SWCHB	xxxxxxx	Console Switches
0283	SWBCNT	xxxxxxx	Port B DDR (hardwired as input)
0284	INTIM	xxxxxxx	Timer Output
0294	TIM1T	xxxxxxx	Set 1 Cycle Timer
0295	TIM8T	xxxxxxx	Set 8 Cycle Timer
0296	TIM64T	xxxxxxx	Set 64 Cycle Timer
0297	T1024T	xxxxxxx	Set 1024 Cycle Timer

VCS Memory Map Table