

---

# The Friendly Computer

---

## Technical Manual

---

Model VIC-20

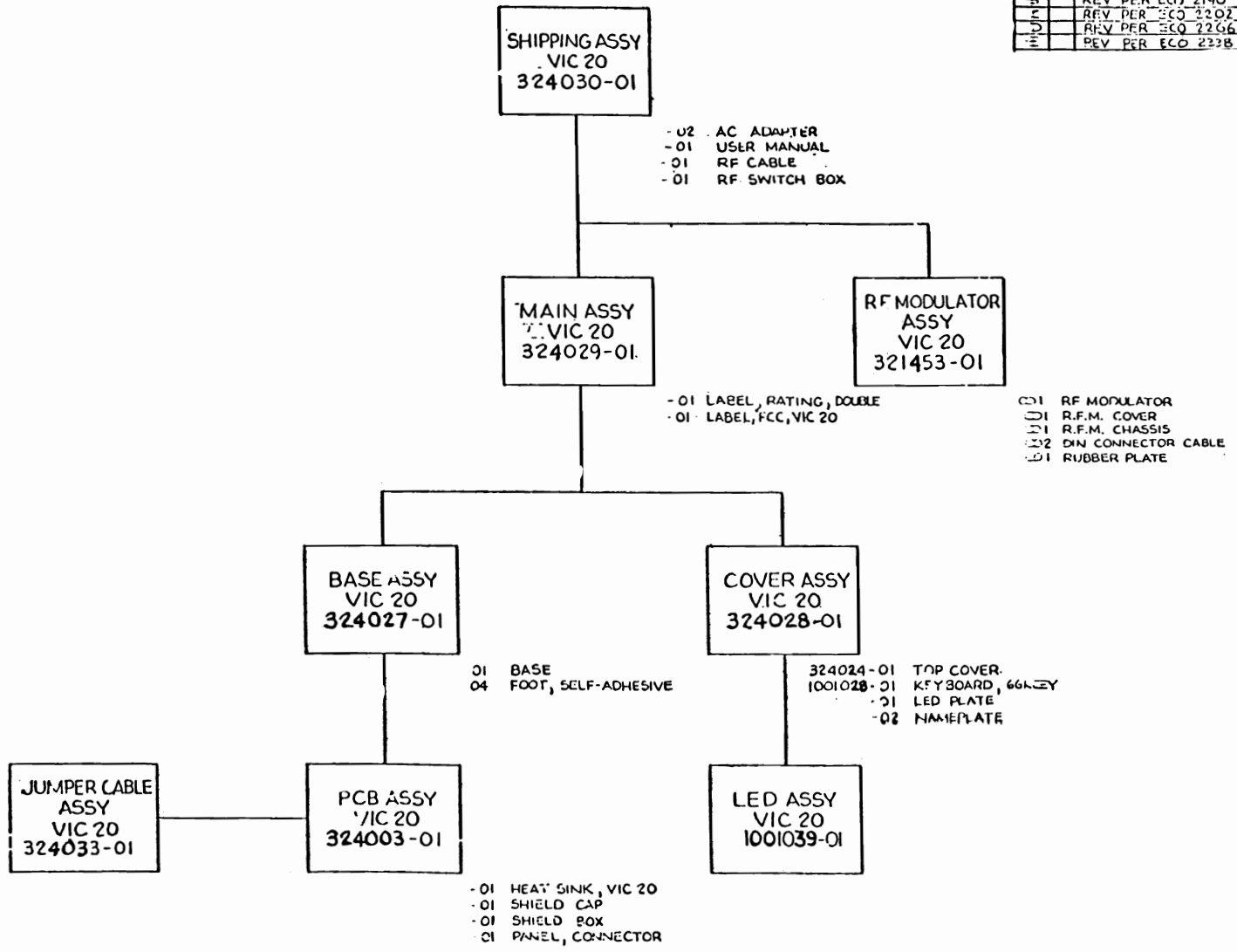
---



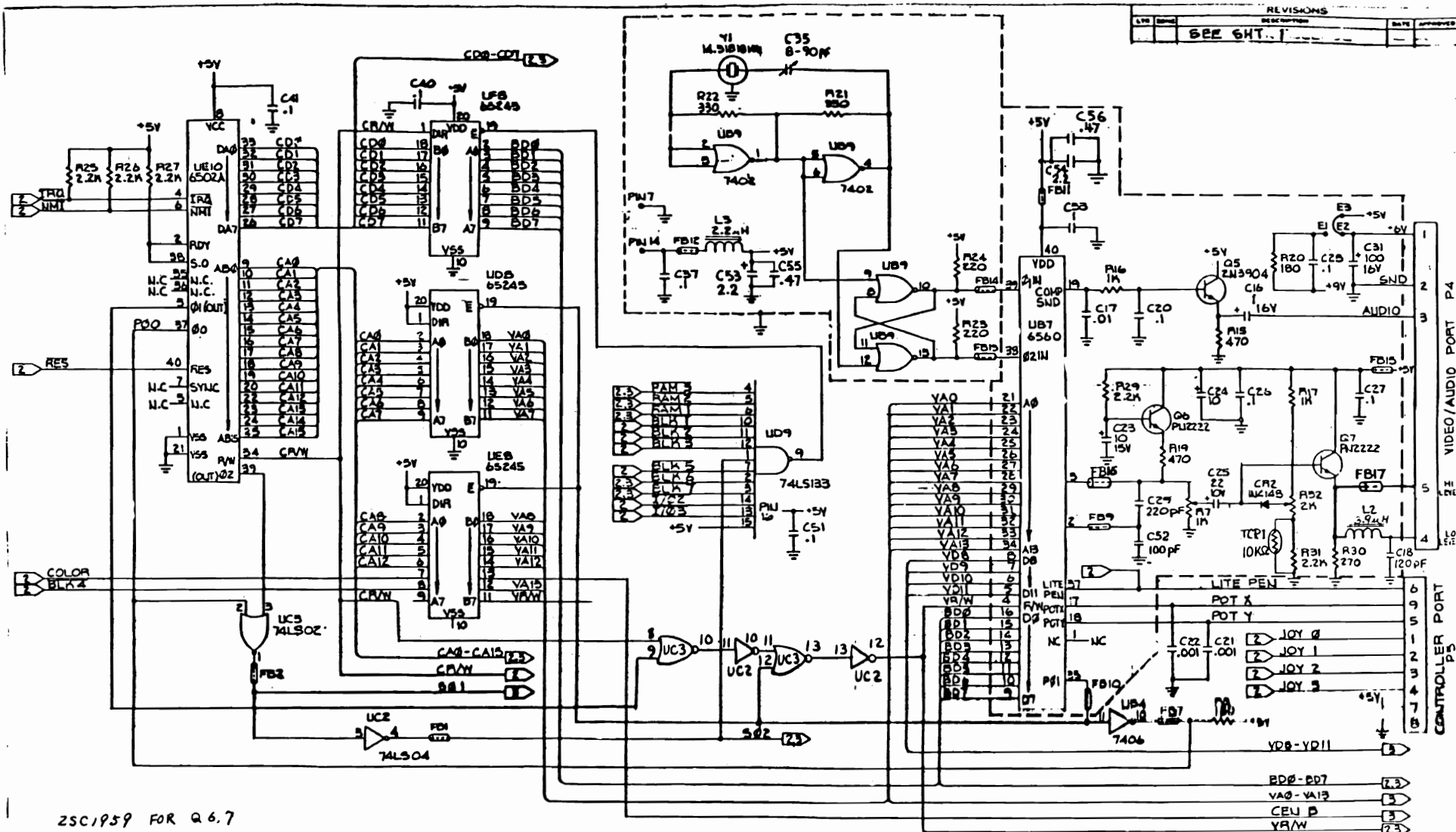
**Commodore**  
COMPUTER

These documents are for repair service information only. Part numbers are for reference only. Only parts on current dealer parts list are available. No license is given for any use by possession of these documents and may not be reproduced in any form without the written approval of Commodore Electronics Limited.

A	PRODUCTION RELEASE	7/1/71
B	REV PER ECO 2190	8/1/71
C	REV PER ECO 2202	9/1/71
D	REV PER ECO 2266	11/1/71
E	REV PER ECO 2338	1/1/72



DESIGNED BY DRAWN BY CHECKED BY APPROVED BY DATE	COMMUNICATOR <b>DRAWING TITLE</b> <b>VIC 20</b> SHEET NO <b>324032</b>
--	--



REVISIONS			
LT#	DATE	DESCRIPTION	APPROVED
1		SEE GHT. 1	

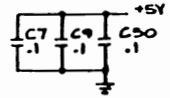
ZSC1959 FOR Q.6.7  
 ZSC1815 FOR Q.3.4.5

3. SUBSTITUTION OF TRANSISTOR

2. CAPACITANCE VALUES ARE IN MICROFARADS, 50M

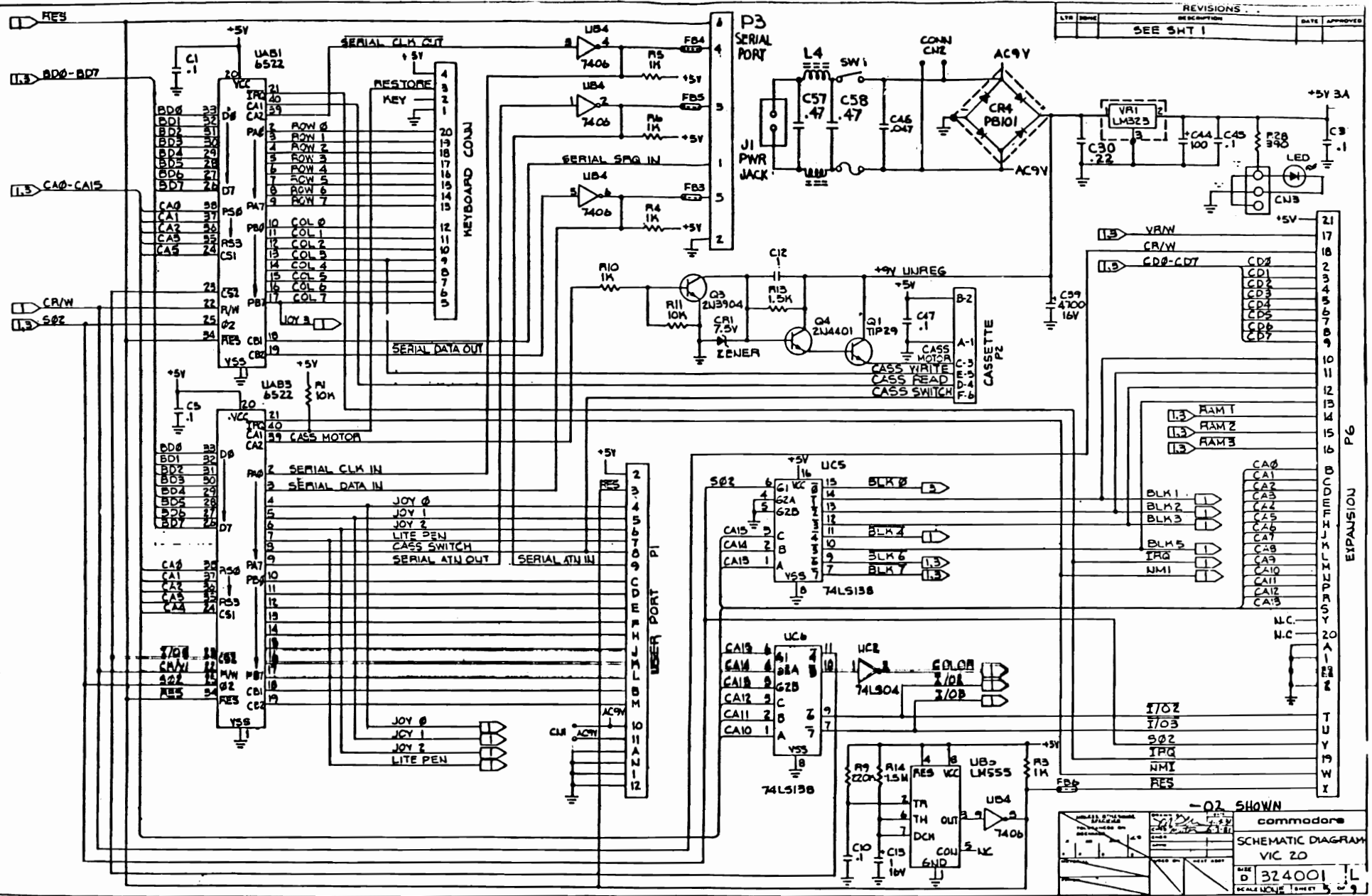
1. RESISTANCE VALUES ARE IN OHM, 1/4W ±5%

NOTES - UNLESS OTHERWISE SPECIFIED:



-02 SHOWN UL CONFIGURATION

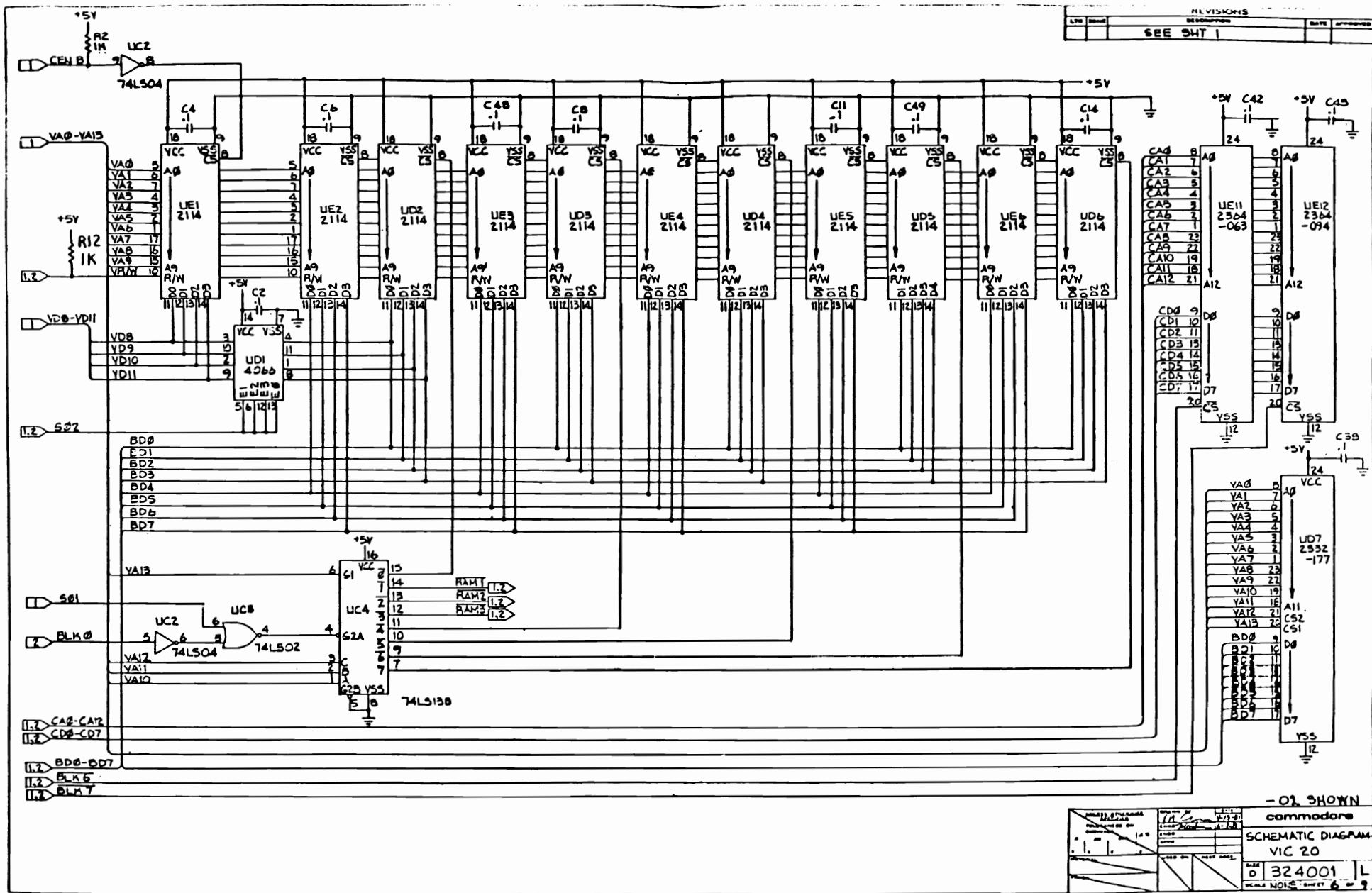
VIC 20		VIC 20	
DATE	03/24/00	DATE	03/24/00
REV	1	REV	1
VIC 20 324003		VIC 20 324003	
COMMODORE		COMMODORE	
SCHEMATIC DIAGRAM		SCHEMATIC DIAGRAM	
VIC 20		VIC 20	



REVISIONS			
LTN	DATE	DESCRIPTION	APPROVED
		SEE SHT 1	

-02 SHOWN

COMMODORE	
SCHEMATIC DIAGRAM	
VIC 20	
DATE	324001
SCALE	1:1



- 01 SHOWN

DESIGNED BY	DATE	REV	COMMODORE
CHECKED BY	1/1/81	1	
APPROVED BY			
SCHEMATIC DIAGRAM			
VIC 20			
DATE	0 324001	L	
SCALE	NOTES	SHEET	6 of 9

PART NO.	DESCRIPTION
-02	PCB ASSY USA
-05	PCB ASSY NTSC(USA, CANADA)
-09	PCB ASSY NTSC(USA, CANADA)

A	/ /	PRODUCTION RELEASE	
C	8/1/81	REPLACED	8/1
D	9/29/81	Added -04 thru -06 Replaced shfts 2 thru 5	Rev PER ECO 2339 1/7
E	11/30/81	Added -07, -08	Rev PER ECO 2359 1/7
F		REV PER ECO 2572	1/7
G	4/20/82	REV PER ECO 2655	1/7
H	4/27/82	REV PER ECO 2656	1/7
J	4/27/82	REV PER ECO 2664	1/7
K		REVISED PER ECO 2667	1/7
L	5/12/82	REVISED PER ECO 2712	1/7
M	7/7/82	REVISED PER ECO 2760	1/7

3. CUT UE8 PIN 9 & 11. PUT JUMPER UE10 PIN 3 TO UC3 PIN 9. PUT JUMPER UAB3 PIN 22 TO UC3 PIN 8. PUT JUMPER UC3 PIN 10 TO UC2 PIN 11. PUT JUMPER UC2 PIN 10 TO UC3 PIN 11. PUT JUMPER UC3 PIN 12 TO UB4 PIN 11. PUT JUMPER UC3 PIN 13 TO UC2 PIN 13. PUT JUMPER UC2 PIN 12 TO UB7 PIN 4.

2 FOR SUBSTITUTE SEE PART SUBSTITUTION INDEX PART NO. 321233

1 SHEET 6-13 OF 13 ARE C-SIZE ASSY DWG.

NOTES.

c b m ENGINEERING OSAKA JAPAN	TITLE	DRAWN BY	DATE	DATE	SIZE	324003-	1 OF 11
	VIC-1001 PCB ASSY	<i>D. Inada</i>	7/17/82	1/1	B		
		CHKD.	1/1	APPR	1/1		

QUANTITY REQD PER PART/DASH NO.				ITEM	D.S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES
	09		02	1	C	324002-01	PC BOARD 180x390x1.6t	REV.C		GLASS EPOXY G-10
				2	C	324002-02		REV.C		
		1		3	C	324002-01		REV.D		
				4	C	324002-02	PC BOARD 180x390x1.6t	REV.D		GLASS EPOXY G-10
	S			5	C	324002-01	PC BOARD 180x390x1.6t	REV.E		GLASS EPOXY G-10
	1			6	C	324002-01	PC BOARD 180x390x1.6t	REV.F		GLASS EPOXY G-10
				7						
	1	1	1	8	B	901435-02	LSI 6502A MPU	UE10		
	2	2	2	9		901437-01	6522 VIA	UAB1,UAB3		
	1	1	1	10		901486-01	2364-063 ROM	UE11		\$C000 ~ \$DFFF
				11		901486-02	2364-064 ROM	UE12		\$E000 ~ \$FFFF
	1	1	1	12		901486-06	2364-094 ROM	UE12		\$E000 ~ \$FFFF
				13		901486-07	2364-095 ROM	UE12		\$E000 ~ \$FFFF
				14		901460-02	2332-171 ROM	UD7		\$8000 ~ \$8FFF
	1	1	1	15		901460-03	2332-177A ROM	UD7		\$8000 ~ \$8FFF
	1	1	1	16		901491-01	6560 VIC	UB7		
				17	B	901896-01	LSI 6561 VIC	UB7		
				18						
	1	1	1	19	B	901552-32	IC 7402	UB9		
	1	1	1	20		901521-02	74LS04 HEX INV.	UC2		
	1	1	1	21		901522-06	7406 HEX INV. OSC	UB4		
	1	1	1	22		901521-01	74LS02 NOR GATE	UC3		
				23		901525-14	74S02 NOR GATE	UC3		SUB. FOR ITEM 22
	1	1	1	24		901521-15	74LS133 NAND GATE	UD9		
				25		901525-02	74S133 NAND GATE	UD9		SUB. FOR ITEM 24
	3	3	3	26		901521-16	74LS138 DECODER	UC4,5,6		
				27		901525-09	74LS74	UB10		
	3	3	3	28		901521-45	74LS245 BUS BUFFER	UE8,UE9,UD8		
	1	1	1	29		901502-01	CD4066 BILATERAL SW.	UD1		
	1	1	1	30	B	901523-01	IC NE555 TIMER	UB6		
				31						
				32						
	11	11	11	33	B	901453-04	IC 2114L RAM STATIC	UD2~UD6 UE1~UE6		300RS
				34						
	1	1	1	35	B	901528-01	VOLT REGULATOR LM323	VR1		
				36						

c b m ENGINEERING  
OSAKA JAPAN

TITLE:

VIC-1001 PCB ASSY

DRAWN BY:

A. Takai

DATE

9 APR 87

CHKD:

1-1

APPR:

DATE

1/1

SIZE

B

324003-

SHEET

2 OF 11



QUANTITY REQD PER PART/DASH NO.				ITEM	D.S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES
	09		02	2	B	902658-01	TRANSISTOR NPN 2N3904	Q3.5		
				1		902652-01	2N4401	Q4		
	1	1		1		902694-01	2SD880	Q1		
				2		902686-01	PN2222	Q6.7		
	3	3		41		902693-01	2SC1815	Q3.4.5		
	2	2		42	B	902695-01	TRANSISTOR NPN 2SC1959	Q6.7		
	2			43	B	900020-06	CAPACITOR MONOLITHIC .47 $\mu$ F. 50V	C37.58		
	1	1	1	44	B	900967-01	DIODE ZENER 7.5V 500mW	CR1		WZ-075
	1	1	1	45		900850-06	DIODE SIGNAL 50V 350mA	CR2		1S2472
	1	1	1	46		900653-01	DIODE RECT 10A 100V	CR4		PB101 SEE NOTE 2
	2			47	B	900402-17	CAPACITOR TANTALUM .047 $\mu$ F/16V	C55.56		
	1	1	1	48	B	902250-01	THERMISTER SDT-1000	TCR1		
	2			49	B	900411-02	CAPACITOR TANTALUM 2.2 $\mu$ F/16V	C53.C54		
	2	2	2	50	B	900100-16	CAPACITOR ELECT. 1 $\mu$ F/16V	C13.16		
	2	2	2	51		900100-25	10 $\mu$ F/16V	C23.24		SEE NOTE 2
				52						
	1	1	1	53		900100-06	22 $\mu$ F/16V	C25		
	2	2	2	54		900100-40	100 $\mu$ F/16V	C31.44		
	1	1	1	55		900101-32	ELECT. 4700 $\mu$ F/16V	C39		
	1	1	1	56		900463-05	CERAMIC 120PF/50V	C18		
	1	1	1	57		900463-08	220PF/50V	C29		
	2	2	2	58		900463-16	0.001 $\mu$ F/50V	C21.22		} AXIAL TYPE
	1	1	1	59		900461-16	0.01 $\mu$ F/50V	C17		
	1	1	1	60		900461-24	0.047 $\mu$ F/50V	C46		
	30	30	30	61		900461-28	0.1 $\mu$ F/50V	C1-12, 14, 20, 26-28, 33, 37, 38, 40-43, 45, 47-51		
				62		900010-57	120PF/50V	C18		
				63		900010-29	220PF/50V	C29		
				64		900010-16	0.001 $\mu$ F/50V	C21.22		} RADIAL TYPE
				65		900010-38	0.01 $\mu$ F/50V	C17		
				66		900302-01	0.047 $\mu$ F/50V	C46		
				67	B	900303-01	0.1 $\mu$ F/50V	C1-12, 14, 20, 26-28, 33, 37, 38, 40-43, 45, 47-51		
				68	B	900010-58	0.22 $\mu$ F/25V	C30		
				69	B	900010-17	CAPACITOR CERAMIC 100PF/50V	C52		
	1	1	1	70	B	900081-01	CAPACITOR TRIMMER 8~90PF	C35		
	1	1	1	71	B	902265-02	POTENTION METER B1K $\Omega$	R7		MITSUMI RGS6-FAN TYPE
	1	1	1	72	B	902265-03	POTENTION METER B2K $\Omega$	R32		MITSUMI RGS6-FAN TYPE

c b m ENGINEERING  
OSAKA JAPAN

TITLE:  
VIC-1001 PCB ASSY

DRAWN BY: N. Takase  
DATE: 9/27/87  
CHKD: 1-1 APPR:

DATE: 1/1  
SIZE: B

324003-

SHEET: 3 of 11

QUANTITY REQD PER PART/DASH NO.				ITEM	Q. S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES
	09	05	02	73	B	901550-100	RESISTOR, CARBON 1/4W 5% 180Ω	R20, 33, 8		
	2	2	2	74	B	- 52	220Ω	R23, 24		
	2	2	2	75	B	- 76	270Ω	R30		
	1	1	1	76	B	- 14	330Ω	R21, 22		
	2	2	2	77	B	- 57	390Ω	R28, 12		
	2	2	2	78	B	- 58	470Ω	R15, 19		
	9	9	9	79	B	- 01	1KΩ	R2, 4, 22, 25		
	1	1	1	80	B	- 69	1.5KΩ	R13		
	5	5	5	81	B	- 18	2.2KΩ	R26, 27, 29, 31		
	2	2	2	82	B	- 20	10KΩ	R1, 11		
	1	1	1	83	B	- 61	220KΩ	R9		
	1	1	1	84	B	901550-37	RESISTOR, CARBON 1/4W 5% 1.5MΩ	R14		
				85	B		RESISTOR, CARBON 1/4W 5% 680Ω	R24		
	1	1	1	86	B	900558-01	CRYSTAL 14.31818 MHz	Y1		DAIWA SHINKU HC-18/U
				87	B	900562-01	CRYSTAL 8.867236 MHz	Y1		" " "
				88	B					
	1	1	1	89	B	903559-04	FUSE SLO-BLO 5.2"x20 250V3A	F1		
	2	2	2	90	B	903613-01	CLIP, FUSE HOLDER			S-N5057S
				91	B					
	1	1	1	92	B	903483-01	POWER JACK	J1		HSC0463
				93	B		POWER JACK	J1		
				94	B					
	1	1	1	95	B	904661-01	POWER SWITCH, RIGHT ANGLE	SW1		
				96	B					
	1	1	1	97	B	903362-01	CONNECTOR, DIN, 5 PIN	P4		TCS4450-01-101 HOSHIDENKI
	1	1	1	98	B	903361-01	CONNECTOR, DIN, 6 PIN	P3		TCS4460-01-101 "
	1	1	1	99	B	903363-01	CONNECTOR, MINI, D 9 PIN	P5		09-67-009-2664 YAMAICHI
	1	1	1	100	B	903346-01	CONNECTOR, CARD EDGE 44 PIN	P6		CE-263 MITSUMI
				101	B					
	2	2	2	102	B	903326-02	HEADER ASSY 0.1 PITCH 2 PIN	CN1, 2		MOLEX 3022-02A
	1	1	1	103	B	903365-01	HEADER ASSY 0.1 PITCH 3 PIN	CN3		MOLEX 3094-03A
	1	1	1	104	B	903364-01	HEADER ASSY 0.1 PITCH 20 PIN	CN KYB		R41-5614A
				105	B					
	4	4	4	106	B	904150-06	IC SOCKET 40 PIN	UAB1, UAB3 UB2, UE10		
	3	3	3	107	B	904153-03	IC SOCKET 24 PIN	UD7 UE11, UE12		
				108	B					

c b m ENGINEERING  
OSAKA JAPAN

TITLE:  
VIC-1001 PCB ASSY

DRAWN BY:  
G. Takae  
DATE:  
9/29/91  
CHKD:  
1/1  
APPR:

DATE:  
1/1  
SIZE:  
B

324003-

SHEET  
4 OF 11

QUANTITY REQD PER PART/DASH NO.				ITEM	D.S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES
	09		05	02						
	1		1	1	109	B 324033-01	JUMPER CABLE ASSY			
	2		2	2	110	B 200018-09	JUMPER WIRE			
	1		1	1	111	B 901151-20	COIL INDUCTOR 3.9uH	L2		
	1		1	1	112	B 901151-17	COIL INDUCTOR 2.2uH	L3		
			-	-	113	5200016	COIL INDUCTOR	L4		
	16		16	16	114	B 903025-01	FERRITE BEAD	FBI-79-16		
	1				115	B 325539-01	COIL INDUCTOR	L4		
	1		1		116	B 324016-01	SHIELD CAP			
	1		1		117	B 324017-01	SHIELD BOX			
					118					
	1				119					
	-		1/8	1/8	120	B 905508-01	TAPE ALUMINUM			
					121					
	1		1	1	122	B 1001044	GUIDE CARTRIDGE			
	2		2	2	123	B 1001045	INSULATOR GUIDE			
	1		1	1	124	B 1001046	HEAT SINK 5V REGULATOR			
	1		1	1	125	B 1001047	HEAT SINK BRIGE DIODE			
					126					
	1		1	1	127	B 1001005-01	PANEL, CONNECTOR			
					128	B 1001005-02	PANEL, CONNECTOR			
					129					
	1		1	1	130	B 1001019-01	CUSHION PE FOAM 20x40x16			
	2		2	2	131	B 906800-04	SCREW PAN HEAD M3x0.5x10	HEAT SINK 5V		ZINC CHROMATE
	7		1	1	132	B 906800-05	SCREW PAN HEAD M3x0.5x15	HEAT SINK BR. 9 PIN CON. (3) GUIDE (3)		ZINC CHROMATE
	4		4	4	133	B 906800-03	M3x0.5x8			" "
	2		2	2	134	B 906800-01	SCREW PAN HEAD M3x0.5x4	PANNEL CONN.		" "
					135					
	4		4	4	136	B 905960-03	NUT HEX. M3x0.5	LM323		ZINC CHROMATE
	2		2	2	137	B 905652-04	LOCK WASHER, EXT. TOOTHED, 3*	LM323		" "
	1				138	B 905485-04	RUG, SOLDER 3*			
	1/8		1/8	1/8	139	904907-01	COMPOUND, HEAT SINK			6746
					140					
					141	C 324001-01	SCHEMATIC DIAGRAM JPN			REV.
					142	C 324001-02	" " UL			REV.
					143	C 324001-03	" " PAL			REV.
					144					

c b m ENGINEERING  
OSAKA JAPAN

TITLE: VIC-20 PCB ASSY

DRAWN BY: G. Takai  
DATE: 9/25/81  
CHKD: 1/1

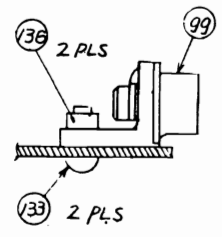
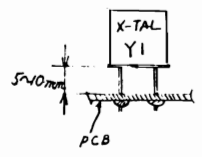
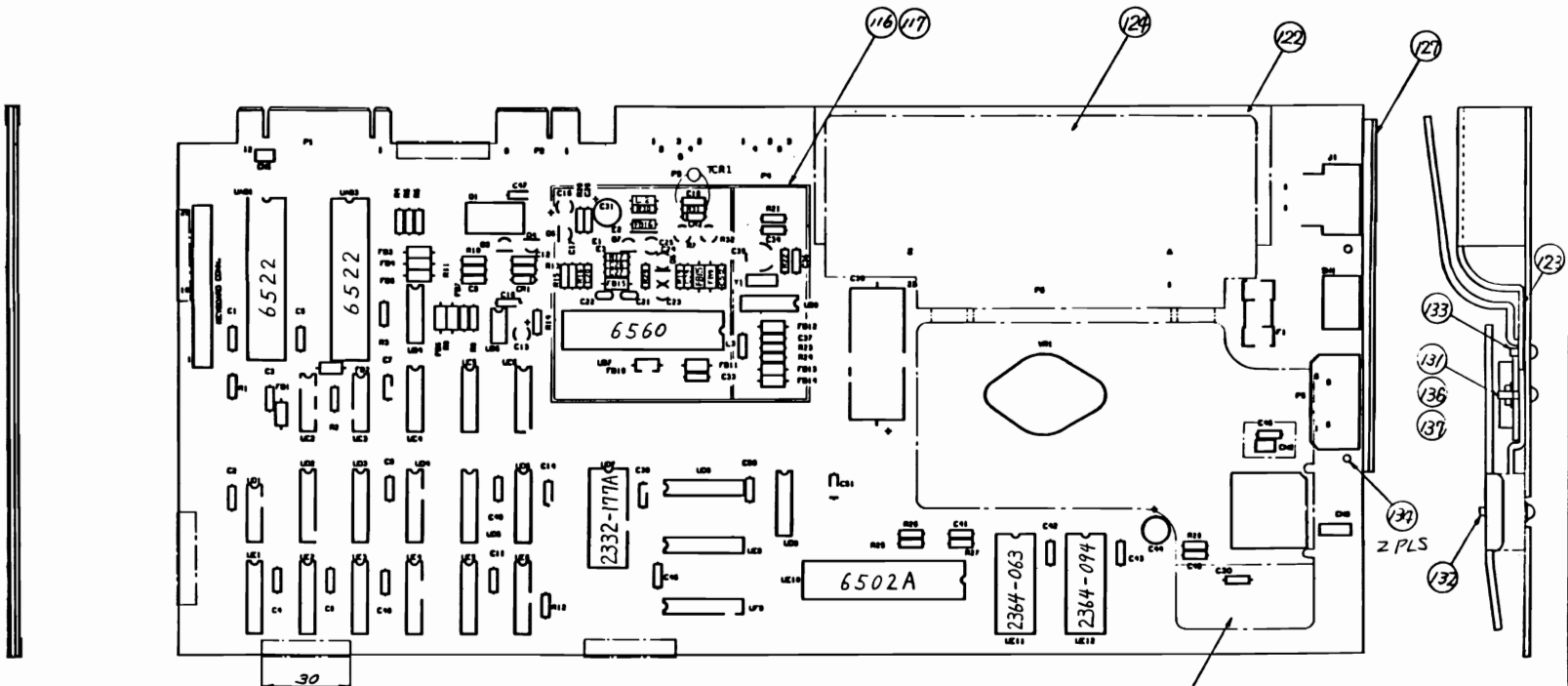
APPR:

DATE: 1/1  
SIZE: B

324003- 5 of 11

1 / SEE SHEET 1

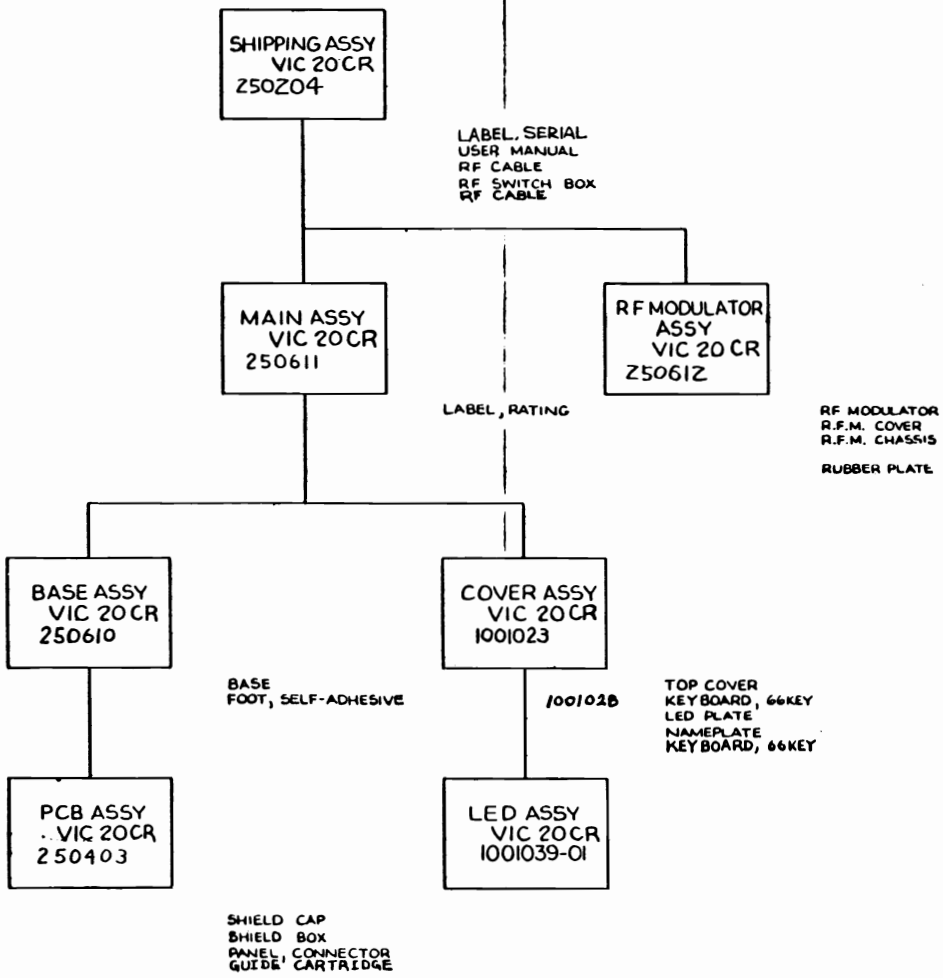
0.7



VIC-20 Foldout #1

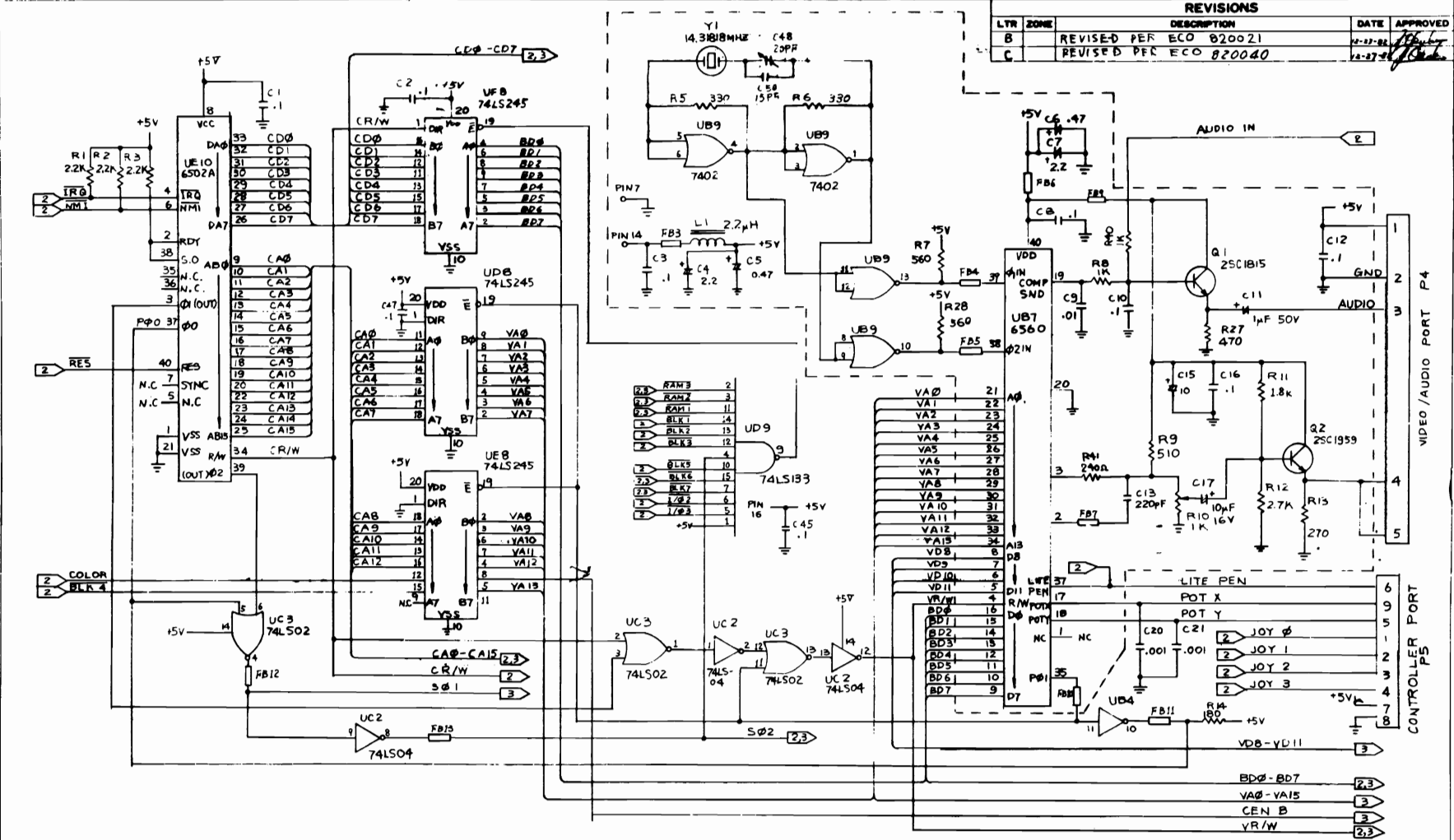
VIC-20		PCB ASSY	
VIC-20		U.S.A.	
SIZE 324003-02		REV	
C SHEET 7 OF 11		M	

REVISIONS			
LTB	DATE	DESCRIPTION	APP'D
A		PRODUCTION RELEASE	



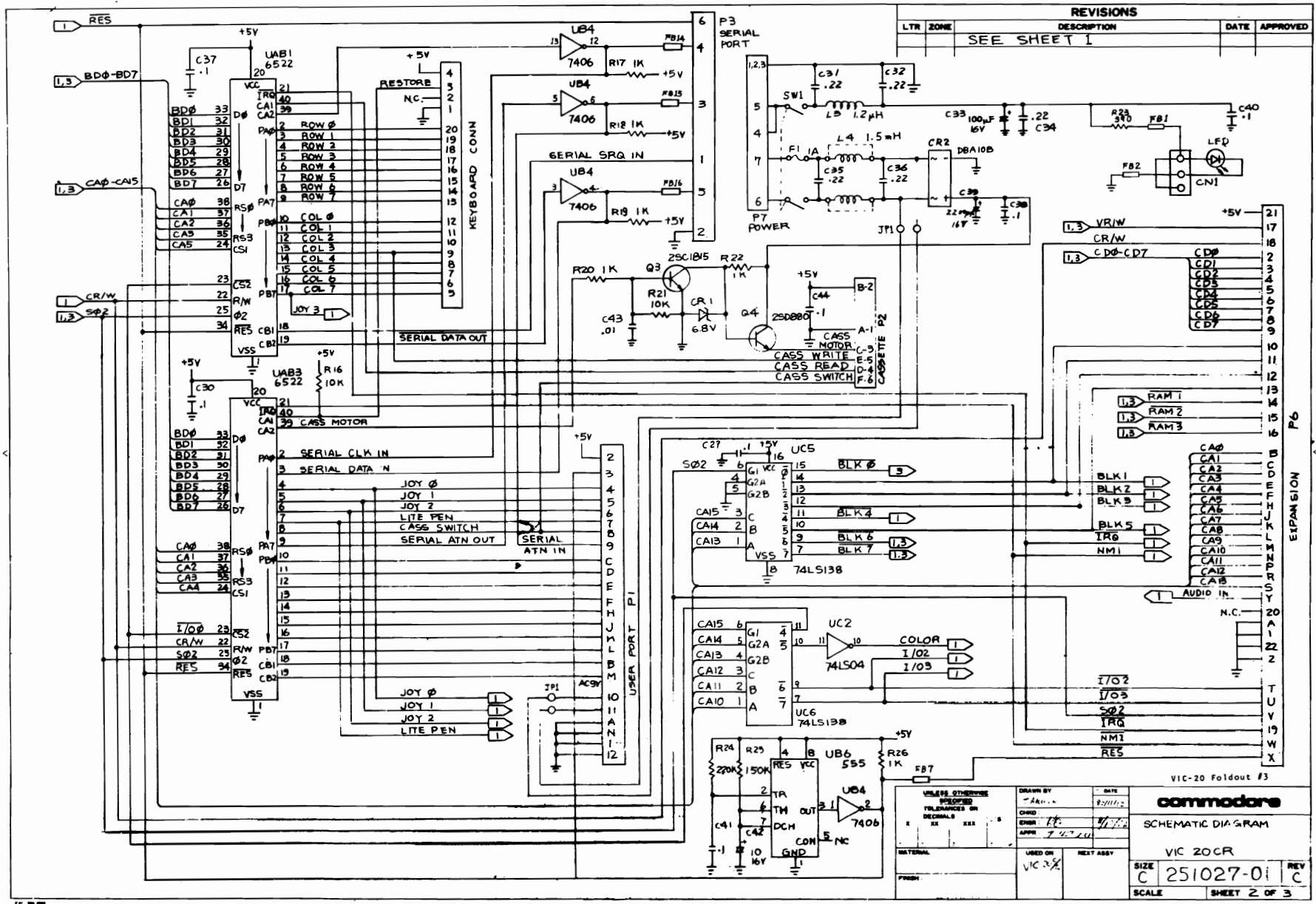
commodore	
DRAWING TREE	
VIC 20 CR	
SIZE	250004
SCALE	A

LTR	ZONE	DESCRIPTION	DATE	APPROVED
B		REVISED PER ECO 020021	12-22-81	<i>[Signature]</i>
C		REVISED PER ECO 020040	12-27-81	<i>[Signature]</i>



VIC-20 Foldout #2

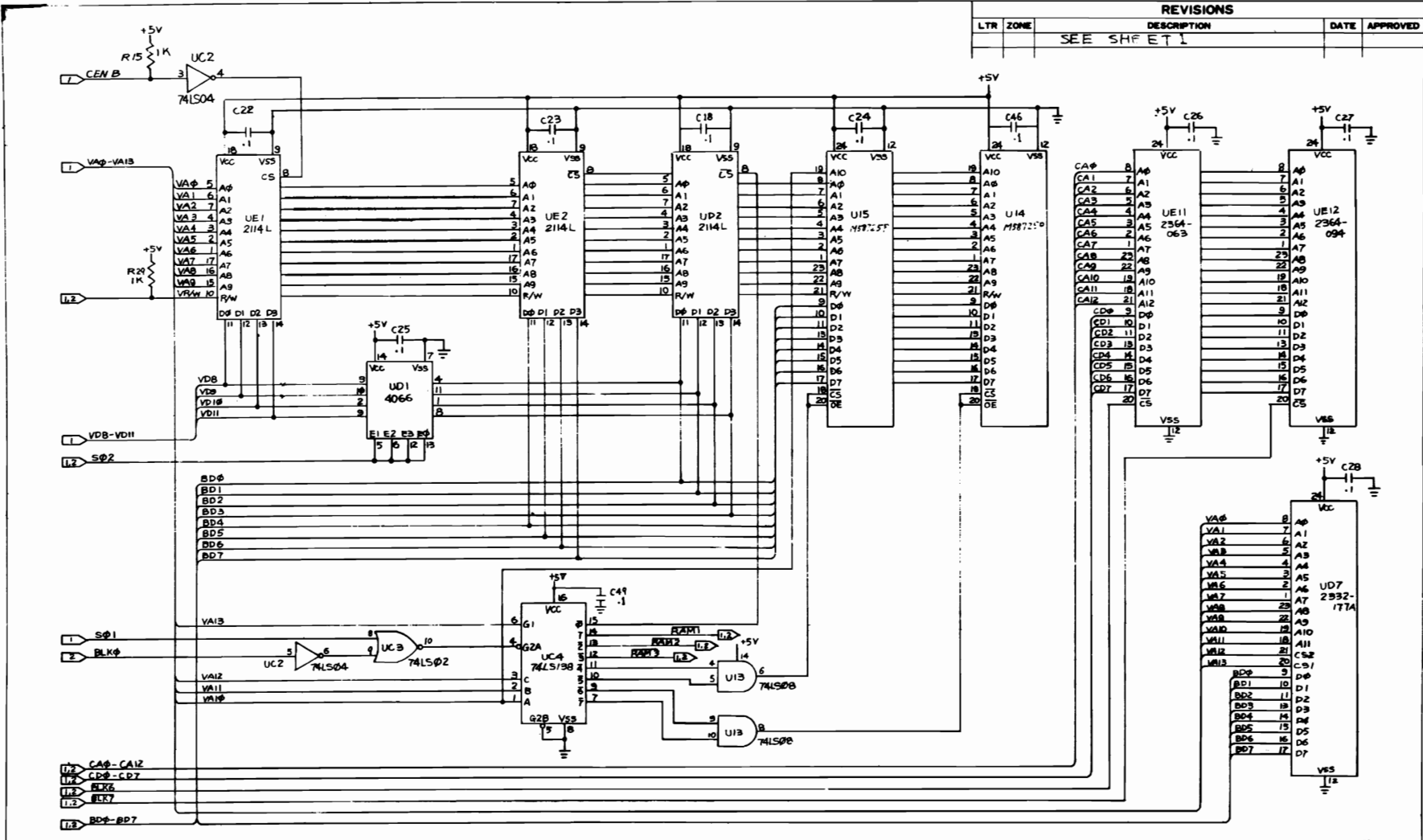
UNLESS OTHERWISE SPECIFIED TOLERANCES ON: X XX XXX C S	DRAWN BY: <i>[Signature]</i>	DATE: 12/22/81	<b>commodore</b>
	CHKD: <i>[Signature]</i>	12/22/81	
	ENGR: <i>[Signature]</i>		VIC 20CR
	APPR: <i>[Signature]</i>		SIZE C 251027-01 REV C
MATERIAL:	USED ON: VIC 20	NEXT ASSY:	SCALE: SHEET 1 OF 3



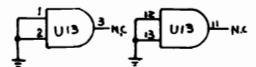
REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		

VIC-20 Foldout #3		DRAWN BY		DATE
UNLESS OTHERWISE SPECIFIED TOLERANCES ON DECIMALS		CHKD	8/20/82	
EVAL		APPV	7/27/82	
VIC-20		USED ON	NEXT ASSY	
FRSH		<b>commodore</b> SCHEMATIC DIAGRAM VIC 20CR SIZE C 251027-01 REV SCALE SHEET 2 OF 3		

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
		SEE SHEET 1		



VIC-20 Foldout #4



UNLESS OTHERWISE SPECIFIED		DRAWN BY	DATE
TOLERANCES ON DECIMALS		WCS	09/11/82
CIRCUIT		ENGR	WCS
APPROVED		APPR	T. B. J.
MATERIAL:	USED ON	NEXT ASSY	
FINISH:	VIC-20		
		VIC 20CR	
SIZE	C	251027-01	REV C
SCALE		SHEET 3 OF 3	



PART NO.	DESCRIPTION	REV	DATE	DESCRIPTION	BY
		A	8/11/82	PRODUCTION RELEASE	
		B		REV PER ECO 820034	STP
250403-02	PCB ASSY, USA	C	8/12/82	REV PER ECO 820041	TM
		D	8/11/82	REV PER ECO 830006	TM
		E		REV PER ECO 830010	TM

I. SHEET 6.7 OF 11 B-SIZE  
 ASSY DWG.

NOTES.  
 SHEETS 8,9,10 NOT IN THIS SET

c b m ENGINEERING OSAKA JAPAN	TITLE: VIC-20CR PCB ASSY	DRAWN BY: S. Hayashi	DATE: 1/1	CHKD: S. Hayashi	DATE: 11/9/82	APPR: 1/0	DATE: 11/19/82	SIZE: B 250403 SHEET: 1 OF 11
----------------------------------	-----------------------------	-------------------------	--------------	---------------------	------------------	--------------	-------------------	-------------------------------------

QUANTITY REQD PER PART/DASH NO.										ITEM	D.S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES								
										02														
										1	✓	251040-01	PC BOARD 380x136x1.6t				GLASS EPOXY G-10							
										2		251040-02	PC BOARD 380x136x1.6t				GLASS EPOXY G-10							
										Ref	3.	250403	VIC-20CR PCB ASSY SH11											
										Ref	4.	✓ 251027-01	SCHEMATIC DIAGRAM (NTSC)				WITHOUT PAL							
											6													
											7													
										1	8	✓ 901425-02	LSI 6502A MPU	UE10										
										2	9	✓ 901437-01	LSI 6522 VIA	UAB1,UAB3										
										1	10	✓ 901486-01	LSI 2364-063 ROM	UE11		\$C000 ~ \$DFFF								
											11	✓ 901486-02	LSI 2364-064 ROM	UE12		\$E000 ~ \$FFFF								
										1	12	✓ 901486-06	LSI 2364-094 ROM	UE12		\$E000 ~ \$FFFF								
											13	✓ 901486-07	LSI 2364-095 ROM	UE12		\$E000 ~ \$FFFF								
											14	✓ 901460-02	LSI 2332-171 ROM	UD7		\$8000 ~ \$BFFF								
										1	15	✓ 901460-03	LSI 2332-177A ROM	UD7		\$8000 ~ \$BFFF								
										1	16	✓ 901491-01	LSI 6560 VIC	UB7										
											17	✓ 901896-01	LSI 6561 VIC	UB7										
											18													
										1	19	901552-32	IC 7402	UB9										
										1	20	✓ 901521-02	IC 74LS04 HEX INV.	UC2										
										1	21	✓ 901522-06	IC 7406 HEX INV. OSC	UB4										
										1	22	✓ 901521-21	IC 74LS02 NOR GATE	UC3										
										1	23	✓ 901521-03	IC 74LS08 AND GATE	UI3										
										1	24	✓ 901521-15	IC 74LS133 NAND GATE	UD9										
										S	25	✓ 901525-02	IC 74S133 NAND GATE	UD9		SUBSTITUTE ITEM 24								
										3	26	✓ 901521-16	IC 74LS138 DECODER	UC4,5,6										
											27	✓ 901525-09	IC 74LS74A FF	UB10										
										3	28	✓ 901521-45	IC 74LS245 BUS BUFFER	UD8,UE8,UF8										
										1	29	✓ 901502-01	IC CD4066 BILATERAL SW	UD1										
										1	30	✓ 901523-01	IC 555 TIMER	UB6										
											31													
											32													
										3	33	✓ 901453-04	IC 2114L RAM STATIC	UE1,UE2,UD2		300nS								
										2	34	✓ 325502-01	IC M58725P 16K-SRAM	UI4,UIS										
											35													
											36													
c b m ENGINEERING OSAKA JAPAN											TITLE: VIC-20CR PCB ASS'Y		DRAWN BY: S. Hayashi		DATE: 1/1		DATE: 1/1		SIZE: B		SHEET: 250403		SHEET: 2 OF 11	
											CHKD: J. A. J.		11/9/82		APPR: J.C.		11/9/82							

QUANTITY REQD PER PART/DASH NO.										ITEM	D.S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES	
										02							
										2	37	902693-01	TRANSISTOR NPN 2SC1815	Q1A3			
										1	38	902695-01	TRANSISTOR NPN 2SC1959	Q2			
										1	39	902694-01	TRANSISTOR NPN 2SD880	Q4			
											40						
											41						
										1	42	900927-01	DIODE ZENER 0.5W 6.8V	CR1			
											43						
										1	44	251028-01	DIODE RECTIFIER DBA10B	CR2			
											45						
											46						
										1	47	251029-01	CAPACITOR TRIMMER CTZ51 20PF	C48			
										26	48	251075-1	CAPACITOR CERAMIC Y5V 25V 0.1μF Z	C1~3, 8, 10, 12, 16, 18, 22~30, 37, 38, 40, 41, 44~47, 49	FORMING DISC TYP.		
										2	49	900411-02	CAPACITOR TANTAL 16V 2.2μF M	C4, 7			
										2	50	900402-17	CAPACITOR TANTAL 16V 0.47μF M	C5, 6			
										1	51	900100-16	CAPACITOR ELECT 16V 1μF	C11			
										3	52	900100-25	CAPACITOR ELECT 16V 10μF	C15, 17, 42			
										2	53	251073-1	CAPACITOR CERAMIC E 50V 0.01μF Z	C9, 43	FORMING DISC TYP.		
											54						
											55						
										1	56	251071-26	CAPACITOR CERAMIC SL 50V 220PF K	C13	FORMING DISC TYP.		
										2	57	251069-8	CAPACITOR CERAMIC B 50V 0.001μF K	C20, 21	FORMING DISC TYP.		
										3	58	251075-7	CAPACITOR CERAMIC Y5V 25V 0.22μF Z	C31, 32, 34	FORMING DISC TYP.		
										1	59	900101-33	CAPACITOR ELECT 16V 2200μF AXIAL	C39	AXIAL		
										1	60	900100-40	CAPACITOR ELECT 16V 100μF	C33	RADIAL		
										2	61	700150-11	CAPACITOR MYLER 100V 0.22μF K	C35, 36	RADIAL		
										1	62	251030-01	CAPACITOR CERMIC N3320 50V 151F J	C50			
											63						
											64						
										1	65	200016-41	VINYL WIRE				
										1	66	905476-05	HEAT-SHRINK ABLE TUBE Ø3×20				
											67						
											68						
											69						
										1	70	251041	POTENTIOMETER B 1K	R10			
											71						
											72						

c b m ENGINEERING  
OSAKA JAPAN

TITLE: VIC-20 CR PCB ASS'Y

DRAWN BY: S. Hayashi  
CHKD: J. Ohta

DATE: 1/1  
11/9/82

APPR: K.G.

DATE: 1/1  
11/9/82

SIZE: B

250403

SHEET 3 OF 11

QUANTITY REQD PER PART/DASH NO.										ITEM	D. S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES	
										02							
										1	73	251068-61	RESISTOR, CARBON RADIAL 1/4W 5% 270Ω	R13			
										2	74	251068-63	RESISTOR, CARBON RADIAL 1/4W 5% 330Ω	R5, R6			
										1	75	251068-67	RESISTOR, CARBON RADIAL 1/4W 5% 470Ω	R27			
										1	76	251068-68	RESISTOR, CARBON RADIAL 1/4W 5% 510Ω	R9			
										2	77	251068-69	RESISTOR, CARBON RADIAL 1/4W 5% 560Ω	R7, 28			
										1	78	251068-76	RESISTOR, CARBON RADIAL 1/4W 5% 1KΩ	R8			
											79						
										1	80	251068-82	RESISTOR, CARBON RADIAL 1/4W 5% 1.8KΩ	R11			
										1	81	251068-86	RESISTOR, CARBON RADIAL 1/4W 5% 2.7KΩ	R12			
										1	82	901550-100	RESISTOR, CARBON AXIAL 1/4W 5% 180Ω	R14			
											83						
										1	84	901550-54	RESISTOR, CARBON AXIAL 1/4W 5% 290Ω	R23			
										9	85	901550-01	RESISTOR, CARBON AXIAL 1/4W 5% 1KΩ	R15, 17-20, 22, 26	R29		
										3	86	901550-18	RESISTOR, CARBON AXIAL 1/4W 5% 2.2KΩ	R1-3			
										2	87	901550-20	RESISTOR, CARBON AXIAL 1/4W 5% 10KΩ	R16, 21			
										1	88	901550-16	RESISTOR, CARBON AXIAL 1/4W 5% 150KΩ	R25			
										1	89	901550-61	RESISTOR, CARBON AXIAL 1/4W 5% 220KΩ	R26			
										1	90	251068-60	RESISTOR, CARBON RADIAL 1/4W 5% 240Ω	R91			
											91						
											92						
											93						
											94						
										1	95	251042-01	CRYSTAL 14.31818 MHZ	Y1		WITH GND PIN	
											96	251042-02	CRYSTAL 8.967236 MHZ	Y1			
										1	97	903558-11	FUSE SLO-BLR 5.2Φ-20 250V 1A	F1			
										2	98	903613-01	CLIP, FUSE HOLDER	F1		S-N 5057S	
										1	99	904500-01	POWER SWITCH	SW1			
										1	100	903362-01	CONNECTOR, DIN 5 PIN	P4		TCS 4450-01-1011	
										1	101	903361-01	CONNECTOR, DIN 6 PIN	P3		TCS 4460-01-1011	
										1	102	906130-01	CONNECTOR, DIN 7 PIN	P7		TCS 4470-01-1011	
										1	103	251057	CONNECTOR, MINI D 9 PIN	P5			
										1	104	903346-01	CONNECTOR, CARD EDGE 44 PIN	P6			
										1	105	903365-01	HEADER ASSY 0.1 PITCH 3 PIN	CN1			
										1	106	903364-01	HEADER ASSY 0.1 PITCH 20 PIN	CN KYB		R41-5614A	
										S	107	903331-20	HEADER ASSY 0.1 PITCH 20 PIN	CN KYB		SUBSTITUTE ITEM 106	
										S	108	903332-03	HEADER ASSY 0.1 PITCH 3 PIN	CN1		SUBSTITUTE ITEM 105	

c b m ENGINEERING  
OSAKA JAPAN

TITLE:

VIC-20 CR PCB ASS'Y

DRAWN BY:

S. Hayashi

DATE

1/1

CHKD: R. Oshida

11/9/82

APPR: [Signature]

DATE

1/1

SIZE

B

250403

SHEET

4 OF 11

QUANTITY REQD PER PART/DASH NO.										ITEM	D.S.	PART NUMBER	DESCRIPTION	REF. DES	BEND	NOTES	
									02								
									4	109		904150-06	IC SOCKET 40 PIN	UAB1, UAB3		UB7, UE10	
									3	110		904153-03	IC SOCKET 24 PIN	UE11, UE12, UD7			
										111							
									1	112		251031-01	JUMPER CABLE 2 PIN	JPI			
										113							
									1	114		901151-17	COIL INDUCTOR 2.2MH	L1	LAL03 XM		
									1	115		325570-01	COIL INDUCTOR 1.2MH	L3			
									1	117		325559-02	ASSY LINE FILTER	L4			
									12	118		903025-01	FERRITE BEAD	FBI, 2,3,6,10~17			
									4	119		325563-01	FERRITE BEAD RADIAL	FBI, 5,7,9			
									1	120		251032	SHIELD CAP				
									1	121		251033	SHIELD BOX				
									1	122		251034	GUIDE CARTRIDGE				
									1	123		251035	PANEL CONNECTOR				
									1	124		1001019-01	CUSHION PE FOAM 20x40x17				
									2	125		906883-03	SCREW TAPPING M3x6L9	P5	ZINC CHROMATE		
									2	126		906883-15	SCREW TAPPING M3x5L9	ITEM 123	ZINC CHROMATE		
									2	127		251093-01	INSULATION SHEET	P5			
										128							
										129							
										130							
										131							

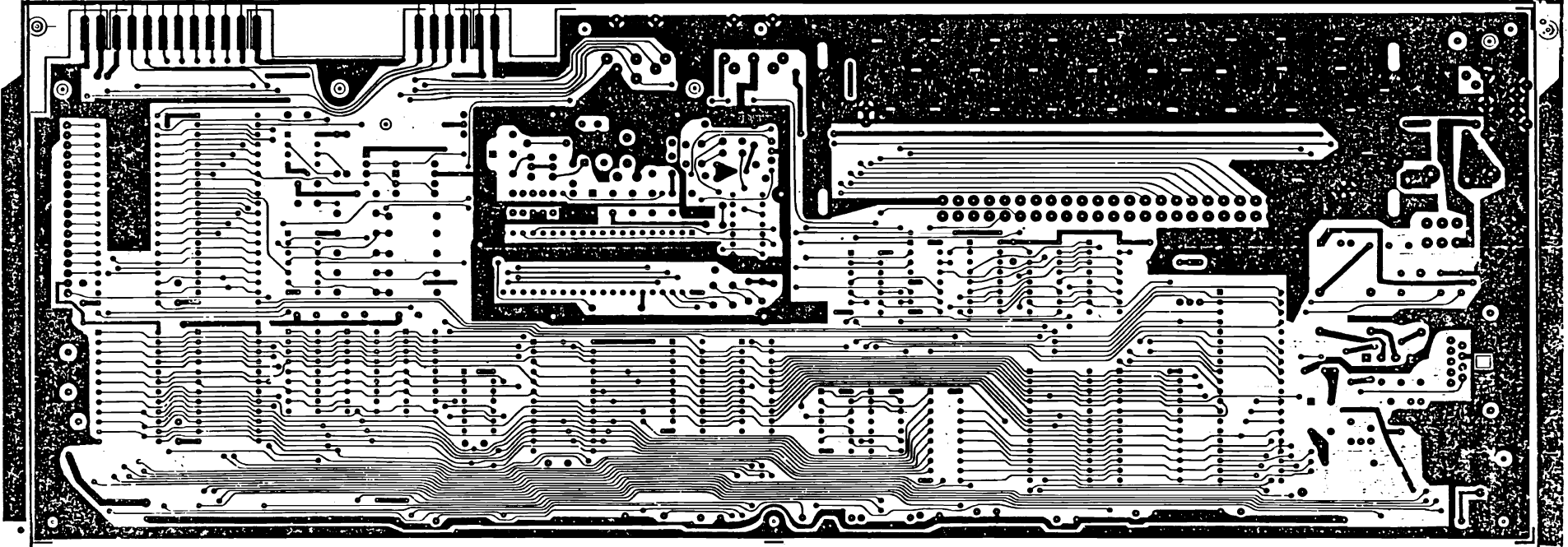
c b m ENGINEERING  
OSAKA JAPAN

TITLE: VIC-20CR PCB ASS'Y

DRAWN BY: S. Hasegawa	DATE 1/1	DATE 1/1	SIZE B	SHEET 250403
CHKD: <i>[Signature]</i>	11/9/82	APPR: <i>[Signature]</i>	11/9/82	5 OF 11

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
		PRODUCTION RERELEASE		

圖號 7A002

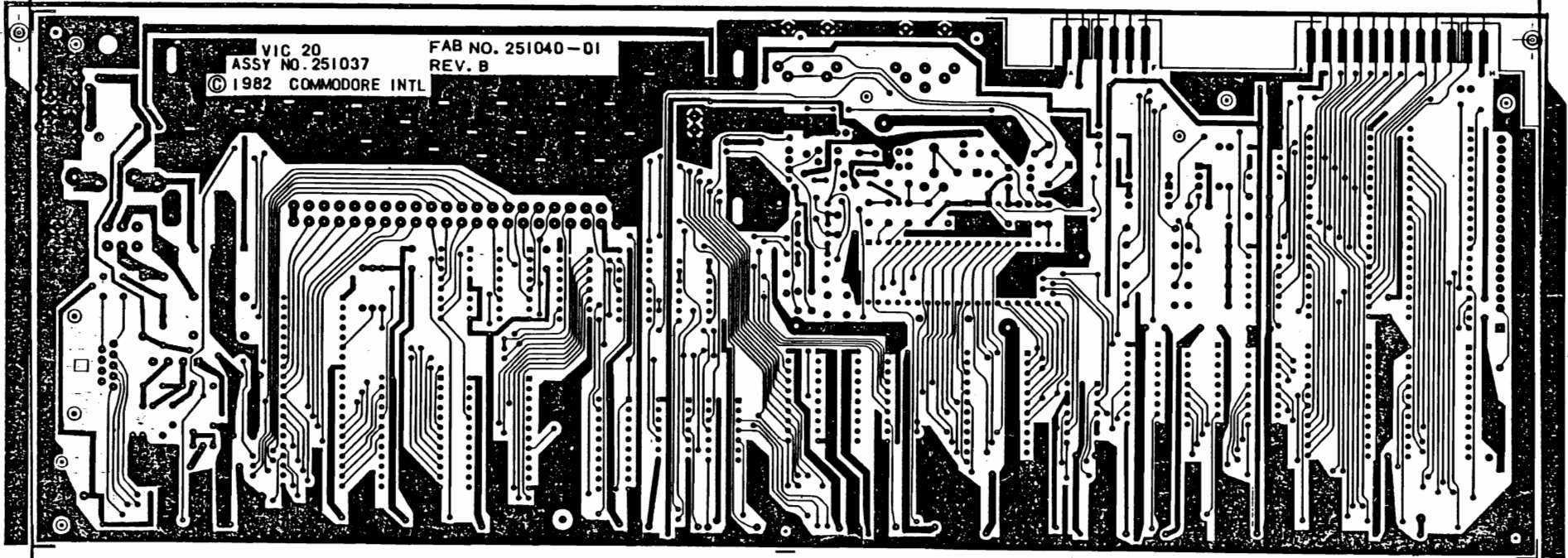


UNLESS OTHERWISE SPECIFIED TOLERANCES ON: DECIMALS .X    .XX    .XXX    < .5"	DRAWN BY:	DATE	<b>commodore</b>  PCB ART WORK COMPONENT SIDE	
	CHKD: <i>A. R. Z...</i>	Nov. 27, 82		
	ENGR:			
	APPR: <i>110</i>	12/7/82		
MATERIAL	USED ON	NEXT ASSY	SIZE	REV
FINISH:	VIC		B Z50403	E
	-20CR		SCALE	SHEET 6 OF 11

THIRD ANGLE SYSTEM. DIMENSION IN mm

REVISIONS				
LTR	ZONE	DESCRIPTION	DATE	APPROVED
		PRODUCTION RELEASE		

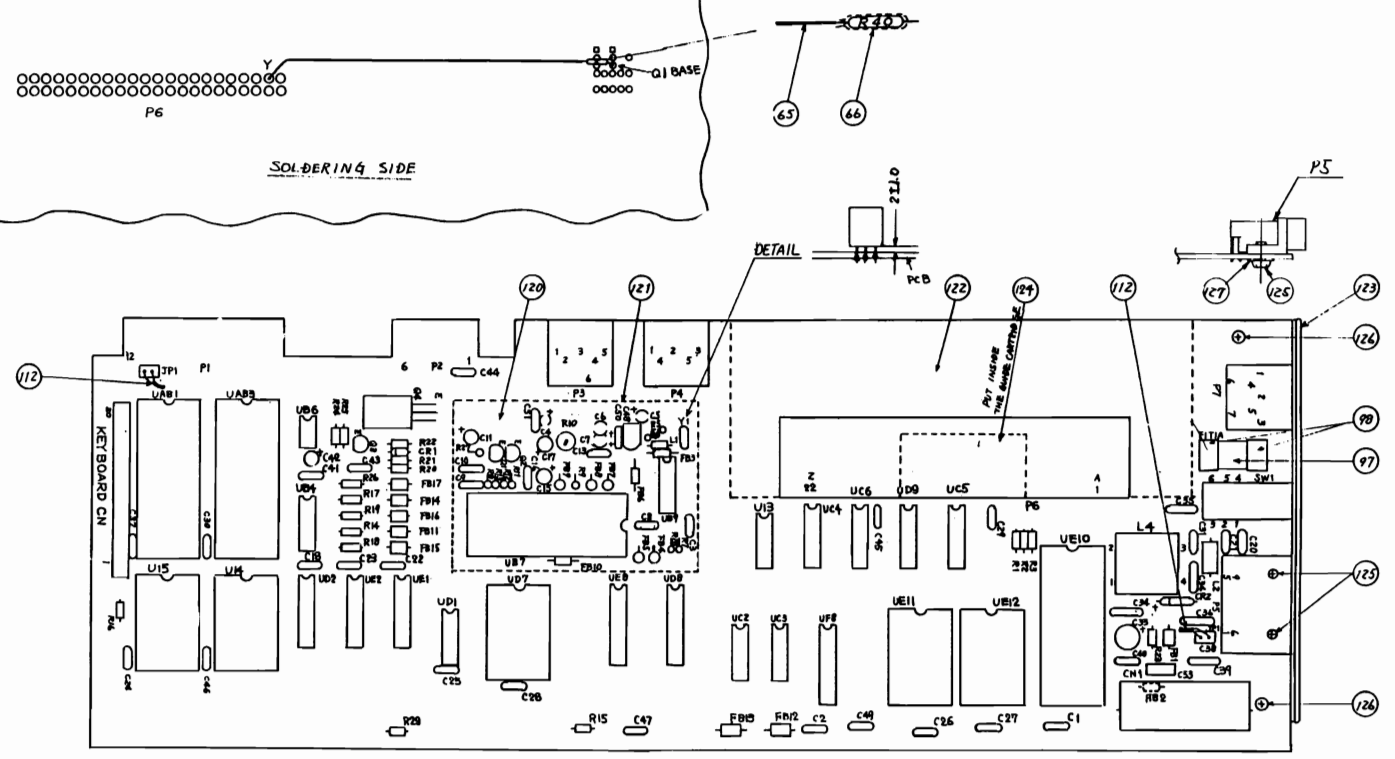
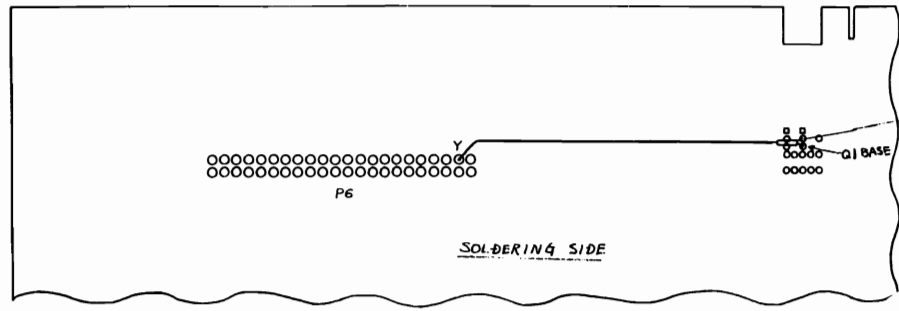
■C-6V



UNLESS OTHERWISE SPECIFIED TOLERANCES ON DECIMALS .X    .XX    .XXX    . ±    ±    ±    ±	DRAWN BY: <i>Y. Sotomoto</i> DATE: <i>1/26/82</i>	<b>commodore</b>  PCB ART WORK CIRCUIT SIDE  SIZE: <b>B</b> <b>250403</b> REV: <b>E</b> SCALE:    SHEET <b>7</b> OF <b>11</b>
	CHKD: <i>R. P. Rich</i> DATE: <i>10/12/82</i>	
	ENGR:    DATE: <i>1/27/82</i>	
	APPR: <i>YB</i>	
MATERIAL:	USED ON:	NEXT ASSY:
FINISH:	VIC-20CR	

THIRD ANGLE SYSTEM DIMENSION

REVISIONS			
LTR	ZONE	DESCRIPTION	DATE APPROVED
		SEE SHEET 1	



VIC-20 Foldout #5

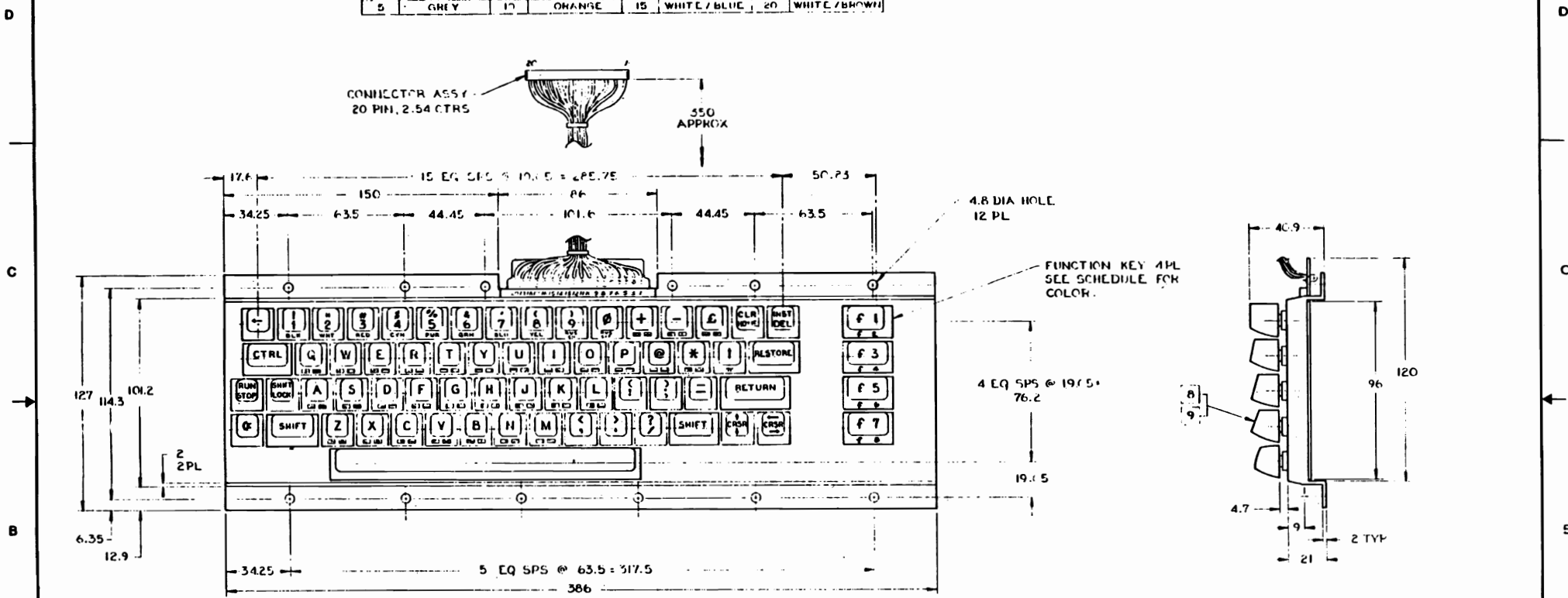
UNLESS OTHERWISE SPECIFIED		DATE	commodore
TOLERANCES ON:		27 12 26	
DECIMALS		27 12 27	VIC-20CR PCB ASSY
X XX XXX		28 12 27	
MATERIAL:		USED ON	SCALE
FRESH:		VIC-20CR	250403
		NEXT ASSY	REV
			E
			SHEET 11 OF 11



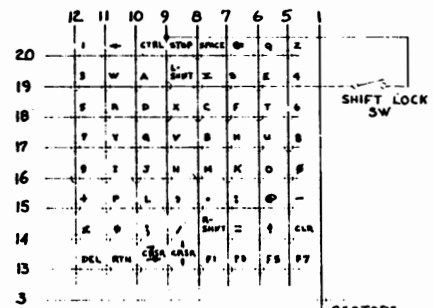
FUNCTION KEY COLOR SCHEDULE		
PART NO	USED ON	KEY CAP COLOR
1001028-01	VIC 20	BROWN (4973)
1001028-02	C-14	BROWN (387655K)

WIRE COLOR SCHEDULE					
NO	COLOR	NO	COLOR	NO	COLOR
1	WHITE	6	VIOLET	11	RED
2	KEY	7	BLUE	12	BROWN
3	BLACK	8	GREEN	13	WHITE / GREY
4	NC	9	YELLOW	14	WHITE / VIOLET
5	GREY	10	ORANGE	15	WHITE / BLUE
				16	WHITE / GREEN
				17	WHITE / YELLOW
				18	WHITE / ORANGE
				19	WHITE / RED
				20	WHITE / BROWN

REVISIONS			
LTR	ZONE	DESCRIPTION	DATE APPROVED
A		PRODUCTION RELEASE	9/11/82



10. ALL DIMENSIONS ARE REFERENCE ONLY.
  9. ALL KEYCAPS TO BE DARK BROWN (38-768660), EXCEPT FUNCTION KEYS. ALL CHARACTERS & GRAPHICS TO BE IVORY (38-135550).
  8. KEYCAPS ARE TWO SHOT MOLDED TRUNCATED PYRAMID WITH CONCAVE TOP FOR CHARACTERS. ALL GRAPHICS ARE ON THE FRONT SIDE OF KEYCAPS BY SILKSCREEN.
  7. CONTACT RESISTANCE SHALL NOT EXCEED 1KΩ OVER LIFE OF CONTACT. (10 MILLION OPERATIONS).
  6. CONTACT TO BE PROTECTED FROM CONTAMINATION OVER LIFE OF CONTACT.
  5. IDENTIFY WITH COMMODORE PART NO 224166, IF APPLICABLE. DASH NO. (BAG # TAG).
  4. THIS PART IS PURCHASED & MANUFACTURED FROM MITSUBISHI IN TOKYO JAPAN.
  3. PCB MATERIAL TO BE GFR-1 OF THE FR-4 FAMILY (FR4 GLASS ALT) EPOXY RESIN FROM CLEAR ON ONE SIDE.
  2. KEYCAP ATTACHMENT TO BE APPROVED BY COMMODORE.
  1. ALL DIMENSIONS ARE IN MILLIMETERS.
- NOTES - UNLESS OTHERWISE SPECIFIED.



-01 & 02 SHOW US VERSIONS

UNLESS OTHERWISE SPECIFIED	DRAWN BY WJ14	DATE 6-8-82	commodore
TOLERANCES ON ALL DIMENSIONS ARE AS SHOWN	CHKD GCS	6-8-82	
MATERIAL	USED ON C-14 VIC 20	NEXT ASSY 224126	KEYBOARD KEY US VERSIONS
FORM			SIZE 11 1001028
			SCALE 1/1 SHEET 1 OF 1