

VIC 20 / Commodore 64 Memory Map

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There are some differences between the 20 and 64 as indicated. Zero Page contents at power-up by Richard Evers.

Location		Contents			Description
Hex	Dec	VIC Hex Dec	C64 Hex Dec		
00-02	0-2	0 4C	76 2F	47	USR Jump. 64: Chip directional reg.
		1 48	72 37	55	64: Chip I/O; memory & tape control
		2 D2	210 33	51	20: JMP \$D248. 64: Unused
03-04	3-4	3 AA	170 AA	170	Float-Fixed vector
		4 D1	209 B1	177	
05-06	5-6	5 91	145 91	145	Fixed-Float vector
		6 D3	211 B3	179	
07	7	7 22	34 22	34	Search character
08	8	8 22	34 22	34	Scan-quotes flag
09	9	9 00	0 00	0	TAB column save
0A	10	10 00	0 00	0	0 = LOAD, 1 = VERIFY
0B	11	11 4C	76 4C	76	Input buffer pointer/# subscripts
0C	12	12 00	0 00	0	Default DIM flag
0D	13	13 00	0 00	0	Type: FF = string, 00 = numeric
0E	14	14 00	0 00	0	Type: 80 = integer, 00 = floating pt
0F	15	15 00	0 00	0	DATA scan/LIST quote/memory flag
10	16	16 00	0 00	0	Subscript/FNx flag
11	17	17 00	0 00	0	0 = INPUT; \$40 = GET; \$98 = READ
12	18	18 00	0 00	0	ATN sign/Comparison eval. flag
13	19	19 05	5 05	5	Current I/O prompt flag
14-15	20-21	20 14	20 14	20	Integer value
		21 00	0 00	0	
16	22	22 19	25 19	25	Pointer: Temporary string stack
17-18	23-24	23 16	22 16	22	Last temp string vector
		24 00	0 00	0	
19-21	25-33	25 02	25 02	2	Stack for temporary strings
		26 FE	254 FE	254	
		27 1D	29 9F	159	
		28 00	0 00	0	
		29 00	0 00	0	
		30 00	0 00	0	
		31 00	0 1E	30	
		32 00	0 00	0	
		33 00	0 00	0	
22-25	34-37	34 05	5 05	5	Utility pointer area
		35 10	16 08	8	
		36 F3	243 F3	243	
		37 01	1 01	1	
26-2A	38-42	38 00	0 00	0	Product area for multiplication
		39 00	0 00	0	
		40 00	0 00	0	
		41 00	0 00	0	
		42 00	0 00	0	
2B-2C	43-44	43 01	1 01	1	Pointer: Start of BASIC
		44 10	16 08	8	
2D-2E	45-46	45 03	3 03	3	Pointer: Start of Variables
		46 10	16 08	8	
2F-30	47-48	47 0A	10 0A	10	Pointer: Start of Arrays
		48 10	16 08	8	
31-32	49-50	49 0A	10 0A	10	Pointer: End of Arrays
		50 10	16 08	8	
33-34	51-52	51 00	0 00	0	Pointer: String Storage (moving down)
		52 1E	30 A0	160	
35-36	53-54	53 00	0 00	0	Pointer: String Utility
		54 1E	30 A0	160	
37-38	55-56	55 00	0 00	0	Pointer: Limit of Memory
		56 1E	30 A0	160	
39-3A	57-58	57 00	0 00	0	Current BASIC line number
		58 FF	255 FF	255	
3B-3C	59-60	59 00	0 00	0	Previous BASIC line number
		60 00	0 00	0	
3D-3E	61-62	61 3D	61 00	0	Pointer: BASIC statement for CONT
		62 00	0 00	0	
3F-40	63-64	63 00	0 00	0	Current DATA line number
		64 00	0 00	0	
41-42	65-66	65 00	0 00	0	Current DATA address
		66 10	16 08	8	
43-44	67-68	67 00	0 00	0	Input vector
		68 00	0 00	0	
45-46	69-70	69 41	65 41	65	Current variable name
		70 00	0 00	0	
47-48	71-72	71 05	5 05	5	Current variable address
		72 10	16 08	8	
49-4A	73-74	73 05	5 05	5	Variable pointer for FOR/NEXT
		74 10	16 08	8	
4B-4C	75-76	75 00	0 00	0	Y-save; op-save; BASIC pointer save
		76 00	0 00	0	
4D	77	77 00	0 00	0	Comparison symbol accumulator
4E-53	78-83	78 00	0 00	0	Misc. work area, pointers, etc.
		79 00	0 00	0	
		80 00	0 00	0	
		81 00	0 00	0	

Location		Contents			Description
Hex	Dec	VIC Hex Dec	C64 Hex Dec		
		82 00	0 00	0	
		83 03	3 03	3	
54-56	84-86	84 4C	76 4C	76	Jump vector for functions
		85 0D	13 0D	13	
		86 D8	216 B8	184	
57-60	87-96	87 00	0 00	0	Misc. numeric work area
		88 0A	10 0A	10	
		89 1F	15 07	7	
		90 03	3 03	3	
		91 1F	15 07	7	
		92 00	0 00	0	
		93 00	0 00	0	
		94 00	0 00	0	
		95 03	3 03	3	
		96 10	16 08	8	
61	61	97 87	135 87	135	Accum#1: Exponent
62-65	62	98-101	98 00	0	Accum#1: Mantissa
		99 00	0 00	0	
		100 00	0 00	0	
		101 65	101 65	101	
66	66	102 4C	76 4C	76	Accum#1: Sign
67	67	103 00	0 00	0	Series evaluation constant pointer
68	68	104 00	0 00	0	Accum#1 hi-order (overflow)
69-6E	69	105-110	105 00	0	Accum#2: Exponent
		106 00	0 00	0	Accum#2: Mantissa
		107 00	0 00	0	
		108 00	0 00	0	
		109 00	0 00	0	
		110 00	0 00	0	Accum#2: Sign
6F	6F	111 00	0 00	0	Sign comparison, Acc#1 vs #2
70	70	112 00	0 00	0	Accum#1 lo-order (rounding)
71-72	71	113-114	113 01	1	Cassette buff len/Series pointer
		114 01	1 01	1	
73-8A	73	115-138	115 E6	230	CHRGET subroutine; get BASIC char
		116 7A	122 7A	122	;INC \$7A
		117 D0	208 D0	208	;BNE \$0079
		118 02	2 02	2	
		119 E6	230 E6	230	;INC \$7B
		120 7B	123 7B	123	
		121 AD	173 AD	173	;LDA \$022D 64: LDA \$022C
		122 2D	45 2C	44	
		123 02	2 02	2	
		124 C9	201 C9	201	;CMP #\$3A
		125 3A	58 3A	58	
		126 B0	176 B0	176	;BCS \$008A
		127 0A	10 0A	10	
		128 C9	201 C9	201	;CMP #\$20
		129 20	32 20	32	
		130 F0	240 F0	240	;BEQ \$0073
		131 EF	239 EF	239	
		132 38	56 38	56	;SEC
		133 E9	233 E9	233	;SBC #\$30
		134 30	48 30	48	
		135 38	56 38	56	;SEC
		136 E9	233 E9	233	;SBC #\$D0
		137 D0	208 D0	208	
		138 60	96 60	96	;RTS
7A-7B	7A	122-123	122 2D	45	BASIC pointer (within subrtn)
		123 02	2 02	2	
8B-8F	8B	139-143	139 80	128	RND seed value
		140 4F	79 4F	79	
		141 C7	199 C7	199	
		142 52	82 52	82	
		143 58	88 58	88	
90	90	144 00	0 00	0	Status word ST
91	91	145 FF	255 FF	255	Keyswitch PIA: STOP and RVS flags
92	92	146 00	0 00	0	Timing constant for tape
93	93	147 00	0 00	0	LOAD = 0, VERIFY = 1
94	94	148 55	85 55	85	Serial output: deferred char flag
95	95	149 FF	255 FF	255	Serial deferred character
96	96	150 00	0 00	0	Tape EOT received
97	97	151 10	16 00	0	Register save
98	98	152 01	1 01	1	How many open files
99	99	153 00	0 00	0	Input device, normally 0
9A	9A	154 08	8 08	8	Output CMD device, normally 3
9B	9B	155 00	0 00	0	Tape character parity
9C	9C	156 00	0 00	0	Byte-received flag
9D	9D	157 80	128 80	128	Direct = \$80/RUN = 0 output control
9E	9E	158 00	0 00	0	Tp Pass 1 error log/char buffer
9F	9F	159 00	0 00	0	Tp Pass 2 err log corrected
A0-A2	A0	160-162	160 00	0	Jifty Clock HML
		161 25	37 3B	59	

Location		Contents				Description		
Hex	Dec	VIC Hex Dec	C64 Hex Dec					
A3	A3	163	163	55	85	55	85	Serial bit count/EOI flag
A4	A4	164	164	00	00	00	00	Cycle count
A5	A5	165	165	00	00	00	00	Countdown, tape write/bit count
A6	A6	166	166	00	00	00	00	Tape buffer pointers
A7	A7	167	167	00	00	00	00	Tp Wrt ldr count/Rd pass/inbit
A8	A8	168	168	00	00	00	00	Tp Wrt new byte/Rd error/inbit cnt
A9	A9	169	169	00	00	00	00	Wrt start bit/Rd bit err/stbit
AA	AA	170	170	00	00	00	00	Tp Scan;Cnt;Ld;End;/byte assy
AB	AB	171	171	00	00	00	00	Wr lead length/Rd checksum/parity
AC-AD	AC	172-173	172	00	00	00	00	Pointer: tape bufr, scrolling
AD	AD	173	173	00	00	00	00	
AE-AF	AE	174-175	174	00	00	00	00	Tape end adds/End of program
AF	AF	175	175	00	00	00	00	
B0-B1	B0	176-177	176	00	00	00	00	Tape timing constants
B1	B1	177	177	00	00	00	00	
B2-B3	B2	178-179	178	3C	60	3C	60	Pointer: Start of Tape Buffer
B3	B3	179	179	03	3	03	3	
B4	B4	180	180	00	00	00	00	1 = Tp timer enabled; bit count
B5	B5	181	181	00	00	00	00	Tp EOT/RS232 next bit to send
B6	B6	182	182	00	00	00	00	Read character error/outbyte buf
B7	B7	183	183	11	17	10	16	* characters in file name
B8	B8	184	184	05	5	05	5	Current logical file
B9	B9	185	185	65	101	65	101	Current secndy address
BA	BA	186	186	08	8	08	8	Current device
BB-BC	BB	187-188	187	EF	239	F0	240	Pointer to file name
BC	BC	188	188	1D	29	9F	159	
BD	BD	189	189	00	00	00	00	Wr shift word/Rd input char
BE	BE	190	190	00	00	00	00	* blocks remaining to Wr/Rd
BF	BF	191	191	00	00	00	00	Serial word buffer
C0	C0	192	192	00	00	00	00	Tape motor interlock
C1-C2	C1	193-194	193	00	00	00	00	I/O start address
C2	C2	194	194	20	32	A0	160	
C3-C4	C3	195-196	195	6D	109	30	48	Kernal setup pointer
C4	C4	196	196	FD	253	FD	253	
C5	C5	197	197	40	64	40	64	Last key pressed
C6	C6	198	198	00	00	00	00	* chars in keybd buffer
C7	C7	199	199	00	00	00	00	Screen reverse flag
C8	C8	200	200	4A	74	49	73	End-of-line for input pointer
C9-CA	C9	201-202	201	04	4	03	3	Input cursor log (row, column)
CA	CA	202	202	4A	74	49	73	
CB	CB	203	203	40	64	40	64	Which key: 64 if no key
CC	CC	204	204	01	1	01	1	0 = flash cursor
CD	CD	205	205	0D	13	11	17	Cursor timing countdown
CE	CE	206	206	20	32	20	32	Character under cursor
CF	CF	207	207	00	00	00	00	Cursor in blink phase
D0	D0	208	208	00	00	00	00	Input from screen/from keyboard

Location		Contents				Description		
Hex	Dec	VIC Hex Dec	C64 Hex Dec					
D1-D2	D1	209-210	209	C6	198	40	64	Pointer to screen line
D2	D2	210	210	1E	30	05	5	
D3	D3	211	211	00	00	00	00	Position of cursor on above line
D4	D4	212	212	00	00	00	00	0 = direct cursor, else programmed
D5	D5	213	213	15	21	27	39	Current screen line length
D6	D6	214	214	09	9	08	8	Row where cursor lives
D7	D7	215	215	0D	13	0D	13	Last inkey/checksum/buffer
D8	D8	216	216	00	00	00	00	* of INSERTS outstanding
D9-F0	D9	217-240	217	9E	158	84	132	Screen line link table
DA	DA	218	218	9E	158	84	132	
DB	DB	219	219	9E	158	84	132	
DC	DC	220	220	9E	158	84	132	
DD	DD	221	221	9E	158	84	132	
DE	DE	222	222	9E	158	84	132	
DF	DF	223	223	1E	30	84	132	
E0	E0	224	224	1E	30	05	5	
E1	E1	225	225	1E	30	85	133	
E2	E2	226	226	9E	158	85	133	
E3	E3	227	227	9E	158	85	133	
E4	E4	228	228	9E	158	85	133	
E5	E5	229	229	9F	159	85	133	
E6	E6	230	230	9F	159	86	134	
E7	E7	231	231	9F	159	86	134	
E8	E8	232	232	9F	159	86	134	
E9	E9	233	233	9F	159	86	134	
EA	EA	234	234	9F	159	86	134	
EB	EB	235	235	9F	159	86	134	
EC	EC	236	236	9F	159	86	134	
ED	ED	237	237	9F	159	87	135	
EE	EE	238	238	9F	159	87	135	
EF	EF	239	239	9F	159	87	135	
F0	F0	240	240	9F	159	87	135	
F1	F1	241	241	FF	255	87	135	Dummy screen link
F2	F2	242	242	08	8	87	135	Screen row marker
F3-F4	F3	243-244	243	6E	110	F0	240	Screen colour pointer
F4	F4	244	244	96	150	D8	216	
F5-F6	F5	245-246	245	5E	94	81	129	Keyboard pointer
F6	F6	246	246	EC	236	EB	235	
F7-F8	F7	247-248	247	00	00	00	00	RS-232 Rcv pntr
F8	F8	248	248	00	00	00	00	
F9-FA	F9	249-250	249	00	00	00	00	RS-232 Tx pntr
FA	FA	250	250	00	00	00	00	
FB	FB	251	251	00	00	00	00	Not Known
FC	FC	252	252	00	00	00	00	Not Known
FD	FD	253	253	00	00	00	00	Not Known
FE	FE	254	254	00	00	00	00	Not Known
FF	FF	255	255	00	00	20	32	Start of Floating to ASCII Work Area

00FF-010A	256-266	Floating to ASCII work area
0100-013E	256-318	Tape error log
0100-01FF	256-511	Processor stack area
0200-0258	512-600	BASIC input buffer
0259-0262	601-610	Logical file table
0263-026C	611-620	Device number table
026D-0276	621-630	Sec address table
0277-0280	631-640	Keybd buffer
0281-0282	641-642	Start of BASIC Memory
0283-0284	643-644	Top of BASIC Memory
0285	645	Serial bus timeout flag
0286	646	Current colour code
0287	647	Colour under cursor
0288	648	Screen memory page
0289	649	Max size of keybd buffer
028A	650	Repeat all keys
028B	651	Repeat speed counter
028C	652	Repeat delay counter
028D	653	Keyboard Shift/Control flag
028E	654	Last shift pattern
028F-0290	655-656	Keyboard table setup pntr
0291	657	Keyboard shift mode
0292	658	0 = scroll enable
0293	659	RS-232 control reg
0294	660	RS-232 command reg

0295-0296	661-662	* Commodore 64 only
0297	663	Bit timing
0298	664	RS-232 status
0299-029A	665-666	RS-232 speed/code
029B	667	RS232 receive pointer
029C	668	RS232 input pointer
029D	669	RS232 transmit pointer
029E	670	RS232 output pointer
029F-02A0	671-672	IRQ save during tape I/O
02A1	673	CIA 2 (NMI) Interrupt control*
02A2	674	CIA 1 Timer A control log *
02A3	675	CIA 1 Interrupt log *
02A4	676	CIA 1 Timer A enabled flag *
02A5	677	Screen row marker *
02C0-02FE	704-766	(Sprite 11) *
0300-0301	768-769	Error message link
0302-0303	770-771	BASIC warm start link
0304-0305	772-773	Crunch BASIC tokens link
0306-0307	774-775	Print tokens link
0308-0309	776-777	Start new BASIC code link
030A-030B	778-779	Get arithmetic element link
030C	780	SYS A-reg save
030D	781	SYS X-reg save
030E	782	SYS Y-reg save

030F	783	SYS status reg save
0310-0312	784-785	USR function jump
0314-0315	788-789	Hardware interrupt vector
0316-0317	790-791	Break interrupt vector
0318-0319	792-793	NMI interrupt vector
031A-031B	794-795	OPEN vector
031C-031D	796-797	CLOSE vector
031E-031F	798-799	Set-input vector
0320-0321	800-801	Set-output vector
0322-0323	802-803	Restore I/O vector
0324-0325	804-805	INPUT vector
0326-0327	806-807	Output vector
0328-0329	808-809	Test-STOP vector
032A-032B	810-811	GET vector
032C-032D	812-813	Abort I/O vector
032E-032F	814-815	Warm start vector
032E-032F	814-815	USR vector
0330-0331	816-817	LOAD link
0332-0333	818-819	SAVE link
033C-03FB	828-1019	Cassette buffer
0340-037E	832-894	(Sprite 13)
0380-03BE	896-958	(Sprite 14)
03C0-03FE	960-1022	(Sprite 15)

VIC 20		
0400-0FFF	1024-4095	3K RAM expansion area
1000-1FFF	4096-8191	Normal BASIC memory
1E00-1FFF	7680-8185	Normal Screen memory
1000-11F9	4096-4601	Screen memory w/expansion
1200-	4608-	BASIC memory w/expansion
2000-7FFF	8192-32767	Memory expansion area
8000-8FFF	32768-36863	Character bit maps
9000-900F	36864-36879	Video Interface Chip
9110-912F	37136-37151	VIA Interface - NMI
9120-912F	37152-37167	VIA Interface - IRQ
9400-95FF	37888-38399	Alternate Colour Nybble area
9600-97FF	38400-38911	Main Colour Nybble area
A000-BFFF	40960-49151	Plug-in ROM area
C000-FFFF	49152-65535	ROM: BASIC and Operating System
FF8A-FFFF	65418-65525	Jump Table (Kernal)

Commodore 64		
0400-07F7	1024-2039	Screen memory (default)
07F8-07FF	2040-2047	Sprite Pointers (default)
0800-9FFF	2048-40959	BASIC RAM memory
8000-9FFF	32768-40959	Alternate: ROM plug-in area
A000-BFFF	40960-49151	ROM: BASIC
A000-BFFF	49060-49151	Alternate: RAM
C000-CFFF	49152-53247	RAM memory, including alternate
D000-D02E	53248-53294	Video Chip (6566)
D400-D41C	54272-54300	Sound Chip (6581 SID)
D800-DBFF	55296-56319	Color nybble memory
DC00-DC0F	56320-56335	Interface chip 1, IRQ (6526 CIA)
DD00-DD0F	56576-56591	Interface chip 2, NMI (6526 CIA)
D000-DFFF	53248-53294	Alternate: Character set
E000-FFFF	57344-65535	ROM: Operating System
E000-FFFF	57344-65535	Alternate: RAM