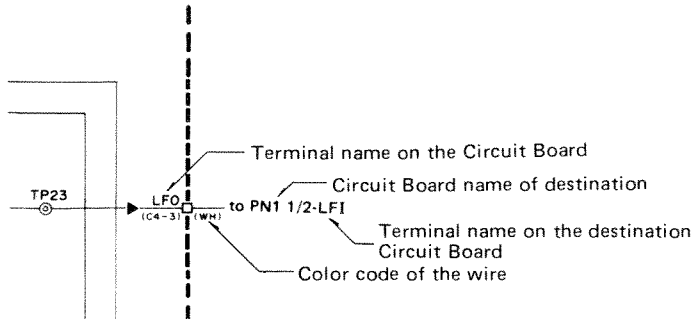


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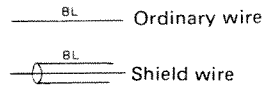
	CODING GUIDE	2
	DISASSEMBLY PROCEDURE	3
	SPECIFICATIONS	4
	PANEL LAYOUT	5
SK	Circuit Diagram	6
SK	Circuit Board & Wiring	7
PA	Circuit Diagram	8
PA	Circuit Board & Wiring	9
PB	Circuit Diagram	10
PB	Circuit Board & Wiring	11
VCO	Circuit Diagram	12
VCO	Circuit Board & Wiring	13
MOD	Circuit Diagram	14
MOD	Circuit Board & Wiring	15
FA	Circuit Diagram	16
FA	Circuit Board & Wiring	17
IF	Circuit Diagram	18
IF	Circuit Board & Wiring	19
PGM	Circuit Diagram	20
PGM	Circuit Board & Wiring	21
DM	Circuit Diagram	22
DM	Circuit Board & Wiring	23
PL	Circuit Diagram	24
PL	Circuit Board & Wiring	25
BL, BR, KS	Circuit Diagram	26
BL, BR	Circuit Board & Wiring	27
JK, SW	Circuit Diagram	28
JK1, JK2	Circuit Board & Wiring	29
DC	Circuit Diagram	30
DC	Circuit Board & Wiring	31
	PANEL SETTING	32
	TUNING	33
	Electrical Checks & Adjustments	34
	PARTS LIST	53

CODING GUIDE

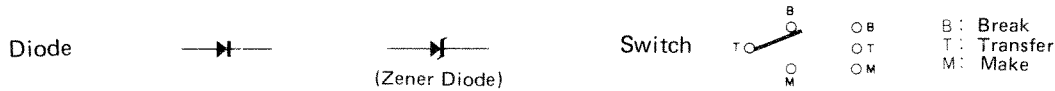
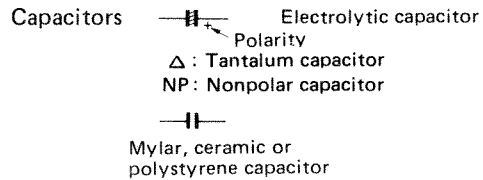
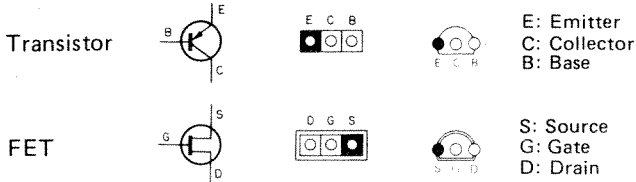
1 Wiring Notation



Note: Types of wire



2 Symbol Description



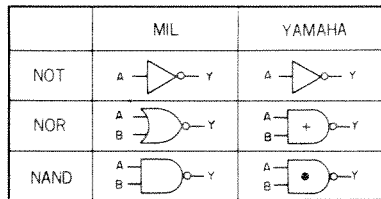
3 Abbreviations of Wire Color Codes

BLACK (クロ).....BL	BROWN (チャ).....BR	RED (アカ).....RE
ORANGE (タイ).....OR	YELLOW (キイ).....YE	GREEN (ミド).....GR
BLUE (アオ).....BE	VIOLET (ムラ).....VI	GRAY (ハイ).....GY
WHITE (シロ).....WH	GRASS GREEN (クサ).....GG	SKY BLUE (ソラ).....SB
PINK (モモ).....PK	TRANSPARENT (トウメイ).....TR	

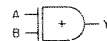
4 Relation of Color Coding and Notes

C	C≠	D	D≠	E	F	F≠	G	G≠	A	A≠	B
BR	RE	OR	YE	GR	BE	VI	GY	WH	GG	SB	PK
(チャ)	(アカ)	(タイ)	(キイ)	(ミド)	(アオ)	(ムラ)	(ハイ)	(シロ)	(クサ)	(ソラ)	(モモ)

5 Logic Symbols



Exclusive OR (排他的論理和)



Truth Table

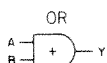
A	B	Y
L	L	L
H	L	H
L	H	H
H	H	L

NOT (Inverter)



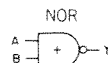
Truth Table

A	Y
L	H
H	L



Truth Table

A	B	Y
L	L	L
H	L	H
L	H	H
H	H	H



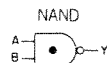
Truth Table

A	B	Y
L	L	H
H	L	L
L	H	L
H	H	L



Truth Table

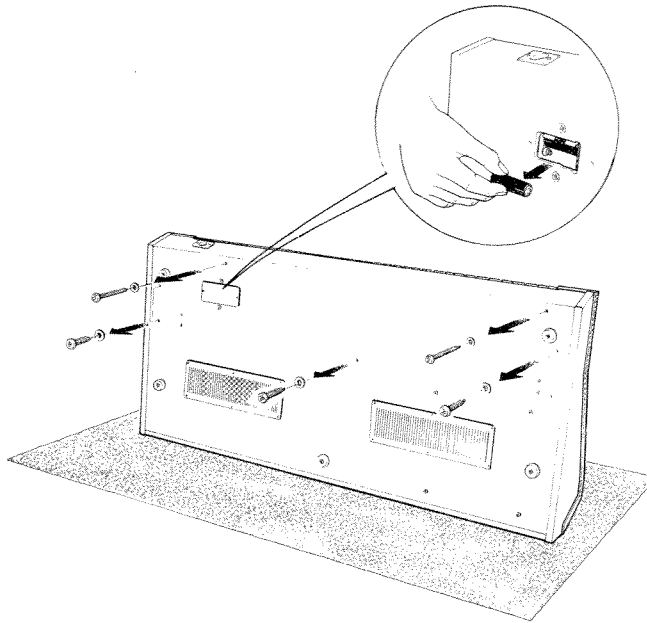
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H	H	H



Truth Table

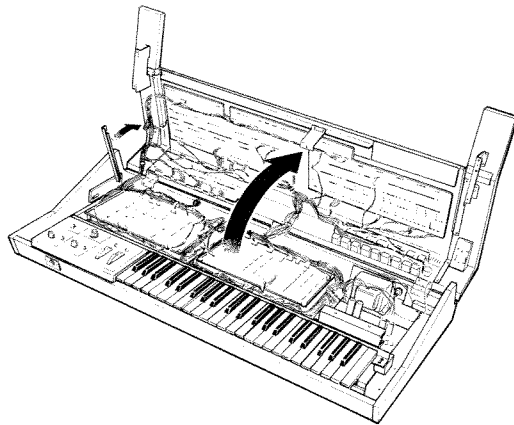
A	B	Y
L	L	H
H	L	H
L	H	H
H	H	L

DISASSEMBLY PROCEDURE

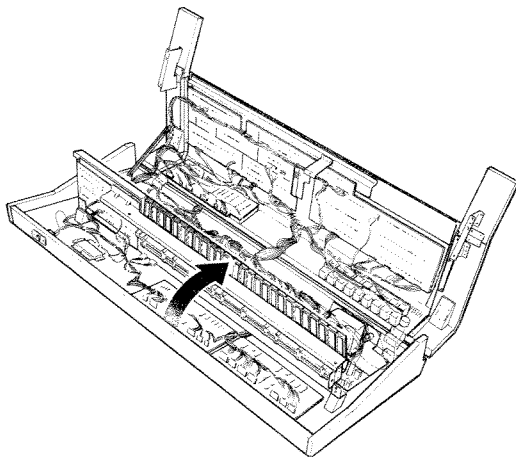


Opening panel and keyboard

- Put the body on a seat of cloth so that the rear panel should not be damaged. Remove screws of the bottom plate.























- Uplift the arm, turn it and fix it with the stopper on the left side.



- You can rotate the keyboard, holding the clapper.

SPECIFICATIONS

KEYBOARD	44 keys, f to c4 (3-2/3 octaves)	UNISON	ON / OFF
CONTROLS		PORTAMENTO	PORTAMENTO / GLISSANDO TIME
VCO 1, VCO 2	PITCH: -500 to + 700 cents FEET: 64', 32', 16', 8', 4', 2' WAVE:  ,  ,  MODULATION FUNCTION:  ,  ,  ,  , S/H, EG+, EG- MODULATION DEPTH PW: 50% to 90% PWM FUNCTION  , EG+, EG- PWM DEPTH	BRILLIANCE	
MIXER	VCO 1 VCO 2 NOISE	SUSTAIN	SUSTAIN I / SUSTAIN II TIME
VCF	CUT OFF FREQ. RESONANCE: Q= 0.5 to 10 HP / BP / LP HP: 12dB/oct. BP: ±6dB/oct. LP: -12dB/oct. MODULATION FUNCTION:  ,  ,  ,  , S/H MODULATION DEPTH EG DEPTH KCV: ON / OFF	PITCH BEND	OCTAVE (±1200 cents) FIFTH (±700 cents) THIRD (±400 cents) WHEEL
VCA	 1  2 MODULATION FUNCTION:  ,  ,  ,  MODULATION DEPTH INITIAL LEVEL	MODULATION	VCO / VCO + VCF / VCF WHEEL
LFO	SPEED: 0.1 to 100Hz SPEED DEPTH EG-VCO:  ,  TRIGGER: REPEAT / OFF	PROGRAMMER	PROGRAM SELECT Buttons M1 (1, 2, 3, 4, 5, 6, 7, 8, 9, 10) M2 (11, 12, 13, 14, 15, 16, 17, 18, 19, 20) PANEL WRITE STORE LOAD
EG-VCO	NORMAL / TIME x 5 ATTACK TIME: 0.001 to 1 sec. (at "NORMAL" setting) DECAY TIME: 0.01 to 10 sec. (ditto)	JACKS	
RING MODULATOR	ON / OFF SPEED: 0.5 to 500 Hz SPEED DEPTH EG-VCO:  , 	OUTPUT	BALANCED OUTPUT (-16dBm/600Ω) HIGH (-13dBm) LOW (-32dBm) During output of saw-tooth wave () at basic setting.
EG-VCF	 ,  NORMAL / TIME x 5 ATTACK TIME: 0.001 to 1 sec. (at "NORMAL" setting) DECAY TIME: 0.01 to 10 sec. (ditto) SUSTAIN LEVEL RELEASE TIME: 0.01 to 10 sec. (ditto)	FOOT SW.	SUSTAIN PORTAMENTO
EG-VCA	NORMAL / TIME x 5 ATTACK TIME: 0.001 to 1 sec. (at "NORMAL" setting) DECAY TIME: 0.01 to 10 sec. (ditto) SUSTAIN LEVEL RELEASE TIME: 0.01 to 10 sec. (ditto)	FOOT CONT.	VOLUME FILTER
OUTPUT	POA: ON / OFF VOLUME PHONES	VCF IN.	-10 to 10V
		VCA IN	-10 to 10V
		CONTROL VOLT I / II:	
			IN (0.0835 to 4V) OUT (0.0835 to 4V)
		TRIGGER I / II	IN (OFF: 15 to 3V, ON: 0 to -10V) OUT (OFF: 3V, ON: -7V)
		PROGRAM	TO TAPE FROM TAPE
		PHONES	24.5 millivolts rms nominal (8Ω or higher impedance)
		OTHERS	
		POWER SOURCE	U.S. and CANADIAN models: 120V, 60Hz GENERAL model 220V or 240V selectable, 50/60Hz
		POWER CONSUMPTION:	40 Watts
		DIMENSIONS	988 x 177 x 470.5mm (W x H x D) (38-7/8 x 7 x 18-1/2")
		WEIGHT	21 kg (46.3 lbs.)
		FINISH	Semi-gloss black panels, rosewood-grain cabinet
		ACCESSORIES:	Power cord Alkaline batteries (Size: AA) x 2
		OPTIONAL ACCESSORIES:	FC-3 Foot Controller FC-4 Foot Swich Pedal

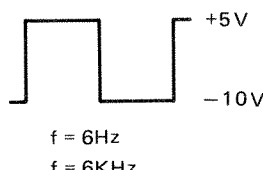
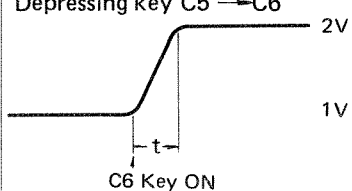
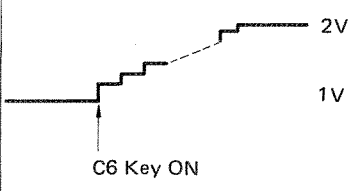
Specifications subject to change without notice.

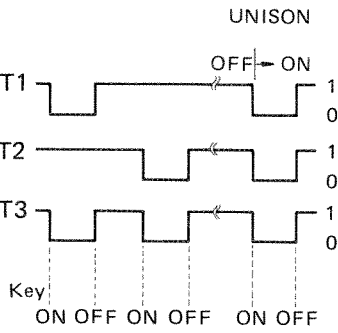
Tuning

No.	Adjustment item	Measurement point		Adjustment value	Adjusting VR		Setting & Conditions		
1	Power supply Voltage 1) +15V 2) -15V 3) +5V -10V	SK MOD	CT1 - E CT2 - E CT1 - E CT2 - E	+15 ± 0.01V -15 ± 0.01V +5 ± 0.1V -10 ± 0.5V	DC	VR1 VR2 VR3			
2	Key voltage 1) PITCH WHEEL voltage	PL	TP1 (C5-1) TP2 (C5-2) VR (C2-6)	-2 ± 0.002V +1 ± 0.002V +2 ± 0.002V	PL	VR1 VR2 VR3	* For the No. 2 operation use the terminal EK (C1-1) of the SK board as their ground point.		
	2) Key voltage output (SK board)	SK	K1 (C1-5) K2 (C1-4)	+166.8 ± 0.2mV	SK	VR3 VR4	SUSTAIN I/II "II" UNISON "ON" Depressing Key F2		
	3) Offset voltage adjustment	PA	O11 (C2-5) O12 (C2-1) O21 (C5-5) O22 (C5-6)	0 ± 0.1mV	PA	VR1 VR2 VR3 VR4	Carry out measurement with short plugs inserted into the CONTROL VOLT IN 1 and 2 at the rear panel.		
	4) PITCH adjustment		O11 O21	2 ± 0.001V 2 ± 0.001V	VCO1 block VCO2 block	PITCH PITCH	Carry out adjustment with short plugs disconnected. Depressing Key C6		
	5) Key voltage output (PA board)		O11 O12 O21 O22	166.8 ± 0.1mV	PA	VR1 VR2 VR3 VR4	Depressing Key F2		
	6) CONTROL VOLT -OUT 1 and 2-	REAR PANEL	CONTROL VOLT OUT 1 and 2	F2: 166.8 ± 0.2mV C3: 250 ± 0.5mV C4: 500 ± 1mV C5: 1 ± 0.002V C6: 2 ± 0.002V			Depressing Key F2 " C3 " C4 " C5 " C6		
3	Tuning	REAR PANEL	OUTPUT "HIGH"		REAR PANEL	1) VCO1-C6 key	(C6 +12) ± 2 φ	HIGH of the tuning VR VCO1I or II	Depressing key C6 UNISON "OFF" VCA block ~1 "10"
						2) VCO1-F2 key	(F2 +12) ± 2 φ	LOW of the tuning VR VCO1I or II	Depressing key F2
						3) VCO2-C6 key	(C6 +12) ± 2 φ	HIGH of the tuning VR VCO2I or II	Depressing key C6 VCA block ~1 "0" ~2 "10"
						4) VCO2-F2 key	(F2 +12) ± 2 φ	LOW of the tuning VR VCO2I or II	Depressing key F2

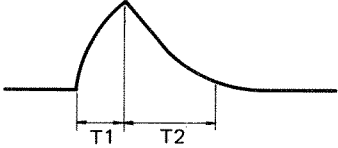
Electrical Checks & Adjustments

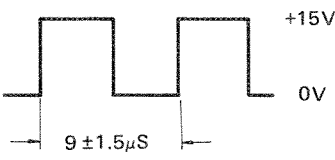
SK Circuit Board

Name of Circuit	TEST POINT	Setting conditions	Adjustment (measurement) value	Adjusting VR	Remarks																								
+5V, -10V Regulator	+5V (C3-3) -10V (C2-2)		+4.9 ± 0.5V -9 ± 1V																										
Clock OSC. -PORTAMENT ● f[Hz] adj.	TP1	● EFFECT block PORTAMENT L S	 f = 6Hz f = 6KHz	VR1 VR2																									
Compalater -PORTAMENT	TP2 TP3 TP4	When the setting of PORTAMENT is made within each specified voltage: STATE 1... 4.6 to 3.3V 2... 3.3 to 0.6V 3... 0.6 to -5.7V 4... -5.7 to -9V	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="2"></th> <th colspan="4">STATE</th> </tr> <tr> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>TP2</td> <td>0</td> <td>1</td> <td>1</td> <td>1</td> </tr> <tr> <td>TP3</td> <td>1</td> <td>1</td> <td>0</td> <td>0</td> </tr> <tr> <td>TP4</td> <td>1</td> <td>1</td> <td>1</td> <td>0</td> </tr> </tbody> </table> <p style="text-align: center;">1 : V_{SS} (+5V) 0 : V_{DD} (-10V)</p> <p>When the PORTA/ GLISS is set at the GLISS under the state 4, the TP3 should be "1" (V_{SS}).</p>		STATE				1	2	3	4	TP2	0	1	1	1	TP3	1	1	0	0	TP4	1	1	1	0		
	STATE																												
	1	2	3	4																									
TP2	0	1	1	1																									
TP3	1	1	0	0																									
TP4	1	1	1	0																									
Key Assigner, Key Volt Buffer, Key Volt S/H Circuits 1) Key Volt adjustment 2) PORTA-MENT effect 3) G LISSANDO effect	K1 (C1-5) K2 (C1-4)	● EFFECT block SUSTAIN I/II...II UNISONON PITCH WHEEL Center 0	C6 Key ON 2 ± 0.001V < Reference > F2 Key ON 166.8mV C3 250mV C4 500mV C5 1000mV	VR3 (K1) VR4 (K2)																									
		PORTAMENT S → L	Depressing key C5 → C6  t = 0.2 ± 0.2mS → 2.5 ± 0.5S																										
		PORTAMENT..... L PORTA/GLISS GLISS	 t = 0.2 ± 0.2mS → 2.5 ± 0.5S																										

Name of Circuit	TEST POINT	Setting conditions	Adjustment (measurement) value	Adjusting VR	Remarks
Trigger Buffer ● UNISON effect	T1 T2 T3	UNISON OFF → ON	 <p style="text-align: center;">UNISON</p> <p style="text-align: center;">OFF → ON</p> <p>T1</p> <p>T2</p> <p>T3</p> <p>Key</p> <p style="text-align: center;">ON OFF ON OFF ON OFF</p> <p style="text-align: right;">1 0 1 0 1 0</p> <p>* In this timing diagram, when one key is depressed ON with the UNISON set at the OFF position, either T1 or T2 should become "0". Moreover, when the key is depressed with the UNISON set at the ON position, T1 and T2 should become "0" simultaneously.</p>		

PA Circuit Board

Name of Circuit	TEST POINT	Setting condition	Adjustment (measurement) value	Adjusting VR	Remarks
EG-VCO 1) Off set voltage 2) ATTACK TIME adjustment	E ⁺ (C6-1)	<ul style="list-style-type: none"> ● EG-VCO Block TIME EXPANDNORMAL ATTACK TIMES DECAY TIME S 	0 ± 0.01V	VR6	
		<p>Set the ATTACK TIME and DECAY TIME so that 8V may be obtained at terminals A (C8-4) and D (C8-3).</p>	<p>1. When any key on the key-board is depressed, the waveform that can be obtained at the terminal E⁺ (C6-1) should be one indicated below.</p>  <p>T1 = 4mS (When the voltage of terminal A is 8V) = 125mS (When the voltage of terminal A is 3V)</p> <p>T2 = 40 ± 10mS (Terminal D 8V) = 1.25 ± 0.4S (Terminal D 3V)</p>	VR5	4mS adjustment
		<p>Set the ATTACK TIME, so that 3V may be obtained at the terminal A.</p>	<p>2. Adjust the VR7 in such away that, with any key is depressed, T1 will become still longer when the obtained value was longer than the standard length of 125mS, and conversely T1 will become still shorter when the obtained value was shorter than the foregoing standard length. Repeat the adjustments described in paragraphs 1 and 2 above, until T1 becomes within ±5% of the specified value.</p>	VR7	125mS adjustment

Name of Circuit	TEST POINT	Setting condition	Adjustment (measurement) value	Adjusting VR	Remarks
PITCH Circuit 1) Clock	TP1				
	2) Offset adjustment				
	O11 (C2-5)	<ul style="list-style-type: none"> ● Turn the PITCH (VR-8, 12) clockwise fully. ● Connect K1 and K2 with the terminal EK. 	Not to exceed $0 \pm 100\mu V$.	VR1	
	O12 (C2-6)			VR2	
	O21 (C5-5)			VR3	
	O22 (C5-6)			VR4	
		<ul style="list-style-type: none"> ● After the adjustment as described in paragraph 2 above has been completed, depressing Key C6. ● Turn the PITCH (VR-8, 12) counterclockwise fully. Depressing Key C6. 	<p>A voltage of $3 \pm 0,009V$ should be present at each terminal.</p> <p>A Voltage of $1.4 \pm 0.1V$ should be present at each terminal.</p>		

PB Circuit Board

Name of Circuit	TEST POINT	Setting condition	Adjustment (measurement) value	Adjusting VR	Remarks
4V Regurator	+4V (C1-1)		$+4 \pm 0.01V$	VR6	
Ring Modulator OSC 1) Level adjustment	TP1	<ul style="list-style-type: none"> ● RING MODULATOR block SPEED DEPTH..... 10 EG-VCO ^ 	Adjust the VR3 in such a way that, with any key is depressed, the waveforms of E- (C1-7) and TP1 may have the same level.	VR3	
		SPEED DEPTH 0	No waveform should appear at TP1.		
2) Speed adjustment	TP2	RMO SPEED.... S F	0.5Hz 500Hz	VR5 VR4	
Ring Modulator 1) Blance adjustment	HO (C6-7)	<ul style="list-style-type: none"> ● VCA block ~1 10 ● RING MODULATOR block RMO ON/OFF.... ON RMO SPEEDS ~ F 		VR2	
		<ul style="list-style-type: none"> After the adjustment above has been completed. ● VCA block ~ 1 0 	The adjustment should be made so that the waveform which appears at the terminal HO (C6-7) may become a minimum.	VR1	
Mixing Amp EXP Control Output Amp 1) Level adjustment	HO (C6-7)	<ul style="list-style-type: none"> ● OUTPUT block POA OFF ● RING MODULATOR block RMO ON/OFF ...OFF ● VCA block Set the ~ 1 so that 0.4Vp-p may be obtained at the terminal I1. 	The adjustment should be made so that 1Vp-p may be obtained at the terminal HO (C6-7) when 0.4Vp-p is present at the terminal I1 (C5-6).	VR7	
		Connect the terminal EI (C5-9) to E (earth).	Variation exceeding -36dB should be obtained.		
2) FOOT CONTROLLER					

Table of Parameter Control Voltage

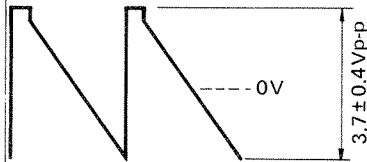
Circuit Board	Block	Function	Position	Voltage [V]	Remarks
PA	VCO1,2	FEET	64'	0	
			32'	0.67	
			16'	1.33	
			8'	2.00	
			4'	2.67	
			2'	3.33	
		WAVE	∧	0	
			∟	1.33	
			∩	2.67	
		MODULATION FUNCTION	∩	0	
	∟		0.57		
	∧		1.14		
	∩		1.71		
	S/H		2.29		
	E ⁺		2.86		
	E ⁻	3.43			
	MODULATION DEPTH	0 ~ 10	0 ~ 4	A type VR	
	PW (PULSE WIDTH)	50 ~ 90%	0 ~ 4	B type VR	
	P.W.M FUNCTION	∩	0		
		E ⁺	1.33		
		E ⁻	2.67		
	P.S. M DEPTH	0 ~ 10	0 ~ 4	B type VR	
	LFO	SPEED	S ~ F	0 ~ 4	B type VR
SPEED DEPTH		0 ~ 10	0 ~ 4	B type VR	
EG-VCO	EG-VCO	∧	4		
		∨	0		
EG-VCO	TIME EXPAND	NORMAL TIME x 5	0 4		
	ATTACK TIME	S ~ L	4 ~ 0		C type VR
	DECAY TIME	S ~ L	4 ~ 0		
RMO	ON-OFF	ON OF	4 0		
	SPEED	S ~ F	0 ~ 4		B type VR
	SPEED DEPTH	0 ~ 10	0 ~ 4		B type VR
	EG-VCO	∧ ∨	4 0		

Circuit Board	Block	Function	Position	Voltage [V]	Remarks
PB	MIXER	VCO1	0 ~ 10	0 ~ 4	A type VR
		VCO2	0 ~ 10	0 ~ 4	A type VR
		NOISE	0 ~ 10	0 ~ 4	A type VR
	VCF	CUT OFF FREQ.	L ~ H	0 ~ 4	B type VR
		RESONANCE	L ~ H	0 ~ 4	B type VR
		FILTER MODE	LP BP HP	0 1.33 2.67	
		MODULATION FUNCTION	~ ^ v L S/H	0 0.8 1.6 2.4 3.2	
		MODULATION DEPTH	0 ~ 10	0 ~ 4	B type VR
		EG DEPTH	0 ~ 10	0 ~ 4	B type VR
		KCV	ON OFF	4 0	
		EG-VCF	POLE	^ v	0 4
	TIME EXPAND		NORMAL TIME x 5	0 4	
	ATTACK TIME		S ~ L	4 ~ 0	C type VR
	DECAY TIME		S ~ L	4 ~ 0	C type VR
	SUSTAIN LEVEL		0 ~ 10	0 ~ 3.4	B type VR
	RELEASE TIME		S ~ L	4 ~ 0	C type VR
	VCA	~1	0 ~ 10	0 ~ 4	A type VR
		~2	0 ~ 10	0 ~ 4	A type
		MODULATION FUNCTION	~ ^ v L	0 1 2 3	

Circuit Board	Block	Function	Position	Voltage [V]	Remarks
PB		MODULATION DEPTH	0 ~ 10	0 ~ 4	
	EG-VCF	TIME EXPAND	NORMAL TIME x 5	0 4	
		ATTACK TIME	S ~ L	0 ~ 4	C type VR
		DECAY TIME	S ~ L	0 ~ 4	C type VR
		SUSTAIN LEVEL	0 ~ 10	0 ~ 3.4	B type VR
		RELEASE TIME	S ~ L	0 ~ 4	C type VR
	OUTPUT	P. O. A.	ON OFF	4 0	

VCO Circuit Board

Name of Circuit	TEST POINT	Setting condition	Adjustment (measurement) value	Adjusting VR	Remarks
VCO Circuit 1) Offset adjustment	TP	<ul style="list-style-type: none"> ● VCO1, 2 block FEET 2' 	Not to exceed $0 \pm 100\mu V$ Adjustments should be made on all of the VCO1-I, VCO2- I , VCO1-II and VCO2-II.	VR3 VR6 VR9 VR12	
2) Tuning	O11 (C6-10) O12 (C3-10) O21 (C4-10) O22 (C1-10)	<ul style="list-style-type: none"> ● Connect each of the terminals V (C6-5) (C3-5), (C4-5) and (C1-5) to the terminal E. ● EFFECT block UNISON ON ● VCO block FEET 8' PITCH..... 0 	1. Depressing Key C6. (Ensure that a voltage of +2,000V is present at the terminal K.) (C6 + 12) $\pm 1 \phi$	VR11 VR5 VR8 VR2	} C6
			2. Depressing Key F2. (Ensure that a voltage of +166.8mV is present at the terminal K.) (F2 + 12) $\pm 1 \phi$	VR1 VR4 VR7 VR10	
			3. Repeat 1. and 2.		
3) VCO modulation		<ul style="list-style-type: none"> ● Disconnect the terminal V from the terminal E. ● VCO block MODULATION FUNCTION.....\square (S3) Set the MOD. DEPTH so that +2V may be obtained at the terminals V. ● LFO block SPEED S 	When the F2 key is depressed, the output frequency that appears at each of the terminals O should vary more than C3.		
		<ul style="list-style-type: none"> ● Connect each of the terminals V to E. ● VCO block MOD. DEPTH..... 0 FEET2', 4', 8', 16', 32', 64' 	Table 1. & 2.		
4) Cent [ϕ] & Tolerance [ϕ]					



4) Cent [ϕ] & Tolerance [ϕ]

Table 1 Cent [ϕ] and Tolerance [ϕ] of each FEET.

Key FEET	F2 166.8mV	F4 667.2mV	C6 2.000V
2'	$(F4 + 12)_{-3}^{+15}$	$(F6 + 12)_{-3}^{+8}$	$(C8 + 12) \pm 3$
4'	$(F3 + 12)_{-3}^{+10}$	$(F5 + 12)_{-3}^{+5}$	$(C7 + 12) \pm 3$
8'	$(F2 + 12) \pm 3$	$(F4 + 12) \pm 3$	$(C6 + 12) \pm 3$
16'	$(F1 + 12)_{-15}^{+3}$	$(F3 + 12)_{-8}^{+3}$	$(C5 + 12) \pm 3$
32'	$(F0 + 12)_{-18}^{+3}$	$(F2 + 12)_{-14}^{+3}$	$(C4 + 12)_{-7}^{+3}$
64'		$(F1 + 12)_{-20}^{+5}$	$(C3 + 12)_{-10}^{+3}$

[ϕ]

Table 2 Output Tolerance [ϕ] of the terminals O11, O12, O21 and O 22.

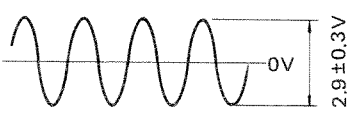
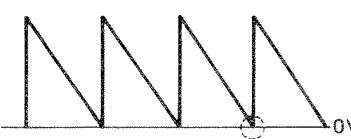
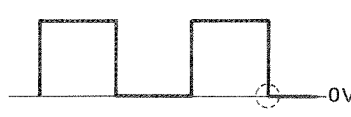
Key FEET	F2 166.8mV	F4 667.2mV	C6 2.000V
2'	10	7	3
4'	10	7	3
8'	10	7	3
16'	12	10	3
32'	15	15	5
64'		20	7

[ϕ]

MOD Circuit Board

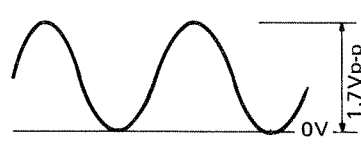
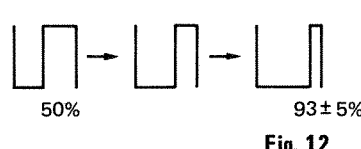
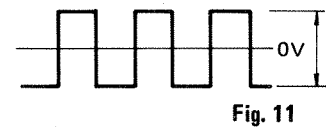
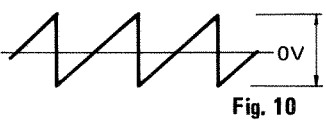
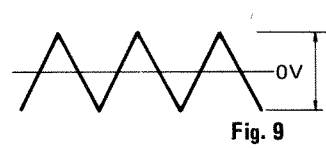
Name of Circuit	TEST POINT	Setting condition	Adjustment (measurement) value	Adjusting VR	Remarks
LFO Circuit 1) Level adjustment	TP1	<ul style="list-style-type: none"> ● LFO block SPEED DEPTH 10 EG-VCO ^ 	Adjust the VR1 in such a way that, with any key is depressed, the waveforms of E ⁻ (C11-4) and TP1 may have the same level.	VR1	
		SPEED DEPTH 0	No waveform should appear at TP1.		
2) LFO SPEED	□ (C1-1) ~ (C12-3, 4) ^ (C12-5,6) v (C12-7,8)	LFO SPEED S	Each waveform 0.1Hz	VR3	
		LFO SPEED F	Each waveform $100 \pm 2\text{Hz}$	VR2	
3) Noise level	WN (C1-4)		+2 dBm	VR6	
4) S/H	S/H (C1-2,3)				

MOD Circuit Board

Name of Circuit	TEST POINT	Setting condition	Adjustment (measurement) value	Adjusting VR	Remarks	
VCO MODULATION Circuit 1) Level adjustment 2) Lower edge level adjustment	V1 (C9-6, 7)	<ul style="list-style-type: none"> ● VCO1, 2 block MOD FUNCTION ~ MOD DEPTH 10 Turn the MODULATION WHEEL fully up to the "0" position at the front side.	 <p>Fig. 6 The same waveform as Fig. 2</p>	VR8 VR12		
	V2 (C9-4, 5)	MOD DEPTH 0	The waveform should disappear.			
		Turn the MODULATION WHEEL fully toward the inside.	The new output should be the output in Fig. 6 ± 10%.			
		MOD FUNCTION ^ MOD DEPTH 10 Turn the MODULATION WHEEL fully up to the "0" position at the front side.	 <p>Fig. 7 Align the lower edge of the waveform with 0V.</p>	VR9 VR11		
		MOD FUNCTION... ∨	Align the lower edge of the output waveform that appears at the terminal V1 with 0V. Ensure that the same waveform as one at the terminal V1 can be obtained at the terminal V2 too.	VR4		
		MOD FUNCTION... ▭	 <p>Fig. 8 Align the lower edge of the waveform with 0V.</p>	VR5		
		MOD FUNCTION... S/H	Ensure that the S/H waveform can be obtained at the terminals V1 and V2.			
		MOD FUNCTION EG ⁺ EG ⁻	With any key is depressed, the same waveform as the PA Circuit Board E ⁺ (C6-1), E ⁻ (C6-2,3) should appear at the terminals V1 and V2, respectively.			

MOD Circuit Board

Name of Circuit	TEST POINT	Setting condition	Adjustment measurement) value	Adjusting VR	Remarks
WSC Circuit	S11 (C3-1) S12 (C3-3) S21 (C3-5) S22 (C3-7) O11 (C10-5) O12 (C10-1) O21 (C4-2) O22 (C4-1)	● VCO1, 2 block PW 50% PWM DEPTH.... 0 WAVE ^ ^ ┘ PW50%~90%	When the C6 key is turned ON a sine wave of $3.7V \pm 0.8V$ should appear at each of the terminals S. Moreover, switch the WAVE (S3,6) progressively and turn ON the C6 key. Ensure that the waveform as indicated in Fig. 9,10,11 below appear at the terminals O, respectively. Ensure that the output waveform at each of terminals O change as indicated in diagrams below.		
PWM FUNCTION Circuit 1) Level adjustment 2) Lower edge Voltage adjustment	TP2 TP3	● VCO1, 2 block PW 50% PWM FUNCTION ~ PWM DEPTH 10 PWM FUNCTION EG ⁺ EG ⁻	Carry out the level adjustment using VR10 and VR14 and the lower edge voltage adjustment using VR9 and VR13 in order that the waveform as indicated in Fig. 13 may be obtained. With any key is depressed, the same waveforms as one at the terminals E ⁺ (C7-3), E ⁻ (C4, 5) should appear.	VR10 VR9 VR14 VR13	Level 0V Level 0V



FA Circuit Board

Name of Circuit	TEST POINT	Setting condition	Adjustment (measurement) value	Adjusting VR	Remarks
VCF Circuit 1) Level adjustment	TP1 TP3	<ul style="list-style-type: none"> ● VCO1, 2 block FEET '..... 4' WAVE ^ ● EFFECT block UNISON ON ● MIXER block VCO1 10 	The adjustment should be made that, with the C4 Key turned ON, the signal level appearing at TP1 and TP3 may become 2/3 time the signal level of F11 (C7-1) and F12 (C7-2). (Reference information) The adjustment should be made so that TP1 and TP3 may become 2 Vp-p when a sine wave of 3Vp-p is applied to F11 and F12 externally.	VR1 VR10	
		VCO1, 2 0 NOISE 10	The same as paragrapy above.	VR2 VR11	
		VCO1,2 0 NOISE 10	The adjustment should be made so that the level of noise waveform appearing at TP1 and TP3 may become the same as the noise level at the terminal NI (C6-2)	VR3 VR12	
2) Peak point and peak level adjustment	FO1 (C4-8)	<ul style="list-style-type: none"> ● VCO1, 2 block FEET 4' WAVE ^ ● MIXER block VCO1 10 VCO2, NOISE 0 ● VCF block Set the CUT OFF. FREQ. and RESONANCE in such a way that 5V may be obtained at the terminal CO (C5-2), RE (C5-1). MOD DEPTH..... 0 HP/BP/LPLP KCVON ● EFFECT block BRILLIANCE Center "0" UNISON ...ON 	The adjustment should be carried out so that the waveform as indicated in Fig. 1. may appear at FO1 (FO2) with the C4 key turned ON and the peak point may be obtained using the VR4 (VR13). Then, adjust the VR5 (VR14) so as to obtain 1Vp-p.	VR4 (VR13) VR5 (VR14)	Peak Point
	FO2 (C4-3)				Level adjustment

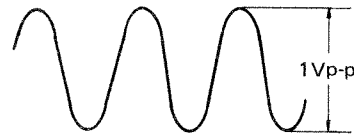
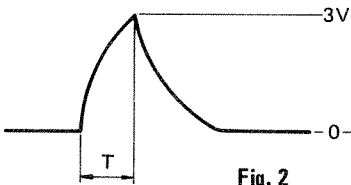


Fig. 1

FA Circuit Board

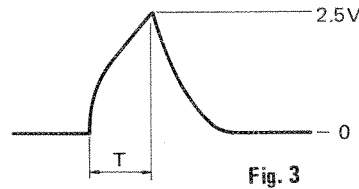
Name of Circuit	TEST POINT	Setting condition	Adjustment (measurement) value	Adjusting VR	Remarks
VCA Circuit 1) Level adjustment	TP5 TP7	<ul style="list-style-type: none"> ● VCO1, 2 block FEET 4' ● VCA block ~1 10 ● EFFECT block UNISON..... ON 	1. Adjust the VR19 and VR27 so that the level of sine wave appearing at TP5 and TP7 may become 1/2 of that of sine wave appearing at the terminals A11 (C8-6) and A12 (C8-5) when the C4 key is depressed.	VR19 VR27	
		<ul style="list-style-type: none"> ● VCA block ~1 10 ~2 10 	2. In the same way as with paragraph 1 above, adjust the VR20 and VR28 so that the level of the foregoing sine wave may become 1/2 of that of sine wave appearing at the terminals A21 (C9-1) and A22 (C8-8).	VR20 VR28	
		<p>~1,~2..... 0</p> <ul style="list-style-type: none"> ● MIXER block Set the VCO1 and VCO2 so that 3Vp-p may be obtained at the terminals A13 (C9-10,11) and A23 (C9-3,4) 	3. Ensure that 3Vp-p signal is obtained at TP5 (TP7).		
	AO1 (C9-8)	<ul style="list-style-type: none"> ● VCA block MOD DEPTH.... 0 <p>Set the INITIAL LEVEL so that 3V may be obtained at the terminal IL (C1-6).</p>	4. Adjust the VR22 (VR30) so that 1.5Vp-p may appear at the terminal AO1 (AO2) when 3Vp-p is applied TP5 (TP7).	VR22 VR30	
	AO2 (C9-9)	<ul style="list-style-type: none"> ● MIXER block VCO1, 2 0 ● VCA block ~1,~2 0 MOD. DEPTH.. 10 	5. Adjust the VR21 and VR29 so that the output at the terminals AO1 and AO2 may become a minimum.	VR21 VR29	

FA Circuit Board

Name of Circuit	TEST POINT	Setting condition	Adjustment (measurement) value	Adjusting VR	Remarks
EG-VCF 1) Level adjustment 2) ATTACK TIME adjustment	TP2 TP4	<ul style="list-style-type: none"> ● EG-VCF block TIME EXPAND NORMAL DECAY TIME S SUSTAIN LEVEL 0 RELEASE TIME S <p>Set the ATTACK TIME so that 8V may be present at the terminal FA (C3-4).</p> <ul style="list-style-type: none"> ● VCF block EG-DEPTH 10 ● EFFECT block UNISON ON 	<p>1. Carry out the level adjustment using the VR9 (VR18) so that the waveform as indicated in Fig. 2 may appear at TP2 (TP4) with any key is depressed.</p> <p>Furthermore, adjust the VR6 (VR15) so that the length of T may become 4mS.</p> <div style="text-align: center;">  <p>Fig. 2</p> </div> <p>T = 4mS ±5% (Terminal FA 8V) = 125mS ±5% (Terminal FA 3V)</p>	VR9 (VR18)	Level
		<ul style="list-style-type: none"> ● EG-VCF block Set the ATTACK TIME so that 3V may be present at the terminal FA. 		<p>2. Adjust the VR8 (VR17) in such a way that, with any key is depressed, T in Fig. 2 will become still longer when the obtained value was longer than the standard length of 125mS, and conversely T will become still shorter when the obtained value was shorter than the foregoing standard length.</p> <p>After the adjustment above has been completed, again carry out the adjustment as described in paragraph 1 above.</p>	VR8 (VR17)
3) Zero level adjustment			<p>3. After the adjustment as described in paragraph 2 above has been completed, adjust the zero level of the output waveform of TP2 (TP4) using the VR7 (VR16). Make sure that the key is turned OFF during the adjustment above.</p>	VR7 (VR16)	

FA Circuit Board

Name of Circuit	TEST POINT	Setting condition	Adjustment (measurement) value	Adjusting VR	Remarks
EG-VCA Circuit 1) Level adjustment 2) ATTACK TIME adjustment	TP6 TP8	<ul style="list-style-type: none"> ● VCA block MOD. DEPTH 0 INITIAL LEVEL..0 ● EG-VCA block DECAY TIME..... S SUSTAIN LEVEL 0 RELEASE TIME S <p>Operate the ATTACK TIME so that 8V may be present at the terminal AA (C1-4).</p> <ul style="list-style-type: none"> ● EFFECT UNISON ON 	<p>1. Carry out the level adjustment using the VR26 (VR34) so that the waveform as indicated in Fig. 3 may appear at TP6 (TP8) with any key is depressed.</p> <p>Furthermore, adjust the VR23 (VR31) so that the length of T may become 4mS.</p>	VR26 (VR34) VR23 (VR31)	Level T
	3) Zero level adjustment		<p>Operate the ATTACK TIME so that 3V may be present at the terminal AA.</p>	<p>2. Adjust the VR25 (VR33) in such a way that, with any key is depressed, T in Fig. 3 will become still longer than the standard length of 125mS, and conversely T will become still shorter when the obtained value was shorter than the foregoing standard length. After the adjustment above has been completed, again carry out the adjustment as described in paragraph 1 above.</p> <p>3. After the adjustments as described in paragraphs 1 and 2 above have been completed, adjust the zero level of the output waveform of TP6 (TP8) using the VR24 (VR32). Make sure that the key is turned OFF during the adjustment above.</p>	VR25 (VR33) VR24 (VR32)



$$T = 4\text{mS} \pm 5\% \text{ (Terminal AA 8V)}$$

$$= 125\text{mS} \pm 5\% \text{ (Terminal AA 3V)}$$

IF Circuit Board

Name of Circuit	TEST POINT	Setting condition	Adjustment (measurement) value	Adjusting VR	Remarks
VCF MODULATION	F (C7-2)	<ul style="list-style-type: none"> ● VCF block MOD. FUNCTION ~ MOD. DEPTH 10 ● EFFECT block MODULATION WHEEL 0 	<p>Adjust the VR1 so that sine waves at the terminal ~ (C5-8) and the terminal F may have the same level.</p> <p>(Reference information) When the MOD. FUNCTION is switched progressively, ensure that those waveforms appearing at the input terminal and the terminal F have the same level.</p>	VR1	
VCA MODULATION	A (C7-3)	<p>VCA block</p> <p>MOD. FUNCTION ~</p> <p>MOD. DEPTH 10</p>	<p>Adjust the VR2 so that sine waves at the terminal ~ (C5-8) and the terminal A may have the same level.</p> <p>(Reference information) When the MOD. FUNCTION is switched progressively, ensure that those waveforms appearing at the input terminal and the terminal A have the same level.</p>	VR2	

PL Circuit Board

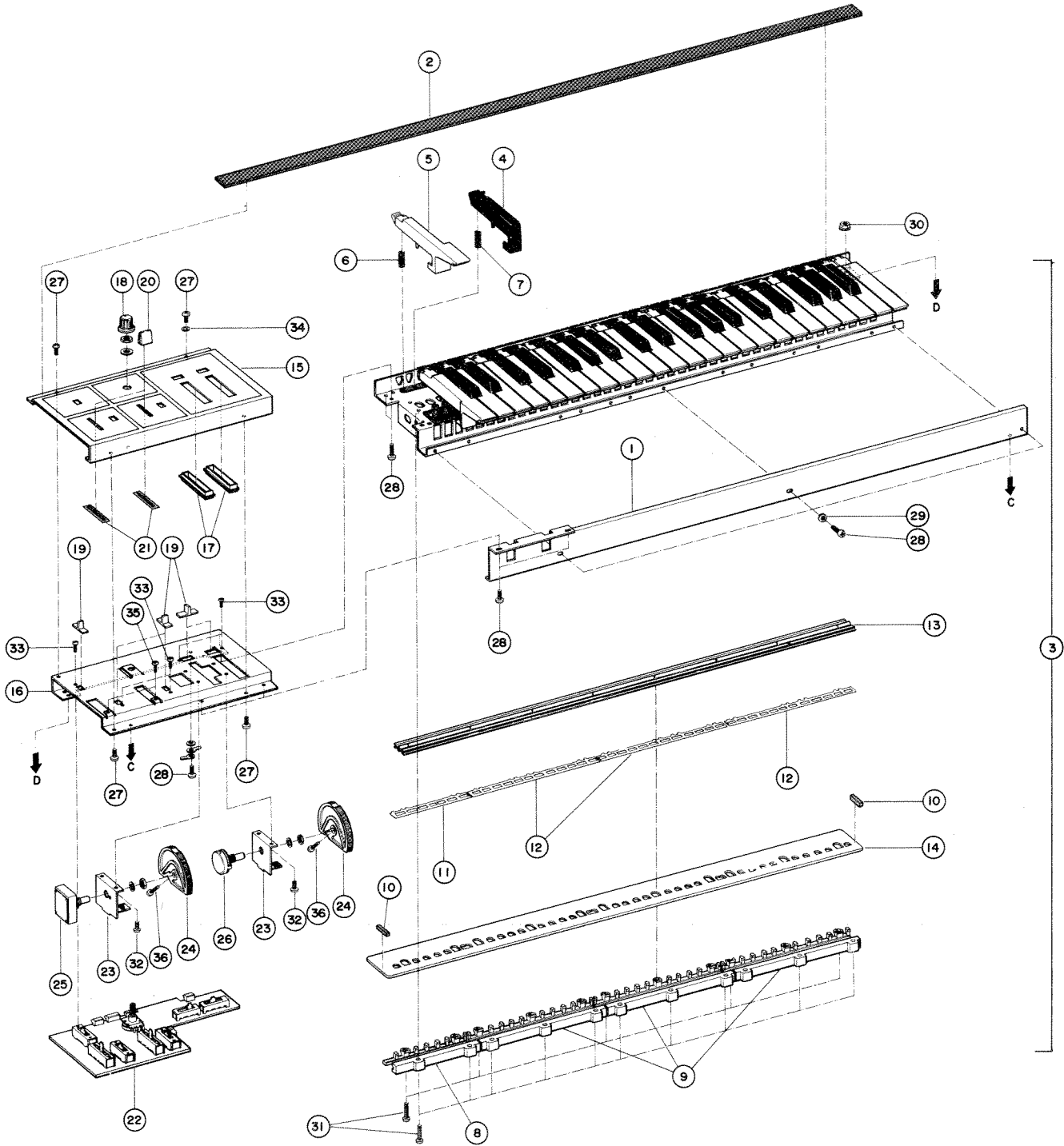
Name of Circuit	TEST POINT	Setting condition	Adjustment (measurement) value	Adjusting VR	Remarks								
Key Volt Generator Circuit	TP1	<ul style="list-style-type: none"> ● EFFECT block LIMITER OCTAVE FIFTH THIRD 	$-2 \pm 0.002V$ $-0.997 \pm 0.003V$ $-0.520 \pm 0.003V$	VR1									
	TP2	The same above.	$+1 \pm 0.001V$ $+0.665 \pm 0.003V$ $+0.413 \pm 0.003V$	VR2									
	VR (C2-6)	LIMITER OCTAVE	Set TP3 at 0V. (This 0V should be obtained at the center detent position.) Adjust the VR3 so that $2 \pm 0.001V$ may be present at the terminal VR.	VR3									
Modulation Buffer Circuit	MO (C2-7) MF (C2-8)	<ul style="list-style-type: none"> ● EFFECT block MODULATION WHEEL MAX MODE VCO VCO + VCF VCF 	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; text-align: center;">MO</td> <td style="width: 50%; text-align: center;">MF</td> </tr> <tr> <td style="text-align: center;">$10.2 \pm 1V$</td> <td style="text-align: center;">$0.6 \pm 0.1V$</td> </tr> <tr> <td style="text-align: center;">$10.2 \pm 1V$</td> <td style="text-align: center;">$10.2 \pm 1V$</td> </tr> <tr> <td style="text-align: center;">$0.6 \pm 0.1V$</td> <td style="text-align: center;">$10.2 \pm 1V$</td> </tr> </table>	MO	MF	$10.2 \pm 1V$	$0.6 \pm 0.1V$	$10.2 \pm 1V$	$10.2 \pm 1V$	$0.6 \pm 0.1V$	$10.2 \pm 1V$		
MO	MF												
$10.2 \pm 1V$	$0.6 \pm 0.1V$												
$10.2 \pm 1V$	$10.2 \pm 1V$												
$0.6 \pm 0.1V$	$10.2 \pm 1V$												
Sustain Control Circuit	FRO (C2-2) ARO (C2-4)	<ul style="list-style-type: none"> ● EFFECT block SUSTAIN S ● VCF block RELEASE TIME S ● VCA block RELEASE TIME... S 	At both terminals FRO and ARO → $+10 \pm 1V$ SUSTAIN When set at L, → $0 \pm 1V$										
		When the FSS (C2-1) is set at 0V:	At both terminals FRO and ARO → $+10 \pm 1V$										

PROGRAMMABLE MEMORY SYNTHESIZER

CS-40M

PARTS LIST

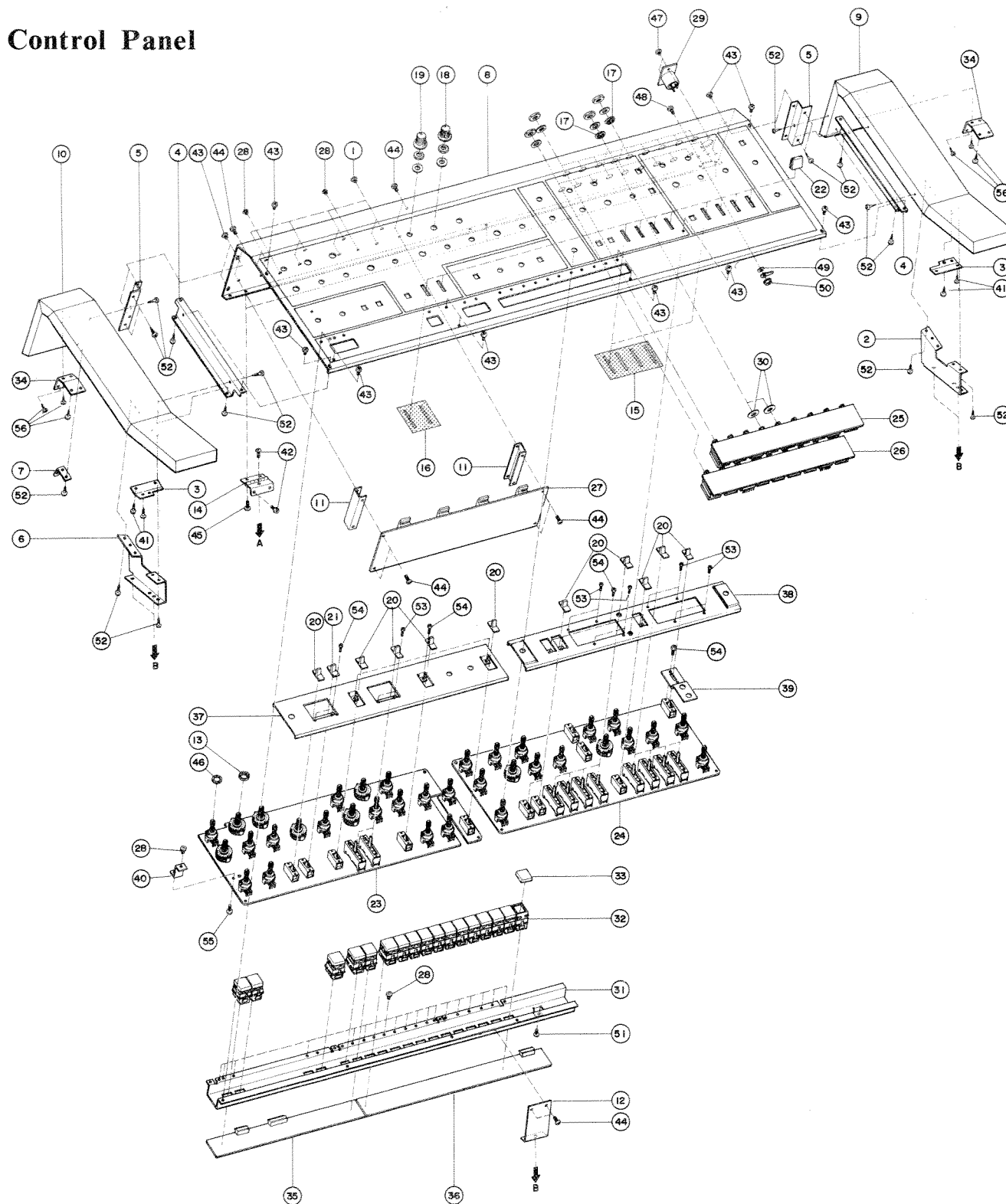
Keyboard



Ref. No.	Part No.	Description	(部 品 名)	Remarks	Common model
※	1 30 10 00 AA 81 13 10	Front Rail	口 金		
※	2 40 10 00 CC 01 47 10	Felt 15 x 845 x 1	フ ェ ル ト		
	3 30 10 00 NB 81 32 50	Keyboard Assembly	フ レ ー ム Ass'y		
	4 30 10 00 CB 01 12 30	Black Key	黒 鍵		
	5 30 10 00 CB 01 11 70	White Key C, F	白 鍵		
	30 10 00 CB 01 11 80	" D, F	"		
	30 10 00 CB 01 11 90	" B, E	"		
	30 10 00 CB 01 12 00	" G	"		
	30 10 00 CB 01 12 10	" A	"		
	30 10 00 CB 01 12 20	" C'	"		
	6 30 10 00 AA 01 56 70	Key Spring, White Key	キ ー ス ブ リ ン グ		
	7 30 10 00 AA 01 56 80	" , Black Key	"		
	8 30 10 00 CB 03 23 90	Holder, Circuit Board (H)	基 板 ホ ル ダ ー H		C-100
	9 30 10 00 CB 03 24 00	" , " (Q)	" Q		"
	10 40 10 00 CB 03 35 40	End Plate	エ ン ド プ レ ー ト		
	11 30 10 00 CB 03 35 60	Isolation Spacer (H)	絶 縁 ス ペ ー サ H		C-100
	12 30 10 00 CB 03 35 70	" (Q)	" Q		"
※	13 40 10 00 CB 81 41 70	Moving Electric Conductive Rubber	可 動 導 電 ゴ ム		
※	14 30 10 00 NA 80 54 10	MK Board # 84831	M K シ ー ト		
※	15 30 10 00 AA 81 13 30	End Block (L)	拍 子 木 (左)		
※	16 30 10 00 AA 81 13 20	Sub-Panel, End Block	拍 子 木 サ ブ パ ネ ル		
※	17 30 10 00 CB 81 40 10	Escutcheon, Controller	エ ス カ ッ シ ョ ン		
	18 30 56 00 CB 81 21 40	Knob, Rotary VR - Ivory -	つ ま み		EM-200
※	19 30 10 00 CB 81 46 90	" , Slide SW - " -	"		
※	20 30 10 00 CB 81 40 40	" , Slide VR	"		
	21 40 10 00 CA 80 17 10	Dust Proof Cover, Slide VR	防 塵 ク ロ ス		
※	22 30 12 56 NA 80 49 00	PL Board # 84132	P L シ ー ト		
※	23 30 10 00 AA 81 12 90	Frame	フ レ ー ム		
※	24 30 10 00 CB 81 40 50	Wheel	ホ イ ー ル		
※	25 40 10 00 HR 50 00 20	Variable Resistor (Pitch) B-10K Ω	ロ ー タ リ ー V R		
※	26 40 10 00 HS 42 03 00	" (MOD) D-10K Ω	"		
	27 40 10 00 Ei 33 00 60	Bind Head Tapping Screw M3 x 6	バ イ ン ド タ ッ ピ ン グ ネ ジ	ZMC2-BI	
	28 40 10 00 Ei 34 01 00	" M4 x 10	"	"	
	29 40 10 00 EV 31 44 00	Toothed Lock Washer A4S	歯 付 座 金	"	
	30 40 10 00 EK 80 06 20	Flange Nut M4	フ ラ ン ジ ナ ッ ト	ZMC2-y	
	31 40 10 00 EZ 33 01 40	Bind Head Screw M3 x 14	エ ー バ ー タ イ ト バ イ ン ド ネ ジ		
	32 40 10 00 EA 03 00 50	Pan Head Screw M3 x 5	ナ ベ 小 ネ ジ	ZMC2-y	
	33 40 10 00 EA 02 60 40	" M2.6 x 4	"	"	
	34 40 10 00 EV 41 00 30	Toothed Lock Washer A3S	歯 付 座 金	ZMC2-BI	
	35 40 10 00 EA 02 00 40	Pan Head Screw M2 x 4	ナ ベ 小 ネ ジ	ZMC2-y	
	36 40 10 00 EA 03 01 80	" M3 x 18	"	"	

※ : New Part (新部品)

Control Panel



Ref. No.	Part No.	Description	(部 品 名)	Remarks	Common model
* 1	30 10 00 CB 81 40 60	Rubber Cap	ゴムキャップ		
* 2	30 10 00 AA 81 11 80	Side Arm Bracket (R)	腕木固定金具(右)		
* 3	30 10 00 AA 81 13 00	Support Angle	補強金具		
* 4	30 10 00 AA 81 11 50	Panel Bracket (Large)	パネル取付金具(大)		

* : New Part (新部品)

Ref. No.	Part No.	Description	(部 品 名)	Remarks	Common model
※	5 30 10 00	AA 81 11 60	Panel Bracket (Small)	パネル取付金具(小)	
※	6 30 10 00	AA 81 15 30	Side Arm Bracket (L)	腕木固定金具(左)	
※	7 30 10 00	AA 81 12 20	Prop Holder	引掛 け 金 具	
※	8 30 10 00	AA 81 13 70	Control Panel	コントロールパネル	
※	9 30 12 56	00 00 00 30	Side Arm (R)	腕 木 集 成 (右)	
※	10 30 12 56	00 00 00 20	" (L)	" (左)	
※	11 30 10 00	AA 81 12 70	C. B Holder	シ ー ト 受 け 金 具	
※	12 30 10 00	AA 81 12 50	Stay	ス テ イ	
※	13 30 10 00	AA 80 58 20	Spacer	ス ペ ー サ ー	
※	14 30 10 00	AA 81 12 40	Hinge	蝶 番	
※	15 40 10 00	CA 80 20 20	Dust Proof Cover	防 塵 ク ロ ス	
※	16 40 10 00	CA 80 20 30	"	"	
※	17 30 56 00	CB 81 00 90	Isolation Nut	絶 縁 ナ ッ ト	EM-120
※	18 30 56 00	CB 81 21 30	Knob, Rotary VR - Yellow -	つ ま み	EM-200
※	19 30 56 00	CB 81 21 40	" , Rotary SW - Ivory -	"	
※	20 30 10 00	CB 81 46 80	" , Slide SW - Yellow -	"	
※	21 30 10 00	CB 81 46 90	" , " - Ivory -	"	
※	22 30 10 00	CB 81 40 40	" , Slide VR	"	
※	23 30 12 56	NA 80 48 20	PA Board # 84052	P A シ ー ト	
※	24 30 12 56	NA 80 48 30	PB " # 84062	P B "	
※	25 30 12 00	NA 80 49 30	JK1 " # 84161	J K 1 "	
※	26 30 12 00	NA 80 50 20	JK2 " "	J K 2 "	
※	27 30 12 56	NA 80 48 40	VCO " # 84072	V C O "	
※	28 40 10 00	iF 00 13 10	LED TLR102KB	L E D	CS-5
※	29 40 10 00	LB 30 01 60	Cannon-type Connector XLR-3-32	キャノンソケット	PM-400
※	30 40 10 00	EK 00 23 70	Washer	ファイバーワッシャー	
※	31 30 10 00	AA 81 13 60	SW Holder	プリセットSW取付金具	
※	32 40 10 00	KA 90 14 00	Push Switch SPA	照 光 式 ス イ ッ チ	
※	33 40 10 00	CB 81 42 10	Button (Red)	つ ま み (赤)	
※	40 10 00	CB 81 42 20	" (White)	" (白)	
※	34 30 10 00	AA 81 27 40	Angle	補 強 ア ン グ ル	
※	35 30 12 00	NA 80 49 10	BL Board # 84141	B L シ ー ト	
※	36 30 12 00	NA 80 49 20	BR " # 84151	B R "	
※	37 30 10 00	AA 81 13 40	Sub-Panel, PA Board	P A サ ブ パ ネ ル	
※	38 30 10 00	AA 81 13 50	" , PB "	P B "	
※	39 30 10 00	AA 81 15 00	Switch Holder	ス イ ッ チ 取 付 金 具	
※	40 30 10 00	AA 81 11 90	LED Holder	L E D 金 具	
※	41 40 10 00	EP 03 11 30	Flat Head Wood Screw M3.1 x 13	皿 木 ネ ジ	ZMC2-y
※	42 40 10 00	Ei 33 01 20	Bind Head Tapping Screw M3 x 12	バインドタッピングネジ	ZMC2-BI
※	43 40 10 00	EC 33 00 50	Truss Head Screw M3 x 5	ト ラ ス 小 ネ ジ	"
※	44 40 10 00	ED 33 00 80	Bind Head Screw M3 x 8	バインド小ネジ	"
※	45 40 10 00	Ei 33 00 60	Bind Head Tapping Screw M3 x 6	バインドタッピングネジ	"
※	46 40 10 00	EV 41 00 70	Toothed Lock Washer A7S	歯 付 座 金	ZMC2-y
※	47 40 10 00	EM 13 00 60	Oval Head Tapping Screw M3 x 6	丸皿タッピングネジ	FNM3-3g
※	48 40 10 00	ED 34 01 00	Bind Head Screw M4 x 10	バインド小ネジ	ZMC2-BI
※	49 40 10 00	EV 31 44 00	Toothed Lock Washer A4S	歯 付 座 金	"
※	50 40 10 00	EK 80 06 20	Flange Nut M4	フ ラ ン ジ ナ ッ ト	"
※	51 40 10 00	EA 03 00 60	Pan Head Screw M3 x 6	ナ ベ 小 ネ ジ	ZMC2-y
※	52 40 10 00	EQ 03 11 30	Round Head Wood Screw M3.1 x 13	丸 木 ネ ジ	"
※	53 40 10 00	EA 02 00 40	Pan Head Screw M2 x 4	ナ ベ 小 ネ ジ	(PA) (PB) ZMC2-y
※	54 40 10 00	EA 02 60 40	" M2.6 x 4	"	"
※	55 40 10 00	ED 03 00 60	Bind Head Screw M3 x 6	バインド小ネジ	(PA) ZMC2-y

※ : New Part (新部品)

Ref. No.	Part No.	Description	(部 品 名)	Remarks	Common model
※	30 12 56 00 00 00 10	Bottom Frame Ass'y	底 枠 集 成		
※	1 30 12 56 NA 80 48 90	DM Board # 84121	D M シ ー ト		
※	2 30 12 56 NA 80 48 60	FA " # 84093	F A "		
※	3 30 12 56 NA 80 48 80	PGM " # 84114	P G M "		
※	4 30 12 56 NA 80 48 50	MOD " # 84082	M O D "		
※	5 30 12 56 NA 80 48 00	SK " # 84031-1/2	S K "		
※	6 30 12 56 NA 80 48 70	IF " # 84031-2/2	I F "		
	7 30 10 00 AA 81 14 00	Battery Cover	バ ッ テ リ ー カ バ ー		
	8 30 10 00 AA 81 12 60	Battery Bottom Cover	フ タ	J	
	30 10 00 AA 81 26 00	"	"	U, C, G	
	9 40 10 00 LB 40 01 00	Phone Jack LJ-070	フ ォ ー ン ジ ャ ッ ク		
※	10 30 10 00 CB 81 42 30	Phone Panel	フ ォ ー ン パ ネ ル		
	11 40 10 00 MG 00 05 60	A.C. Cord	電 源 コ ー ド	J	
	40 10 00 MG 00 05 80	"	"	U, C	
	40 10 00 MG 00 03 60	"	"	G	PM1000
※	12 40 10 00 CB 81 42 40	Battery Case	電 池 ケ ー ス		
	14 30 54 00 AA 80 25 40	Holder, Stay	ス テ ー 押 え 金 具		PM-700
	15 30 56 00 AA 81 00 50	Radiator Grille	放 熱 グ リ ル		EM100-2
※	16 30 10 00 AA 81 12 10	Angle	ア ン グ ル		
※	17 30 10 00 AA 81 12 30	Stay	ス テ イ		
※	18 30 10 00 CB 81 40 70	Shaft Holder (R)	軸 受 (右)		
※	19 30 10 00 CB 81 40 80	" (L)	" (左)		
	20 30 54 00 CB 80 12 70	Leg	ゴ ム 脚		PM200B
	21 30 10 00 CB 81 14 30	Bush	ブ ッ シ ュ		
	22 30 56 00 CB 08 70 00	Circuit Board Holder	シ ー ト ホ ル ダ ー		EM-200
※	23 30 10 00 CB 81 47 00	Rubber Bush	ゴ ム ボ タ ン		
※	24 30 10 00 AA 81 13 80	Power Supply Unit Chassis	電 源 シ ャ ー シ	J, U, C	
※	30 10 00 AA 81 13 90	"	"	G	
	25 40 10 00 AA 03 15 80	Fuse Holder Washer	ヒ ュ ー ズ ホ ル ダ ー ワ ッ シ ー	G	
※	26 40 10 00 CB 81 42 50	Stopper, Slide SW	ス ト ッ パ ー	G	
	27 30 56 00 CB 01 09 80	Spacer	ス ペ ー サ ー		
	28 40 10 00 LB 30 05 60	A.C. Connector	A C コ ネ ク タ ー		
	29 40 10 00 LB 20 04 90	Fuse Holder SN-2052	ヒ ュ ー ズ ホ ル ダ ー	J, U, C	
	40 10 00 LB 20 05 90	" FEB031, 1401	"	G	
	30 40 10 00 KA 40 04 10	Slide Switch	ス ラ イ ド S W	G	
	31 40 10 00 KA 30 04 30	Toggle Switch CTA11	ト グ ル S W	J, U, C	J-15 35B
	40 10 00 KA 30 03 70	" 3902B	"	G	EM200
	32 40 10 00 KB 00 03 30	Fuse 1.0A 250V	ヒ ュ ー ズ	J	
	40 10 00 KB 00 06 60	" 400MA 250V	"	G	
	40 10 00 KB 00 10 60	" 1.0A 250V	"	U, C	
	33 40 10 00 FZ 00 01 10	Spark Suppressor Capacitor 0.33+120Ω500V	ス パ ー ク キ ラ ー	J, U	
	40 10 00 FZ 00 09 50	" S1201	"	C	
	34 40 10 00 CB 07 21 90	Cover, Spark Suppressor Capacitor	コ ン デ ン サ カ バ ー	J, U	A-55
	40 10 00 CB 07 98 90	Cover, "	"	C	
※	35 40 10 00 GA 81 38 00	Power Transformer	電 源 ト ラ ン ス	J	
※	40 10 00 GA 81 51 00	"	"	U, C	
※	40 10 00 GA 81 52 00	"	"	G	
※	36 30 12 00 NA 80 48 10	DC Board # 84041	D C シ ー ト	J	
※	30 12 00 NA 80 54 20	" "	D C "	U, C	
※	30 12 00 NA 80 54 30	" "	D C "	G	
※	37 30 10 00 AA 81 11 70	C. B. Frame	回 転 フ レ ー ム		
※	38 30 10 00 AA 81 12 00	Hinge	蝶 番		

※: New Part (新部品)

Ref. No.	Part No.	Description	(部 品 名)	Remarks	Common model
39	30 10 00 AA 81 15 60	C. B. Spacer	基 板 金 具		
40	30 10 00 AA 81 12 80	C. B. Holder	シ ー ト ホ ル ダ ー		
41	40 10 00 Ei 33 01 60	Bind Head Tapping Screw M3 x 16	バ イ ン ド タ ッ ピ ン グ ネ ジ	ZMC2-BI	
42	40 10 00 EV 20 30 40	Flat Washer 4S	平 座 金	"	
43	40 10 00 EP 03 11 00	Flat Head Wood Screw M3.1 x 10	皿 木 ネ ジ	ZMC2-y	
44	40 10 00 EQ 03 51 30	Round Head Wood Screw M3.5 x 13	丸 木 ネ ジ	"	
45	40 10 00 EQ 33 11 00	" M3.1 x 10	"	ZMC2-BI	
46	40 10 00 EV 20 00 40	Flat Washer 4S	平 座 金	ZMC2-y	
47	40 10 00 EQ 03 11 00	Round Head Wood Screw M3.1 x 10	丸 木 ネ ジ	"	
48	40 10 00 ED 35 03 00	Bind Head Screw M5 x 30	バ イ ン ド 小 ネ ジ	FCM3-BI	
49	40 10 00 ED 33 00 80	" M3 x 8	"	ZMC2-BI	
50	40 10 00 EL 34 01 40	Sems Screw M4 x 14	セ ム ス 小 ネ ジ	"	
51	40 10 00 EA 33 01 60	Pan Head Screw M3 x 16	ナ ベ 小 ネ ジ	"	
52	40 10 00 EV 20 30 50	Flat Washer A5S	平 座 金	"	
53	40 10 00 EM 33 11 20	Oval Head Tapping Screw M3.1 x 12	丸 皿 タ ッ ピ ン グ ネ ジ	"	
54	30 10 00 CB 81 29 20	Cable Clip	グ リ ッ プ 型 止 メ 輪		
55	40 10 00 EA 04 00 80	Pan Head Screw M4 x 8	ナ ベ 小 ネ ジ	ZMC2-y	
56	40 10 00 EA 33 00 60	" M3 x 6	"	ZMC2-BI	
57	40 10 00 EA 03 01 50	" M3 x 15	"	ZMC2-y	
58	40 10 00 EV 43 00 40	Toothed Lock Washer A4S	歯 付 座 金	"	
59	40 10 00 Ei 33 01 20	Bind Head Tapping Screw M3 x 12	バ イ ン ド タ ッ ピ ン グ ネ ジ	ZMC2-BI	
60	40 10 00 Ei 33 00 60	" M3 x 6	"	"	
61	40 10 00 EL 04 00 80	Sems Screw M4 x 8	セ ム ス 小 ネ ジ	ZMC2-y	
62	40 10 00 EK 80 06 20	Flange Nut M4	フ ラ ン ジ ナ ッ ト	ZMC2-BI	
63	40 10 00 EA 34 02 00	Pan Head Screw M4 x 20	ナ ベ 小 ネ ジ	"	
64	40 10 00 EV 31 44 00	Toothed Lock Washer A4S	歯 付 座 金	"	
65	40 10 00 ED 03 00 80	Bind Head Screw M3 x 8	バ イ ン ド 小 ネ ジ	ZMC2-y	
66	40 10 00 ED 03 00 60	" M3 x 6	"	"	

※ : New Part (新部品)

Ref. No.	Part No.	Description	(部 品 名)	Remarks	Common model
※	30 12 56 NA 80 48 00	SK, IF Board	# 84031	S K , I F シ ー ト	
※	30 12 56 NA 80 48 20	PA "	# 84052	P A "	
※	30 12 56 NA 80 48 30	PB "	# 84062	P B "	
※	30 12 56 NA 80 48 40	VCO "	# 84072	V C O "	
※	30 12 56 NA 80 48 50	MOD "	# 84082	M O D "	
※	30 12 56 NA 80 48 60	FA "	# 84093	F A "	
※	30 12 56 NA 80 48 80	PGM "	# 84114	P G M "	
※	30 12 56 NA 80 48 90	DM "	# 84121	D M "	
※	30 12 56 NA 80 49 00	PL "	# 84132	P L "	
※	30 12 00 NA 80 49 10	BL "	# 84141	B L "	
※	30 12 00 NA 80 49 20	BR "	# 84151	B R "	
※	30 12 00 NA 80 49 30	JK1 "	# 84161	J K 1 "	
※	30 12 00 NA 80 50 20	JK2 "	"	J K 2 "	
※	30 10 00 NA 80 54 10	MK "	# 84831	M K "	
※	30 12 00 NA 80 48 10	DC "	# 84041	D C "	J
※	30 12 00 NA 80 54 20	DC "	"	D C "	U, c
※	30 12 00 NA 80 54 30	DC "	"	D C "	G
※	40 10 00 FD 31 21 00	Polystyrene Capacitor	(K) 100pF	スチロールコンデンサ	
	40 10 00 FF 04 31 20	"	(J) 1,200pF	"	
	40 10 00 FM 09 71 00	Nonpolar Capacitor	16V 10μF	N P コ ン デ ン サ	
	40 10 00 FM 61 61 00	"	50V 1μF	"	
	40 10 00 FP 33 63 30	Tantalum Capacitor	16V 3.3μF	タンタルコンデンサ	
	40 10 00 FP 34 51 50	"	25V 0.15μF	"	
	40 10 00 FP 34 61 50	"	25V 1.5μF	"	
	40 10 00 FP 35 52 20	"	35V 0.22μF	"	
	40 10 00 FP 35 61 00	"	35V 1μF	"	
	40 10 00 FP 33 71 00	"	16V 10μF	"	
	40 10 00 FP 34 61 00	"	25V 1μF	"	
	40 10 00 FT 21 52 20	Polypropylene Capacitor	0.22μF	ポリプロピレンコンデンサ	
	40 10 00 GD 90 02 50	Out Put Transformer		出 カ ト ラ ン ス	
	40 10 00 Hi 20 99 90	Solid Resistor	(K) 10MΩ	ソ リ ッ ド 抵 抗	
	40 10 00 HL 31 24 70	Metal Oxide Film Resistor	1W 0.47Ω	酸 化 金 属 被 膜 抵 抗	
	40 10 00 HL 31 51 50	"	1W 150Ω	"	
	40 10 00 HL 31 54 70	"	1W 470Ω	"	
	40 10 00 HL 32 36 80	"	2W 6.8Ω	"	
	40 10 00 HQ 42 00 30	Slide Variable Resistor	B-10KΩ	ス ラ イ ド V R	
	40 10 00 HQ 42 00 60	"	C-10KΩ	"	
	40 10 00 HS 31 05 50	Variable Resistor	16φ A-10KΩ	可 変 抵 抗 器	
	40 10 00 HS 31 05 70	"	16φ B-10KΩ	"	
	40 10 00 HS 31 07 30	"	B-10KΩ	"	Center-tap
※	40 10 00 HT 19 00 10	Semi Variable Resistor	B-500Ω	半 固 定 抵 抗	V10K8-4-2 CS-40M
	40 10 00 HT 19 00 40	"	B-5KΩ	"	"

※ : New Part (新部品)

Ref. No.	Part No.	Description	(部 品 名)	Remarks	Common model
	40 10 00 HT 19 00 50	Semi Variable Resistor	B-10K Ω	半 固 定 抵 抗	V10K8-4-2
	40 10 00 HT 19 00 60	"	B-20K Ω	"	"
	40 10 00 HT 19 00 80	"	B-100K Ω	"	"
	40 10 00 HT 19 00 90	"	B-100K Ω	"	"
	40 10 00 HT 19 01 00	"	B-500K Ω	"	"
	40 10 00 HT 19 01 30	"	B-2K Ω	"	"
	40 10 00 HT 56 00 70	"	B-10K Ω	"	3321H-1
	40 10 00 HT 69 00 10	"	B-5K Ω	"	RJ9W
※	40 10 00 HT 69 00 20	"	B-500K Ω	"	"
	40 10 00 HU 57 53 00	Metal Film Resistor	1% 300 Ω	金 属 被 膜 抵 抗	
	40 10 00 HU 57 53 30	"	" 330 Ω	"	
	40 10 00 HU 57 61 00	"	" 1K Ω	"	
	40 10 00 HU 57 63 30	"	" 3.3K Ω	"	
	40 10 00 HU 57 65 10	"	" 5.1K Ω	"	
	40 10 00 HU 57 68 20	"	" 8.2K Ω	"	
	40 10 00 HU 57 71 00	"	" 10K Ω	"	
	40 10 00 HU 57 71 50	"	" 15K Ω	"	
	40 10 00 HU 57 71 80	"	" 18K Ω	"	
	40 10 00 HU 57 72 00	"	" 20K Ω	"	
	40 10 00 HU 57 72 20	"	" 22K Ω	"	
	40 10 00 HU 57 73 00	"	" 30K Ω	"	
	40 10 00 HU 57 73 90	"	" 39K Ω	"	
	40 10 00 HU 57 74 70	"	" 47K Ω	"	
	40 10 00 HU 57 81 20	"	" 120K Ω	"	
	40 10 00 HU 57 81 50	"	" 150K Ω	"	
	40 10 00 HU 59 51 00	"	0.1% 100 Ω	"	
	40 10 00 HU 59 61 00	"	" 1K Ω	"	
	40 10 00 HU 59 65 00	"	" 5K Ω	"	
	40 10 00 HU 59 71 00	"	" 10K Ω	"	
※	40 10 00 HU 59 71 30	"	" 13K Ω	"	
※	40 10 00 HU 59 71 40	"	" 14K Ω	"	
	40 10 00 HU 59 72 00	"	" 20K Ω	"	
	40 10 00 HU 59 74 00	"	" 40K Ω	"	
	40 10 00 HU 59 78 00	"	" 80K Ω	"	
	40 10 00 HU 59 81 00	"	" 100K Ω	"	
	40 10 00 HU 59 81 60	"	" 160K Ω	"	
	40 10 00 HZ 00 11 40	Metal Film Resistor	0.1% 29.94K Ω	金 属 被 膜 抵 抗	
	40 10 00 HZ 00 11 50	"	" 1.684K Ω	"	
※	40 10 00 HZ 00 12 10	"	" 252.6	"	
※	40 10 00 HZ 00 12 20	"	" 334.8	"	
※	40 10 00 HZ 00 12 30	"	" 412.6	"	
※	40 10 00 HZ 00 12 40	"	" 476.8	"	
※	40 10 00 HZ 00 12 50	"	" 519.8	"	
※	40 10 00 HZ 00 12 60	"	" 1.005K Ω	"	
※	40 10 00 HZ 00 12 70	"	" 2.414K Ω	"	
※	40 10 00 HZ 00 12 80	"	" 8.243K Ω	"	
	40 10 00 iA 04 90 10	Transistor	2SA490 (Y)	ト ラ ン ジ ス タ	
※	40 10 00 iA 09 50 00	"	2SA950 (Y)	"	
	40 10 00 iA 10 15 20	"	2SA1015 (Y)	"	
	40 10 00 iC 18 15 20	"	2SC1815 (Y)	"	

※ : New Part (新部品)

Ref. No.	Part No.	Description	(部 品 名)	Remarks	Common model
※	40 10 00 iC 21 20 00	Transistor	2SC2120 (Y)	ト ラ ン ジ ス タ	
	40 10 00 iD 02 35 10	"	2SD235 (Y)	"	
	40 10 00 iE 00 00 10	FET	2SK30A (Y)	F E T	
	40 10 00 iE 10 12 00	"	2SK105 (F)	"	
	40 10 00 iF 00 13 10	LED	TLR102KB	L E D	
	40 10 00 iF 00 00 10	Diode	1N34A	ダ イ オ ー ド	
	40 10 00 iF 00 00 40	"	1S1555	"	
	40 10 00 iF 00 03 00	"	1S1715P	"	
	40 10 00 iH 00 02 80	"	1D2C1	"	
	40 10 00 iH 00 02 90	"	1D2Z1	"	
※	40 10 00 iF 00 16 60	Zenor Diode	RD3.6EB1	ツェナーダイオード	
※	40 10 00 iF 00 16 70	"	RD6.8EB2	"	
※	40 10 00 iF 00 16 80	"	RD9.1EB3	"	
※	40 10 00 iF 00 16 90	"	RD5.6EB3	"	
※	40 10 00 iF 00 17 00	"	RD15EB3	"	
	40 10 00 iF 00 19 00	"	02BZ3.3	"	
	40 10 00 iG 00 11 80	I C	TC4013BP	I C	D-F/F x 2
	40 10 00 iG 00 12 10	"	μA310H	"	OP Amp
	40 10 00 iG 00 12 40	"	TC4011BP	"	NAND
	40 10 00 iG 00 12 60	"	TC4049BP	"	Inverter
	40 10 00 iG 00 13 90	"	NJM4558DV	"	OP Amp
	40 10 00 iG 00 14 10	"	BA617	"	VCO
	40 10 00 iG 00 14 40	"	TC4071BP	"	OR
	40 10 00 iG 00 15 00	"	iG00150	"	VCO II
	40 10 00 iG 00 15 10	"	iG00151	"	VCA
	40 10 00 iG 00 15 30	"	iG00153	"	VCO III
	40 10 00 iG 00 15 60	"	iG00156	"	(+) VCF
	40 10 00 iG 00 15 80	"	iG00158	"	WSC
	40 10 00 iG 00 15 90	"	iG00159	"	EG-VCA
	40 10 00 iG 00 16 00	"	BA634	"	Divider
	40 10 00 iG 00 16 20	"	μA796HC	"	Ring MOD.
	40 10 00 iG 00 16 90	"	TC4016BP	"	Analog SW
	40 10 00 iG 00 17 20	"	TC4069UBP	"	Inverter
	40 10 00 iG 00 17 40	"	TC4050BP	"	Buffer
	40 10 00 iG 00 17 60	"	TC4081BP	"	AND
	40 10 00 iG 00 17 90	"	TC4030BP	"	EX-OR
	40 10 00 iG 02 55 00	"	TA7504S	"	OP Amp
	40 10 00 iG 02 56 00	"	TA7505M	"	OP Amp
	40 10 00 iG 02 57 00	"	TC4017BP	"	Counter
	40 10 00 iG 03 11 00	"	M54516P	"	Tr Array
	40 10 00 iG 03 25 00	"	TA7531M	"	OP Amp
※	40 10 00 iG 03 55 00	"	TC4028BP	"	DECODER
※	40 10 00 iG 03 56 00	"	TC4532BP	"	8bit Encoder
※	40 10 00 iG 03 57 00	"	TC4075BP	"	3 Input OR
※	40 10 00 iG 03 58 00	"	TC40175BP	"	D-F/F
※	40 10 00 iG 03 59 10	"	M58981S-45	"	RAM
※	40 10 00 iG 03 61 00	"	NJM2901	"	Comparator
※	40 10 00 iG 03 62 00	"	μPC271C	"	Comparator
※	40 10 00 iG 03 63 00	"	TC4072BP	"	4 input OR

※ : New Part (新部品)

Ref. No.	Part No.	Description	(部 品 名)	Remarks	Common model
※	30 10 00 IT 61 50 00	I C	YM615	I C	SKA
※	30 10 00 IT 61 60 00	"	YM616	"	Controller
※	30 10 00 IT 61 70 00	"	YM617	"	SMD
※	40 10 00 IK 00 02 60	Photo-Coupler	P873-G35-201B	フ ォ ト カ プ ラ ー	
	40 10 00 KA 40 03 60	Slide Switch	3 contacts	ス ラ イ ド S W 3 接 点	
	40 10 00 KA 40 05 90	"	3 "	" 3 "	
	40 10 00 KA 40 06 00	"	2 "	" 2 "	
	40 10 00 KA 50 10 80	Rotary Switch	6 contacts	ロ ー タ リ ー S W 6 接 点	
	40 10 00 KA 50 10 90	"	5 "	" 5 "	
	40 10 00 KA 50 10 90	"	3 "	" 3 "	
※	40 10 00 KA 50 14 60	"	4 "	" 4 "	
※	40 10 00 KA 50 14 70	"	7 "	" 7 "	
	40 10 00 KB 00 03 10	Fuse	0.5A 250V	ヒ ュ ー ズ	J
	40 10 00 KB 00 05 30	"	"	"	G
	40 10 00 KB 00 10 10	"	"	"	U, C
	40 10 00 LB 20 05 70	Fuse Holder Pin		ヒ ュ ー ズ ホ ル ダ ー ピ ン	
※	40 10 00 LB 20 12 30	Phone Jack	MONO	ホ ー ン ジャ ッ ク	
※	40 10 00 LB 30 10 80	"	STEREO	"	
	40 10 00 LB 30 07 30	Connector	3 pin	N H コ ネ ク タ ー 3 P	Top Entry
	40 10 00 LB 30 09 60	"	3 "	" 3 P	Bottom Entry
	40 10 00 LB 40 05 70	"	4 "	" 4 P	Top Entry
	40 10 00 LB 40 06 30	"	4 "	" 4 P	Bottom Entry
	40 10 00 LB 50 02 50	"	5 "	" 5 P	Top Entry
	40 10 00 LB 50 02 70	"	5 "	" 5 P	S, E
	40 10 00 LB 50 03 70	"	5 "	" 5 P	Bottom Entry
	40 10 00 LB 60 24 60	"	7 "	" 7 P	Top Entry
	40 10 00 LB 60 24 70	"	10 "	" 10 P	"
	40 10 00 LB 60 24 90	"	8 "	" 8 P	"
	40 10 00 LB 60 28 90	"	6 "	" 6 P	S, E
	40 10 00 LB 60 29 40	"	6 "	" 6 P	Top Entry
	40 10 00 LB 60 29 90	"	6 "	" 6 P	Bottom Entry
	40 10 00 LB 60 30 00	"	7 "	" 7 P	"
	40 10 00 LB 60 30 10	"	8 "	" 8 P	"
※	40 10 00 LB 60 30 40	"	9 "	" 9 P	Top Entry
※	40 10 00 LB 60 30 60	"	9 "	" 9 P	Bottom Entry
	40 10 00 LB 60 30 70	"	10 "	" 10 P	"
	40 10 00 LB 60 30 90	"	11 "	" 11 P	Top Entry
	30 10 00 BA 80 39 10	Heat Sink		放 熱 板	(DC)
	30 10 00 BA 80 39 30	"		"	(DC)

※ : New Part (新部品)

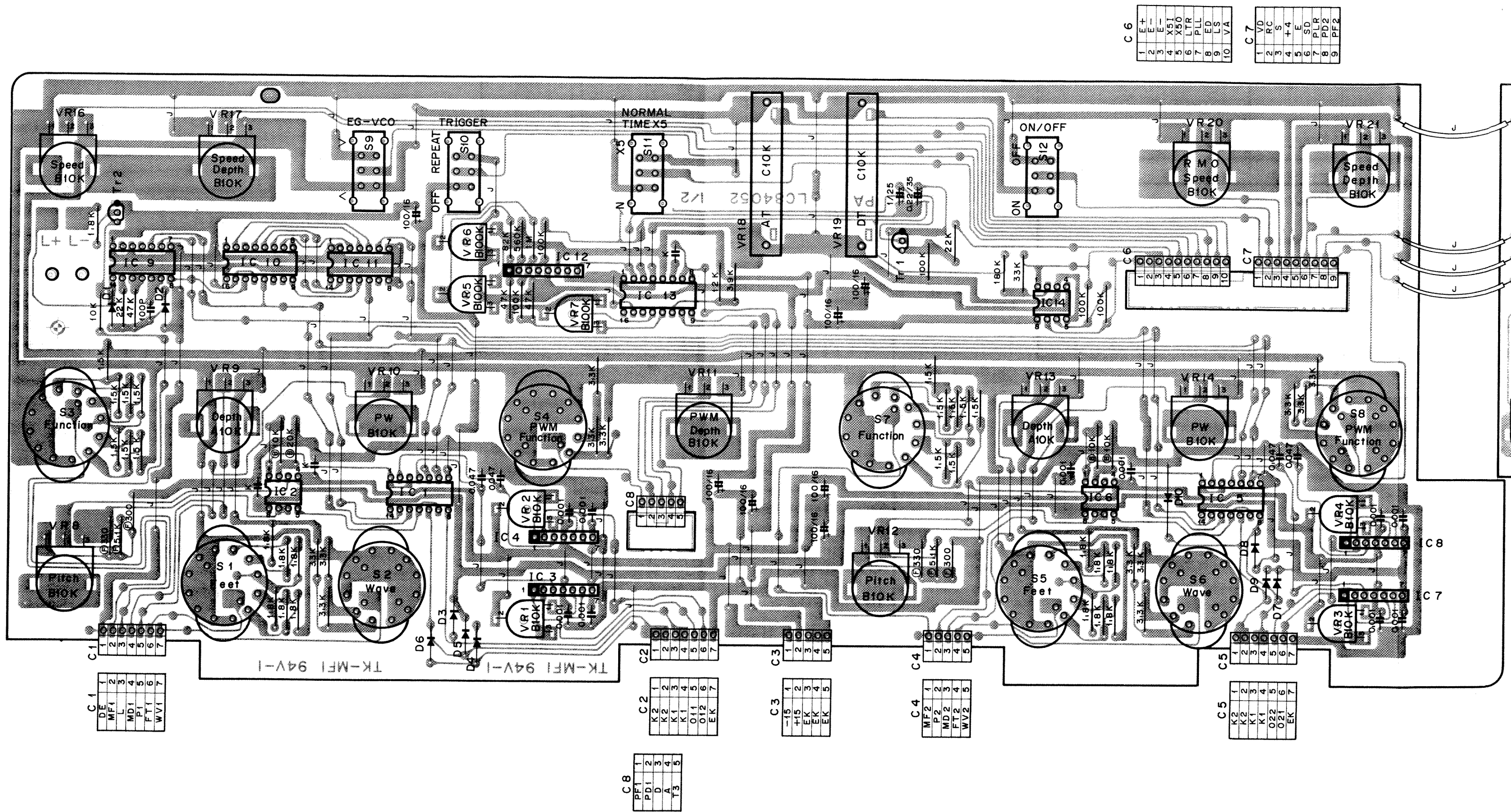
CS-40M SERVICE MANUAL

1979年10月 初版発行

発行所：日本楽器製造株式会社

版下・印刷：東海電子印刷株式会社





C 1

DE	1
MF1	2
L	3
MD1	4
PT1	5
FT1	6
WV1	7

C 8

PF1	1
PD1	2
D	3
A	4
T3	5

C 2

K2	1
K2	2
K1	3
K1	4
O11	5
O12	6
EK	7

C 3

-15	1
+15	2
EK	3
EK	4
EK	5

C 4

MF2	1
P2	2
MD2	3
FT2	4
WV2	5

C 5

K2	1
K2	2
K1	3
K1	4
O21	5
O21	6
EK	7

C 6

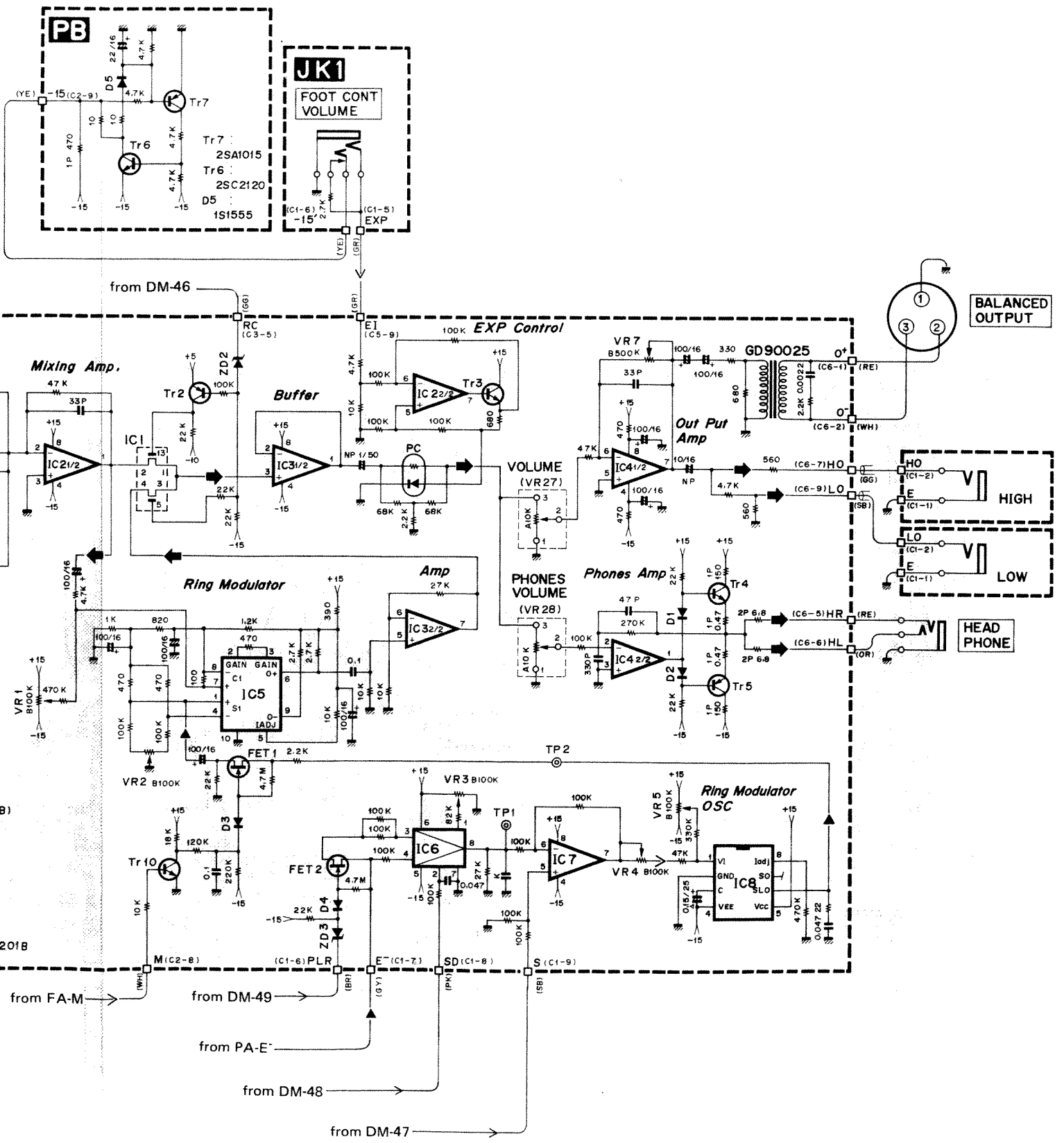
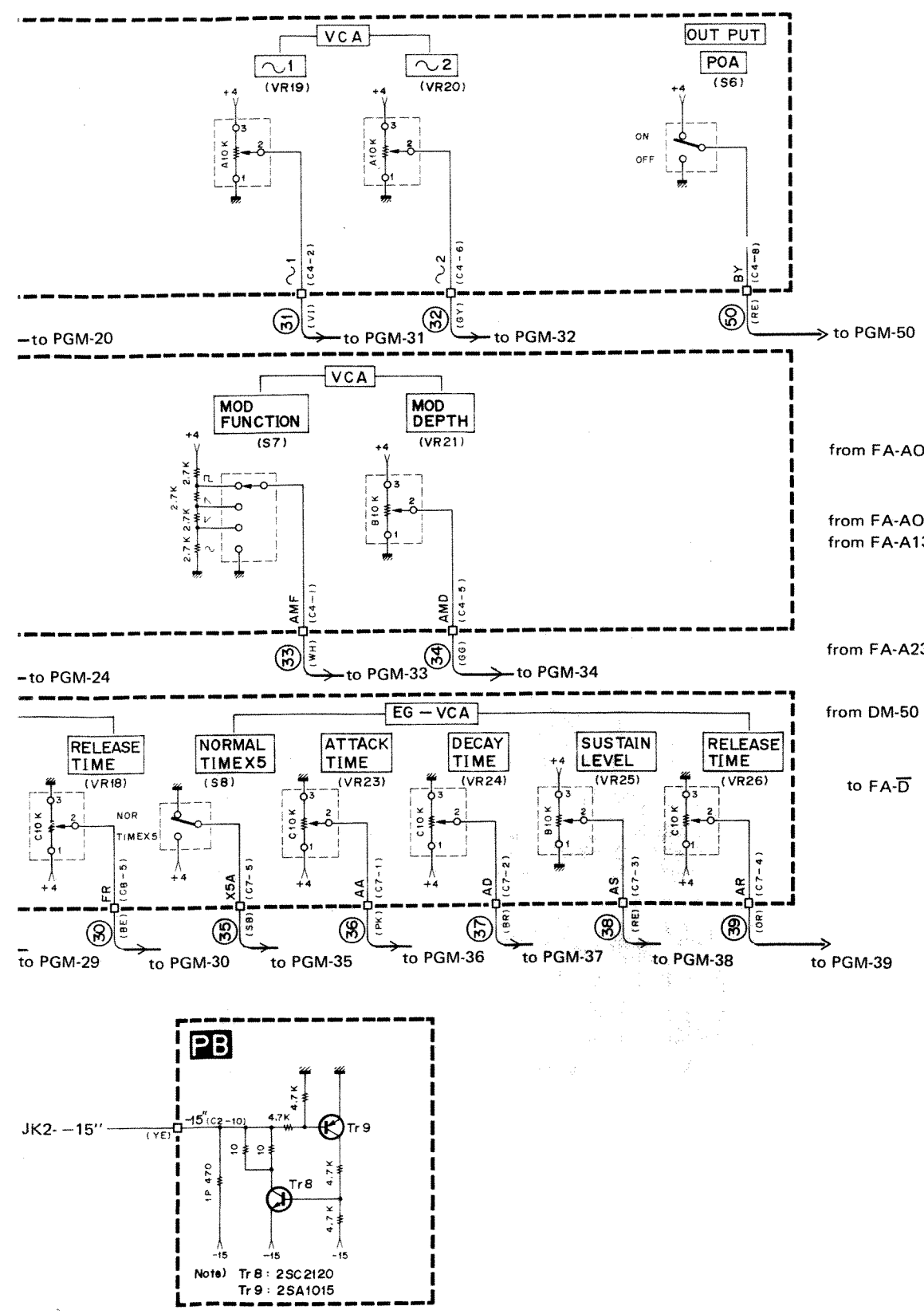
E+	1
E-	2
X51	3
X50	4
LTR	5
PLL	6
ED	7
LS	8
VA	9
VA	10

C 7

VD	1
RC	2
S	3
+4	4
E	5
SD	6
PLR	7
PD2	8
PF2	9

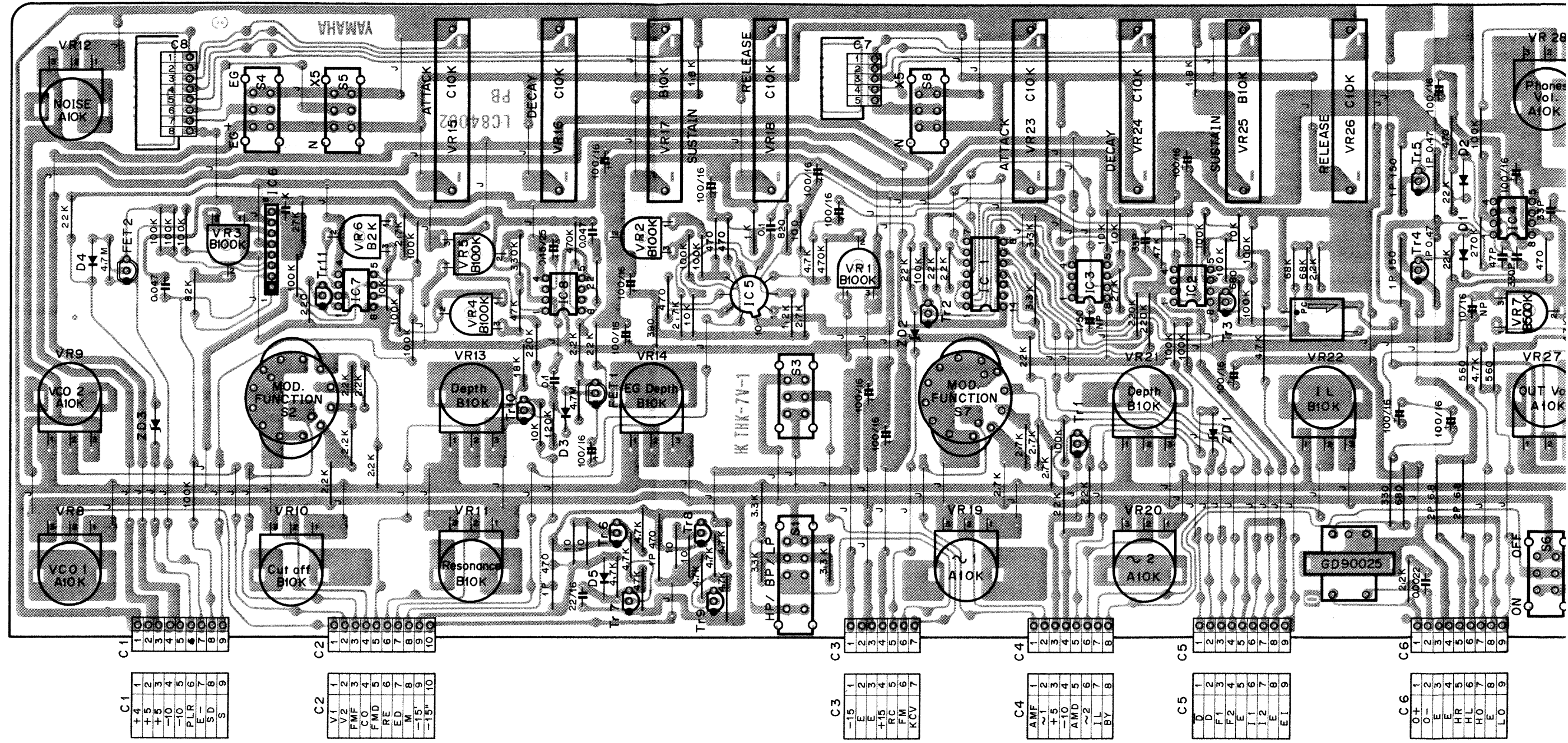
View from the printed pattern side of the circuit board.

PB Circuit Diagram



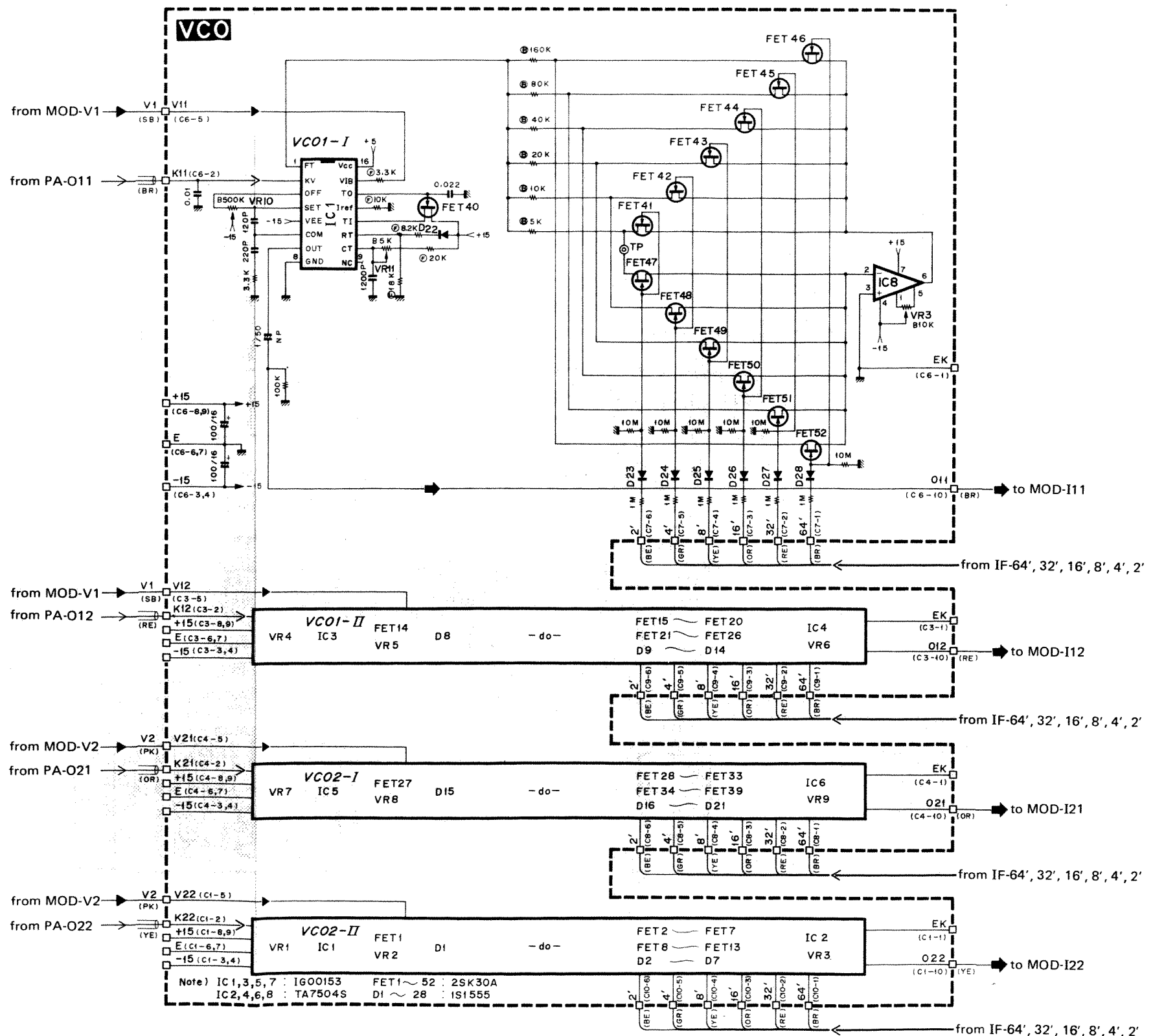
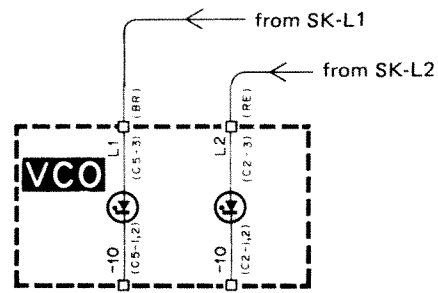
C8	N	1
	FA	2
	FD	3
	FS	4
	FR	5
	X5F	6
	PL	7
	E	8

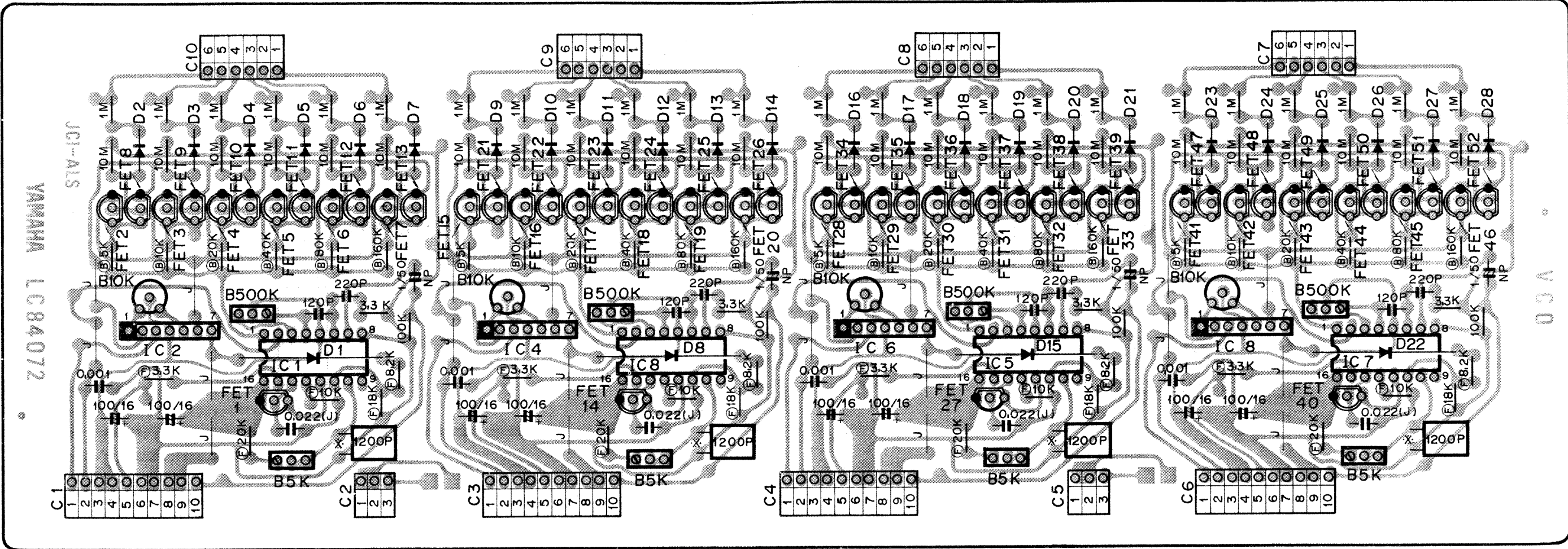
C7	AA	1
	AD	2
	AS	3
	AR	4
	X5A	5



View from the printed pattern side of the circuit b

VCO Circuit Diagram





Pin No.	Pin Name
1	EK
2	K22
3	-15
4	-15
5	V22
6	E
7	E
8	+15
9	+15
10	O22

Pin No.	Pin Name
1	-10
2	-10
3	L2

Pin No.	Pin Name
1	EK
2	K21
3	-15
4	-15
5	V21
6	E
7	E
8	+15
9	+15
10	O21

Pin No.	Pin Name
1	EK
2	K12
3	-15
4	-15
5	V12
6	E
7	E
8	+15
9	+15
10	O12

Pin No.	Pin Name
1	-10
2	-10
3	L1

Pin No.	Pin Name
1	EK
2	K11
3	-15
4	-15
5	V11
6	E
7	E
8	+15
9	+15
10	O11

Pin No.	Pin Name
1	64'
2	32'
3	16'
4	8'
5	4'
6	2'

Pin No.	Pin Name
1	64'
2	32'
3	16'
4	8'
5	4'
6	2'

Pin No.	Pin Name
1	64'
2	32'
3	16'
4	8'
5	4'
6	2'

Pin No.	Pin Name
1	64'
2	32'
3	16'
4	8'
5	4'
6	2'

Pin No.	Pin Name
1	EK
2	K
3	-15
4	-15
5	V
6	E
7	E
8	+15
9	+15
10	O

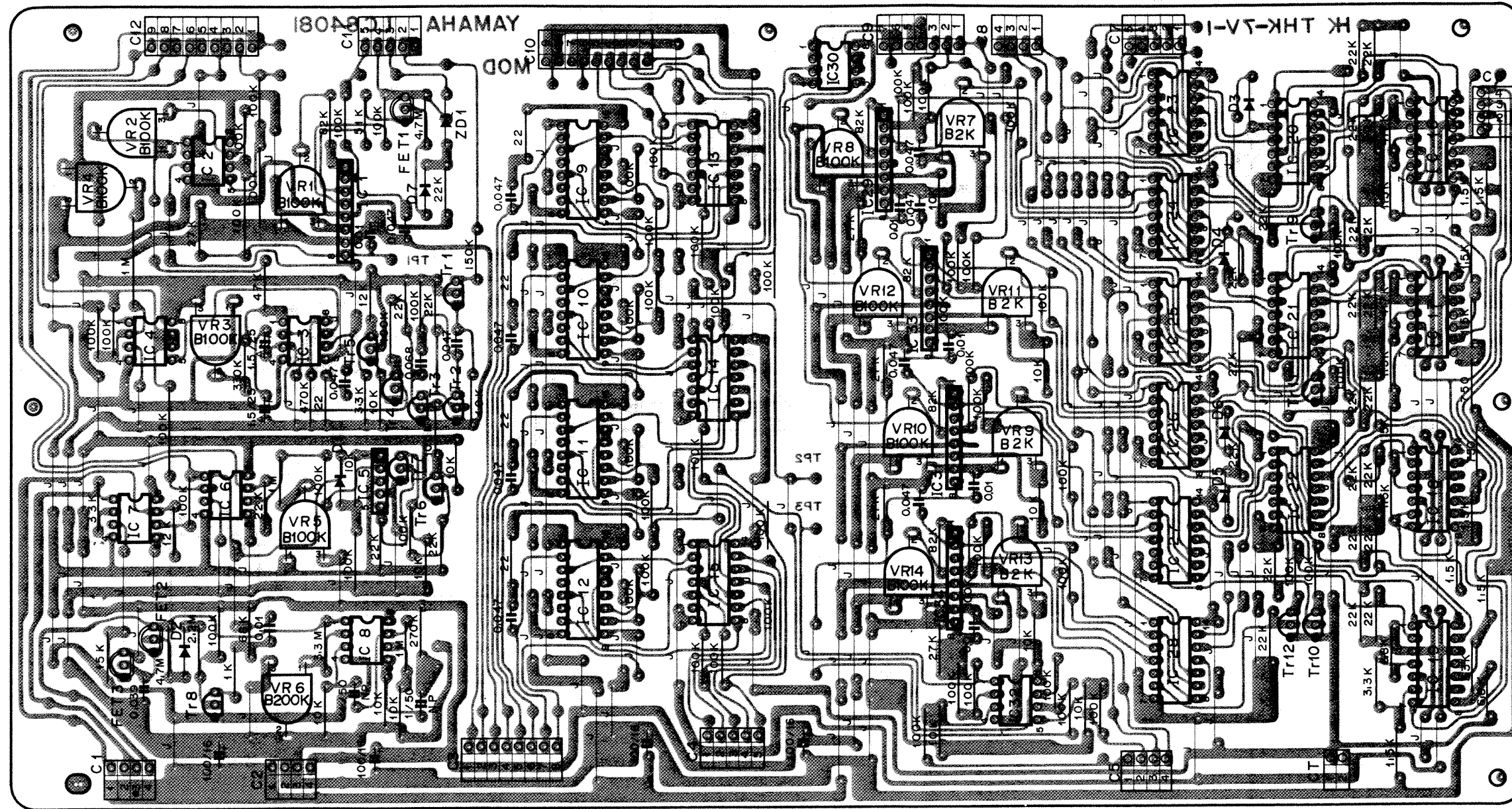
Pin No.	Pin Name
1	-10
2	-10
3	L2

Pin No.	Pin Name
1	EK
2	K
3	-15
4	-15
5	V
6	E
7	E
8	+15
9	+15
10	O

Pin No.	Pin Name
1	EK
2	K
3	-15
4	-15
5	V
6	E
7	E
8	+15
9	+15
10	O

Pin No.	Pin Name
1	-10
2	-10
3	L1

View from the printed pattern side of the circuit board



C 1

1	FL
2	S/H
3	S/H
4	WN

C 2

1	-15
2	E
3	E
4	+15

C 3

1	S11
2	I11
3	S12
4	I12
5	S21
6	I21
7	S22
8	I22

C 4

1	O22
2	O21
3	FL2
4	A2
5	A2

C 5

1	P2
2	P1
3	PD2
4	PD1

C 7

1	+5
2	-10

C 12

1	LT
2	S
3	~
4	~
5	~
6	~
7	V
8	V
9	2FL

C 11

1	T3
2	T3
3	PL
4	F-
5	SD

C 10

1	O12
2	A1
3	FL1
4	A1
5	O11
6	-10
7	-10
8	+5
9	+5

C 9

1	MD2
2	MW
3	MD1
4	V2
5	V2
6	V1
7	V1

C 8

1	~
2	~
3	~
4	~

C 7

1	2FL
2	S/H
3	E+
4	E-
5	-

C 1

Pin No.	Pin Name	Wire Color	Destination
1	FL	YE	IF- (C5-7) FL
2	S/H	GR	MOD-S/H (C7-2)
3	S/H	GR	IF-S/H (C5-5)
4	WN	GY	FA-NI (C6-2)

C 2

Pin No.	Pin Name	Wire Color	Destination
1	-15	YE	DC-15 (C2-6)
2	E	BL	DC-AE (C2-4)
3	E	BL	PB-E (C8-8)
4	+15	BR	DC+15 (C2-2)

C 3

Pin No.	Pin Name	Wire Color	Destination
1	S11	GR	FA-A11 (C8-6)
2	I11	BR	VCO-O (C6-10)
3	S12	BE	FA-A12 (C8-5)
4	I12	RE	VCO-O (C3-10)
5	S21	VI	FA-A21 (C9-1)
6	I21	OR	VCO-O (C4-10)
7	S22	GY	FA-A22 (C8-8)
8	I22	YE	VCO-O (C1-10)

C 4

Pin No.	Pin Name	Wire Color	Destination
1	O22	GY	FA-F22 (C6-4)
2	O21	VI	FA-F21 (C6-5)
3	FL2	GR	IF-FL2 (C7-6)
4	A2	BE	IF-A2 (C7-9)
5	A2	YE	IF-A2 (C7-6)

C 5

Pin No.	Pin Name	Wire Color	Destination
1	P2	PK	DM-12 (C2-3)
2	P1	GR	DM-5 (C11-1)
3	PD2	RE	DM-14 (C2-1)
4	PD1	VI	DM-7 (C11-3)

C 6

Pin No.	Pin Name	Wire Color	Destination
1	MF1	OR	DM-3 (C1-2)
2	MF2	GG	DM-10 (C2-5)
3	PF1	BE	DM-6 (C11-2)
4	PF2	BR	DM-13 (C2-2)

C 7

Pin No.	Pin Name	Wire Color	Destination
1	2FL	BE	MOD-2 FL (C12-9)
2	S/H	GR	MOD-S/H (C1-2)
3	E+	VI	PA-E+ (C6-1)
4	E-	GY	MOD-E- (C11-4)
5	E-	GY	PA-E- (C6-3)

C 8

Pin No.	Pin Name	Wire Color	Destination
1	~	OR	MOD-~ (C12-7)
2	~	RE	MOD-~ (C12-5)
3	~	BR	PA-L (C1-3)
4	~	BR	MOD-~ (C12-3)

C 9

Pin No.	Pin Name	Wire Color	Destination
1	MD2	SB	DM
2	MW	GG	PL
3	MD1	YE	DM
4	V2	PK	VC
5	V2	PK	VC
6	V1	SB	VC
7	V1	SB	VC

C 10

Pin No.	Pin Name	Wire Color	Destination
1	O12	PK	FA
2	A1	BR	IF
3	FL1	RE	IF
4	A1	OR	IF
5	O11	SB	FA
6	-10	BE	DC
7	-10	BE	FA
8	+5	GR	DC
9	+5	GR	FA

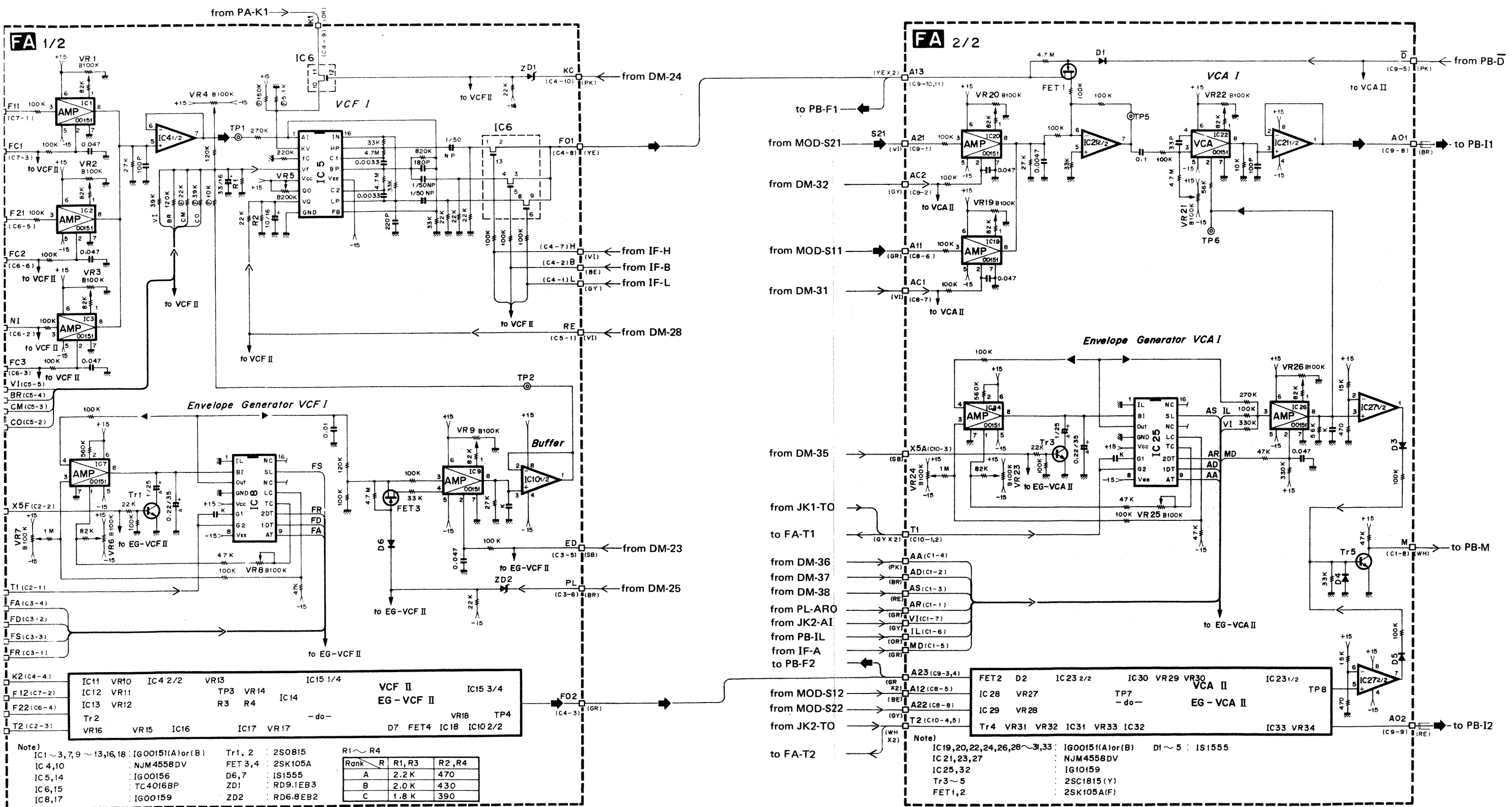
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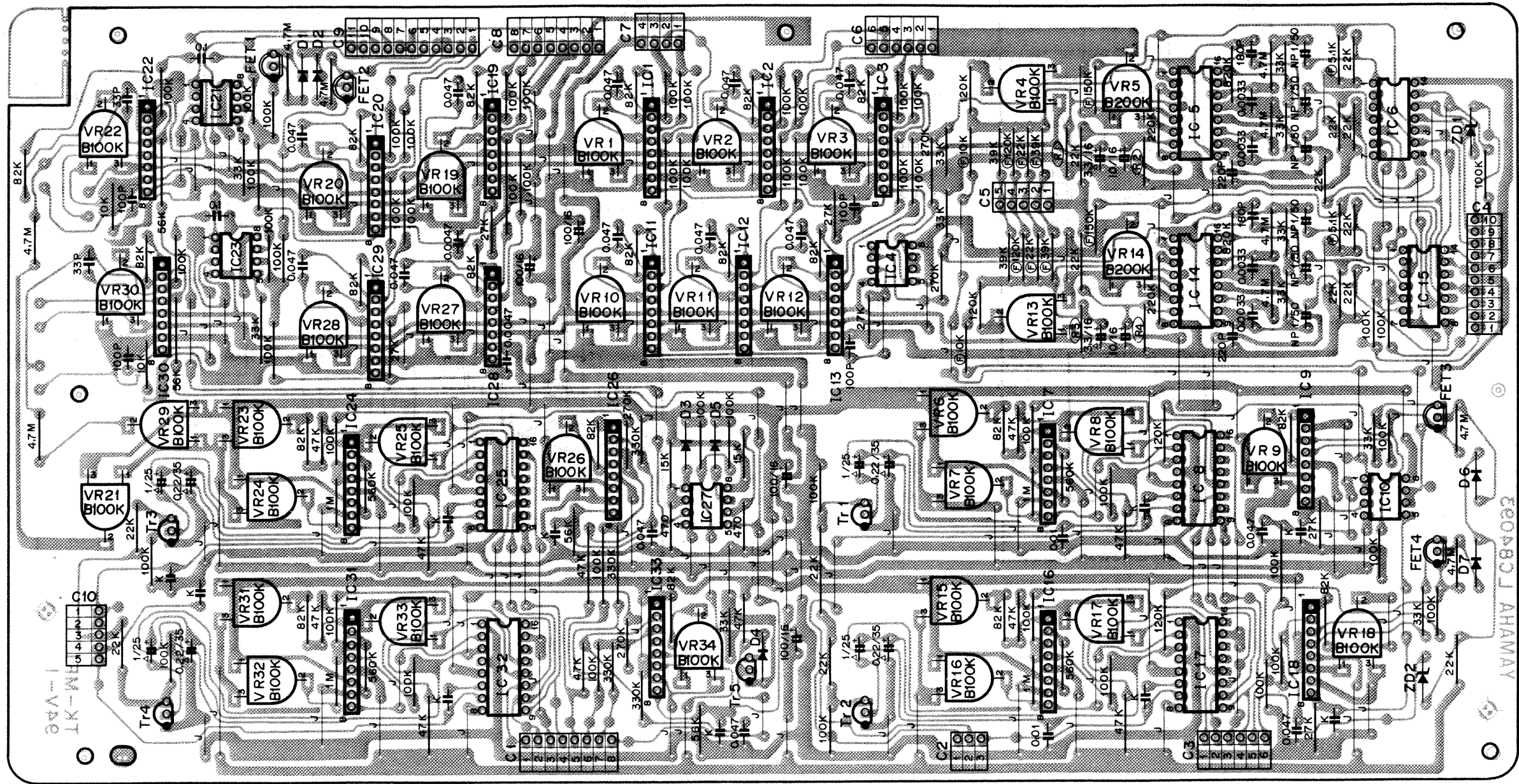
Pin No.	Pin Name	Wire Color	Destination
1	T3	OR	SK
2	T3	OR	PA
3	PL	BE	DM
4	E	GY	MK
5	SD	GR	DF

C 12

Pin No.	Pin Name	Wire Color	Destination
1	LT	BE	SK
2	S	YE	DI
3	~	BR	MH
4	~	BR	IF
5	~	RE	MH
6	~	RE	IF
7	~	OR	MH
8	~	OR	IF
9	2FL	BE	MH

FA Circuit Diagram





C10

T1	1
T1	2
X5A	3
T2	4
T2	5

C9

11	A13
10	A13
9	A02
8	A01
7	E
6	E
5	D
4	A23
3	A23
2	AC2
1	A21

CB

8	A22
7	AC1
6	A11
5	A12
4	+15
3	+15
2	E
1	E

C7

4	-15
3	FC1
2	F12
1	F11

C6

6	FC2
5	F21
4	F22
3	FC3
2	NI
1	+15

C5

5	V1
4	BR
3	CM
2	CO
1	RE

C1

AR	1
AD	2
AS	3
AA	4
MD	5
IL	6
VI	7
M	8

C2

T1	1
X5F	2
T2	3

C3

FR	1
FD	2
FS	3
FA	4
ED	5
PL	6

C4

10	KC
9	K1
8	F01
7	H
6	+5
5	-10
4	K2
3	F02
2	B
1	L

C1

Pin No.	Pin Name	Wire Color	Des
1	AR	GR	PL-AR1
2	AD	BR	DM-37
3	AS	RE	DM-38
4	AA	PK	DM-36
5	MD	GR	IF-A IC
6	IL	OR	PB-IL1
7	VI	GY	JK2-A1
8	M	WH	PB-M1

C2

Pin No.	Pin Name	Wire Color	Des
1	T1	GY	FA-T1
2	X5F	RE	DM-26
3	T2	WH	FA-T2

C3

Pin No.	Pin Name	Wire Color	Des
1	FR	VI	PL-FR
2	FD	YE	DM-26
3	FS	GR	DM-25
4	FA	OR	DM-27
5	ED	SB	DM-22
6	PL	BR	DM-25

C4

Pin No.	Pin Name	Wire Color	Des
1	L	GY	IF-L1
2	B	BE	IF-B1
3	F02	GR	FA-A2
4	K2	YE	PA-K2
5	-10	BE	MOD-
6	+5	GR	MOD-
7	H	VI	IF-H1
8	F01	YE	FA-A1
9	K1	OR	PA-K1
10	KC	PK	DM-24

C5

Pin No.	Pin Name	Wire Color	Des
1	RE	VI	DM-15
2	CO	BE	DM-16
3	CM	OR	IF-F1
4	BR	YE	PL-BR
5	VI	GR	JK1-F

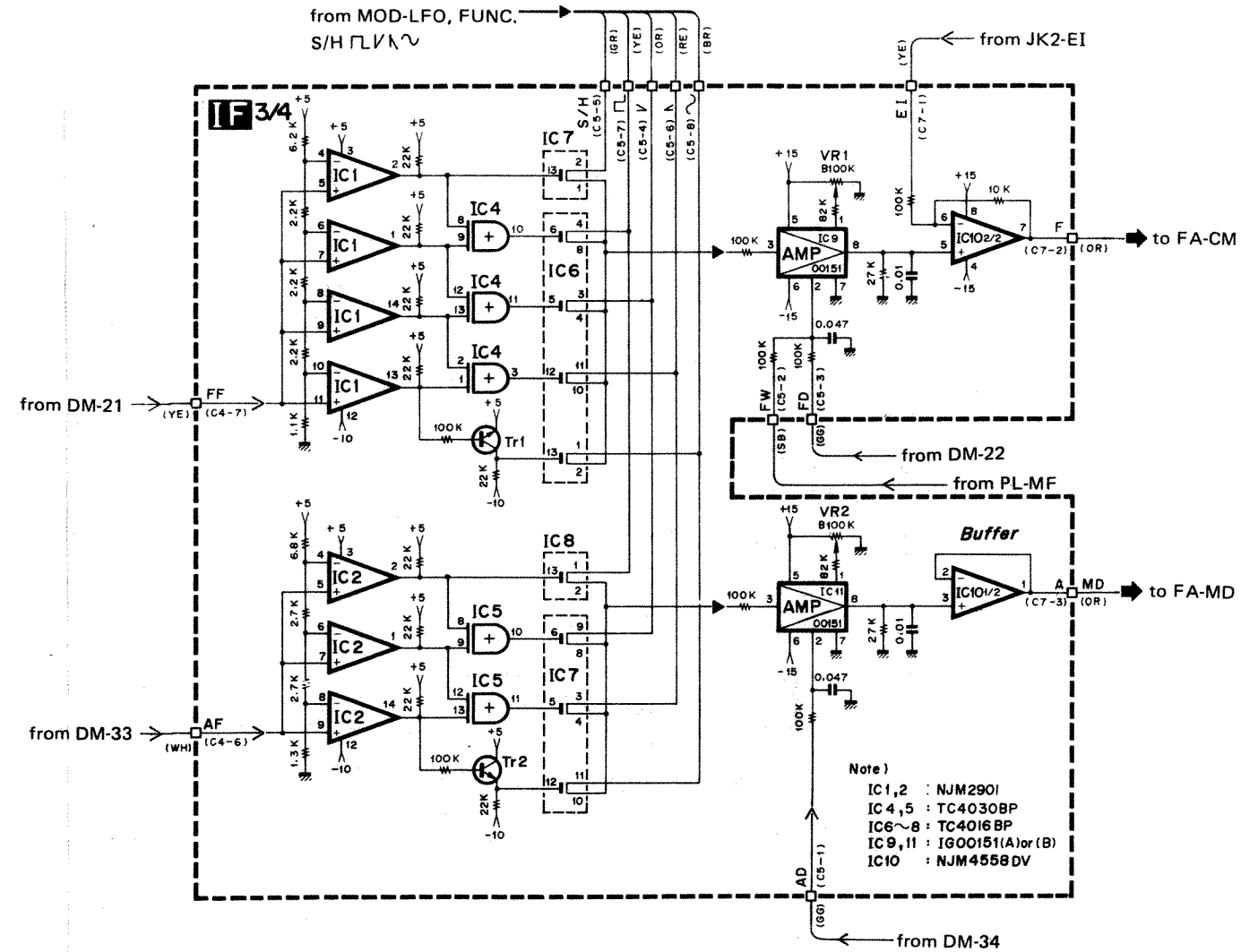
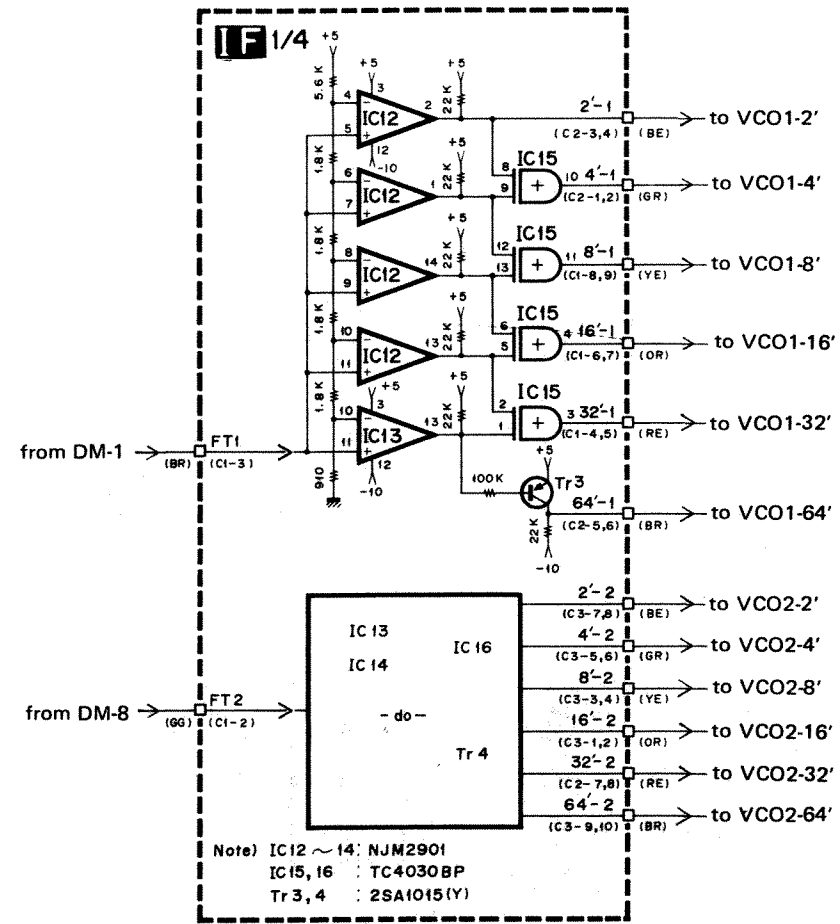
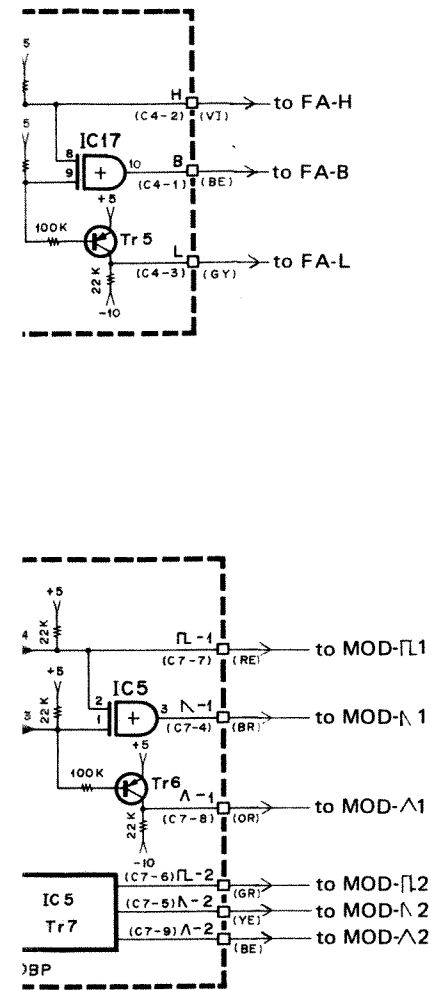
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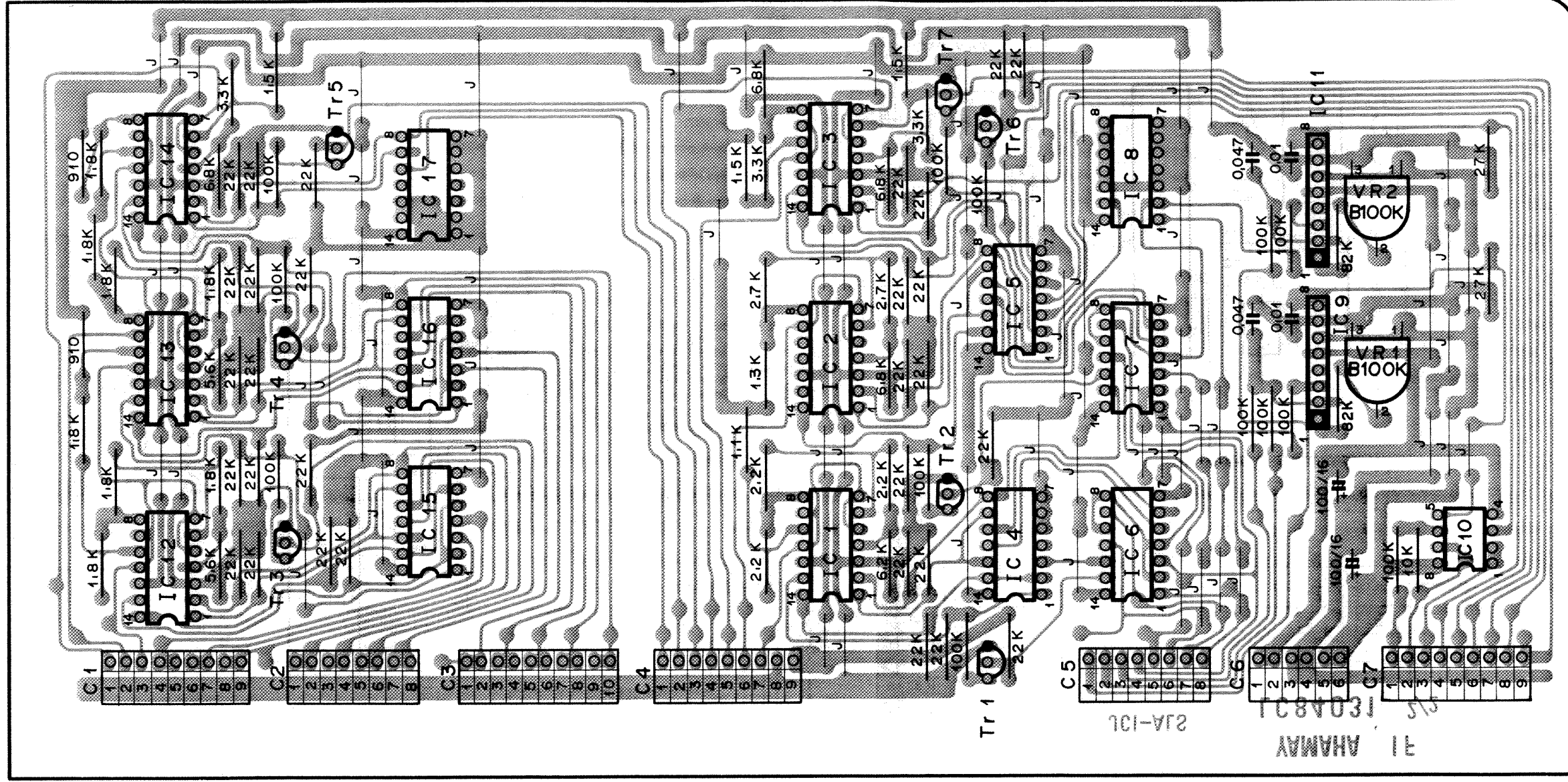
Pin No.	Pin Name	Wire Color	Des
1	+15	BR	FA-1
2	NI	GY	MOD-
3	FC3	GR	DM-17
4	F22	GY	MOD-
5	F21	VI	MOD-
6	FC2	YE	DM-11

C7

Pin No.	Pin Name	Wire Color	Des
1	F11	SB	MOD-
2	F12	PK	MOD-
3	FC1	OR	DM-11
4	-15	YE	DC-

IF Circuit Diagram





C 1

1	FM
2	FT2
3	FT1
4	32'-1
5	32'-1
6	16'-1
7	16'-1
8	8'-1
9	8'-1

C 2

1	4'-1
2	4'-1
3	2'-1
4	2'-1
5	64'-1
6	64'-1
7	32'-2
8	32'-2

C 3

1	16'-2
2	16'-2
3	8'-2
4	8'-2
5	4'-2
6	4'-2
7	2'-2
8	2'-2
9	64'-2
10	64'-2

C 4

1	B
2	H
3	L
4	WV2
5	WV1
6	AF
7	FF
8	+5
9	-10

C 5

1	AD
2	FW
3	FD
4	V
5	S/H
6	N
7	~
8	~

C 6

1	-15
2	-15
3	E
4	E
5	+15
6	+15

C 7

1	EI
2	F
3	A
4	N1
5	N2
6	N2
7	N1
8	N1
9	N2

C1

Pin No.	Pin Name	Wire Color	Destination
1	FM	GY	DM-20 (C3-5)
2	FT2	GG	DM-8 (C11-4)
3	FT1	BR	DM-1 (C1-4)
4	32'	RE	VCO-32' (C7-2)
5	32'	RE	VCO-32' (C9-2)
6	16'	OR	VCO-16' (C7-3)
7	16'	OR	VCO-16' (C9-3)
8	8'	YE	VCO-8' (C7-4)
9	8'	YE	VCO-8' (C9-4)

C2

Pin No.	Pin Name	Wire Color	Destination
1	4'	GR	VCO-4' (C7-5)
2	4'	GR	VCO-4' (C9-5)
3	2'	BE	VCO-2' (C7-6)
4	2'	BE	VCO-2' (C9-6)
5	64'	BR	VCO-64' (C7-1)
6	64'	BR	VCO-64' (C9-1)
7	32'	RE	VCO-32' (C8-2)
8	32'	RE	VCO-32' (C10-2)

C3

Pin No.	Pin Name	Wire Color	Destination
1	16'	OR	VCO-16' (C8-3)
2	16'	OR	VCO-16' (C10-3)
3	8'	YE	VCO-8' (C8-4)
4	8'	YE	VCO-8' (C10-4)
5	4'	GR	VCO-4' (C8-5)
6	4'	GR	VCO-4' (C10-5)
7	2'	BE	VCO-2' (C8-6)
8	2'	BE	VCO-2' (C10-6)
9	64'	BR	VCO-64' (C8-1)
10	64'	BR	VCO-64' (C10-1)

C4

Pin No.	Pin Name	Wire Color	Destination
1	B	BE	FA-B (C4-2)
2	H	VI	FA-H (C4-7)
3	L	GY	FA-L (C4-1)
4	WV2	WH	DM-9 (C11-5)
5	WV1	RE	DM-2 (C1-3)
6	AF	WH	DM-33 (C4-2)
7	FF	YE	DM-21 (C3-4)
8	+5	GR	DM-+5 (C12-4)
9	-10	BE	DM--10 (C12-2)

C5

Pin No.	Pin Name	Wire Color	Destination
1	AD	GG	DM-34 (C4-1)
2	FW	SB	PL-MF (C2-8)
3	FD	GG	DM-22 (C3-3)
4	V	OR	MOD-V (C12-8)
5	S/H	GR	MOD-S/H (C1-3)
6	N	RE	MOD-N (C12-6)
7	N	YE	MOD-N (C1-1)
8	N	BR	MOD-N (C12-4)

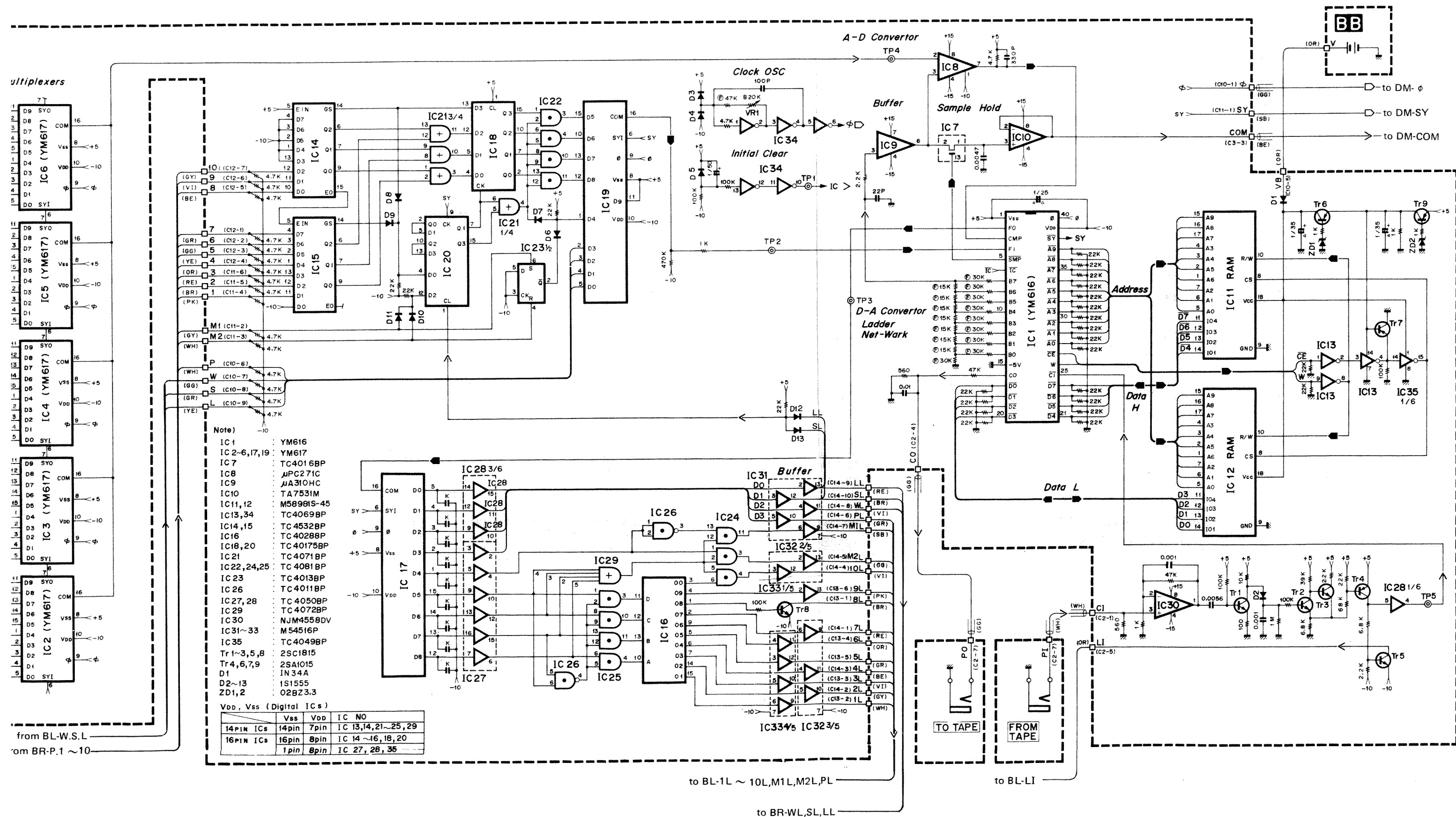
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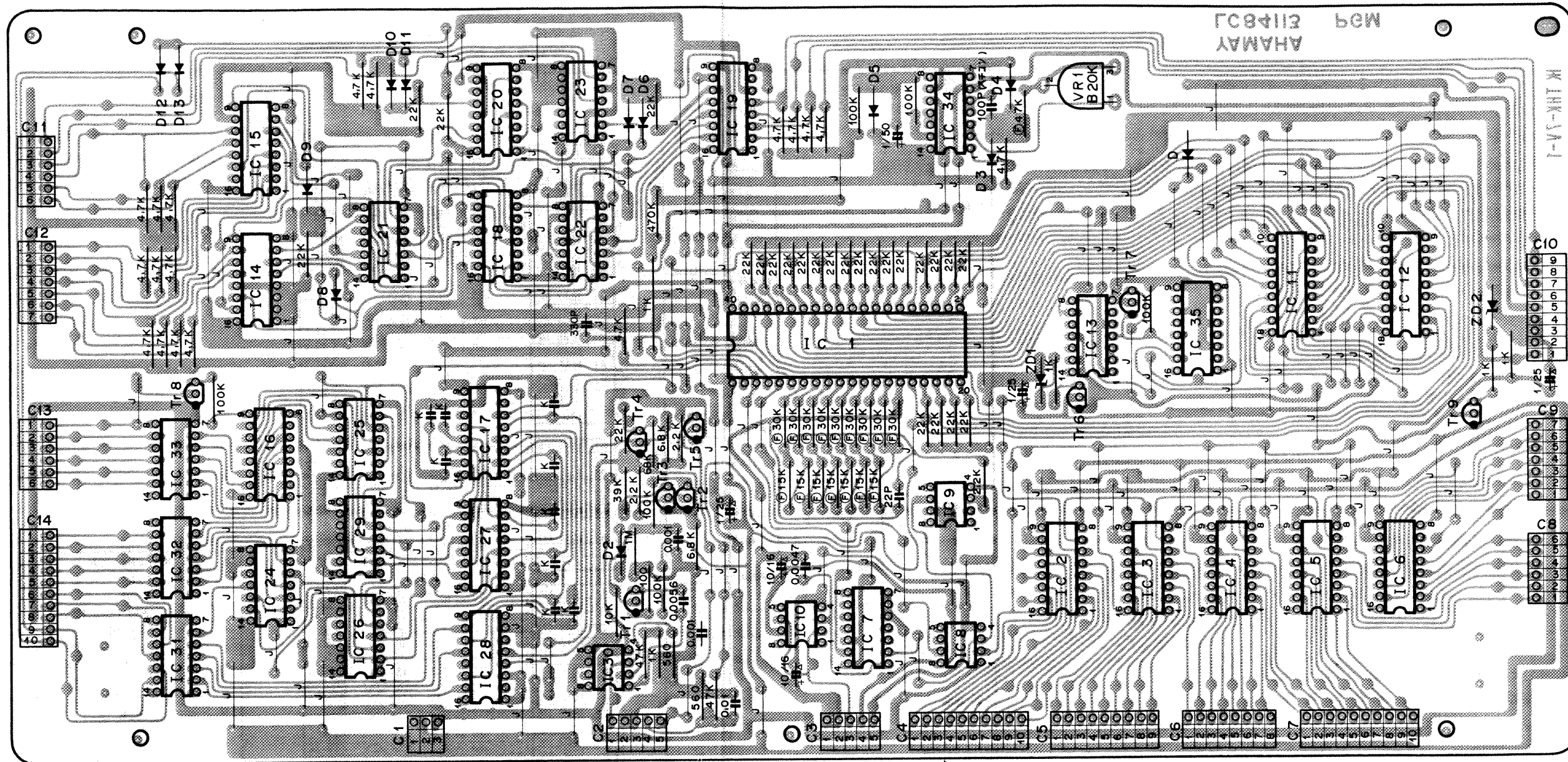
Pin No.	Pin Name	Wire Color	Des
1	-15	YE	DC--1
2	-15	YE	SK--1
3	E	BL	DC-AE
4	E	-	-
5	+15	BR	DC+15
6	+15	BR	SK+15

C7

Pin No.	Pin Name	Wire Color	Des
1	EI	YE	JK2-EI
2	F	OR	FA-CV
3	A	GR	FA-ME
4	N1	BR	MOD-
5	N2	YE	MOD-
6	N2	GR	MOD-
7	N1	RE	MOD-
8	N1	OR	MOD-
9	N2	BE	MOD-

PGM Circuit Diagram





C11

SY	1
M1	2
M2	3
1	4
2	5
3	6

C12

7	1
6	2
5	3
4	4
8	5
9	6
10	7

C13

8L	1
1L	2
3L	3
6L	4
5L	5
9L	6

C14

7L	1
2L	2
4L	3
10L	4
M2L	5
PL	6
ML	7
WL	8
LL	9
SL	10

C10

9	L
8	S
7	W
6	P
5	VB
4	DE
3	DE
2	DE
1	Ø

C9

7	50
6	49
5	48
4	47
3	46
2	41
1	42

C8

6	43
5	44
4	45
3	31
2	32
1	33

C1

+5	1
3	2
-10	3

C2

E	1
E	3
CO	4
LI	5

C3

AE	1
AE	2
COM	3
+5	4
-15	5

C4

6	1
7	2
8	3
9	4
10	5
5	6
4	7
3	8
2	9
1	10

C5

16	1
17	2
18	3
28	4
20	5
15	6
14	7
13	8
12	9

C6

11	1
26	2
27	3
19	4
29	5
30	6
25	7
24	8

C7

23	1
22	2
21	3
36	4
37	5
38	6
39	7
40	8
35	9
34	10

C1

Pin No.	Pin Name	Wire Color	Destination
1	+5	GR	DC+5 (C1-7)
2	+5	GR	BL+5 (C-7)
3	-10	BE	DC-10 (C1-10)

C2

Pin No.	Pin Name	Wire Color	Destination
1	CI	S-WH	JK2-PI (C2-7)
2	E	S-WH-S	
3	E	S-GG-S	
4	CO	S-GG	JK1-PO (C2-7)
5	LI	OR	BL-LI (C-3)

C3

Pin No.	Pin Name	Wire Color	Destination
1	AE	BL	DM-E (C6-4)
2	AE	S-BE-S	
3	COM	S-BE	DM-COM (C12-6)
4	+15	BR	DM+15 (C6-2)
5	-15	YE	DM-15 (C6-6)

C4

Pin No.	Pin Name	Wire Color	Destination
1	6	BE	PA-PF1 (C8-1)
2	7	VI	PA-PD1 (C8-2)
3	8	GY	PA-FT2 (C4-4)
4	9	WH	PA-WV2 (C4-5)
5	10	GG	PA-MF2 (C4-1)
6	5	GR	PA-P1 (C1-5)
7	4	YE	PA-MD1 (C1-4)
8	3	OR	PA-MF1 (C1-2)
9	2	RE	PA-WV1 (C1-7)
10	1	BR	PA-FT1 (C1-6)

C5

Pin No.	Pin Name	Wire Color	Destination
1	16	YE	PB-V2 (C2-2)
2	17	GR	PB-N (C8-1)
3	18	BE	PB-CO (C2-4)
4	28	YE	PB-FD (C8-3)
5	20	GY	PB-FM (C3-6)
6	15	OR	PB-V1 (C1-2)
7	14	RE	PA-PD2 (C7-8)
8	13	BR	PA-PF2 (C7-9)
9	12	PK	PA-P2 (C4-2)

C6

Pin No.	Pin Name	Wire Color	Destination
1	11	SB	PA-MD2 (C4-3)
2	26	RE	PB-X5F (C8-6)
3	27	OR	PB-FA (C8-2)
4	19	VI	PB-RE (C2-6)
5	29	GR	PB-FS (C8-4)
6	30	BE	PB-FR (C8-5)
7	25	BR	PB-PL (C8-7)
8	24	PK	PB-KCV (C3-7)

C7

Pin No.	Pin Name	Wire Color	Destination
1	23	SB	PB-ED (C2-7)
2	22	GG	PB-FMD (C2-5)
3	21	WH	PB-FMF (C2-3)
4	36	PK	PB-AA (C7-1)
5	37	BR	PB-AD (C7-2)
6	38	RE	PB-AS (C7-3)
7	39	OR	PB-AR (C7-4)
8	40	YE	PA-LS (C6-9)
9	35	SB	PB-X5A (C7-5)
10	34	GG	PB-AMD (C4-5)

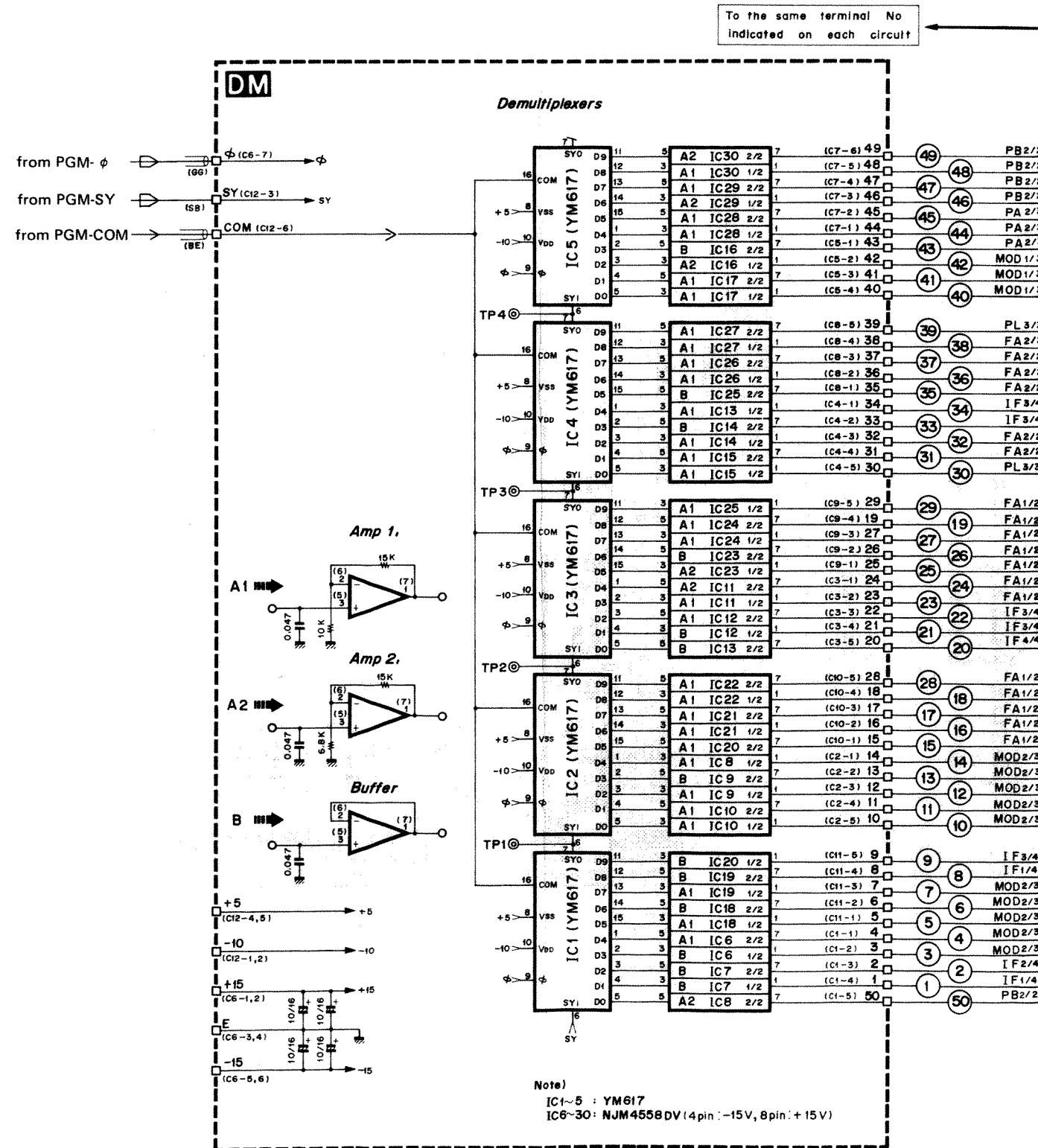
C8

Pin No.	Pin Name	Wire Color	Destination
1	33	WH	PB-AMF (C4-1)
2	32	GY	PB-V2 (C4-6)
3	31	VI	PB-V1 (C4-2)
4	45	WH	PA-VD (C7-1)
5	44	GY	PA-VA (C6-10)
6	43	VI	PA-X50 (C6-5)

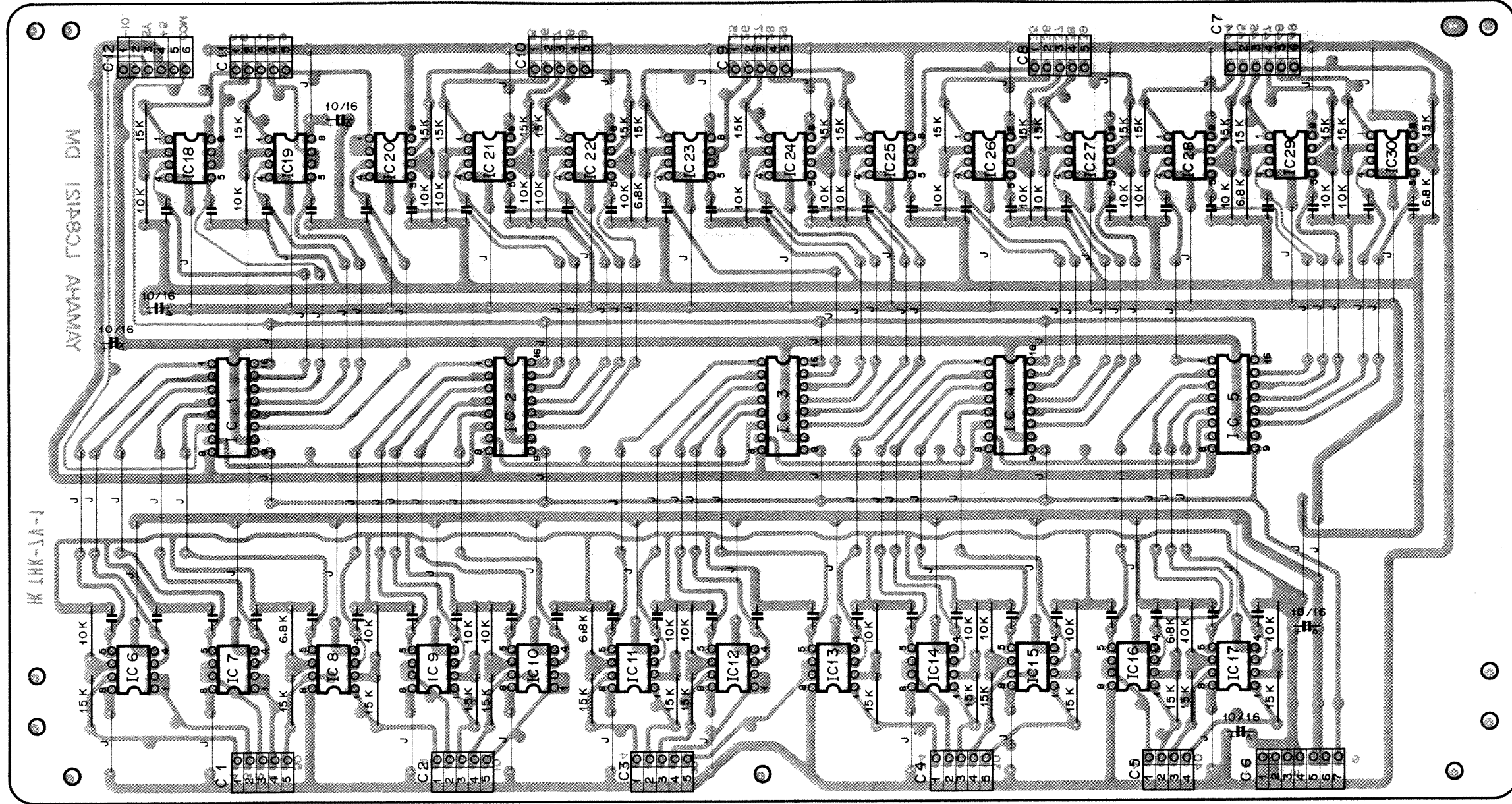
C9

Pin No.	Pin Name	Wire Color	Destination
1	42	BE	PA-PLL (C6-7)
2	41	GR	PA-ED (C6-8)
3	46	GG	PA-RC (C7-2)
4	47	SB	PA-S (C7-3)
5	48	PK	PA-SD (C7-6)
6	49	BR	PA-PLR (C7-7)
7	50	RE	PB-BY (C4-8)

DM Circuit Diagram



NO	BLOCK	FUNCTION	NO	BLOCK	FUNCTION
1	VCO 1	FEET	26	EG-VCF	TIME NOR/X5
2	-do-	WAVE	27	-do-	ATTACK TIME
3	-do-	MOD. FUNCTION	28	VCF	RESONANCE
4	-do-	MOD. DEPTH	29	EG-VCF	SUSTAIN LEVEL
5	-do-	PULSE WIDTH	30	-do-	RELEASE TIME
6	-do-	P.W.M FUNCTION	31	VCA	~ 1
7	-do-	P.W.M DEPTH	32	-do-	~ 2
8	VCO 2	FEET	33	-do-	MOD. FUNCTION
9	-do-	WAVE	34	-do-	MOD. DEPTH
10	-do-	MOD. FUNCTION	35	EG-VCA	TIME NOR X5
11	-do-	MOD. DEPTH	36	IF	1/4
12	-do-	PULSE WIDTH	37	-do-	DECAY TIME
13	-do-	P.W.M FUNCTION	38	-do-	SUSTAIN LEVEL
14	-do-	P.W.M DEPTH	39	-do-	RELEASE TIME
15	MIXER	VCO 1	40	LFO	SPEED
16	-do-	VCO 2	41	-do-	SPEED DEPTH
17	-do-	NOISE	42	-do-	EG POLE
18	VCF	CUT OFF FREQ.	43	EG-VCO	TIME NOR X5
19	EG-VCF	DECAY TIME	44	-do-	ATTACK TIME
20	VCF	HP/BP/LP	45	-do-	DECAY TIME
21	-do-	MOD. FUNCTION	46	RMO	ON-OFF
22	-do-	MOD. DEPTH	47	-do-	SPEED
23	-do-	EG DEPTH	48	-do-	SPEED DEPTH
24	-do-	KCV ON-OFF	49	-do-	EG POLE
25	EG-VCF	EG POLE	50	OUTPUT	POA ON-OFF



C12

1	-10
2	SY
3	+5
4	COM
5	COM
6	COM

C11

1	5
2	6
3	7
4	8
5	9

C10

1	15
2	16
3	17
4	18
5	28

C9

1	25
2	26
3	27
4	19
5	29

C8

1	35
2	36
3	37
4	38
5	39

C7

1	44
2	45
3	46
4	47
5	48
6	49

C1

4	1
3	2
2	3
1	4
50	

C2

14	1
13	2
12	3
11	4
10	5

C3

24	1
23	2
22	3
21	4
20	5

C4

34	1
33	2
32	3
31	4
30	5

C5

43	1
42	2
41	3
40	4

C6

+15	1
+15	2
E	3
E	4
-15	5
Ø	6
Ø	7

C1

Pin No.	Pin Name	Wire Color	Destination
1	4	YE	MOD-MD1 (C9-3)
2	3	OR	MOD-MF1 (C6-1)
3	2	RE	IF-WV1 (C4-5)
4	1	BR	IF-FT1 (C1-3)
5	50	RE	PB-D (C5-2)

C8

Pin No.	Pin Name	Wire Color	Destination
1	35	SB	FA-XSA (C1)
2	36	PK	FA-AA (C1)
3	37	BR	FA-AD (C1)
4	38	RE	FA-AS (C1)
5	39	YE	PL-ARI (C1)

C2

Pin No.	Pin Name	Wire Color	Destination
1	14	RE	MOD-PD2 (C5-3)
2	13	BR	MOD-PF2 (C6-4)
3	12	PK	MOD-P2 (C5-1)
4	11	SB	MOD-MD2 (C9-1)
5	10	GG	MOD-MF2 (C6-2)

C9

Pin No.	Pin Name	Wire Color	Destination
1	25	BR	FA-PL (C3)
2	26	RE	FA-X5F (C1)
3	27	OR	FA-FA (C3)
4	19	VI	FA-RE (C3)
5	29	GR	FA-FS (C3)

C3

Pin No.	Pin Name	Wire Color	Destination
1	24	PK	FA-KC (C4-10)
2	23	SB	FA-ED (C3-5)
3	22	GG	IF-FD (C5-3)
4	21	YE	IF-FF (C4-7)
5	20	GY	IF-FM (C1-1)

C10

Pin No.	Pin Name	Wire Color	Destination
1	15	OR	FA-FC1 (C1)
2	16	YE	FA-FC2 (C1)
3	17	GR	FA-FC3 (C1)
4	18	BE	FA-CO (C1)
5	28	YE	IF-FD (C1)

C4

Pin No.	Pin Name	Wire Color	Destination
1	34	GG	IF-AD (C5-1)
2	33	WH	IF-AF (C4-6)
3	32	GY	FA-AC2 (C9-2)
4	31	VI	FA-AC1 (C8-7)
5	30	BE	PL-FRI (C2-3)

C11

Pin No.	Pin Name	Wire Color	Destination
1	5	GR	MOD-P1 (C1)
2	6	BE	MOD-PF1 (C1)
3	7	VI	MOD-PD1 (C1)
4	8	GG	IF-FT2 (C1)
5	9	WH	IF-WV2 (C1)

C5

Pin No.	Pin Name	Wire Color	Destination
1	43	RE	PA-X51 (C6-4)
2	42	BE	MOD-PL (C11-3)
3	41	GR	MOD-SD (C11-5)
4	40	YE	MOD-S (C12-2)

C12

Pin No.	Pin Name	Wire Color	Destination
1	-10	BE	DC-10 (C1)
2	-10	BE	IF-10 (C1)
3	SY	SB	PGM-SY (C1)
4	+5	GR	IF+5 (C4)
5	+5	GR	DC+5 (C4)
6	COM	BE	PGM-COM

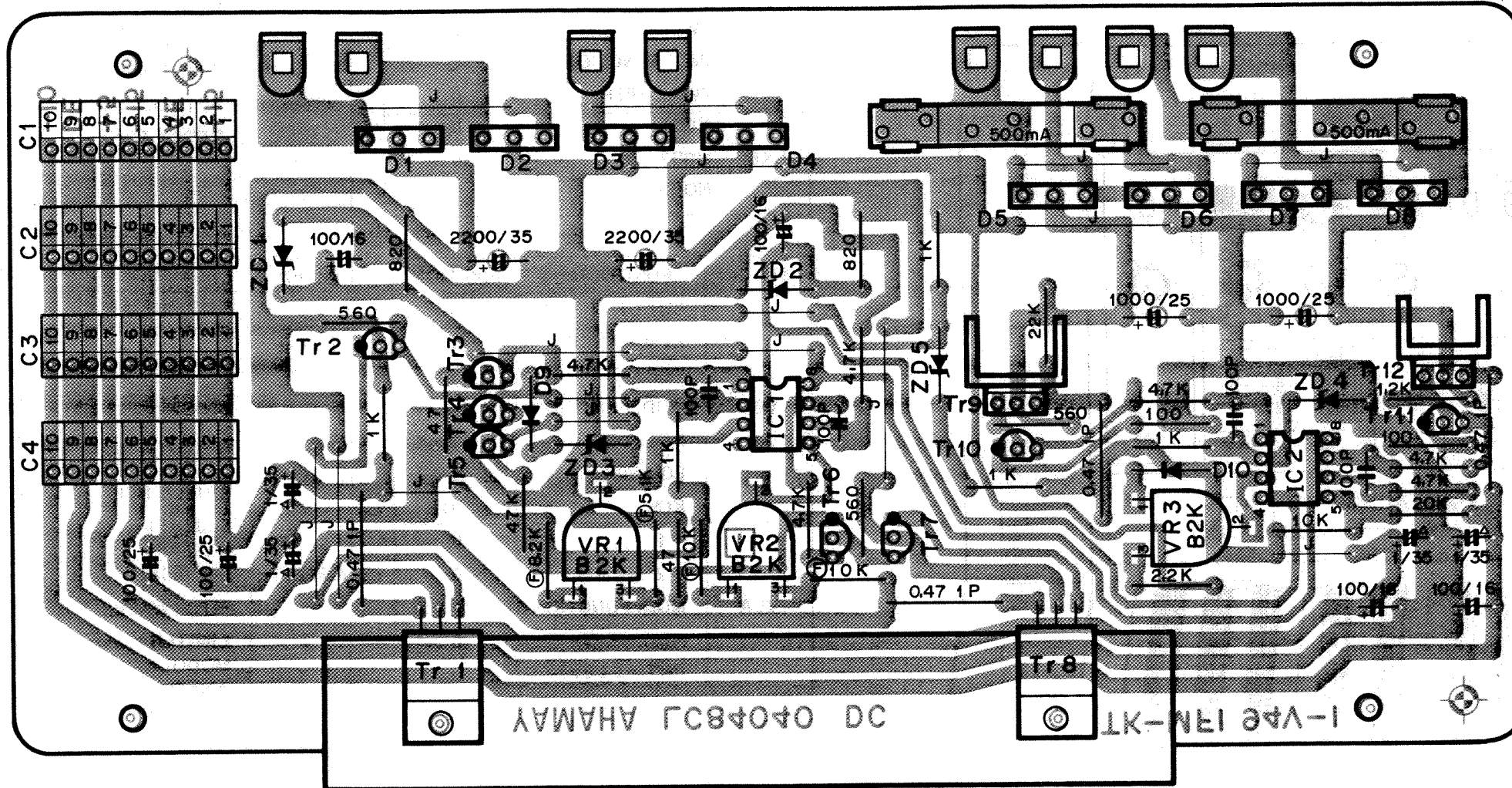
C6

Pin No.	Pin Name	Wire Color	Destination
1	+15	BR	DC+15 (C4-2)
2	+15	BR	PGM+15 (C3-4)
3	E	BL	DC-AE (C4-4)
4	E	BL	PGM-AE (C3-1)
5	-15	YE	DC-15 (C4-6)
6	-15	YE	PGM-15 (C3-5)
7	Ø	GG	PGM-Ø (C10-1)

C7

Pin No.	Pin Name	Wire Color	Destination
1	44	GY	PA-A (C8-4)
2	45	WH	PA-D (C8-3)
3	46	GG	PB-RC (C3-5)
4	47	SB	PB-S (C1-9)
5	48	PK	PB-SD (C1-8)
6	49	BR	PB-PLR (C1-6)

C1~C4	
10	-10
9	DE
8	DE
7	+5
6	-15
5	-15
4	AE
3	AE
2	+15
1	+15



C1

Pin No.	Pin Name	Wire Color	Destination
1	+15	BR	PA+15 (C3-2)
2	+15	BR	PL+15 (C3-2)
3	AE	BL	PA-E (C7-5)
4	AE	BL	PL-E (C3-4)
5	-15	YE	PA-15 (C3-1)
6	-15	YE	PL-15 (C3-1)
7	+5	GR	PGM+5 (C1-1)
8	DE	BL	PA-DE (C1-1)
9	DE	BL	SK-E (C3-5)
10	-10	BE	PGM-10 (C1-3)

C2

Pin No.	Pin Name	Wire Color	Destination
1	+15	BR	PB+15 (C3-4)
2	+15	BR	MOD+15 (C2-4)
3	AE	BL	PB-E (C3-2)
4	AE	BL	MOD-E (C2-2)
5	-15	YE	PB-15 (C3-1)
6	-15	YE	MOD-15 (C2-1)
7	+5	GR	PB+5 (C1-2)
8	DE	BL	PGM-DE (C10-3)
9	DE	-	-
10	-10	BE	PB-10 (C1-4)

C3

Pin No.	Pin Name	Wire Color	Destination
1	+15	BR	FA+15 (C8-3)
2	+15	BR	VCO+15 (C1-8)
3	AE	BL	FA-E (C8-1)
4	AE	BL	VCO-E (C1-6)
5	-15	YE	FA-15 (C7-4)
6	-15	YE	VCO-15 (C1-3)
7	+5	GR	MOD+5 (C10-8)
8	DE	-	-
9	DE	-	-
10	-10	BE	MOD-10 (C10-6)

C4

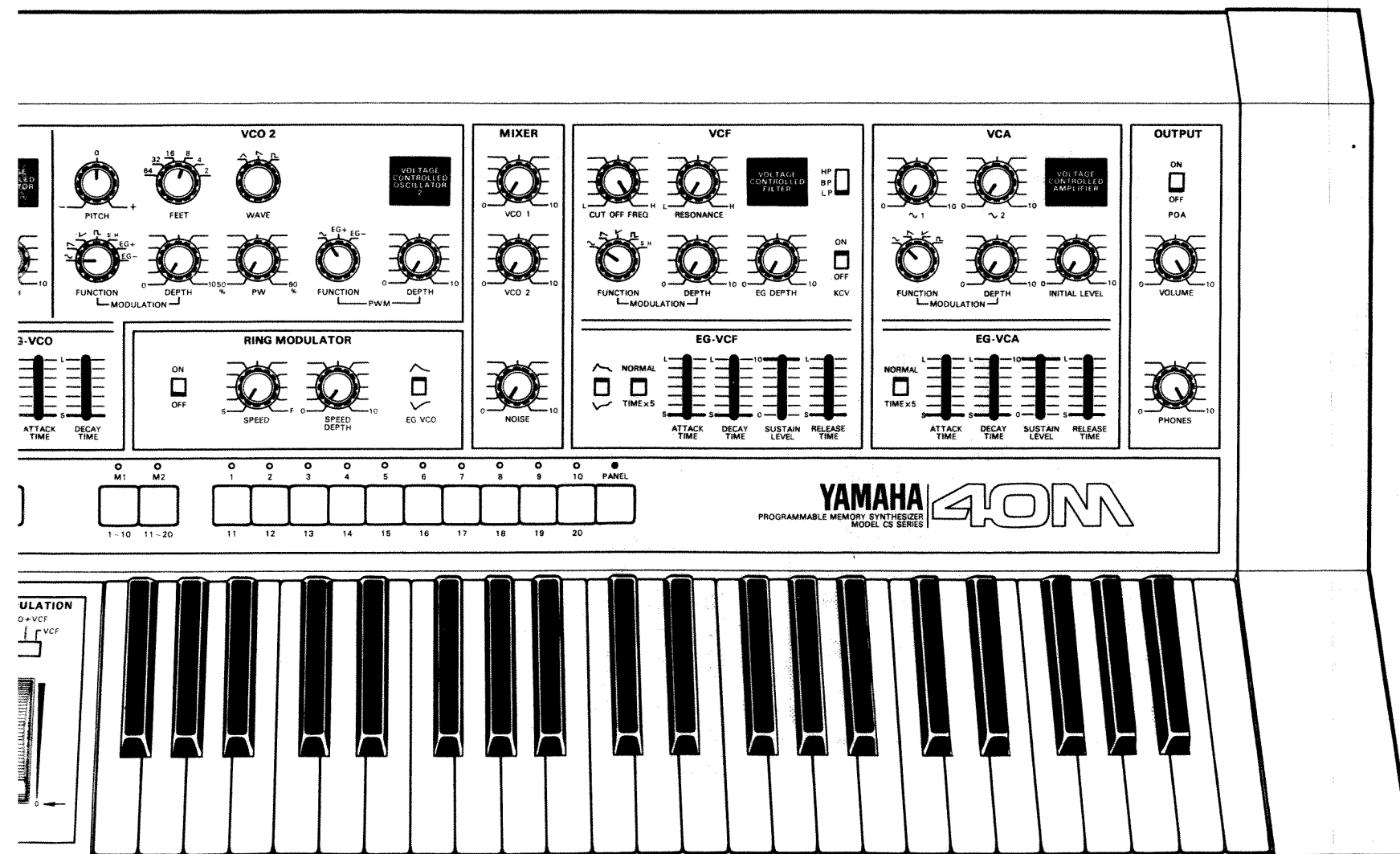
Pin No.	Pin Name	Wire Color	Destination
1	+15	BR	IF+15 (C6-5)
2	+15	BR	DM+15 (C6-1)
3	AE	BL	IF-E (C6-3)
4	AE	BL	DM-E (C6-3)
5	-15	YE	IF-15 (C6-1)
6	-15	YE	DM-15 (C6-5)
7	+5	GR	DM+5 (C12-5)
8	DE	-	-
9	DE	-	-
10	-10	BE	DM-10 (C12-1)

Note)

- Circuit Board : LC84040
- IC
IC1, 2 : NJM4558DV
- Transistor
Tr1, 9 : 2SD235
Tr2 : 2SC2120
Tr3 ~ 5, 10 : 2SC1815
Tr6, 11 : 2SA1015
Tr7 : 2SA950
Tr8, 12 : 2SA490
- Diode
D1, 3, 5, 7 : 1D2C1
D2, 4, 6, 8 : 1D2Z1
D9, 10 : 1S1555
D1, 2 : RD15EB3
ZD3 : RD5, 6EB3
ZD4, 5 : RD3, 6EB1
- Capacitor
△ marked : Tantalum Capacitor

PANEL SETTING

be
as
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tes



BLOCK	FUNCTION	POSITION
VCO1 & VCO2	PITCH	Near center "0" Position
	FEET	8'
	WAVE	∩
	MOD. FUNCTION	∩
	MOD. DEPTH	0
	PW	50%
	PWM FUNCTION	∩
MIXER	VCO1	0
	VCO2	0
	NOISE	0

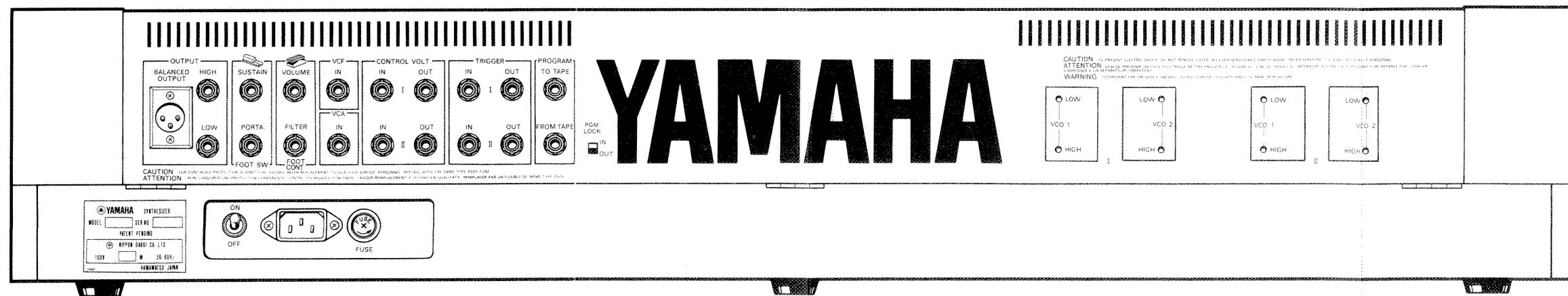
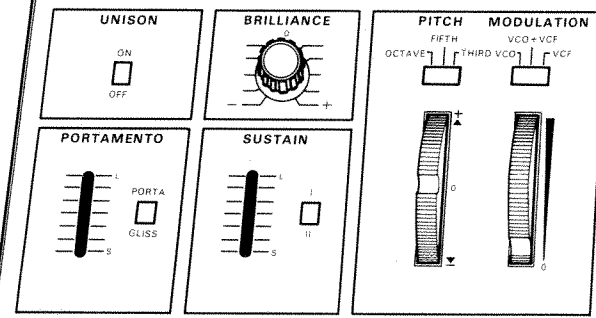
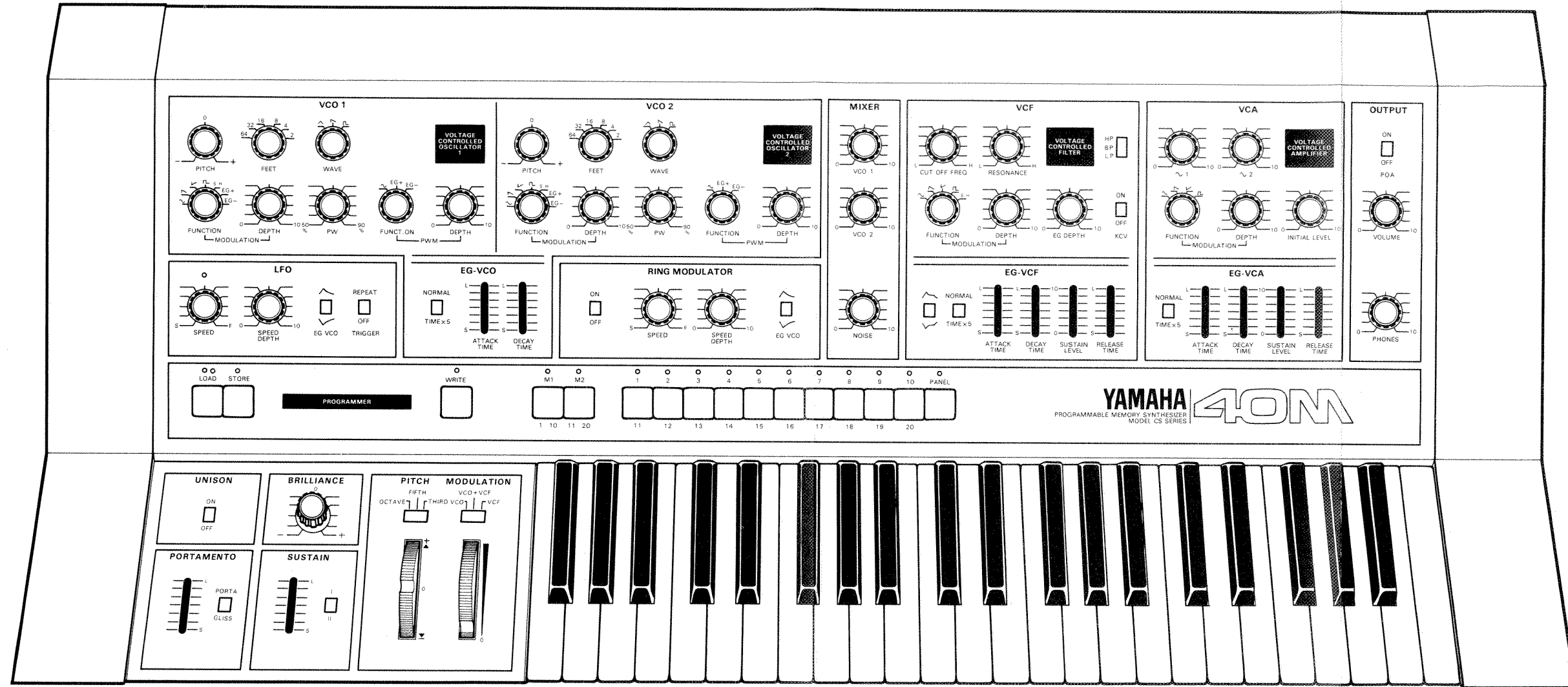
BLOCK	FUNCTION	POSITION
OUTPUT	POA	OFF
	VOLUME	10
	PHONES	10
LFO	SPEED	S
	SPEED DEPTH	0
	EG-VCO	∩
	TRIGGER	OFF
EG-VCO	TIME EXPAND	NORMAL
	ATTACK TIME	S
	DECAY TIME	S

BLOCK	FUNCTION	POSITION
VCF	CUT OFF FREQ.	H
	RESONANCE	L
	VCF MODE	LP
	MOD. FUNCTION	∩
	MOD. DEPTH	0
	EG DEPTH	0
	KCV	ON
VCA	~1	0
	~2	0
	MOD. FUNCTION	∩
	MOD. DEPTH	0
EG-VCA	INITIAL LEVEL	0
	ATTACK TIME	S
	DECAY TIME	S

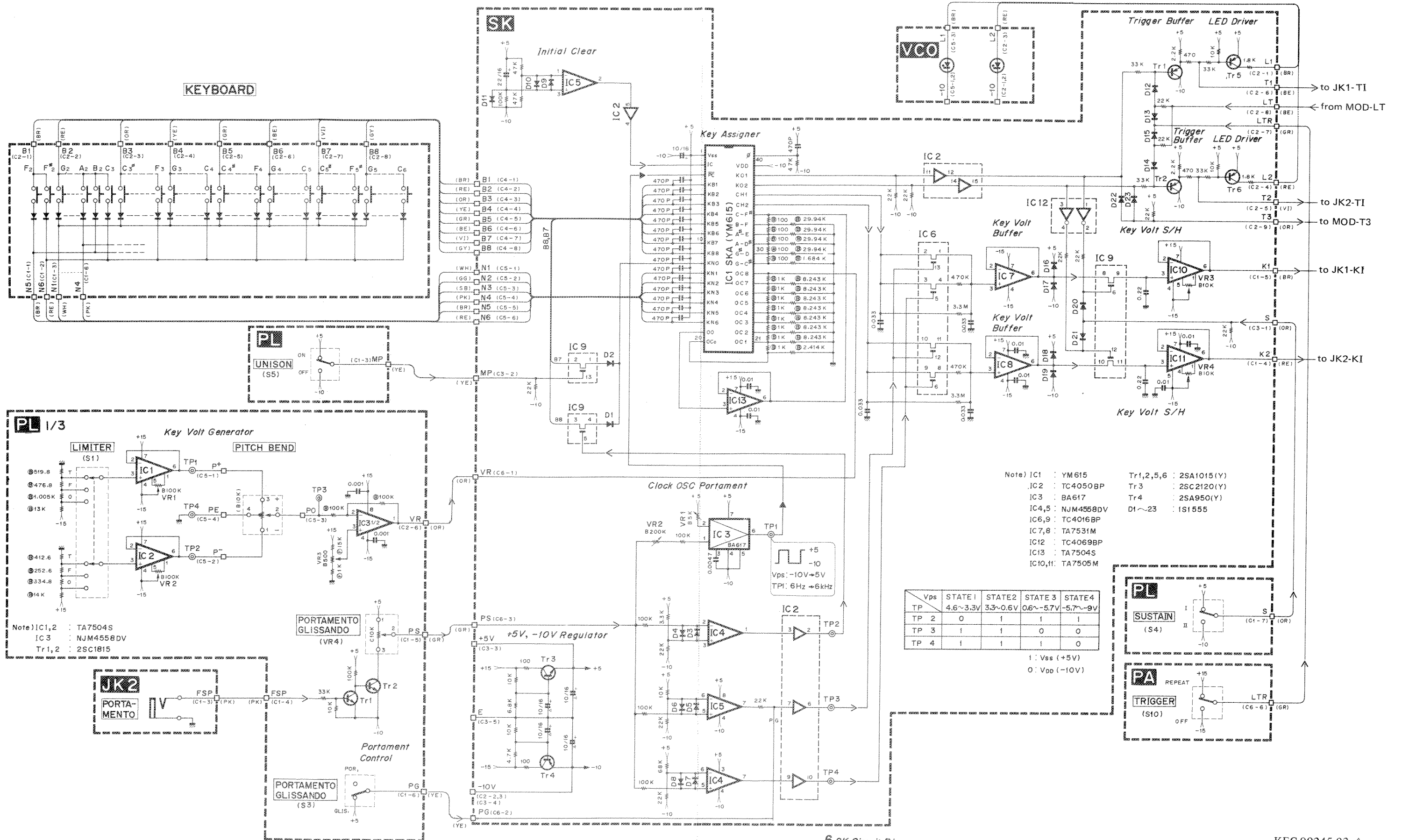
BLOCK	FUNCTION	POSITION
RING MODULATOR	RMO ON/OFF	OFF
	SPEED	S
	SPEED DEPTH	0
	EG-VCO	∩
EFFECT	UNISON	OFF
	PORTAMENT	S
	PORTA/GLISS	PORTA
	BRILLIANCE	Center "0" Position
	SUSTAIN	S
	SUSTAIN MODE I/II	II
	PITCH WHEEL	Center detent Position
LIMITER	OCTAVE	
MODULATION WHEEL	MODULATION WHEEL	0
	MODULATION WHEEL	0
	MODULATION MODE	VCO
PRO-GRAMMER		PANEL

BLOCK	FUNCTION	POSITION
EG-VCF	TIME EXPAND	NORMAL
	ATTACK TIME	S
	DECAY TIME	S
	SUSTAIN LEVEL	10
	RELEASE TIME	S
EG-VCA	TIME EXPAND	NORMAL
	ATTACK TIME	S
	DECAY TIME	S
	RELEASE TIME	S

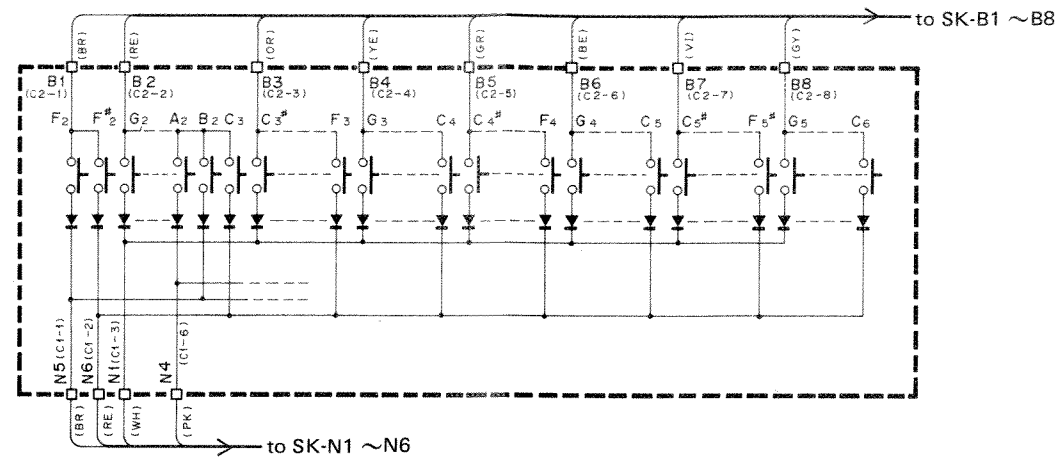
PANEL LAYOUT



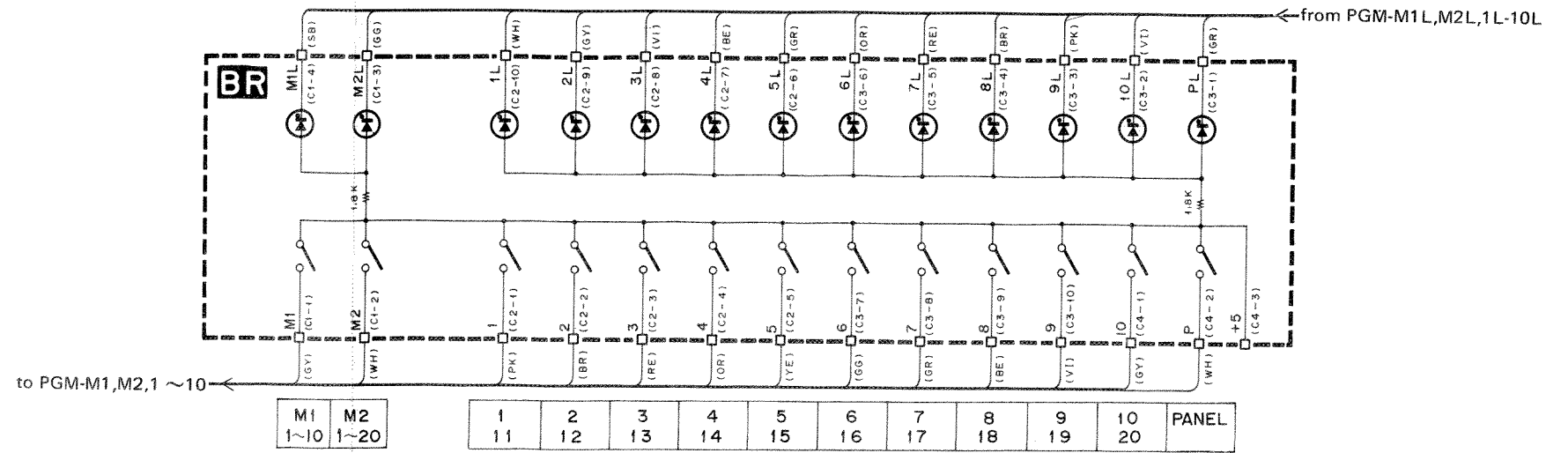
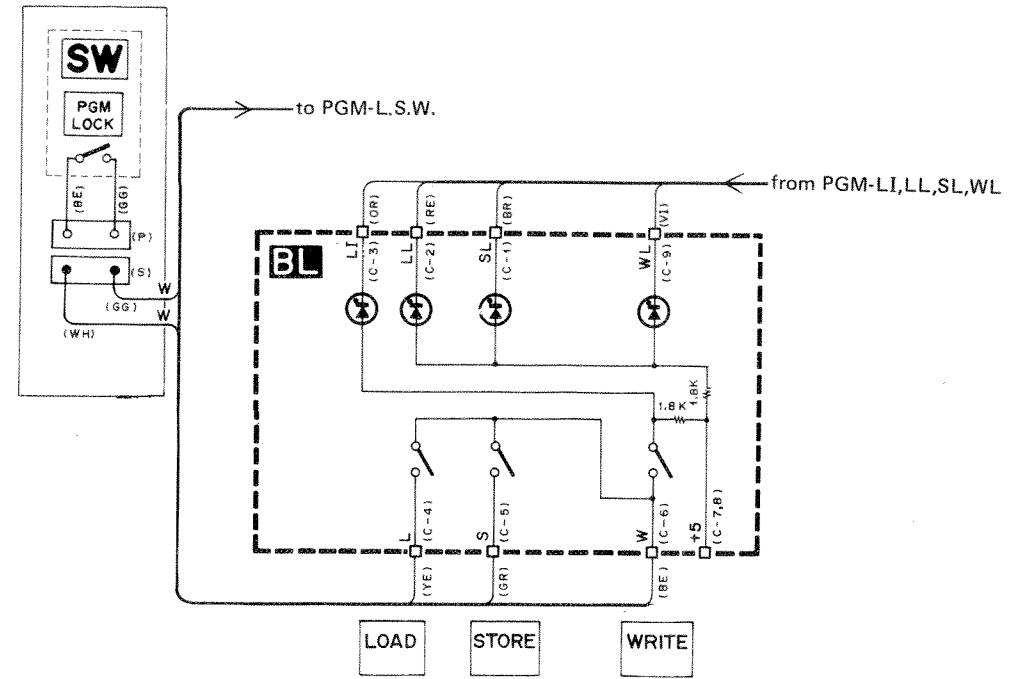
SK Circuit Diagram



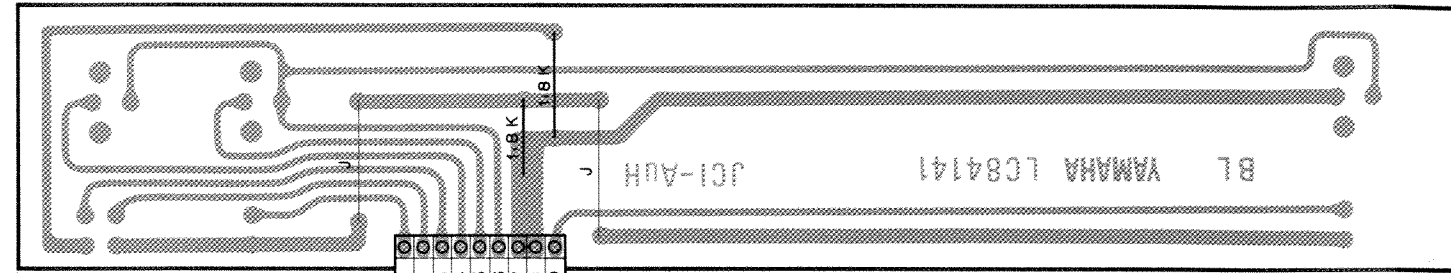
KS Circuit Diagram



BL, BR Circuit Diagram



BL, BR Circuit Board & Wiring



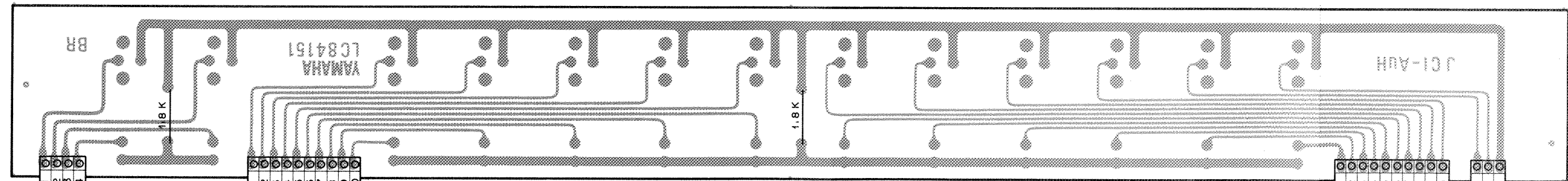
View from the printed pattern side of the circuit board

1	SL
2	LL
3	LI
4	L
5	S
6	W
7	+5
8	+5
9	WL

C1

Pin No.	Pin Name	Wire Color	Destination
1	SL	BR	PGM-SL (C14-10)
2	LL	RE	PGM-LL (C14-9)
3	LI	OR	PGM-LI (C2-5)
4	L	YE	PGM-L (C10-9)
5	S	GR	PGM-S (C10-8)
6	W	BE	SW-1 (C-1)
7	+5	GR	PGM-+5 (C1-2)
8	+5	GR	BR-+5 (C4-3)
9	WL	VI	PGM-WL (C14-8)

Note)
1. Circuit Board : LC84141



View from the printed pattern side of the circuit board

C1

1	M1
2	M2
3	M2L
4	M1L

C2

1	1
2	2
3	3
4	4
5	5
6	5L
7	4L
8	3L
9	2L
10	1L

C3

1	PL
2	10L
3	9L
4	8L
5	7L
6	6L
7	7
8	8
9	9
10	10

C4

1	10
2	P
3	+5

C1

Pin No.	Pin Name	Wire Color	Destination
1	M1	GY	GPM-M1 (C11-2)
2	M2	WH	PGM-M2 (C11-3)
3	M2L	GG	PGM-M2L (C14-5)
4	M1L	SB	PGM-M1L (C14-7)

C2

Pin No.	Pin Name	Wire Color	Destination
1	1	PK	PGM-1 (C11-4)
2	2	BR	PGM-2 (C11-5)
3	3	RE	PGM-3 (C11-6)
4	4	OR	PGM-4 (C12-4)
5	5	YE	PGM-5 (C12-3)
6	5L	GR	PGM-5L (C13-5)
7	4L	BE	PGM-4L (C14-3)
8	3L	VI	PGM-3L (C13-3)
9	2L	GY	PGM-2L (C14-2)
10	1L	WH	PGM-1L (C13-2)

C3

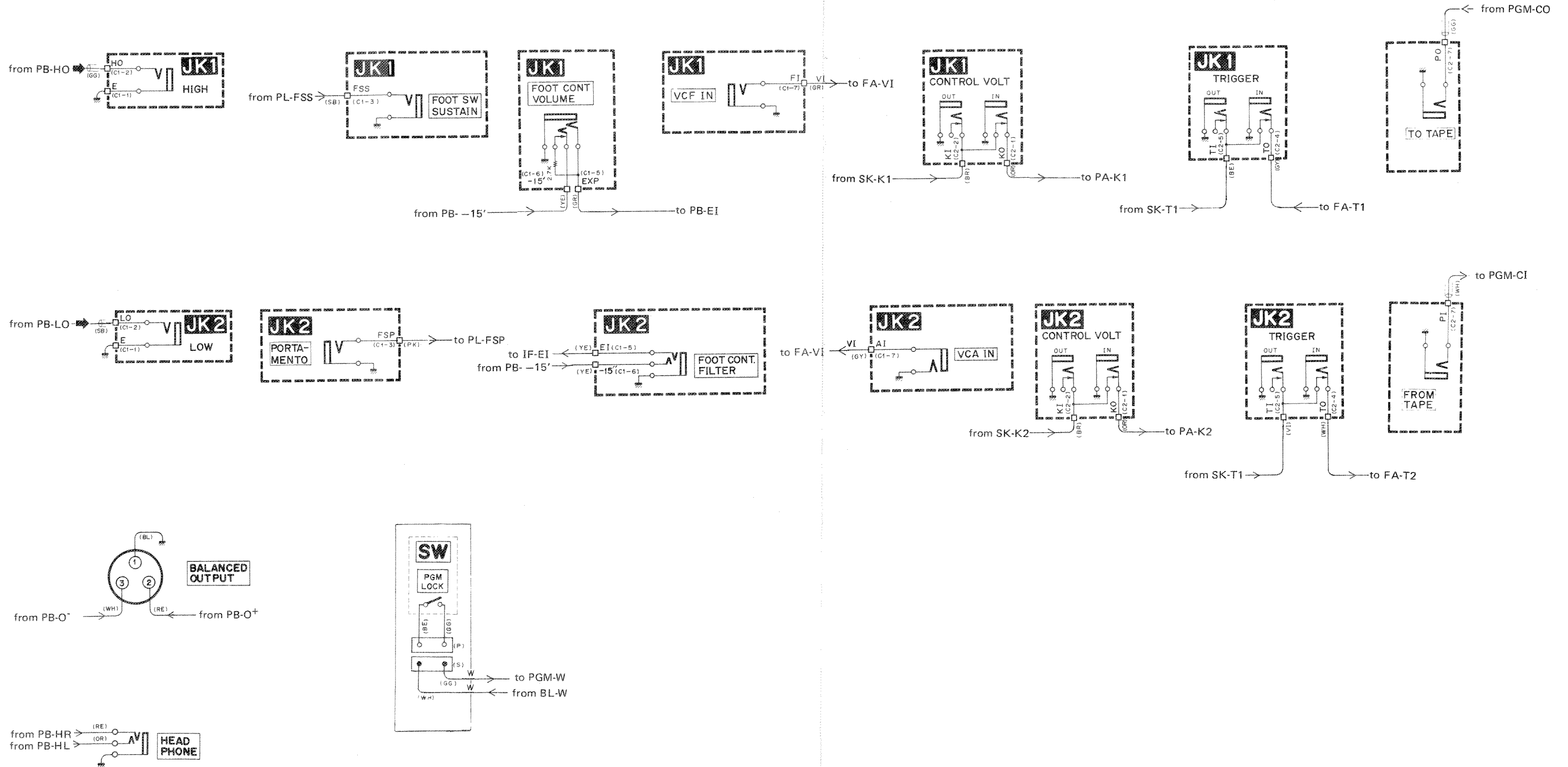
Pin No.	Pin Name	Wire Color	Destination
1	PL	GR	PGM-PL (C14-6)
2	10L	VI	PGM-10L (C14-4)
3	9L	PK	PGM-9L (C13-6)
4	8L	BR	PGM-8L (C13-1)
5	7L	RE	PGM-7L (C14-1)
6	6L	OR	PGM-6L (C13-4)
7	6	GG	PGM-6 (C12-2)
8	7	GR	PGM-7 (C12-1)
9	8	BE	PGM-8 (C12-5)
10	9	VI	PGM-9 (C12-6)

C4

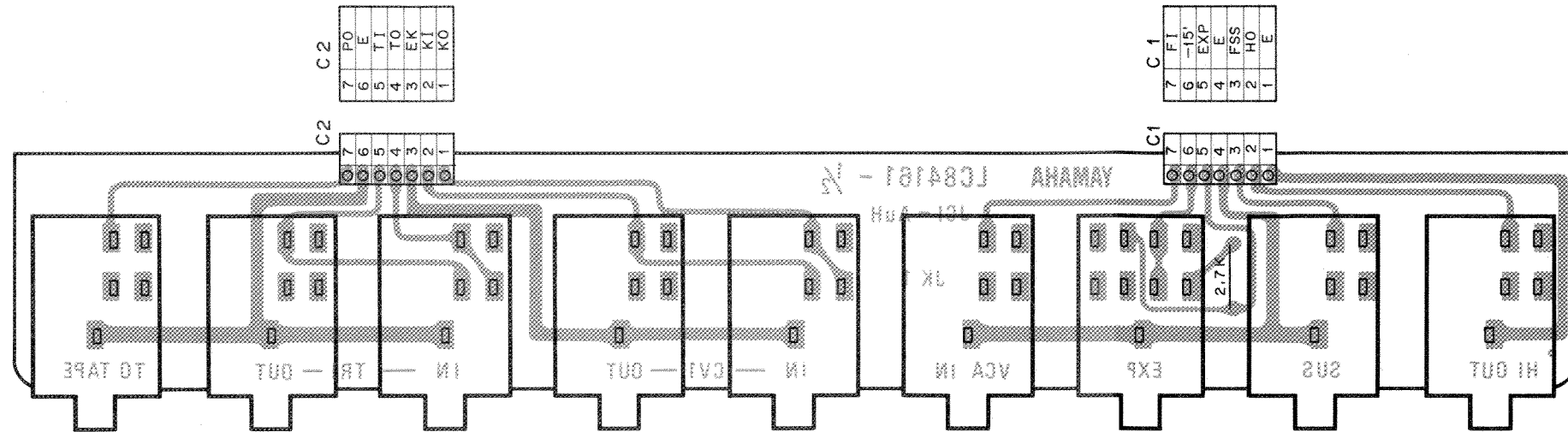
Pin No.	Pin Name	Wire Color	Destination
1	10	GY	PGM-10 (C12-7)
2	P	WH	PGM-P (C10-6)
3	+5	GR	BL-+5 (C-8)

Note)
1. Circuit Board : LC84151

JK, SW Circuit Diagram



JK1 Circuit Board & Wiring



C1

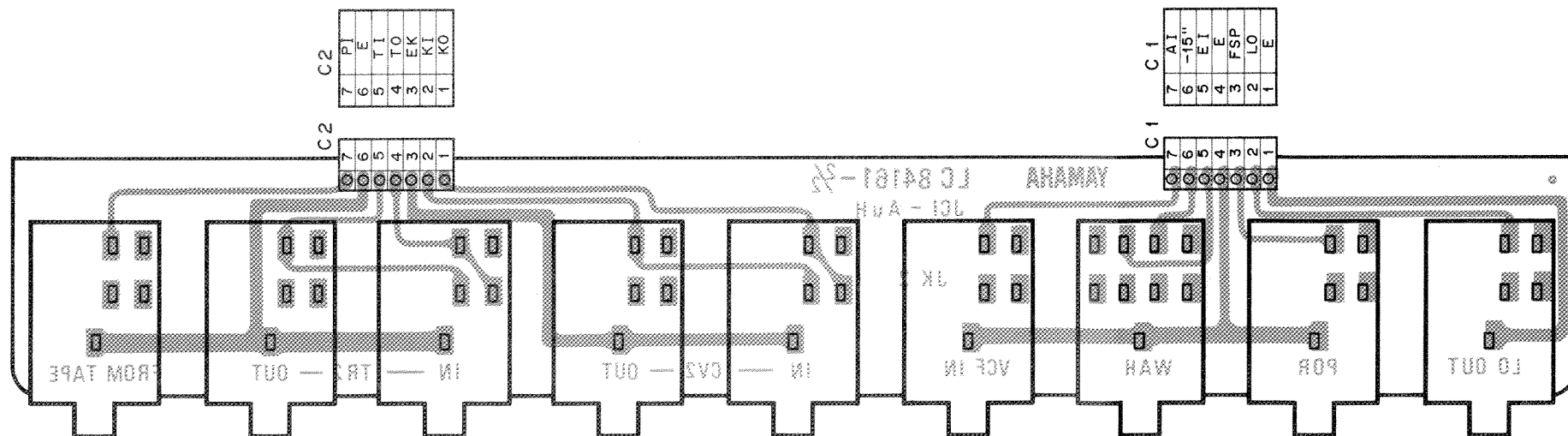
Pin No.	Pin Name	Wire Color	Destination
1	E	S-GG-S	
2	HO	S-GG	PB-HO (C6-7)
3	FSS	SB	PL-FSS (C2-1)
4	E	-	-
5	EXP	GR	PB-EI (C5-9)
6	-15"	YE	PB--15" (C2-9)
7	FI	GR	FA-VI (C5-5)

C2

Pin No.	Pin Name	Wire Color	Destination
1	KO	OR	PA-K1 (C5-3)
2	KI	BR	SK-K1 (C1-5)
3	EK	BL	PA-EK (C3-4)
4	TO	GY	FA-T1 (C10-1)
5	TI	BE	SK-T1 (C2-6)
6	E	S-GG-S	
7	PO	S-GG	PGM-CO (C2-4)

Note)
1. Circuit Board : LC84161

JK2 Circuit Board & Wiring



C1

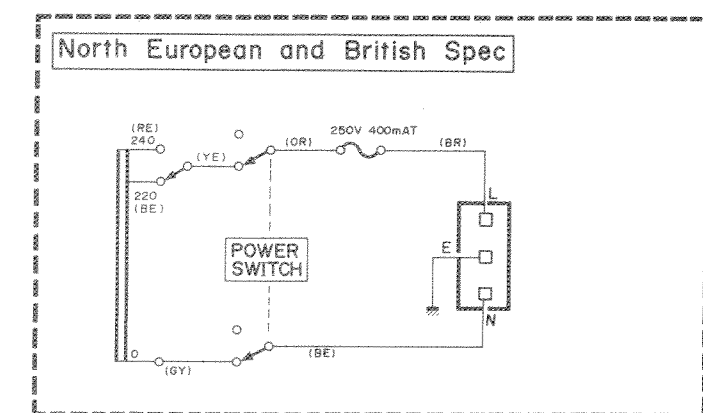
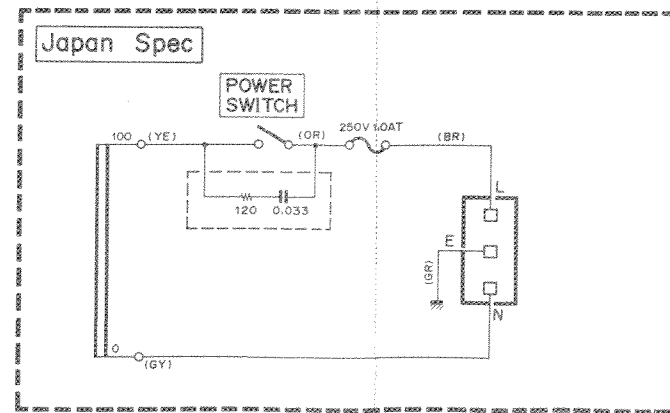
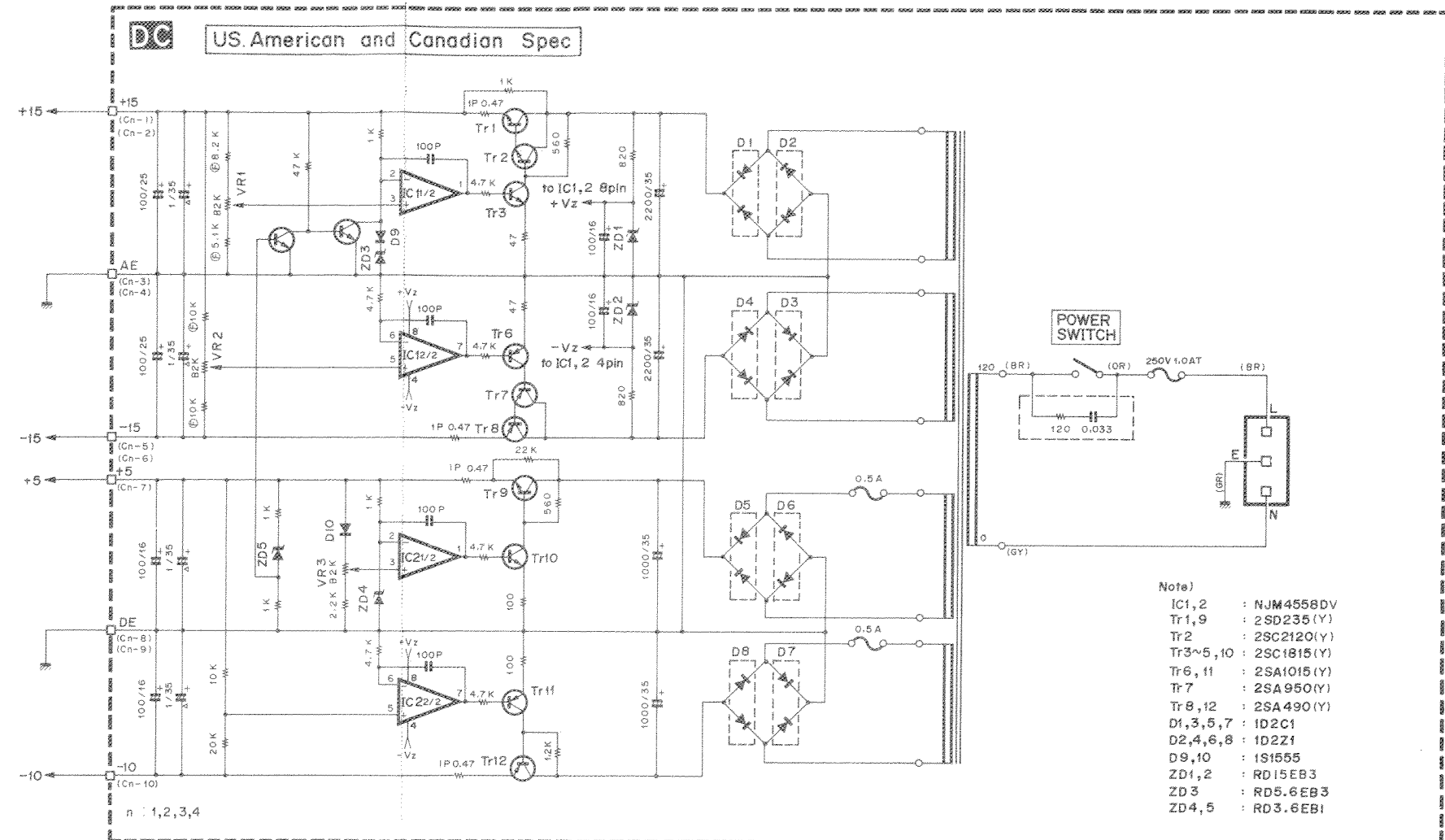
Pin No.	Pin Name	Wire Color	Destination
1	E	S-SB-S	
2	LO	S-SB	PB-LO (C6-9)
3	FSP	PK	PL-FSP (C1-4)
4	E	BL	FA-E (C8-2)
5	EI	YE	IF-EI (C7-1)
6	-15"	YE	PB--15" (C2-10)
7	AI	GY	FA-VI (C1-7)

C2

Pin No.	Pin Name	Wire Color	Destination
1	KO	YE	PA-K2 (C5-1)
2	KI	RE	SK-K2 (C1-4)
3	EK	BL	PA-EK (C3-5)
4	TO	WH	FA-T2 (C10-4)
5	TI	VI	SK-T2 (C2-5)
6	E	-	-
7	PI	S-WH	PGM-CI (C2-1)

Note)
1. Circuit Board : LC84161

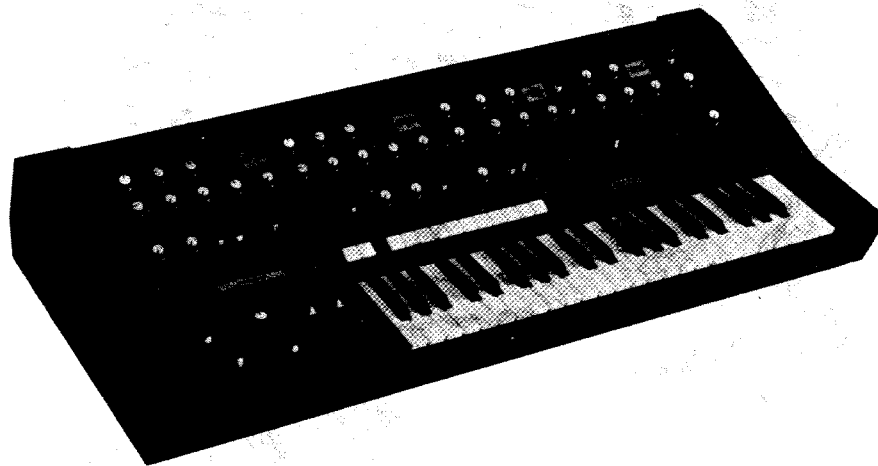
DC Circuit Diagram



YAMAHA

PROGRAMMABLE MEMORY SYNTHESIZER

CS-40M



SERVICE MANUAL

SK Circuit Board & Wiring

C1

Pin No.	Pin Name	Wire Color	Destination
1	EK	BL	PL-E (C3-6)
2	+15	BR	IF-+15 (C6-6)
3	-15	YE	IF--15 (C6-2)
4	K2	RE	JK2-K1 (C2-2)
5	K1	BR	JK1-K1 (C2-2)

C2

Pin No.	Pin Name	Wire Color	Destination
1	L1	BR	VCO-L1 (C5-3)
2	-10	BE	VCO- -10 (C2-1)
3	-10	BE	VCO- -10 (C5-1)
4	L2	RE	VCO-L2 (C2-3)
5	T2	VI	JK2-T1 (C2-5)
6	T1	BE	JK1-T1 (C2-5)
7	LTR	GR	PA-LTR (C6-6)
8	LT	BE	MOD-LT (C12-1)
9	T3	OR	MOD-T3 (C11-1)

C3

Pin No.	Pin Name	Wire Color	Destination
1	S	OR	PL-S (C1-7)
2	MP	YE	PL-MP (C1-3)
3	+5	GR	PL-+5 (C1-2)
4	-10	BE	PL- -10 (C1-1)
5	E	BL	DC-DE (C1-9)

C4

Pin No.	Pin Name	Wire Color	Destination
1	B1	BR	KS-B1 (C2-1)
2	B2	RE	KS-B2 (C2-2)
3	B3	OR	KS-B3 (C2-3)
4	B4	YE	KS-B4 (C2-4)
5	B5	GR	KS-B5 (C2-5)
6	B6	BE	KS-B6 (C2-6)
7	B7	VI	KS-B7 (C2-7)
8	B8	GY	KS-B8 (C2-8)

C5

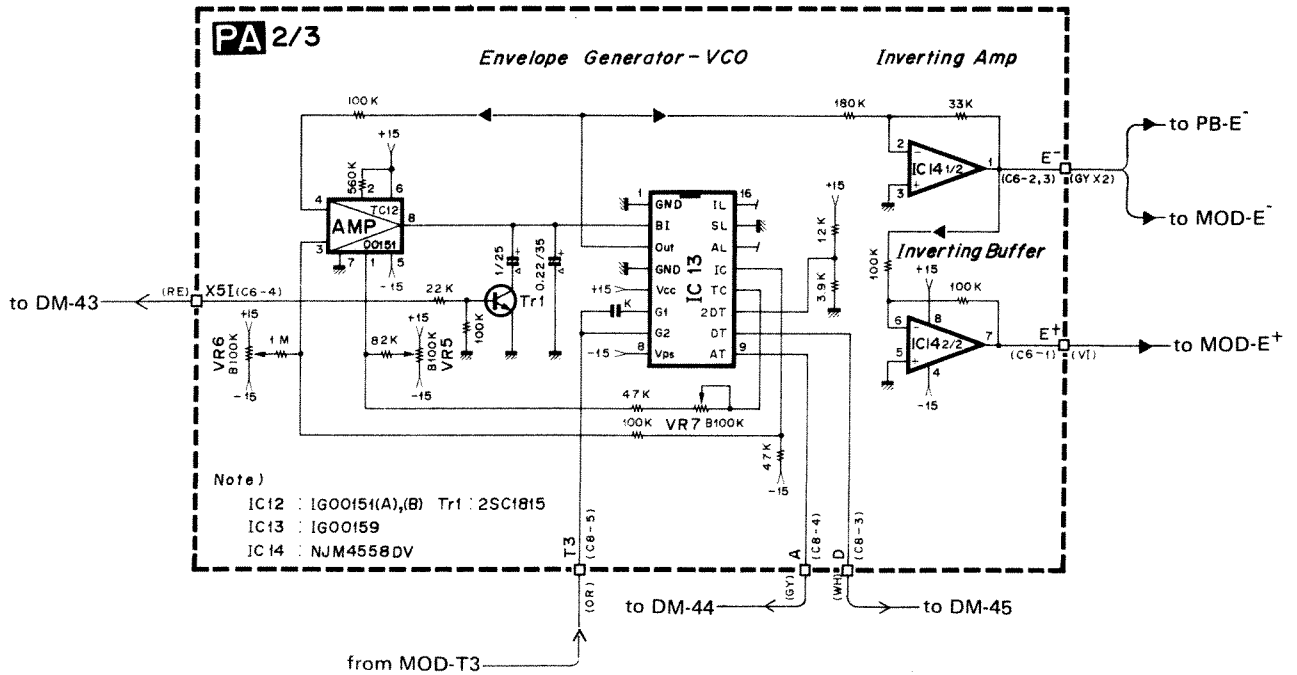
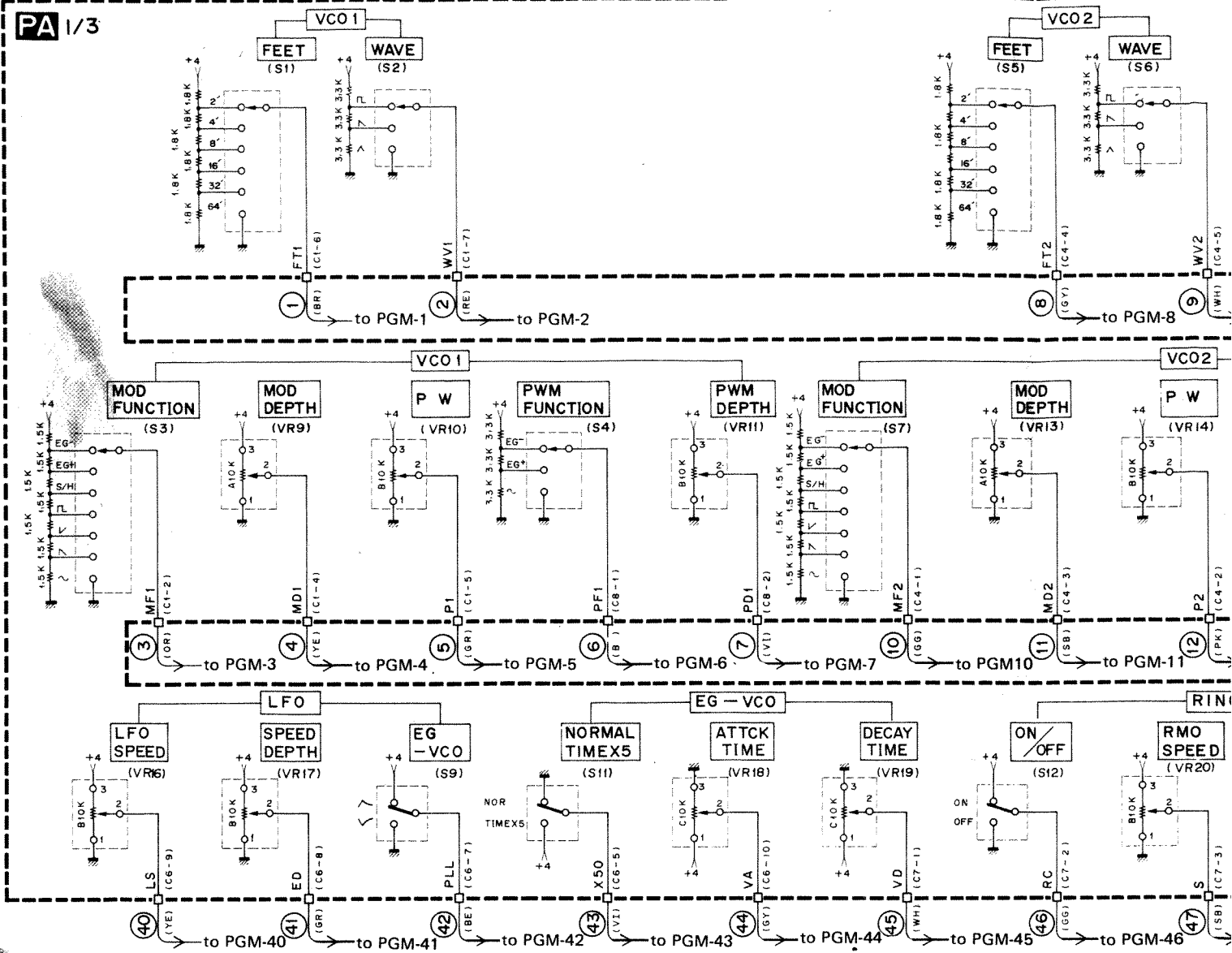
Pin No.	Pin Name	Wire Color	Destination
1	N1	WH	KS-N1 (C1-3)
2	N2	GG	KS-N2 (C1-4)
3	N3	SB	KS-N3 (C1-5)
4	N4	PK	KS-N4 (C1-6)
5	N5	BR	KS-N5 (C1-1)
6	N6	RE	KS-N6 (C1-2)

C6

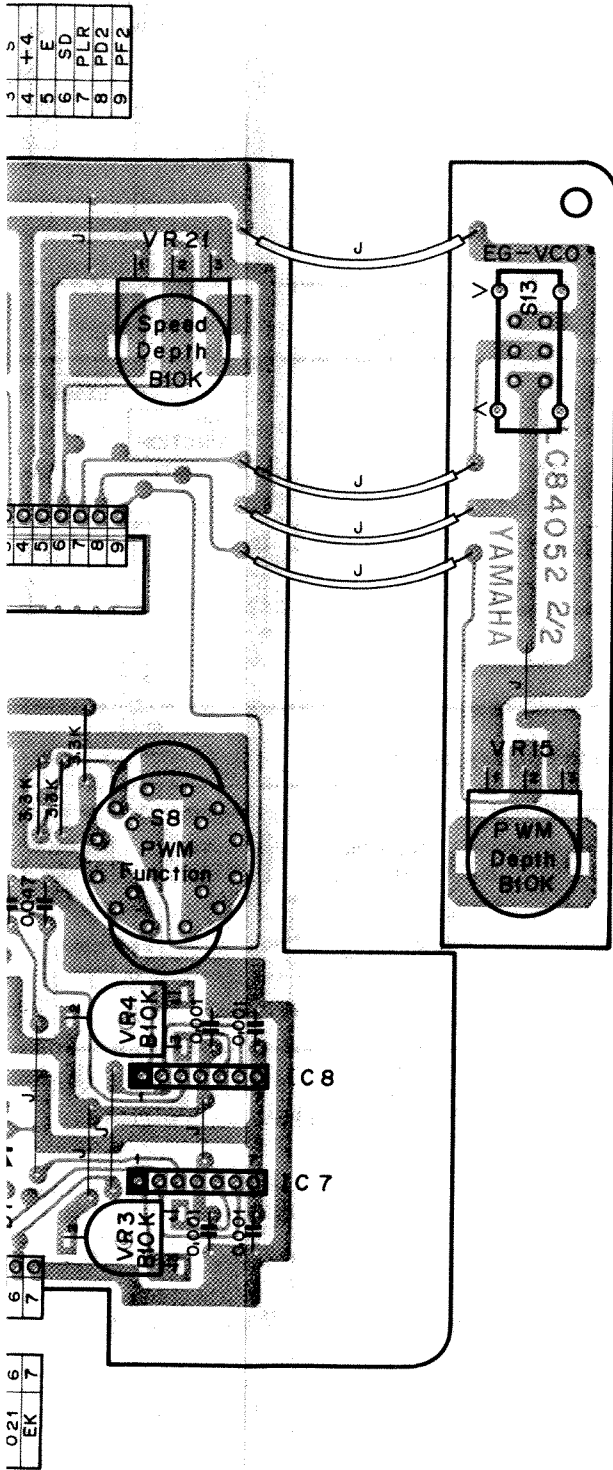
Pin No.	Pin Name	Wire Color	Destination
1	VR	OR	PL-VR (C2-6)
2	PG	YE	PL-PG (C1-8)
3	PS	GR	PL-PS (C1-5)

Note)

- Circuit Board : LC84031-1/2
- IC
 - IC1 : YM615
 - IC2 : IC4050BP
 - IC3 : BA617
 - IC4,5 : NJM4558DV
 - IC6,9 : TC4016BP
 - IC7,8 : TA7531M
 - IC10,11 : TA7505M
 - IC12 : TC4069BP
 - IC13 : TA7504S
- Transistor
 - Tr1, 2, 5, 6 : 2SA1015
 - Tr3 : 2SC2120
 - Tr4 : 2SA150
- Diode
 - D1 ~ 23 : 1S1555
- Capacitor
 - △ marked : Tantalum Capacitor
 - * marked : Polyphopylene Capacitor



PA Circuit Board & Wiring



View from the printed pattern side of the circuit board

C1

Pin No.	Pin Name	Wire Color	Destination
1	DE	BL	DC-DE (C1-8)
2	MF1	OR	PGM-3 (C4-8)
3	L	BR	MOD-~ (C8-3)
4	MD1	YE	PGM-4 (C4-7)
5	P1	GR	PGM-5 (C4-6)
6	FT1	BR	PGM-1 (C4-10)
7	WV1	RE	PGM-2 (C4-9)

C8

Pin No.	Pin Name	Wire Color	Destination
1	PF1	BE	PGM-6 (C4-1)
2	PD1	VI	PGM-7 (C4-2)
3	D	WH	DM-45 (C7-2)
4	A	GY	DM-44 (C7-1)
5	T3	OR	MOD-T3 (C11-2)

C2

Pin No.	Pin Name	Wire Color	Destination
1	K2	YE	PA-K2 (C5-2)
2	K2	YE	FA-K2 (C4-4)
3	K1	OR	PA-K1 (C5-4)
4	K1	OR	FA-K1 (C4-9)
5	O11	S-BR	VCO-K (C6-2)
6	O12	S-RE	VCO-K (C3-2)
7	EK	S-BR/S-RE	

C3

Pin No.	Pin Name	Wire Color	Destination
1	-15	YE	DC-15 (C1-5)
2	+15	BR	DC-15 (C1-1)
3	EK	BL	PL-E (C3-5)
4	EK	BL	JK1-EK (C2-3)
5	EK	BL	JK2-EK (C2-3)

C4

Pin No.	Pin Name	Wire Color	Destination
1	MF2	GG	PGM-10 (C4-5)
2	P2	PK	PGM-12 (C5-9)
3	MD2	SB	PGM-11 (C6-1)
4	FT2	GY	PGM-8 (C4-3)
5	WV2	WH	PGM-9 (C4-4)

C5

Pin No.	Pin Name	Wire Color	Destination
1	K2	YE	JK2-K0 (C2-1)
2	K2	YE	PA-K2 (C2-1)
3	K1	OR	JK1-K0 (C2-1)
4	K1	OR	PA-K1 (C2-3)
5	O21	S-OR	VCO-K (C4-2)
6	O22	S-YE	VCO-K (C1-2)
7	EK	S-YE/S-OR	

C6

Pin No.	Pin Name	Wire Color	Destination
1	E+	VI	MOD-E+ (C7-3)
2	E-	GY	PB-E- (C1-7)
3	E-	GY	MOD-E- (C7-5)
4	X5I	RE	DM-43 (C5-1)
5	X50	VI	PGM-43 (C8-6)
6	LTR	GR	SK-LTR (C2-7)
7	PLL	BE	PGM-42 (C9-1)
8	ED	GR	PGM-41 (C9-2)
9	LS	YE	PGM-40 (C7-8)
10	VA	GY	PGM-44 (C8-5)

C7

Pin No.	Pin Name	Wire Color	Destination
1	VD	WH	PGM-45 (C8-4)
2	RC	GG	PGM-46 (C9-3)
3	S	SB	PGM-47 (C9-4)
4	+4	VI	PB-+4 (C1-1)
5	E	BL	DC-AE (C1-3)
6	SD	PK	PGM-48 (C9-5)
7	PLR	BR	PGM-49 (C9-6)
8	PD2	RE	PGM-14 (C5-7)
9	PF2	BR	PGM-13 (C5-8)

Note)

1. Circuit Board : LC84050 [2]

2. IC

- IC1, 5 : TC4016BP
- IC2, 6, 14 : NJM4558DV
- IC3, 4, 7, 8 : TA7504S
- IC9 : TC4069BP
- IC10 : TC4017BP
- IC11 : TC4075BP
- IC12 : iG00151(A)(B)
- IC13 : iG00159

3. Transistor

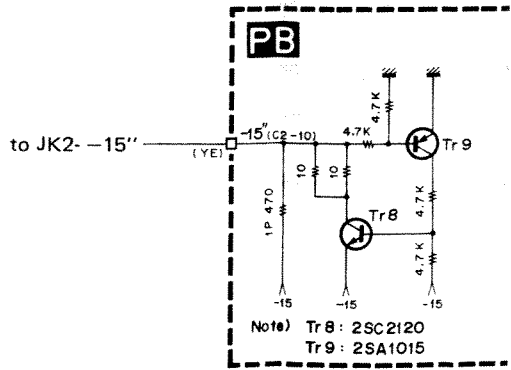
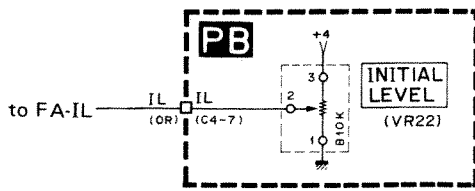
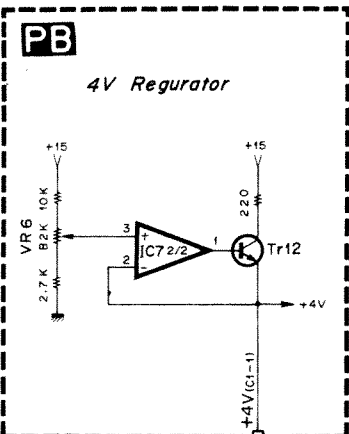
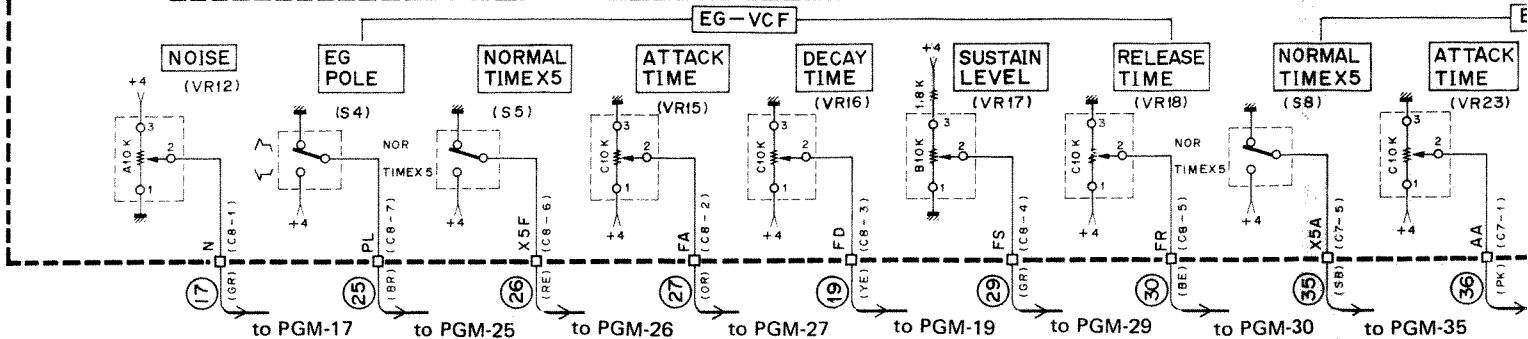
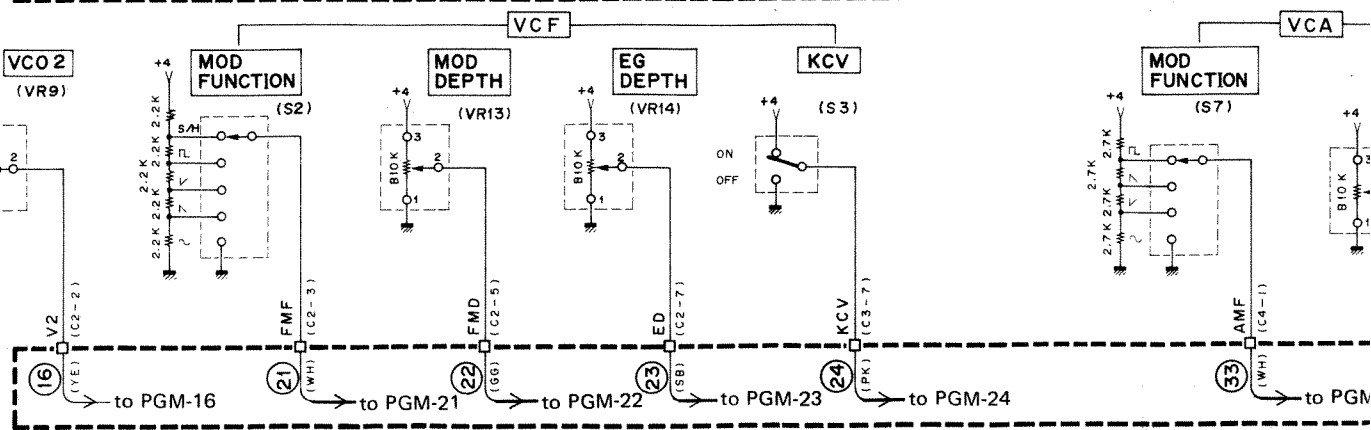
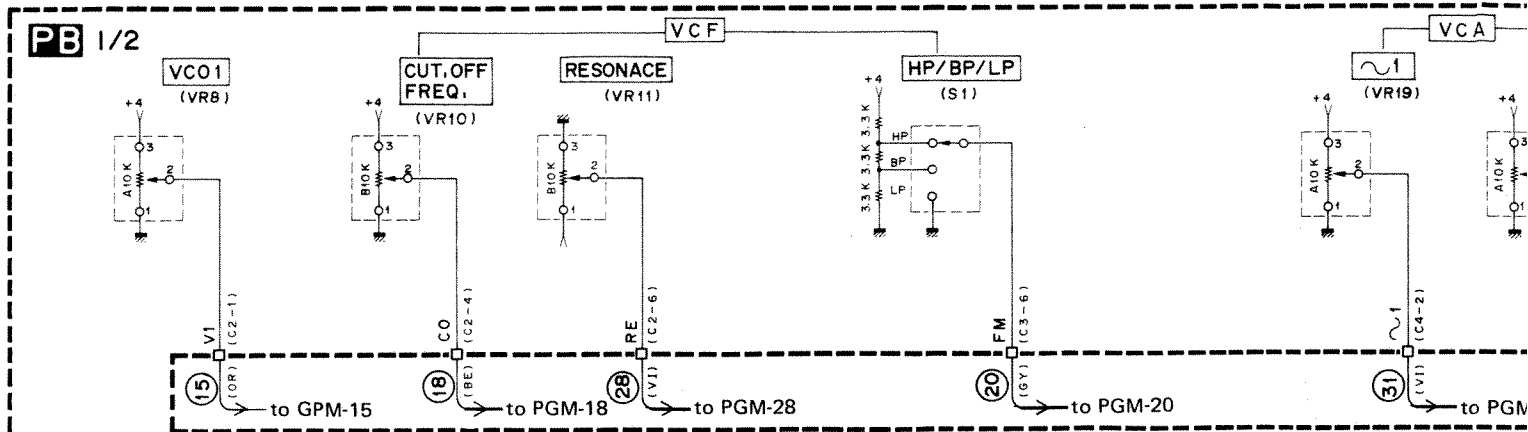
- Tr1, 2 : 2SC1815

4. Diode

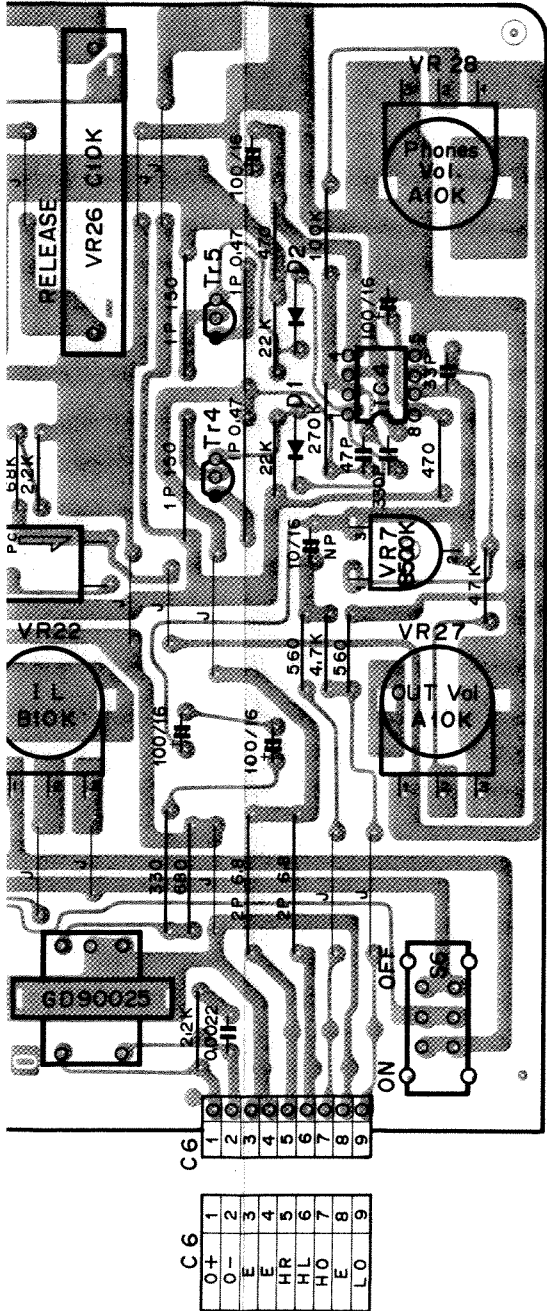
- D1, 2, 3 ~ 10 : 1S1555

5. Capacitor

- K marked : 1000P
- △ marked : Tantalum Capacitor



PB Circuit Board & Wiring



View from the printed pattern side of the circuit board

C1

Pin No.	Pin Name	Wire Color	Destination
1	+4	VI	PA-+4 (C7-4)
2	+5	GR	DC-+5 (C2-7)
3	+5	GR	PB-+5 (C4-3)
4	-10	BE	DC-10 (C2-10)
5	-10	BE	PB-10 (C4-4)
6	PLR	BR	DM-49 (C7-6)
7	E	GY	PA-E (C6-2)
8	SD	PK	DM-48 (C7-5)
9	S	SB	DM-47 (C7-4)

C6

Pin No.	Pin Name	Wire Color	Destination
1	O*	RE	XLR-2
2	O*	WH	XLR-3
3	E	-	-
4	E	S-GG-S	-
5	HR	RE	HP-2
6	HL	OR	HP-3
7	HO	S-GG	JK1-HO (C1-2)
8	E	S-SB-S	-
9	LO	S-SB	JK2-LO (C1-2)

C2

Pin No.	Pin Name	Wire Color	Destination
1	V1	OR	PGM-15 (C5-6)
2	V2	YE	PGM-16 (C5-1)
3	FMP	WH	PGM-21 (C7-3)
4	CO	BE	PGM-18 (C5-3)
5	FMD	GG	PGM-22 (C7-2)
6	RE	VI	PGM-19 (C5-4)
7	ED	SB	PGM-23 (C7-1)
8	M	WH	FA-M (C1-8)
9	-15*	YE	JK1-15* (C1-6)
10	-15*	YE	KJ2-15* (C1-6)

C7

Pin No.	Pin Name	Wire Color	Destination
1	AA	PK	PGM-36 (C7-4)
2	AD	BR	PGM-37 (C7-5)
3	AS	RE	PGM-38 (C7-6)
4	AR	OR	PGM-39 (C7-7)
5	X5A	SB	PGM-35 (C7-9)

C8

Pin No.	Pin Name	Wire Color	Destination
1	N	GR	PGM-17 (C5-2)
2	FA	OR	PGM-27 (C6-3)
3	FD	YE	PGM-28 (C6-4)
4	FS	GR	PGM-29 (C6-5)
5	FR	BE	PGM-30 (C6-6)
6	X5F	RE	PGM-26 (C6-2)
7	PL	BR	PGM-25 (C6-7)
8	E	BL	MOD-E (C2-3)

C3

Pin No.	Pin Name	Wire Color	Destination
1	-15	YE	DC-15 (C2-5)
2	E	BL	DC-AE (C2-3)
3	E	-	-
4	+15	BR	DC-+15 (C2-1)
5	RC	GG	DM-46 (C7-3)
6	FM	GY	PGM-20 (C5-5)
7	KCV	PK	PGM-24 (C6-8)

C4

Pin No.	Pin Name	Wire Color	Destination
1	AMF	WH	PGM-33 (C8-1)
2	~ 1	VI	PGM-31 (C8-3)
3	+5	GR	PB-+5 (C1-3)
4	-10	BE	PB-10 (C1-5)
5	AMD	GG	PGM-34 (C7-10)
6	~ 2	GY	PGM-32 (C8-2)
7	IL	OR	FA-IL (C1-6)
8	BY	RE	PGM-50 (C9-7)

C5

Pin No.	Pin Name	Wire Color	Destination
1	D	PK	FA-D (C9-5)
2	D	RE	DM-50 (C1-5)
3	F1	YE	FA-A13 (C9-11)
4	F2	GR	FA-A23 (C9-4)
5	E	S-BR-S	-
6	I1	S-BR	FA-A01 (C9-8)
7	I2	S-RE	FA-A02 (C9-9)
8	E	S-RE-S	-
9	EI	GR	JK1-EXP (C1-5)

Note)

1. Circuit Board : LC84062

2. IC

- IC1 : TC4016BP
- IC2 ~ 4, 7 : NJM4558DV
- IC5 : μ A796HC
- IC6 : iG00151
- IC8 : iG00150

3. Transistor

- Tr1, 2, 7, 9 : 2SA1015
- Tr3, 10, 11 : 2SC1815
- Tr4, 6, 8 : 2SC2120
- Tr5 : 2SA950

4. FET

- FET1, 2 : 2SK105

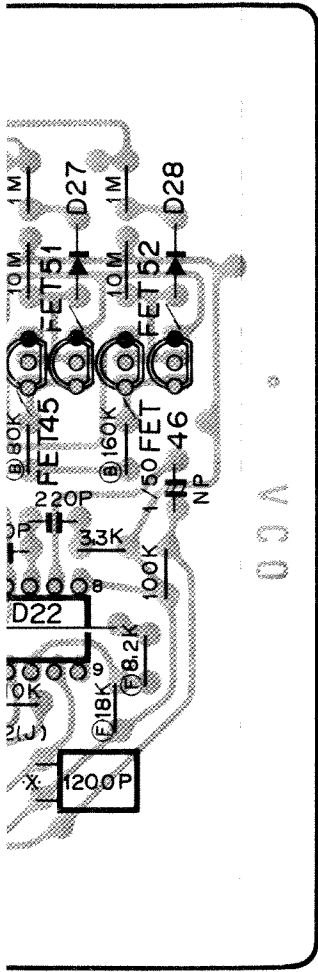
5. Diode

- D1 ~ 5 : 1S1555
- ZD1 ~ 3 : RD6.8EB2

6. Capacitor

- Δ marked : Tantalum Capacitor
- K marked : 1000P

VCO Circuit Board & Wiring



C1

Pin No.	Pin Name	Wire Color	Destination
1	EK	S-YE-S	
2	K	S-YE	PA-O22 (C5-6)
3	-15	YE	DC-15 (C3-6)
4	-15	YE	VCO-15 (C3-3)
5	V	PK	MOD-V2 (C9-4)
6	E	BL	DC-AE (C3-4)
7	E	BL	VCO-E (C3-6)
8	+15	BR	DC+15 (C3-2)
9	+15	BR	VCO+15 (C3-8)
10	O	YE	MOD-I22 (C3-8)

C6

Pin No.	Pin Name	Wire Color	Destination
1	EK	S-BR-S	
2	K	S-BR	PA-O11 (C2-5)
3	-15	YE	VCO-15 (C4-4)
4	-15	-	-
5	V	SB	MOD-V1 (C9-7)
6	E	BL	VCO-E (C4-7)
7	E	-	-
8	+15	BR	VCO+15 (C4-9)
9	+15	-	-
10	O	BR	MOD-I11 (C3-2)

C2

Pin No.	Pin Name	Wire Color	Destination
1	-10	BE	SK-10 (C2-2)
2	-10	-	-
3	L2	RE	SK-L2 (C2-4)

C7

Pin No.	Pin Name	Wire Color	Destination
1	64'	BR	IF-64' (C2-5)
2	32'	RE	IF-32' (C1-4)
3	16'	OR	IF-16' (C1-6)
4	8'	YE	IF-8' (C1-8)
5	4'	GR	IF-4' (C2-1)
6	2'	BE	IF-2' (C2-3)

C3

Pin No.	Pin Name	Wire Color	Destination
1	EK	S-RE-S	
2	K	S-RE	PA-O12 (C2-6)
3	-15	YE	VCO-15 (C1-4)
4	-15	YE	VCO-15 (C4-3)
5	V	SB	MOD-V1 (C9-6)
6	E	BL	VCO-E (C1-7)
7	E	BL	VCO-E (C4-6)
8	+15	BR	VCO+15 (C1-9)
9	+15	BR	VCO+15 (C4-8)
10	O	RE	MOD-I12 (C3-4)

C8

Pin No.	Pin Name	Wire Color	Destination
1	64'	BR	IF-64' (C3-9)
2	32'	RE	IF-32' (C2-7)
3	16'	OR	IF-16' (C3-1)
4	8'	YE	IF-8' (C3-3)
5	4'	GR	IF-4' (C3-5)
6	2'	BE	IF-2' (C3-7)

C4

Pin No.	Pin Name	Wire Color	Destination
1	EK	S-OR-S	
2	K	S-OR	PA-O21 (C5-5)
3	-15	YE	VCO-15 (C3-4)
4	-15	YE	VCO-15 (C6-3)
5	V	PK	MOD-V2 (C9-5)
6	E	BL	VCO-E (C3-7)
7	E	BL	VCO-E (C6-6)
8	+15	BR	VCO+15 (C3-9)
9	+15	BR	VCO+15 (C6-8)
10	O	OR	MOD-I21 (C3-6)

C9

Pin No.	Pin Name	Wire Color	Destination
1	64'	BR	IF-64' (C2-6)
2	32'	RE	IF-32' (C1-5)
3	16'	OR	IF-16' (C1-7)
4	8'	YE	IF-8' (C1-9)
5	4'	GR	IF-4' (C2-2)
6	2'	BE	IF-2' (C2-4)

C5

Pin No.	Pin Name	Wire Color	Destination
1	-10	BE	SK-10 (C2-3)
2	-10	-	-
3	L1	BR	SK-L1 (C2-1)

C10

Pin No.	Pin Name	Wire Color	Destination
1	64'	BR	IF-64' (C3-10)
2	32'	RE	IF-32' (C2-8)
3	16'	OR	IF-16' (C3-2)
4	8'	YE	IF-8' (C3-4)
5	4'	GR	IF-4' (C3-6)
6	2'	BE	IF-2' (C3-8)

Note)

1. Circuit Board : LC84070 [2]
2. IC
IC1, 3, 5, 7 : iG00153
IC2, 4, 6, 8 : TA7504S
3. FET
FET : 2SK30A
4. Diode
Diode : 1S1555
5. Capacitor
※ marked : Styrol Capacitor

pattern side of the circuit board

MOD Circuit Board & Wiring

C1

Pin Name	Wire Color	Destination
FL	YE	IF- (C5-7) FL
S/H	GR	MOD-S/H (C7-2)
S/H	GR	IF-S/H (C5-5)
WN	GY	FA-NI (C6-2)

C2

Pin Name	Wire Color	Destination
-15	YE	DC- -15 (C2-6)
E	BL	DC-AE (C2-4)
E	BL	PB-E (C8-8)
+15	BR	DC+15 (C2-2)

C3

Pin Name	Wire Color	Destination
S11	GR	FA-A11 (C8-6)
I11	BR	VCO-O (C6-10)
S12	BE	FA-A12 (C8-5)
I12	RE	VCO-O (C3-10)
S21	VI	FA-A21 (C9-1)
I21	OR	VCO-O (C4-10)
S22	GY	FA-A22 (C8-8)
I22	YE	VCO-O (C1-10)

C4

Pin Name	Wire Color	Destination
Q22	GY	FA-F22 (C6-4)
Q21	VI	FA-F21 (C6-5)
FL 2	GR	IF-FL 2 (C7-6)
^ 2	BE	IF-^ 2 (C7-9)
∩ 2	YE	IF-∩ 2 (C7-5)

C5

Pin Name	Wire Color	Destination
P2	PK	DM-12 (C2-3)
P1	GR	DM-5 (C11-1)
PD2	RE	DM-14 (C2-1)
PD1	VI	DM-7 (C11-3)

C6

Pin Name	Wire Color	Destination
MF1	OR	DM-3 (C1-2)
MF2	GG	DM-10 (C2-5)
PF1	BE	DM-6 (C11-2)
PF2	BR	DM-13 (C2-2)

C7

Pin Name	Wire Color	Destination
2 FL	BE	MOD-2 FL (C12-9)
S/H	GR	MOD-S/H (C1-2)
E*	VI	PA-E* (C6-1)
E-	GY	MOD-E- (C11-4)
E-	GY	PA-E- (C6-3)

C8

Pin Name	Wire Color	Destination
∨	OR	MOD-∨ (C12-7)
∩	RE	MOD-∩ (C12-5)
∩	BR	PA-L (C1-3)
∩	BR	MOD-∩ (C12-3)

C9

Pin No.	Pin Name	Wire Color	Destination
1	MD2	SB	DM-11 (C2-4)
2	MW	GG	PL-MO (C2-7)
3	MD1	YE	DM-4 (C1-1)
4	V2	PK	VCO-V (C1-5)
5	V2	PK	VCO-V (C4-5)
6	V1	SB	VCO-V (C3-5)
7	V1	SB	VCO-V (C6-5)

C10

Pin No.	Pin Name	Wire Color	Destination
1	O12	PK	FA-F12 (C7-2)
2	∩ 1	BR	IF-∩ 1 (C7-4)
3	FL 1	RE	IF-FL 1 (C7-7)
4	^ 1	OR	IF-^ 1 (C7-8)
5	O11	SB	FA-F11 (C7-1)
6	-10	BE	DC- -10 (C3-10)
7	-10	BE	FA- -10 (C4-5)
8	+5	GR	DC+5 (C3-7)
9	+5	GR	FA+5 (C4-6)

C11

Pin No.	Pin Name	Wire Color	Destination
1	T3	OR	SK-T3 (C2-9)
2	T3	OR	PA-T3 (C8-5)
3	PL	BE	DM-42 (C5-2)
4	E-	GY	MOD-E- (C7-4)
5	SD	GR	DM-41 (C5-3)

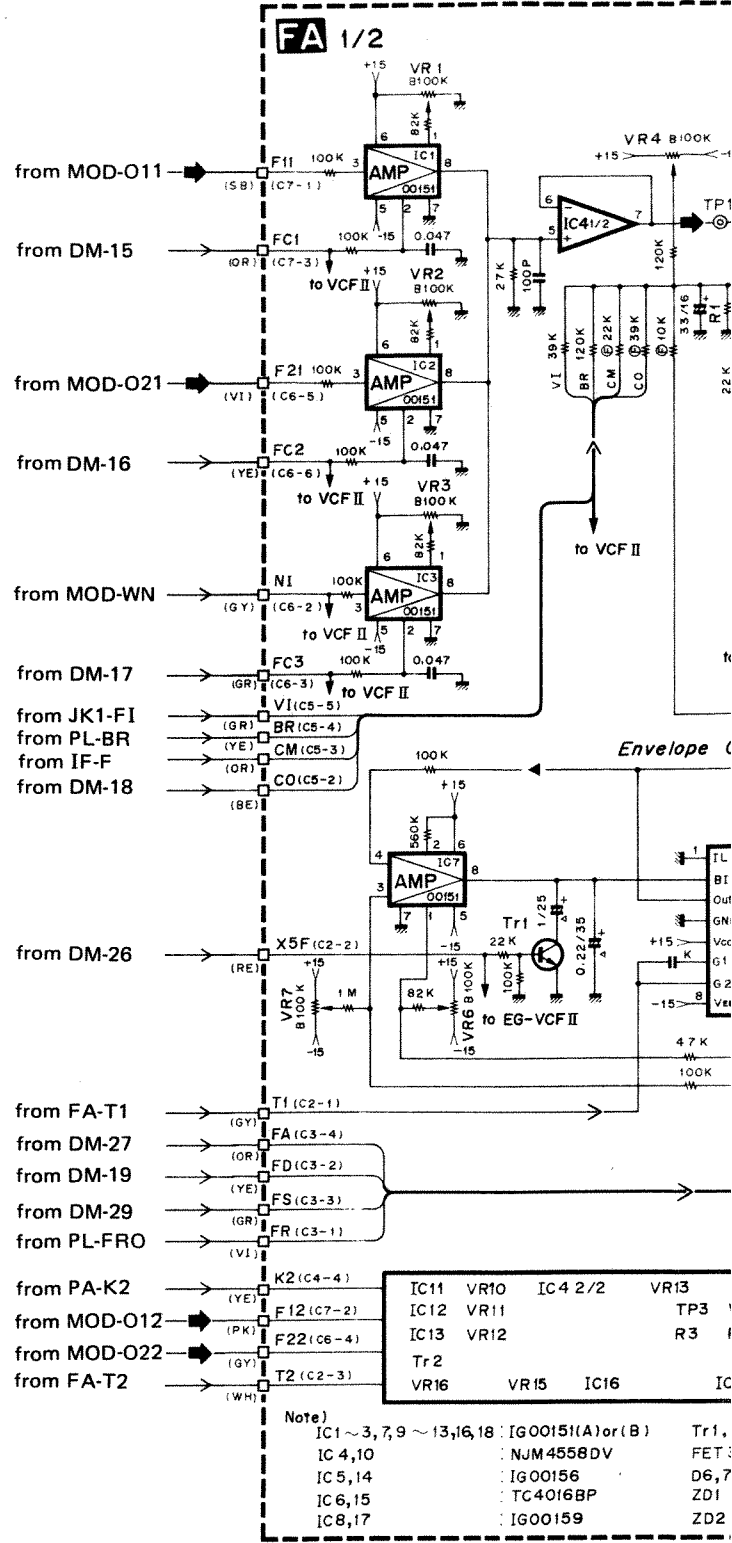
C12

Pin No.	Pin Name	Wire Color	Destination
1	LT	BE	SK-LT (C2-8)
2	S	YE	DM-40 (C5-4)
3	∩	BR	MOD-∩ (C8-4)
4	∩	BR	IF-∩ (C5-8)
5	∩	RE	MOD-∩ (C8-2)
6	∩	RE	IF-∩ (C5-6)
7	∨	OR	MOD-∨ (C8-1)
8	∨	OR	IF-∨ (C5-4)
9	2 FL	BE	MOD-2 FL (C7-1)

Note)

- Circuit Board : LC84082
- IC
 - IC1,29,31,33,34 : iG00151
 - IC2,4,6 ~ 8,30,32 : NJM4558DV
 - IC3 : iG00150
 - IC5 : BA634
 - IC13,14,15,23 ~ 28 : TC4016BP
 - IC9 ~ 12 : iG00158
 - IC16 ~ 19 : NJM2901
 - IC20 ~ 22 : TC4030BP
- Transistor
 - Tr1 ~ 3,5,8 : 2SC1815
 - Tr4,6,7,9 ~ 12 : 2SA1015
- FET
 - FET1,2,3 : 2SK105A
- Diode
 - D1 ~ 7 : 1S1555
 - ZD1 : RD6,8EB2
 - ZD2 : 1S1715P

from P



FA Circuit Board & Wiring

C1

Pin No.	Pin Name	Wire Color	Destination
1	AR	GR	PL-ARO (C2-4)
2	AD	BR	DM-37 (C8-3)
3	AS	RE	DM-38 (C8-4)
4	AA	PK	DM-36 (C8-2)
5	MD	GR	IF-A (C7-3)
6	IL	OR	PB-IL (C4-7)
7	VI	GY	JK2-AT (C1-7)
8	M	WH	PB-M (C2-8)

C8

Pin No.	Pin Name	Wire Color	Destination
1	E	BL	DC-AE (C3-3)
2	E	BL	JK2-E (C1-4)
3	+15	BR	DC+15 (C3-1)
4	+15	BR	FA+15 (C6-1)
5	A12	BE	MOD-S12 (C3-3)
6	A11	GR	MOD-S11 (C3-1)
7	AC1	VI	DM-31 (C4-4)
8	A22	GY	MOD-S22 (C3-7)

C2

Pin No.	Pin Name	Wire Color	Destination
1	T1	GY	FA-T1 (C10-2)
2	X5F	RE	DM-26 (C9-2)
3	T2	WH	FA-T2 (C10-5)

C9

Pin No.	Pin Name	Wire Color	Destination
1	A21	VI	MOD-S21 (C3-5)
2	AC2	GY	DM-32 (C4-3)
3	A23	GR	FA-FO2 (C4-3)
4	A23	GR	PB-F2 (C5-4)
5	D	PK	PB-D (C5-1)
6	E	S-BR-S	
7	E	S-RE-S	
8	AQ1	S-BR	PB-11 (C5-6)
9	AQ2	S-RE	PB-12 (C5-7)
10	A13	YE	FA-F01 (C4-8)
11	A13	YE	PB-F1 (C5-3)

C3

Pin No.	Pin Name	Wire Color	Destination
1	FR	VI	PL-FRO (C2-2)
2	FD	YE	DM-28 (C9-4)
3	FS	GR	DM-29 (C9-5)
4	FA	OR	DM-27 (C9-3)
5	ED	SB	DM-23 (C3-2)
6	PL	BR	DM-25 (C9-1)

C10

Pin No.	Pin Name	Wire Color	Destination
1	T1	GY	JK1-T0 (C2-4)
2	T1	GY	FA-T1 (C2-1)
3	X5A	SB	DM-35 (C8-1)
4	T2	WH	JK2-T0 (C2-4)
5	T2	WH	FA-T2 (C2-3)

C4

Pin No.	Pin Name	Wire Color	Destination
1	L	GY	IF-L (C4-3)
2	B	BE	IF-B (C4-1)
3	FO2	GR	FA-A23 (C9-3)
4	K2	YE	PA-K2 (C2-2)
5	-10	BE	MOD-10 (C10-7)
6	+5	GR	MOD+5 (C10-8)
7	H	VI	IF-H (C4-2)
8	FO1	YE	FA-A13 (C9-10)
9	K1	OR	PA-K1 (C2-4)
10	KC	PK	DM-24 (C3-1)

C5

Pin No.	Pin Name	Wire Color	Destination
1	RE	VI	DM-19 (C10-5)
2	CO	BE	DM-18 (C10-4)
3	CM	OR	IF-F (C7-2)
4	BR	YE	PL-BR (C3-3)
5	VI	GR	JK1-F1 (C1-7)

C6

Pin No.	Pin Name	Wire Color	Destination
1	+15	BR	FA+15 (C8-4)
2	NI	GY	MOD-WN (C1-4)
3	FC3	GR	DM-17 (C10-3)
4	F22	GY	MOD-O22 (C4-1)
5	F21	VI	MOD-O11 (C4-2)
6	FC2	YE	DM-16 (C10-2)

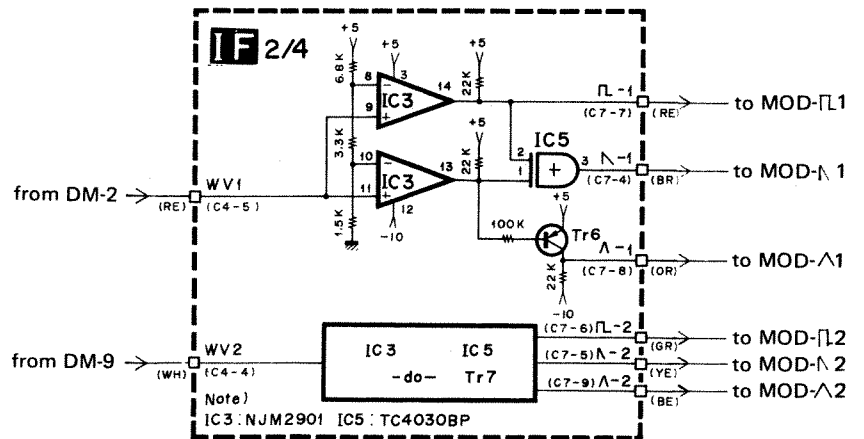
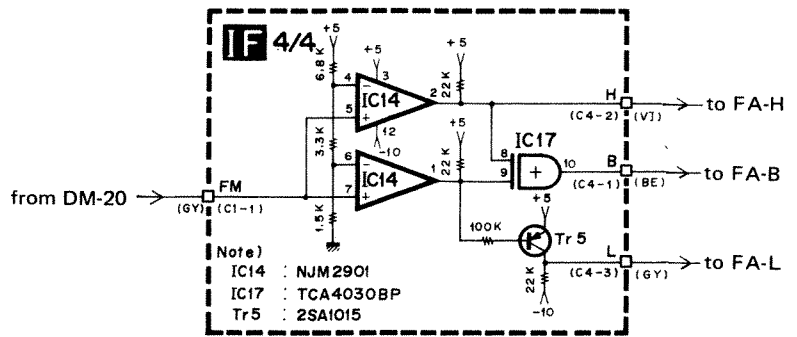
C7

Pin No.	Pin Name	Wire Color	Destination
1	F11	SB	MOD-O11 (C10-5)
2	F12	PK	MOD-O12 (C10-1)
3	FC1	OR	DM-15 (C10-1)
4	-15	YE	DC-15 (C3-5)

Pin No.	Pin Name
10	KC
9	K1
8	FO1
7	H
6	+5
5	-10
4	K2
3	FO2
2	B
1	L

Note)

- Circuit Board : LC84090 [3]
- IC
 - IC1 ~ 3,7,9,11 ~ 13,16
18,19,20,22,24,26, : iG00151
28 ~ 31,33
 - IC4,10,21,23,27 : NJM4558DV
 - IC5,14 : iG00156
 - IC6,15 : TC4016BP
 - IC8,17,25,32 : iG00159
- Transistor
 - Tr1 ~ 5 : 2SC1815
- FET
 - FET1 ~ 4 : 2SK105
- Diode
 - D1 ~ 7 : 1S1555
 - ZD1 : RD9.1EB3
 - ZD2 : RD6.8EB2
- Capacitor
 - K marked : 1000P
 - △ marked : Tantalum Capacitor



IF Circuit Board & Wiring

C1

Pin Name	Wire Color	Destination
FM	GY	DM-20 (C3-5)
FT2	GG	DM-8 (C11-4)
FT1	BR	DM-1 (C1-4)
32'	RE	VCO-32' (C7-2)
32'	RE	VCO-32' (C9-2)
16'	OR	VCO-16' (C7-3)
16'	OR	VCO-16' (C9-3)
8'	YE	VCO-8' (C7-4)
8'	YE	VCO-8' (C9-4)

C2

Pin Name	Wire Color	Destination
4'	GR	VCO-4' (C7-5)
4'	GR	VCO-4' (C9-5)
2'	BE	VCO-2' (C7-6)
2'	BE	VCO-2' (C9-6)
64'	BR	VCO-64' (C7-1)
64'	BR	VCO-64' (C9-1)
32'	RE	VCO-32' (C8-2)
32'	RE	VCO-32' (C10-2)

C3

Pin Name	Wire Color	Destination
16'	OR	VCO-16' (C8-3)
16'	OR	VCO-16' (C10-3)
8'	YE	VCO-8' (C8-4)
8'	YE	VCO-8' (C10-4)
4'	GR	VCO-4' (C8-5)
4'	GR	VCO-4' (C10-5)
2'	BE	VCO-2' (C8-6)
2'	BE	VCO-2' (C10-6)
64'	BR	VCO-64' (C8-1)
64'	BR	VCO-64' (C10-1)

C4

Pin Name	Wire Color	Destination
B	BE	FA-B (C4-2)
H	VI	FA-H (C4-7)
L	GY	FA-L (C4-1)
WV2	WH	DM-9 (C11-5)
WV1	RE	DM-2 (C1-3)
AF	WH	DM-33 (C4-2)
FF	YE	DM-21 (C3-4)
+5	GR	DM-+5 (C12-4)
-10	BE	DM--10 (C12-2)

C5

Pin Name	Wire Color	Destination
AD	GG	DM-34 (C4-1)
FW	SB	PL-MF (C2-8)
FD	GG	DM-22 (C3-3)
✓	OR	MOD-✓ (C12-8)
S/H	GR	MOD-S/H (C1-3)
∩	RE	MOD-∩ (C12-6)
∩	YE	MOD-∩ (C1-1)
∩	BR	MOD-∩ (C12-4)

C6

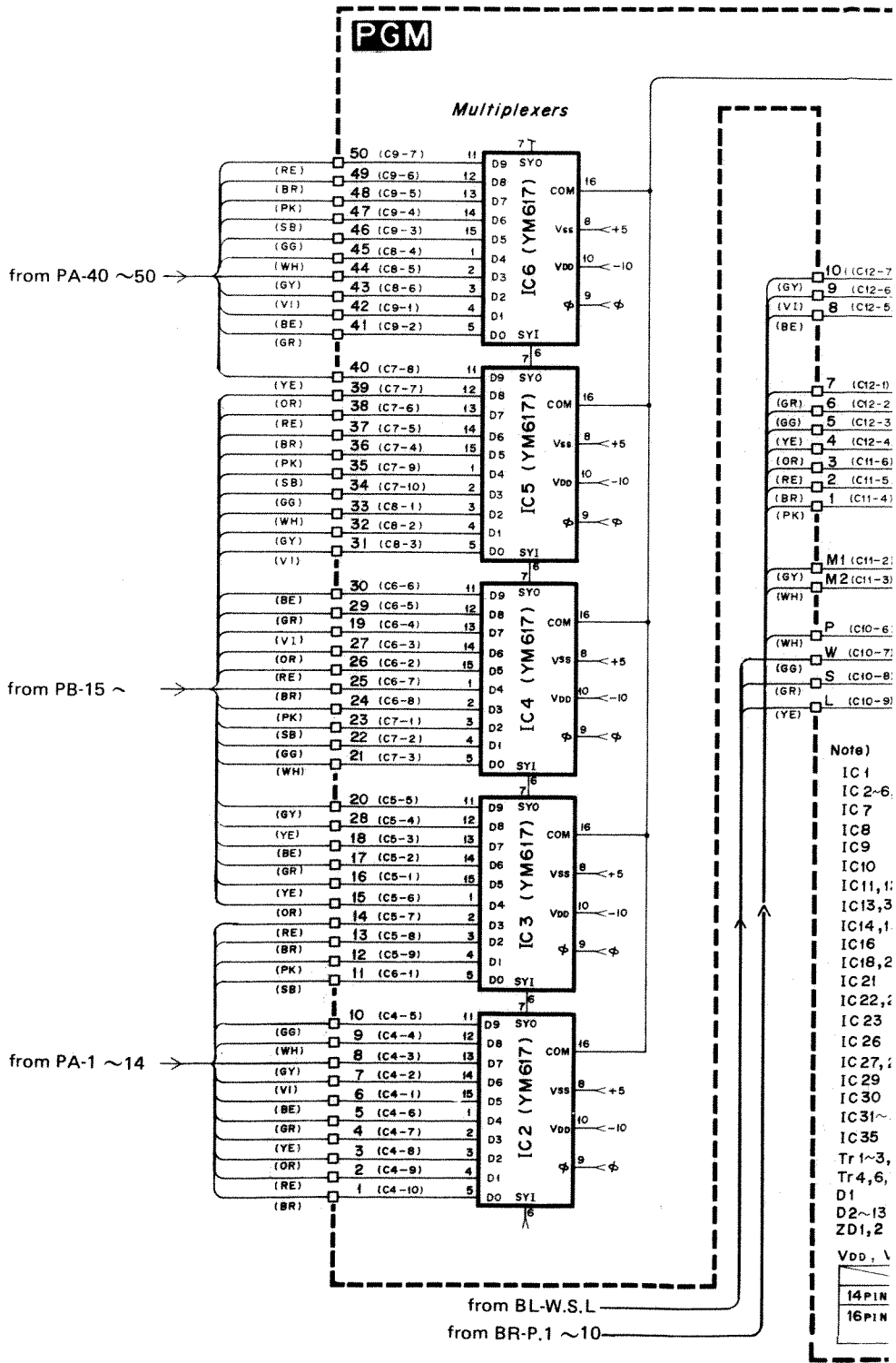
Pin No.	Pin Name	Wire Color	Destination
1	-15	YE	DC--15 (C4-5)
2	-15	YE	SK--15 (C1-3)
3	E	BL	DC-AE (C4-3)
4	E	-	-
5	+15	BR	DC+15 (C4-1)
6	+15	BR	SK+15 (C1-2)

C7

Pin No.	Pin Name	Wire Color	Destination
1	EI	YE	JK2-EI (C1-5)
2	F	OR	FA-CM (C5-3)
3	A	GR	FA-MD (C1-5)
4	∩ 1	BR	MOD-∩ 1 (C10-2)
5	∩ 2	YE	MOD-∩ 2 (C4-5)
6	∩ 2	GR	MOD-∩ 2 (C4-3)
7	∩ 1	RE	MOD-∩ 1 (C10-3)
8	∩ 1	OR	MOD-∩ 1 (C10-4)
9	∩ 2	BE	MOD-∩ 2 (C4-4)

Note)

1. Circuit Board : LC84031-2/2
2. IC
 - IC1 ~ 3, 12 ~ 14 : NJM2901
 - IC4, 5, 15 ~ 17 : TC4030BP
 - IC6 ~ 8 : TC4016BP
 - IC9, 11 : iG00151
 - IC10 : NJM4558DV
3. Transistor
 - Tr1 ~ 7 : 2SA1015



DM Circuit Board & Wiring

C1

Wire Color	Destination
YE	MOD-MD1 (C9-3)
OR	MOD-MF1 (C6-1)
RE	IF-WV1 (C4-5)
BR	IF-FT1 (C1-3)
RE	PB-D (C5-2)

C2

Wire Color	Destination
RE	MOD-PD2 (C5-3)
BR	MOD-PF2 (C6-4)
PK	MOD-P2 (C5-1)
SB	MOD-MD2 (C9-1)
GG	MOD-MF2 (C6-2)

C3

Wire Color	Destination
PK	FA-KC (C4-10)
SB	FA-ED (C3-5)
GG	IF-FD (C5-3)
YE	IF-FF (C4-7)
GY	IF-FM (C1-1)

C4

Wire Color	Destination
GG	IF-AD (C5-1)
WH	IF-AF (C4-6)
GY	FA-AC2 (C9-2)
VI	FA-AC1 (C8-7)
BE	PL-FRI (C2-3)

C5

Wire Color	Destination
RE	PA-X5I (C6-4)
BE	MOD-PL (C11-3)
GR	MOD-SD (C11-5)
YE	MOD-S (C12-2)

C6

Wire Color	Destination
BR	DC+15 (C4-2)
BR	PGM+15 (C3-4)
BL	DC-AE (C4-4)
BL	PGM-AE (C3-1)
YE	DC-15 (C4-6)
YE	PGM-15 (C3-5)
GG	PGM- (C10-1)

C7

Wire Color	Destination
GY	PA-A (C8-4)
WH	PA-D (C8-3)
GG	PB-RC (C3-5)
SB	PB-S (C1-9)
PK	PB-SD (C1-8)
BR	PB-PLR (C1-6)

C8

Pin No.	Pin Name	Wire Color	Destination
1	35	SB	FA-X5A (C10-3)
2	36	PK	FA-AA (C1-4)
3	37	BR	FA-AD (C1-2)
4	38	RE	FA-AS (C1-3)
5	39	YE	PL-ARI (C2-5)

C9

Pin No.	Pin Name	Wire Color	Destination
1	25	BR	FA-PL (C3-6)
2	26	RE	FA-X5F (C2-2)
3	27	OR	FA-FA (C3-4)
4	19	VI	FA-RE (C5-1)
5	29	GR	FA-FS (C3-3)

C10

Pin No.	Pin Name	Wire Color	Destination
1	15	OR	FA-FC1 (C7-3)
2	16	YE	FA-FC2 (C6-6)
3	17	GR	FA-FC3 (C6-3)
4	18	BE	FA-CO (C5-2)
5	28	YE	FA-FD (C3-2)

C11

Pin No.	Pin Name	Wire Color	Destination
1	5	GR	MOD-P1 (C5-2)
2	6	BE	MOD-PF1 (C6-3)
3	7	VI	MOD-PD1 (C5-4)
4	8	GG	IF-FT2 (C1-2)
5	9	WH	IF-WV2 (C4-4)

C12

Pin No.	Pin Name	Wire Color	Destination
1	-10	BE	DC-10 (C4-10)
2	-10	BE	IF-10 (C4-9)
3	SY	SB	PGM-SY (C11-1)
4	+5	GR	IF+5 (C4-8)
5	+5	GR	DC+5 (C4-7)
6	COM	BE	PGM-COM (C3-3)

Note)

1. Circuit Board : LC84121

2. IC

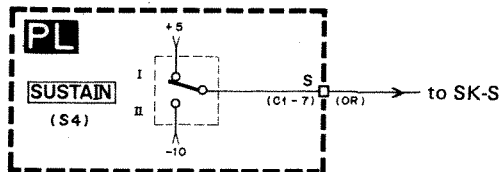
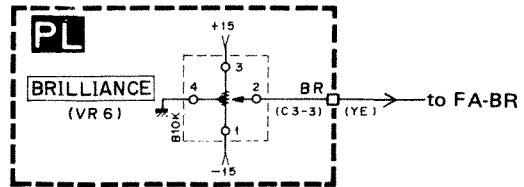
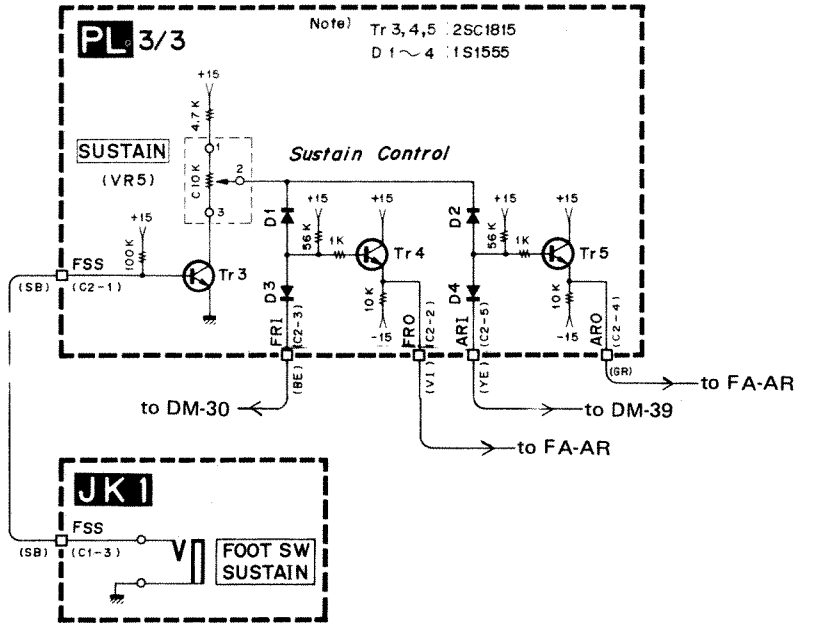
IC1 ~ 5 : YM617

IC6 ~ 30 : NJM4558DV

3. Capacitor

⊢ marked : 0.047 Mylar Capacitor

△ marked : Tantalum Capacitor

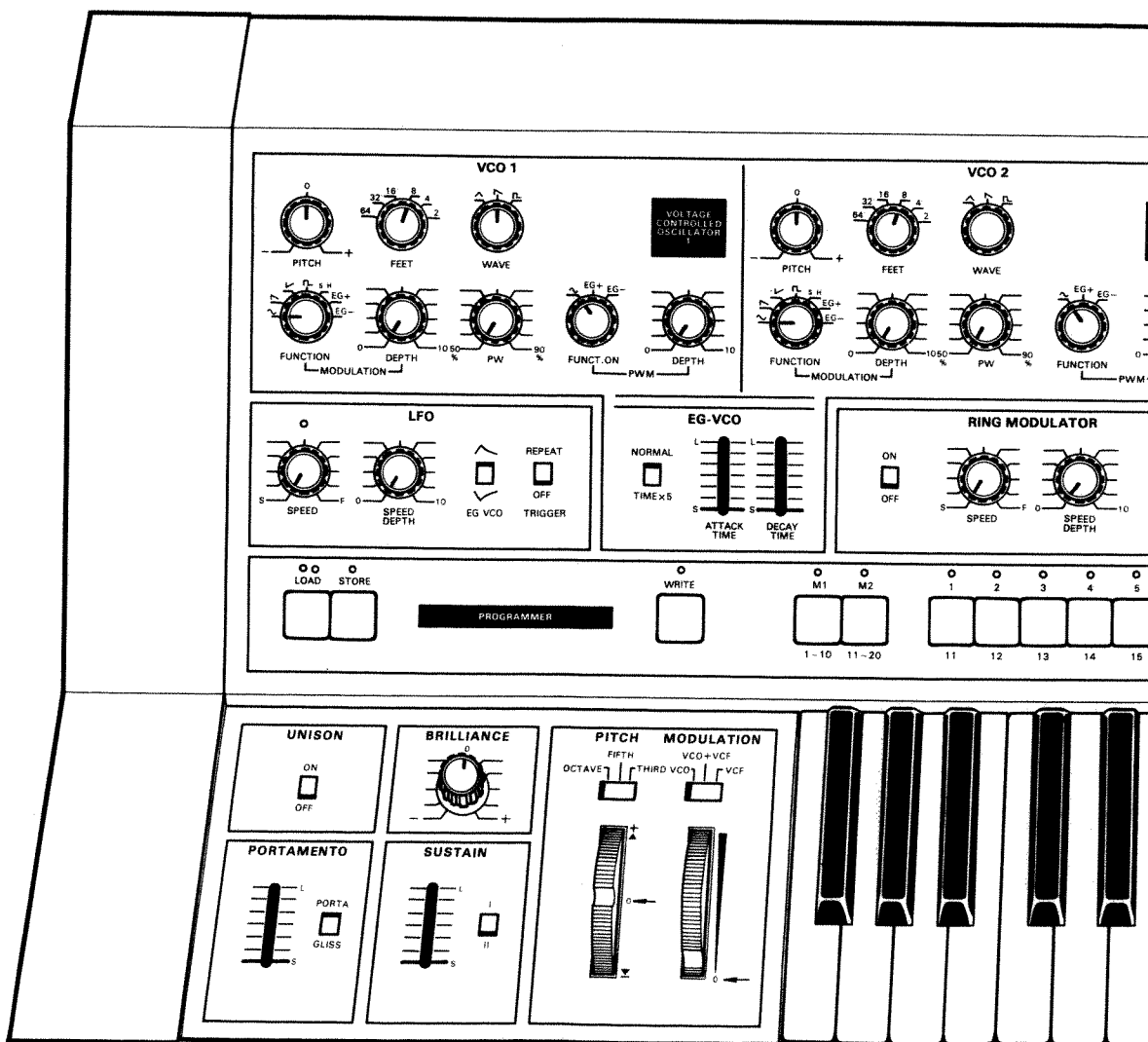


DC Circuit Board & Wiring

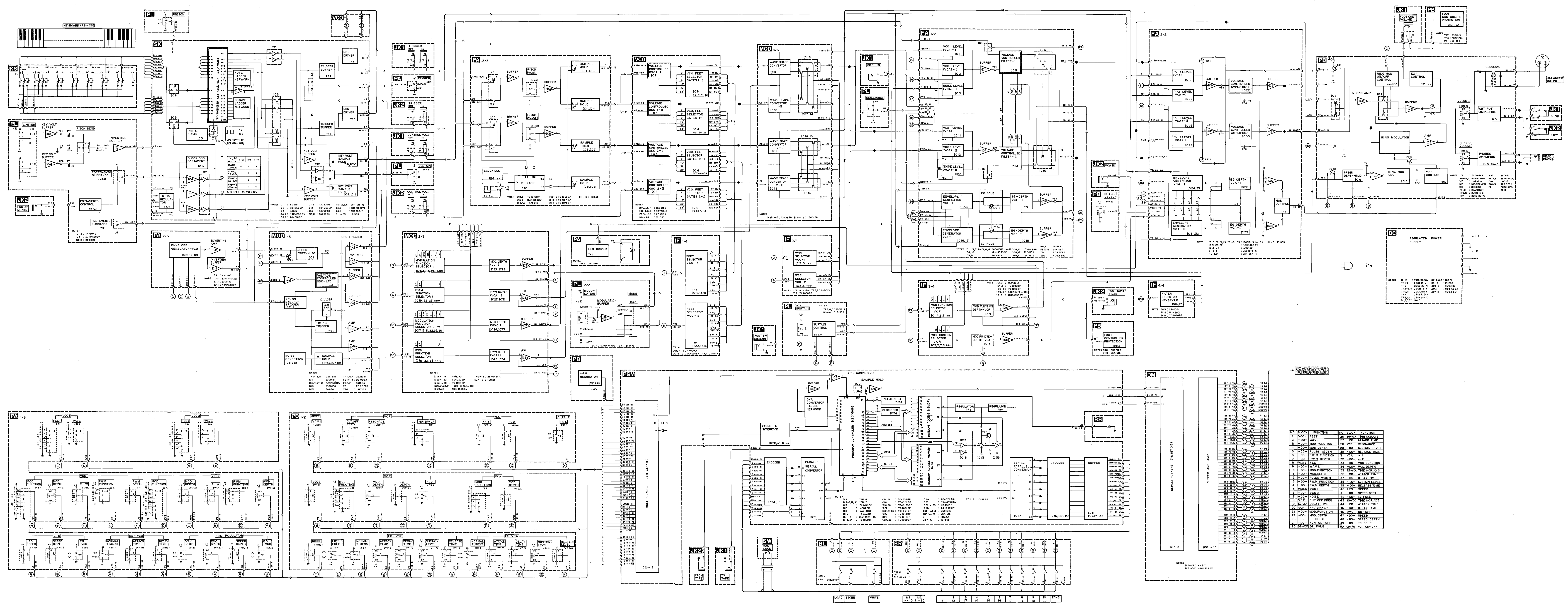
Before you start tuning and adjustment.

Before you begin tuning and adjustment, care must be exercised as to the following points give below.

1. Unless otherwise noted, the setting should be made as specified in the panel setting diagram.
2. In order to perform accurate tuning, after the power supply is applied, make sure to wait at least 15 minutes of aging period, before you start tuning.



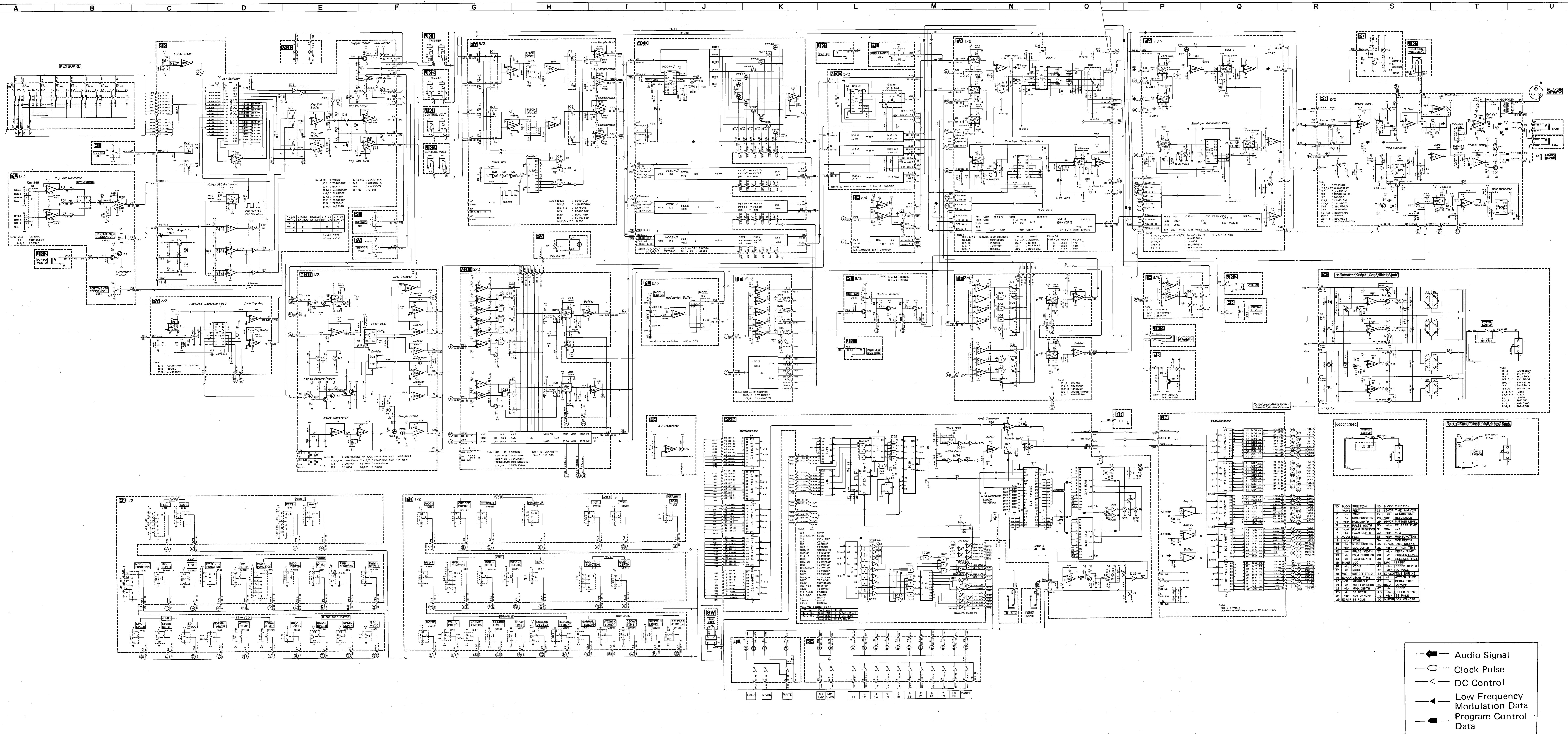
CS-40M BLOCK DIAGRAM 006879



IC	FUNCTION	IC	FUNCTION
1A	KEY SWITCH	20	ENV. TIME
1B	KEY SWITCH	21	ENV. TIME
1C	KEY SWITCH	22	ENV. TIME
1D	KEY SWITCH	23	ENV. TIME
1E	KEY SWITCH	24	ENV. TIME
1F	KEY SWITCH	25	ENV. TIME
1G	KEY SWITCH	26	ENV. TIME
1H	KEY SWITCH	27	ENV. TIME
1I	KEY SWITCH	28	ENV. TIME
1J	KEY SWITCH	29	ENV. TIME
1K	KEY SWITCH	30	ENV. TIME
1L	KEY SWITCH	31	ENV. TIME
1M	KEY SWITCH	32	ENV. TIME
1N	KEY SWITCH	33	ENV. TIME
1O	KEY SWITCH	34	ENV. TIME
1P	KEY SWITCH	35	ENV. TIME
1Q	KEY SWITCH	36	ENV. TIME
1R	KEY SWITCH	37	ENV. TIME
1S	KEY SWITCH	38	ENV. TIME
1T	KEY SWITCH	39	ENV. TIME
1U	KEY SWITCH	40	ENV. TIME
1V	KEY SWITCH	41	ENV. TIME
1W	KEY SWITCH	42	ENV. TIME
1X	KEY SWITCH	43	ENV. TIME
1Y	KEY SWITCH	44	ENV. TIME
1Z	KEY SWITCH	45	ENV. TIME
2A	ENV. AMP	46	ENV. TIME
2B	ENV. AMP	47	ENV. TIME
2C	ENV. AMP	48	ENV. TIME
2D	ENV. AMP	49	ENV. TIME
2E	ENV. AMP	50	ENV. TIME
2F	ENV. AMP	51	ENV. TIME
2G	ENV. AMP	52	ENV. TIME
2H	ENV. AMP	53	ENV. TIME
2I	ENV. AMP	54	ENV. TIME
2J	ENV. AMP	55	ENV. TIME
2K	ENV. AMP	56	ENV. TIME
2L	ENV. AMP	57	ENV. TIME
2M	ENV. AMP	58	ENV. TIME
2N	ENV. AMP	59	ENV. TIME
2O	ENV. AMP	60	ENV. TIME
2P	ENV. AMP	61	ENV. TIME
2Q	ENV. AMP	62	ENV. TIME
2R	ENV. AMP	63	ENV. TIME
2S	ENV. AMP	64	ENV. TIME
2T	ENV. AMP	65	ENV. TIME
2U	ENV. AMP	66	ENV. TIME
2V	ENV. AMP	67	ENV. TIME
2W	ENV. AMP	68	ENV. TIME
2X	ENV. AMP	69	ENV. TIME
2Y	ENV. AMP	70	ENV. TIME
2Z	ENV. AMP	71	ENV. TIME
3A	ENV. AMP	72	ENV. TIME
3B	ENV. AMP	73	ENV. TIME
3C	ENV. AMP	74	ENV. TIME
3D	ENV. AMP	75	ENV. TIME
3E	ENV. AMP	76	ENV. TIME
3F	ENV. AMP	77	ENV. TIME
3G	ENV. AMP	78	ENV. TIME
3H	ENV. AMP	79	ENV. TIME
3I	ENV. AMP	80	ENV. TIME
3J	ENV. AMP	81	ENV. TIME
3K	ENV. AMP	82	ENV. TIME
3L	ENV. AMP	83	ENV. TIME
3M	ENV. AMP	84	ENV. TIME
3N	ENV. AMP	85	ENV. TIME
3O	ENV. AMP	86	ENV. TIME
3P	ENV. AMP	87	ENV. TIME
3Q	ENV. AMP	88	ENV. TIME
3R	ENV. AMP	89	ENV. TIME
3S	ENV. AMP	90	ENV. TIME
3T	ENV. AMP	91	ENV. TIME
3U	ENV. AMP	92	ENV. TIME
3V	ENV. AMP	93	ENV. TIME
3W	ENV. AMP	94	ENV. TIME
3X	ENV. AMP	95	ENV. TIME
3Y	ENV. AMP	96	ENV. TIME
3Z	ENV. AMP	97	ENV. TIME
4A	ENV. AMP	98	ENV. TIME
4B	ENV. AMP	99	ENV. TIME
4C	ENV. AMP	100	ENV. TIME

- Audio Signal
- - - Clock Pulse
- DC Control
- ▲— Low Frequency Modulation Data
- Program Control Data

CS-40M OVERALL CIRCUIT DIAGRAM 006879



Symbol	Function
—▶	Audio Signal
- - - ○	Clock Pulse
—▶	DC Control
—■	Low Frequency Modulation Data
—◆	Program Control Data

Block	Component	Value	Notes
SK	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
PA	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
PB	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
VCO	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
MOD	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
FA	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
IF	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
PGM	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
DM	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
PL	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
BL	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
BR	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
JK1	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
JK2	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
KS	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
BC	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
DC	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	
SW	C1	100K	
	C2	100K	
	C3	100K	
	C4	100K	