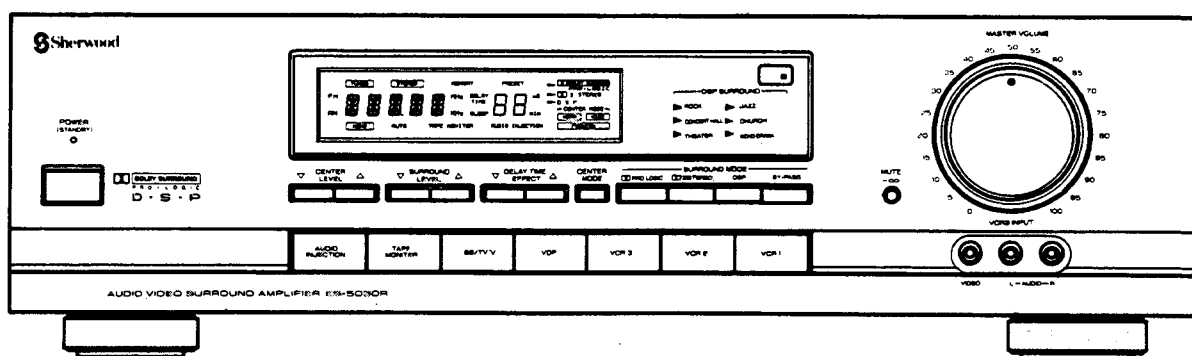


SERVICE MANUAL

ES-5030R AUDIO & VIDEO SURROUND AMPLIFIER



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SAFETY PRECAUTIONS

WARNING

Service Should not be attempted by anyone unfamiliar with the necessary precautions on this player. The following precautions are necessary during servicing.

1. Many electrical and mechanical parts in this player have special safety characteristics that often pass unnoticed and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts that have these special safety characteristics are identified in this manual and its supplements: electrical components having such features are identified by $\triangle$ in the schematic diagram and the parts list.

Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts that do not have the same safety characteristics as specified in the parts list may create shock, fire, or other hazards.

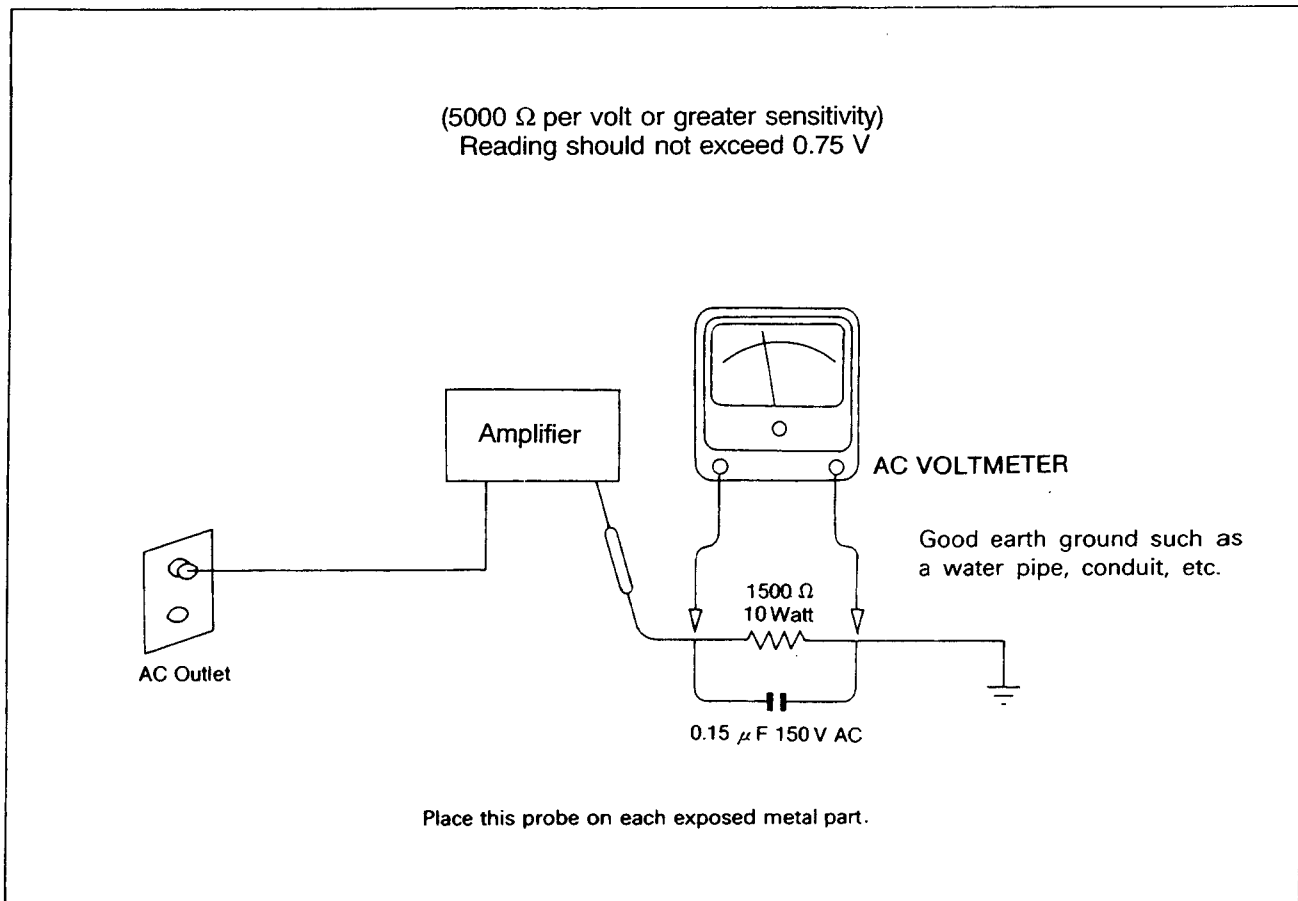
2. Before returning the set to the customer, always do an AC leakage current check on the exposed metal parts of the cabinet, such

as terminals, screw heads, metal overlays, etc., to be sure the set is safe to operate without danger of electrical shock.

Plug the AC line cord directly into a 120 V AC outlet(120 V AC version only). (Do not use a line isolation transformer during this check.)

Use an AC voltmeter, having 5000 Ω per volt or greater sensitivity, in the following manner: Connect a 1500 Ω 10 watt resistor paralleled by a 0.15 μ F 150 V AC capacitor, between a known good earth ground (water pipe, conduit, etc.) and the exposed metal parts, one at a time. Measure the AC voltage across the combination of a 1500 Ω resistor and a 0.15 μ F capacitor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metal part. Voltage measured must not exceed 0.75 V RMS. This corresponds to 0.2 mA AC.

Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



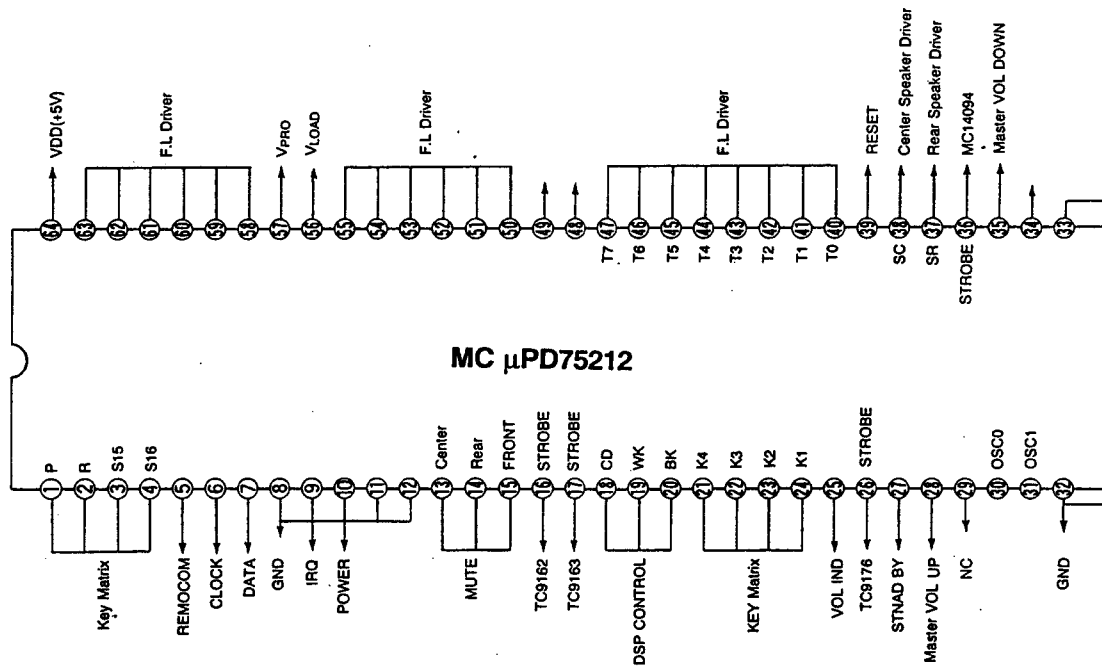
SPECIFICATIONS

Front output	• Front output sensitivity at 1 V output 1 kHz, 47 kΩ.....150 mV • Frequency response(-3 dB).....10 Hz~55 kHz • Total harmonic distortion.....0.005% • Signal to noise ratio(1HF-A weighted).....95 dB
DSP/Dolby Prologic	• RMS output power Center amp.....50 W Rear amp.....25 W+25 W • Frequency response(-3 dB) Center Channel Normal.....100 Hz~15 kHz Wide.....30 Hz~15 kHz Rear channel.....100 Hz~6.2 kHz • Total Harmonic distortion Center channel at 50 W 1 kHz, 8 Ω.....0.05% Rear channel at 25 W 1 kHz, 8 Ω.....0.5% • Signal to noise ratio(1HF-A weighted) Center channel.....83 dB Rear channel.....68 dB • Pre output at input sensitivity 210 mV Center channel.....1.5 V Rear channel.....1.5 V
VIDEO	• Input impedance.....75 Ω • Frequency response(-3 dB).....5 Hz~10 MHz • Signal to noise.....55 dB
General	• Power requirement.....230 W • Dimension.....(W)440 $\times$ (H)110 $\times$ (D)280 mm • Weight.....6.5 kg • Power requirements: A : 120 V 60 Hz for American/Canadian version B : 120/220 V, 60/50 Hz for mult-voltage version(switchable) C : 230 V 50 Hz for general European version D : 230 V 50 Hz German/Italian version E : 240 V 50 Hz for U.K/Austalian version F : 230 V 50 Hz for Swiss/Scandinabian version

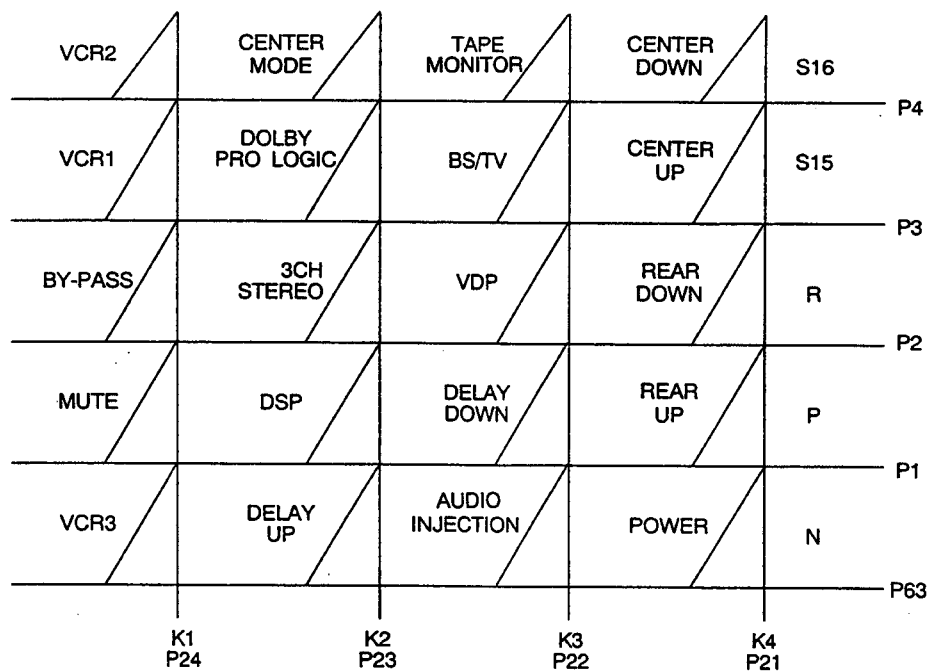
Note:Component and circuitry are subject to modification to insure best operation under differing local conditions. This manual is based on the American(A) standard, and provides information on regional circuit modification through use of alternate schematic diagrams or wiring diagram, and information on regional component variations through use of parts list. Design and specifictions subject to change without notice for improvement.

CIRCUIT DESCRIPTION

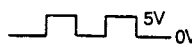
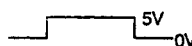
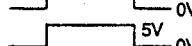
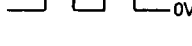
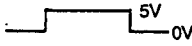
Pin Assignment of μ -processor, MC μ PD75212



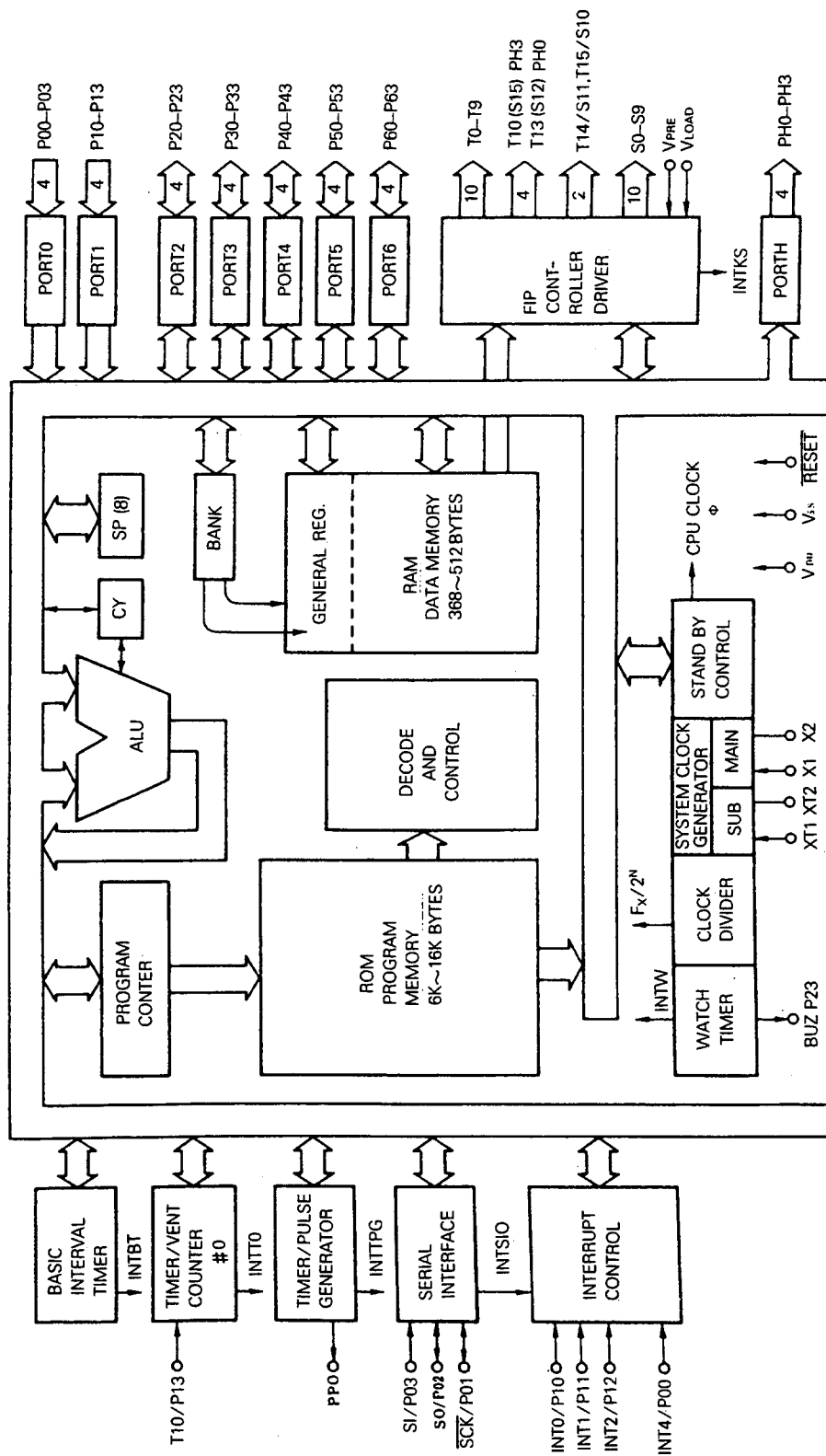
Key Matrix



Functions Assigned(IC701: μ PD75212)

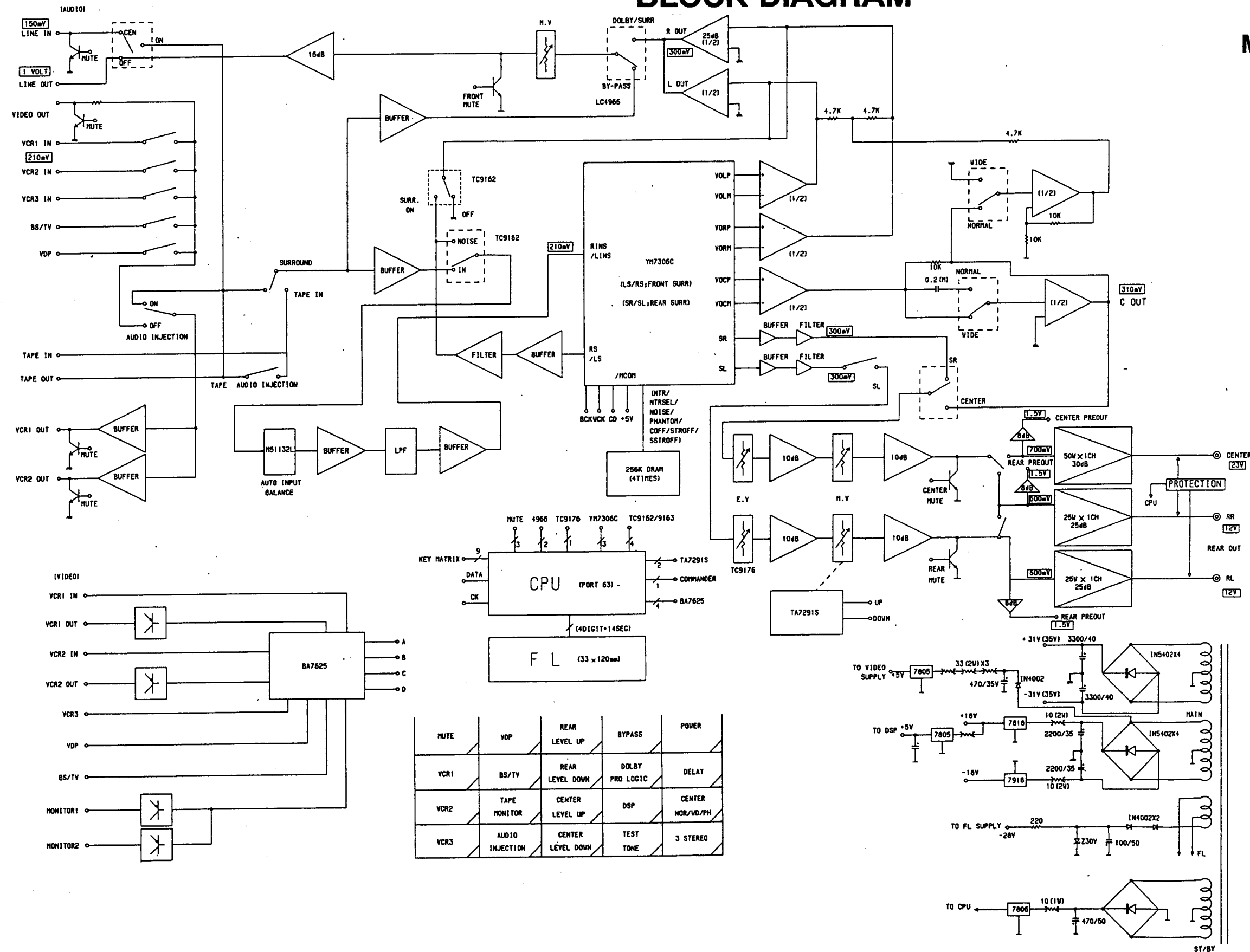
No.	Terminal	operating chart	Remarks
1~4	Key Matrix		
5	Remote Control Data IN		
6	Clock		
7	Data		
8	GND		
9	IRQ		
10	Power		
11	GND		
12	GND		
13	Center Mute		
14	Rear Mute		
15	Front Mute		
16	Switch IC Strobe		
17	Switch IC Strobe		
18	DSP CD Data Control		
19	DSP WK Data Control		
20	DSP BK Data Control		
21~24	Key Matrix		
25	Volume IND		
26	Electric V.R Strobe		
27	Standby		
28	Motor Volume Drive up		
29	NC		
30	OSC0		
31	OSC1		
32	GND		
33	GND		
34	NC		
35	Motor Volume Drive Down		
36	VIDEO/DSP Functions LED Driver		
37	Rear Speaker Control		
38	Center Speaker Control		
39	Reset		
40~47	LCD Driver		
48	N.C		
49	N.C		
50~55	LCD Driver		
56	V_{LOAD}		
57	V_{PRE}		
58~63	Key Matrix		
64	VDD(+5V)		

Block Diagram

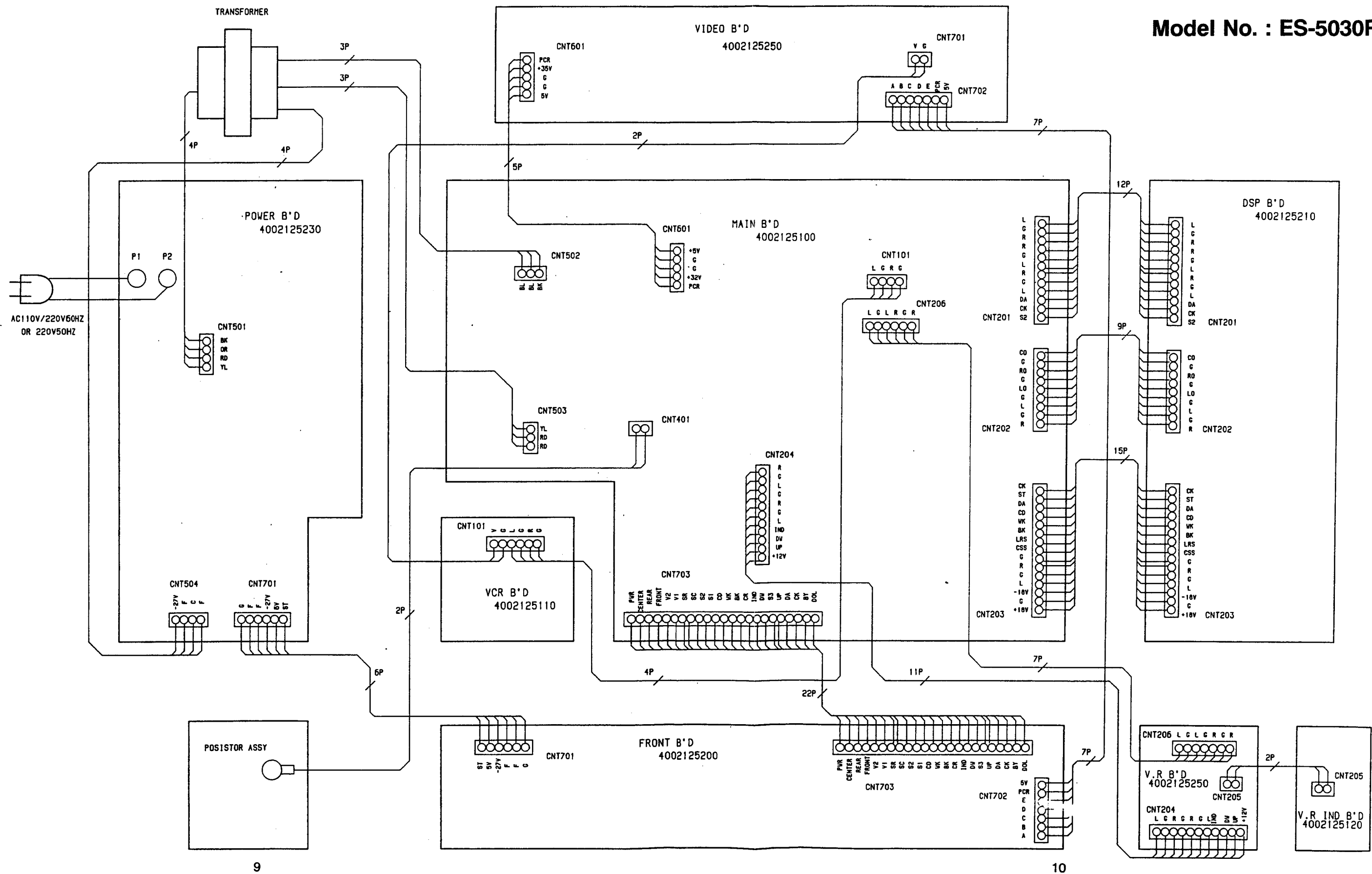


BLOCK DIAGRAM

Model No. : ES-5030R

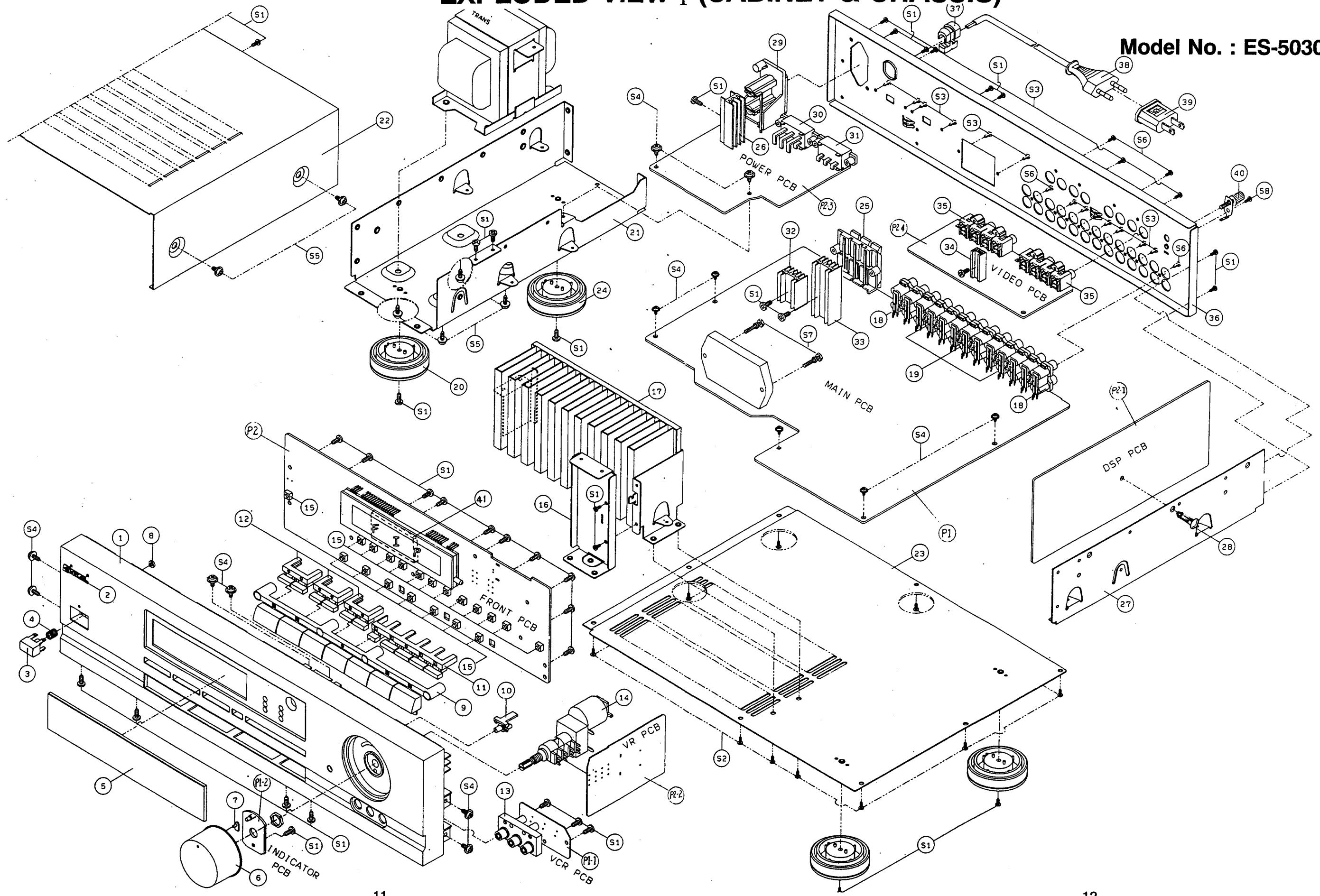


Model No. : ES-5030R

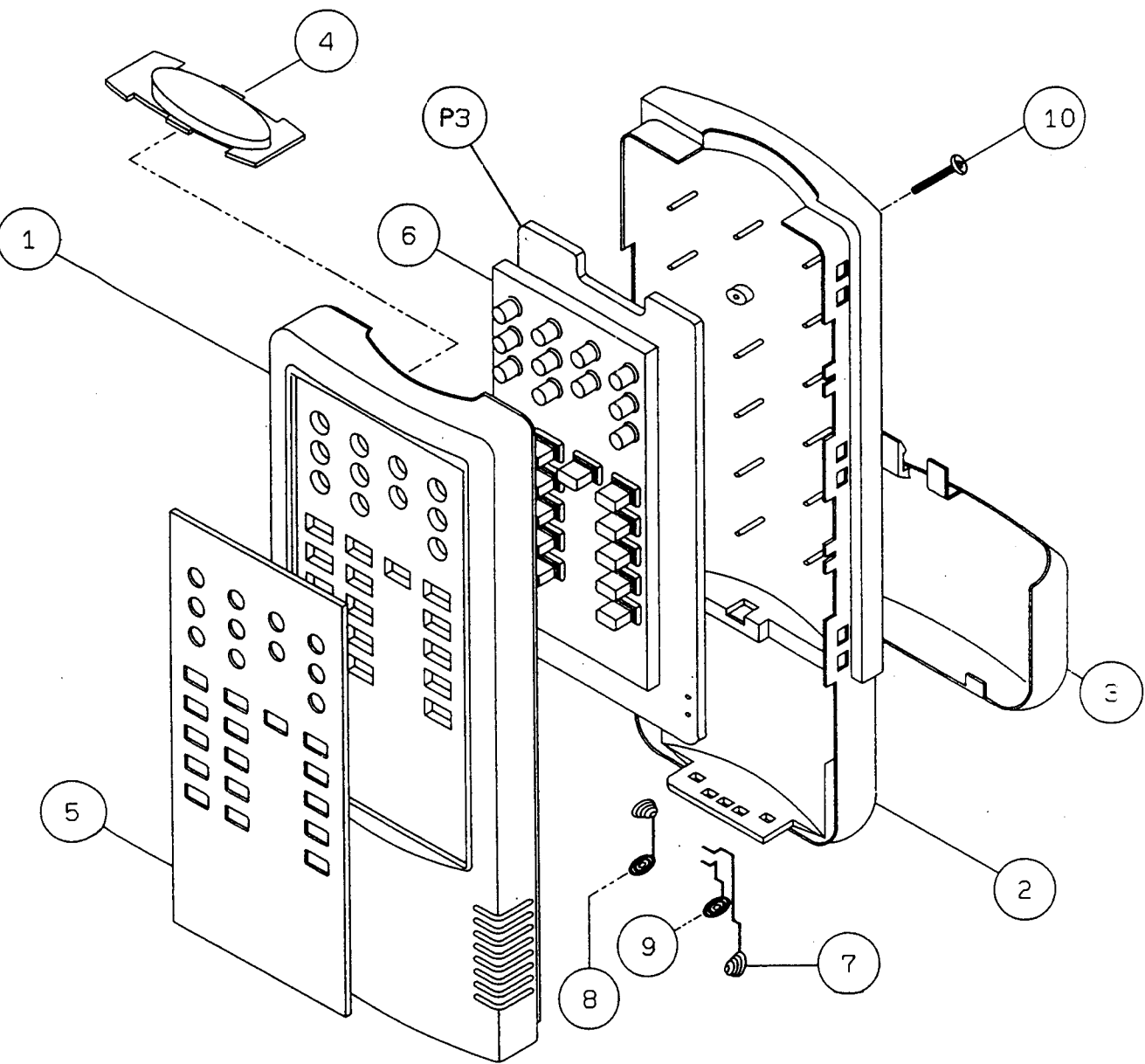


EXPLODED VIEW I (CABINET & CHASSIS)

Model No. : ES-5030R



EXPLODED VIEW II (COMMANDER)



Ref. No.	Description	Mfr. Parts No.	Q'ty
1	Cover Top, ABS, Black	048581000611	1
2	Cover Bottom, ABS, Black	048581000711	1
3	Cover Battery, ABS, Black	048583003711	1
4	Cover Upper, ACRYL, Wine	8555030610	1
5	Function Plate, PVC, DOM	048552003361	1
6	Function Plate, PVC, A,B,C,D,E,F	048552003362	1
7	Rubber Tact, Rubber	048722000761	1
8	Spring Battery(D)	6555605610	1
P-25	Spring Battery(B), SUS	6555605320	1
P25	Spring Battery(D)	6555605410	1
10	Screw PH2 x 10 ZNB	8019120103	1
P3	PCB Remocon	4005011300	1

CABINET & CHASSIS PARTS LIST

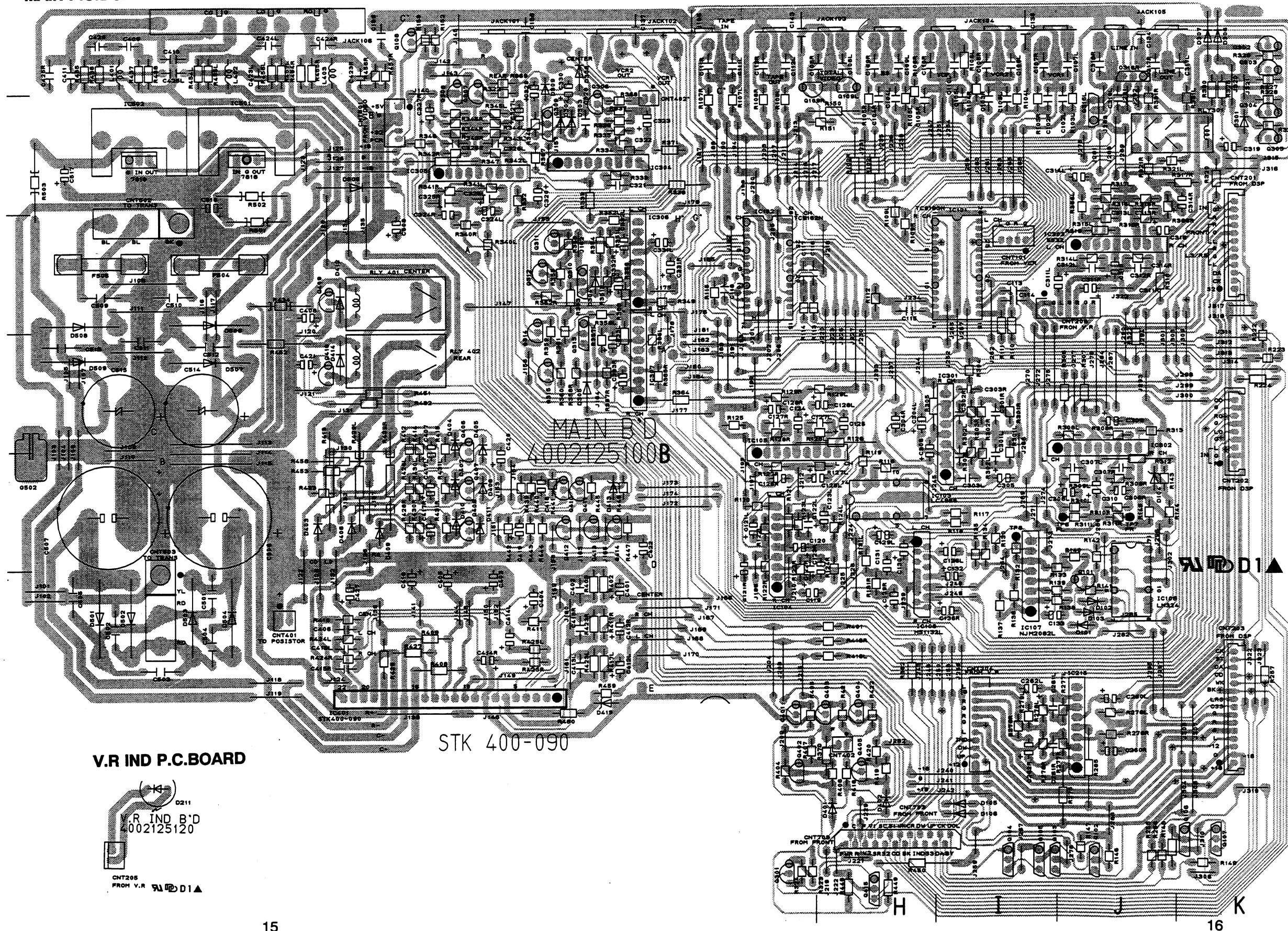
Ref. No.	Part No.	Description	Q'ty	Version	Ref. No.	Part No.	Description	Q'ty	Version
PACKAGE					S1	8109230083	Screw #2BTC 3x8B	38	
	9722036710	Cushion Poly	1		S2	8109230063	Screw #2BTC 3x6B	10	
	9715000120	Film Soft PE	1		S3	8119130103	Screw #1PT 3x10B	16	
	049605254710	Box Carton	1		S4	8159230081	Screw #2WPTC 3x8Y	14	
ACCESSORIES					S5	8159440083	Screw #WSAM 4x8B	8	
	4328200510	Cord RCA 2P	1		S6	8155000710	Screw Ground	4	
	9017036620	INSTRUCTION Manual	1	A	S7	8099130161	Screw HEX MSPW 3x16Y	2	
					S8	8119240061	Screw #2PTC 4x6Y	1	
CABINET									
1	048501029511	Panel Front, ABS, Black	1	Dom					
	048501029512	Panel Front, ABS, Black	1	A,B,C,D,E,F					
2	048535034011	Badge, ABS	1	Dom					
	048535033911	Badge, ABS	1	A,B,C,D,E,F					
3	8545074330	Power Knob, ABS	1						
4	6555004380	Spring	1						
5	048555036113	Display Window, Acryl	1	Dom					
	048555036114	Display Window, Acryl	1	A,B,C,D,E,F					
6	8543033210	Rotary Knob, ABS	1						
7	8555047310	Indicator, Acryl	1						
8	8545082010	Indicator Power, Acryl	1						
9	048543051611	Button Tact(7Key), ABS	1	Dom					
	048543051612	Button Tact(7Key), ABS	1	A,B,C,D,E,F					
10	8545112310	Button Mute, ABS	1						
11	8543051510	Button Tact(5Key), ABS	1						
12	8543051410	Button Tact(2Key), ABS	3						
16	6503028310	Heat Sink BKT. Secc	1						
17	7502007310	Heat Sink AL	1						
20	046033102611	Foot, AI	2	Dom					
	046033102511	Foot, (HS), ABS	2	A,B,C,D,E,F					
21	6122621310	Frame Left, SECC	1						
22	046122027521	Cover TOP, SECC	1						
23	6122419010	Button Cover, SECC	1						
24	046033102511	Foot, (HS), ABS	2	Dom,B,C,D,E,F					
	6033102510	Foot, (Black), ABS	2	A					
27	6123205410	Frame Right, SECC	1						
28	6528301910	Fastner, Nylon	1						
36	046102036511	Back Chassis, SECC	1	Dom					
	046102036521	Back Chassis, SECC	1	A					
	046102036531	Back Chassis, SECC	1	B					
	046102036541	Back Chassis, SECC	1	C					
	046102036551	Back Chassis, SECC	1	D					
	046102036561	Back Chassis, SECC	1	E					
	046102036571	Back Chassis, SECC	1	F					
37	6513000310	Stopper Cord	1	Dom					
	6518000710	Stopper Cord	1	A					
	6518000111	Stopper Cord	1	B,C,D,E,F					
33	△ 4308000810	Cord AC Power	1	Dom					
	△ 4308001410	Cord AC Power	1	A					
	△ 4308000430	Cord AC Power	1	B,C,D,F					
	△ 4308003610	Cord AC Power	1	E					
39	△ 4428300310	Adapter AC Plug	1	Dom					
40	4408104910	Terminal GND	1						
TRANS	2828000307	Transformer, 110/220V 50/60Hz	1						
P1	4002125100	PCB Main	1						
P1-1	4002125110	PCB VCR	1						
P1-2	4002125120	PCB Indicator	1						
P2	4002125200	PCB Front	1						
P2-1	4002125210	PCB DSP	1						
P2-2	4002125220	PCB VR	1						
P2-3	4002125230	PCB Power	1						
P2-4	4002125240	PCB Video	1						

PRODUCT SAFETY NOTICE

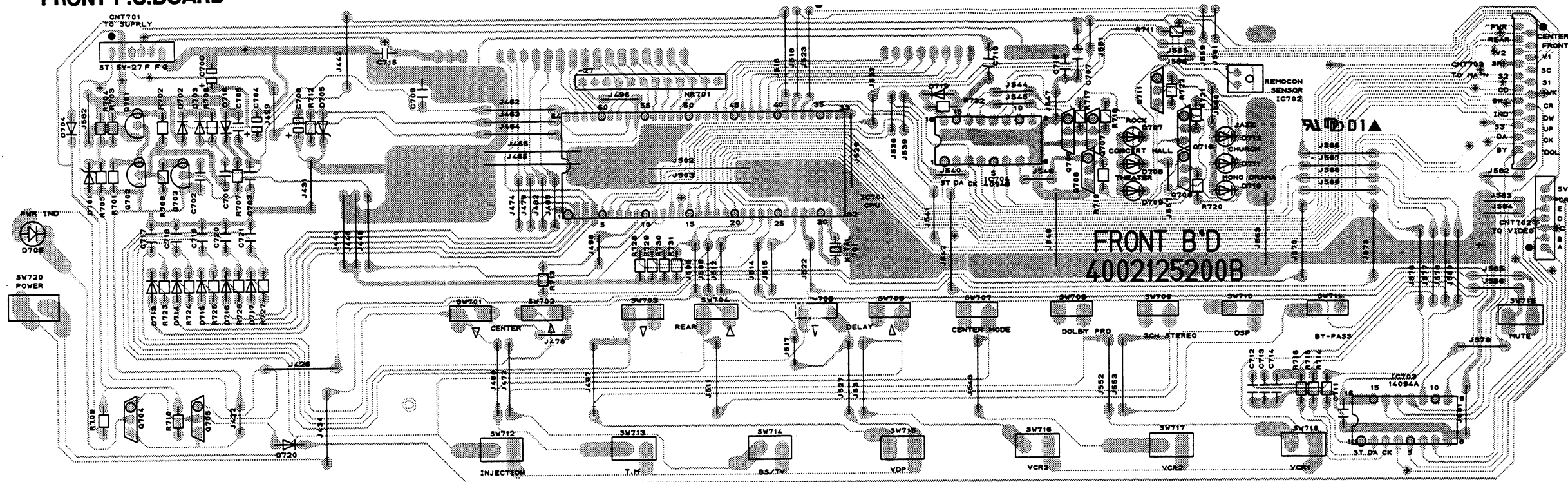
Each precaution in this manual should be followed during servicing. Components identified with the IEC symbol Δ in the parts list and the safety can be of special significance. When replacing a component identified with Δ , use only the replacement parts designated, or parts with the same ratings of resistance, wattage or voltage that are designated in the parts list in this manual. Leakage-current or resistance measurements must be made to determine that exposed parts are acceptably insulated from the supply circuit before returning the product to the customer.

PRINTED CIRCUIT BOARDS

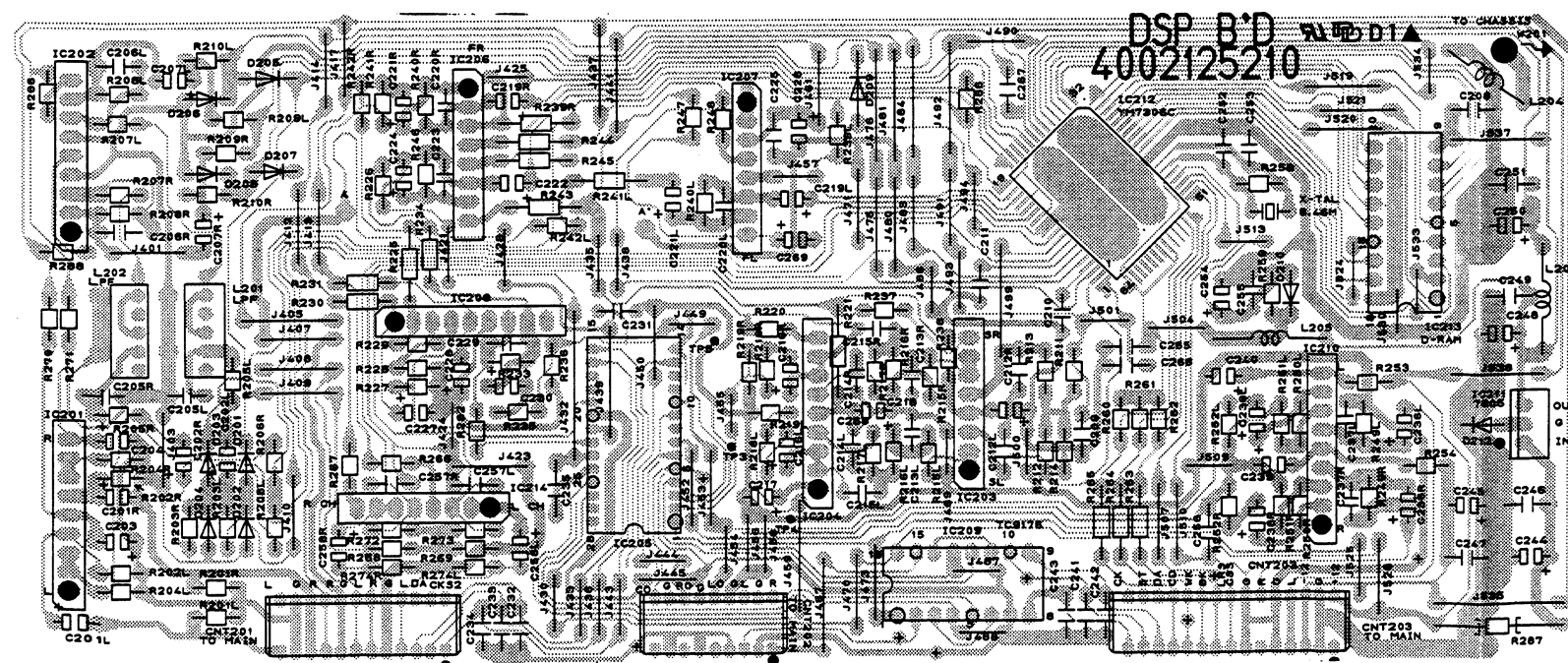
MAIN P.C.BOARD



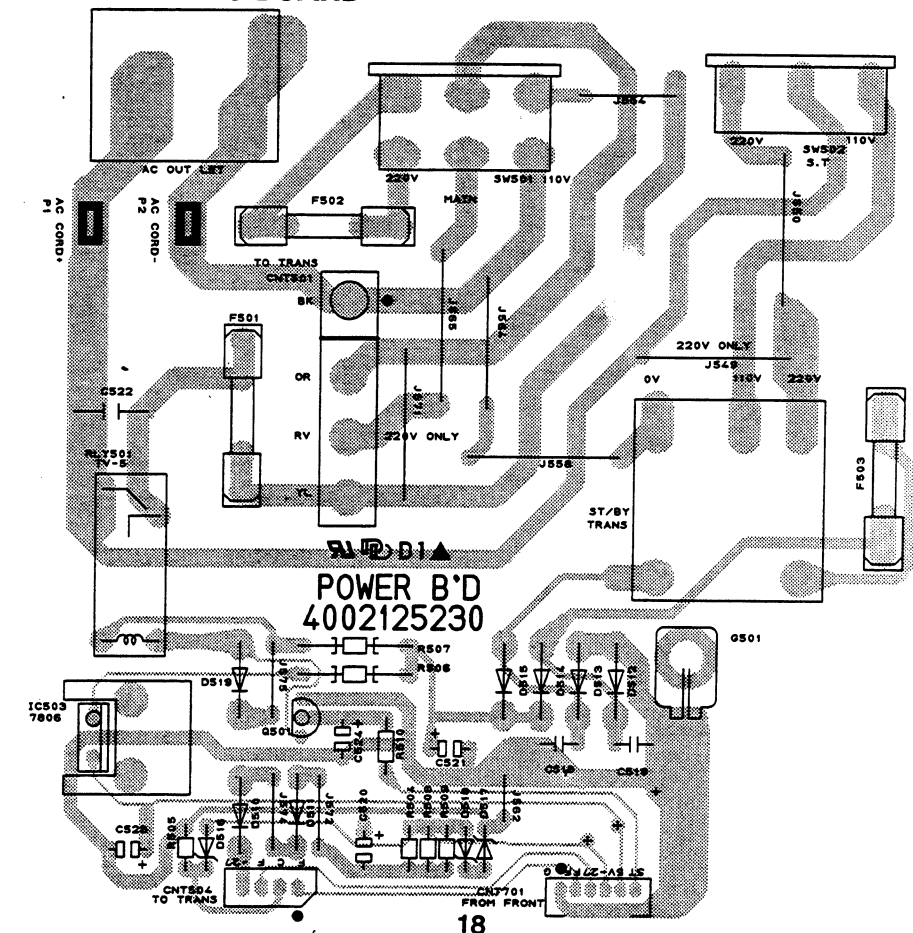
FRONT P.C.BOARD



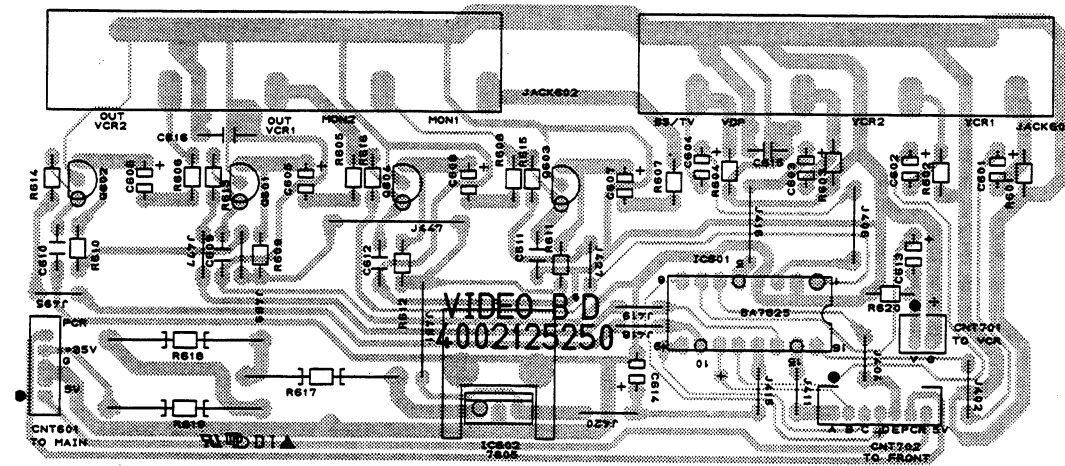
DSP P.C.BOARD



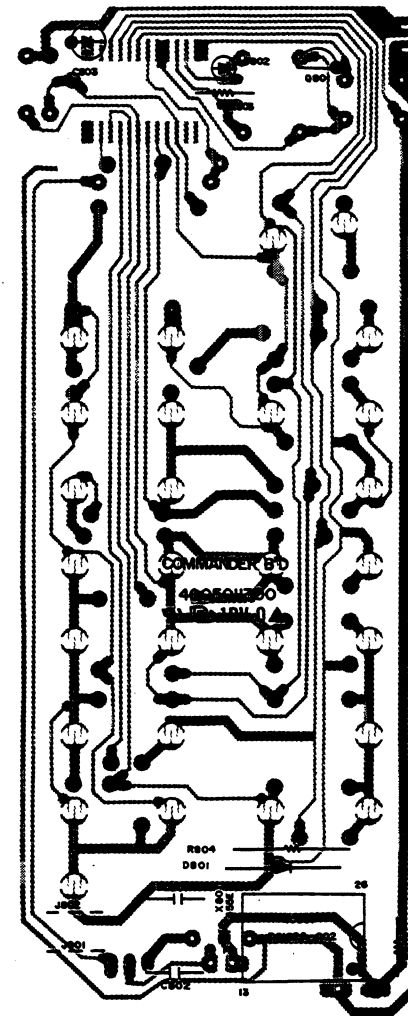
POWER P.C.BOARD



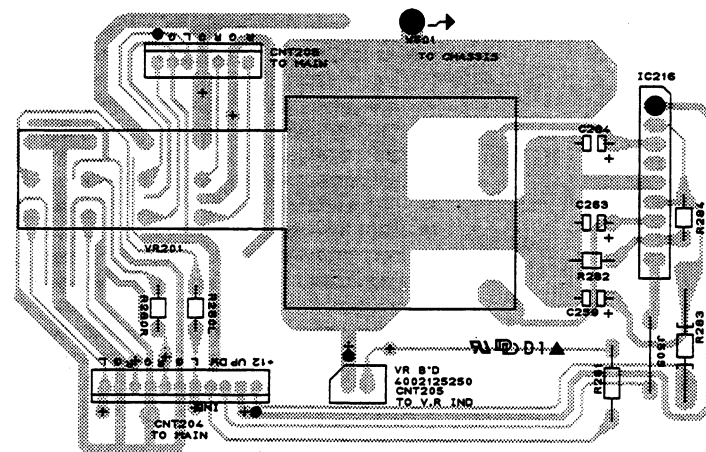
VIDEO P.C.BOARD



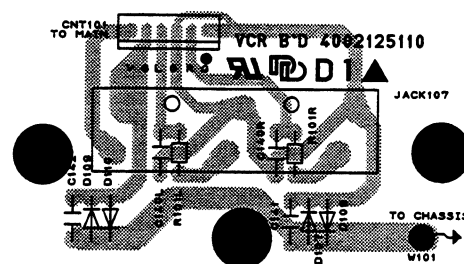
COMMANDER P.C.BOARD



VR P.C.BOARD



VCR P.C.BOARD



ELECTRICAL PARTS LIST

Ref. No.	Part No.	Description	Q'ty	Version	Ref. No.	Part No.	Description	Q'ty	Version
P1	054021010018	ASS'Y P.C.B MAIN			C332L/R	3479210071	Electrolytic SA	10 uF	50V M 2
18	4438108110	Jack RCA 4P	2		C333L/R	3479210071	Electrolytic SA	10 uF	50V M 2
19	4438103210	Jack RCA 6P	3		C334	3479222971	Electrolytic SA	2.2 uF	50V M 1
25	4408107410	Terminal Speaker	1		C401	3479222971	Electrolytic SA	2.2 uF	50V M 1
32	7505206120	Heat Sink REG TR, AL	1		C402	3519471935	Ceramic Tubular	470 pF	50V J 1
33	7505206130	Heat Sink REG TR, AL	1		C403	3479247021	Electrolytic SA	47 uF	50V M 1
	4255001010	Clip, Fuse	4		C404	3479210071	Electrolytic SA	10	50V M 1
	4855000111	Pipe Ceramic	8		C405	3479247021	Electrolytic SA	47 uF	50V M 1
C102L/R	3519101935	Ceramic Tubular	100 pF	50V J 2	C406	3509109130	Ceramic Disc	10 pF	50V J 1
C103L/R	3519101935	Ceramic Tubular	100 pF	50V J 2	C407	3479247971	Electrolytic SA	4.7 uF	50V M 1
C104L/R	3519101935	Ceramic Tubular	100 pF	50V J 2	C408	3479210971	Electrolytic SA	1 uF	50V M 1
C105L/R	3519101935	Ceramic Tubular	100 pF	50V J 2	C409	3679473120	Mylar	0.047 uF	100V J 1
C106L/R	3519101935	Ceramic Tubular	100 pF	50V J 2	C410/411	3519223935	Ceramic Tubular	2200 pF	50V J 2 D
C107L/R	3519101935	Ceramic Tubular	100 pF	50V J 2	C412L/R	3479222971	Electrolytic SA	2.2 uF	50V M 2
C108L/R	3519101935	Ceramic Tubular	100 pF	50V J 2	C413L/R	3519471935	Ceramic Tubular	470 pF	50V J 2
C109L/R	3519101935	Ceramic Tubular	100 pF	50V J 2	C414L/R	3479222971	Electrolytic SA	2.2 uF	50V M 2
C110L/R	3519101935	Ceramic Tubular	100 pF	50V J 2	C415L/R	3509109130	Ceramic Disc	10 pF	50V K 2
C111L/R	3519101935	Ceramic Tubular	100 pF	50V J 2	C416	3479247021	Electrolytic SA	47 uF	50V M 1
C112L/R	3519101935	Ceramic Tubular	100 pF	50V J 2	C417	3479247971	Electrolytic SA	4.7 uF	50V M 1
C113	3519101935	Ceramic Tubular	100 pF	50V J 1	C418	3479247971	Electrolytic SA	4.7 uF	50V M 1
C114	3519101935	Ceramic Tubular	100 pF	50V J 1	C419	3479222071	Electrolytic SA	22 uF	50V M 1
C115	3519102935	Ceramic Tubular	1000 pF	50V J 1	C420	3479210071	Electrolytic SA	10 uF	50V M 1
C116/117	3519101935	Ceramic Tubular	100 pF	50V J 2	C421	3479210971	Electrolytic SA	1 uF	50V M 1
C118	3519102935	Ceramic Tubular	1000 pF	50V J 1	C422	3479347121	Electrolytic SG	470 uF	10V M 1
C119/120	3479210071	Electrolytic SA	10 uF	50V M 2	C423	3679473120	Mylar	0.047 uF	100V J 1
C121L/R	3479222971	Electrolytic SA	2.2 uF	50V M 2	C424L/R	3519223935	Ceramic Tubular	2200 pF	50V J 2 D
C122L/R	3519056935	Ceramic Tubular	5.6 pF	50V K 2	C425	3519223935	Ceramic Tubular	2200 pF	50V J 1 D
C123L/R	3479210071	Electrolytic SA	10 uF	50V M 2	C426	3679473120	Mylar	0.047 uF	100V J 1
C124/125	3479210071	Electrolytic SA	10 uF	50V M 2	C427	3479247021	Electrolytic SA	47 uF	10V M 1
C126L/R	3479222971	Electrolytic SA	2.2 uF	50V M 2	CNT201	4428550120	Wafer 12P		1
C127L/R	3519056935	Ceramic Tubular	5.6 pF	50V K 2	CNT202	4428550090	Wafer 9P		1
C128L/R	3479210071	Electrolytic SA	10 uF	50V M 2	CNT203	4428550150	Wafer 15P		1
C129L/R	3479210071	Electrolytic SA	10 uF	50V M 2	CNT204	4428525610	Wafer 11P		1
C130-132	3479222071	Electrolytic SA	22 uF	50V M 3	CNT206	4428516610	Wafer 7P		1
C133	3479210071	Electrolytic SA	10 uF	50V M 1	CNT101	4428516310	Wafer 4P		1
C134/135	3519104935	Ceramic Tubular	0.1 uF	50V J 2	CNT502	4428525790	Wafer 3P		1
C136L/R	3479210071	Electrolytic SA	10 uF	50V M 2	CNT503	4428525790	Wafer 3P		1
C137-139	3519104935	Ceramic Tubular	0.1 uF	50V J 3	CNT601	4428516410	Wafer 5P		1
C301L/R	3679272120	Mylar	0.0027 uF	100V J 2	CNT703	4428526345	Wafer 22P		1
C302L/R	3619391110	Poly	390 pF	50V J 2	D101-103	2058322101	1N4148		3
C303L/R	3679682120	Mylar	0.0068 uF	100V J 2	D104	2258599103	Zener, UZ5.1BSB		1
C304L/R	3479210071	Electrolytic SA	10 uF	50V M 2	D105-107	2058322101	1N4148		3
C305/306	3479210071	Electrolytic SA	10 uF	50V M 2	D301-309	2058322101	1N4148		9
C307L/R	3519391130	Ceramic Tubular	390 pF	50V J 2	D401-411	2058322101	1N4148		12
C308L/R	3479233871	Electrolytic SA	0.33 uF	50V M 2	D412	2258100135	1N4002		1
C309/310	3479210071	Electrolytic SA	0.15 uF	50V M 2	D413	2258522120	Zener, UZ13.0BSB		1
C311L/R	3479222971	Electrolytic SA	2.2 uF	50V M 2	D414	2258100135	1N4002		1
C313L/R	3519221935	Ceramic Tubular	220 pF	50V J 2	D415	2258522108	Zener, UZ4.3BSB		1
C314L/R	3479210071	Electrolytic SA	10 uF	50V M 2	D501-504	2058100136	1N5402		4
C315/316	3479222071	Electrolytic SA	22 uF	50V M 2	D505	2258100135	1N4002		1
C317L/R	3519101935	Ceramic Tubular	100 pF	50V J 2	D506-509	2058100136	1N5402		3
C319L/R	3519101935	Ceramic Tubular	100 pF	50V J 2	IC101	2168007122	TC9163N		1
C319	3479222971	Electrolytic SA	2.2 uF	50V M 1	IC102	2168007121	TC9162N		1
C320	3479210071	Electrolytic SA	0.15 uF	50V M 1	IC103	2138017108	LC4966		1
C321/322	3519391130	Ceramic Tubular	390 pF	50V J 2	IC104/105	2168206103	KIA4559S		2
C323	3479247971	Electrolytic SA	4.7 uF	50V M 1	IC106	2138015100	M51132L		1
C324L/R	3479210071	Electrolytic SA	0.15 uF	50V M 2	IC107	2168220139	NJM2082L		1
C325L/R	3519391130	Ceramic Tubular	390 pF	50V J 2	IC108	2168000113	LM324		1
C326L/R	3519470935	Ceramic Tubular	47 pF	50V K 2	IC301/302	2168206103	KIA4559S		2
C327L/R	3479247971	Electrolytic SA	4.7 uF	50V M 2	IC303	2168220140	M5532L		1
C328	3519104935	Ceramic Tubular	0.1 uF	50V J 1	IC304-307	2168206103	KIA4559S		4
C329	3479210141	Electrolytic SG	100 uF	25V M 1	IC401	2178317138	STK400-090		1
C330	3479222041	Electrolytic SA	22 uF	25V M 1	IC402	2168601106	GL7818		1
C331L/R	3479247971	Electrolytic SA	4.7 uF	50V M 2	IC502	2168600106	KA7918		1

Ref. No.	Part No.	Description	Q'ty	Version	Ref. No.	Part No.	Description	Q'ty	Version
L401-403	2648001010	Coil, Inductor 0.5uH	3		R309L/R	3069153970	Carbon Film	15k ohm	1/5W J 2
Q101	2218207106	2SD117Y	1		R310	3069101970	Carbon Film	100 ohm	1/5W J 1
Q102/103	2208222105	DTA114YS, Switching, PNP, Silicon	2		R311L/R	3069104970	Carbon Film	100k ohm	1/5W J 2
Q104-107	2208622106	DTC114YS, Switching, NPN, silicon	4		R312/313	3069101970	Carbon Film	100 ohm	1/5W J 2
Q108	2208206105	BKTA1266Y/KTA1015Y.Switching,PNP,silicon	1		R314L/R	3069333970	Carbon Film	33k ohm	1/5W J 2
Q109L/R	2208606112	KTD1302, Muting, NPN, silicon	2		R315L/R	3069622970	Carbon Film	6.2k ohm	1/5W J 2
Q301	2208206105	BKTA1266Y/KTA1015Y.Switching,PNP,silicon	1		R316L/R	3069751970	Carbon Film	750 ohm	1/5W J 2
Q302-308	2208606112	KTD1302, Muting, NPN, silicon	7		R317L/R	3069103970	Carbon Film	10k ohm	1/5W J 2
Q309/310	2208222105	DTA114YS, Switching, PNP, Silicon	2		R318/319	3069101970	Carbon Film	100 ohm	1/5W J 2
Q311/312	2208606112	DTD1302, Muting, NPN, silicon	2		R320	3069391970	Carbon Film	390 ohm	1/5W J 1
Q313	2208222105	DTA114YS, Switching, PNP, Silicon	1		R321L/R	3069202970	Carbon Film	2k ohm	1/5W J 2
Q314/315	2208606112	KTD1302, Muting, NPN, silicon	2		R322	3069102970	Carbon Film	1k ohm	1/5W J 1
Q316L/R	2208622108	DTC114TS, Switching, NPN, silicon	2		R323	3069332970	Carbon Film	3.3k ohm	1/5W J 1
Q401	2208606112	KTD1302, Muting, NPN, silicon	1		R324	3069103970	Carbon Film	10k ohm	1/5W J 1
Q402	2208206105	BKTA1266Y/KTA1015Y.Switching,PNP,silicon	1		R325	3069105970	Carbon Film	1M ohm	1/5W J 1
Q403/404	2208606112	KTD1302, Muting, NPN, silicon	2		R326	3069103970	Carbon Film	10k ohm	1/5W J 1
Q405	2208206105	BKTA1266Y/KTA1015Y.Switching,PNP,silicon	1		R327/328	3069332970	Carbon Film	3.3k ohm	1/5W J 2
Q406-409	2208606104	KTC1815Y/BKTC3198Y.Switching,NPN,silicon	4		R329	3069103970	Carbon Film	10k ohm	1/5W J 1
Q410	2208206105	BKTA1266Y/KTA1015Y.Switching,PNP,silicon	1		R330	3069474970	Carbon Film	470k ohm	1/5W J 1
Q411/412	2208606104	KTC1815Y/BKTC3198Y.Switching,NPN,silicon	2		R332	3069102970	Carbon Film	1k ohm	1/5W J 1
Q413/414	2208606112	KTD1302, Muting, NPN, silicon	2		R333	3069473970	Carbon Film	47k ohm	1/5W J 1
Q415	2208222105	DTA114YS, Switching, PNP, Silicon	1		R334	3069622970	Carbon Film	6.2k ohm	1/5W J 1
R101L/R	3069471970	Carbon Film	470 ohm	1/5W J 2	R335	3069432970	Carbon Film	4.3k ohm	1/5W J 1
R102L/R	3069332970	Carbon Film	3.3k ohm	1/5W J 2	R336	3069104970	Carbon Film	100k ohm	1/5W J 1
R103L/R	3069471970	Carbon Film	470 ohm	1/5W J 2	R337	3069102970	Carbon Film	1k ohm	1/5W J 1
R104L/R	3069471970	Carbon Film	470 ohm	1/5W J 2	R338/339	3069101970	Carbon Film	100 ohm	1/5W J 2
R105L/R	3069471970	Carbon Film	470 ohm	1/5W J 2	R340L/R	3069102970	Carbon Film	1k ohm	1/5W J 2
R106L/R	3069471970	Carbon Film	470 ohm	1/5W J 2	R341L/R	3069473970	Carbon Film	47k ohm	1/5W J 2
R107L/R	3069471970	Carbon Film	470 ohm	1/5W J 2	R342L/R	3069622970	Carbon Film	6.2k ohm	1/5W J 2
R108L/R	3069471970	Carbon Film	470 ohm	1/5W J 2	R343L/R	3069432970	Carbon Film	4.3k ohm	1/5W J 2
R109L/R	3069333970	Carbon Film	33k ohm	1/5W J 2	R344L/R	3069104970	Carbon Film	100k ohm	1/5W J 2
R110-115	3069102970	Carbon Film	1k ohm	1/5W J 6	R345L/R	3069102970	Carbon Film	1k ohm	1/5W J 2
R116-118	3069104970	Carbon Film	100k ohm	1/5W J 3	R346/347	3069101970	Carbon Film	100 ohm	1/5W J 2
R119-121	3069101970	Carbon Film	100 ohm	1/5W J 3	R348	3069202970	Carbon Film	2k ohm	1/5W J 1
R122L/R	3069473970	Carbon Film	47k ohm	1/5W J 2	R349/350	3069101970	Carbon Film	100 ohm	1/5W J 2
R123L/R	3069472970	Carbon Film	4.7k ohm	1/5W J 2	R351	3069104970	Carbon Film	100k ohm	1/5W J 1
R124L/R	3069104970	Carbon Film	100k ohm	1/5W J 2	R352L/R	3069122970	Carbon Film	1.2k ohm	1/5W J 2
R125/126	3069101970	Carbon Film	100 ohm	1/5W J 2	R353	3069105970	Carbon Film	1M ohm	1/5W J 1
R127L/R	3069473970	Carbon Film	47k ohm	1/5W J 2	R354	3069471970	Carbon Film	470 ohm	1/5W J 1
R128L/R	3069472970	Carbon Film	4.7k ohm	1/5W J 2	R355/356	3069332970	Carbon Film	3.3k ohm	1/5W J 2
R129L/R	3069104970	Carbon Film	100k ohm	1/5W J 2	R357L/R	3069104970	Carbon Film	100k ohm	1/5W J 2
R130	3069221970	Carbon Film	220 ohm	1/5W J 1	R358L/R	3069122970	Carbon Film	1.2k ohm	1/5W J 2
R131L/R	3069103970	Carbon Film	10k ohm	1/5W J 2	R359	3069332970	Carbon Film	3.3k ohm	1/5W J 1
R132/133	3069103970	Carbon Film	10k ohm	1/5W J 2	R360	3069332970	Carbon Film	3.3k ohm	1/5W J 1
R134/135	3069223970	Carbon Film	20k ohm	1/5W J 2	R361	3069105970	Carbon Film	1M ohm	1/5W J 1
R136	3069103970	Carbon Film	10k ohm	1/5W J 1	R362	3069471970	Carbon Film	470 ohm	1/5W J 1
R137	3069183970	Carbon Film	18k ohm	1/5W J 1	R363/364	3069101970	Carbon Film	100 ohm	1/5W J 2
R138	3069103970	Carbon Film	10k ohm	1/5W J 1	R365L/R	3069104970	Carbon Film	100k ohm	1/5W J 2
R139	3069474970	Carbon Film	470k ohm	1/5W J 1	R366	3069332970	Carbon Film	3.3k ohm	1/5W J 1
R140	3069106970	Carbon Film	10M ohm	1/5W J 1	R367	3069105970	Carbon Film	1M ohm	1/5W J 1
R141	3069104970	Carbon Film	100k ohm	1/5W J 1	R368/369	3069102970	Carbon Film	1k ohm	1/5W J 2
R142	3069103970	Carbon Film	10k ohm	1/5W J 1	R370/371	3069335970	Carbon Film	3.3M ohm	1/5W J 2
R143	3069911970	Carbon Film	910 ohm	1/5W J 1	R401/402	3069102970	Carbon Film	1k ohm	1/5W J 2
R144/145	3069103970	Carbon Film	10k ohm	1/5W J 2	R403	3069273970	Carbon Film	27k ohm	1/5W J 1
R146/147	3069104970	Carbon Film	100k ohm	1/5W J 2	R404	3069106970	Carbon Film	10M ohm	1/5W J 1
R148-151	3069102970	Carbon Film	1k ohm	1/5W J 4	R405	3069102970	Carbon Film	1k ohm	1/5W J 1
R152	3069103970	Carbon Film	10k ohm	1/5W J 1	R406/407	3069103970	Carbon Film	10k ohm	1/5W J 2
R153	3069332970	Carbon Film	3.3k ohm	1/5W J 1	R408/409	3069101970	Carbon Film	100 ohm	1/5W J 2
R301L/R	3069103970	Carbon Film	10k ohm	1/5W J 2	R410	3069273970	Carbon Film	27k ohm	1/5W J 1
R302L/R	3069822970	Carbon Film	8.2k ohm	1/5W J 2	R411	3069821970	Carbon Film	820 ohm	1/5W J 1
R303L/R	3069822970	Carbon Film	8.2k ohm	1/5W J 2	R412	3069152970	Carbon Film	1.5k ohm	1/5W J 1
R304/305	3069101970	Carbon Film	100 ohm	1/5W J 2	R413	3059278682	Cement	0.27 ohm	3W 1
R306/307	3069103970	Carbon Film	10k ohm	1/5W J 2	R414	3069473970	Carbon Film	47k ohm	1/5W J 1
R308L/R	3069102970	Carbon Film	1k ohm	1/5W J 2	R415	3069153970	Carbon Film	15k ohm	1/5W J 1

Ref. No.	Part No.	Description	Q'ty	Version
R418/LR	3069102970	Carbon Film 1k ohm 1/5W J	2	
R417/LR	3069102970	Carbon Film 1k ohm 1/5W J	2	
R418	3069106970	Carbon Film 10M ohm 1/5W J	1	
R419/420	3069103970	Carbon Film 10k ohm 1/5W J	2	
R421/422	3069102970	Carbon Film 1k ohm 1/5W J	2	
R423/LR	3069273970	Carbon Film 27k ohm 1/5W J	2	
R424/LR	3069243970	Carbon Film 24k ohm 1/5W J	2	
R425/LR	3069102970	Carbon Film 1k ohm 1/5W J	2	
R426/427	3069101970	Carbon Film 100 ohm 1/5W J	2	
R428/LR	3069122970	Carbon Film 1.2k ohm 1/5W J	2	
R429/LR	3059278682	Cement 0.27 ohm 3W	2	
R430/LR	3069473970	Carbon Film 47k ohm 1/5W J	2	
R431/LR	3069153970	Carbon Film 15k ohm 1/5W J	2	
R432	3069103970	Carbon Film 10k ohm 1/5W J	1	
R433	3069123970	Carbon Film 12k ohm 1/5W J	1	
R434	3029331472	Mylar 330 ohm 1W	1	
R435-438	3069100970	Carbon Film 10 ohm 1/5W J	4	
R439/440	3069223970	Carbon Film 22k ohm 1/5W J	2	
R441	3069102970	Carbon Film 1k ohm 1/5W J	1	
R442	3069101970	Carbon Film 100 ohm 1/5W J	1	
R443	3069103970	Carbon Film 10k ohm 1/5W J	1	
R444/445	3069473970	Carbon Film 47k ohm 1/5W J	2	
R446	3069513970	Carbon Film 51k ohm 1/5W J	1	
R447	3069152970	Carbon Film 1.5k ohm 1/5W J	1	
R448/449	3069103970	Carbon Film 10k ohm 1/5W J	2	
R450	3069123970	Carbon Film 12k ohm 1/5W J	1	
R451	3069103970	Carbon Film 10k ohm 1/5W J	1	
R452	3029331472	Mylar 330 ohm 1W	1	
R453	3069123970	Carbon Film 12k ohm 1/5W J	1	
R454-457	3069220970	Carbon Film 22 ohm 1/5W J	4	
R458	3069123970	Carbon Film 12k ohm 1/5W J	1	
R459	3069102970	Carbon Film 1k ohm 1/5W J	1	
R460	3069822970	Carbon Film 8.2k ohm 1/5W J	1	
R501/502	3029220572	Mylar 22 ohm 2W	2	
R503	3029100572	Mylar 10 ohm 2W	1	
F504/505	5508202830	Fuse, NB 3.5A 120V	2	
CNT401	2438012200	Ass'y Posistor, PTH9M04BE222 2F333	1	
RLY301	5528001020	Relay, RZ 12V	1	
RLY401/402	5528001630	Relay, OSA-SS-224DM5	2	
F504/505	5508202830	Fuse, NB 3.5A 120V	2	
A-A	152622101013	Wire 100mm	1	
B-B	152622101613	Wire 160mm	1	
C-C	152622022413	Wire 240mm	1	
H-H	152624030844	Wire 80mm	1	
G-G	152624020643	Wire 60mm	1	
G502	4235007310	Terminal Ground	1	
P1-1 054021010019 ASS'Y P.C.B VCR				
13	4438109810	VCR Jack 3P	1	
C104/LR	3519101935	Ceramic Tubular 100 pF 50V J	2	
C141/142	3519104935	Ceramic Tubular 0.1 uF 50V K	2	
R101/LR	3069471970	Carbon Film 470 ohm 1/5W J	2	
D107-110	2058322101	1N4148, Rectifier	4	
CNT101	435206248532	Lead Ass'y 6P 240 mm	1	
W101	152624101258	Lug HI - WP #24BK LF 120 0.5/0.5	1	
P1-2 054021010020 ASS'Y P.C.B INDICATOR				
D211	2371124701	LED SLR-34URCF25	1	
CNT205	435102123181	Lead Ass'y 2P 180mm	1	
P2 054021010021 ASS'Y P.C.B FRONT				
15	4658003710	Switch Tact	20	
41	6715015560	Sponge	1	
C701	3679103120	Mylar 0.01 100V J	1	

Ref. No.	Part No.	Description	Q'ty	Version
C702	3519101935	Ceramic Tubular 100 pF 50V J	1	
C703	3519102935	Ceramic Tubular 1000 pF 50V J	1	
C704	3479310121	Electrolytic SG 100 uF 0V M	1	
C705	3519102935	Ceramic Tubular 1000 pF 50V J	1	
C706	3438147312	Electrolytic SA 0.047 uF 5.5V M	1	
C708	3479210071	Electrolytic SA 10 uF 50V M	1	
C709	3519103935	Ceramic Tubular 0.01 uF 50V J	1	
C710/711	3519104935	Ceramic Tubular 0.1 uF 50V K	2	
C712	3519102935	Ceramic Tubular 1000 pF 50V J	1	
C713/714	3519101935	Ceramic Tubular 100 pF 50V J	2	
C715/716	3679473120	Mylar 0.047 uF 100V J	2	
C717-721	3519101935	Ceramic Tubular 100 pF 50V J	5	
CNT701	436206243332	Lead Ass'y 6P 240 mm	1	
CNT702	436207263332	Lead Ass'y 7P 260 mm	1	
CNT703	4428526346	Wafer 5P, FPC	1	
D701	2258599103	Zener, UZ5.1BSB	1	
D702-704	2058322101	1N4148, Rectifier	3	
D705	2258599107	Zener, UZ9.1BSC	1	
D706-712	2371124701	LED SLR-34URCF25	7	
D713-718	2058322101	1N4148, Rectifier	6	
IC701	2138313206	CPU, uPD 75212ACW-A77	1	
IC702	2408000131	Remote Sensor	1	
IC703/704	2138009115	MC14094	2	
R701	3069391970	Carbon Film 390 ohm 1/5W J	1	
R702	3069562970	Carbon Film 5.6k ohm 1/5W J	1	
R703	3069391970	Carbon Film 390 ohm 1/5W J	1	
R704	3069390970	Carbon Film 39 ohm 1/5W J	1	
R705	3069105970	Carbon Film 1M ohm 1/5W J	1	
R706	3069103970	Carbon Film 10k ohm 1/5W J	1	
R707	3069223970	Carbon Film 22k ohm 1/5W J	1	
R708	3069473970	Carbon Film 47k ohm 1/5W J	1	
R709	3069391970	Carbon Film 390 ohm 1/5W J	1	
R710/711	3069103970	Carbon Film 10k ohm 1/5W J	2	
R712	3069682970	Carbon Film 6.8k ohm 1/5W J	1	
R713-716	3069102970	Carbon Film 1k ohm 1/5W J	4	
R717-722	3069391970	Carbon Film 390 ohm 1/5W J	6	
R723-727	3069102970	Carbon Film 1k ohm 1/5W J	5	
R728-731	3069123970	Carbon Film 12k ohm 1/5W J	4	
Q701	2028106106	KTA 817A	1	
Q702/703	2208606104	KTC1815Y/BKTC318Y, Switching, NPN, silicon	2	
Q704-711	2208622106	DTC114Y5, Switching, NPN, silicon	8	
FL	2328130925	FL, FIP 11CM9	1	
X701	3938101880	Resonator, CTS 4.19M GW	1	
CNT703	4118622159	Card Cable, 22P 150mm	1	
P2-1 05402101002 ASS'Y P.C.B DSP				
C201/LR	3479210071	Electrolytic SA 10 uF 50V M	2	
C202/LR	3479210071	Electrolytic SA 10 uF 50V M	2	
C203/204	3479210071	Electrolytic SA 10 uF 50V M	2	
C205/LR	3679102120	Mylar 0.001 uF 100V J	2	
C206/LR	3519121935	Ceramic Tubular 120 pF 50V J	2	
C207/LR	3479210071	Electrolytic SA 10 uF 50V M	2	
C208/209	3519104935	Ceramic Tubular 0.1 uF 50V K	2	
C210/211	3619332110	Poly 3300 pF 50V J	2	
C212/LR	3519820935	Ceramic Tubular 82 pF 50V K	2	
C213/LR	3679272120	Myla 0.0027 uF 100V J	2	
C214/LR	3619391110	Poly 390 pF 50V J	2	
C215/LR	3679682120	Mylar 0.0068 uF 100V J	2	
C216/LR	3479210071	Electrolytic SA 10 uF 50V M	2	
C217/218	3479210071	Electrolytic SA 10 uF 50V M	2	
C219/LR	3479210071	Electrolytic SA 10 uF 50V M	2	
C220/LR	3509680130	Ceramic Disc 68 pF 50V J	2	
C221/LR	3479210071	Electrolytic SA 10 uF 50V M	2	
C222	3479210071	Electrolytic SA 10 uF 50V M	1	

Ref. No.	Part No.	Description	Q'ty	Version
C223	3509391130	Ceramic Disc	390 pF 50V J	1
C224	3479210071	Electrolytic SA	10 uF 50V M	1
C225	3519104935	Ceramic Tubular	0.1 uF 50V K	1
C226	3479310121	Electrolytic SG	100 uF 10V M	1
C227/228	3479210071	Electrolytic SA	10 50V M	2
C229	3509680130	Ceramic Disc	68 pF 50V J	1
C230	3479210071	Electrolytic SA	10 uF 50V M	1
C232/233	3519101935	Ceramic Tubular	100 pF 50V J	2
C234	3519102935	Ceramic Tubular	1000 pF 50V J	1
C235	3069224120	Mylar	0.22 uF 100V J	1
C236L/R	3479222872	Electrolytic SA	0.22 uF 50V M	2
C237L/R	3509391130	Ceramic Disc	390 pF 50V J	2
C238L/R	3479210071	Electrolytic SA	10 uF 50V M	2
C239/240	3479210071	Electrolytic SA	10 uF 50V M	2
C241	3519102935	Ceramic Tubular	1000 pF 50V J	1
C242/243	3519101935	Ceramic Tubular	100 pF 50V J	2
C244/245	3479322141	Electrolytic SG	220 uF 25V M	2
C246/247	3519104935	Ceramic Tubular	0.1 uF 50V K	2
C248	3479322121	Electrolytic SG	220 uF 10V M	1
C249	3519104935	Ceramic Tubular	0.1 uF 50V K	1
C250	3479322121	Electrolytic SG	220 uF 10V M	1
C251	3519104935	Ceramic Tubular	0.1 uF 50V K	1
C252/253	3509229130	Ceramic Disc	22 pF 50V J	2
C254	3479247971	Electrolytic SA	4.7 uF 50V M	1
C255/256	3519104935	Ceramic Tubular	0.1 uF 50V K	2
C257L/R	3519121935	Ceramic Tubular	120 pF 50V J	2
C258L/R	3479210071	Electrolytic SA	10 uF 50V M	2
C260L/R	3479222872	Electrolytic SA	0.22 uF 50V M	2
C261L/R	3519391130	Ceramic Tubular	390 pF 100V J	2
C262L/R	3479210071	Electrolytic SA	10 uF 50V M	2
C265/267	3519104935	Ceramic Tubular	0.1 uF 50V K	2
C268	3479210071	Electrolytic SA	10 uF 50V M	1
C269	3479210071	Electrolytic SA	10 uF 50V M	1
CNT201	4428560120	Wafer 12P		1
CNT202	4428560090	Wafer 9P		1
CNT203	4428560150	Wafer 15P		1
D201-210	2058322101	1N4148, Rectifier		10
D212	2058322101	1N4148, Rectifier		1
IC201/202	2168206103	KIA4559S/KIA75559S, Headphone Amp.		2
IC203	2168220139	NJM2082L		1
IC204	2168206103	KIA4559S/KIA75559S, Headphone Amp.		1
IC205	2168007121	TC9162N		1
IC206/207	2168220139	NJM2082L		2
IC208	2168206103	KIA4559S/KIA75559S, Headphone Amp.		1
IC209	2138007124	TC9176P		1
IC210	2168206103	KIA4559S/KIA75559S, Headphone Amp.		1
IC211	2168601101	GL7805, Regulator		1
IC212	2138000195	YM7306C		1
IC213	2138402115	41C464P-08, D RAM		1
IC214	2168220139	NJM2082L		1
IC215	2168206103	KIA4559S/KIA75559S, Headphone Amp.		1
L201/202	2658301130	LPF 257BLR-K5013N		2
L203/204	2648701110	Bead Core 6φ		2
R201L/R	3069104970	Carbon Film	100k ohm 1/5W J	2
R202L/R	3069473970	Carbon Film	47k ohm 1/5W J	2
R203L/R	3069104970	Carbon Film	100k ohm 1/5W J	2
R204L/R	3069101970	Carbon Film	100 ohm 1/5W J	2
R205L/R	3069472970	Carbon Film	4.7k ohm 1/5W J	2
R206L/R	3069104970	Carbon Film	100k ohm 1/5W J	2
R207L/R	3069472970	Carbon Film	4.7k ohm 1/5W J	2
R208L/R	3069103970	Carbon Film	10k ohm 1/5W J	2
R209L/R	3069103970	Carbon Film	10k ohm 1/5W J	2
R210L/R	3069103970	Carbon Film	100 ohm 1/5W J	2
R211	3069500070	Carbon Film	5.6k ohm 1/5W J	1

Ref. No.	Part No.	Description	Q'ty	Version
R212/213	3069335970	Carbon Film	3.3M ohm 1/5W J	2
R214	3069472970	Carbon Film	4.7k ohm 1/5W J	1
R215L/R	3069103970	Carbon Film	10k ohm 1/5W J	2
R216L/R	3069822970	Carbon Film	8.2k ohm 1/5W J	2
R217L/R	3069822970	Carbon Film	8.2k ohm 1/5W J	2
R218L/R	3069101970	Carbon Film	100 ohm 1/5W J	2
R219L/R	3069104970	Carbon Film	100k ohm 1/5W J	2
R220/221	3069101970	Carbon Film	100 ohm 1/5W J	2
R222-224	3069102970	Carbon Film	1k ohm 1/5W J	3
R225/226	3069103970	Carbon Film	10k ohm 1/5W J	2
R227	3069105970	Carbon Film	1M ohm 1/5W J	1
R228/229	3069103970	Carbon Film	10k ohm 1/5W J	2
R230/231	3069101970	Carbon Film	100 ohm 1/5W J	2
R232	3069912970	Carbon Film	9.1k ohm 1/5W J	1
R233/234	3069103970	Carbon Film	10k ohm 1/5W J	2
R235	3069101970	Carbon Film	100 ohm 1/5W J	1
R236	3069104970	Carbon Film	100k ohm 1/5W J	1
R237/238	3069101970	Carbon Film	100 ohm 1/5W J	2
R239L/R	3069103970	Carbon Film	10k ohm 1/5W J	2
R240L/R	3069103970	Carbon Film	10k ohm 1/5W J	2
R241L/R	3069103970	Carbon Film	10k ohm 1/5W J	2
R242	3069472970	Carbon Film	4.7k ohm 1/5W J	1
R243/244	3069101970	Carbon Film	100 ohm 1/5W J	2
R246	3069103970	Carbon Film	10k ohm 1/5W J	1
R247/248	3069101970	Carbon Film	100 ohm 1/5W J	2
R249L/R	3069473970	Carbon Film	47k ohm 1/5W J	2
R250L/R	3069622970	Carbon Film	6.2k ohm 1/5W J	2
R251L/R	3069272970	Carbon Film	2.7k ohm 1/5W J	2
R253L/R	3069103970	Carbon Film	10k ohm 1/5W J	2
R253/254	3069101970	Carbon Film	100 ohm 1/5W J	2
R255-257	3069102970	Carbon Film	1k ohm 1/5W J	3
R258	3069105970	Carbon Film	1M ohm 1/5W J	1
R259	3069103970	Carbon Film	10k ohm 1/5W J	1
R260-262	3069104970	Carbon Film	100k ohm 1/5W J	3
R263-265	3069102970	Carbon Film	1k ohm 1/5W J	3
R266/267	3069101970	Carbon Film	100 ohm 1/5W J	2
R268	3069562970	Carbon Film	5.6k ohm 1/5W J	1
R269	3069472970	Carbon Film	4.7k ohm 1/5W J	1
R270/271	3069101970	Carbon Film	100 ohm 1/5W J	2
R272/273	3069335970	Carbon Film	3.3M ohm 1/5W J	2
R274L/R	3069473970	Carbon Film	47k ohm 1/5W J	2
R275	3069101970	Carbon Film	100 ohm 1/5W J	1
R276L/R	3069224970	Carbon Film	220k ohm 1/5W J	2
R277L/R	3069622970	Carbon Film	6.2k ohm 1/5W J	2
R278L/R	3069302970	Carbon Film	3k ohm 1/5W J	2
R279L/R	3069473970	Carbon Film	47k ohm 1/5W J	2
R285/286	3069101970	Carbon Film	100 ohm 1/5W J	2
R287	3029330472	Metal Film	33 ohm 1W J	1
R288	3069101970	Carbon Film	100 ohm 1/5W J	1
W201	152624101258	Lug HI - WP #24BK LF 120 0.5/0.5		1
P2-2 054021010023 ASSY P.C.B VOLUME				
14	3208061010	Motor VR		1
C259	3479310141	Electrolytic SG	100 25V M	1
C263/264	3479310121	Electrolytic SG	100 10V M	2
CNT204	435211168732	Lead Ass'y 11P 160mm		1
CNT205	4426508210	Wafer 2P		1
CNT206	435207208232	Lead Ass'y 7P 200mm		1
W501	152624101258	Lug HI - WP #24BK LF 120 0.5/0.5		1
IC216	2168007204	TA7291S, Motor Control		1
R280L/R	3069102970	Carbon Film	1k ohm 1/5W J	2
R281	3069391970	Carbon Film	390 ohm 1/5W J	1
R282	3069392970	Carbon Film	3.9k ohm 1/5W J	1
R283	3029470472	Metal Film	47 ohm 1W J	1

Ref. No.	Part No.	Description	Q'ty	Version
R284	3069103970	Carbon Film 10k ohm 1/5W J	1	
VR201	3208061010	VR 47K,Rotary with Nut, Volume	1	
P2-3	054021010024	ASS'Y P.C.B POWER		
26	△ 7505206220	Heat Sink REG TR, AL	1	
29	△ 4448103910	AC Outlet 1P	1	Dom
	△ 4448103210	AC Outlet 1P	1	A
	△ 4448103610	AC Outlet 1P	1	B,C,D,F
30	△ 4618006510	Voltage Selector 6P	1	Dom,B
31	△ 4618006610	Voltage Selector 3P	1	Dom,B
	2828072607	Stand-by Transformer	1	
C501-505	3509103450	Ceramic Disc 0.01 uF 400V J	5	D
C506/507	3419533230	Electrolytic HS 3300 uF 50V M	2	
C508	3479347169	Electrolytic SG 470 uF 35V M	1	
C509-513	3509103450	Ceramic Disc 0.01 uF 400V J	5	D
C514/515	3409322267	Electrolytic SG 2200 uF 35V M	2	
C516/C517	3479222971	Electrolytic SA 2.2 uF 50V M	2	
C518/C519	3679473120	Mylar 0.047 uF 100V J	2	
C520	3479310171	Electrolytic SG 100 uF 50V M	1	
C521	3409347169	Electrolytic SG 470 uF 35V M	1	
C522	3549472407	Ceramic Disc 0.0047 uF 400V J	1	
C523	3479222071	Electrolytic SA 22 uF 50V M	1	
C524	3479210971	Electrolytic SA 1 uF 50V M	1	
CNT501	4428525800	Wafer 4P	1	
CNT504	4428505610	Wafer 4P	1	
CNT701	4428516510	Wafer 6P	1	
IC503	2168601110	GL7805, Regulator	1	
R504	3069621970	Carbon Film 620 ohm 1/5W J	1	
R505	3069153970	Carbon Film 15k ohm 1/5W J	1	
R506/507	3029100472	Metal Film 10 ohm 1W J	2	
R508/509	3069621970	Carbon Film 620 ohm 1/5W J	2	
R510	3069332970	Carbon Film 3.3k ohm 1/5W J	1	
D510-515	2258100135	1N4002, Switching	6	
D516	2258599105	DZ6.2BM, Zener	1	
D517/518	2258599109	Zener, UZ15.0BSC	2	
D519	2258100135	1N4002, Switching	1	
Q501	2208606114	TR, MPSA06, Switching, NPN, silicon	1	
RLY501	5528001620	OST-S-112DM(TV-5)	1	
P1/P2	4225001410	Pin Solder	2	
G501	4235007310	Terminal ground	1	
F501	△ 5508202503	Fuse NB 2.5A 250V, 5.2x20	1	
F502	△ 5508202230	Fuse NB 1.5A 250V, 5.2x20	1	
F503	△ 5508201430	Fuse 315mA NB 125V, Normal Blow	1	

P2-4	054021010025	ASS'Y P.C.B VIDEO		
34	7505206210	Heat Sink REG TR, AL	1	
35	4438113310	Video Jack 4P	2	
C601-604	3479333061	Electrolytic SG 33 35V M	4	
C605-608	3479347121	Electrolytic SG 470 uF 10V M	4	
C613	3479333061	Electrolytic SG 33 uF 35V M	1	
C614	3479210971	Electrolytic SA 1 uF 50V M	1	
CNT601	436205103332	Lead Ass'y 5P 10 mm	1	
CNT701	4428516110	Wafer 2P	1	
CNT702	4428516610	Wafer 7P	1	
IC601	2168027106	BA7625, Video Control	1	
IC602	2168601101	GL7805, Regulator	1	
R601-608	3069750970	Carbon Film 75 ohm 1/5W J	8	
R609-612	3069151970	Carbon Film 150 ohm 1/5W J	4	
R613-616	3069101970	Carbon Film 100 ohm 1/5W J	4	
R617-619	3029330572	Metal Film 33 ohm 2W J	3	
R620	3069750970	Carbon Film 75 ohm 1/5W J	1	
Q601-604	2208206105	BKTA1266Y/KTA1015Y, Switching, PNP, silicon		

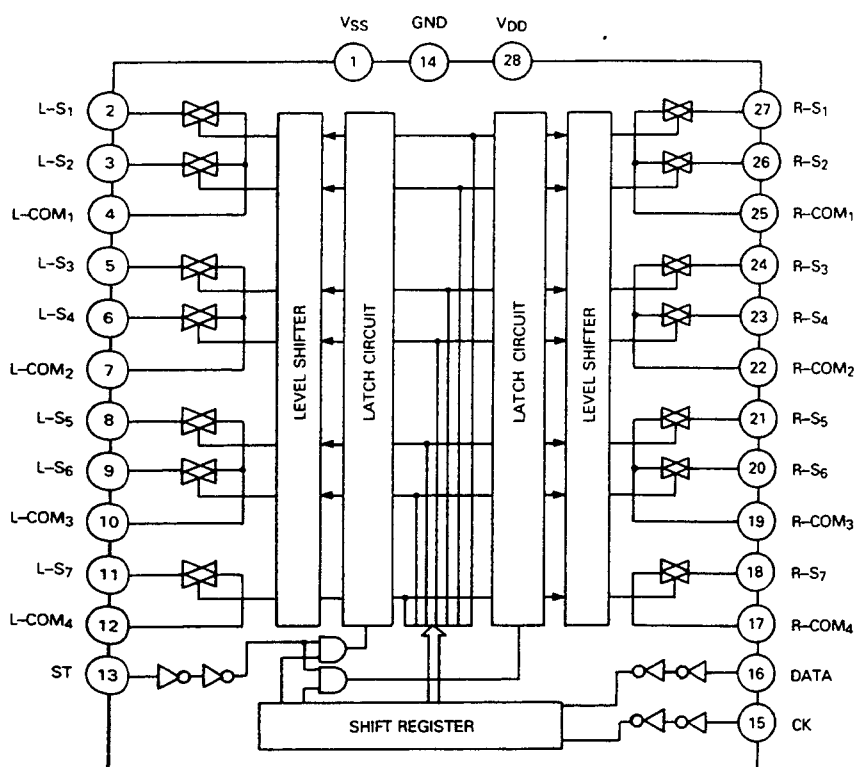
Ref. No.	Part No.	Description	Q'ty	Version
P3	054021010026	ASS'Y P.C.B COMMANDER		
X-TAL	3908101300	X-Tal, 8.4672 MHz	1	
C801/802	3519101935	Ceramic Tubular 100 pF 50V J	2	
C803	3479247021	Electrolytic SA 47 uF 10V M	1	
D801	2028322101	1N4148, Rectifier	1	
D802	2408001100	ELZ-K-OEC	1	
IC801	2138013122	uPD6122-002	1	
Q801	2208606112	KTD1302, Muting, NPN, silicon	1	
R801/802	3069224970	Carbon Film 220k ohm 1/5W J	2	
R803	3069229970	Carbon Film 2.2 ohm 1/5W J	1	
R804	3069102970	Carbon Film 1k ohm 1/5W J	1	
X805	3938001001	Resonator, CSB455E	1	
7	6555605610	Spring Battery (C)	1	
9	6555605410	Spring Battery (D)	1	

SEMICONDUCTOR LEAD IDENTIFICATION & INTERNAL DIAGRAM

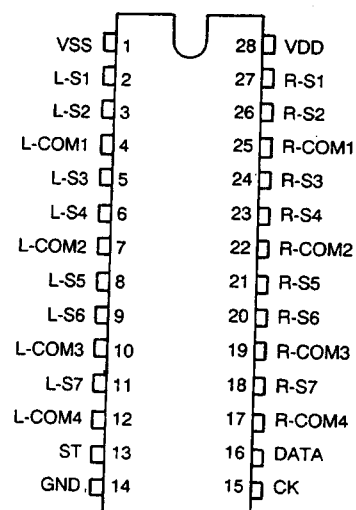
TC9163N(NJU7312L) : IC101

Pin No	Terminal	Description	Pin No	Terminal	Description
1	VSS	Negative power supply terminal(-15V)	15	Clock	Serial control terminal
2	VDP	Input/output terminals	16	Data	Serial control terminal
3	VCR1	Audio signal (left channel)	17	R COM3	Input/output terminals of audio signal (right channel)
4	VCR2	Audio signal (left channel)	18	Audio Injection	
5	L COM1	Audio signal (left channel)	19	Audio Injection	
6	VCR2	VCR1 Record out terminals	20	R COM2	
7	VDP	Audio signal (left channel)	21	Line in	
8	Line in	Audio signal (left channel)	22	VDP	
9	L COM2		23	VCR2	
10	Audio Injection		24	R COM1	
11	Audio Injection		25	VCR2	
12	L COM3		26	VCR1	
13	Strobe	Serial control terminal	27	VDP	Positive power supply terminal(+15V)
14	Ground		28	VDD	

Block Diagram



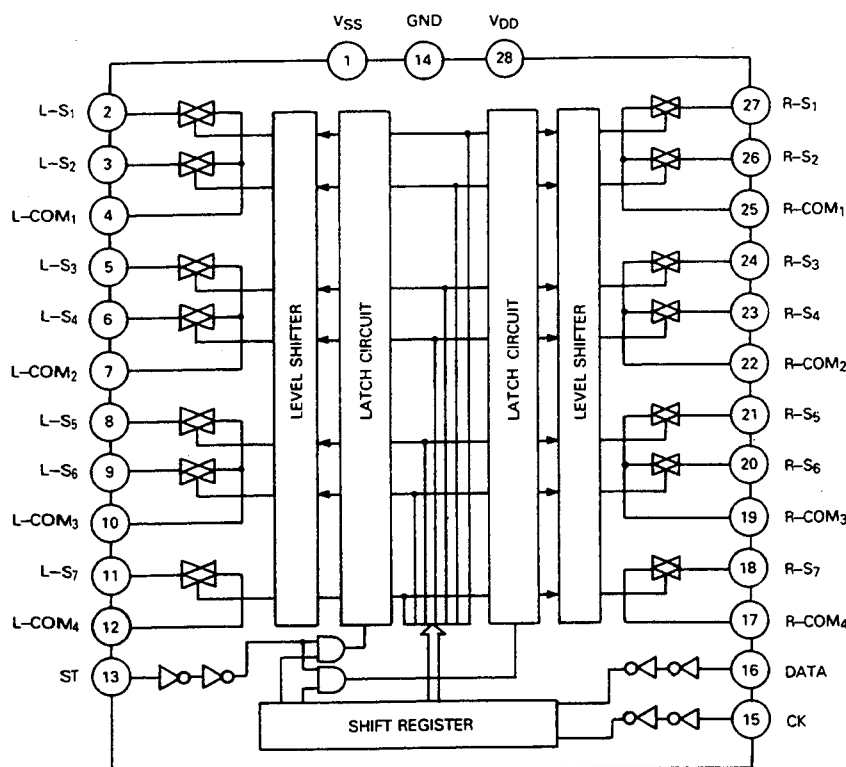
Pin Assignment



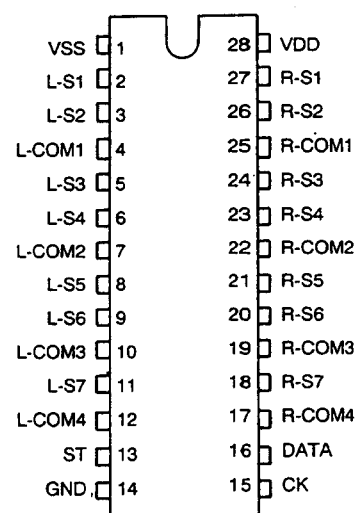
TC9162N(NJU7311L) : IC201,IC205

Pin No	Terminal	Description	Pin No.	Terminal	Description
1	VSS	Negative power supply terminal(-15V)	15	Clock	Serial control terminal
2	Center in	From SSM-2126 pin No.25	16	Data	
3	Stadium R CH	From IC113	17	Prologic in	To IC107
4	Center,Rear R CH out	To TC9176 pin No. 14	18	Dolby in	From IC111 pin No.8
5	Stadium L CH/Theater	From IC113	19	Front R CH out	To CNT105
6	Prologic	From SSM-2126 pin No.30	20	Prologic R CH in	From SSM-2126 pin No.26
7	rear L CH	To TC9176 pin No. 3	21	By-Pass R CH in	To CNT105
8	Center out	To Center AMP in	22	Front L CH out	
9	Rear R CH out	To rear AMP in	23	Prologic L CH in	From SSM-2126 pin No.24
10	Center rear R CH in	From IC116	24	By-Pass L CH in	To IC107
11	Rear L CH in	From IC116	25	Delay in	
12	Rear R CH out	To rear AMP	26	Stadium in	From IC113
13	Strobe	Serial control terminal	27	Theater in	From IC113
14	Ground		28	VDD	Positive power supply terminal(+15V)

Block Diagram

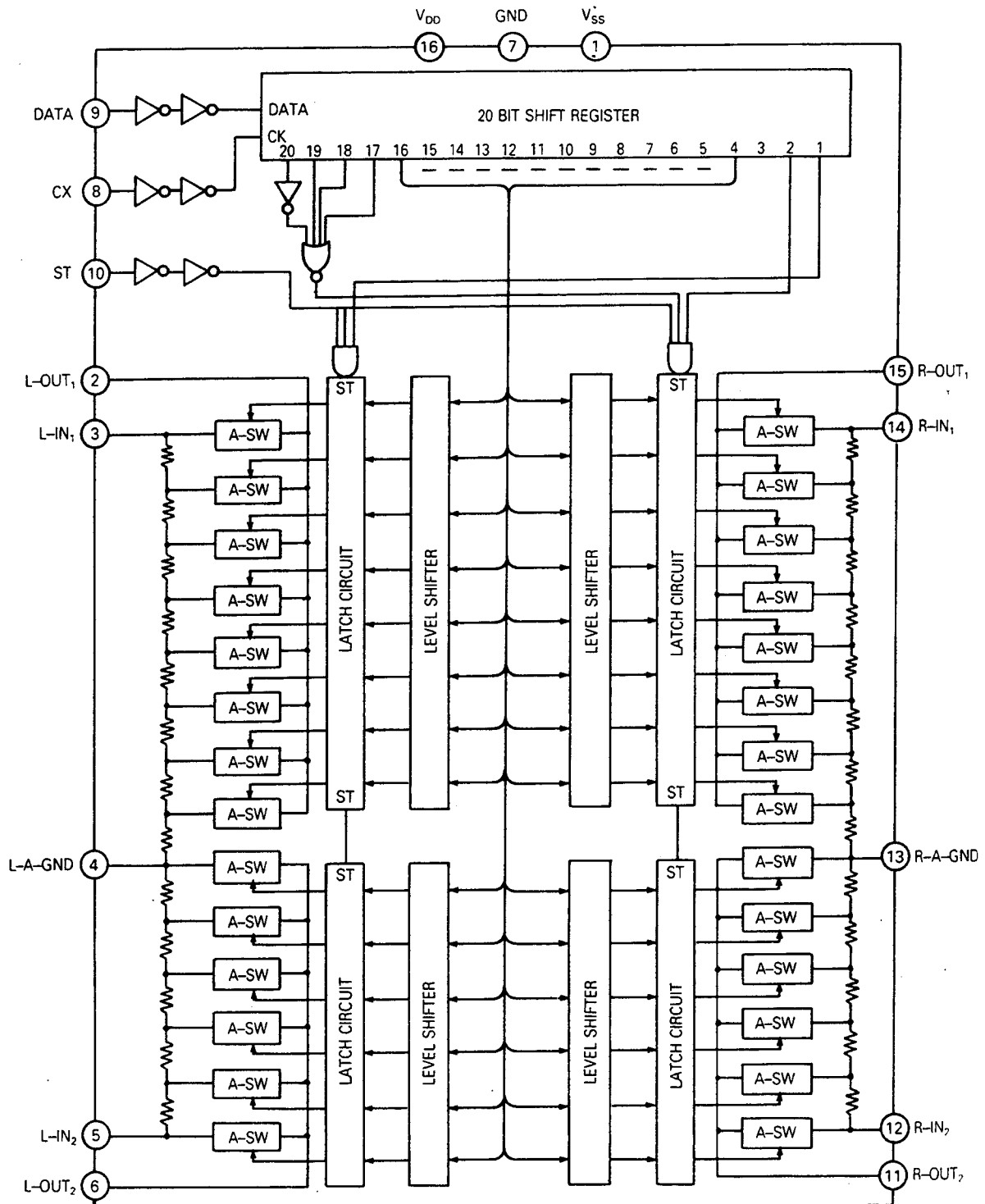


Pin Assignment

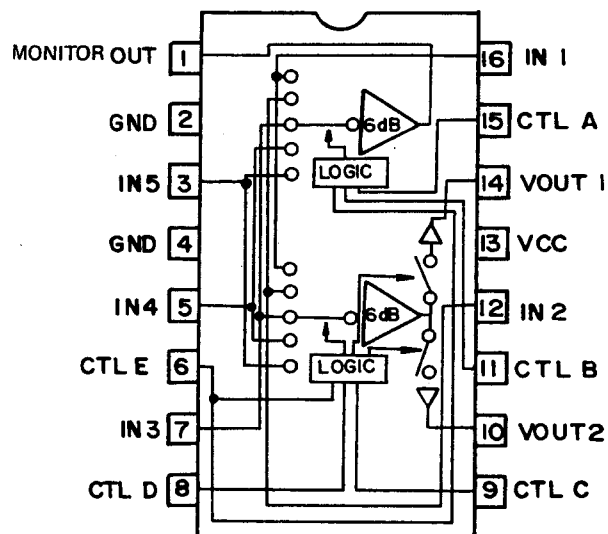


TC9176P : IC209

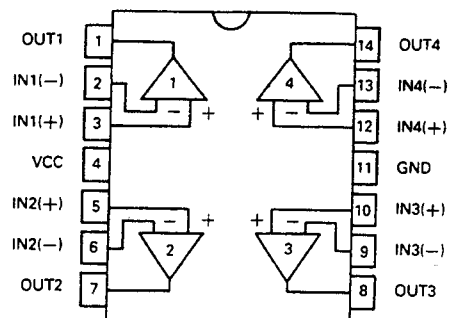
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BA7625A : IC601

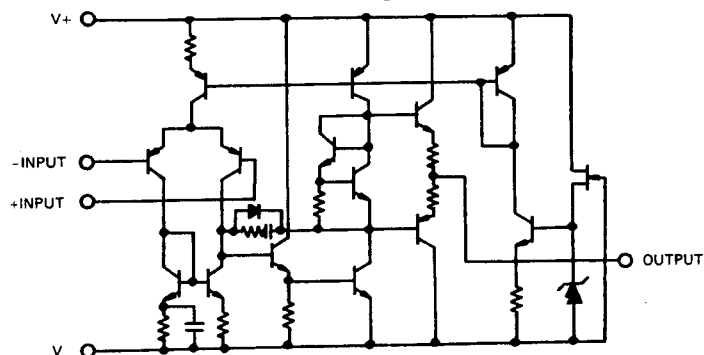


LM324 : IC108

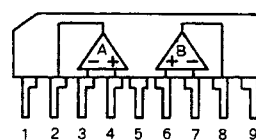


NJM2082L : IC107, IC203, IC206, IC207, IC214

Block Diagram



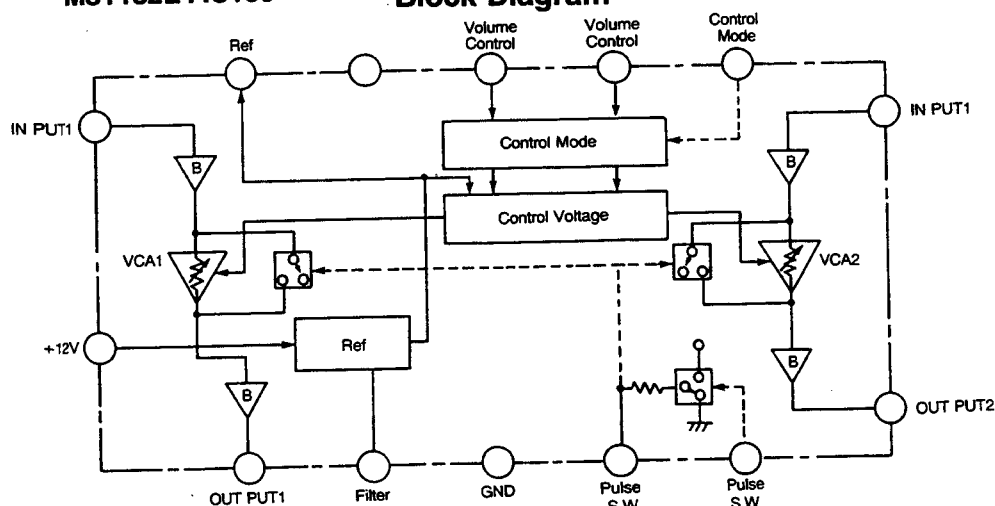
Pin Assignment



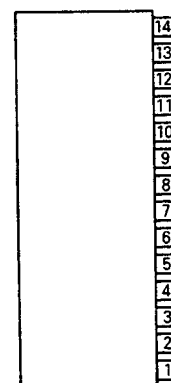
1. V_I
2. A OUTPUT
3. A INPUT
4. A INPUT
5. V_I
6. B INPUT
7. B INPUT
8. B OUTPUT
9. V_I

M51132L : IC106

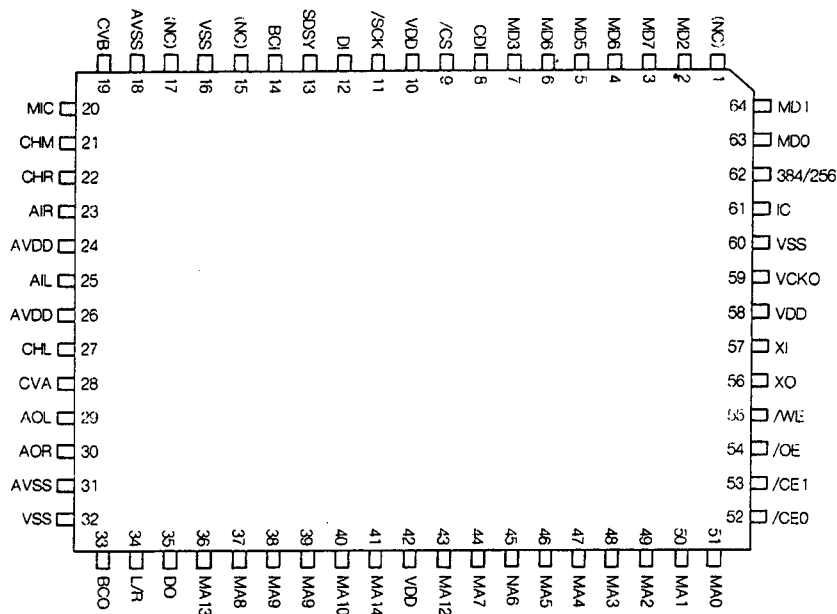
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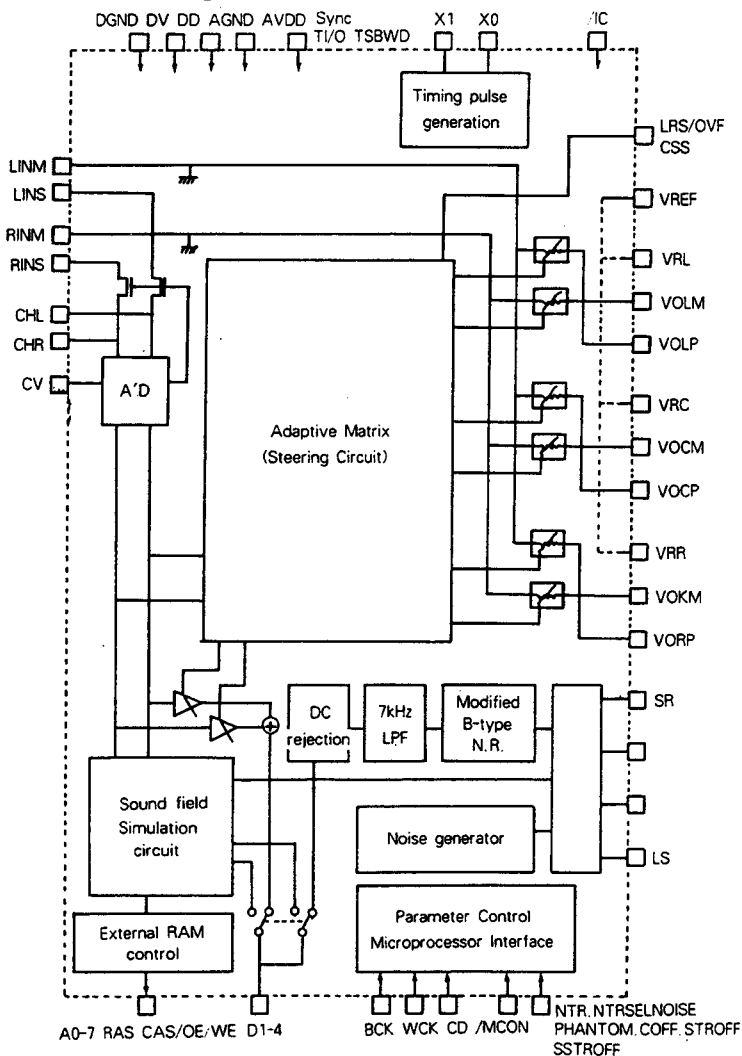
Pin Assignment



YM7306C : IC212 Pin Assignment

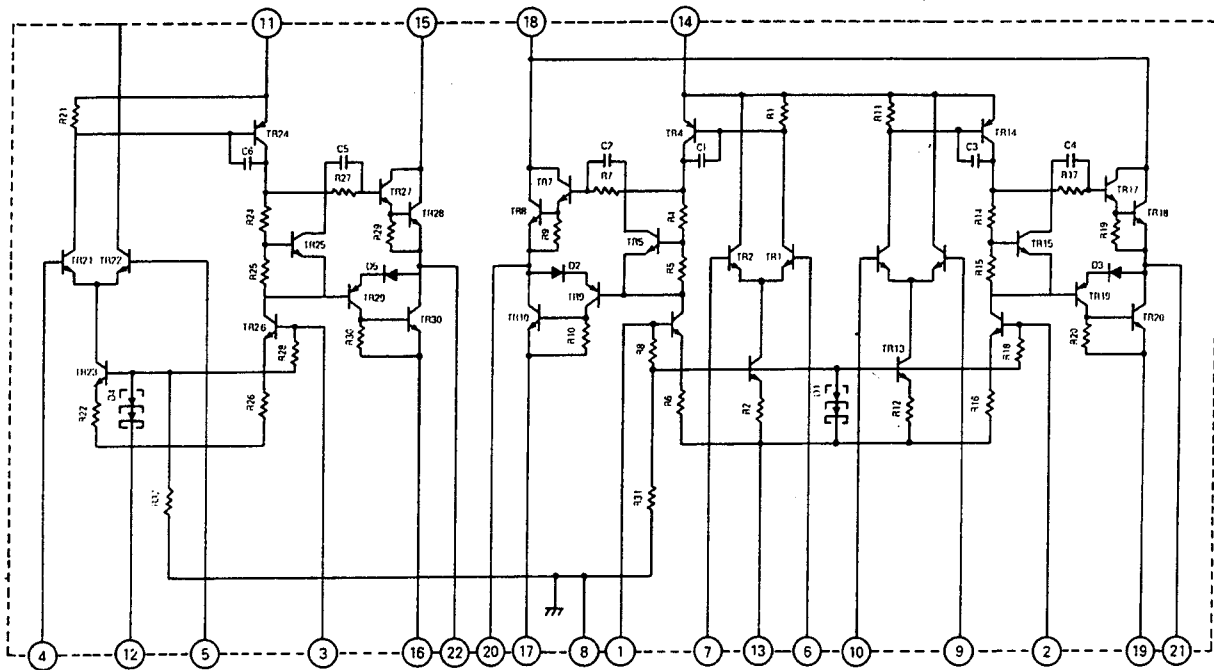


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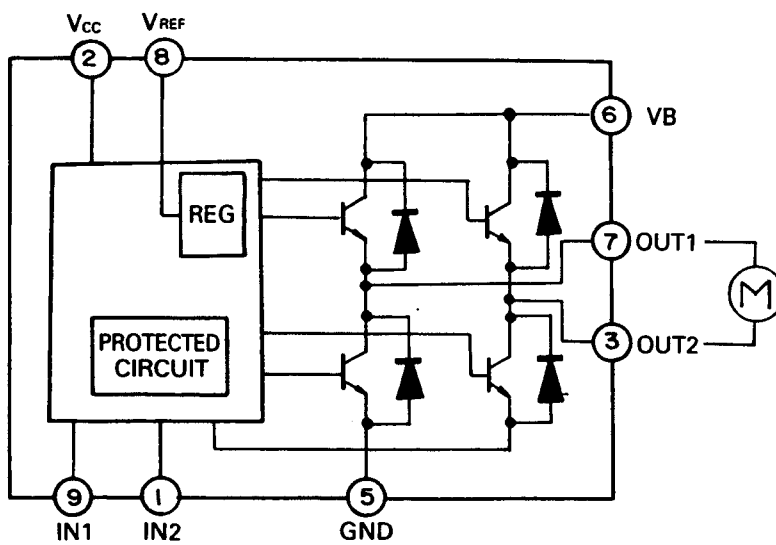
STK400-090 : IC401

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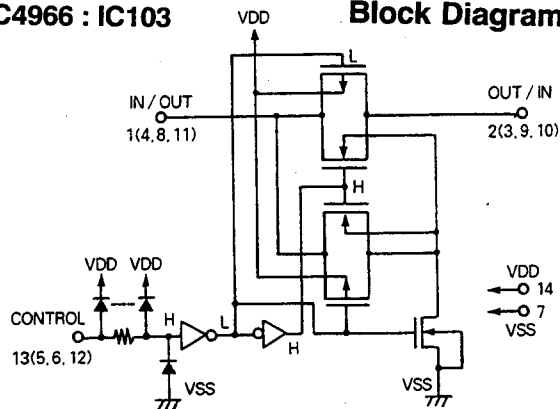
TA7291S : IC119

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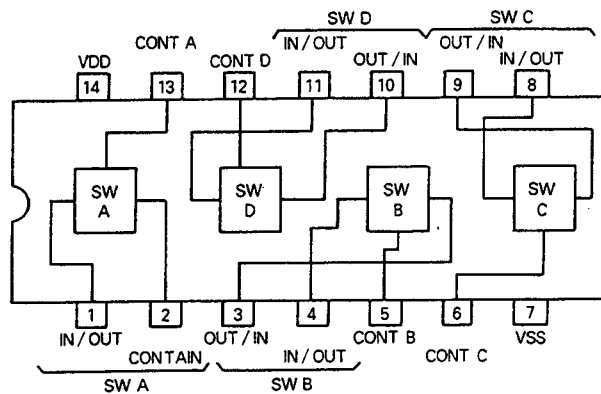


LC4966 : IC103

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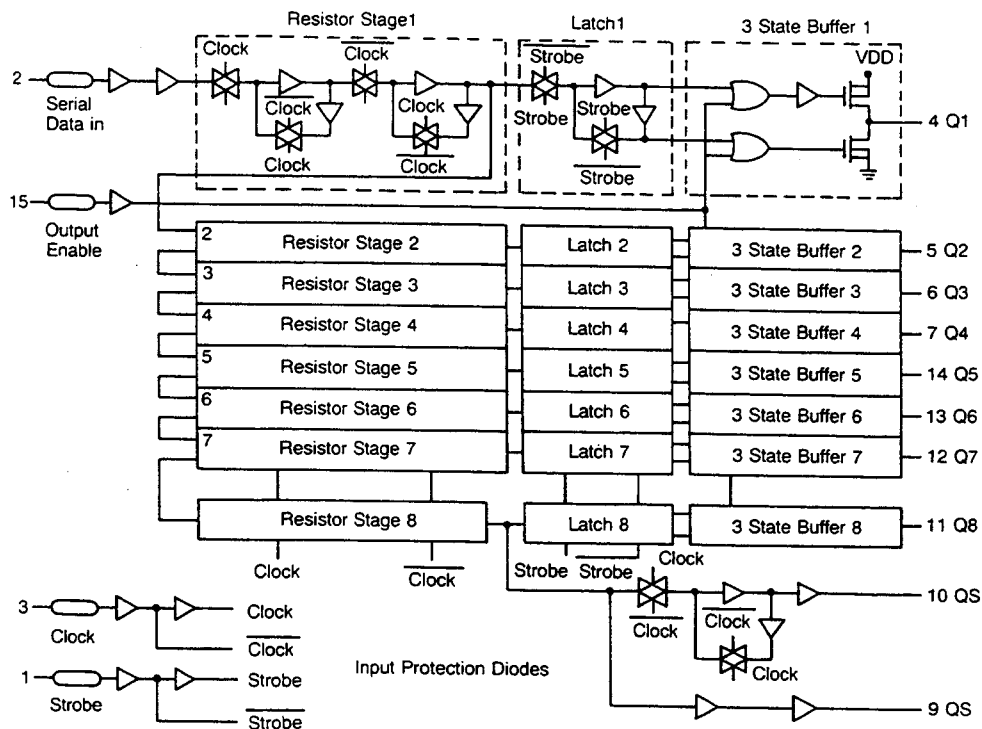


49966B : IC503, IC504 Pin Assignment



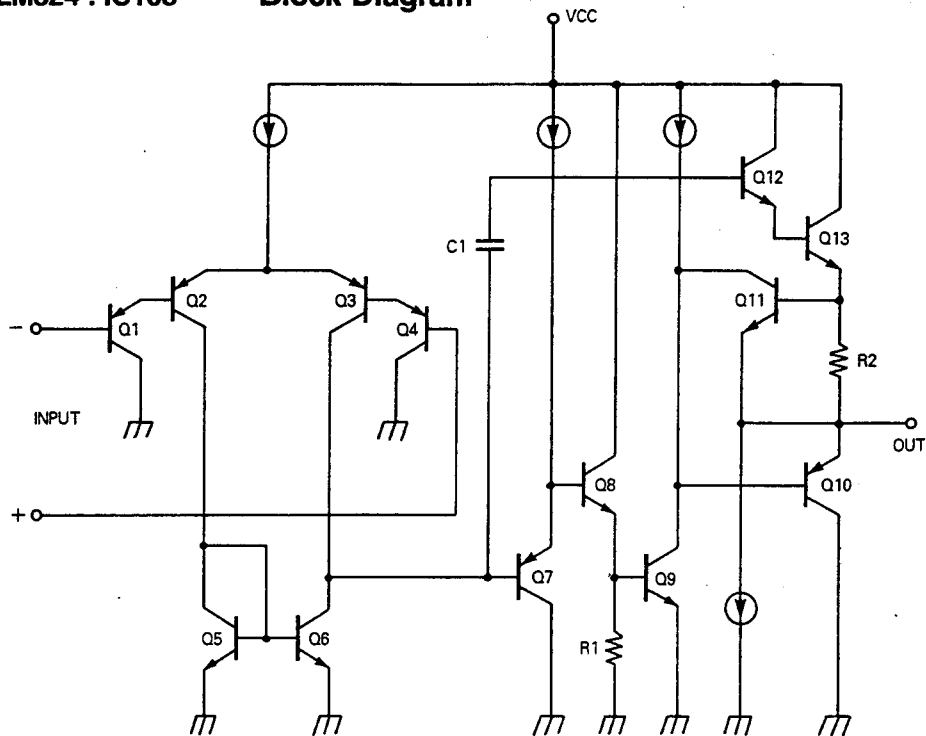
MC14094B : IC702,704

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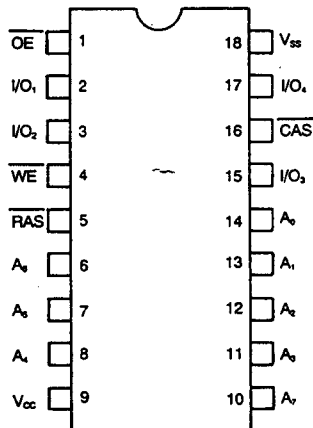
LM324 : IC108

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GM71C464A-80 : IC213

Pin Assignment

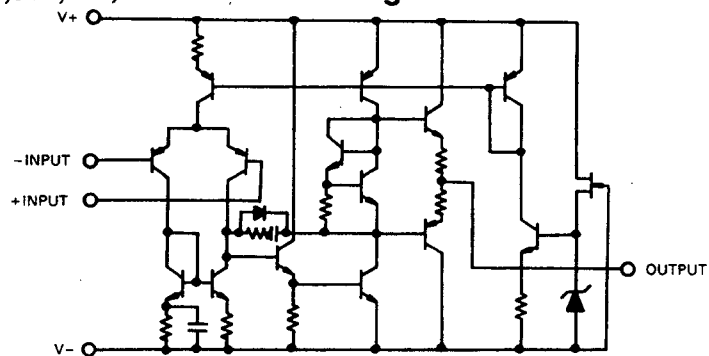


A0~A7	Address Inputs
RAS	Row Address Strobe
CAS	Column Address Strobe
WE	Write Enable
OE	Output Enable
I/O1~I/O4	Data Input, Output
V _{CC}	+5V Supply
V _{SS}	Ground

KIA4559S : IC104,105,201,202,204,208,210,215

IC301,302,303,304,305,306,307

Pin Assignment



VOLTAGE CHART

IC's

unit:[V]

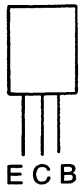
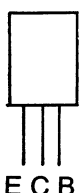
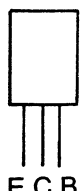
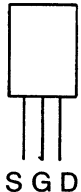
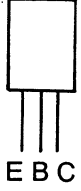
PART	REF	DEVICE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Main B'D	IC101	TC9163	-18	0	0	0	0	0	0	0	0	0	0	0	0	0	2.6	0	0	0	0	0
			21	22	23	24	25	26	27	28												
				0	0	0	0	0	0	0	28	-										
	IC102	TC9162	-18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
			21	22	23	24	25	26	27	28												
	IC103	LC4966	0	0	0	0	17.6	17.6	-18	0	0	0	0	-18	-18	18						
	IC104	KKTA4559S	18	0	0	0	-18	0	0	0	18											
	IC105	KTA4559S	18	0	0	0	-18	0	0	0	18											
	IC106	M51132L	14	6.5	5.7	5.7	14	0	0	5.6	0	2.8	0	5.6	5.7	6.5						
DSP B'D	IC107	NJM2082S	5.6	5.6	5.6	18	4	3	2.3	18												
	IC108	LM324	5.6	5.6	5.6	18	0	2.5	-18	5.6	5.6	5.6	-18	5.6	2.5	17						
	IC201	KIA4559S	17	0	0	-17	0	0	0	18												
	IC202	KIA4559S	18	0	0	-18	0	0	0	18												
	IC203	NJM2082L	2.8	2.8	2	-18	5	5.4	5.4	5.4	18											
	IC204	KIA4559S	18	2.6	2.6	2.6	-18	5.3	5.3	5.3	18											
	IC205	TC9162	-18	0	0	0	0	0	0	0	0	0	0	0.1	0	0	2.6	2.5	0	0	0	0
			21	22	23	24	25	26	27	28												
			6	0	0	0	0	0	0	0	18											
	IC206	NJM2082L	2.8	2.8	2.8	-18	2.8	2.8	2.8	17												
	IC207	NJM2082L	2.8	2.8	2.8	-18	2.8	2.8	2.8	17												
	IC208	KIA4559S	17	0	0	0	-18	0	0	0	18											
	IC209	TC9176	-18	0	0	0	0	0	0	4.5	0	0	0	0	0	0	18					
	IC210	KIA4559S	18	0	0	0	-18	0	0	0	18											
	IC212	YM7306C	5.6	2	5.7	2.8	2.8	2.8	2.8	5.7	5.2	2.8	0	0	2.3	5.6	5.5	2.8	5.6	4.3	2.8	5.6
			21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
			2.8	2.8	5.6	4.3	5.7	5.6				2.8	2.8	2.8	2.3	2	0.9	3.7	5.2	2.3	3.2	3.3
			41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
			2.6	3	0	0	2.5	2.8	5.7	0	4.8	5.6	4.8	0	0	5.6	5.6	5.6	5.6	5.7	5.7	5.6
			61	62	63	64																
			5.6	5.6	5.7	5.7																
	IC213	GM71C464A-80	2.4	1.6	2.3	5.2	0.9			2.8	5.7		2.8	2.8	2.3	2	0.9	3.7	0.8	0		
	IC214	NJM2082L	5.7	5.7	5.7	-18	5.7	5.7	5.7	1.8												
	IC215	KIA4559S	18	0	0	0	-18	0	0	0	18											
V.R B'D	IC216	TA7291S	18	0	0	0	-18	0	0	0	18											
	IC301	KIA4559S	18	0	0	0	-18	0	0	0	18											
	IC302	KIA4559S	18	0	0	0	-18	0	0	0	18											
	IC303	KIA4559S	17	0	0	0	-17	0	0	0	17											
	IC304	KIA4559S	18	0	0	0	-18	0	0	0	18											
	IC305	KIA4559S	28	0	0	0	-18	0	0	0	18											
Main B'D	IC306	KIA4559S	18	0	0	0	-18	0	0	0	18											
	IC307	KIA4559S	18	0	0	0	-18	0	0	0	18											
	IC401	STK400-090	-30	-30	-40	0	0	0	0	0	0	0	41	-41	-31	30	42	-42	-32	31	-32	0
			21	22																		
Video B'D			0	0																		
	IC601	BA7625	0.6	0	2	0	2	5	2	0	0	0.6	0	4.9	5	1.8	0	2				
	IC701	CPU	-26	-22	-26	-22	5	4.7	0	0	5.3	0	0	0	0	0	0.1	0	0	0	0	4.8
			21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Front B'D			0	0	0	0	4.2	0	4.7	0	4.8	2.1	2.3	0	0	4.8	0	0	4.8	4.8	4.8	-26
			41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
			-26	-26	-26	-26	-26	-26	-26	-26	-29	-12	-16	-23	-16	-12	-16	-36	-9	-19	-29	-19
			61	62	63	64																
			-22	-19	-19	4.8																
	IC703	MC14094B	0	0	4.7	0	0	0	0	0	5	0	4.9	4.9	0	5	5	5				
	IC704	MC14094B	0	4.9	4.7	0	0	0	0	0	0	0	0	4.2	0	0	5	0				

TRANSISTORS

unit:[V]

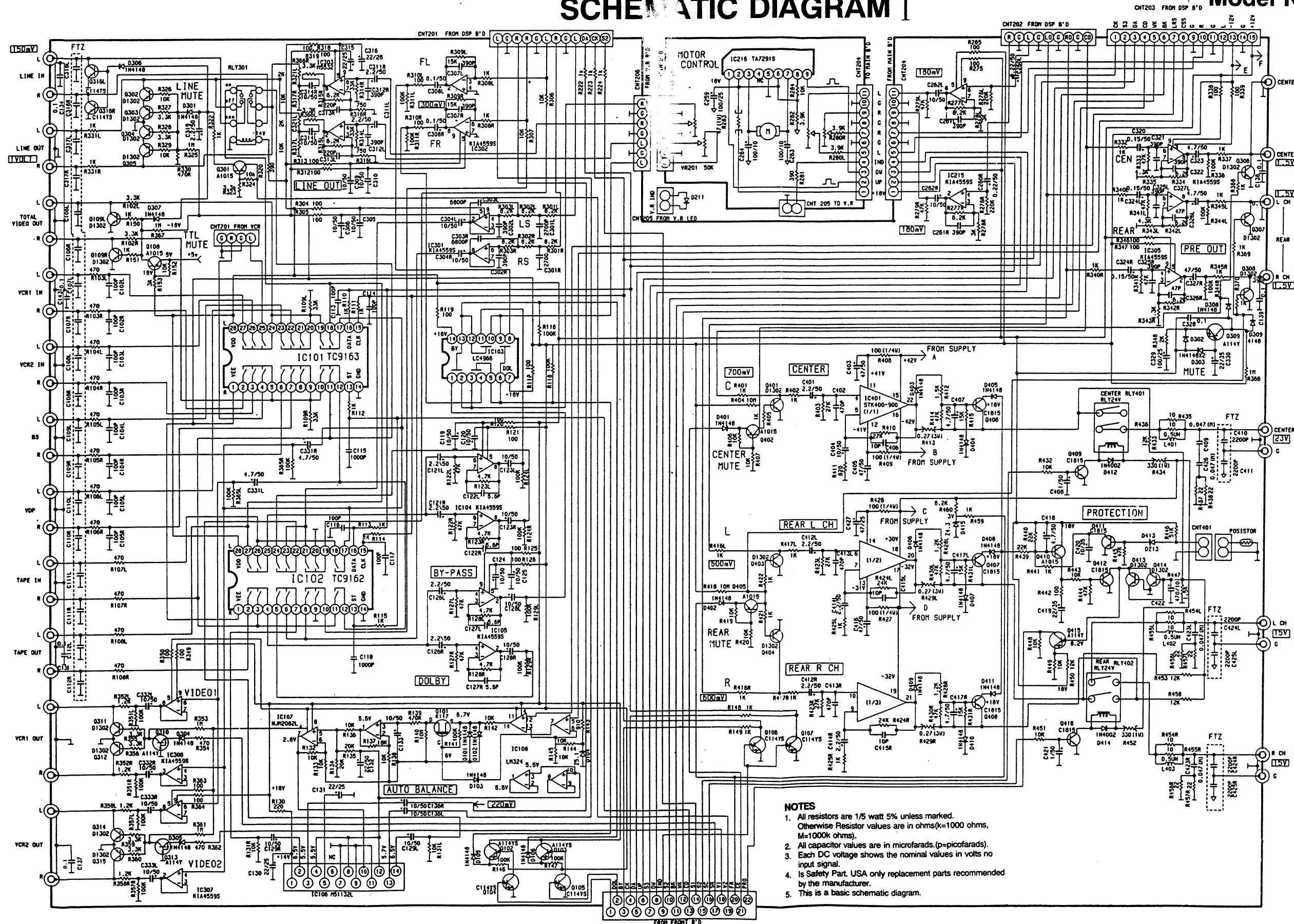
Part	Ref.No.	Device	E	C	B	Ref.No	Device	E	C	B
Main/ Front	Q101	2SK117	6.2	-17	5.3	Q601	A1015	1.36	0	0.6
	Q102	A114YS	18	18	0	Q602	A1015	1.36	0	0.6
	Q103	A114YS	18	-18	18	Q603	A1015	1.36	0	0.6
	Q104	C114YS	0	0	4.8	Q604	A1015	1.36	0	0.6
	Q105	C114YS	0	18	0	Q701	KTA817A	5.6	0.98	5
	Q106	C114YS	5	4.8	5	Q702	C1815	0	0	0.78
	Q107	C114YS	5	4.8	5	Q703	C1815	0	5.3	0.1
	Q108	A1015	5	0	5	Q704	C114YS	0	3.7	0
	Q109L/R	D1302	0	0	0	Q705	C114YS	0	0	4.7
	Q301	A1015	0.1	-5.4	0	Q706	C114YS	0	3.7	0
	Q302	D1302	-0.2	0	-5.6	Q707	C114YS	0	3.7	0
	Q303	D1302	-0.2	0	-5.6	Q708	C114YS	0	3.7	0
	Q304	D1302	-0.1	0	-5.6	Q709	C114YS	0	3.7	0
	Q305	D1302	-0.1	0	-5.6	Q710	C114YS	0	3.7	0
	Q306	D1302	0	0	-6.3	Q711	C114YS	0	3.7	0
	Q307	D1302	0	0	-6.3					
	Q308	D1302	0	0	-6.3					
	Q309	A114YS	17.7	-16.4	17.6					
	Q310	A114YS	2.9	2.9	0					
	Q311	D1302	0	0	0.6					
	Q312	D1302	0	0	0.6					
	Q313	Q114YS	0	-16.7	0					
	Q314	D1302	0	0	-16.7					
	Q315	D1302	0	0	-16.7					
	Q316L/R	C114TS	0	0	0					
	Q401	D1302	0	0	-6.3					
	Q402	A1015	0	-6.3	0					
	Q403	D1302	0	0	-6.3					
	Q404	D1302	0	0	-6.3					
	Q405	A1015	0	-6.3	0					
	Q406	C1815	0	18	0					
	Q407	C1815	0	18	0					
	Q408	C1815	0	18	0					
	Q409	C1815	0	0	0.7					
	Q410	A1015	18	0	18					
	Q411	C1815	0	18	0					
	Q412	C1815	0	8.2	0					
	Q413	D1302	0	0	0					
	Q414	D1302	0	0	0					
	Q415	A114YS	8.2	0	8.2					
	Q416	C1815	0	0	0.67					
	Q501	A06	0	0	0.7					

TRANSISTORS LEAD & IDENTIFICATION

TRANSISTOR	FRONT VIEW	BOTTOM VIEW
DTC114YS DTA114YS DTC114YS		
KIA1015 KTC1815 KTP1302		
KTA817A		
2SK117		
A06		
TERMINAL NAME		
B→BASE S→SOURCE C→COLLECTOR G→GATE E→EMITTER D→DRAIN		

SCHEMATIC DIAGRAM I

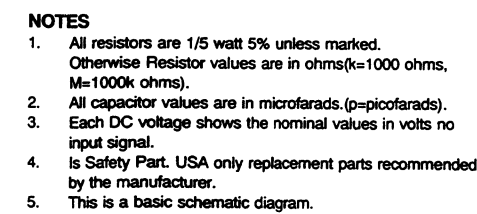
Model No. : E 030F



NOTES

1. All resistors are 1/5 watt 5% unless marked. Otherwise Resistor values are in ohms (K=1000 ohms, M=1000K ohms).
2. All capacitor values are in microfarads. (p=picofarads).
3. Each DC voltage shows the nominal values in volts no input signal.
4. Is Safety Part. USA only replacement parts recommended by the manufacturer.
5. This is a basic schematic diagram.

Model No. : ES-5030R



SCHEMATIC DIAGRAM III

Model No. : ES-5030R

