



ELECTRICAL MANUAL

CRATER RAIDER U.R.

Bally

MIDWAY MFG. CO.

10601 W Belmont Avenue
Franklin Park, Illinois 60131
U.S.A.



Phone: (312) 451-9200 Cable Address: MIDCO Telex No.: 72-1596

0A57-00300-0200

WARNING

THIS GAME MUST BE GROUNDED. FAILURE TO DO SO MAY RESULT IN DESTRUCTION TO ELECTRONIC COMPONENTS.

WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not used in accordance with the instructions manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a CLASS A computing device pursuant to SUBPART J of PART 15 of FCC RULES, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

ELECTRICAL BULLETIN: FOR ALL APPARATUS COVERED BY THE CANADIAN STANDARDS ASSOCIATION (CSA) STANDARD C22.2 NO. 1, WHICH EMPLOYS A SUPPLY CORD TERMINATED WITH A POLARIZED 2-PRONG ATTACHMENT PLUG.

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

ATTENTION: POUR PREVENIR CHOCS ELECTRIQUES NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

Bally **MIDWAY**

Invites You To Use

**OUR TOLL FREE NUMBERS FOR
SERVICE INFORMATION CONCERNING THIS GAME, OR ANY
OTHER BALLY MIDWAY GAME YOU NOW HAVE ON LOCATION.**

**CALL US FOR PROMPT, COURTEOUS
ANSWERS TO YOUR PROBLEMS.**

VIDEO → Continental U.S. 1-800-323-7182

PINBALL → Continental U.S. 1-800-323-3555

Bally **MIDWAY**

10601 West Belmont Avenue Franklin Park, Illinois, 60131

phone (312) 451-8200

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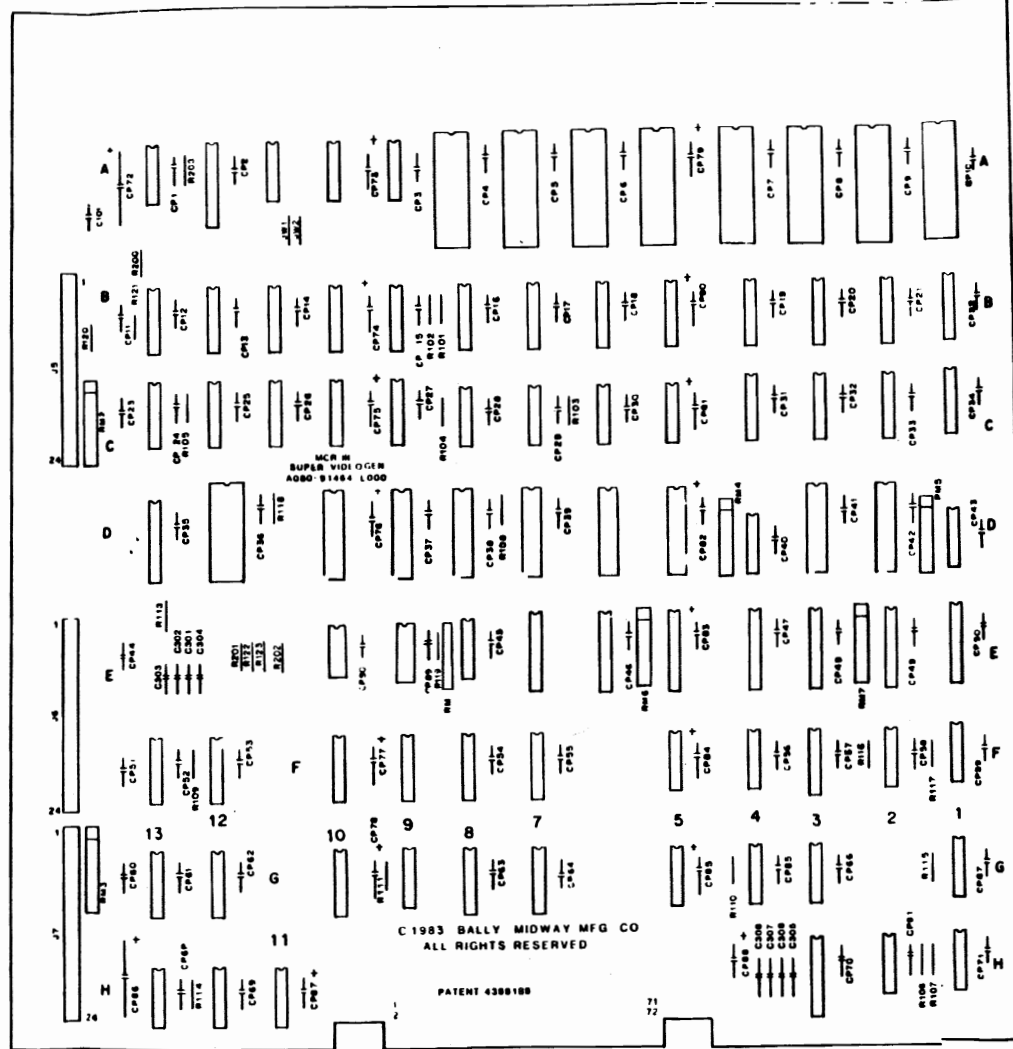
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Printed in U.S.A.

DESIGNATION LIST

DESIGNATION	DESCRIPTION	DESIGNATION	DESCRIPTION
C101	.01 RF AX CER	IC 10	7420
C301-C308	100 PF AX CER	IC 20	93479
CP1-CP71	.01 RF AX CER	IC 30	93479
CP72-CP80	100 PF AX ELEC.	IC 40	7420
CP73-CP85, CP87,	10 MF 25V AX TANT.	IC 50	93479
CP88		IC 60	93479
CP89, CP90, CP91	.01MF AX. CER.	IC 70	93422
		IC 80	93422
		IC 90	93422
R101-R111, R113-	1K OHM 1/4W	IC 100	93422
R121		IC 110	93422
R122, R123	500 OHM 1/4W	IC 120	STAT. BAR
R200	100 OHM 1/4W	IC 130	74LS245
R201, R202	82 OHM 1/4W	IC 1E	74LS374
R203	1K OHM 1/4W	IC 2E	74LS374
		IC 3E	74LS374
RM1	82 OHM 8 PIN SIP	IC 4E	74LS374
RM 2	1K 10 PIN SIP	IC 5E	74LS374
RM 3	1K 10 PIN SIP	IC 6E	74LS374
RM 4	1K 9 PIN SIP	IC 7E	74LS240
RM 5	1K 9 PIN SIP	IC 8E	74LS00
RM 6	1K 9 PIN SIP	IC 9E	74S101
RM 7	1K 9 PIN SIP	IC 10E	74S04
		IC 11E	74LS74
IC 1A	EPROM	IC 2F	74LS74
IC 2A	EPROM	IC 3F	74LS157
IC 3A	EPROM	IC 4F	74S00
IC 4A	EPROM	IC 5F	74LS32
IC 5A	EPROM	IC 7F	74LS283
IC 6A	EPROM	IC 8F	74LS175
IC 7A	EPROM	IC 9F	74LS157
IC 8A	EPROM	IC 10F	74LS157
IC 9A	74LS86	IC 12F	74LS157
IC 10A	74LS86	IC 13F	74LS157
IC 11A	74LS174	IC 1G	74LS74
IC 12A	74LS273	IC 3G	74S08
IC 13A	74S04	IC 4G	74LS30
		IC 5G	74LS30
IC 1B	74LS194	IC 7G	74LS283
IC 2B	74LS194	IC 8G	74LS174
IC 3B	74LS194	IC 9G	74LS174
IC 4B	74LS194	IC 10G	74LS157
IC 5B	74LS194	IC 12G	74LS157
IC 6B	74LS194	IC 13G	74LS157
IC 7B	74LS194		
IC 8B	74LS161	IC 1H	74LS32
IC 9B	74LS174	IC 2H	74S86
IC 10B	74LS174	IC 3H	74LS240
IC 11B	74S283	IC 11H	7420
IC 12B	74S283	IC 12H	7420
IC 13B	74S283	IC 13H	74LS74
IC 1C	74LS258	IC51A-IC58A	28 PIN SOCKET
IC 2C	74LS258	IC5 D2, D3, D5-D10	22 PIN SOCKET
IC 3C	74LS258	IC5 D12	24 PIN SOCKET
IC 4C	74LS258		
IC 5C	74LS00		
IC 6C	74LS04		
IC 7C	74LS74		
IC 8C	74LS30		
IC 9C	74LS169		
IC 10C	74LS169		
IC 11C	74LS169		
IC 12C	74LS169		
IC 13C	74S133		



CROSS REFERENCE LIST

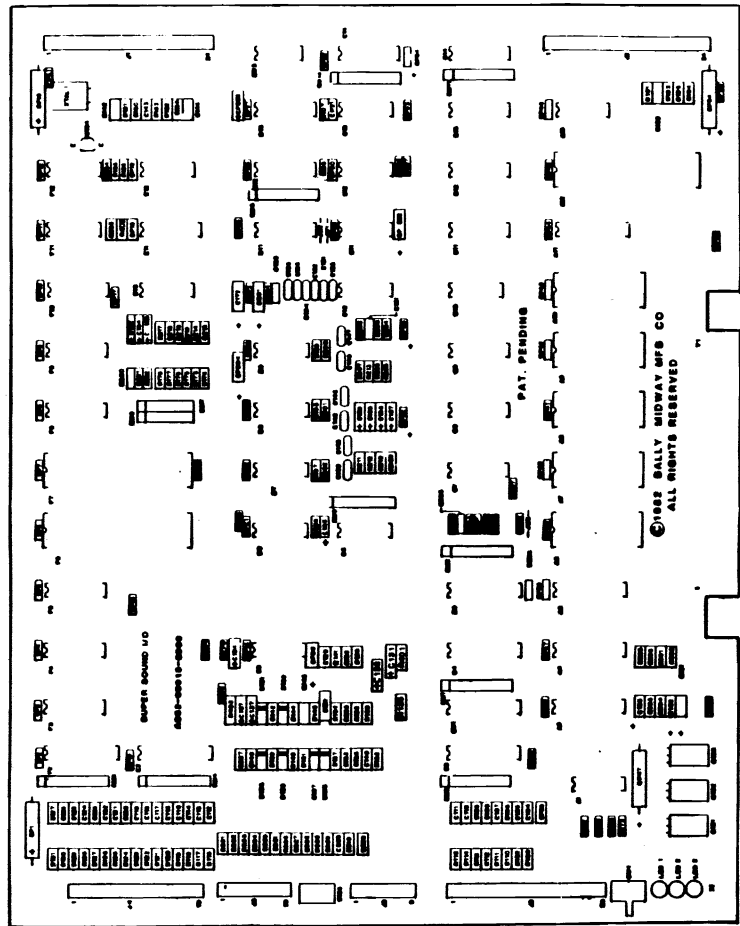
DESCRIPTION	QTY	DESIGNATION NO.	PART NOS.
CAP 100PF	8	C301-C308	0986-00800-1000
CAP .01MF	75	C101, CP1-CP71,	0986-00800-2500
		CP85, CP90, CP91,	
CAP 100F	15	CP73-CP85, CP87,	0986-00800-2400
		CP88	
CAP 1000F	2	CP72, CP86	0986-00800-1800
82 OHM 1/4 W RES.	2	R201, R202	100E-00005-0031
100 OHM 1/4 W RES.	1	R200	100E-00005-0035
1K OHM 1/4 W RES.	21	R101-R111, R113-	100E-00005-0061
		R121, R203	
500 OHM 1/4W RES.	2	R122, R123	100E-00005-0054
8 PIN SIP	82 OHM	RM1	102E-00004-0035
9 PIN SIP	1K OHM	RM2-RR7	102E-00004-0011
10 PIN SIP	1K OHM	RR2, RR3	102E-00004-0015
74S00	1	4F	0304-00803-0047
74LS00	2	5C, 8I	0304-00803-0010
74S04	2	13A, 10E	0304-00803-0011
74LS04	1	6C	0304-00803-0012
74LS08	1	3G	0304-00803-0037
74LS10	1	9G	0304-00803-0014
7420	4	10, 4B, 11H, 12H	0304-00803-0015
74LS30	3	8C, 4C, 5G	0304-00803-0016
74LS32	2	5F, 1H	0304-00803-0017
74LS74	5	7C, 1F, 2F, 1G, 13H	0304-00803-0018
74S86	1	2M	0304-00803-0048
74LS86	2	9A, 10A	0304-00803-0019
74S133	1	15C	0304-00803-0020
74LS137	8	3F, 9I, 10F, 12F, 13F,	0304-00803-0021
		10G, 12G, 15G	
74S161	1	9E	0304-00803-0038
74LS161	1	9B	0304-00803-0022
74LS169	4	9C-12C	0304-00803-0023
74LS174	1	11A, 10B, 11B, 8G	0304-00803-0024
74LS175	1	8F	0304-00803-0025
74LS194	8	10-8B	0304-00803-0026
74LS240	2	7E, 3H	0304-00803-0050
74LS245	1	13D	0304-00803-0027
74LS258	4	1C-4C,	0304-00803-0028
74LS273	1	12A	0304-00803-0029
74S283	2	12B, 13B	0304-00803-0039
74LS283	2	7F, 7G	0304-00803-0030
74LS374	6	1E-6E	0304-00803-0031
93422	4	7D-10D	0304-00803-0032
93479	1	20, 30, 50, 60	0304-00803-0033
STAT. BAR	1	120	0304-00803-0034
EPROM KIT	8	IC1A-8A	SEE NOTE
28 PIN SOCKET	8	IC5 1A-8A	0986-00804-0500
22 PIN SOCKET	8	IC5 20, 30, 50, 60,	0986-00804-0700
		70-100	
24 PIN SOCKET	1	IC5 120	0986-00804-1600
KK100 RT. ANGLE	3	J5, J6, J7	0986-00804-4700
24 PIN CONN.			
JUMPER WIRE	2	JM1, JM2	0986-00805-0200
MCR III SUPER VIDEO GEN.			A082-91464-1000

NOTE: ROM PART NUMBERS AT BACK OF CATALOG.

PROJECT ENG R PLOUSSARD	USED ON	MIDWAY MFG. CO.
DO NOT WRITE	FULL	NO REVISIONS
DATE 12/9/83	SUPER VIDEO GEN. MCR III ASSY DWG	A082-91464-1000
	PART NO	MOSI - 00304 - L005

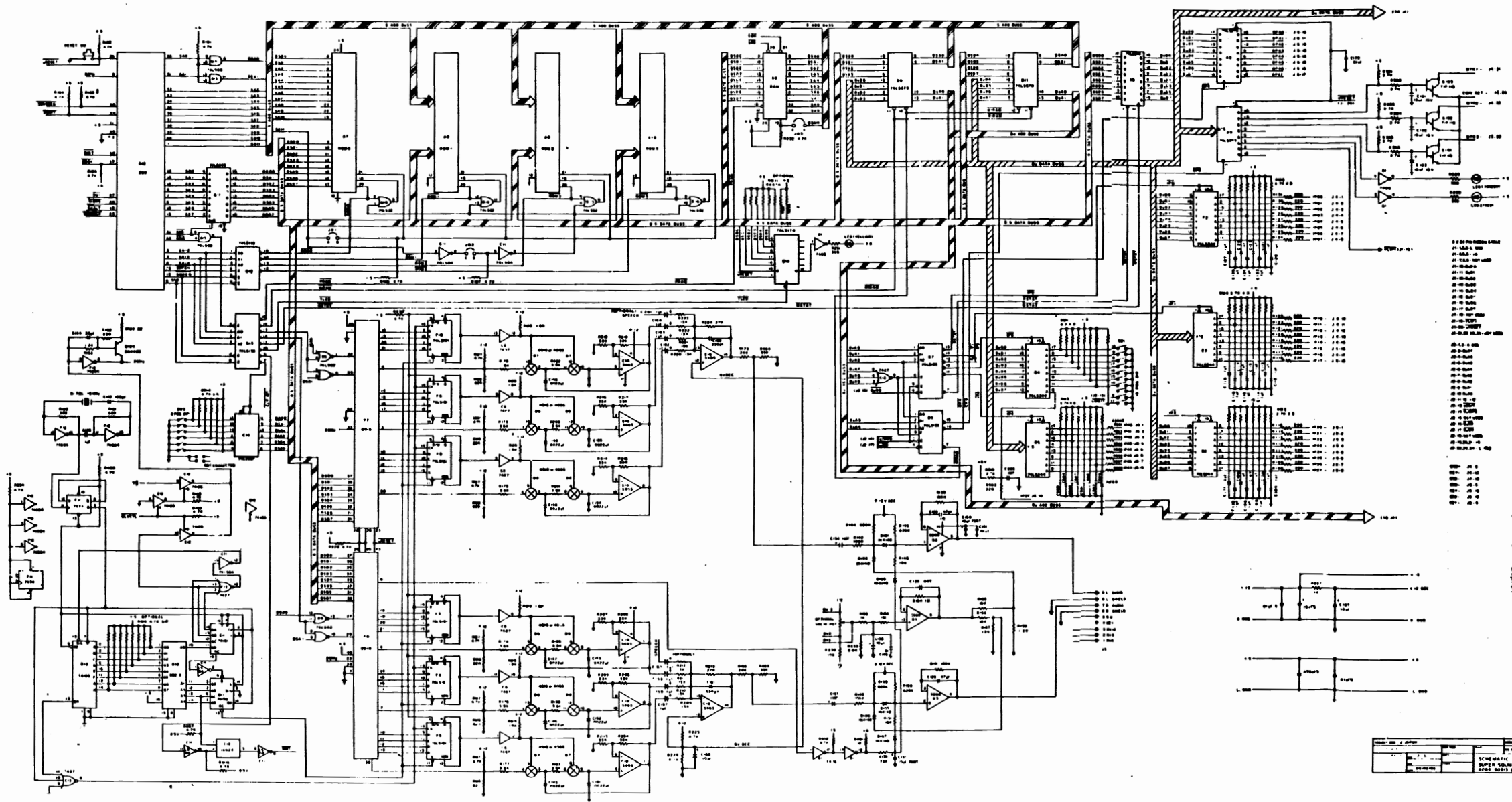
DESIGNATION LIST

DESIGNATION NO.	DESCRIPTION	DESIGNATION NO.	DESCRIPTION	DESIGNATION NO.	DESCRIPTION
C101-C103	10 MF 25V AX. TANT.	R152	100G. 00M 1/4W 5% CRBN.	0101-0103	10A148
C104-C127	-1 MF 50V AX. CER.	R153	1K 00M 1/4W 5% CRBN.	0105-0107	10A148
C128, C129	47 PF 50V AX. CER.	R154	100G. 00M 1/4W 5% CRBN.	0101-0103	11P110
C131	TANT.			0104	2M4403
C134-C137	1 MF 20V AX. TANT.	R155, R156	10K 00M 1/4W 5% CRBN.	IC1A	7400
C138	10 MF 25V AX. TANT.	R157, R158	1.2K 00M 1/4W 5% CRBN.	IC14, 4A	74LS273
C139	-0022 MF 100V 10% RYLAR	R160, R161	330 00M 1/4W 5% CRBN.	IC15A	74LS374
C140	-01 MF 50V AX. CER.	R162	220 00M 1/4W 5% CRBN.	IC6A	1K 8 00M
C142	100 PF 50V AX. CER.	R163	1.2K 00M 1/4W 5% CRBN.	IC7A	ROM/EPROM 1
C143	-1 MF 50V AX. CER.	R164	22 00M 1/4W 5% CRBN.	IC8A	ROM/EPROM 2
C144	33 PF 50V AX. CER.	R165	1.2K 00M 1/4W 5% CRBN.	IC10A	ROM/EPROM 3
C145-C154	-0022 MF 100V 10% RYLAR	R166	4.7K 00M 1/4W 5% CRBN.	IC11A	74LS245
C157-C159	1 MF 20V AX. TANT.	R173-R178	5.0K 00M 1/4W 5% CRBN.	IC12A	2-80 CPU
C161	330 PF 50V AX. CER.	R179	24K 00M 1/4W 5% CRBN.	IC13A	74LS00
C162-C164	1 MF 20V AX. TANT.	R196	24K 00M 1/4W 5% CRBN.	IC120, 40, 50	74LS244
C165	330 PF 50V AX. CER.	R196	4.7K 00M 1/4W 5% CRBN.	IC120, 130	74LS670
C166, C167	10 MF 25V AX. TANT.	R197-R202	33K 00M 1/4W 5% CRBN.	IC100	74LS32
C172	10 MF 25V AX. TANT.	R203-R208	33K 00M 1/4W 5% CRBN.	IC110	74LS070
C173	-01 MF 50V AX. CER.	R209-R211	27K 00M 1/4W 5% CRBN.	IC120, 130	74LS130
C501-C509	-1 MF 50V AX. CER.	R213	27K 00M 1/4W 5% CRBN.	IC140	74LS174
CP1	470 MF 10V AX. ELECT.	R214-R219	33K 00M 1/4W 5% CRBN.	IC6C	7407
CP2-CP14	-01 MF 50V AX. CER.	R220-R222	27K 00M 1/4W 5% CRBN.	IC11C	74LS04
CP13	470 MF 10V AX. ELECT.	R224	27K 00M 1/4W 5% CRBN.	IC12C	MC14024
CP14-CP19	-01 MF 50V AX. CER.	R225, R226	4.7K 00M 1/4W 5% CRBN.	IC13C	7427
CP20	10 MF 25V AX. TANT.	R227	10 00M 1/4W 5% CRBN.	IC14C	74LS307
CP21-CP27	-01 MF 50V AX. CER.	R228	4.7K 00M 1/4W 5% CRBN.	IC10E	MC3403
CP29-CP33	-01 MF 50V AX. CER.	R231	300 00M 1/4W 5% CRBN.	IC60	74LS02
CP34	10 MF 25V AX. TANT.	R232	4.7K 00M 1/4W 5% CRBN.	IC70-90	MC14016
CP35-CP46	-01 MF 50V AX. CER.	R233	3K 00M 1/4W 5% CRBN.	IC110	74190
CP47	470 MF 10V AX. ELECT.	R234, R235	4.7K 00M 1/4W 5% CRBN.	IC120	PN0002A
CP48-CP51	-01 MF 50V AX. CER.	R239	100 00M 1/4W 5% CRBN.	IC130	74104
CP52, CP53	10 MF 25V AX. TANT.	R301-R306	2.7K 00M 1/4W 5% CRBN.	IC2E	74LS244
CP54	470 MF 10V AX. ELECT.	R401	1K 00M 1/4W 5% CRBN.	IC10E	MC3403
CP202-CP204	10 MF 25V AX. TANT.	R402	4.7K 00M 1/4W 5% CRBN.	IC11E	74101
R101-R107	4.7K 00M 1/4W 5% CRBN.	R403, R404	33K 00M 1/4W 5% CRBN.	IC12E	74126
R108-R131	220 00M 1/4W 5% CRBN.	R405-R407	4.7K 00M 1/4W 5% CRBN.	IC12E	74LS244
R133	33K 00M 1/4W 5% CRBN.	R501-R509	220 00M 1/4W 5% CRBN.	IC2F	74LS245
R138, R141	100K 00M 1/4W 5% CRBN.	R510	2.7K 00M 1/4W 5% CRBN.	IC3F-5F	74LS191
R142	100K 00M 1/4W 5% CRBN.	R511	4.7K 00M 10 PIN 8-1.P.	IC4F, 7F	AT-3-8910
R144, R145	020K 00M 1/4W 5% CRBN.	R512-R515	4.7K 00M 10 PIN 8-1.P.	IC8F-10F	74LS191
R146	100K 00M 1/4W 5% CRBN.	R517	020 00M 0 PIN 8-1.P.	IC11F	74104
R149, R150	020K 00M 1/4W 5% CRBN.	R518	4.7K 00M 0 PIN 8-1.P.	IC12F	74104
R151	10K 00M 1/4W 5% CRBN.	R519	4.7K 00M 10 PIN 8-1.P.	IC10A-IC10E	24 PIN IC SOCKET
		R520	2.7K 00M 10 PIN 8-1.P.	IC11A-IC11E	40 PIN IC SOCKET
		R521	10K 00M 10 PIN 8-1.P.	IC12A-IC12E	10 PIN IC SOCKET
		R522	4.7K 00M 10 PIN 8-1.P.	IC30F, 7F	40 PIN IC SOCKET
		R523	4.7K 00M 10 PIN 8-1.P.	J1, J2	24 PIN XT100 BT. ANGLE
		R524	4.7K 00M 10 PIN 8-1.P.	J3	9 PIN XT100 BT. ANGLE ORIT 4
		R525	4.7K 00M 10 PIN 8-1.P.	J4	10 PIN XT100 BT. ANGLE ORIT 1A
		R526	4.7K 00M 10 PIN 8-1.P.	J5	23 PIN XT100 BT. ANGLE ORIT 19
		R527	4.7K 00M 10 PIN 8-1.P.	J6	10 PIN XT100 BT. ANGLE ORIT 8
		R528	4.7K 00M 10 PIN 8-1.P.	JMT, JMT2	JUMPER WIRE
		R529	4.7K 00M 10 PIN 8-1.P.	LED 3	YELLOW LED
		R530	4.7K 00M 10 PIN 8-1.P.	SW1	10 POSITION DIP
		R531	4.7K 00M 10 PIN 8-1.P.	SW2	0 POSITION DIP
		R532	4.7K 00M 10 PIN 8-1.P.	SW4	PUSHBUTTON S.O.
		R533	4.7K 00M 10 PIN 8-1.P.	STAL 1	10 00M STAL
		R534	4.7K 00M 10 PIN 8-1.P.	SNAP	SNAP
		R535	4.7K 00M 10 PIN 8-1.P.	AD80-90913-6000	SUPER SHD. I/O BD.



CROSS REFERENCE LIST

DESCRIPTION	QTY	DESIGNATION NO.	PART NOS.	DESCRIPTION	QTY	DESIGNATION NO.	PART NOS.
33 PF 50V AX. CER.	1	C144	0986-00800-0300	10A148	6	0101-0103, 0105-0107	0986-00801-0200
47 PF 50V AX. CER.	2	C120, C120	0986-00800-2000	2M4403	1	0104	0986-00802-0500
100 PF 50V AX. CER.	1	C142	0986-00800-1000	11P110	1	0101-0103	0986-00802-0400
100 PF 50V AX. CER.	2	C161, C165	0986-00800-1200	74LS02	1	IC 60	0986-00803-7400
-0022 MF 100V 10% RYLAR	12	C145-C154	0986-00800-1200	74LS04	1	IC 12F	0986-00803-6400
-047 MF 100V RYLAR	1	C139	0986-00800-2400	74LS04	1	IC 1A	0986-00803-7400
-01 MF 50V AX. CER.	47	CP2-CP12, CP16-CP19, CP21-CP27, CP29-CP33, CP35-CP46, CP48-CP51, CP52, CP53	0986-00800-2000	74LS07	1	IC 6C	0986-00803-9900
1 MF 50V AX. CER.	34	CP20-CP28, CP30-CP34, CP36-CP38, CP40-CP47, CP49-CP54	0986-00800-1100	74LS100	1	IC 13A	0986-00803-7300
1 MF 20V AX. TANT.	8	C101-C103, C104, C105, C106, C107, C108, C109, C110, C111, C112, C113, C114, C115, C116, C117, C118, C119, C120, C121, C122, C123, C124, C125, C126, C127, C128, C129, C130, C131, C132, C133, C134, C135, C136, C137, C138, C139, C140, C141, C142, C143, C144, C145, C146, C147, C148, C149, C150, C151, C152, C153, C154, C155, C156, C157, C158, C159, C160, C161, C162, C163, C164, C165, C166, C167, C168, C169, C170, C171, C172, C173, C174, C175, C176, C177, C178, C179, C180, C181, C182, C183, C184, C185, C186, C187, C188, C189, C190, C191, C192, C193, C194, C195, C196, C197, C198, C199, C200, C201, C202, C203, C204, C205, C206, C207, C208, C209, C210, C211, C212, C213, C214, C215, C216, C217, C218, C219, C220, C221, C222, C223, C224, C225, C226, C227, C228, C229, C230, C231, C232, C233, C234, C235, C236, C237, C238, C239, C240, C241, C242, C243, C244, C245, C246, C247, C248, C249, C250, C251, C252, C253, C254, C255, C256, C257, C258, C259, C260, C261, C262, C263, C264, C265, C266, 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1 MF 20V AX. TANT.	8	C101-C103, C104, C105, C106, C107, C108, C109, C110, C111, C112, C113, C114, C115, C116, C117, C118, C119, C120, C121, C122, C123, C124, C125, C126, C127, C128, C129, C130, C131, C132, C133, C134, C135, C136, C137, C138, C139, C140, C141, C142, C143, C144, C145, C146, C147, C148, C149, C150, C151, C152, C153, C154, C155, C156, C157, C158, C159, C160, C161, C162, C163, C164, C165, C166, C167, C168, C169, C170, C171, C172, C173, C174, C175, C176, C177, C178, C179, C180, C181, C182, C183, C184, C185, C186, C187, C188, C189, C190, C191, C192, C193, C194, C195, C196, C197, C198, C199, C200, C201, C202, C203, C204, C205, C206, C207, C208, C209, C210, C211, C212, C213, C214, C215, C216, C217, C218, C219, C220, C221, C222, C223, C224, C225, C226, C227, C228, C229, C230, C231, C232, C233, C234, C235, C236, C237, C238, C239, C240, C241, C242, C243, C244, C245, C246, C247, C248, C249, C250, C251, C252, C253, C254, C255, C256, C257, C258, C259, C260, C261, C262, C263, C264, C265, C266, C267, C268, C269, C270, C271, C272, C273, C274, C275, C276, C277, C278, C279, C280, C281, C282, C283, C284, C285, C286, C287, C288, C289, C290, C291, C292, C293, C294, C295, C296, C297, C298, C299, C300, C301, C302, C303, C304, C305, C306, C307, C308, C309, C310, C311, C312, C313, C314, C315, C316, C317, C318, C319, C320, C321, C322, C323, C324, C325, C326, C327, C328, C329, C330, C331, C332, C333, C334, C335, C336, C337, C338, C339, C340, C3					

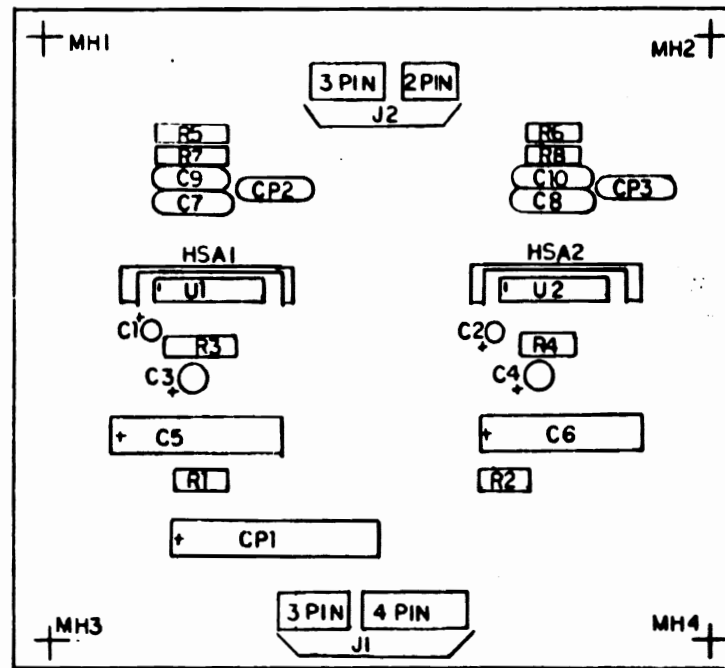


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DATE	REV	BY	CHKD
10/1/68	1	J. J. ...	J. J. ...
SYNOPSIS		SYNOPSIS	
SCHEMATIC DRAWING		SCHEMATIC DRAWING	
WATER TIGHT		WATER TIGHT	
DATE		DATE	
10/1/68		10/1/68	
BY		BY	
J. J. ...		J. J. ...	
CHKD		CHKD	
J. J. ...		J. J. ...	
APP'D		APP'D	
J. J. ...		J. J. ...	
TITLE		TITLE	
1051-00000-010		1051-00000-010	

DESIGNATION LIST

DESIGNATION	DESCRIPTION
C1,C2	4.7mf 25v rd.tant.
C3,C4	22mf 6v " "
C5,C6	470mf 6v ax.elect.
C7-C10	.1mf 50v ax.cr.
CP1	220mf 25v ax.elect.
CP2,CP3	.1mf 50v ax.cr.
R1,R2	2.7K Ω 1/4w 5% CRBN.
R3,R4	27 Ω " " "
R5-R8	1 Ω 1/2w " "
U1,U2	MB3730
J1	3 PIN STRT. KK156
J2	4 " " "
HSA1,2	HEATSINK ASSY.
MH1-MH4	HEYCO BUSHING



CROSS REFERENCE LIST

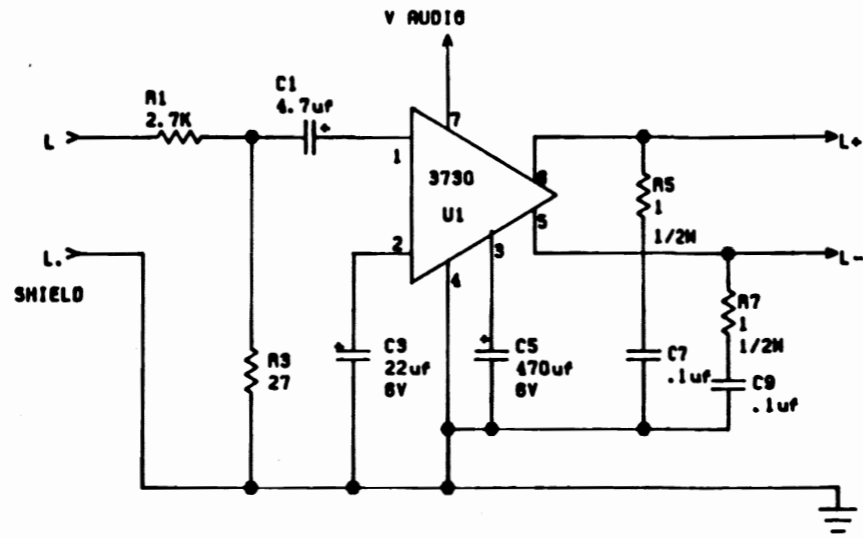
DESCRIPTION	QTY	DESIGNATION	PART NO
.1mf 50v ax.cr.	6	C7-C10, CP2,CP3	0986-00800-1100
4.7mf 25v rd.tant	2	C1,C2	0986-00800-3100
22mf 6v " "	2	C3,C4	0986-00800-1600
220mf 25v ax.elect.	1	CP1	0986-00800-3200
470mf 6v " "	2	C5,C6	0986-00800-1700
1 Ω 1/2w 5%	4	R5-R8	0062-02603-1XXX
27 Ω 1/4w " "	2	R3,R4	0062-068B3-1XXX
2.7K " "	2	R1,R2	0062-199B3-1XXX
MB3730	2	U1,U2	0066-188XX-XX4X
2 PIN STRT. KK156	1	J2	3000-16367-0200
3 " " "	2	J1,J2	3000-16367-0300
4 " " "	1	J1	3000-16367-0400
HEATSINK ASSY.	2	HSA1, HSA2	A986-00010-E000
HEYCO BUSHING	4	MH1-MH4	0017-00042-0014
PC BOARD	1		A080-90910-E000

PROJECT ENG. C MEDNICK

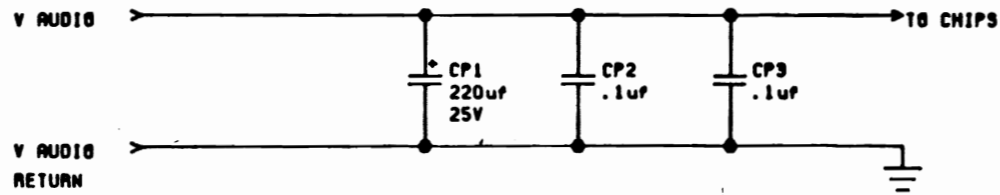
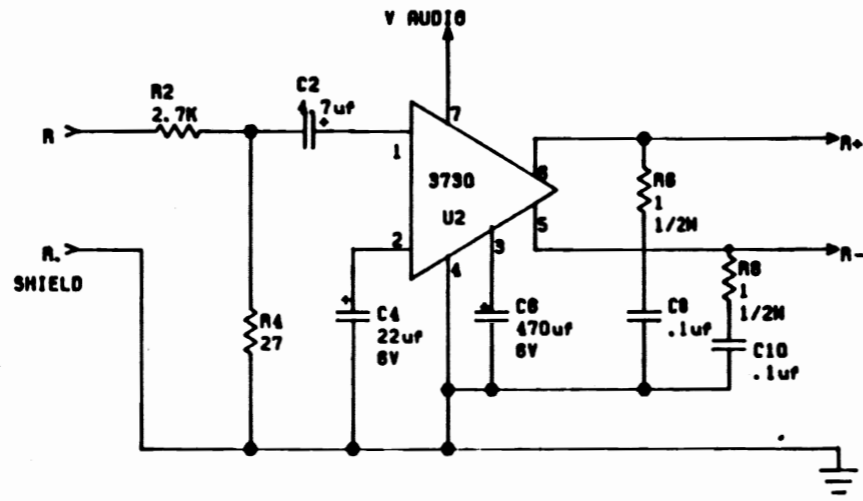
THIS DWG IS CONFIDENTIAL & PROPERTY OF MIDWAY MFG CO.

DIM. TOLERANCES UNLESS OTHERWISE SPEC FRACTIONAL T I R 002 CONCENTRICITY \pm 1/64 DECIMAL \pm .005 HOLE DIA + .002 - .000 ANGLE \pm 1/2" DO NOT SCALE DWG	FIRST USED ON TRON	MIDWAY MFG. CO. FRANKLIN PK., IL. 60131 A BALLY CO	
	DATE 9-1-82		SCALE FULL
	DRAWN TJK		
	MECH. LMR MAT.		
ELEC. LMR FINISH		DUAL PWR. AMP. ASSY A080-90910-E000	REVISIONS PART NO M051-00986-E010

- J1**
- PIN 1 N.C.
 - 2 L. AUDIO
 - 3 L. SHIELD
 - 4 KEY
 - 5 V AUDIO RETURN
 - 6 R. AUDIO
 - 7 R. SHIELD
 - 8 V AUDIO



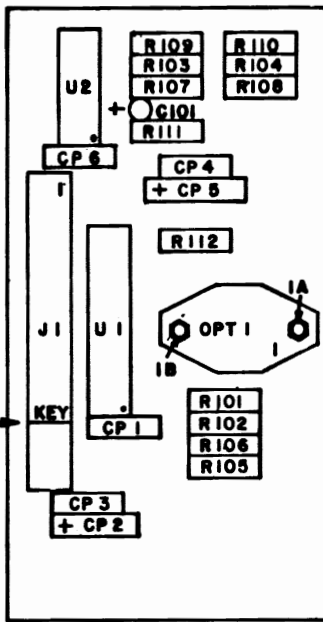
- J2**
- PIN 1 R+
 - 2 R-
 - 3 KEY
 - 4 L+
 - 5 N.C.
 - 6 L-



REVISIONS		MIDWAY MFG. CO.	
		FRANKLIN PK. ILL.	
USED ON TRON		PART NO	
NO. REQ'D		M051-00986-E011	
SCALE		SCHEMATIC, DUAL POWER AMP.	
NONE		A082-90910-E000	
HEAT TREAT		FINISH	
DO NOT SCALE DWG.		DATE 9/1/82	
DIM TOLERANCES UNLESS SPECIFIED		URN	
CONCENTRICITY 1/100		CND	
FRACTIONAL .005		DECIMAL	
HOLE DIA + .003 000			

DESIGNATION LIST

DESIGN. NO.	DESCRIPTION
C101	4.7 μf TANT 16V RAD.
CP 1	.01 μf 50V AX. CER.
CP 2	10 μf 16V AX. ELECT.
CP 3	.01 μf 50V AX. CER.
CP 4	.01 μf 50V AX. CER.
CP 5	10 μf 16V AX. ELECT.
CP 6	.01 μf 50V AX. CER.
R101	4.7K 1/4W 5%
R102	4.7K 1/4W 5%
R103	200K 1/4W 5%
R104	200K 1/4W 5%
R105	6.2K 1/4W 5%
R106	120 ohm 1/4W 5%
R107	30 K 1/4W 5%
R108	91 K 1/4W 5%
R109	200K 1/4W 5%
R110	200K 1/4W 5%
R111	4.7 K 1/4W 5%
R112	6.2 K 1/4W 5%
OPT 1	OPTICAL SENSOR
U 1	74LS491
U 2	LM339
J 1	13 PIN KK-156 RT. ANGLE (PIN 11 OMITTED)
MHOPT 1A, 1B	PLASTIC RIVET RND. HD.
A082-91482-A000 P.C.B.	

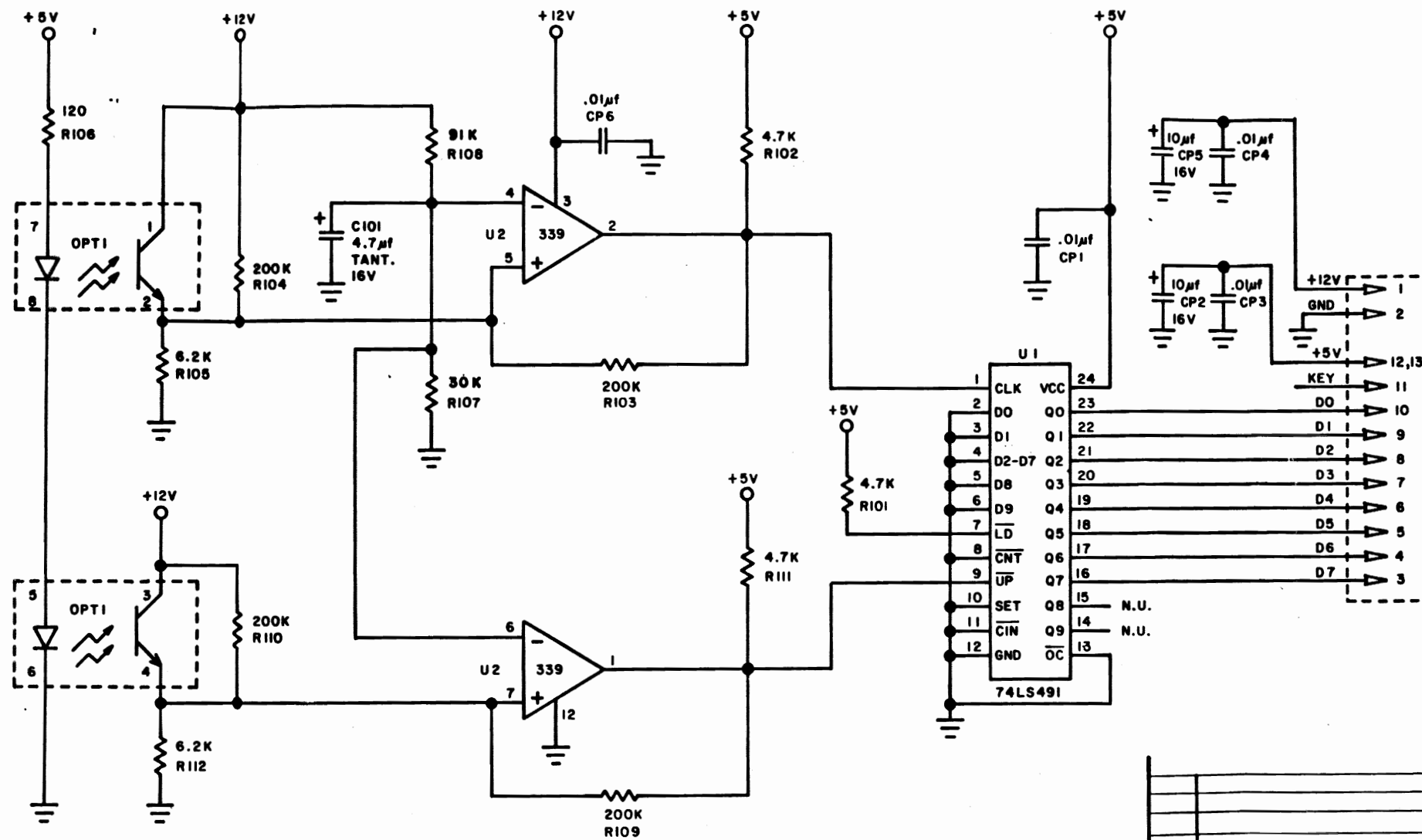


CROSS REFERENCE LIST

DESCRIPTION	QTY	DESIGN. NO.	PART NO.
.01 μf 50V AX. CER.	4	CP1, 3, 4, 6.	0628-00800-0100
4.7 μf 16V RAD. TANT.	1	C101	0628-00800-0200
10 μf 16V AX. ELECT.	2	CP 2, 5	0628-00800-0300
120 ohm 1/4W 5%	1	R106	0062-11683-1XXX
4.7K 1/4W 5%	3	R101, 102, 111.	0062-21183-1XXX
6.2K 1/4W 5%	2	R105, 112	0062-21783-1XXX
30 K 1/4W 5%	1	R107	0062-24983-1XXX
91 K 1/4W 5%	1	R108	0062-27383-1XXX
200K 1/4W 5%	4	R103, 104, 109, 110.	0062-28983-1XXX
74LS491	1	U 1	0628-00800-2700
LM339	1	U 2	0628-00800-2900
OPTICAL SENSOR	1	OPT 1	0628-00804-0100
13 PIN KK-156 (RT. ANGLE PIN 11 OMITTED)	1	J 1	3000-16387-1311
PLASTIC RIVET RND. HD. 2		MHOPT 1A, 1B.	0017-00072-0091
P.C.B.	1		A082-91482-A000

REVISIONS		

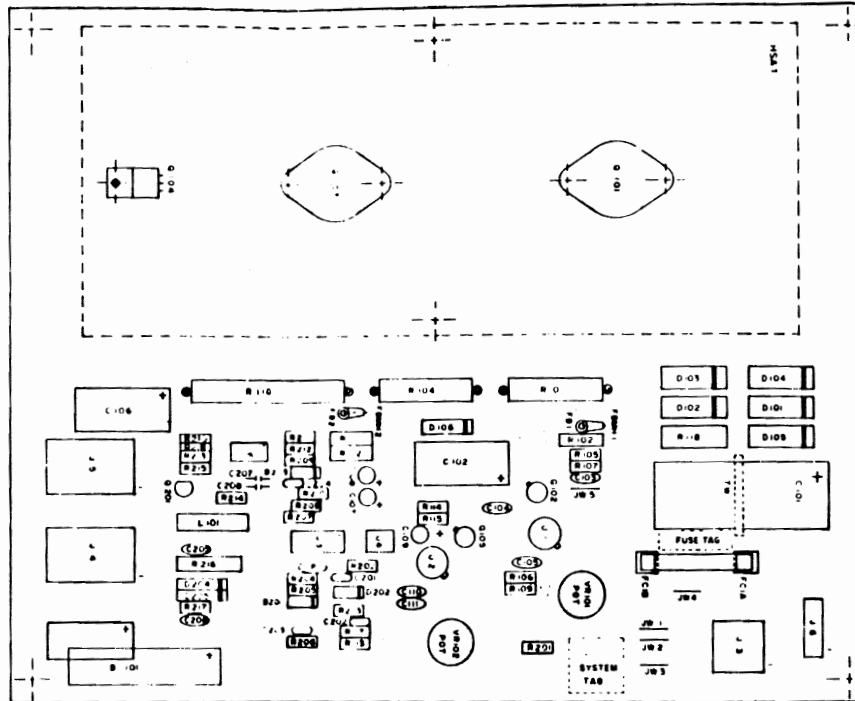
PROJECT ENG: JOHN BOYDSTON		USED ON KOZMIK KROOZ'R		Bally / MIDWAY MFG. CO. FRANKLIN PK. ILL.	
DO NOT SCALE DWG.	HEAT TREAT	SCALE	NO. REQ'D PER	PART NO.	
DIM. TOLERANCES UNLESS SPECIFIED	DATE: 2/17/83			M051-00114-A022	
CONCENTRICITY TYP 001				ASSY DRAWING OPTICAL SENSOR A082-91482-A000 A084-91482-A000	
FRACTIONAL 1/64					
DECIMAL 005					
HOLE DIA +.002 000					



REVISIONS	

PROJECT ENG: JOHN BOYDSTON		USED 0 KOZMIK KROOZ'R		Baby / MIDWAY MFG. CO. FRANKLIN PK. ILL.	
DO NOT SCALE DWG		HEAT TREAT	SCALE	NO. REQ'D 1 PER	
DIM TOLERANCES UNLESS SPECIFIED		DRW. C.L.	MAT'L.	SCHEMATIC DRAWING	
CONCENTRICITY TYP. 0.05		CRD. JBB	FINISH	OPTICAL SENSOR	
FRACTIONAL 1/64				A082-91482-A000	
DECIMAL 0.05		DATE 2/17/83	A084-91482-A000		PART NO. M051-00114-A023
HOLE DIA +002 000					

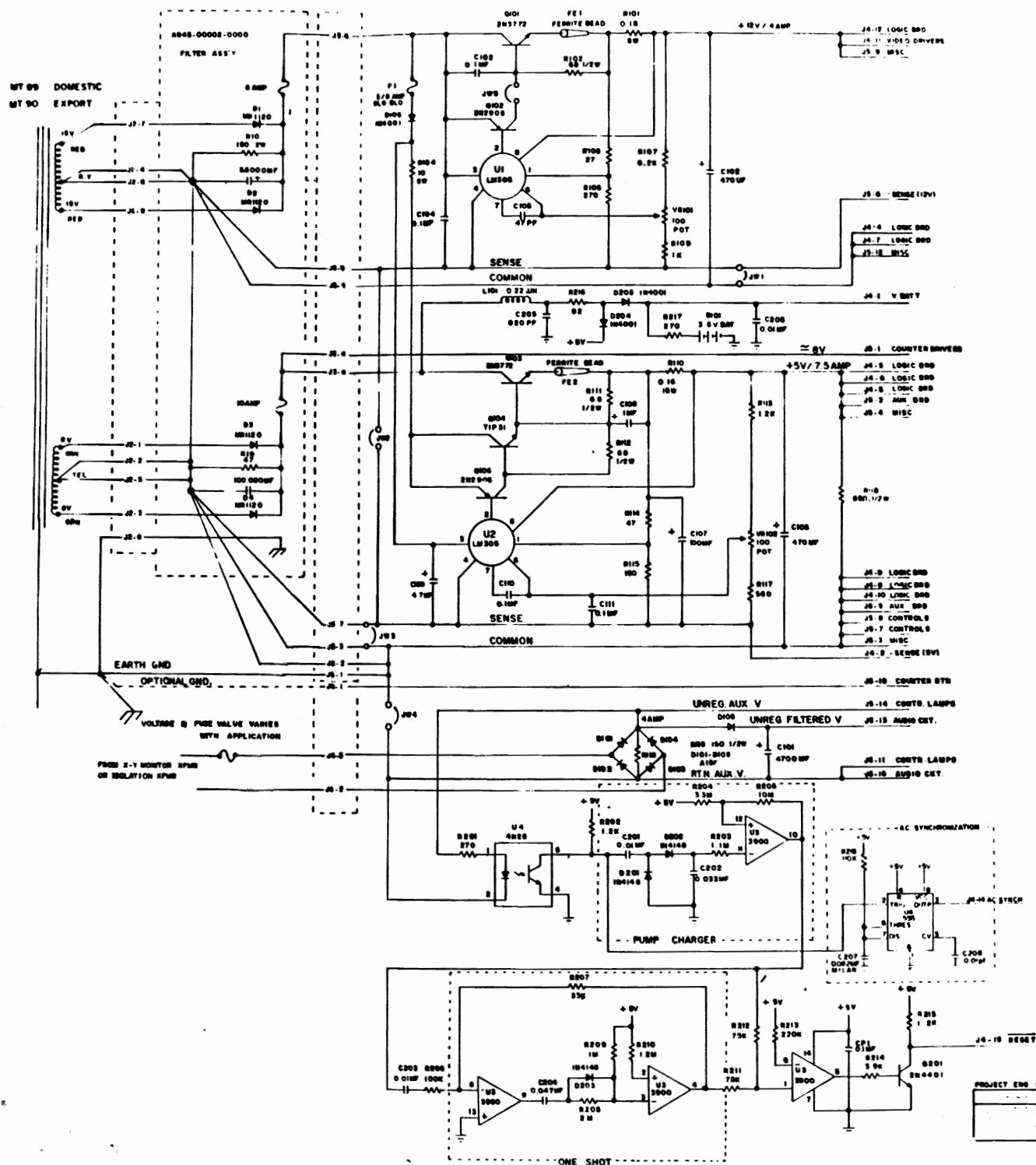
DESIGNATION LIST			
DESIGNATION	DESCRIPTION	DESIGNATION	DESCRIPTION
C101	4700uf AX ELECT.	R117	560ohm 1/4W 5%
C102	470uf AX ELECT.	R118	150ohm 2W
C103	1uf AX CER	R201	270ohm 1/4W 5%
C104	1uf AX CER	R202	1.2K 1/4W 5%
C108	47uf AX CER	R203	1.1M 1/4W 5%
C109	470uf AX ELECT.	R204	3.3M 1/4W 5%
C107	100uf RD TANT	R208	10M 1/4W 5%
C108	4.7uf RD TANT	R208	100K 1/4W 5%
C110	1uf AX CER	R207	33K 1/4W 5%
C111	1uf AX CER	R208	2M 1/4W 5%
C201	.01uf MYLAR	R209	1M 1/4W 5%
C202	.033uf MYLAR	R210	1.2M 1/4W 5%
C203	.01uf MYLAR	R211	75K 1/4W 5%
C204	.047uf MYLAR	R212	75K 1/4W 5%
C205	.820uf AX CER	R213	220K 1/4W 5%
C206	.01uf AX CER	R214	3.6K 1/4W 5%
C207	0.082uf MYLAR	R215	1.2K 1/4W 5%
		R219	82ohm 1W 10%
		R217	270ohm 1/4W 5%
		R218	110K 1/4W 5%
		R219	88ohm 1/2W 5%
		VR101.102	100ohm POT
CP1	1uf AX CER		
R101	18ohm 5W W/RES SPACER	D101	A15F
R102	88ohm 1/2W 5%	D102	A15F
R104	100ohm 5W W/RES SPACER	D103	A15F
R105	27ohm 1/4W 5%	D104	A15F
R106	270ohm 1/4W 5%	D105	A15F
R107	8.2K 1/4W 5%	D106	1N4001
		D201	1N4148
		D202	1N4148
		D203	1N4148
		D204	1N4001
		D205	1N4001
R109	1K 1/4W 5%		
R110	16ohm 15W W/RES SPACER		
R111	8.8ohm 1/2W 5%		
R112	88ohm 1/2W 5%		
R113	1.2K 1/4W 5%		
R114	47ohm 1/4W 5%		
R115	160ohm 1/4W 5%		
		Q102	2N2905
		Q105	2N2905
		Q201	2N4401
		U1	LM705 REG
		U2	LM305 REG
		U3	LM3900
		U4	1N78
		U6	555
		L101	22uH INDUCTOR
		B101	BATTERY 3.6VDC 60DEG C
		F1	3 RA 5 BLO FUSE
		FC1A,1B	FUSE CLIP
		FE-2	FERRITE BEAD
		TW1	TE WRAP
		J3	7PIN P.C. MOUNT CONN (MALE)
		J4	15PIN P.C. MOUNT CONN (FEMALE)
		J5	15PIN P.C. MOUNT CONN (MALE)
		J6	15PIN P.C. MOUNT CONN (MALE)
		LB1	FUSE TAG
		LB2	SYSTEM TAG
		HSA1	HEAT SINK ASSY 1
		MHSA1	MOUNTING HARDWARE (HEAT SINK)
			2 SCREW
			4 WASHER
			2 HEX NUT
		JW1-5	JUMPER WIRE
		FBMH1.2	FERRITE BEAD MOUNTING HARDWARE



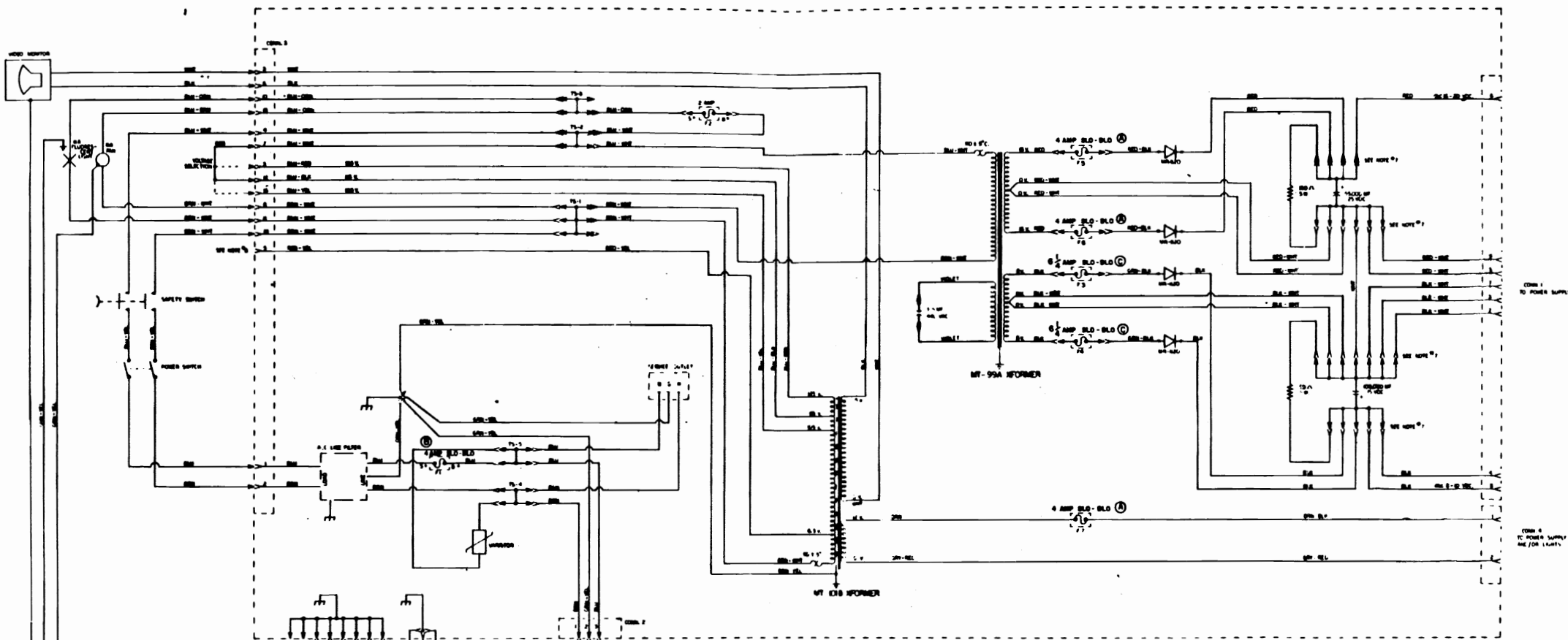
FROJ. ENG. L. DEKKER
MIDWAY MFG. CO.
ASSEMBLY DRAWING 125VA PWRSPLY
A082-90412-0000
5/14/82
MOSI-00945-8006

CROSS REFERENCE LIST

DESCRIPTION	Qty	DESIGNATION	PART #
47uf AX CER	1	C108	0845 00811-0100
820uf AX CER	1	C108	0845 00818 0400
0.1uf AX CER	2	C206,208	0845 00818-0100
0.1uf MYLAR	2	C201,203	0845 00818 0200
0.33uf MYLAR	1	C207	0845 00818 0300
0.47uf MYLAR	1	C204	0845 00818 0300
0.082uf AX CER	1	C207	0845 00818-1800
1uf AX CER	5	C103,104,107,111, CP1	0845 00811 0200
1uf RAD TANT	1	C108	0845 00811 0300
4.7uf RAD TANT	1	C107	0845 00811 0400
100uf RAD TANT	1	C107	0845 00811 0500
470uf AX ELECT	2	C102,105	0845 00818-0600
470uf AX ELECT	1	C101	0845 00811 0700
18ohm 15W 5%	1	R110	0845 00815 0100
18ohm 5W 5%	1	R101	0845 00815 0200
8.8ohm 1/2W 5%	1	R111	0845 00812-0100
100ohm 5W 5%	1	R108	0845 00812-0100
27ohm 1/4W 5%	1	R114	0845 00813 11XX
47ohm 1/4W 5%	1	R102,112,218	0845 00813 11XX
88ohm 1/2W 5%	3	R106,201,217	0845 00813 11XX
82ohm 1W 10%	1	R218	0845 00812 0200
160ohm 1/4W 5%	1	R115	0845 00812 0200
270ohm 1/4W 5%	3	R106,201,217	0845 00813 11XX
56ohm 1/4W 5%	1	R117	0845 00813 11XX
1K 1/4W 5%	1	R109	0845 00813 11XX
1.2K 1/4W 5%	3	R113,202,215	0845 00813 11XX
39K 1/4W 5%	1	R214	0845 00813 11XX
8.2K 1/4W 5%	1	R107	0845 00813 11XX
33K 1/4W 5%	1	R207	0845 00813 11XX
75K 1/4W 5%	1	R211,212	0845 00813 11XX
100K 1/4W 5%	1	R206	0845 00813 11XX
110K 1/4W 5%	1	R218	0845 00813 11XX
220K 1/4W 5%	1	R213	0845 00813 11XX
1M 1/4W 5%	1	R209	0845 00813 11XX
1.1M 1/4W 5%	1	R203	0845 00813 11XX
1.2M 1/4W 5%	1	R210	0845 00813 11XX
2M 1/4W 5%	1	R205	0845 00813 11XX
3.3M 1/4W 5%	1	R204	0845 00813 11XX
10M 1/4W 5%	1	R205	0845 00813 11XX
100ohm POT	2	VR101.102	0845 00814 0030
LM305 REG	2	U1,2	0845 00811 0100
555	1	U6	0845 00810-4300
LM3900	1	U3	0845 00813 0200
4N28	1	U4	0845 00813 0300
A15F RECTIFIER	5	D101-105	0845 00804 0200
1N4001	3	D106,204,205	0845 00804 0300
1N4148	3	D201-203	0845 00804 0500
2N2905	2	Q102,105	0845 00808 0300
2N4401	1	Q201	0845 00804 0400
BATTERY 3.6VDC 60DEG C	1	B101	0845 00808 0300
FUSE 3/8A 5 BLO	1	F1	0845 00808 0400
FUSE CLIP	2	FC1A,1B	0845 00814 0300
TE WRAP	1	TW1	0845 00814 0300
FERRITE BEAD	2	FE1,2	0845 00808 0200
FERRITE MOUNTING HDW	2	FBMH1.2	0845 00813 0100
22uH INDUCTOR	1	L101	0845 00814 0200
FUSE TAG	1	LB1	0845 00845-8004
SYSTEM TAG	1	LB2	0845 00845-8009
P.C.B.	1		A080-90412-0000
HEAT SINK ASSY 1	1	HSA1	0845 00808-0000
(SEE HSA ASSY DRAWING "HSA NOTE")			
4-40 X 10 SLT RND	2	MHSA1A,2A	0845 00811-00727
4-40 HEX NUT	2	MHSA1E,2E	0845 00811-00727
WSH 4-120-250-018	4	MHSA1B,1D	0845 00811-00727
3PIN P.C. MOUNT CONN (MALE)	1	J6	0845 00821-0440
8PIN P.C. MOUNT CONN (MALE)	1	J3	0845 00821-0425
15PIN P.C. MOUNT CONN (FEMALE)	1	J4	0845 00821-0440
15PIN P.C. MOUNT CONN (MALE)	1	J5	0845 00821-0440
22AWG T & R BARE 2.5"	5	JW1-5	0845 00821-0030



PROJECT ENG L DENNER	FULL	DRAWING NO.	MIDWAY MFG. CO.
5/3/82	POWER SUPPLY 125VA W/CKT SUPPORT AO82-90412-0000	1 PER	M051-00945-0007



NOTES:
 1. SEE LIST
 2. SEE LIST
 3. SEE LIST
 4. SEE LIST
 5. SEE LIST
 6. SEE LIST
 7. SEE LIST
 8. SEE LIST

POWER CHASSIS *125 VA
 115V - 60HZ.
 PART NO. A945-00020-0000
 DWG. NO. M051-00945-B037

BALLY / MIDWAY
 10501 W. BELMONT AVE.
 FRANKLIN PARK, ILL. 60151

REV. A	INCREASED FUSE VALUES WAS 3 AMP - NOW 4 AMP ADDED PART NO. (UL)	MB 3-15-63
REV. B	INCREASED FUSE VALUE WAS 3 AMP - NOW 4 AMP	MB 3-24-63
REV. C	INCREASED FUSE VALUES	MK 8-16-64

BALLY/MIDWAY'S CRATER RAIDER

U.R. #A57

ROM/EPROM PART NUMBERS

UNPROGRAMED SUPER VIDEO GEN. A084-91464-H000
PROGRAMED SUPER VIDEO GEN. A084-91464-AA57

POS.	MIDWAY PART NUMBER
1A	0A57-00803-0014
2A	0A57-00803-0015
3A	0A57-00803-0016
4A	0A57-00803-0017
5A	0A57-00803-0018
6A	0A57-00803-0019
7A	0A57-00803-0020
8A	0A57-00803-0021

JUMPERS	IN	OUT
JW1		**
JW2	**	

UNPROGRAMED SCROLLING CPU A084-91721-C000
PROGRAMED SCROLLING CPU A084-91721-AA57

POS.	MIDWAY PART NUMBER
3A	0A57-00803-0005
4A	0A57-00803-0006
5A	0A57-00803-0007
6A	0A57-00803-0008
6D	0A57-00803-0001
7D	0A57-00803-0002
8D	0A57-00803-0003
9D	0A57-00803-0004
10D	0A57-00803-0022
11D	BLANK
10G	0A57-00803-0009

JUMPERS	IN	OUT
JW1	**	
JW2		**
JW11		**
JW13	**	
JW14		**
JW15		**

UNPROGRAMED S/S I/O A084-90913-F000
PROGRAMED S/S I/O A084-90913-AA57

POS.	MIDWAY PART NUMBER
7A	0A57-00803-0010
8A	0A57-00803-0011
9A	0A57-00803-0012
10A	0A57-00803-0013

EPROM	JUMPERS	IN	OUT
2532	JW1		**
2532	JW2	**	
2732	JW1	**	
2732	JW2		**

REVISIONS
