PRESIDENT

Saitek™

Doc. No.	:	SW19-PG-35
Rev.	:	0.1
Date	:	5.7.93

SW19 GENERAL PRODUCT SPECIFICATIONS

A.	Battery Requirement	:	1.5V (size 'C' or 'UM-2') X 6 pcs. Alkaline type recommended
B.	Operating Voltage	:	6.6 - 10.2 Volts
C.	Adaptor Operating Voltage	:	8 - 12 volts
D.	Current Consumption	:	a) Normal mode at V.90 = 9V with two LEDs on 35mA typical 61mA max b) Memory mode at V90 = 9V 100uA typical 300uA max
E.	Power Consumption	:	315mW typical 550mW max
F.	System Clock Frequency	:	20MHz +/-5% (AT V90 = 9V)

PREPARED BY : C. W. Tang

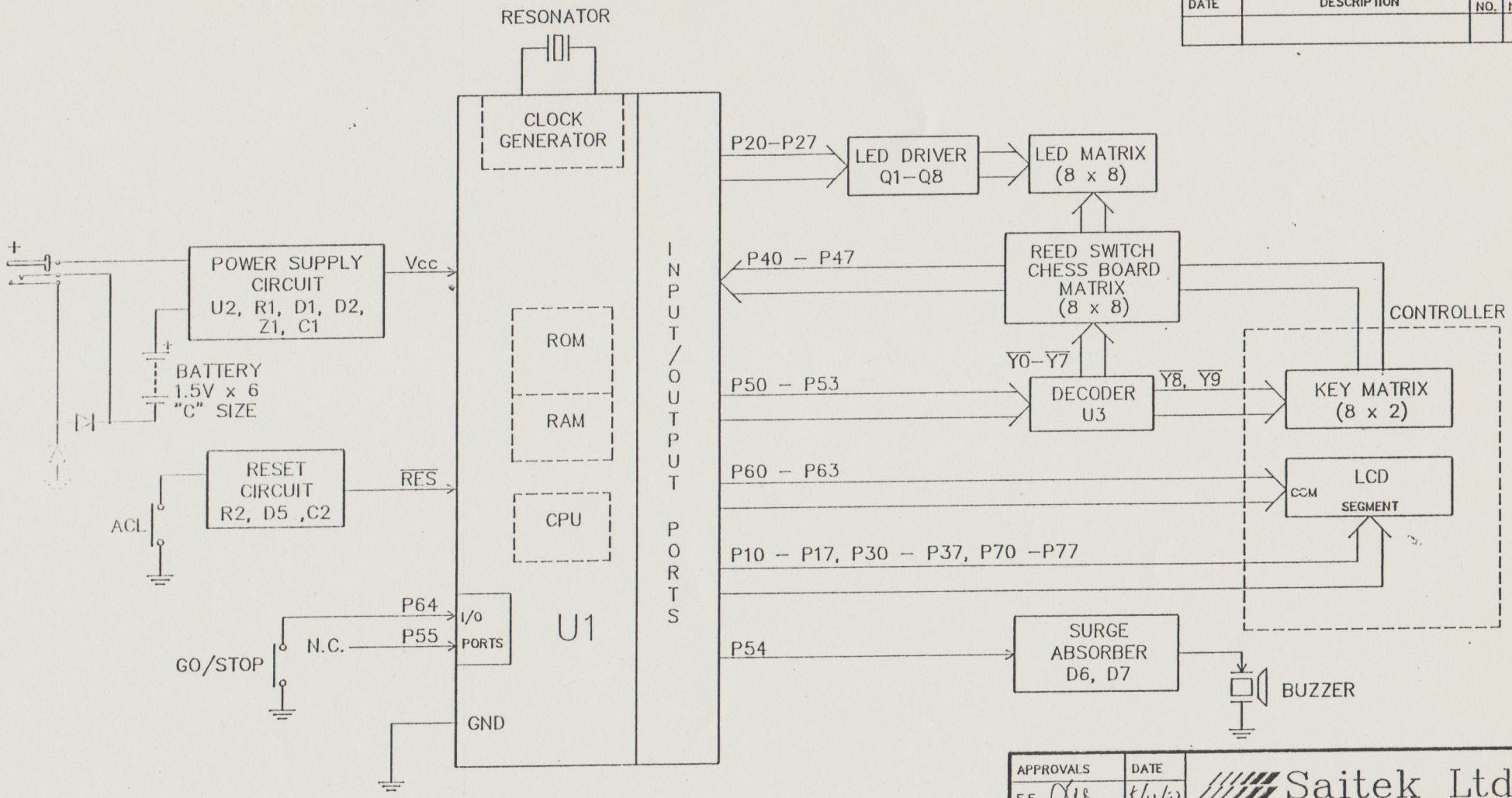
APPROVED BY :

DIST : QAM, IEM, SEE, SEA

FILENAME : \ED#01\SW19

ORIGINAL

REVISION			
DATE	DESCRIPTION	ECN NO.	REV. NO.



APPROVALS	DATE
E.E.	5/11/93
DRAWN	5/11/93
E.D.	5.11.93
B.D.D.	5.11.93
Q.A.	8.11.93

Saitek Ltd.

BLOCK DIAGRAM

TITLE: 299 PRESIDENT CHESS

DWG. NO. SW19 – PE – 039 REV. 0

PROJECT : PRESIDENT CHESS

DOC. NO. : SW19-PS-35

REV. : 0

DATE : 2.7.93

ADJUSTMENT PROCEDURE FOR SW19

OBJECT : To adjust system clock frequency.

EQUIPMENT NEEDED : Frequency counter or Oscilloscope capable of frequency measurement up to 20 MHz.

PROCEDURE :

1. Disassemble unit by removing screws (8) on cabinet base.
2. Power on unit (V90 = 9V)
3. Place probe of counter/scope at pin 9 of U1. If frequency measured is out of specified range (19 - 21MHz). replace C4 or C3 (S.O.T.) until counter/scope reading is within specification.
4. Reassemble unit.

PREPARED BY : C. W. Tang

APPROVED BY :

DIST : QAM, IEM, SEE, SEA

FILENAME : \ED#01\SW19

PROJECT : SW19
DOC. NO. : SW19-PS-040
REV. : 0
DATE : 28.12.93
C.C. : QA, ED

SW19 TROUBLE SHOOTING CHART

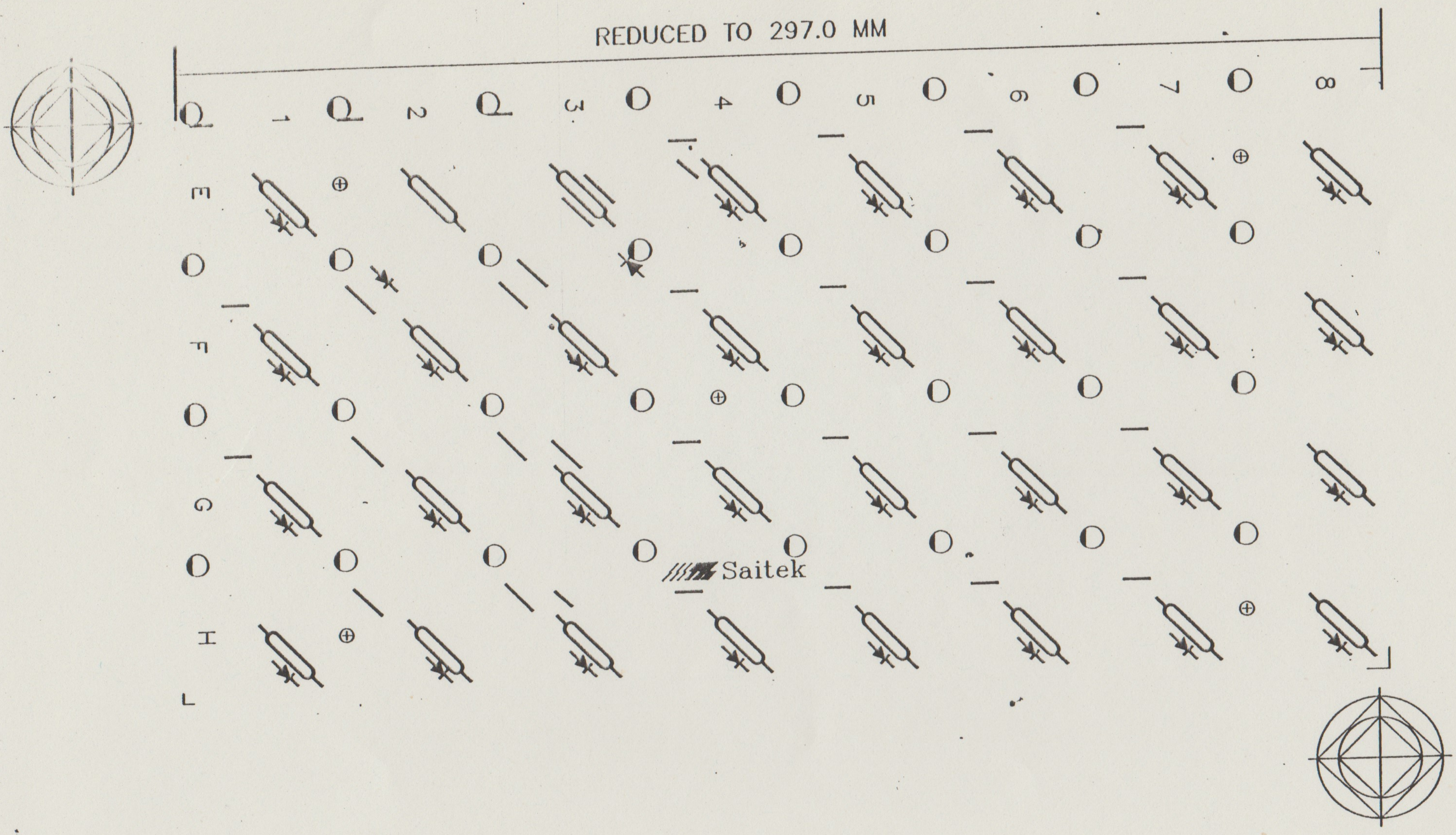
SYMPTOMS		POSSIBLE CAUSES
1. Unit will not turn on	i)	Check Vcc for 6.6V to 10.2V: If Vcc is not within this range: 1. Dead or weak battery 2. Broken connection in battery wiring 3. Defective adapter - Check adapter voltage under load 4. Broken connection between adapter socket and logic PCB 5. Defective voltage regulator - Check D1,D2,D3,D4,Z1,R1,U2
	ii)	Check clock circuit - Look for 20 MHz oscillation at U1 pin 10/9. If not, 1. Check X1 2. Defective U1
	iii)	Check reset circuit: - Check action at U1 pin 8 from logic "LOW" to logic "HIGH" after "ACL" is pressed. If not, - Check D5,R2,C2,contact on ACL
2. LED (s) turn on when they should not	i)	Look for broken traces or short circuits on PCBs
	ii)	Broken connections between PCBs
	iii)	Defective corresponding LED
	iv)	Defective corresponding resistor
	v)	Defective U1
	vi)	Check Q1-Q8,R9-R32
3.No response or improper response to command keys	i)	Check no dust,oxide,opened circuit in golden finger
	ii)	Loose contacts or misalignment between sensor and PCB traces
	iii)	Defective U1
4. No sound	i)	Broken wiring from beeper to PCB
	ii)	Defective beeper
	iii)	Defective D6,D7
	iv)	Defective U1, Check for pulse output at U1 pin 29 when "SOUND ON"
5. No Go/Stop function	i)	Check connections between switch and PCB
	ii)	Broken or short circuits on PCB
	iii)	Check R4

Daniel

	iv) v)	Check pin 5 logic "Low" when GO/STOP pressed on. Defective U1
6. Excessive current drain Current > 61mA when "GO" Current > 300µA in "STOP"	i) ii) iii) iv)	Components wiring or PCB trace short-circuited Contaminations and/or foreign particles on PCB Capacitor leakage- Check C1,C5 Defective U2
7. Generates illegal moves when escapes from "STOP"	i) ii)	Battery exhausted Defective U1

FILE : ED#10A/SW19PS40

Daniel Mind



3RD ANGLE PROJECTION	SIGNATURE		DATE	REV.	ITEM
TOLERANCES	DRAWN BY:	TY	24/1/93		
DIM. : ANGLE:	CHECK BY:	Zong	25/1/93		
SCALE: 1 : 1 UNIT: mm	ENGRG AUTH		25-5-93		
QUANTITY :	Q.A. APPD.		26.1.93		
SHEET OF	BDD APPD.		26.1.93		

DESCRIPTION OF CHANGE WAS	IS	DATE	DRAWN	CHECK	APPROVED ED	QA	BDD
		26/1	TY	Zong			

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TITLE: Chessboard (CB) Component Layout

DWG. NO.: SW19-PE-012CL

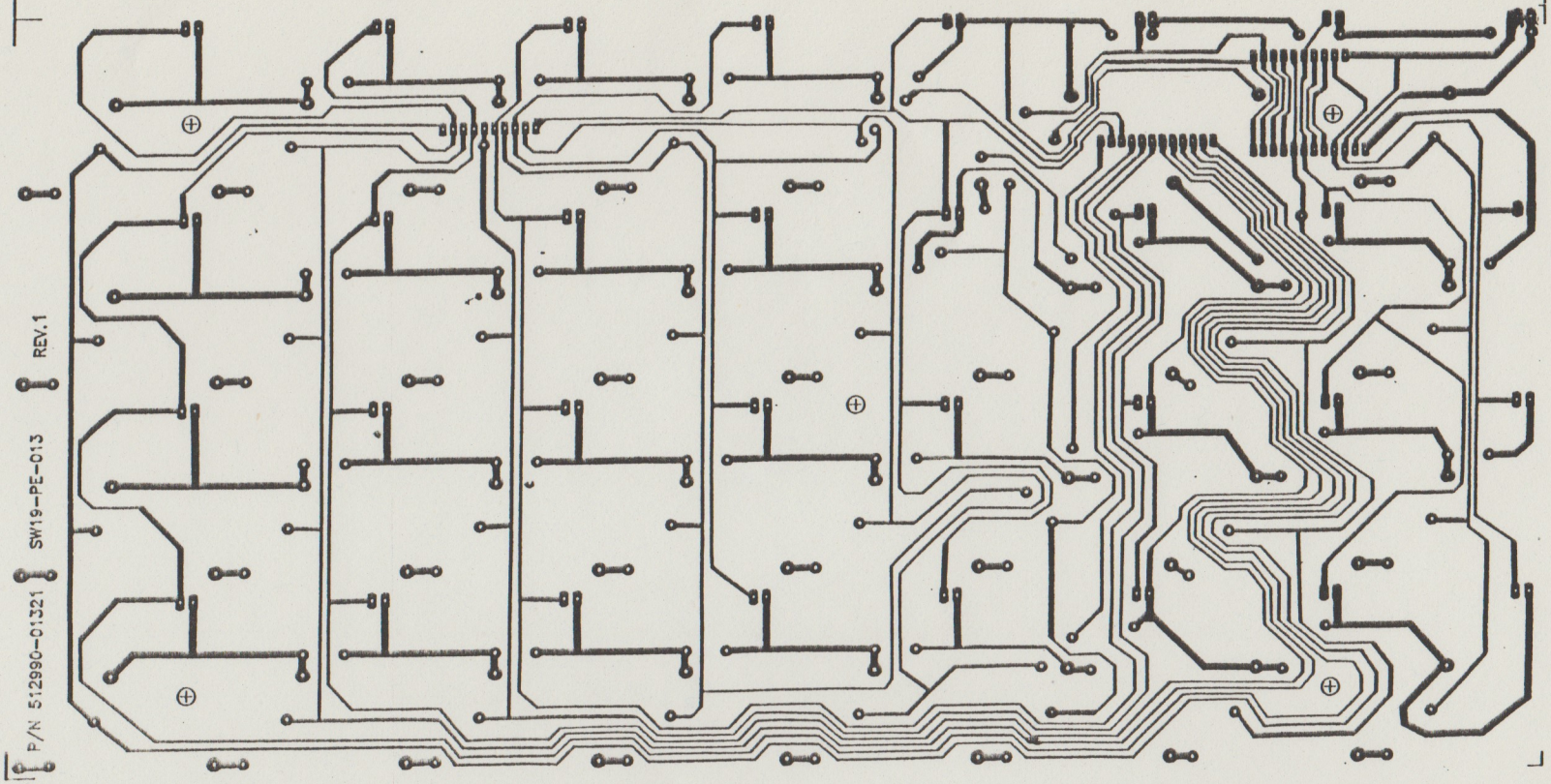
PROJECT: SW19

P/N. :

MATERIAL

FINISH

REDUCED TO 297.0 MM



3RD ANGLE PROJECTION	SIGNATURE		DATE
TOLERANCES	DRAWN BY:	TY	24/1/93
DIM. : ANGLE:	CHECK BY:	Zong	25/5/93
SCALE: :1 UNIT: mm	ENGRG AUTH	Alfred	25.5.93
QUANTITY :	Q.A. APPD.	[illegible]	26.5.93
SHEET OF	BDD APPD.	[illegible]	26/5/93

REV.	ITEM	WAS	IS	DATE	DRAWN	CHECK	ED	QA	BDD
		DESCRIPTION OF CHANGE					APPROVED		
f		correct a diode silkscreen		26/7	TY	Zong	[illegible]	[illegible]	

Saitek

TITLE: Chessboard (B) Layout - Solder side -

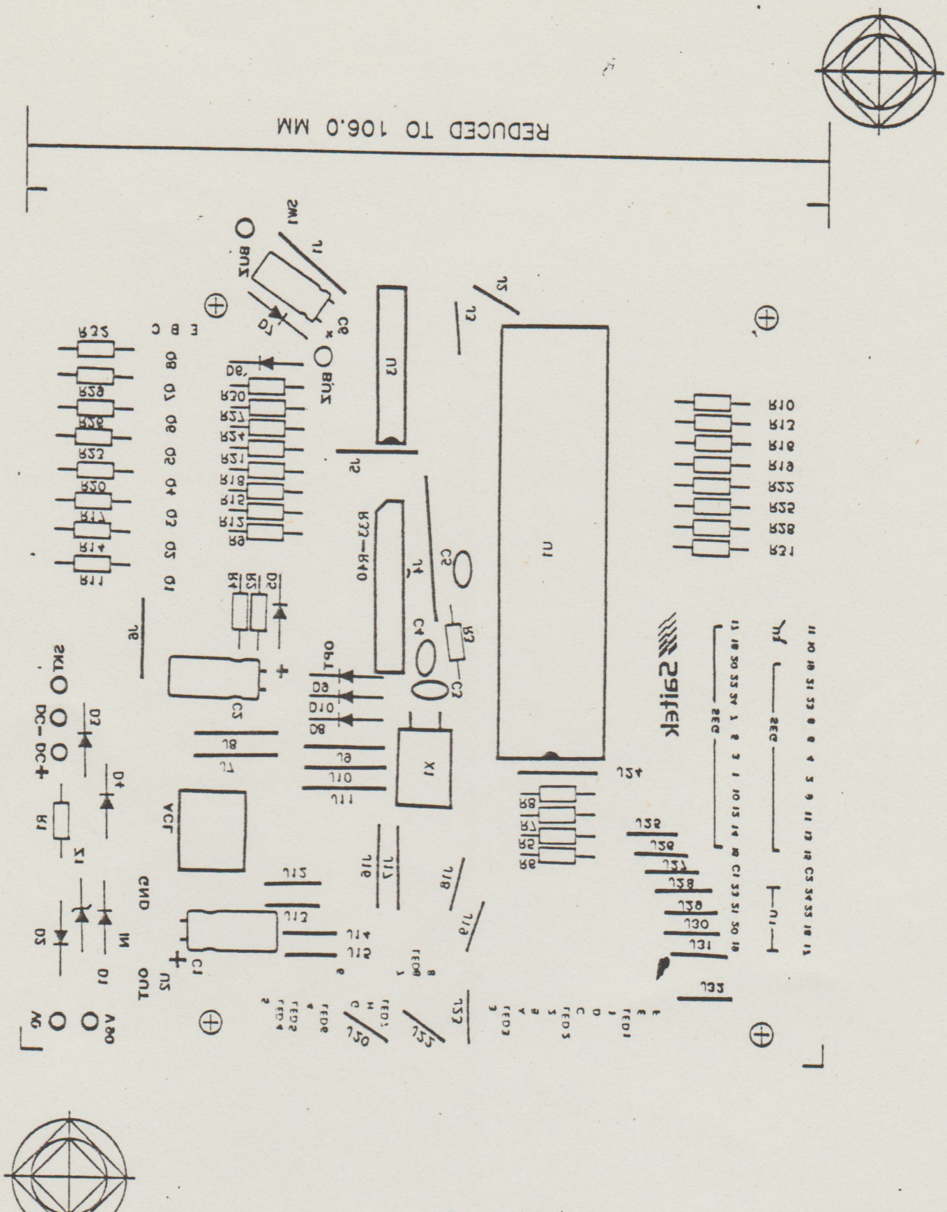
DWG. NO.: SW19-PE-01355

PROJECT: SW19

P/N.: 5 1 2 9 9 0 - 0 1 3 2 1

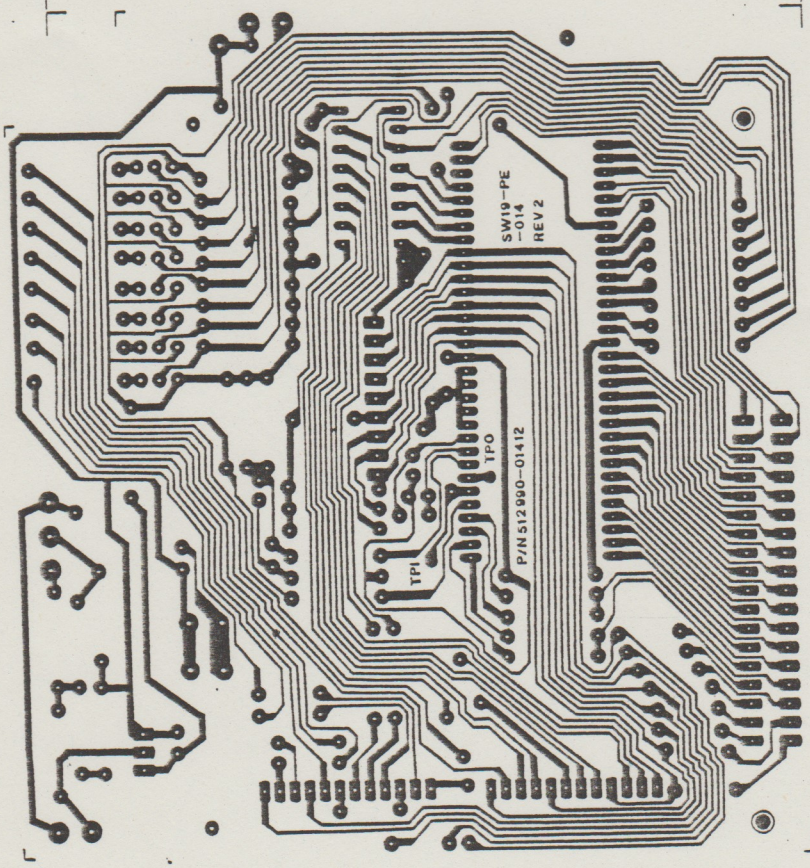
MATERIAL

FINISH



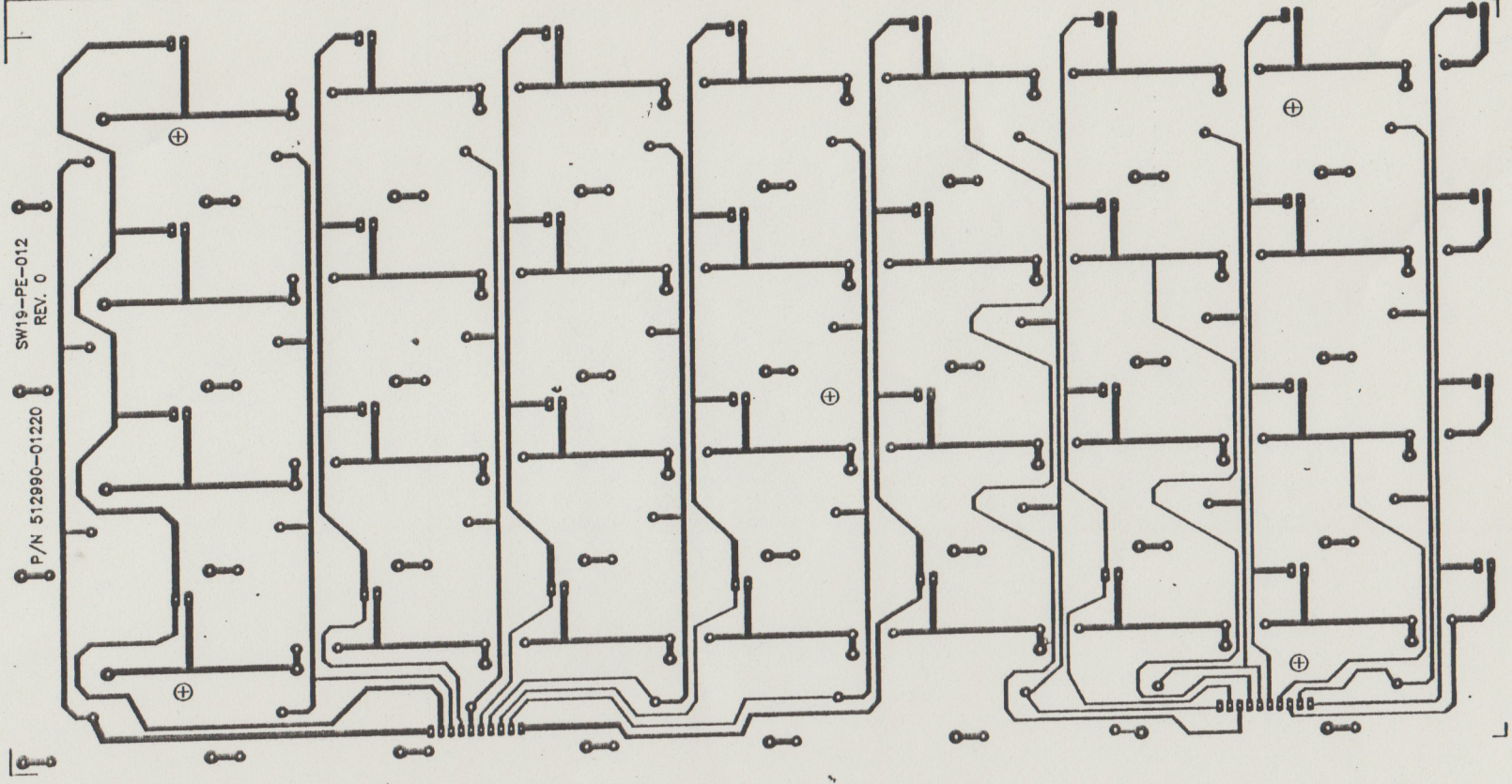
REV.	ITEM	WAS	IS	DATE	DRAWN	CHECK	ED	QA	BOD
		DESCRIPTION OF CHANGE					APPROVED		
2				6/9	TY	[illegible]	[illegible]		
1				27/7	TY	[illegible]	[illegible]	[illegible]	

3RD ANGLE PROJECTION	SIGNATURE	• DATE	
TOLERANCES ⌀	DRAWN BY: TY	24/5/93	Saitek
DIM. : ANGLE:	CHECK BY:	25/5/93	TITLE: Logic PCB Component Layouts
SCALE: 2 : 1 UNIT: mm	ENGRG AUTH	25.5.93	DWG. NO.: SW19-PE-014C2 PROJECT: SW19
QUANTITY :	Q.A. APPD.	25.5.93	P/N. :
SHEET OF	BOD APPD.	26.5.93	MATERIAL FINISH



				2		Mechanical change	6/9	TY			
				1		Modify layout	27/4	TY			
3RD ANGLE PROJECTION	SIGNATURE		DATE	REV.	ITEM	WAS \ DESCRIPTION OF CHANGE	DATE	DRAWN	CHECK	D	DA	3DO APPROVED
TOLERANCES	DRAWN BY:	TY	24/6/99									
DIM. : ANGLE:	CHECK BY:		25/5/99		Saitek		TITLE: Logic PCB assy - Sol Lab 1/2 -					
SCALE: 1:1 UNIT: mm	ENGRG AUTH		25.5.99				OWG. NO.: SW19-PE-014					
QUANTITY :	Q.A. APPD.						P/N.:					
SHEET OF	3DO APPD.						MATERIAL					FINISH

REDUCED TO 297.0 MM



3RD ANGLE PROJECTION	SIGNATURE		DATE
TOLERANCES	DRAWN BY:	TY	24/5/93
DIM. : ANGLE:	CHECK BY:	Zang	25/5/93
SCALE: 1:1 UNIT: mm	ENGRG AUTH	Alfred	25.5.93
QUANTITY :	Q.A. APPD.	[illegible]	26.5.93
SHEET OF	BDD APPD.	[illegible]	26.5.93

REV.	ITEM	WAS DESCRIPTION	IS OF CHANGE	DATE	DRAWN	CHECK	ED	QA	BDD
							APPROVED		

Saitek

TITLE: Chessboard (A) Layout – Solderside –

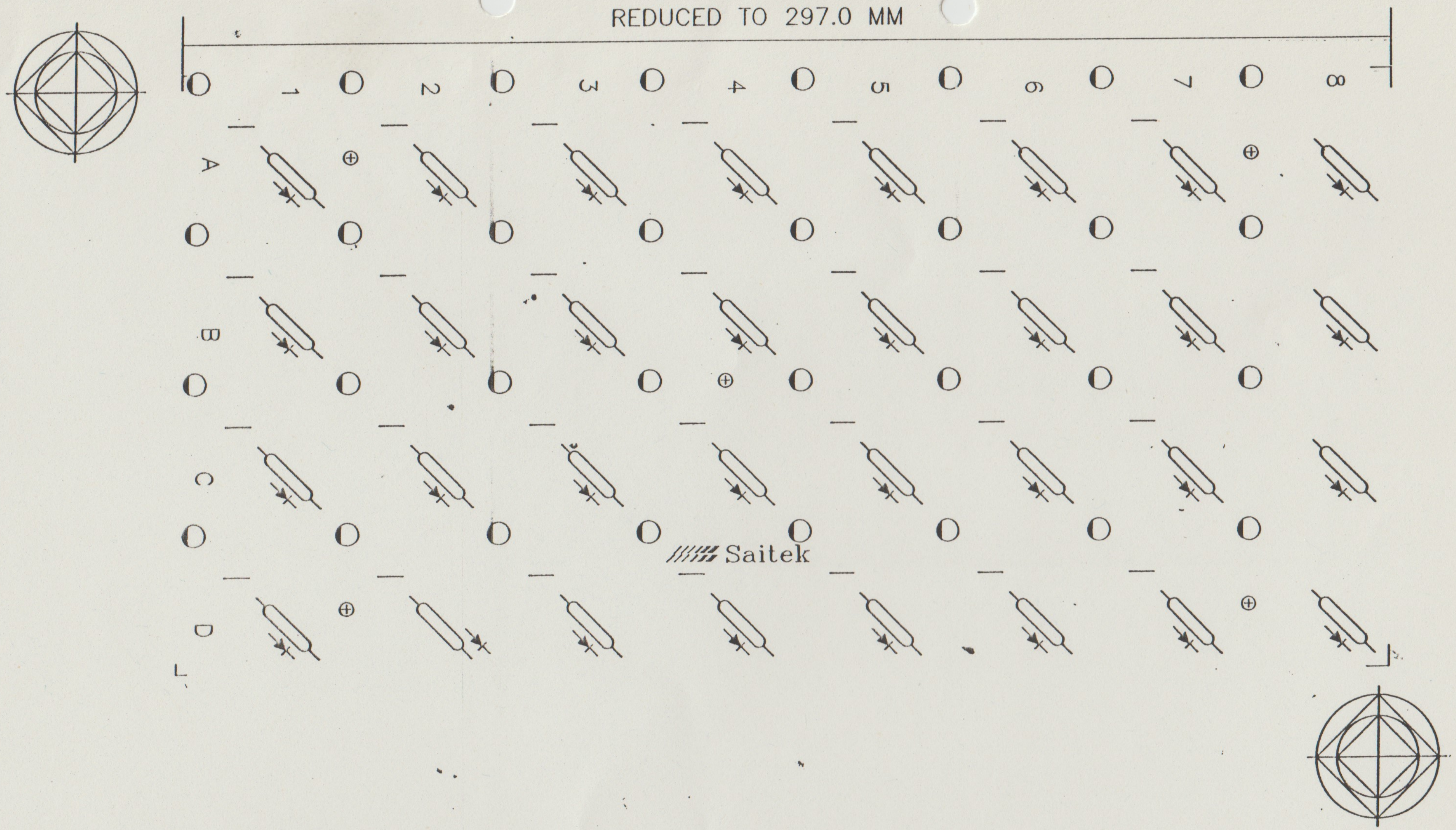
DWG. NO.: SW19-PE-01255

PROJECT: SW19

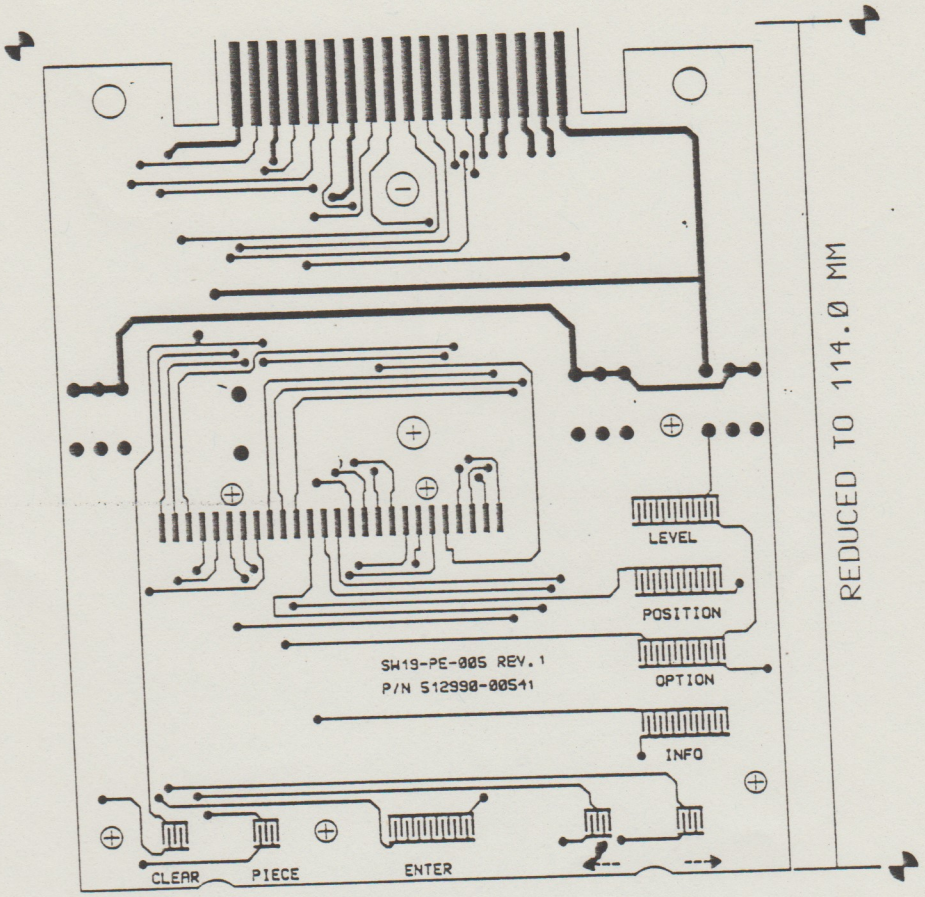
P/N.: 15.1.29.9.0-0.1.2.2.0.1

MATERIAL

FINISH



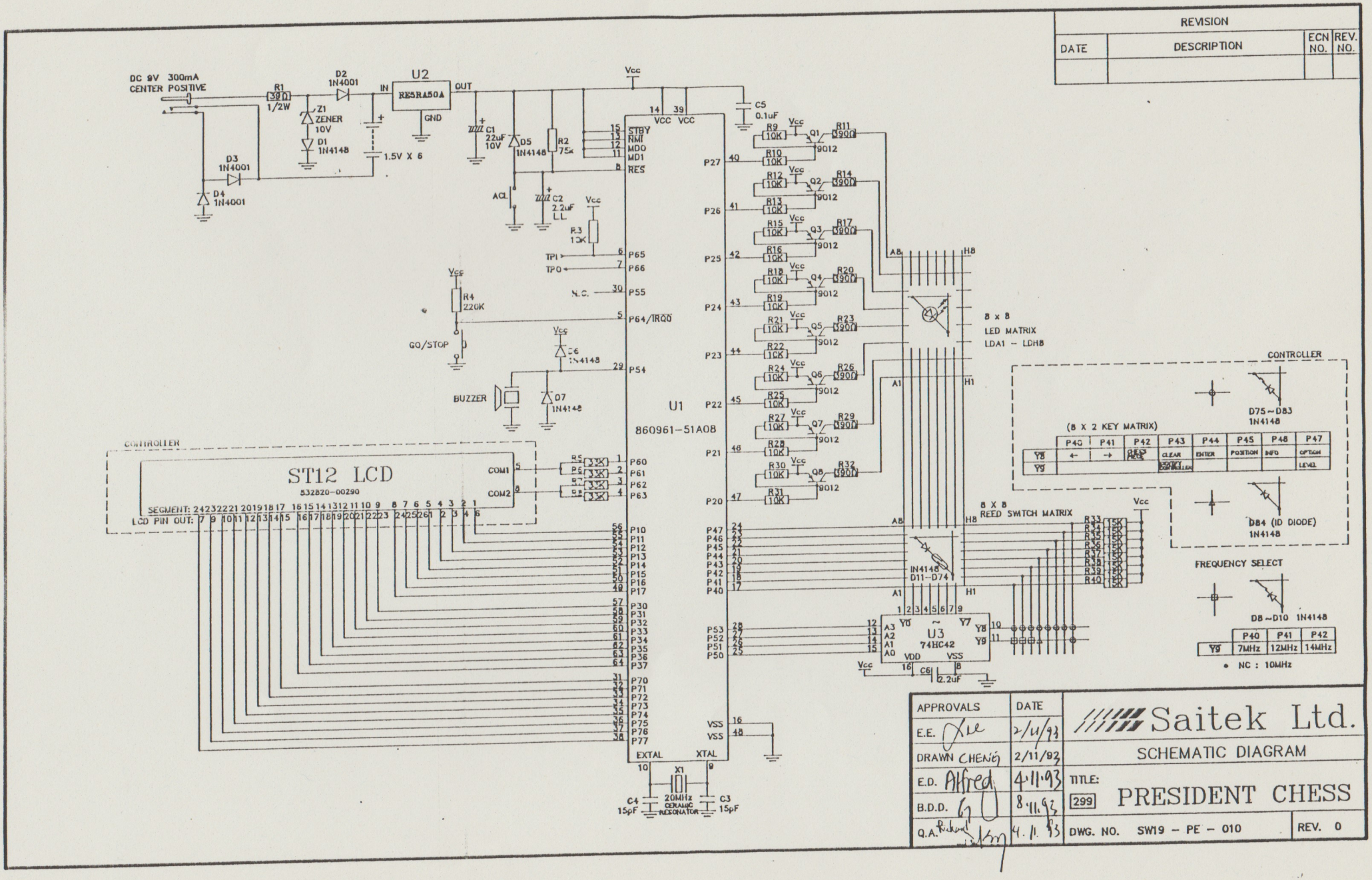
APPROVED BDD QA ED	CHECK	DRAWN	DATE	DESCRIPTION OF CHANGE IS	WAS	ITEM	REV.	DATE	SIGNATURE		3RD ANGLE PROJECTION	
TITLE: Chessboard (A) Component Layout				Saitek				21/5/93		DRAWN BY:	TOLERANCES	
								25/5/93		CHECK BY:	DIM. :	ANGLE:
PROJECT: SM19				DWG. NO.: SM19-P5-012CL				27.5.93	Alfred	ENGRG AUTH	SCALE: 1 : 1	UNIT: mm
				P/N :				26-5-93		Q.A. APPD.	QUANTITY :	
FINISH				MATERIAL				26-5-93		BDD APPD.	SHEET	OF


LEVEL
POSITION
OPTION
INFO
SW19-PE-005 REV.1
P/N 512990-00541
CLEAR
PIECE
ENTER
REDUCED TO 114.0 MM

REDUCED TO 114.0 MM

D75
D76
D77
Saitek
D84
D83
D79
D80
D81
D82
D78
REDUCED TO 114.0 MM

ORIGINAL


REVISION
DATE
DESCRIPTION
ECN NO.
REV. NO.
DC 9V 300mA
CENTER POSITIVE
R1 390Ω 1/2W
D2 1N4001
Z1 ZENER 10V
D1 1N4148
1.5V X 6
D3 1N4001
D4 1N4001
U2
RE5RA50A
IN
OUT
GND
C1 22uF 10V
D5 1N4148
R2 75K
ACL
C2 2.2uF LL
R3 10K
TP1
TP0
N.C.
R4 220K
GO/STOP
D6 1N4148
BUZZER
D7 1N4148
U1
860961-51A08
STBY
NMI
MD0
MD1
RES
P65
P66
P55
P64/IRQ0
P54
P60
P61
P62
P63
P10
P11
P12
P13
P14
P15
P16
P17
P30
P31
P32
P33
P34
P35
P36
P37
P70
P71
P72
P73
P74
P75
P76
P77
VSS
EXTAL
XTAL
X1 20MHz CERAMIC RESONATOR
C4 15pF
C3 15pF
C5 0.1uF
Vcc
R9 10K
R10 10K
R11 390Ω
Q1 9012
R12 10K
R13 10K
R14 390Ω
Q2 9012
R15 10K
R16 10K
R17 390Ω
Q3 9012
R18 10K
R19 10K
R20 390Ω
Q4 9012
R21 10K
R22 10K
R23 390Ω
Q5 9012
R24 10K
R25 10K
R26 390Ω
Q6 9012
R27 10K
R28 10K
R29 390Ω
Q7 9012
R30 10K
R31 10K
R32 390Ω
Q8 9012
8 x 8
LED MATRIX
LDA1 – LDH8
CONTROLLER
D75~D83
1N4148
(8 X 2 KEY MATRIX)
P40 P41 P42 P43 P44 P45 P48 P47
Y8 ← → CLEAR ENTER POSITION INFO OPTION
Y9 LEVEL
D84 (ID DIODE)
1N4148
8 X 8
REED SWITCH MATRIX
IN4148
D11–D74
U3
74HC42
VDD
VSS
C6 0.2uF
FREQUENCY SELECT
D8~D10 1N4148
P40 P41 P42
Y9 7MHz 12MHz 14MHz
• NC : 10MHz
CONTROLLER
ST12 LCD
532820-00290
COM1
COM2
SEGMENT:
LCD PIN OUT:
APPROVALS
DATE
E.E.
DRAWN CHENG
2/11/93
E.D. Alfred
4.11.93
B.D.D.
8.11.93
Q.A.
4.11.93
Saitek Ltd.
SCHEMATIC DIAGRAM
TITLE:
299
PRESIDENT CHESS
DWG. NO. SW19 – PE – 010
REV. 0

SAITEK

BILL OF MATERIALS

PROJECT	:	SW19 (PRESIDENT CHESS)
ART.NO.	:	299
SHIP VER.	:	EV
REVISION	:	3.02

FILENAME : \ED#P01\SW19

REVISION HISTORY

REVISION	DATE	BY	DESCRIPTION OF CHANGES
P1	28.05.93	C.W. TANG	Preliminary BOM.
P2	07.06.93	C.W. TANG	Preliminary BOM.
1	28.06.93	C.W. TANG	Parts up-date.
1.1	06.07.93	C.W. TANG	Parts up-date.
2	23.09.93	ANGUS SAM	Parts up-date (ECN#93086)
3	24.09.93	ANGUS SAM	Adjust ALC (Ref.:SE-Price of ALC & Block Charge Rev.1)
3.01	02.02.94	ANGUS SAM	Updated ALC.
3.02	09.02.94	ANGUS SAM	Chessmen, Pawn (P/N 234200-07600) cost amended, Option assembly updated.

RELATED DOCUMENTS	REV
Schematic dwg : SW19-PE-010	0

Prepared BY : 9-2-94
ANGUS SAM

Approved by : 18-2-94 EM

Distribution :
+1.00 [ ] MMM, IEM FAM ; QAM, SEE
+0.10 [ ] MMM, IEM FAM ; QAM, SEE
+0.01 [X] MMM, IEM
Circulate : MSM-> GM-> BDM2 -> BDM1

Date issue : 18 FEB 1994

CHG MOD: NW=new component; * =desc/PN/Ref changed +/-=cost up/down; C/NC=consigned/non-consigned +/-Q=QTY up/down

992990-11EV - SW19,EV, PRESIDENT CHESS Rev : 3

Level	Item	Chg	Stock Code	Rev	Cons	Description	Qty Per	Reference
1			982990-00000	1		UNIT ASSEMBLY,FOR SW19	1.000	
2			912990-00001	1		GUTS ASSEMBLY-LOGIC	1.000	
3	1		512990-01411			PCB,LOGIC,SS,1.6MM PAPER PHENOLIC	1.000	
3	2		860961-51A08		RC	MICROPROCESSOR,SW19,DIP	1.000	U1
3	3		741413-00042		RC	TTL,-42,BCD TO DECIMAL DECODER,HC	1.000	U3
3	4		522080-00320		RC	SWITCH,1PIT,FOR ST11E,JTM-1105C	1.000	ACL
3	5		690014-00000		RC	ELECT REGULATOR,5V RESRA50AC	1.000	U2
3	6		654148-10000			DIODE,SWITCHING,1N4148	4.000	D1,5-7
3	7		654001-20000			DIODE,RECTIFIER,1N4001	3.000	D2-4
3	8		613905-41102			RESISTOR,FIXED,C-FILM,39,5%,1/2W	1.000	R1
3	9		617535-31102			RESISTOR,FIXED C-FILM,75K,5%,1/4W	1.000	R2
3	10		611035-31102			RESISTOR,FIXED C-FILM,10K,5%,1/4W	5.000	R3,9-10,12-13
3	11		611035-31102			RESISTOR,FIXED C-FILM,10K,5%,1/4W	5.000	R15-16,18-19,21
3	12		611035-31102			RESISTOR,FIXED C-FILM,10K,5%,1/4W	5.000	R22,24-25,27-28
3	13		611035-31102			RESISTOR,FIXED C-FILM,10K,5%,1/4W	2.000	R30-31
3	14		612245-31102			RESISTOR,FIXED C-FILM,220K,5%,1/4W	1.000	R4
3	15		613335-31102			RESISTOR,FIXED,C-FILM,33K,5%,1/4W	4.000	R5-8
3	16		613915-31102			RESISTOR,FIXED C-FILM,390,5%,1/4W	5.000	R11,14,17,20,23
3	17		613915-31102			RESISTOR,FIXED C-FILM,390,5%,1/4W	3.000	R26,29,32
3	18		611535-32109		RC	RESISTOR,ARRAY C-FILM,15KX8,5%,1/4W,9	1.000	R33-40
3	19		670290-12GB0		RC	TRANSISTOR,PNP,9012G,CENTRE B	8.000	Q1-8
3	20		62104Z-01611			CAPACITOR,C-CAP,0.1UF,+80-20%,16V	1.000	C5
3	21		62225Z-01615			CAPACITOR,E-CAP,2.2UF,+80-20%,16V	1.000	C6
3	22		642000-03250		RC	RESONATOR,20MHZ,50PPM	1.000	X1
3	23		62226Z-01615			CAPACITOR,E-CAP,22UF,+80-20%,16V	1.000	C1
3	24		650000-31005			DIODE,ZENER,10V,+/-5%,1/2W	1.000	Z1
3	25		62225Z-01616			CAPACITOR,E-CAP,2.2UF,+80-20%,16V,L.L.	1.000	C2
3	26		62150J-05014			CAPACITOR,C-CAP,NPO,15PF,+/-5%,50V	2.000	C3,4
3	27		000190-00019			CONNECTOR,EDGE,36 PIN	1.000	
3	28		000030-01170			CONN ARRAY,N=12,L=310MM,P=2MM,E=3.5MM	2.000	
3	29		000050-80155			JUMPER,L=8MM,LL=15MM,D=0.5MM	5.000	J18-20,22-23
3	30		000050-80155			JUMPER,L=8MM,LL=15MM,D=0.5MM	12.000	J25-32,12-15
3	31		000051-20155			JUMPER,L=12MM,LL=15MM,D=0.5MM	12.000	J1-3,5-11,16-17
3	32		000051-20155			JUMPER,L=12MM,LL=15MM,D=0.5MM	1.000	J24
3	33		000051-50155			JUMPER,L=15MM,LL=15MM,D=0.5MM	1.000	J4
2			912990-00002	1		GUTS ASSEMBLY-LED "A"	1.000	
3	34		512990-01220			PCB,LED "A",1.6MM,PAPER PHENOLIC	1.000	
3	35		660009-11002		RC	LED,RED,FLAT HEAD,D=2MM,TOSHIBA TLR206	32.000	LED A1-D8
3	36		525110-00110		RC	SWITCH,REED,FOR SW6.1,ORD225	32.000	RS A1-D8
3	37		654148-10000			DIODE,SWITCHING,1N4148	32.000	D11-42
3	38		000030-01180			CONN ARRAY,N=10,L=40MM,P=2MM,E=3.5MM	2.000	
3	39		000050-80155			JUMPER,L=8MM,LL=15MM,D=0.5MM	28.000	
2			912990-00012	1		GUTS ASSEMBLY-LED "B"	1.000	
3	40		512990-01321			PCB,LED,"B",S.S.,16MM,PAPER PHENOLIC	1.000	
3	41		660009-11002		RC	LED,RED,FLAT HEAD,D=2MM,TOSHIBA TLR206	32.000	LED E1-H8
3	42		525110-00110		RC	SWITCH,REED,FOR SW6.1,ORD225	32.000	RS E1-H8
3	43		654148-10000			DIODE,SWITCHING,1N4148	32.000	D43-74
3	44		000050-80155			JUMPER,L=8MM,LL=15MM,D=0.5MM	23.000	

992990-11EV - SW19,EV, PRESIDENT CHESS Rev : 3

Level	Item	Chg	Stock Code	Rev	Cons	Description	Qty Per	Reference
3	45		000051-20155			JUMPER,L=12MM,LL=15MM,D=0.5MM	10.000	
2			912990-00000	1		GUTS ASSEMBLY-LCD & K-BOARD,CONTROL	1.000	
3	46		512990-00541			PCB,LCD & K BOARD,DS.1.6MM,FR4	1.000	
3	47		654148-10000			DIODE,SWITCHING,1N4148	10.000	D75-84
2			962990-00000	1.		CASING ASSEMBY FOR SW19	1.000	
3	48		000073-11454			SCREW,S/T,+BIND,M2.6X12MM,A	8.000	B-CAB & CHESSBD
3	49		000073-21534			SCREW,S/T,+PAN,M3.0X8MM,A	6.000	FOR LOGIC PCB
3	50		000073-11434			SCREW,S/T,+BIND,M2.6X8MM,A	1.000	B-CAB> CONTROL
3	51		000073-11534			SCREW,S/T,+BIND,M3X8MM,A	10.000	FOR REED PCB
3	52		222700-03600		RC	METAL,B-CONT,COM,PH BRONZE,NI-PLT,ST5	1.000	
3	53		224200-03100		RC	METAL,B-CONT,COM'B',PH BRONZE,NI-PLT,W1	1.000	
3	54		227020-03400		RC	METAL,B-CONT,"+",PH BRONZE,NI-PLATED,DG4	1.000	
3	55		227020-03500		RC	METAL,B-CONT,"-",PH BRONZE,NI-PLATED,DG4	1.000	
3	56		000130-00270			BUZZER,D=27MM	1.000	
3	57		000220-00002			SOCKET,DC POWER JACK,TC 18-014	1.000	
3	58		000107-06503			SPONGE,70X65X3MM	1.000	
3	59		000090-00400			FOAM PAD,16X7.8X2MM,ADHESIVE	1.000	FIX GO/STOP KEY
3	60		352990-02300		RC	INLAY,FOR JACK,PVC,BLK,SW19	1.000	
3	61		352990-03201		RC	INLAY,FOR GO/STOP,PVC,BLK,SW19	1.000	FOR GO/STOP
3	62		292990-02200		RC	CONTROLLER INLET COVER,PVC,ADHSIVE	1.000	
3	63		000060-08043			STRAND WIRE,BLACK,L=80MM,E=3.5MM,AWG28	1.000	+
3	64		000062-09043			STRAND WIRE,RED,L=90MM,E=3.5MM,AWG28	1.000	-
3	65		000065-06043			STRAND WIRE,GREEN,L=80MM,E=3.5MM,AWG28	1.000	G
3	66		000060-30043			STRAND WIRE,BLACK,L=300MM,E=3.5MM,AWG28	1.000	
3	67		000062-37043			STRAND WIRE RED,E=3.5MM,L=370MM,AWG28	1.000	
3	68		000064-06041			STRAND WIRE,YELLOW,L=60MM,E=3.5MM,AWG30	2.000	FOR GO/STOP KEY
3	69		000068-15043			STRAND WIRE,GREY,L=150MM,E=3.5MM,AWG28	2.000	BUZZER
3	70		000021-00010			RUBBER FOOT,3M,D12X3.2MM,ADHESIVE	4.000	CHESSBOARD
3	71		522990-00410			SWITCH,PUSH FOR SW19,PIC-PB-11B01	1.000	GO/STOP
3			952990-00000	1		CABINET SET,CHESSBOARD,SW19	1.000	
4	72		214210-00205		RC	PLASTIC,CHESSBOARD B-CAB,HIPS,BLK	1.000	
4	73		232990-00100		RC	WOOD,CHESSBOARD CABINET,M.D.F.,TEAK	1.000	
4	74		214210-00300		RC	PLASTIC,BATT.LID,HIPS,BLACK	1.000	
4	75		214210-00400		RC	PLASTIC,EPROM COVER,HIPS,BLACK	1.000	
3			922990-00000	1		MODULE,CONTROL,CASING AND ASSEMBLY,SW19	1.000	
4	76		532820-00290		RC	LCD,FOR GT12	1.000	
4	77		250000-00529		RC	ZEBRA CONNECTOR,SG,46X2.3X12.3,P=.18MM	1.000	
4	78		000090-00800			FOAM PAD,SW19	1.000	LCD
4	79		256880-00910		RC	RUBBER,CONDUCTIVE KEYPAD 'B',FOR SW19	2.000	IN,OPT,PO,LE,EN
4	80		256880-01010		RC	RUBBER,CONDUCTIVE KEYPAD 'C',FOR SW19	1.000	BK,WT,CLR,P TYP
4	81		000073-11434			SCREW,S/T,+BIND,M2.6X8MM,A	7.000	
4	82		000073-21234			SCREW,S/T,+PAN,M2.3X8MM,A	5.000	FOR CONTROL
4	83		342990-02000		RC	NAME PLATE,AL SHEET,KASPAROV,SCR'N	1.000	
4	84		000021-00020			RUBBER FOOT,3M,D6.5X3.2MM,ADHESIVE	4.000	
4			952990-00010	1		CABINET SET,CONTROL MODULE,SW19	1.000	
5	85		212990-00201		RC	PLASTIC,CONTROL MODULE,T-CAB,HIPS,BLK	1.000	

992990-11EV - SW19,EV, PRESIDENT CHESS Rev : 3

Level	Item	Chg	Stock Code	Rev	Comm	Description	Qty Per Reference
5	86		242990-00271		RC	PLASTIC,CONTROL MODULE,B-CAS,HIP,BLK	1.000
1			992990-10000	1		PACKING ASSEMBLY,FOR SW19	1.000
2	87		412990-01100			CARTON,FOR SW19,4PC/CTN	.250
2	88		452990-01300			INSERT 1,UNIT & MODULE,SW19	1.000
2	89		452990-02500			INSERT,UNIT,SW19	1.000
2	90		000125-00500			POLYBAG,500X500X0.045MM	1.000 UNIT
2	91		000122-15140			POLYBAG,215X140X0.045MM	1.000 MODULE
2	92		000123-00200			POLYBAG,300X200X0.045MM	1.000 MANUAL
2	93		370000-07400		RC	LABEL,COMMON,CUSTOMER LABELS	1.000
2	94		360000-00200			LABEL,FOR SERIAL NO, ADHESIVE	1.000
2	95		462910-10500		RC	ACCESSORY,POUCH,FOR SA9 CHESSMEN	1.000
2			242990-19400	1		CHESSMEN SET,SW19 2-5/8",BLITZ	1.000
3			242990-19510	1		CHESSMEN SUBSET,SW19,2-5/8",BLITZ,BROWN	1.000
4			244200-08281	1		CHESSMEN,SW19,KING,BROWN,D13X4,BLITZ	1.000
5	96		234200-07110		RC	WOOD,KING,D.BROWN,W/O MAG,W1	1.000
5	97		000161-00150		RC	MAGNET,ISO,FERRITE,D13X4	1.000
5	98		295100-08210		RC	FELT,DIA 20MM,BLK,W ADHESIVE	1.000
4			244200-08281	1		CHESSMEN,SW19,QUEEN,BROWN,D13X4,BLITZ	1.000
5	99		234200-07210		RC	WOOD,QUEEN,D.BROWN,W/O MAG,W1	1.000
5	100		000161-00150		RC	MAGNET,ISO,FERRITE,D13X4	1.000
5	101		295100-08210		RC	FELT,DIA 20MM,BLK,W ADHESIVE	1.000
4			244200-08281	1		CHESSMEN,SW19,BISHOP,BROWN,D13X4,BLITZ	2.000
5	102		234200-07310		RC	WOOD,BISHOP,D.BROWN,W/O MAG,W1	1.000
5	103		000161-00150		RC	MAGNET,ISO,FERRITE,D13X4	1.000
5	104		295100-08210		RC	FELT,DIA 20MM,BLK,W ADHESIVE	1.000
4			244200-08281	1		CHESSMEN,SW19,KNIGHT,BROWN,D13X4,BLITZ	2.000
5	105		234200-07410		RC	WOOD,KNIGHT,D.BROWN,W/O MAG,W1	1.000
5	106		000161-00150		RC	MAGNET,ISO,FERRITE,D13X4	1.000
5	107		295100-08210		RC	FELT,DIA 20MM,BLK,W ADHESIVE	1.000
4			244200-08281	1		CHESSMEN,SW19,ROOK,BROWN,D13X4,BLITZ	2.000
5	108		234200-07510		RC	WOOD,ROOK,D.BROWN,W/O MAG,W1	1.000
5	109		000161-00150		RC	MAGNET,ISO,FERRITE,D13X4	1.000
5	110		295100-08210		RC	FELT,DIA 20MM,BLK,W ADHESIVE	1.000
4			244200-08281	1		CHESSMEN,SW19,PAWN,BROWN,D13X4,BLITZ	8.000
5	111		234200-07610		RC	WOOD,PAWN,D.BROWN,W/O MAG,W1	1.000
5	112		000161-00150		RC	MAGNET,ISO,FERRITE,D13X4	1.000
5	113		294200-08510		RC	FELT,DIA 17 MM,BLK,W ADHESIVE	1.000
3			242990-19610	1		CHESSMEN SUBSET,SW19,2-5/8",BLITZ,BEIGE	1.000
4			244200-08281	1		CHESSMEN,SW19,KING,BEIGE,D13X4,BLITZ	1.000
5	114		234200-07100		RC	WOOD,KING,BEIGE,W/O MAG,W1	1.000

SAITEK

PRODUCT COSTING - SAITEK BOM FORMAT

Run :
Prog:

992990-11EV - SW19 EV, PRESIDENT CHESS

Rev : 3

Level	Item	Chg	Stock Code	Rev	Cons	Description	Qty Per Reference
5	115		000161-00150		RC	MAGNET,ISO,FERRITE,D13X4	1.000
5	116		295100-08210		RC	FELT,DIA 20MM,BLK,W ADHESIVE	1.000
4			234200-09031		1	CHESSMEN,SW19,QUEEN,BEIGE,D13X4,BLITZ	1.000
5	117		234200-07200		RC	WOOD,QUEEN,BEIGE,W/O MAG,W1	1.000
5	118		000161-00150		RC	MAGNET,ISO,FERRITE,D13X4	1.000
5	119		295100-08210		RC	FELT,DIA 20MM,BLK,W ADHESIVE	1.000
4			234200-09031		1	CHESSMEN,SW19,BISHOP,BEIGE,D13X4,BLITZ	2.000
5	120		234200-07200		RC	WOOD,BISHOP,BEIGE,W/O MAG,W1	1.000
5	121		000161-00150		RC	MAGNET,ISO,FERRITE,D13X4	1.000
5	122		295100-08210		RC	FELT,DIA 20MM,BLK,W ADHESIVE	1.000
4			234200-09031		1	CHESSMEN,SW19,KNIGHT,BEIGE,D13X4,BLITZ	2.000
5	123		234200-07200		RC	WOOD,KNIGHT,BEIGE,W/O MAG,W1	1.000
5	124		000161-00150		RC	MAGNET,ISO,FERRITE,D13X4	1.000
5	125		295100-08210		RC	FELT,DIA 20MM,BLK,W ADHESIVE	1.000
4			234200-09031		1	CHESSMEN,SW19,ROOK,BEIGE,D13X4,BLITZ	2.000
5	126		234200-07200		RC	WOOD,ROOK,BEIGE,W/O MAG,W1	1.000
5	127		000161-00150		RC	MAGNET,ISO,FERRITE,D13X4	1.000
5	128		295100-08210		RC	FELT,DIA 20MM,BLK,W ADHESIVE	1.000
4			234200-09031		1	CHESSMEN,SW19,PAWN,BEIGE,D13X4,BLITZ	8.000
5	129		234200-07200		RC	WOOD,PAWN,BEIGE,W/O MAG,W1	1.000
5	130		000161-00150		RC	MAGNET,ISO,FERRITE,D13X4	1.000
5	131		296200-08910		RC	FELT,DIA 17 MM,BLK,W ADHESIVE	1.000
3	132		243990-19400C			CHESSMEN SET,SW19,ALC	1.000
1			992990-11EV		1	OPTION ASSEMBLY FOR SW19	1.000
2	133		352990-00800		RC	RATING PLATE,FOR SW19	1.000
2	134		412990-61000		RC	MANUAL FOR SW19 E/F/G/D/I/S,SWL	1.000
2	135		422990-61100		RC	GIFTBOX,FOR SW19,E/F/G/D/I/S,SWL	1.000
2	136		430004-51000		RC	CARD,WARRANTY,E/G/F/D/S,SWL,CHESS	1.000
2	137		352990-00701		RC	INLAY,LCD WINDOW,PVC,TRANSPERANT,SLKSC,G	1.000
2	138		370000-11200		RC	ADDENDUM,COM#112,DISTRIBUTOR LIST,E	1.000
2	139		430016-01004		RC	LEAFLET,CONSUMER,1993,ENGLISH,SWL	1.000

1.3 Pin Assignments and Functions

1.3.1 Pin Arrangement

Figure 1-2 shows the pin arrangement of the H8/325 Series in the DC-64S and DP-64S packages. Figure 1-3 shows the pin arrangement in the FP-64A package. Figure 1-4 shows the pin arrangement in the CP-68 package.

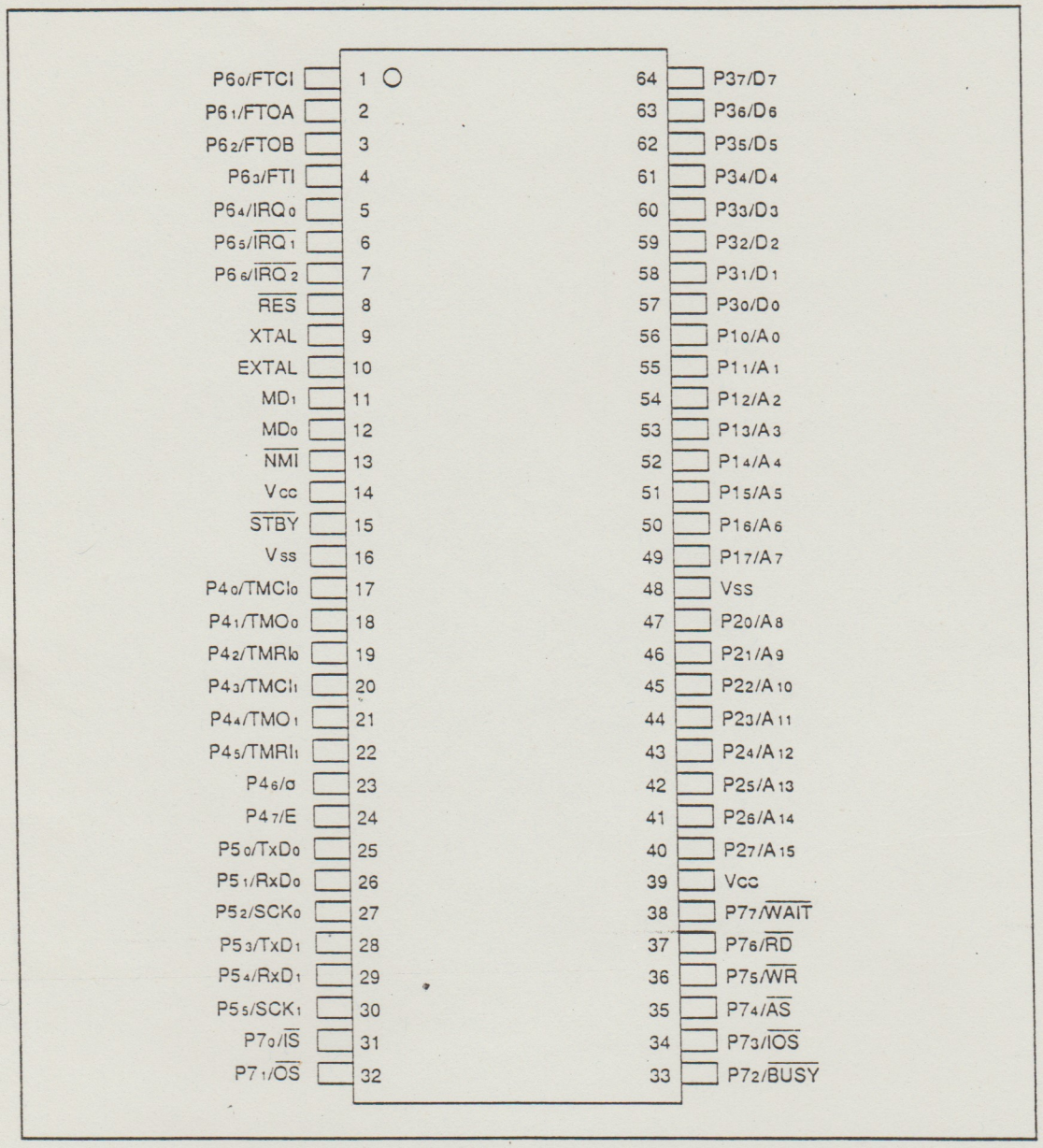
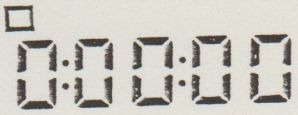
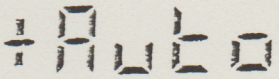
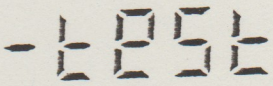


Figure 1-2. Pin Arrangement (DC-64S, DP-64S, Top View)

8A. FUNCTIONAL TEST PROCEDURE FOR PRESIDENT CHESS (For version 702)

* All following tests must be performed with SW19 chess pieces

Purpose	Procedure	Observation
1. Power up	- Insert six 'C' size batteries into the battery compartment	- Scans LED column by column together with LCD segments displayed in Table 1 - New game sound is emitted - LCD shows 
2. QC test mode	- Press ACL - Press OPTION	- Same as 1 - LCD shows 
	- Press ← twice	- LCD shows 
	- Press ENTER	- All LCD segments are turned ON except PAWN symbol and all a-segment of seven segment digit.

Purpose	Procedure	Observation
	- Press INFO	- LCD shows □ 0 10
	- Press function keys as shown in Table 2	- See Table 2
3. Reset unit	- Press ACL	- Same as 1
4. Chessboard test	- Press POSITION	- LCD show "- POS -"
	- Press CLEAR twice	- LCD show □
	- Press PIECE TYPE twice	- LCD show □ ♛
	- Short the reed switches of row 1 with magnets. After the chessboard LED turns on steadily, put a testing chessman on squares labelled with A on Table 3 (A2, B3, C4....G8, H8)	- Corresponding square LEDs are on and LCD shows the coordinates of the testing chessman
	- Repeat the above step for row 2, 3, 4, 5, 6, 7, 8 and put a testing chessman on squares labelled with B, C, D, E, F, G, H respectively on Table 3.	- Same as above
5. Reset unit	- Press ACL	- Same as 1

Purpose	Procedure	Observation
6. Multimove	- Place all chess pieces on the chessboard - Press OPTION	- LCD shows +Auto
	- Press ENTER	- LCD shows -Auto
	- Press CLEAR - Move F2, F4, E7, E5, G2, G4	- The clock starts counting - Coordinate LEDs come on with a "Beep" for each move and LCD shows corresponding move.
	- Press ENTER	- D8 LED is on and H4 LED is flashing and LCD shows d8-H4
	- Picks up the Black Queen on D8 - Put down the Black queen on H4	- H4 LEDs are on and LCD shows as above - LCD shows d8-H4 and MAtE alternatively, then after a while white clock starts counting up.

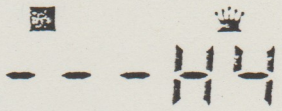
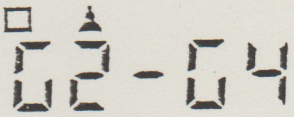
Purpose	Procedure	Observation
7. Check memory	- Press GO/STOP	- All LEDs and LCD come off
	- Press OPTION twice	- No response
	- Remove the controller	
	- Plug in the controller	- No response
	- Insert a non-energized adapter	- No response
	- Press GO	- White clocks counting up
8. Check adapter + batteries	- Press GO/STOP	- All LEDs and LCD come off
	- Insert an energized adapter	- Same as above
	- Press GO	- White clocks counting up
9. Check adapter	- Press GO/STOP	- All LEDs and LCD come off
	- Remove batteries	- Same as above
	- Press GO/STOP	- White clock counting up
	- Picks up the Black Queen on H4	- H4 LEDs are on and
		- LCD shows 
	- Put down the Black Queen on D8	- LCD shows 
		- G4 LED is ON and G2 LED is flashing
	- Press CLEAR	- Black clocks starts counting up.

Table 1

Sequences	LCD shows	Column LEDs ON
1		A
2		B
3		C
4		D
5		E
6		F
7		G
8		H
9		NIL

Table 2

Function Key Press	LEDs to be ON (for a while)
LEVEL	H2
POSITION	F1
OPTION	H1
INFO	G1
■ / →	B1
□ / ←	A1
ENTER / PLAY	E1.
PIECE TYPE	C1
CLEAR	D1
GO / STOP	All LED and LCD OFF

* A beep sound is given out for each key press.
* Pressing <ENTER> and <CLEAR> at the same time will exit QC test mode.
* LCD always shows □ 0 10 during function key pressed (except in stop mode).

Table 3

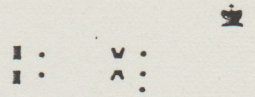
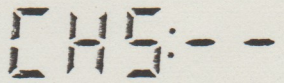
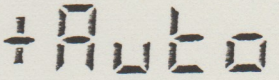
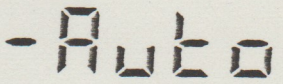
8	G	F	E	D	C	B	A	A
7	F	E	D	C	B	A	H	H
6	E	D	C	B	A	H	G	G
5	D	C	B	A	H	G	F	F
4	C	B	A	H	G	F	E	E
3	B	A	H	G	F	E	D	D
2	A	H	•G	F	E	D	C	C
1	H	G	F	E	D	C	B	B
	A	B	C	D	E	F	G	H

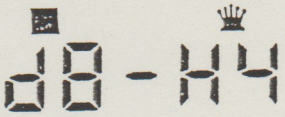
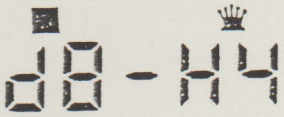
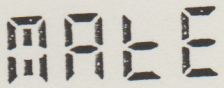
Note : The testing chessman should rest on the square for at least 1 second.

8B. FUNCTIONAL TEST PROCEDURE FOR PRESIDENT CHESS (For version 907 and A08A)

* All following tests must be performed with SW19 chess pieces

Purpose	Procedure	Observation
1. Power up	- Insert six 'C' size batteries into the battery compartment	- Scans LED column by column together with LCD segments displayed in Table 1 - New game sound is emitted - LCD shows 0:00:00
2. QC test mode	- Press ACL - Press OPTION	- Same as 1 - LCD shows +Auto
	- Press ← twice	- LCD shows -tESt
	- Press ENTER	- LCD shows tESt - Then LCD shows F: 10 - And LED of square A6 is turned ON steadily.

Purpose	Procedure	Observation
	- Press ENTER	- Scans LED column by column together with LCD segments displayed in Table 1 (except for sequence 9) - LCD shows 
	- Press function keys as shown in Table 2 - Short the reed switches of row 1 with magnets. After the chessboard LED turns on steadily, put a testing chessman on squares labelled with A on Table 3 (A2, B3, C4....G8, H8) - Repeat the above step for row 2, 3, 4, 5, 6, 7, 8 and put a testing chessman on squares labelled with B, C, D, E, F, G, H respectively on Table 3.	- See Table 2 - Corresponding square LEDs are on and - The coordinates of the square is shown on LCD in the format of  where -- is the coordinates of the testing chessman.
3. Reset unit	- Press ACL	- Same as 1
4. Multimove	- Place all chesspieces on the chessboard - Press OPTION	- LCD shows 
	- Press ENTER	- LCD shows 
	- Press CLEAR	- The clock starts counting

Purpose	Procedure	Observation
	- Move F2, F4, E7, E5, G2, G4	- Coordinate LEDs come on with a "Beep" for each move and LCD shows corresponding move.
	- Press ENTER	- D8 LED is on and H4 LED is flashing and LCD shows 
	- Picks up the Black Queen on D8 - Put down the Black queen on H4	- H4 LEDs are on and LCD shows as above - LCD shows  and  alternatively, then after a while white clock starts counting up.
5. Check memory	- Press GO/STOP - Press OPTION twice - Remove the controller - Plug in the controller - Insert a non-energized adapter - Press GO	- All LEDs and LCD come off - No response - No response - No response - White clocks counting up
6. Check adapter + batteries	- Press GO/STOP - Insert an energized adapter - Press GO	- All LEDs and LCD come off - Same as above - White clocks counting up

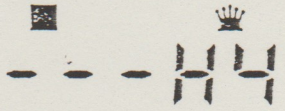
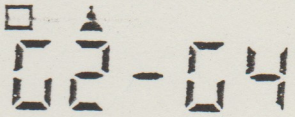
Purpose	Procedure	Observation
7. Check adapter	- Press GO/STOP	- All LEDs and LCD come off
	- Remove batteries	- Same as above
	- Press GO/STOP	- White clock counting up
	- Picks up the Black Queen on H4	- H4 LEDs are on and
		- LCD shows 
	- Put down the Black Queen on D8	- LCD shows 
		- G4 LED is ON and G2 LED is flashing
	- Press CLEAR	- Black clocks starts counting up.

Table 1

Sequences	LCD shows	Column LEDs ON
1		A
2		B
3		C
4		D
5		E
6		F
7		G
8		H
9		NIL

Table 2

Function Key Press	LED turned ON steadily	LCD display
LEVEL	H2	All segments turned ON
POSITION	F1	
OPTION	H1	
INFO	G1	
■ / →	B1	
□ / ←	A1	
ENTER/PLAY	E1	
PIECE TYPE	C1	
CLEAR	D1	
GO/STOP	All LEDs turned OFF	All LCD segments turned OFF

* A beep sound is given out for each key press.
* Pressing <ENTER> and <CLEAR> at the same time will exit QC test mode.

Table 3

8	G	F	E	D	C	B	A	A
7	F	E	D	C	B	A	H	H
6	E	D	C	B	A	H	G	G
5	D	C	B	A	H	G	F	F
4	C	B	A	H	G	F	E	E
3	B	A	H	G	F	E	D	D
2	A	H	G	F	E	D	C	C
1	H	G	F	E	D	C	B	B
	A	B	C	D	E	F	G	H

Note : The testing chessman should rest on the square for at least 1 second.