

## ICS64S – Commodore 64 compatible replacement motherboard

Uses most of the same components from Assembly 250407 and KU-14194HB motherboards, \* = part not the same as original motherboard!

BOARD REFERENCE	QTY	VALUE	DESCRIPTION	MANUFACTURER PART #	DIGIKEY PART #	MOUSER PART #	ARROW PART #
<b>RESISTORS</b>							
*R42	1	82	82 ohm 1%	SFR250008209FR500	PPC82.0YCT-ND	594-5043ED82R00F	
R26,R53	2	100	100 ohm 1%	MBB02070C1000FCT00	BC3564CT-ND	594-MBB02070C1000FCT	MBB02070C1000FCT00
R52	1	330	330 ohm 1%	MBB02070C3300FCT00	BC3741CT-ND	594-MBB02070C3300FCT	MBB02070C3300FCT00
R39	1	390	390 ohm 1%	MBB02070C3900FCT00	BC3766CT-ND	594-MBB02070C3900FCT	MBB02070C3900FCT00
R5	1	560	560 ohm 1%	MBB02070C5600FCT00	BC3834CT-ND	594-MBB02070C5600FCT	MBB02070C5600FCT00
R4,R6,R8,R16,R28,R29,R30,R31,R36,R38	10	1K	1K 1%	MBB02070C1001FCT00	BC3566CT-ND	594-MBB02070C1001FCT	MBB02070C1001FCT00
R2,R51	2	1.5K	1.5K 1%	MBB02070C1501FCT00	BC3616CT-ND	594-MBB02070C1501FCT	MBB02070C1501FCT00
R17,R37	2	2.7K	2.7K 1%	MBB02070C2701FCT00	BC3711CT-ND	594-MBB02070C2701FCT	MBB02070C2701FCT00
R1,R43,R44,R45	4	3.3K	3.3K 1%	MBB02070C3301FCT100	BC3742CT-ND	594-MBB02070C3301FCT1	MBB02070C3301FCT100
R3,R7	2	10K	10K 1%	MBB02070C1002FCT00	BC3569CT-ND	594-MBB02070C1002FCT	MBB02070C1002FCT00
R19	1	15K	15K 1%	MBB02070C1502FCT100	BC3617CT-ND	594-MBB02070C1502FCT1	MBB02070C1502FCT100
R33,R34	2	47K	47K 1%	MBB02070C4702FCT100	BC3793CT-ND	594-MBB02070C4702FCT1	MBB02070C4702FCT100
*R9	1	100K	100K 1%	MBB02070C1003FCT100	BC3570CT-ND	594-MBB02070C1003FCT1	MBB02070C1003FCT100
R10	1	330K	330K 1%	MBB02070C3303FCT00	BC3747CT-ND	594-MBB02070C3303FCT	
R35,*R41,*R50	3	470K	470K 1%	MBB02070C4703FCT00	BC3796CT-ND	594-MBB02070C4703FCT	MBB02070C4703FCT00
R27	1	500	Trimmer, 500 Ohms, Linear	3306P-1-501	3306P-501-ND	652-3306P-1-501	3306P-1-501
RP1,RP2	2	33 ohm x 4	Network, 33 ohm, Isolated 8 pin SIP	4608X-102-330LF	4608X-2-330LF-ND	652-4608X-2LF-33	4608X-102-330LF
RP3	1	3.3K x 7	Network, 3.3K, Bussed 8 pin SIP	4608X-101-332LF	4608X-1-332LF-ND	652-4608X-1LF-3.3K	4608X-101-332LF
RP4	1	3.3K x 9	Network, 3.3K, Bussed 10 pin SIP	4610X-101-332LF	4610X-1-332LF-ND	652-4610X-1LF-3.3K	4610X-101-332LF
<b>DIODES</b>							
CR1	1	IN4371	Zener, 2.7V, 500mW, DO-35-2	TXZ2V7C-TAP	TXZ2V7C-TAPGICT-ND	78-TXZ2V7A	
CR2	1	IN755	Zener, 7.5V, 500mW, DO-35-2	TXZ7V5C-TAP	TXZ7V5C-TAP-ND	78-TXZ7V5C	
CR5,CR6	2	1N4001	Rectifier, 1A, 50V	1N4001-E3/54	1N4001-E3/54GICT-ND	625-1N4001-E3/54	1N4001-E3/54
*CR7,CR8,CR9,CR10	4	GPP20J	Rectifier, 2A, 600V, DO-15	GPP20J-E3/54	GPP20J-E3/54GICT-ND	625-GPP20J-E3	GPP20JE373
<b>FERRITE BEADS</b>							
FB1,FB2,FB3,FB4,FB5,FB7,FB8,FB9,FB10,FB11,FB12,FB14,FB15,FB16,FB17,FB18,FB19,FB20,FB21,FB22	20	FERRITE_BEAD	3.75x5.5mm, axial (Fair-Rite)	2743015112	2743015112	623-2743015112	2743015112
<b>SMALL INDUCTORS</b>							
L1,L2	2	2.2uH	Inductor 2.2uH 5% axial	78F2R2J-RC	78F2R2J-RC-ND	652-78F2R2J-RC	78F2R2K-RC
*L5	1	4.7uH	Inductor 4.7uH 10% axial	5800-4R7-RC	M8277-ND	542-5800-4R7-RC	5800-4R7-RC
<b>CAPACITORS</b>							
*C70 (PAL)	1	15pf	MLCC 15pf 50V 5% COG NPO	FG28C0G1H150JNT06	445-173478-1-ND	810-FG28C0G1H150JNT6	
*C70 (NTSC)	1	16pf	MLCC 16pf 50V 5% COG NPO	C317C160J5G5TA	399-8914-ND	80-C317C160J5G	C317C160J5G5TA
C36	1	20pf	MLCC 20pf 50V 5% COG NPO	C317C200J5G5TA	399-8916-ND	80-C317C200J5G	C317C200J5G5TA
C83,C86	2	82pF	MLCC 82pf 50V 5% COG NPO	RDE5C1H820J0K1H03B	490-8718-ND	81-RDE5C1H820J0K1H3B	RDE5C1H820J0K1H03B
C204	1	150pf	MLCC 150pf 50V 5% COG NPO	RDE5C1H151J0K1H03B	490-8646-ND	81-RDE5C1H151J0K1H3B	RDE5C1H151J0K1H03B
*C23	1	390pf	MLCC 390pf 50V 5% COG NPO	RDE5C1H391J0K1H03B	490-8686-ND	81-RDE5C1H391J0K1H3B	RDE5C1H391J0K1H03B
C10,C11	2	470pf	MLCC 470pf 50V 5% COG NPO	RDE5C1H471J0K1H03B	490-8694-ND	81-RDE5C1H471J0K1H3B	RDE5C1H471J0K1H03B
C37	1	1000pf	MLCC 1000pf 50V 5% COG NPO	RDE5C1H102J0K1H03B	490-8632-ND	81-RDE5C1H102J0K1H3B	RDE5C1H102J0K1H03B
C48,C93	2	1800pf	MLCC 1800pf 50V 5% COG NPO	RDE5C1H182J0K1H03B	490-8656-ND	81-RDE5C1H182J0K1H3B	RDE5C1H182J0K1H03B
*C38	1	4700pf	MLCC 4700pf 50V 5% COG NPO	RDE5C1H472J1K1H03B	490-8696-ND	81-RDE5C1H472J1K1H3B	RDE5C1H472J1K1H03B
C1,C2,C3,C4,C5,C6,C7,C9,C12,C15,C16,C18,C22,C25,C26,C27,C28,C29,C30,C31,C32,C33,C35,C39,C40,C41,C42,C43,C44,C45,C46,C47,C49,C50,C51,C52,C53,C54,C56,C58,C59,C60,C61,C63,C66,C67,C68,C74,C84,C89,C92,C95,C96,C98,C99,C101,C103,C105	58	0.1uf	Capacitor - MLCC 0.1uf 50V 10% X7R	C322C104K5R5TA	399-4329-ND	80-C322C104K5R5TA	C322C104K5R5TA
C20,C21	2	0.22uf	Capacitor - Poly Film 0.22uf 63V 10%	BFC237011224	BC1628-ND	594-2222-370-11224	BFC237011224
C97,C100	2	0.22uf	Capacitor - MLCC 0.22uf 100V 10% X7R	C330C224K1R5TA	399-4400-ND	80-C330C224K1R	C330C224K1R5TA
C85	1	0.47uf	Capacitor - MLCC 0.47uf 50V 10% X7R	C330C474K5R5TA	399-4415-ND	80-C330C474K5R	C330C474K5R5TA
C8,C13,C14,C24,C34,C57,C62,C64,C65,C94,C102,C107,C108	13	10uf	Capacitor - Electrolytic 10uf 50V 20%	ECE-A1HKS100	P997-ND	667-ECE-A1EKS100I	ECE-A1HKS100
C17,C91	2	100uf	Capacitor - Electrolytic 100uf 63V 20%	EEU-FR1J101B	P15402-ND	667-EEU-FR1J101B	EEU-FR1J101B
C55	1	330uf	Capacitor - Electrolytic 330uf 35V 20%	35YXF330MEFCT810X16	1189-3742-1-ND	647-UVR1V331MPD	
C88,C90	2	470uf	Capacitor - Electrolytic 470uf 50V 20%	477TTA050M	1572-1157-ND	598-477TTA050M	477TTA050M
C19	1	2200uf	Capacitor - Electrolytic 2200uf 25V 20%	MAL202116222E3	4042PHBK-ND	594-2222-021-16222	MAL202116222E3
<b>SOCKETS / INTEGRATED CIRCUITS (CHIPS)</b>							
U1	1	40 PIN / CIA_U1	6526 CIA	Original computer			
U2	1	40 PIN / CIA_U2	6526 CIA	Original computer			
U3	1	28 PIN / BASIC ROM	8K ROM	Original computer / EPROM			
U4	1	28 PIN / KERNAL ROM	8K-64K ROM	2764-27512 EPROM/EEPROM			
U5	1	28 PIN / CHAR ROM	4K ROM	Original computer / EPROM			
U6	1	18 PIN / VIDEO RAM	2114 SRAM	Original computer / NEW			
U7	1	40 PIN / CPU	6510 CPU	Original computer			
U9,U10,U11,U12,U21,U22,U23,U24	8	16 PIN / RAM	4164-2 1x64kb SDRAM	Original computer / NEW			
U17	1	28 PIN / PLA	82S100 PLA	Original computer / NEW			
U18	1	28 PIN / SID	6581 - original computer	Original computer / NEW			
U19	1	40 PIN / VICII	6567/6569 ( NTSC/PAL) VICII	Original computer			
U8	1	14 PIN / 7406N	IC HEX INVERTER OPEN COLLECTOR	SN74LS06N	296-15069-5-ND	595-SN74LS06N	
U13,U25	2	16 PIN / 74LS257	IC QUAD 2-1 DATA SEL/MUX	SN74LS257BN	296-1656-5-ND	595-SN74LS257BN	
U14	1	16 PIN / 74LS258	IC QUAD 2-1 MULTIPLEXER TRI S	SN74LS258BN	296-33983-5-ND	595-SN74LS258BN	SN74LS258BN
U15	1	16 PIN / 74LS139	IC DUAL 2-4 LINE DECODER	SN74LS139AN	296-1640-5-ND	595-SN74LS139AN	
U16,U28	2	14 PIN / CD4066	IC QUAD BILATERAL SWITCH	CD4066BE	296-2061-5-ND	595-CD4066BE	
U20	1	14 PIN / NE556	IC OSC TIMER DUAL	NE556N	296-6504-5-ND	595-NE556N	NE556N
U26	1	20 PIN / 74LS373	IC OCT D-TYPE LATCH	SN74LS373N	296-1660-5-ND	595-SN74LS373N	SN74LS373N
U27	1	14 PIN / 74LS08	IC GATE AND 4CH 2-INP	SN74LS08N	296-1633-5-ND	595-SN74LS08N	SN74LS08N
U29	1	14 PIN / 74LS74	IC FF D-TYPE DUAL 1BIT	SN74LS74AN	296-1668-5-ND	595-SN74LS74AN	SN74LS74AN
U30	1	16 PIN / 74LS193	IC 4-BIT UP/DOWN COUNTER	SN74LS193N	296-1649-5-ND	595-SN74LS193N	SN74LS193N
U31	1	16 PIN / 74LS629N	IC OSC DUAL VCO 20MHZ	SN74LS629N	296-3725-5-ND	595-SN74LS629N	
U32	1	14 PIN / MC4044	IC PHASE DETECTOR	MC4044			
<b>TRANSISTORS</b>							
Q1,Q2,Q7,Q8	4	2SC1815	Bipolar Transistor TO-92 Vce=60V 400mA	2SC1815 PBFREE	1514-2SC1815PBFREE-ND	610-2SC1815	
Q3	1	TP298/2SD880	Bipolar Transistor TO-220	KSD880YTU	KSD880YTU-ND	512-KSD880YTU	KSD880YTU
<b>CRYSTAL (CHOOSE ONE)</b>							
*Y1 (NTSC)	1	Crystal	14.31818MHz 50ppm HC-49/US 18pF	ABL-14.31818B2	535-9039-ND	815-ABL-14.31818B2	
*Y1 (NTSC)	1	Crystal	14.31818MHz 100ppm HC-49 18pF	AB-14.31818MHZ-B2	535-9004-ND	815-AB-14.31818B2	
*Y1 (PAL)	1	Crystal	17.734475MHz 50ppm HC-49/US 18pF	HC-49/U-S17734475ABJB	300-6038-ND	695-HC49US-177-U	
*Y1 (PAL)	1	Crystal	17.734475MHz 30ppm HC-49 18pF	AB-17.734475-B4	535-9004-ND	815-AB-17.734475-B4	
<b>REGULATORS</b>							
VR1	1	7812	12v regulator 1A TO-220	LM2940CT-12/NOPB	LM2940CT-12/NOPB-ND	926-LM2940CT-12/NOPB	
VR2	1	7805	5v regulator 1A TO-220	L4941BV	497-6695-5-ND	511-L4941BV	L4941BV
<b>CONNECTORS / HEADERS</b>							
CN1	1	Header	Male vertical, 1x20, 0.100" (pull pin 2 from connector)	22284204	WM50018-20-ND	538-22-28-4204	
CN4	1	IEC port	6 pin round DIN 45322	Original computer / NEW			
CN5	1	Video port connector	8 pin round DIN 45326	Original computer / NEW			
CN6	1	Cartridge port connector	Edge connector, dual row, female, 22x2 (44 pos) 0.100"	CR22A-44D-2.54DSA(70)	H122591-ND	798-CR22A44D254DSA70	
CN7	1	Power connector	7 pin round DIN 45329	Original computer / NEW			
CN8,CN9	2	Joystick port connector	DB9, multiple options	Original computer / NEW			
CN10,J6	2	Header	Male vertical, 1x3, 0.100"	22-28-4033	WM50016-03-ND	538-22-28-4033	22284033
J1, INT IEC	2	Header	Male vertical, 2x3 (or two 1x3), 0.100"	10-97-7066	WM22469-ND	538-10-97-7066	
J2	1	Header	Male horizontal, 1x3, 0.100"	22-28-8034	WM22414-ND	538-22-28-8034	22288034
J3,J4,J5	3	Header	Male vertical, 1x4, 0.100"	22-28-4040	WM50014-04-ND	538-22-28-4040	22284040
<b>MISCELLANEOUS</b>							
SW1	1	POWER_SWITCH	Original computer / NEW				
F1	2	Clip (half)	Eaton Fuse Clip	BK1A1907-03	283-2826-ND	504-BK1A1907-03	BK1A1907-03-R
FUSE	1	1A	Fuse Glass 6x32mm 1A 250VAC fast blow	3AG 1-R	507-1630-ND	530-3AG1-R	
*L3 (optional - can use straight 18awg-22awg wire)	1	330uH	Inductor 330uH 10% axial	B82144F2334J000	495-6799-1-ND	871-B82144F2334J000	
L4	1	CHOKE	250V,3.8mH,2.1A,150mOhms, Original computer / NEW	SSR10V-21038	399-SSR10V-21038-ND	80-SSR10V-21038	