

VHF FM HANDHELD TRANSCEIVER

**DJ-F1T/E DJ-S1T/E**

UHF FM HANDHELD TRANSCEIVER

**DJ-F4T/E DJ-S4T/E**

# Service Manual

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**ALINCO ELECTRONICS INC.**

# ■ SPECIFICATIONS

## ■ GENERAL

<b>Frequency Coverage</b>	F1T & S1T: TX: 144.000-147.995 MHz RX: 138.000-173.995 MHz (AM Mode 118 — 136 MHz after Modification)
	F1E & S1E: TX: 144.000-145.995 MHz RX: 144.000-145.995 MHz
	F4T & S4T: TX: 440.000-449.995 MHz RX: 410.000-470.000 MHz
	F4E & S4E: TX: 430.000-440.000 MHz RX: 430.000-440.000 MHz
<b>Memory Channel</b>	40 Channels + 1 Call Channel
<b>Channel Steps</b>	5, 10, 12.5, 15, 20, and 25 kHz
<b>Standard Shift Frequency</b>	F1T/E & S1T/E: 600 kHz F4T & S4T: 5 MHz F4E & S4E: 7.6 MHz (Resettable by 5 kHz [Minimum] between 0 and 15.995 MHz)
<b>Emission Type</b>	F3
<b>Antenna Impedance</b>	50 Ω
<b>Operating Voltage</b>	rated 9V
<b>Microphone Impedance</b>	2 kΩ
<b>Speaker Impedance</b>	8 Ω
<b>Dimensions</b>	110 (H) × 53 (W) × 37 (D) mm (4.3 × 2.1 × 1.5 inch) (with Standard Battery Pack or Standard Dry Cell Battery Case) (without Projections)
<b>Weight</b>	F1T/E & F4T/E Approx. 375 g (13.2 oz) with Standard Battery Pack S1T/E & S4T/E Approx. 370 g (13 oz) with Standard Dry Cell Battery Case
<b>Ground</b>	Negative

## ■ TRANSMITTER

**Output Power** with Battery Pack EBP-16N (Standard for F1T/E & F4T/E)

Hi	Mid	Low
2 W (F1T/E & S1T/E) 1.5 W (F4T/E & S4T/E)	1 W	0.1 W

with Optional Battery Pack EBP-18N or at 13V

Hi	Mid	Low
5 W	1 W	0.1 W

with Dry Cell Battery Pack at 9V

Hi	Mid	Low
2.5 W (F1T/E & S1T/E) 2 W (F4T/E & S4T/E)	1 W	0.1 W

<b>Modulation System</b>	Variable Reactance Frequency Modulation
<b>Max. Freq. Deviation</b>	± 5 kHz
<b>Spurious Emission</b>	Less than 60 dB below carrier
<b>Microphone</b>	Built-in Electret Condenser

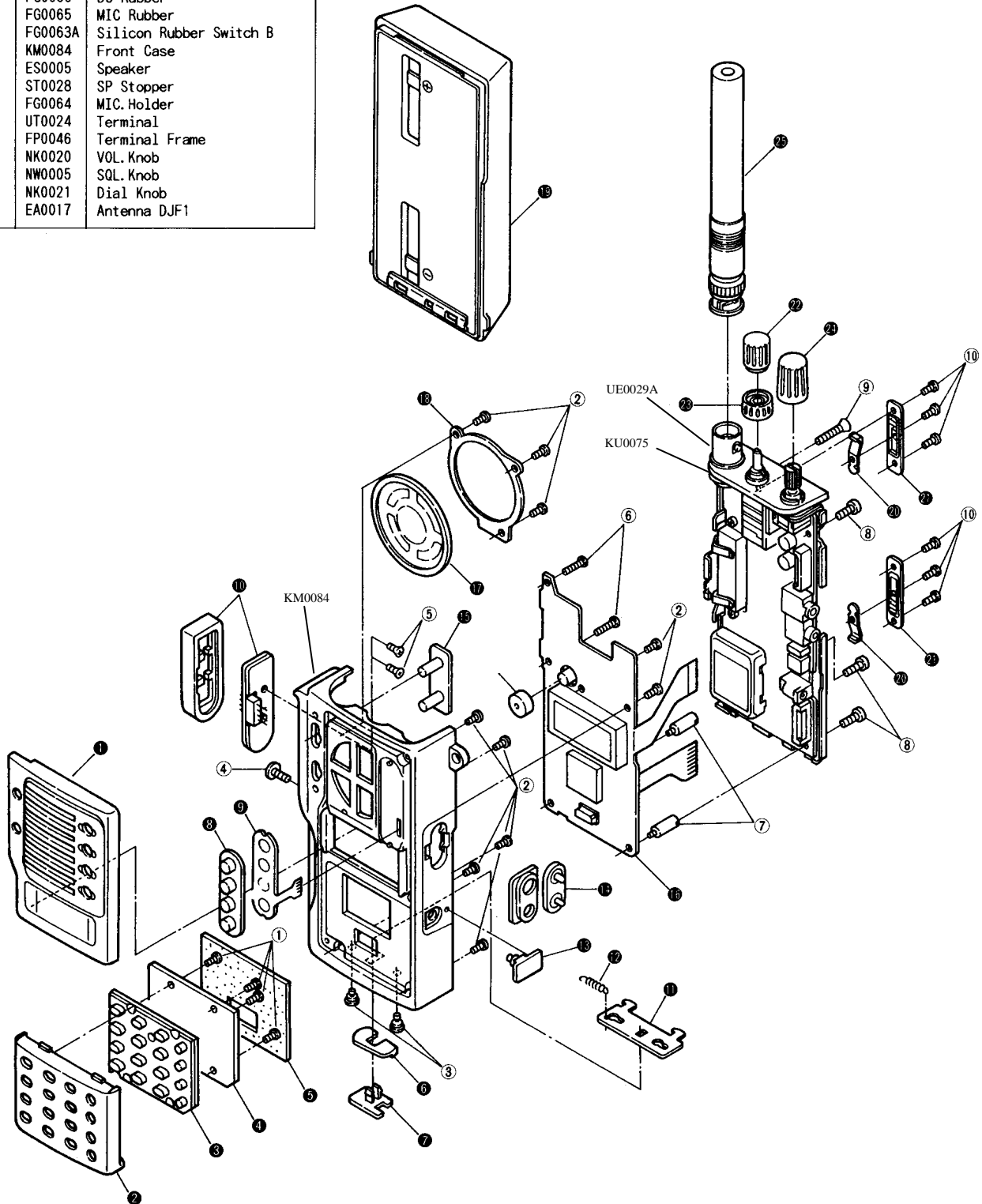
## ■ RECEIVER

<b>Receiving System</b>	Double-conversion superheterodyne
<b>Sensitivity</b>	12 dB SINAD less than -15 dBμ
<b>Intermediate Frequencies</b>	1st 23.05 MHz 2nd 455 kHz

# DJ-F1T/E CABINET PARTS LOCATION

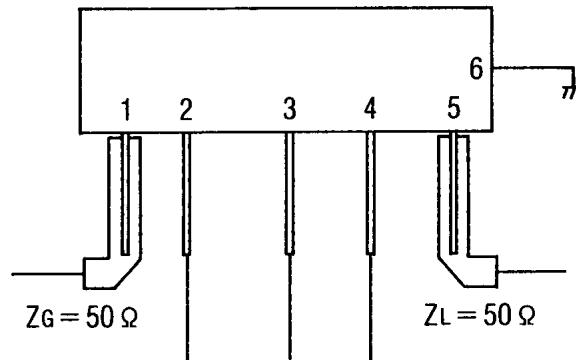
Mechanical Parts		
1	KM0121	Front Panel, F1T
	KM0081	Front panel DJ-S1
	KM0078	Front panel DJ-S1T
2	KM0114	Key Pad Panel
3	FG0069	Rubber Contact
4	UP0210	DJP3 key Board
5	FG0088	Anti-Water Drop Mat C
6	NB0041	Lock Knob
7	NB0040	Release Knob
8	FG0061A	Silicon Rubber Switch A
9	UP0198	SW P. O. Board
10	FG0058	PTT Rubber
11	FM0047	Release Plate
12	SC0005	Spring Coil
13	FG0066	DC Rubber
14	FG0065	MIC Rubber
15	FG0063A	Silicon Rubber Switch B
16	KM0084	Front Case
17	ES0005	Speaker
18	ST0028	SP Stopper
19	FG0064	MIC. Holder
20	UT0024	Terminal
21	FP0046	Terminal Frame
22	NK0020	VOL. Knob
23	NW0005	SQL. Knob
24	NK0021	Dial Knob
25	EA0017	Antenna DJF1

Screw		
1	AF0015	0# Screw 2+3 BC
2	AF0005	0# Screw 2+3.5 N
3	SA0009	Supporter For Release Switch
4	AA0039	Screw 2+6 BC
5	AA0037	Screw 2+4
6	AF0017	0# Screw 2+8 N
7	SA0008	Supporter For Lock
8	AA0036	Screw 2+5 N
9	AA0038	Screw (flat) 2+16N
10	AF0016	0# Screw 2+2 BC



## ■ M67748L1 (MAIN UNIT IC-201)

- 1: INPUT
- 2: PREDRIVE + B
- 3: BIAS + B
- 4: FINAL + B
- 5: OUTPUT
- 6: GAD (FIN)

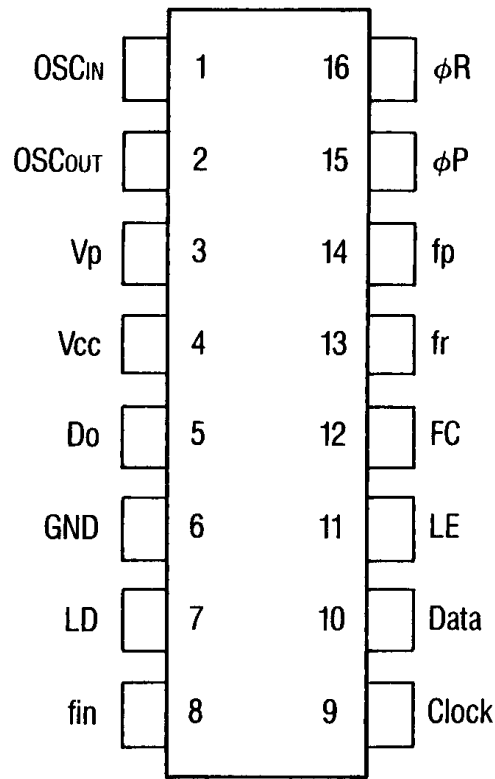


### Electrical Characteristics

ITEM	SYMBOL	T <sub>c</sub> (°C)	CONDITION	RATING			UNIT
				MIN.	TYPE	MAX.	
Output power	P <sub>o</sub>	25	f = 135-150MHz, P <sub>in</sub> = 20mW, V <sub>cc</sub> = 12.5V, V <sub>bb</sub> = 5V, Z <sub>g</sub> = Z <sub>l</sub> = 50Ω	7			W
Total efficiency	η <sub>T</sub>	25	(ditto)	45			%
2nd spurious	2f <sub>o</sub>	25	(ditto)			-20	dB
3rd spurious	3f <sub>o</sub>	25	(ditto)			-25	dB
Input SWR	p <sub>in</sub>	25	(ditto)			2.5	—
Output SWR	p <sub>out</sub>	25	(ditto)		1.5		—

# ■ MB1504L (MAIN UNIT IC-202)

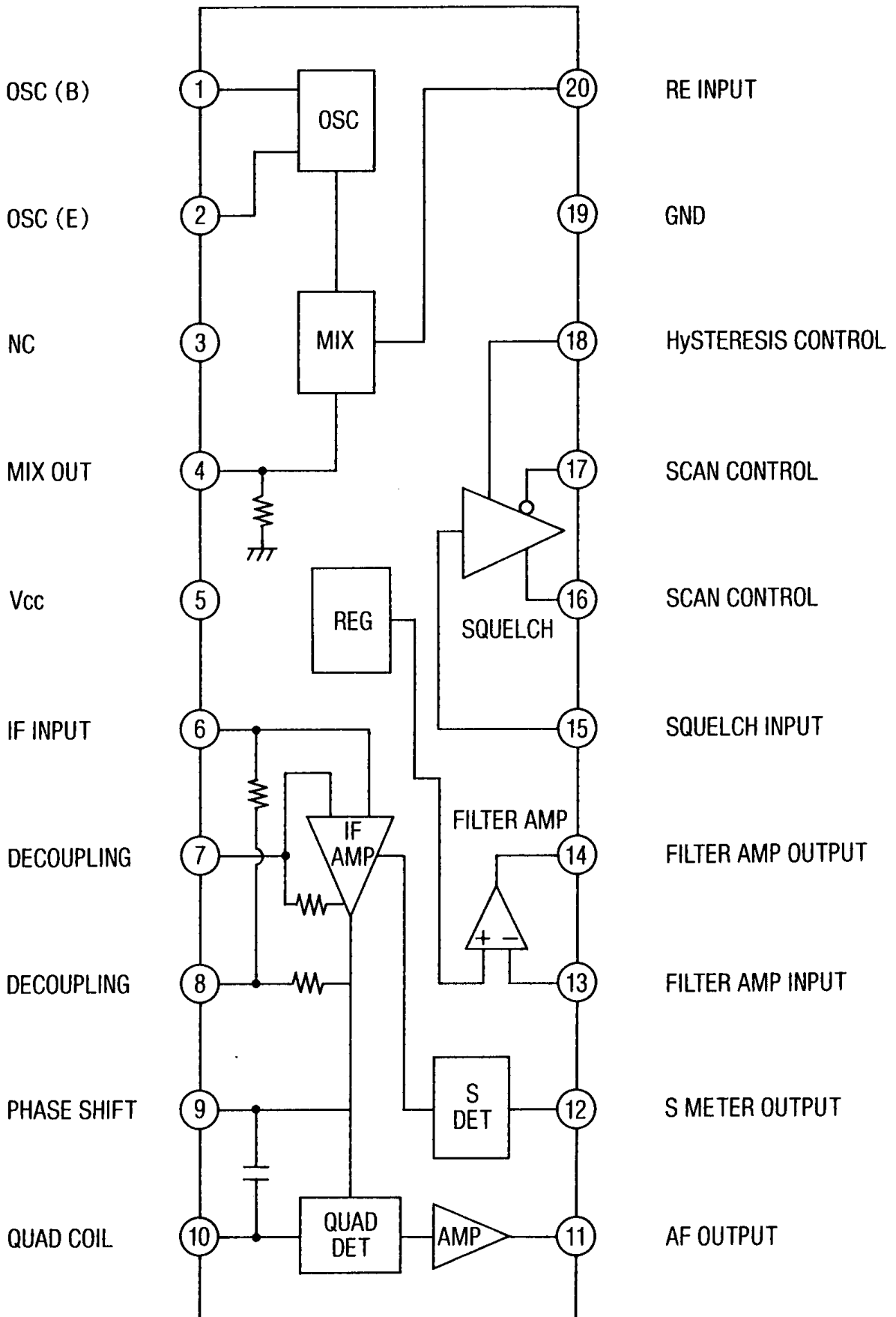
(TOP VIEW)



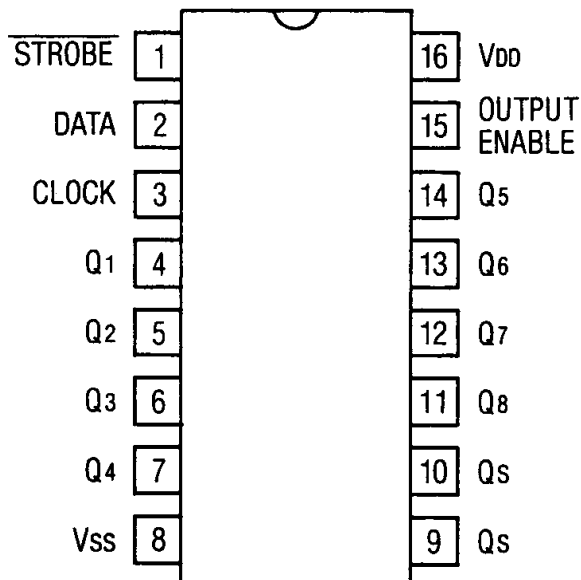
Pin Function Table

NO.	SYMBOL	I/O	RATING
1	OSCIN	I	Cristal oscillator input
2	OSCOUT	O	
3	Vp	—	Voltage for charge-pump
4	Vcc	—	Voltage for IC
5	Do	O	Charge-pump output
6	GND	—	Ground
7	LD	O	Lock detector output
8	fin	I	Frequency input
9	Clock	I	Serial interface (clock input)
10	Data	I	Serial interface data input
11	LE	I	Serial interface load enable input
12	FC	O	Do changer output
13	fr	O	Reference Frequency output
14	fp	O	Programmable counter output
15	φP	O	Charge-pump output
16	φR	O	

■ TK10487MT (MAIN UNIT IC-203)

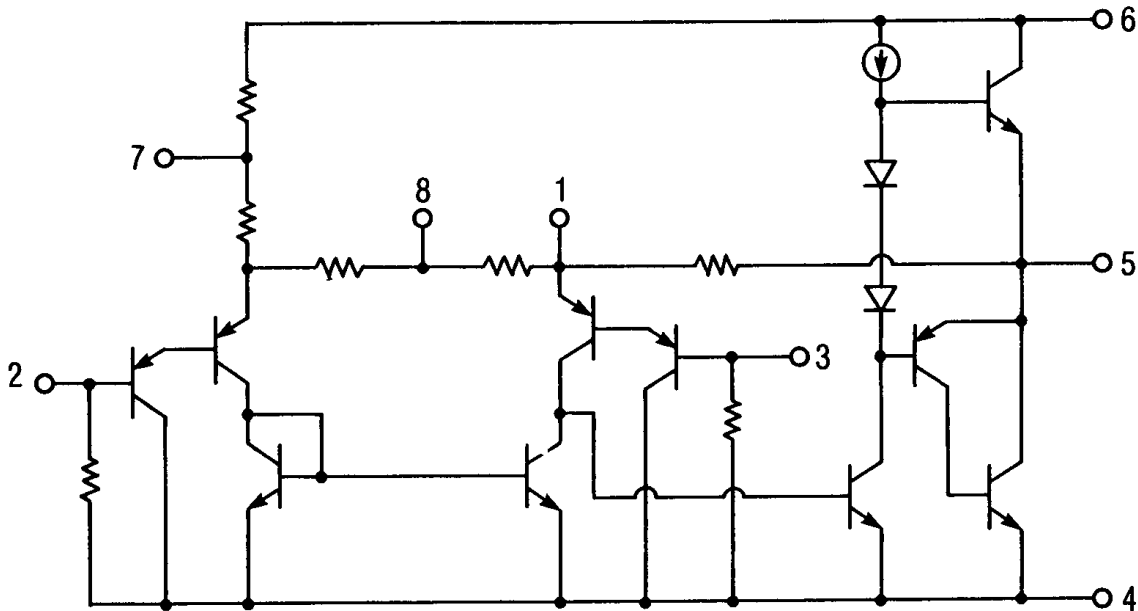
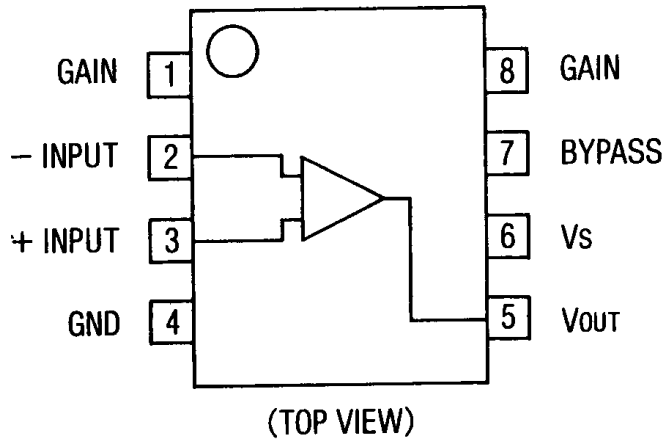


# ■ $\mu$ PD4094BG (MAIN UNIT IC-204)



CLOCK	OUTPUT ENABLE	$\overline{\text{STROBE}}$	DATA	PARALLEL OUTPUT		SERIES OUTPUT	
				Q1	Qn	Qs*	Q's
	L	x	x	High Impedance	High Impedance	D7	NO CHANGE
	L	x	x	High Impedance	High Impedance	NO CHANGE	D8
	H	L**	x	NO CHANGE	NO CHANGE	D7	NO CHANGE
	H	H	L	L	Q <sub>n-1</sub>	D7	NO CHANGE
	H	H	H	H	Q <sub>n-1</sub>	D7	NO CHANGE
	H	H	H	NO CHANGE	NO CHANGE	NO CHANGE	D8

# ■ NJM386M (MAIN UNIT IC-205)

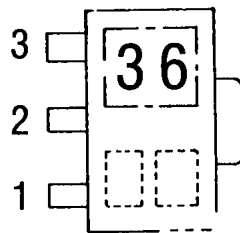
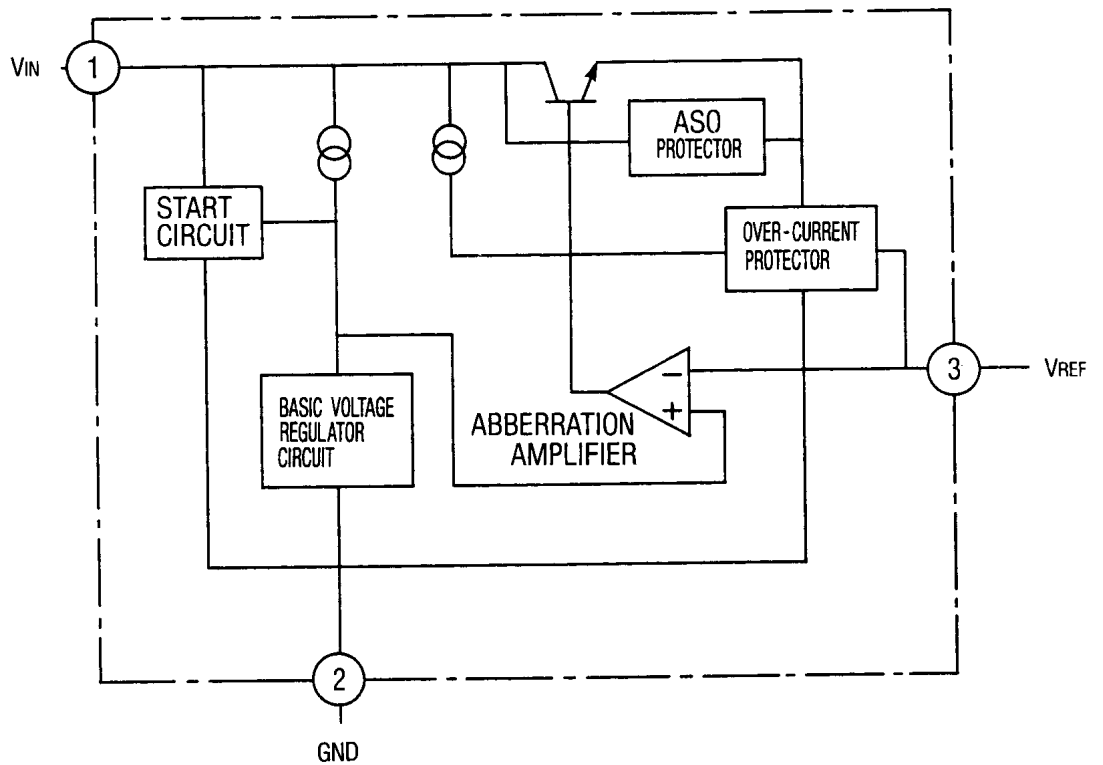


## Electrical Characteristics

ITEM	CONDITION	SYMBOL	MIN.	TYP.	MAX.	UNIT
Supply voltage		$V_s$	4	—	12	V
Reactive current	$V_{IN} = 0V$	$I_o$	—	4	8	mA
Output voltage	$R_L = 8\Omega, THD = 10\%$	$P_{OUT}$	250	325	—	mW
Output voltage	$V_s = 9V, R_L = 16\Omega, THD = 10\%$	$P_{OUT}$	—	500	—	mW
Voltage gain	$f = 1kHz$	$A_v$	—	26	—	dB
Voltage gain	$f = 1kHz,$	$A_v$	—	46	—	dB
Band width		BW	—	300	—	kHz
Total high distortion	$R_L = 8\Omega, P_{OUT} = 125mW$ $f = 1kHz,$	THD	—	0.2	—	%
Power supply rejection	$f = 1kHz,$	PSRR	—	50	—	dB
Input register		$R_{IN}$	—	50	—	$K\Omega$
Input bias supply		$I_{BIAS}$	—	250	—	nA



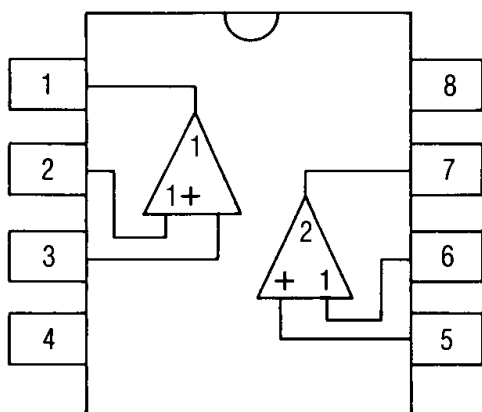
## ■ M5236ML (MAIN UNIT IC-206)



### Electrical Characteristics

ITEM	SYMBOL	CONDITION	RATING			UNIT
			MIN.	TYP.	MAX.	
Input voltage	$V_{IN}$		3.5	—	36	V
Output voltage	$V_O$		1.5	—	33	V
Voltage difference	$V_{I-O}$		—	0.2	0.5	V
Standard voltage	$V_{REF}$		1.20	1.26	1.32	V
Input regulation	$Reg_{-in}$	$V_I = 15 \sim 20V$	—	0.02	0.1	%/V
Loaded regulation	$Reg_{-L}$	$I_L = 10 \sim 200mA$	—	0.02	0.1	%
Bias current	$I_B$		—	1.3	2.3	mA
Output voltage temp. coefficient	$TCV_O$	$T_a = 0 \sim +75^\circ C$	—	0.01	—	%/°C
Ripple rejection ratio	RR	$f = 120Hz, \sqrt{r} = 300mV_{rms}$ $V_{I-O} = 3V$	—	68	—	dB
Output noise voltage	$V_{No}$	$\Delta f = 20Hz \sim 100kHz$	—	33	—	$\mu V_{rms}$

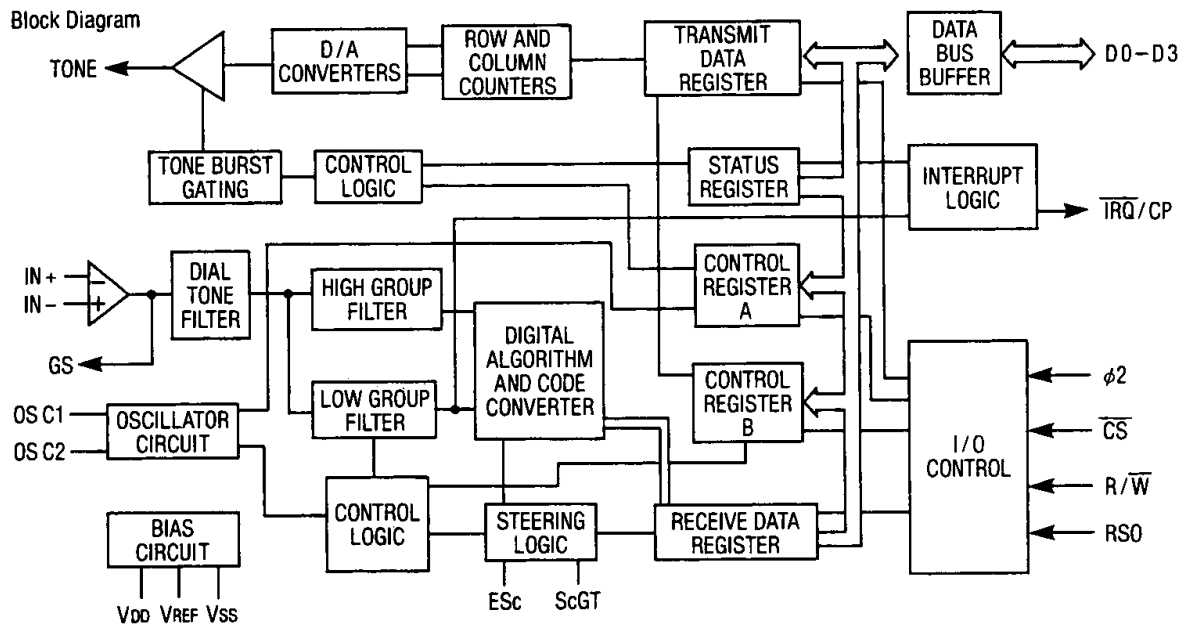
■ M5218 (MAIN UNIT IC-207)



Electrical Characteristics

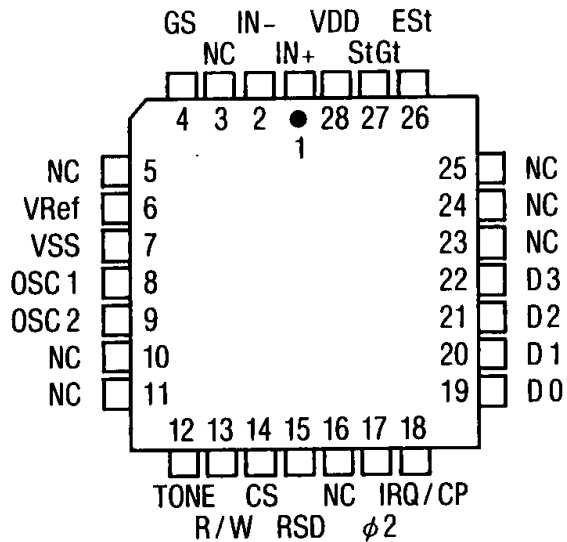
ITEM	SYMBOL	CONDITION	RATING			UNIT
			MIN.	TYP.	MAX.	
I. current circuit	I <sub>cc</sub>	V <sub>in</sub> = 0	—	3.0	6.0	mA
V. input offset	V <sub>io</sub>	R <sub>s</sub> ≤ 10KΩ	—	0.5	6.0	mV
I. input offset	I <sub>io</sub>		—	5	200	nA
I. input bias	I <sub>b</sub>		—	—	500	nA
R. input	R <sub>in</sub>		0.3	5	—	MΩ
G. open voltage	G <sub>vo</sub>	R <sub>L</sub> ≥ 2KΩ, V <sub>o</sub> = ±10V	86	110	—	dB
V. max. output	V <sub>om</sub>	R <sub>L</sub> ≥ 10KΩ	± 12	± 14	—	V
		R <sub>L</sub> ≥ 2KΩ	± 10	± 13	—	V
Common mode range	V <sub>cm</sub>		± 12	± 14	—	V
Common mode rejection	CMRR	R <sub>s</sub> ≤ 10KΩ	70	90	—	dB
C. voltage rejection ratio	SVRR	R <sub>s</sub> ≤ 10KΩ	—	30	150	μV/V
Power consumption	P <sub>d</sub>		—	90	180	mW
Bandwidth	f <sub>T</sub>		—	7	—	MHz
Through rate	SR	G <sub>v</sub> = 0dB, R <sub>L</sub> = 2KΩ	—	2.2	—	V/μs
Input scale noise voltage	V <sub>ni</sub>	R <sub>s</sub> = 1KΩ, BW: 10Hz ~ 30kHz	—	2.0	—	μVrms

## ■ CM8880 (DTMF UNIT IC-601)

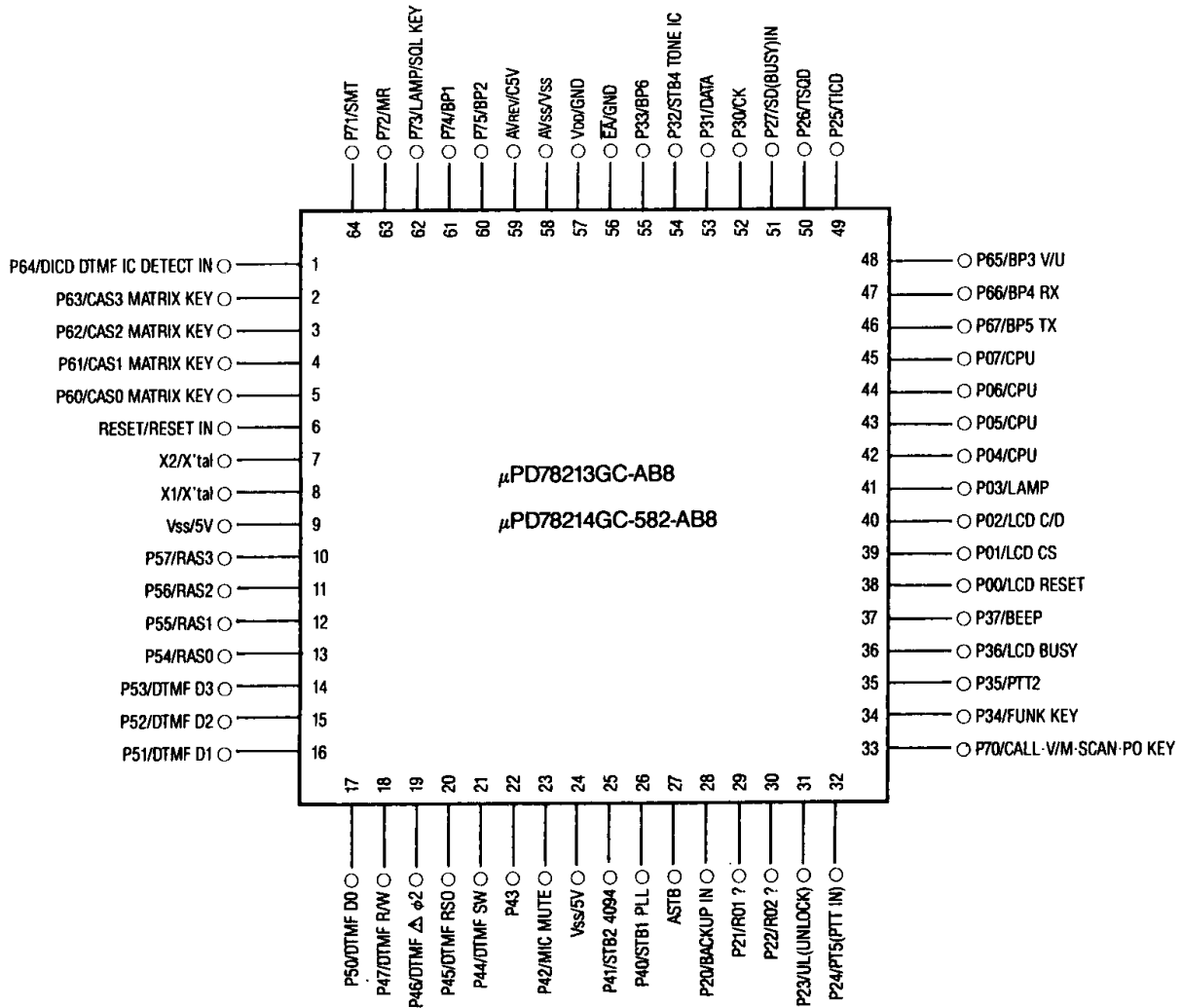


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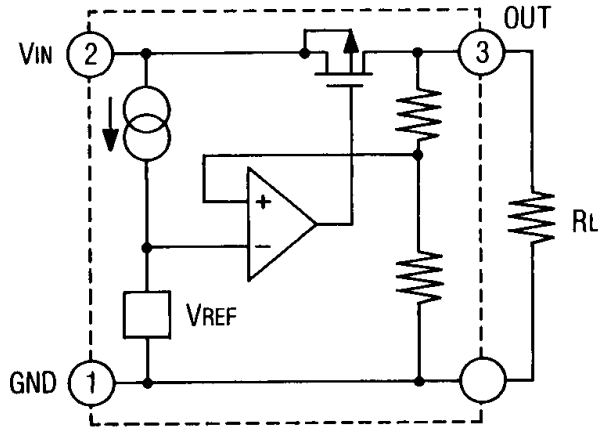
## ■ TM8880 (DTMF UNIT IC-602)



# ■ MPD78214GC582-AB8 (CPU UNIT IC-02)

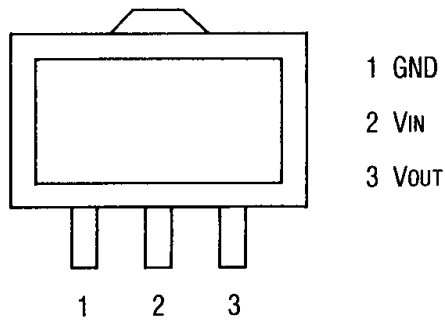


■S-81250HG (CPU UNIT IC-03)

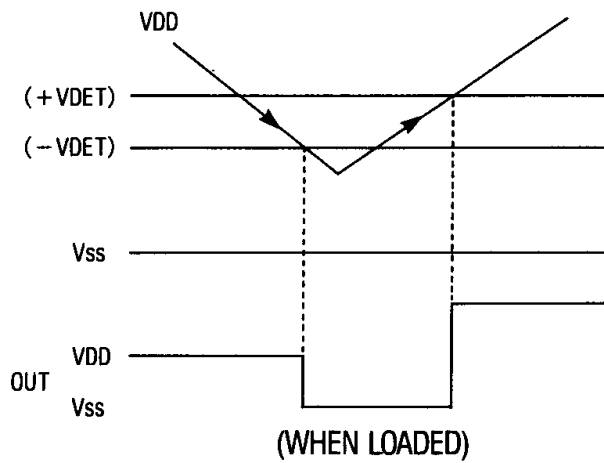
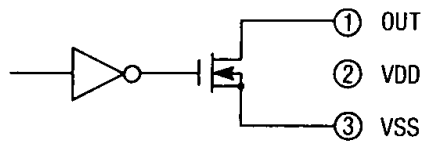
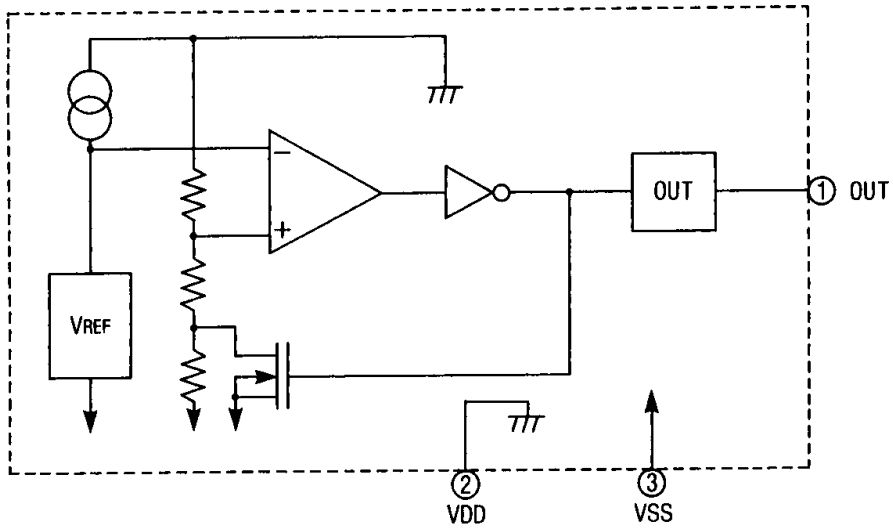


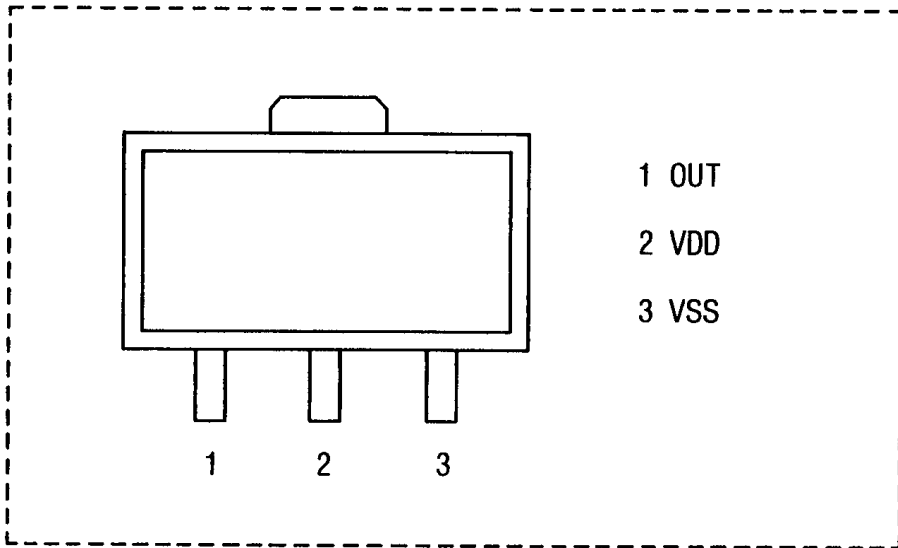
Electric Characteristics (+5V output/high-tention proof) (Unless specified;  $T_a=25^{\circ}\text{C}$ )

ITEM	SYMBOL	CONDITION	RATING			UNIT
			MIN.	TYP.	MAX.	
Output voltage	$V_{OUT}$	$V_{IN} = +7\text{V}$ , $I_{OUT} = 10\text{mA}$	4.75	5.00	5.25	V
Output current	$I_{OUT}$	$V_{IN} = +7\text{V}$	40	50	—	mA
Load stability	$\Delta V_{OUT}$	$1\text{mA} \leq I_{OUT} \leq 40\text{mA}$ $V_{IN} = +7\text{V}$	—	40	80	mV
In/output voltage difference	$V_{diff}$	$I_{OUT} = 1\text{mA}$	—	30	—	mV
Current consumption	$I_{SS}$	$V_{IN} = +7\text{V}$ , No load	—	3.0	7.0	$\mu\text{A}$
Input stability	$\frac{\Delta V_{OUT}}{\Delta V_{IN} - V_{OUT}}$	$+6\text{V} \leq V_{IN} \leq +10\text{V}$	—	0.1	—	%/V
Input voltage	$V_{IN}$		—	—	12	V
Temperature coefficient of output voltage	$\frac{\Delta V_{OUT}}{\Delta T_a}$	$I_{OUT} = 10\text{mA}$ $-20^{\circ}\text{C} \leq T_a \leq 70^{\circ}\text{C}$	—	$\pm 0.625$	—	$\text{mV}/^{\circ}\text{C}$



■ S-8054HN (CPU UNIT IC-04)





ITEM	SYMBOL	CONDITION	UNIT
Supply voltage range	$V_{DD}-V_{SS}$	12.0	V
Input voltage	$V_{in}$	$V_{SS} - 0.3 \sim V_{DD} + 0.3$	
Output voltage	$V_{out}$	$V_{SS} - 0.3 \sim 12$	
Output current	$I_{out}$	50	mA
Power-loss allowance	$P_d$	200	mW
Operation temp.	$T_{opr}$	-20 ~ +70	°C
Storage temp.	$T_{stg}$	-40 ~ +125	
Solder	$T_{solder}$	260°C 10 sec.	

# ■DJ-F1T/E DJ-S1T/E PARTS LIST

Ref. No.	Part Code	Part Name and Number	Ref. No.	Part Code	Part Name and Number	Ref. No.	Part Code	Part Name and Number
<b>CPU UNIT</b>								
IC1	XA0141	IC, μPD7225GB-3B7	R31	RK3050	Chip R, MCR03EZJH103 (T only)		TS0056	VCO Shield K1
IC2	XA0165	IC, μPD78214GC582-AB8	R31	RK3056	Chip R, MCR03EZJH333 (E only)		TS0057	PM Shield K1
IC3	XA0142	IC, S-81250HG-RD-TI	R32	RK3050	Chip R, MCR03EZJH103		UT0019	PC Board Terminal CK-1-2
IC4	XA0106	IC, S-8054HN-CB-TI	R34	RK3050	Chip R, MCR03EZJH103		TS0052A	VCO Case DJF1
			R35	RK3062	Chip R, MCR03EZJH104			
Q1	XU0003	Transistor, DTC114TKT96	R36	RK3062	Chip R, MCR03EZJH104	C101	CU3035	Chip C, CM105W5R102K
Q2	XU0012	Transistor, DTC114EKT96	R37	RK3058	Chip R, MCR03EZJH473	C102	CU3035	Chip C, CM105W5R102K
Q3	XT0095	Transistor, 2SC4081T106R	R38	RK3058	Chip R, MCR03EZJH473	C103	CU3035	Chip C, CM105W5R102K
Q4	XT0095	Transistor, 2SC4081T106R	R39	RK3056	Chip R, MCR03EZJH333	C104	CS0063	Chip C, TMC1V104TR
Q5	XU0029	Transistor, DTC114YUT106	R40	RK3050	Chip R, MCR03EZJH103	C105	CU3019	Chip C, CM105CH470K
Q6	XT0077	Transistor, 2SC3326ATE85L	R41	RK3038	Chip R, MCR03EZJH102	C106	CU3035	Chip C, CM105W5R102K
Q7	XT0094	Transistor, 2SA1576T106R	R42	RK3038	Chip R, MCR03EZJH102			
			R43	RK3039	Chip R, MCR03EZJH122	C107	CU3035	Chip C, CM105W5R102K
D1	XL0025	Diode, SLE-0022M	R44	RK3067	Chip R, MCR03EZJH274	C108	CU3002	Chip C, CM105CH010C
D2	XD0128	Diode, MA713-TX	R45	RK3022	Chip R, MCR03EZJH470	C109	CU3047	Chip C, CM105W5R103K
D3	XD0128	Diode, MA713-TX	R46	RK3058	Chip R, MCR03EZJH473	C110	CS0216	Chip C, TMC-M1A106MTR
D4	XD0120	Diode, MA704M-K-TX	R47	RK3046	Chip R, MCR03EZJH472	C111	CU3047	Chip C, CM105W5R103K
D6	XD0129	Diode, ISS318TT11	R48	RK3046	Chip R, MCR03EZJH472	C112	CU3047	Chip C, CM105W5R103K
			R49	RK3038	Chip R, MCR03EZJH102	C113	CU3006	Chip C, CM105CH050C
			R50	RK3050	Chip R, MCR03EZJH103	C114	CU3035	Chip C, CM105W5R102K
C1	CU3047	Chip C, CM105W5R103	R51	RK3056	Chip R, MCR03EZJH333	C115	CU3035	Chip C, CM105W5R102K
C2	CS0235	Chip C, TMC-M1V334MTRA	R52	RK3001	Chip R, MCR03EZJH000 (T only)	C116	CU3021	Chip C, CM105CH680K
C5	CU3059	Chip C, CM105Y5V104Z (T only)	R53	RK3001	Chip R, MCR03EZJH000 (E only)	C117	CU3002	Chip C, CM105CH010C
C5	CU3054	Chip C, CM105W5R223k25V (E only)	R54	RK3035	Chip R, MCR03EZJH561	C118	CU3047	Chip C, CM105W5R103K
C6	CU3047	Chip C, CM105W5R103 (T only)	R55	RK3058	Chip R, MCR03EZJH473	C119	CU3035	Chip C, CM105W5R102K
C6	CU3054	Chip C, CM105W5R223k25V (E only)	R56	RK3058	Chip R, MCR03EZJH473	C120	CS0049	Chip C, TMC1C105TR
C7	CU3056	Chip C, CM105Y5V473Z (T only)	R57	RK3050	Chip R, MCR03EZJH103	C121	CU3035	Chip C, CM105W5R102K
C7	CU3054	Chip C, CM105W5R223k25V (E only)	R58	RK3054	Chip R, MCR03EZJH223	C122	CU3059	Chip C, CM105Y5V104Z
C8	CU3047	Chip C, CM105W5R103	R59	RK3001	Chip R, MCR03EZJH000			
C9	CS0053	Chip C, TMC0J476TRD	R60	RK3050	Chip R, MCR03EZJH103	R101	RK3026	Chip R, MCR03EZJH101
C10	CS0050	Chip C, TMC1A475TRB	R62	RK3039	Chip R, MCR03EZJH122	R102	RK3022	Chip R, MCR03EZJH470
C11	CU3047	Chip C, CM105W5R103	R64	RK3050	Chip R, MCR03EZJH103	R103	RK3030	Chip R, MCR03EZJH221
C12	CS0057	Chip C, TMC0J225TRA				R104	RK3030	Chip R, MCR03EZJH221
C13	CS0057	Chip C, TMC0J225TRA	L1	QC0048	Chip L, NL322522T100K	R105	RK3054	Chip R, MCR03EZJH223
C14	CU3031	Chip C, CM105W5R471	L2	QC0048	Chip L, NL322522T100K	R106	RK3050	Chip R, MCR03EZJH103
C15	CU3047	Chip C, CM105W5R103	L4	QC0010	Chip L, MLF321611E100M	R107	RK3046	Chip R, MCR03EZJH472
C16	CU3035	Chip C, CM105W5R102	VR1	RH0060	VR, MVR32HXBRN473	R108	RK0052	Chip R, MCR10EZJH103E
C17	CU3035	Chip C, CM105W5R102	VR2	RH0060	VR, MVR32HXBRN473	R109	RK3026	Chip R, MCR03EZJH101
C18	CU3047	Chip C, CM105W5R103	VR3	RH0060	VR, MVR32HXBRN473	R110	RK3034	Chip R, MCR03EZJH471
C19	CU3047	Chip C, CM105W5R103				R111	RK3026	Chip R, MCR03EZJH101
C20	CS0049	Chip C, TMC1C105TRA	X001	XB0001	X'tal FARC4CA03580000K01	R112	RK3062	Chip R, MCR03EZJH104
C21	CU3047	Chip C, CM105W5R103		ED0002	LITHIUM BATT.	R113	RK3038	Chip R, MCR03EZJH102
C23	CU3011	Chip C, CM105CH100K		TZ0044	CPU Insulate sheet	R114	RK3038	Chip R, MCR03EZJH102
C24	CU3023	Chip C, CM105CH101K				R115	RK3063	Chip R, MCR03EZJH124
C25	CU3023	Chip C, CM105CH101K	SW1	UU0013	Switch SKHUAB Tape	R116	RK3062	Chip R, MCR03EZJH104
C26	CU3063	Chip C, CM105W5R153K25V (E only)	SW2	UU0013	Switch SKHUAB Tape	R117	RK3038	Chip R, MCR03EZJH102
			SW3	UU0013	Switch SKHUAB Tape	R118	RK3050	Chip R, MCR03EZJH103
R1	RK3001	Chip R, MCR03EZJH000	CN1	UE0129	Connector, DF9A-9S-1V (22)	<b>MAIN UNIT</b>		
R2	RK3058	Chip R, MCR03EZJH473	CN2	UE0130	Connector, DF9A-11S-1V (22)	IC201	XA0148	IC, M67748L
R3	RK3058	Chip R, MCR03EZJH473	CN3	UE0131	Connector, DF9A-13S-1V (22)	IC202	XA0145	IC, MB1504LPF-G-BND-TF
R4	RK3058	Chip R, MCR03EZJH473	CN4	UE0135	Connector, 52207-0590	IC203	XA0144	IC, TK-10487MTR
R5	RK3065	Chip R, MCR03EZJH184				IC204	XA0019	IC, μPD40948G-T1
R6	RK3024	Chip R, MCR03EZJH680	LCD	EL0015	LCD DJ-F1	IC205	XA0061	IC, N.JM386M-T1
R7	RK3058	Chip R, MCR03EZJH473		ST0026	LCD Flame	IC206	XA0104	IC, M5236ML-773A-36
R8	RK3038	Chip R, MCR03EZJH102		DH0006	LCD Reflection Board	IC207	XA0068	IC, M5218FP-T01-1
R11	RK3102	Chip R, MCR03EZJH203 (T only)		FG0067	LCD Sillicon Rubber Connector	Q201	XT0097	Transistor, 2SC4393TE85L
R12	RK3001	Chip R, MCR03EZJH000 (E only)				Q202	XT0097	Transistor, 2SC4393TE85L
R12	RK3050	Chip R, MCR03EZJH103 (T only)		UP0199	DJF1	Q203	XT0030	Transistor, 2SC3356T1BR25
R13	RK3102	Chip R, MCR03EZJH203 (T only)		UP0200	DJF1	Q204	XT0095	Transistor, 2SC4081T106R
R14	RK3102	Chip R, MCR03EZJH203 (T only)		UE0137	Pin Header SB4P-HVQ-28	Q205	XT0096	Transistor, 2SC4099T106N
R15	RK3001	Chip R, MCR03EZJH000 (E only)	W1	MACL02AA	#02Blue	Q206	XU0029	Transistor, DTC114YUT106
R15	RK3050	Chip R, MCR03EZJH103 (T only)	W2	MRCL02AA	#02Red	Q207	XT0088	Transistor, 2SA1213YTE12L
R16	RK3050	Chip R, MCR03EZJH103 (E only)	<b>VCO UNIT</b>			Q208	XU0020	Transistor, FMW1T98
R16	RK3102	Chip R, MCR03EZJH203 (T only)	Q101	XT0030	Transistor, 2CS3356T1	Q209	XT0030	Transistor, 2SC3356T1BR25
R17	RK3001	Chip R, MCR03EZJH000 (E only)	Q102	XT0030	Transistor, 2CS3356T1	Q210	XT0030	Transistor, 2SC3356T1BR25
R17	RK3050	Chip R, MCR03EZJH103 (T only)	Q103	XT0090	Transistor, 2SC2411KT146	Q211	XT0094	Transistor, 2SA1576T106R
R18	RK3102	Chip R, MCR03EZJH203 (T only)	D101	XD0132	Diode, 1SV215TPH4	Q212	XT0030	Transistor, 2SC3356T1BR25
R19	RK3058	Chip R, MCR03EZJH473	D102	XD0132	Diode, 1SV215TPH4	Q213	XT0095	Transistor, 2SC4081T106R
R20	RK3050	Chip R, MCR03EZJH103 (E only)	D103	XD0131	Diode, 1SV214TPH4	Q214	XT0095	Transistor, 2SC4081T106R
R20	RK3058	Chip R, MCR03EZJH473 (T only)	L101	QC0003	Chip L, MLF321606A-1R0M	Q215	XT0095	Transistor, 2SC4081T106R
R21	RK3050	Chip R, MCR03EZJH103 (E only)	L102	QC0090	Chip L, MLF321606A-4R7M	Q216	XT0095	Transistor, 2SC4081T106R
R21	RK3058	Chip R, MCR03EZJH473 (T only)	L103	QC0010	Chip L, MLF321611E-100M	Q217	XT0095	Transistor, 2SC4081T106R
R22	RK3067	Chip R, MCR03EZJH274	L104	QA0077	Chip L, Case Coil QA0077	Q218	XT0088	Transistor, 2SA1213YTE12L
R23	RK3022	Chip R, MCR03EZJH470	L105	QC0010	Chip L, MLF321611E-100M	Q219	XT0095	Transistor, 2SC4081T106R
R24	RK3039	Chip R, MCR03EZJH122				Q220	XU0029	Transistor, DTC114YUT106
R25	RK3038	Chip R, MCR03EZJH102				Q221	XT0088	Transistor, 2SA1213YTE12L
R26	RK3058	Chip R, MCR03EZJH473				Q222	XU0027	Transistor, FMA7T98
R27	RK3067	Chip R, MCR03EZJH274						
R28	RK3056	Chip R, MCR03EZJH333						
R29	RK3062	Chip R, MCR03EZJH104						
R30	RK3062	Chip R, MCR03EZJH104						

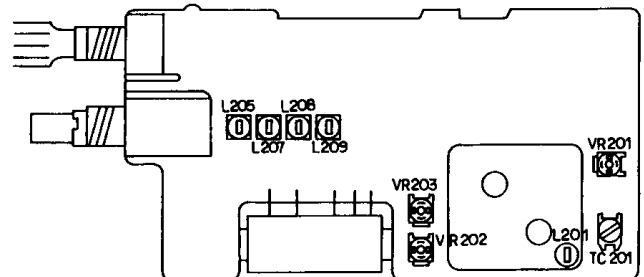
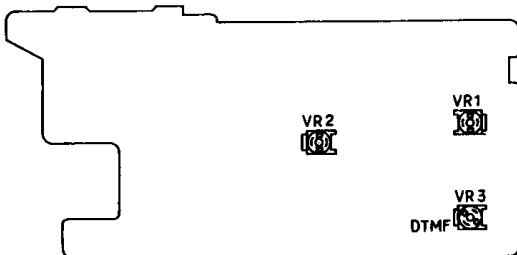




Ref. No.	Part Code	Part Name and Number	Ref. No.	Part Code	Part Name and Number	Ref. No.	Part Code	Part Name and Number		
R256	RK3058	Chip R, MCR03EZJ473	R340	RK1107	Chip R, MCR18EZJ000E					
R258	RK3001	Chip R, MCR03EZJ000	R342	RK3060	Chip R, MCR03EZJ683					
R259	RK3035	Chip R, MCR03EZJ561	R343	RK3001	Chip R, MCR03EZJ000					
R260	RK3042	Chip R, MCR03EZJ222	TC201	CT0012	Trimmer C, CTZ-10AW					
R261	RK3001	Chip R, MCR03EZJ000	VR201	RH0064	VR, MVR32HXBRN103					
R262	RK3072	Chip R, MCR03EZJ684	VR202	RH0061	VR, MVR32HXBRN472					
R263	RK3046	Chip R, MCR03EZJ472	VR203	RH0064	VR, MVR32HXBRN103					
R264	RK3070	Chip R, MCR03EZJ474	VR204	RV0014	VR, RK09722115R1211					
R265	RK3044	Chip R, MCR03EZJ332	X201	XQ0046	X'tal UM-5 23.505MHZ					
R266	RK3026	Chip R, MCR03EZJ101	X202	XK0002	X'tal CDBM455C7					
R267	RK3067	Chip R, MCR03EZJ274	X203	XQ0022	X'tal UM-1 12.8MHZ					
R268	RK3050	Chip R, MCR03EZJ103	FL201	XC0004	CeramicFilter, CFUM455E					
R269	RK3046	Chip R, MCR03EZJ472	FL202	XF0008	CeramicFilter, 23.05MHZ UM-5					
R270	RK3058	Chip R, MCR03EZJ473	CN202	UE0110	Connector, 52030-1210					
R271	RK3054	Chip R, MCR03EZJ223	CN203	UE0110	Connector, 52030-1210					
R272	RK3050	Chip R, MCR03EZJ103	JK201	UJ0015	Jack, HEC1781-01-020					
R273	RK3042	Chip R, MCR03EZJ222	JK202	UJ0022	Jack, HSJ1102-01-540					
R274	RK3026	Chip R, MCR03EZJ101	JK203	UJ0019	Jack, HSJ1423-01-010					
R275	RK3062	Chip R, MCR03EZJ104	RE201	UR0006	RE EC09P20-51					
R276	RK3046	Chip R, MCR03EZJ472		MRCK08AA	Lead, #08 RED					
R277	RK3051	Chip R, MCR03EZJ123		MRCK04AA	Lead, #04 RED					
R279	RK3042	Chip R, MCR03EZJ222		YZ0058	Solder-Plated Wire					
R281	RK3026	Chip R, MCR03EZJ101		QB0003	Ferrite Beads					
R282	RK3042	Chip R, MCR03EZJ222	<b>KEY BOARD UNIT</b>							
R283	RK3047	Chip R, MCR03EZJ562	PCB801	UP0210	DJP3 KEY BOARD					
R284	RK3026	Chip R, MCR03EZJ101	CN0801	UE0133	Connector DF9A-11P-1V(22)					
R285	RK3026	Chip R, MCR03EZJ151	R801	RK3024	Chip R, MCR03EZJ680					
R286	RK3014	Chip R, MCR03EZJ100	R802	RK3024	Chip R, MCR03EZJ680					
R287	RK3066	Chip R, MCR03EZJ224	D801	XL0016	Diode, SLM13MWT96B					
R288	RK3042	Chip R, MCR03EZJ222	D802	XL0016	Diode, SLM13MWT96B					
R289	RK3046	Chip R, MCR03EZJ472	D803	XL0016	Diode, SLM13MWT96B					
R290	RK3030	Chip R, MCR03EZJ221	D804	XL0016	Diode, SLM13MWT96B					
R291	RK0105	Chip R, MCR10EZJ2R2E	<b>DTMF UNIT</b>							
R292	RK3047	Chip R, MCR03EZJ562	IC601	XA0169	IC CM8880-2PEIT					
R293	RK3053	Chip R, MCR03EZJ183	Q0601	XU0021	Transistor FMC3 T98					
R294	RK3044	Chip R, MCR03EZJ332	D0601	XD0129	Diode, 1SS318 TT11					
R295	RK3038	Chip R, MCR03EZJ102	C601	CU3035	Chip C, CM105 W5R 102K					
R296	RK3042	Chip R, MCR03EZJ222	C602	CU3035	Chip C, CM105 W5R 102K					
R297	RK3050	Chip R, MCR03EZJ103	C603	CU3059	Chip C, CM105 Y5V 104Z					
R298	RK3056	Chip R, MCR03EZJ333	C604	CS0050	Chip C, JMC 1A 475TRB					
R299	RK3038	Chip R, MCR03EZJ102	C605	CU3059	Chip C, CM105 Y5V 104Z					
R300	RK3042	Chip R, MCR03EZJ222	C606	CU3047	Chip C, CM105 W5R 103K					
R301	RK3038	Chip R, MCR03EZJ102	C607	CU3017	Chip C, CM105 CH 330K					
R302	RK3046	Chip R, MCR03EZJ472	C608	CU3017	Chip C, CM105 CH 330K					
R303	RK3034	Chip R, MCR03EZJ471	C609	CU3047	Chip C, CM105 W5R 103K					
R304	RK3050	Chip R, MCR03EZJ103	C610	CU3059	Chip C, CM105 Y5V 104Z					
R305	RK3043	Chip R, MCR03EZJ272		UP0212	DJF1 DTMFBoard					
R306	RK3038	Chip R, MCR03EZJ102	R601	RK3018	Chip R, MCR03 EZHT220					
R307	RK3054	Chip R, MCR03EZJ223	R602	RK3066	Chip R, MCR03 EZHT224					
R308	RK3066	Chip R, MCR03EZJ224	R603	RK3066	Chip R, MCR03 EZHT224					
R309	RK3047	Chip R, MCR03EZJ562	R604	RK3062	Chip R, MCR03 EZHT104					
R310	RK3034	Chip R, MCR03EZJ471	R605	RK3059	Chip R, MCR03 EZHT563					
R311	RK3026	Chip R, MCR03EZJ101	R606	RK3058	Chip R, MCR03 EZHT473					
R312	RK3050	Chip R, MCR03EZJ103	R607	RK3050	Chip R, MCR03 EZHT103					
R313	RK3056	Chip R, MCR03EZJ333	R608	RK3038	Chip R, MCR03 EZHT102					
R314	RK3050	Chip R, MCR03EZJ103	R609	RK3056	Chip R, MCR03 EZHT333					
R315	RK3050	Chip R, MCR03EZJ103	X0601	XQ0021	X'tal DSMAT 3.58MHZ					
R316	RK3038	Chip R, MCR03EZJ102		TT3008	Elastic Tube X'tal					
R317	RK3038	Chip R, MCR03EZJ102		YZ0042	Cement G-17 1g					
R318	RK3026	Chip R, MCR03EZJ151	CN601	UE0134	Connector, DF9A-13P-1V(22)					
R319	RK3026	Chip R, MCR03EZJ101								
R320	RK3074	Chip R, MCR03EZJ105								
R321	RK3038	Chip R, MCR03EZJ102								
R322	RK3042	Chip R, MCR03EZJ222								
R323	RK3056	Chip R, MCR03EZJ333								
R324	RK3073	Chip R, MCR03EZJ824								
R325	RK3050	Chip R, MCR03EZJ103								
R326	RK3001	Chip R, MCR03EZJ000								
R327	RK3046	Chip R, MCR03EZJ472								
R328	RK3038	Chip R, MCR03EZJ102								
R329	RK3038	Chip R, MCR03EZJ102								
R330	RK3072	Chip R, MCR03EZJ684								
R331	RK3038	Chip R, MCR03EZJ102								
R332	RK3038	Chip R, MCR03EZJ102								
R333	RK3050	Chip R, MCR03EZJ103								
R334	RK3030	Chip R, MCR03EZJ221								
R335	RK1018	Chip R, MCR18EZJ101E								
R336	RK3026	Chip R, MCR03EZJ101								
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R339	RK3062	Chip R, MCR03EZJ104								

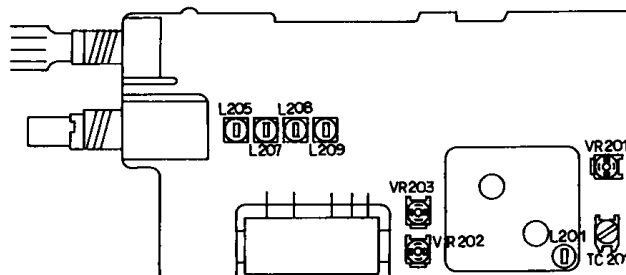
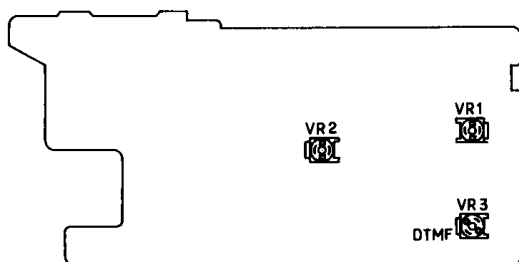
## ■ ADJUSTMENT F1-T/S1-T

Item	Adjustment method	Spec.
1. Standard frequency	Transmit at 146.03 on L.C.D. board, then adjust TC201 so that the frequency is 146.03MHz $\pm$ 50Hz. Adjusting point TC201	146.03MHz $\pm$ 50Hz
2. Output power		
1) High power	Transmit at 146.03MHz, then adjust VR202 so that the output power is 5.0W when operating power source at 13.8V. Adjusting point(s) VR202 main board	5W $\pm$ 0.1W
2) Middle power	Transmit at 146.03MHz, then adjust VR203 so that the output power is 1.0W when operating power source at 13.8V. Adjusting point(s) VR203 main board	1W $\pm$ 0.1W
3) Low power	Transmit at 146.03MHz, then verify that the output power is between 80mW and 200mW.	
3. Transmitting spurious	Transmit at 1144.03Hz, 146.03MHz and 147.99MHz, then verify the transmitting spurious is as follows when operating voltage is between 6V and 14V. High power ..... under -60dB Low power..... under -50dB Also verify no queer oscillation is occurring.	High Power under -60dB Low Power under -50dB
4. Modulation		
1) MIC modulation adjustment	Transmit at 146.03MHz and input low frequency of 1kHz 50mV from MIC input terminal. Then adjust VR201 so that the modulation is 4.5kHz. Adjusting point(s) VR201 main board	4.5kHz $\pm$ 0.1kHz
2) DTMF deviation	Transmit at 146.03MHz and press the ten-key [1]. Then adjust the VR3 so that the modulation is 3.1kHz. Adjusting point(s) VR3 CPU board	3.1kHz $\pm$ 0.1kHz
3) Sub-audible tone modulation	Set the sub-audible tone at 88.5MHz, then adjust VR1 so that the frequency is 800Hz when transmitting at 146.03MHz. Adjusting point(s) VR1 CPU board	800Hz $\pm$ 100Hz
5. Standard VCO voltage	At the receiving condition, adjust L104 so that the voltage of P/D is 0.7V with the frequency set at 146.03MHz. Adjusting point(s) VCO board L204 At the transmitting condition verify that the voltage of P/D is between 0.5V and 1.0V with the frequency set at 145.05MHz.	0.8 $\pm$ 0.1V
6. AIR BAND	At the receiving frequency of 125.03MHz, input the signal of AM 1kHz 30% output 8dB $\mu$ (disconnection terminal) from SG. Then verify that the S/N is more than 10dB. And, receivable from 118.00MHz to 142.99MHz.	
7. VHF front-end adjusting	At the receiving frequency of 146.03MHz, adjust L205, L207, L208 and L209 so that the 12dB sind gets maximum sensitivity. Adjusting point(s) L205, L207, L208, L209 main board	
8. S meter	At the receiving frequency of 146.03MHz input the signal of 20dB $\mu$ from the transceiver tester. Then adjust VR2 so that the FU11 in S meter starts lighting. Adjusting point(s) VR2 CPU board	

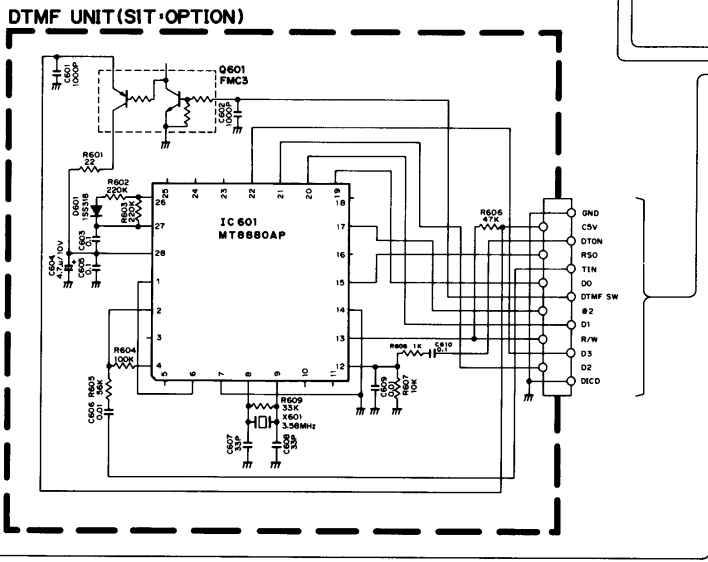
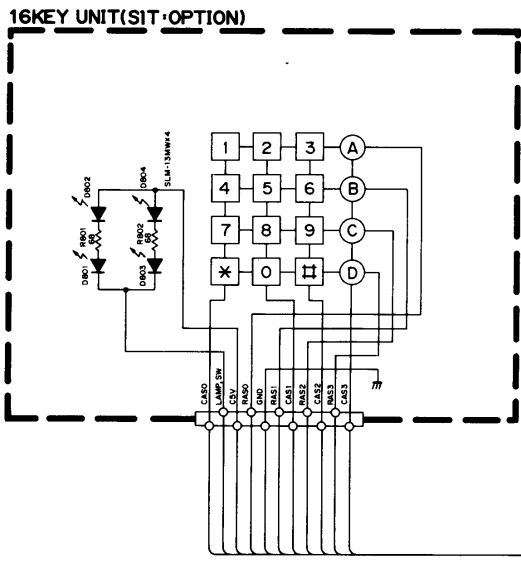
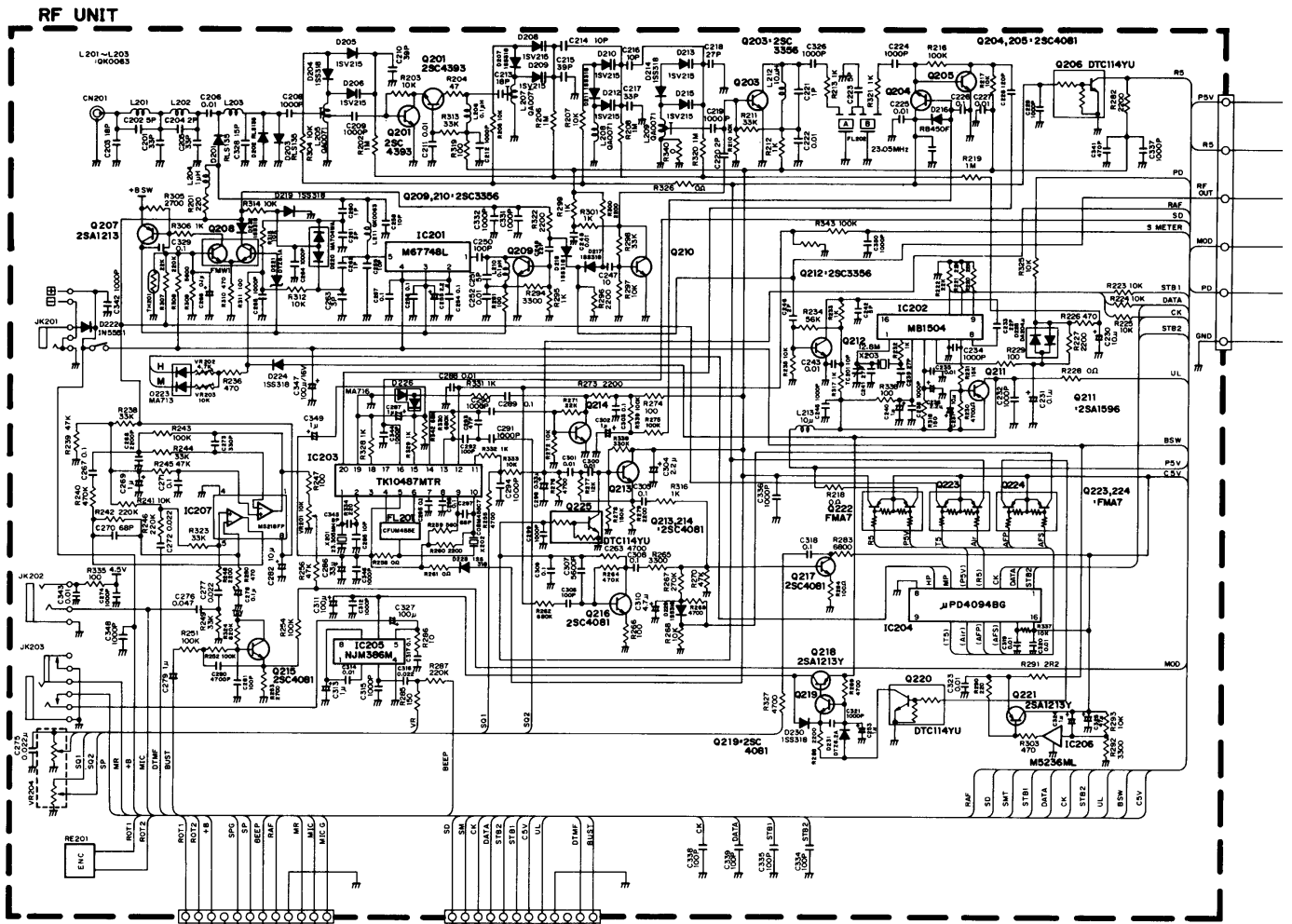


## ■ ADJUSTMENT F1-E/S1-E

Item	Adjustment method	Spec.
1. Standard frequency	Transmit at 145.05 on L.C.D. board, then adjust TC201 so that the frequency is 145.05MHz $\pm$ 50Hz. Adjusting point(s) TC201	145.05MHz $\pm$ 50Hz
2. Output power		
1) High power	Transmit at 145.05MHz, then adjust VR202 so that the output power is 5.0W when operating power source at 13.8V. Adjusting point(s) VR202 main board	5W $\pm$ 0.1W
2) Middle power	Transmit at 145.05MHz, then adjust VR203 so that the output power is 1.0W when operate at 13.8V. Adjusting point(s) VR203 main board	1W $\pm$ 0.1W
3) Low power	Transmit at 145.05MHz, then verify that the output power is between 80mW and 200mW.	
3. Transmitting spurious	Transmit at 145.05MHz, 144.05MHz and 145.95MHz, then verify the transmitting spurious is as follows when operating voltage is between 6V and 14V. High power ..... under -60dB Low power..... under -50dB Also verify no queer oscillation is occurring.	High Power under -60dB Low Power under -50dB
4. Modulation		
1) MIC modulation adjustment	Transmit at 145.05MHz and input low frequency of 1kHz 50mV from MIC input terminal. Then adjust VR201 so that the modulation is 4.5kHz. Adjusting point(s) VR201 main board	4.5kHz $\pm$ 0.1kHz
2) DTMF deviation	Transmit at 145.05MHz and press the ten-key <span style="border: 1px solid black; padding: 0 2px;">1</span> . Then adjust the VR3 so that the modulation is 3.1kHz. Adjusting point(s) VR3 CPU board	3.1kHz $\pm$ 0.1kHz
3) Tone-burst modulation	Transmit at 145.05MHz, then adjust VR1 so that the modulation is 3.0kHz. Verify that the tone-burst is in the range of 1,750Hz $\pm$ 20Hz at this time. Adjusting point(s) VR1 CPU board	3.0kHz $\pm$ 0.1kHz
5. Standard VCO voltage	At the receiving condition, adjust L104 so that the voltage of P/D is 0.7V with the frequency set at 145.05MHz. Adjusting point(s) VCO board L204 At the transmitting condition verify that the voltage of P/D is between 0.5V and 1.0V with the frequency set at 145.05MHz.	0.7V $\pm$ 0.1V
6. AIR BAND	At the receiving frequency of 125.03MHz, input the signal of AM 1kHz 30% output 8dB $\mu$ (disconnection terminal) from SG. Then verify that the S/N is more than 10dB. And, receivable from 118.00MHz to 142.99MHz.	
7. VHF front-end adjusting	At the receiving frequency of 145.05MHz, adjust L205, L207, L208 and L209 so that the 12dB sind gets maximum sensitivity. Adjusting point(s) L205, L207, L208, L209 main board	
8. S meter	At the receiving frequency of 145.95MHz input the signal of 20dB $\mu$ from the transceiver tester. Then adjust VR2 so that the FU11 in S meter starts lighting. Adjusting point(s) VR2 CPU board	



# SCHEMATIC DIAGRAM

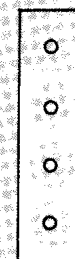
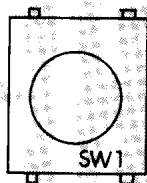
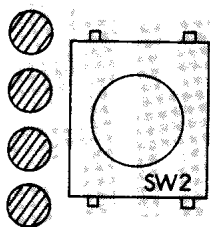
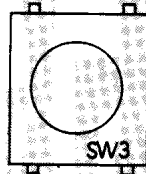
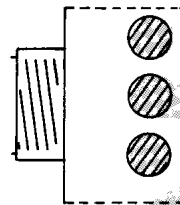
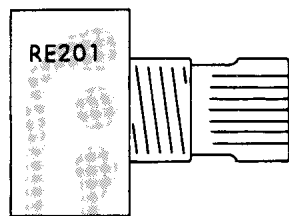
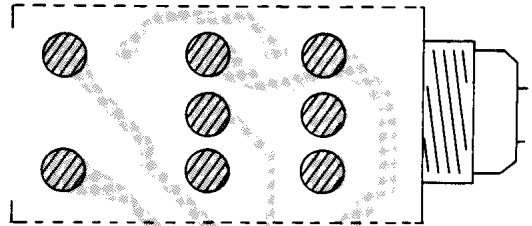
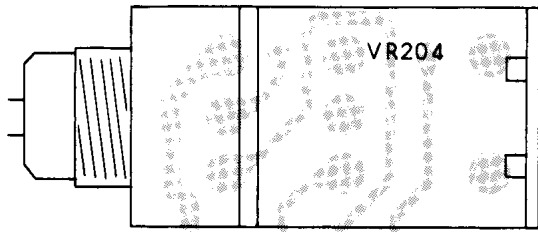


Specifications are subject to change without notice or obligation.

VCO UNIT

The image displays a technical drawing of a VCO UNIT. The drawing is a top-down view of a rectangular component. It features a large central rectangular area, likely representing a main cavity or a specific functional section. Surrounding this central area are various smaller rectangular sections, some of which appear to be mounting points or connection points. The drawing is characterized by a complex arrangement of lines, including straight lines, curves, and hatching, which define the geometry and internal structure of the unit. The overall layout is symmetrical and precise, typical of a technical drawing used in engineering or manufacturing.

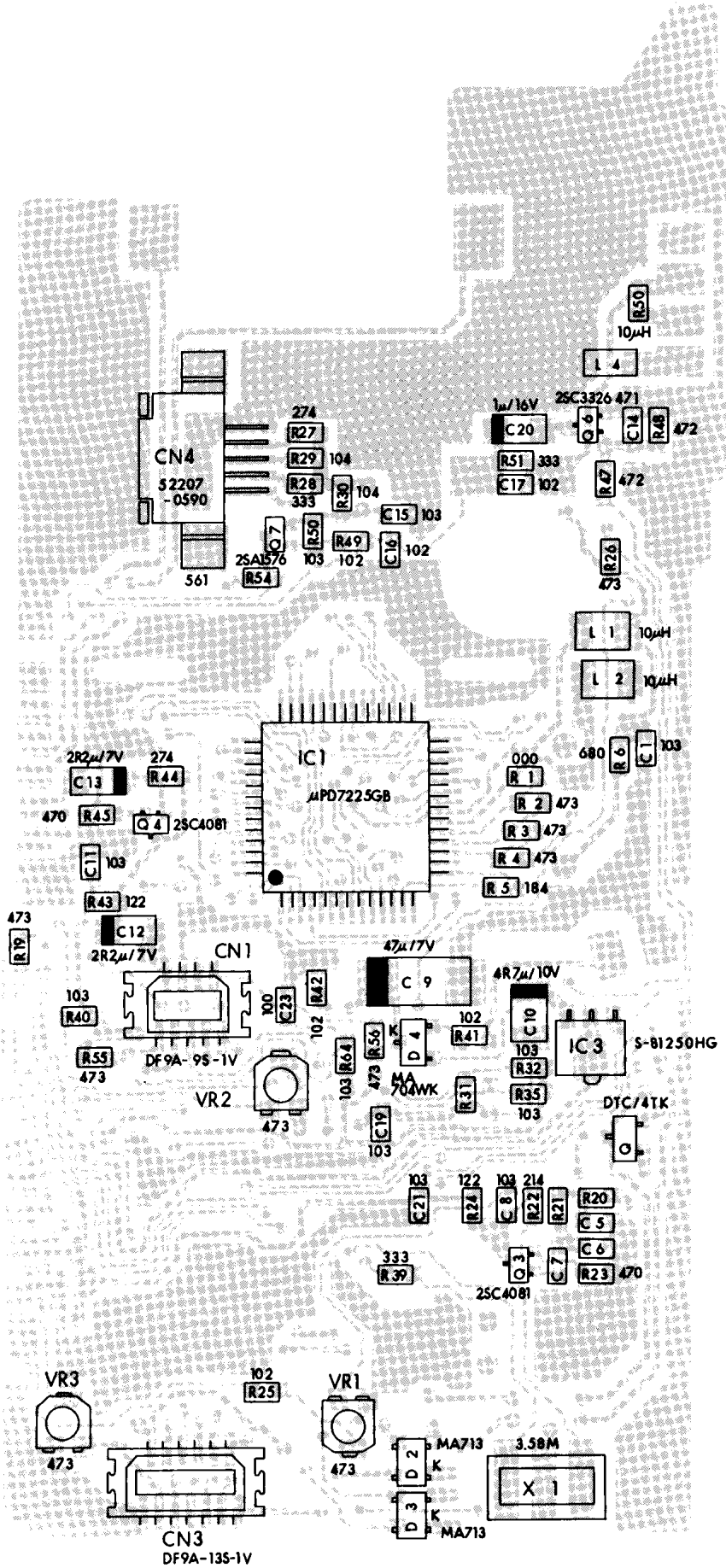
■ VR.RE.SW.PC BOARDS



SW1.2.3 (SKHUAB)

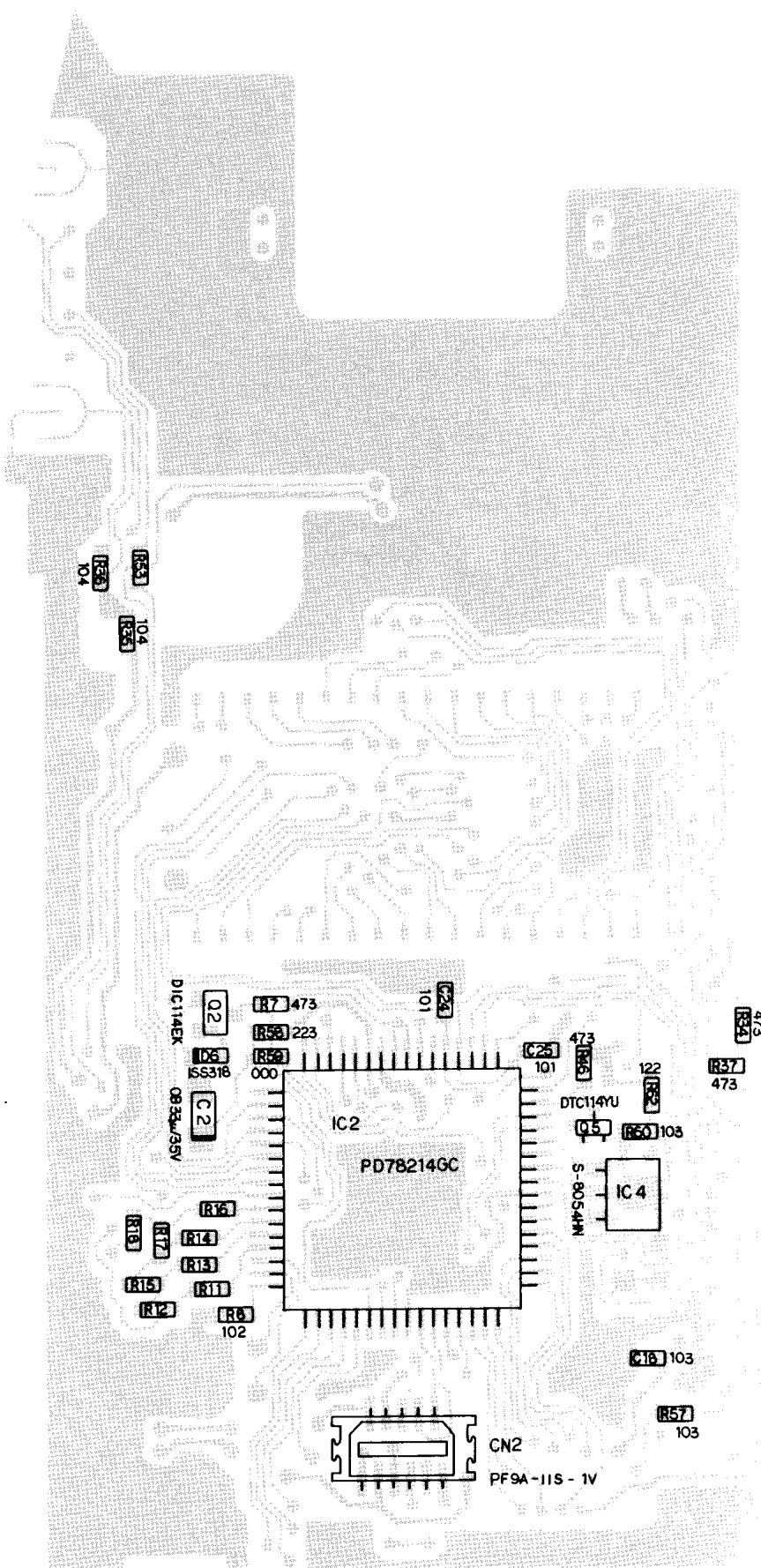
# ■ CPU PC BOARD

Side A

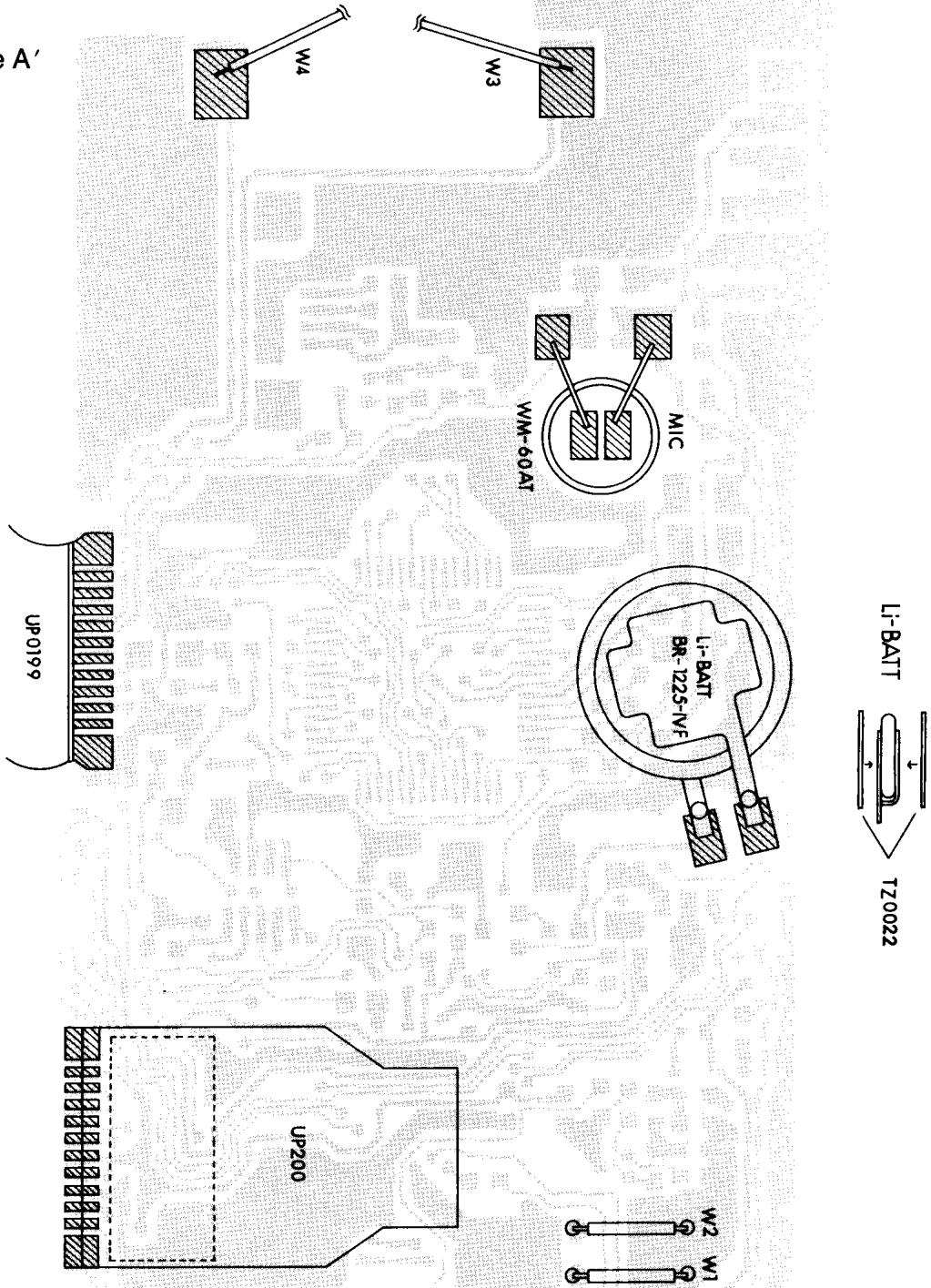




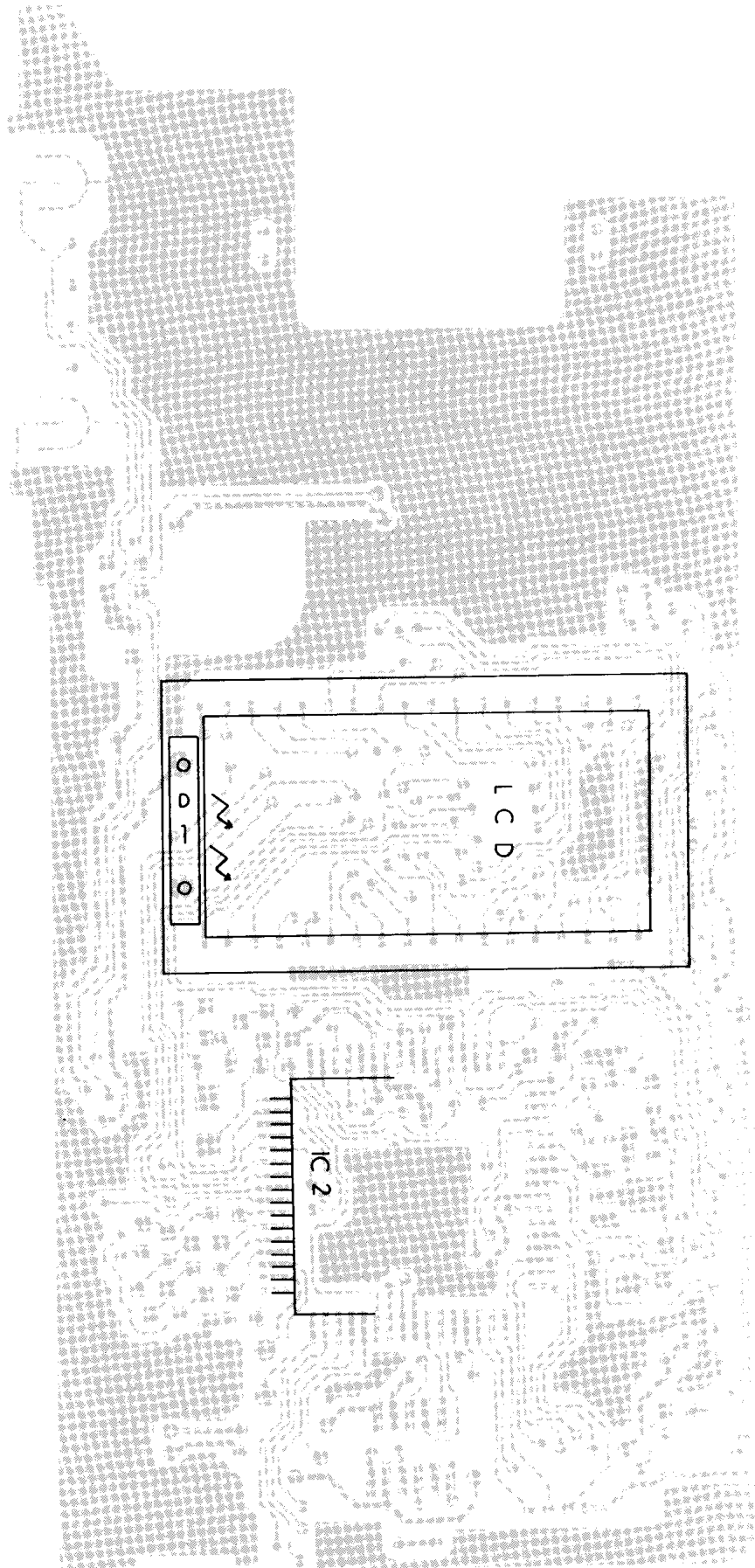
Side B



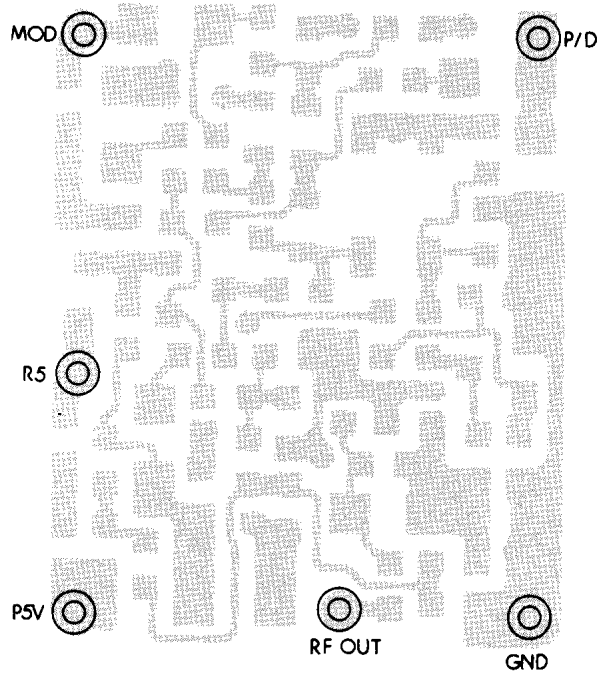
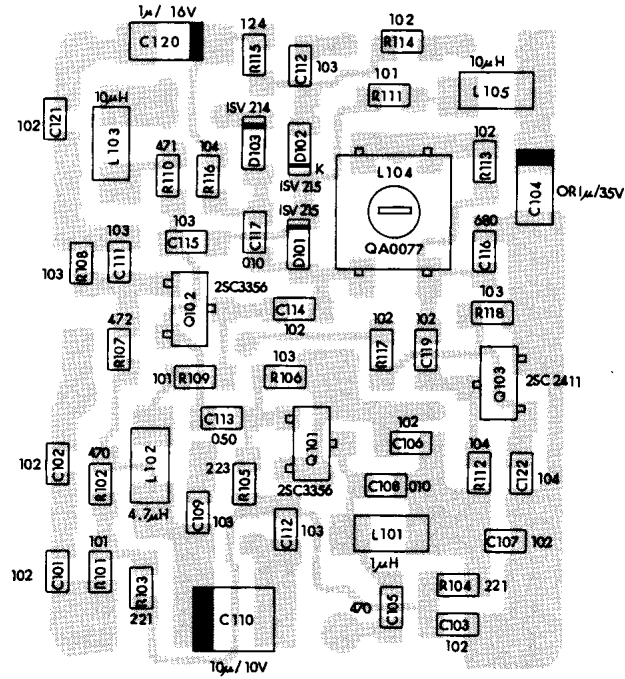
Side A'



Side B'

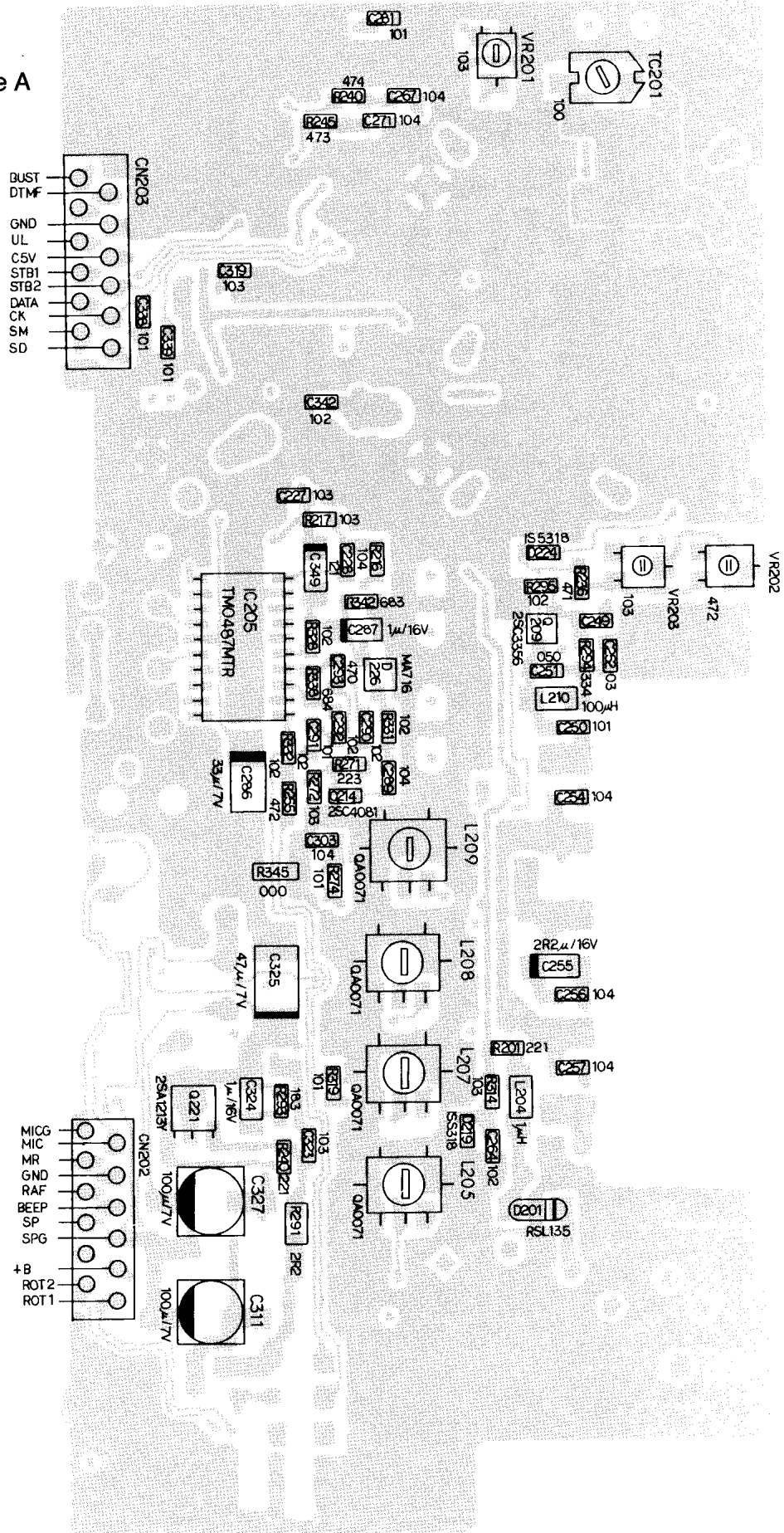


# ■ VCO PC BOARD



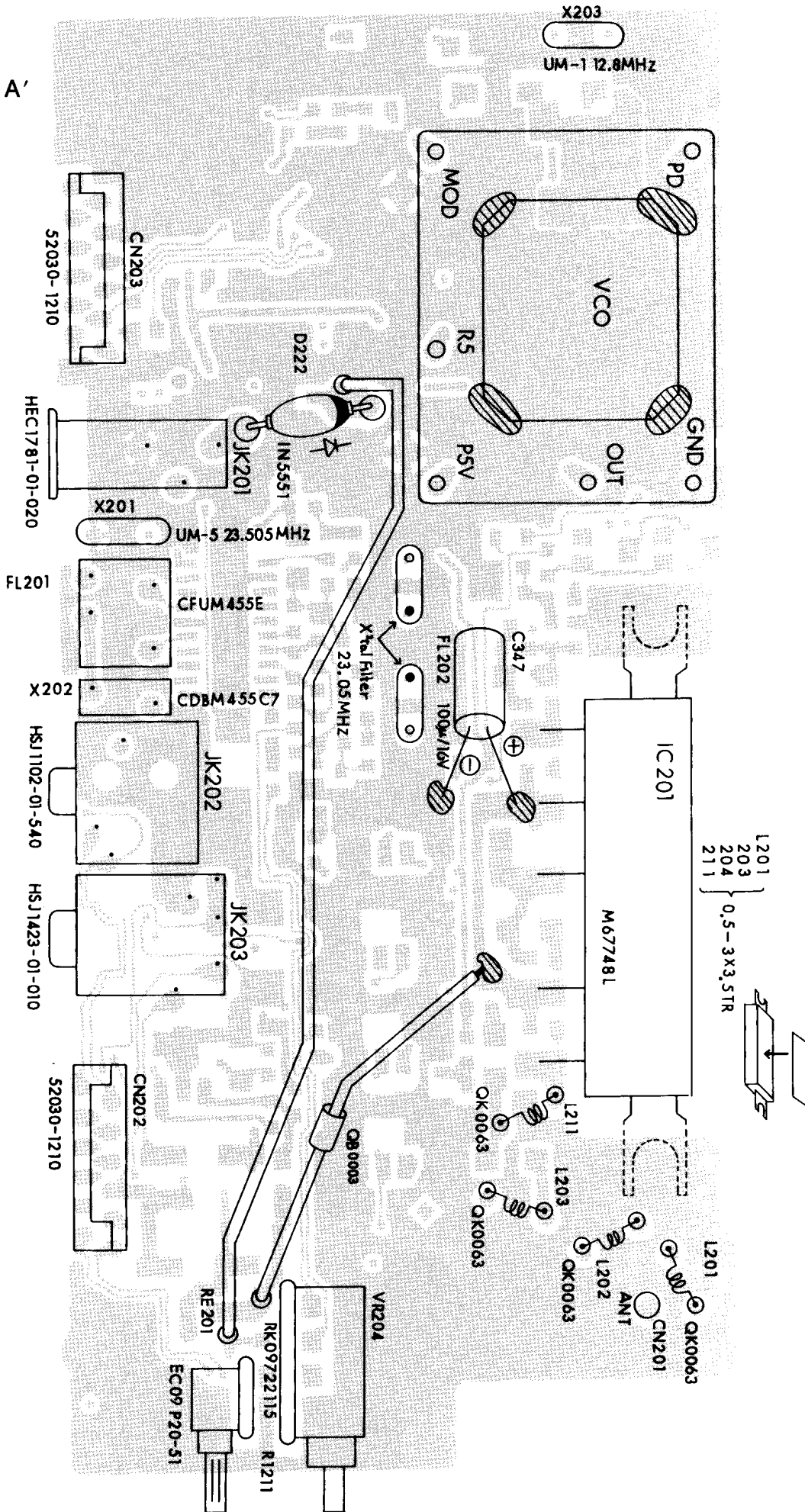
# ■ MAIN PC BOARD

Side A

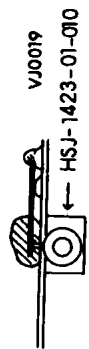
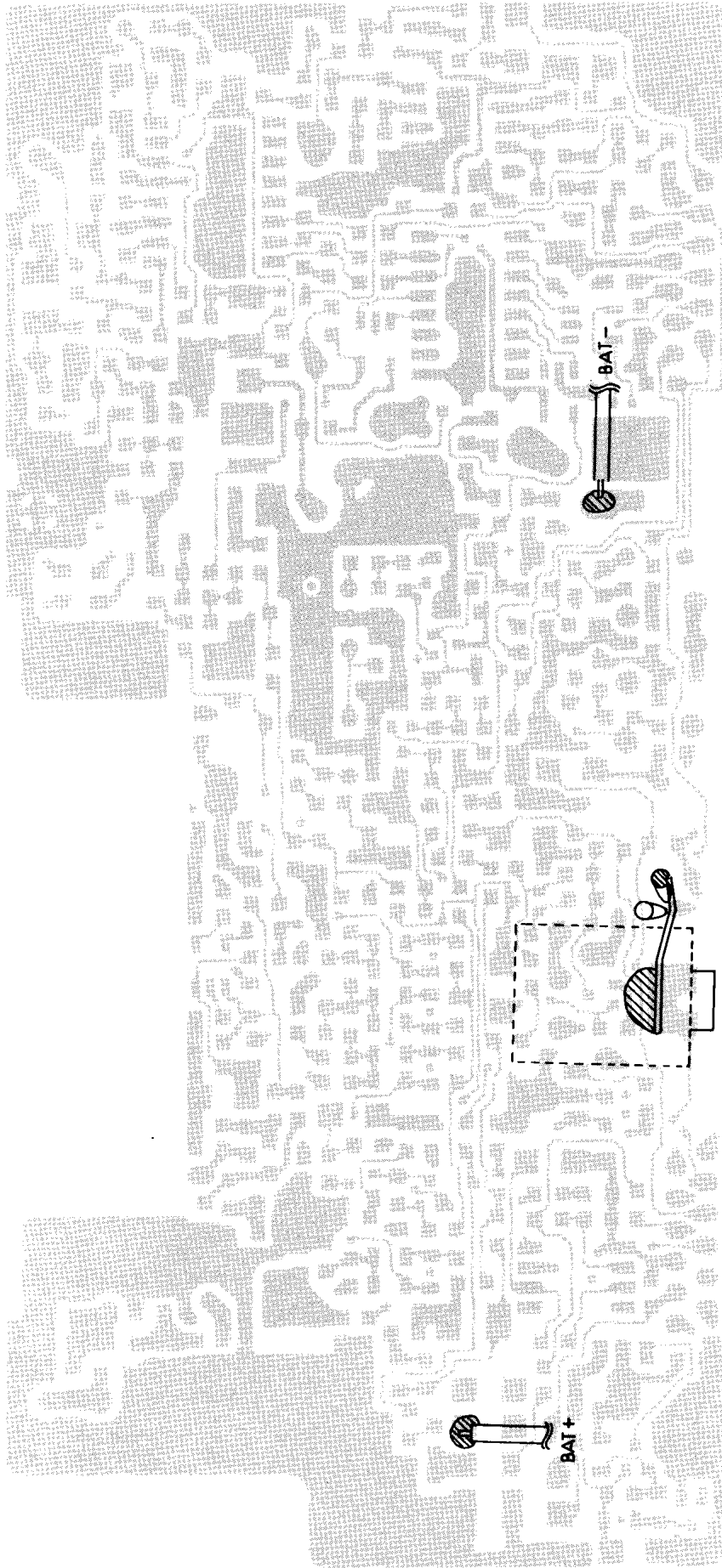




Side A'



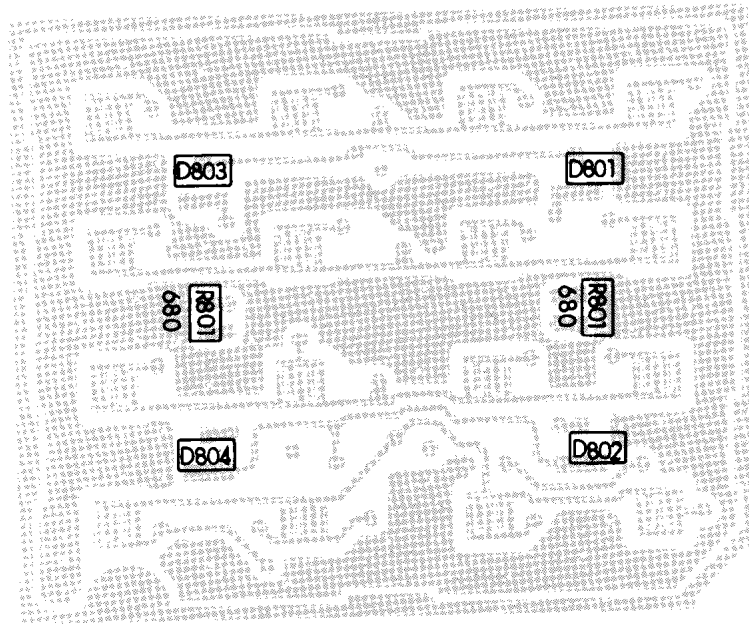
Side B'



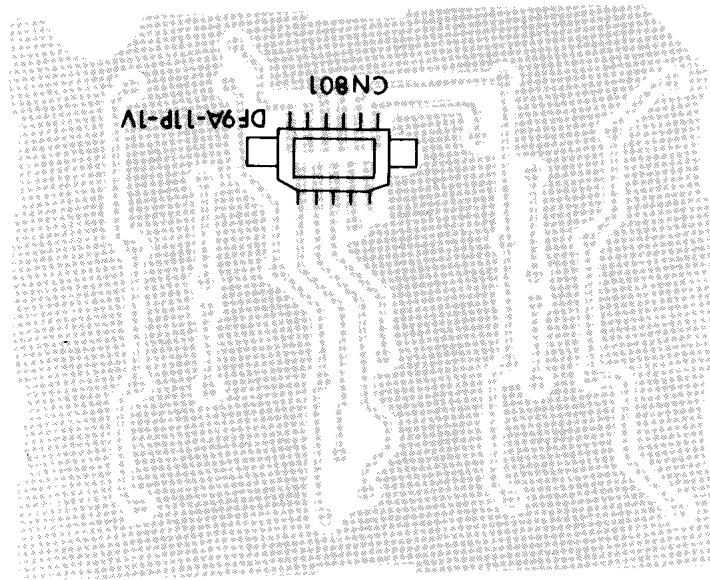


# ■ KEY BOARD

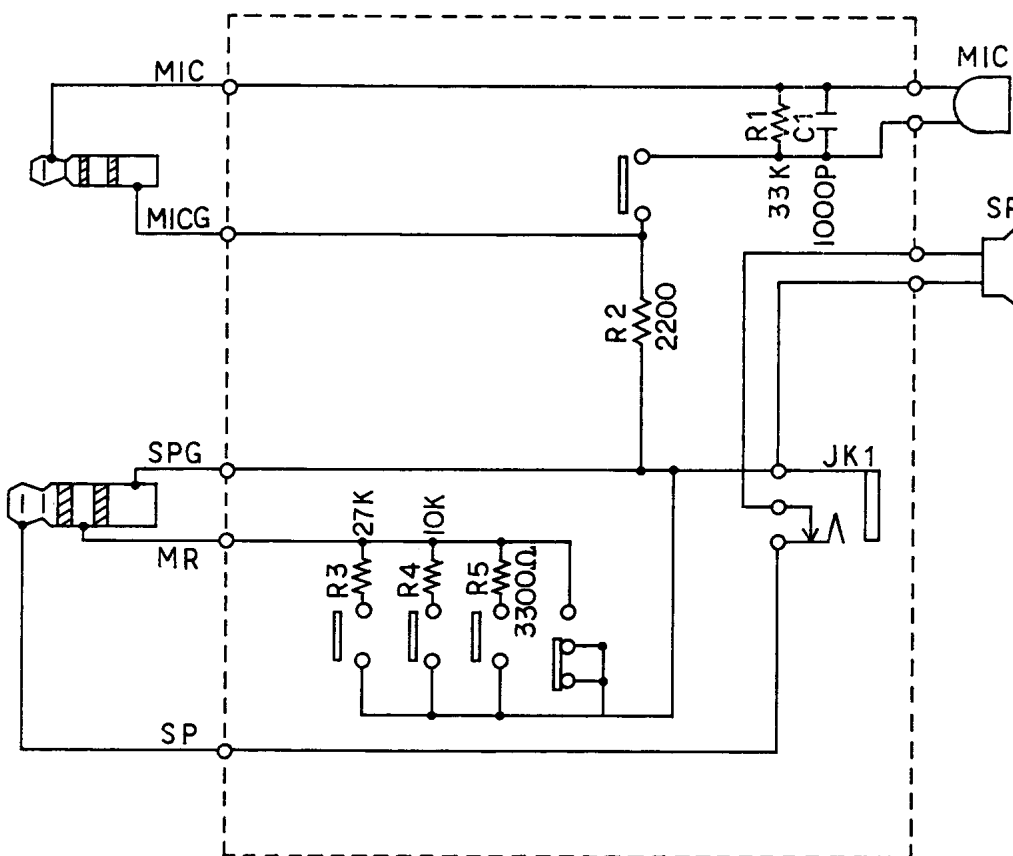
Side A



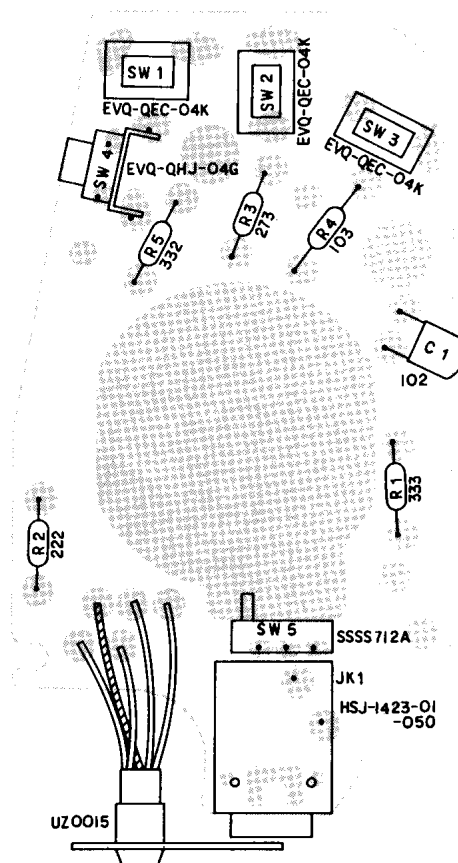
Side B



# EMS-8 (REMOTE CONTROL SPEAKER/MICROPHONE)



Ref. No.	Part Code	Part Name and Number
R	RD0039U	Chip R, 1/4W 222
R1	RD0059	Chip R, 1/4W 333
R2	RD0039	Chip R, 1/4W 222
R3	RD0057	Chip R, 1/4W 273
R4	RD0052	Chip R, 1/4W 103
R5	RD0042	Chip R, 1/4W 332
C1	CK0003	Ceramic C, 50V 102Z
SW1	UU0007	Tact Switch, EVQ-QEC 04K
SW2	UU0007	Tact Switch, EVQ-QEC 04K
SW3	UU0007	Tact Switch, EVQ-QEC 04K
SW4	UU0009	Tact Switch, EVQ-QHJ 04G
SW5	US0018	Slide Switch, SSSS712A
JK1	UP0211	EMS8 Board
	UJ0016	Jack HSJ1423-01-050

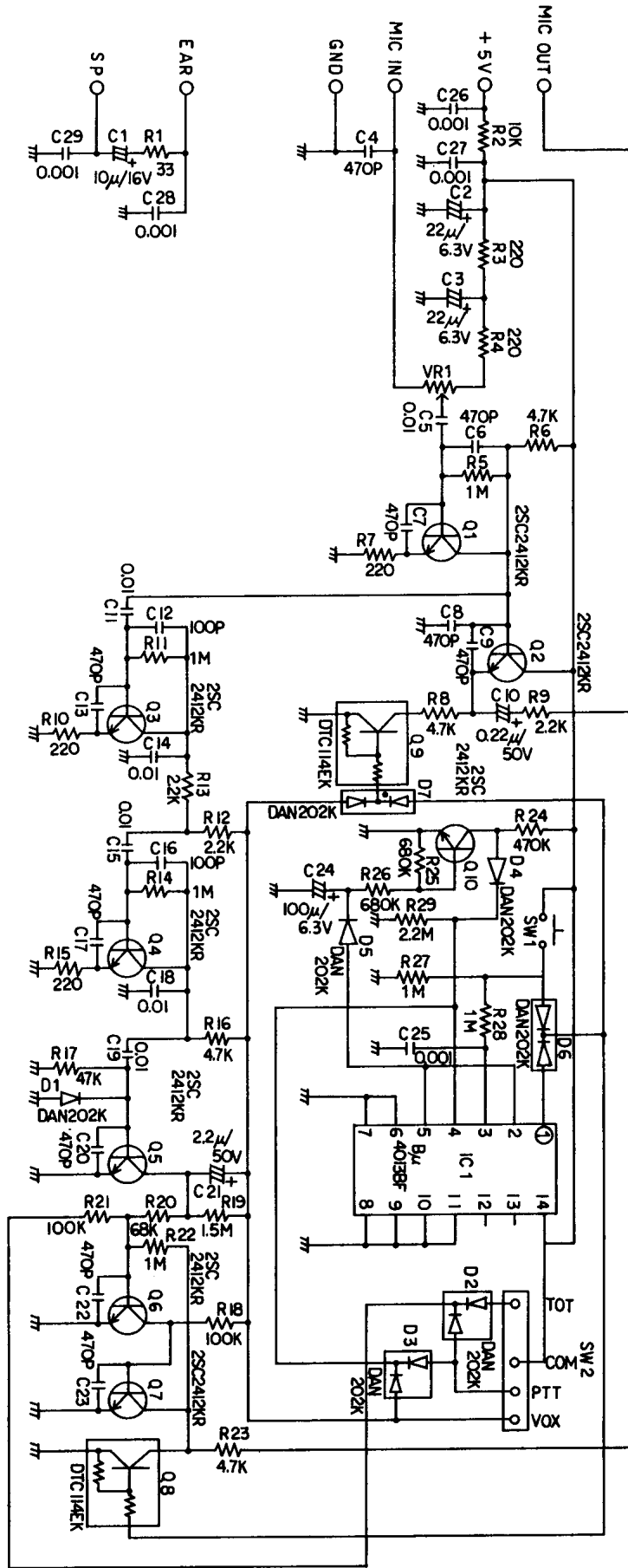


# EME-10K (HEADSET W/PTT VOX)

Ref. No.	Part Code	Part Name and Number
C1	CE0044	Chemical C, 1.6V 10 $\mu$ F MS5
C2	CE0034	Chemical C, 6.3V 22 $\mu$ F MS5
C3	CE0034	Chemical C, 6.3V 22 $\mu$ F MS5
C4	CU3031	Chip C, CM105 W5R 471K 50VAT
C5	CU3052	Chip C, CM105 W5R 103K 25VAT
C6	CU3031	Chip C, CM105 W5R 471K 50VAT
C7	CU3031	Chip C, CM105 W5R 471K 50VAT
C8	CU3031	Chip C, CM105 W5R 471K 50VAT
C9	CU3031	Chip C, CM105 W5R 471K 50VAT
C10	CE0109	Chemical C, 50V 0.22 $\mu$ F MS5
C11	CU3052	Chip C, CM105 W5R 103K 25VAT
C12	CU3023	Chip C, CM105 CH 101K 50VAT
C13	CU3031	Chip C, CM105 W5R 471K 50VAT
C14	CU3052	Chip C, CM105 W5R 103K 25VAT
C15	CU3052	Chip C, CM105 W5R 103K 25VAT
C16	CU3023	Chip C, CM105 CH 101K 50VAT
C17	CU3031	Chip C, CM105 W5R 471K 50VAT
C18	CU3052	Chip C, CM105 W5R 103K 25VAT
C19	CU3052	Chip C, CM105 W5R 103K 25VAT
C20	CU3031	Chip C, CM105 W5R 471K 50VAT
C21	CE0200	Chemical C, 50V 2.2 $\mu$ F UW
C22	CU3031	Chip C, CM105 W5R 471K 50VAT
C23	CU3031	Chip C, CM105 CH 101K 50VAT
C24	CE0037	Chemical C, 6.3V 100 $\mu$ F MS5
C25	CU3035	Chip C, CM105 W5R 102K 50VAT
C26	CU3035	Chip C, CM105 W5R 102K 50VAT
C27	CU3035	Chip C, CM105 W5R 102K 50VAT
C28	CU3035	Chip C, CM105 W5R 102K 50VAT
C29	CU3035	Chip C, CM105 W5R 102K 50VAT
D1	XD0040	Diode, DAN202K T96
D2	XD0040	Diode, DAN202K T96
D3	XD0040	Diode, DAN202K T96
D4	XD0040	Diode, DAN202K T96
D5	XD0040	Diode, DAN202K T96
D6	XD0040	Diode, DAN202K T96
D7	XD0040	Diode, DAN202K T96
Q1	XT0037	Transistor, 2SC2412K T96R
Q2	XT0037	Transistor, 2SC2412K T96R
Q3	XT0037	Transistor, 2SC2412K T96R
Q4	XT0037	Transistor, 2SC2412K T96R
Q5	XT0037	Transistor, 2SC2412K T96R
Q6	XT0037	Transistor, 2SC2412K T96R
Q7	XT0037	Transistor, 2SC2412K T96R

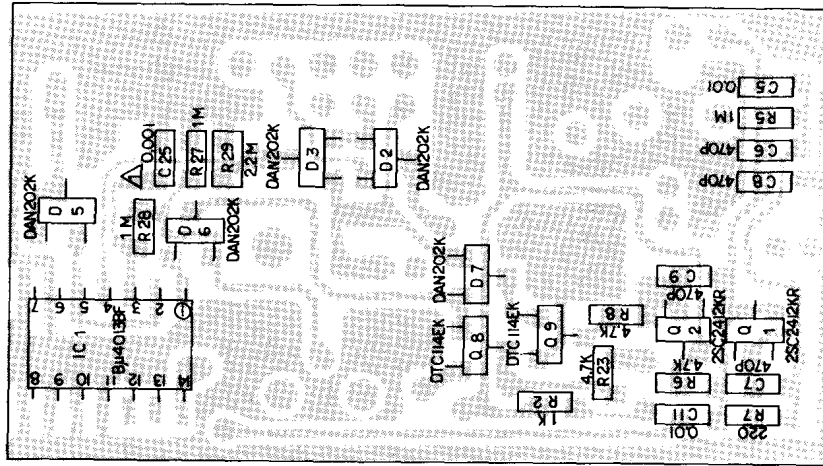
Ref. No.	Part Code	Part Name and Number
Q8	XU0012	Digital Transistor, DTC114EKT96
Q9	XU0012	Digital Transistor, DTC114EKT96
Q10	XT0037	Transistor, 2SC2412K T96R
R1	RK3020	Chip R, MCR03EZ0J 330
R2	RK3038	Chip R, MCR03EZ0J 102
R3	RK3030	Chip R, MCR03EZ0J 221
R4	RK3030	Chip R, MCR03EZ0J 221
R5	RK3074	Chip R, MCR03EZ0J 105
R6	RK3046	Chip R, MCR03EZ0J 472
R7	RK3030	Chip R, MCR03EZ0J 221
R8	RK3046	Chip R, MCR03EZ0J 472
R9	RK3042	Chip R, MCR03EZ0J 222
R10	RK3030	Chip R, MCR03EZ0J 221
R11	RK3074	Chip R, MCR03EZ0J 105
R12	RK3042	Chip R, MCR03EZ0J 222
R13	RK3042	Chip R, MCR03EZ0J 222
R14	RK3074	Chip R, MCR03EZ0J 105
R15	RK3030	Chip R, MCR03EZ0J 221
R16	RK3046	Chip R, MCR03EZ0J 472
R17	RK3058	Chip R, MCR03EZ0J 473
R18	RK3062	Chip R, MCR03EZ0J 104
R19	RK3076	Chip R, MCR03EZ0J 155
R20	RK3060	Chip R, MCR03EZ0J 683
R21	RK3062	Chip R, MCR03EZ0J 104
R22	RK3074	Chip R, MCR03EZ0J 105
R23	RK3046	Chip R, MCR03EZ0J 472
R24	RK3070	Chip R, MCR03EZ0J 474
R25	RK3072	Chip R, MCR03EZ0J 684
R26	RK3072	Chip R, MCR03EZ0J 684
R27	RK3074	Chip R, MCR03EZ0J 105
R28	RK3074	Chip R, MCR03EZ0J 105
R29	RK0090	Chip R, MCR10EZ0J 225
IC1	XA0123	IC, BU4013BF-T1
SW1	UU0009	Tact Switch, EVQ-QHJ-04G
SW2	US0016	Slide Switch, SSSS913L2
VR1	RH0062	Semi Valuable VR, EVM-LIG A00B23
	UP0187A	EME-10 Board

# SCHEMATIC DIAGRAM OF EME-10K

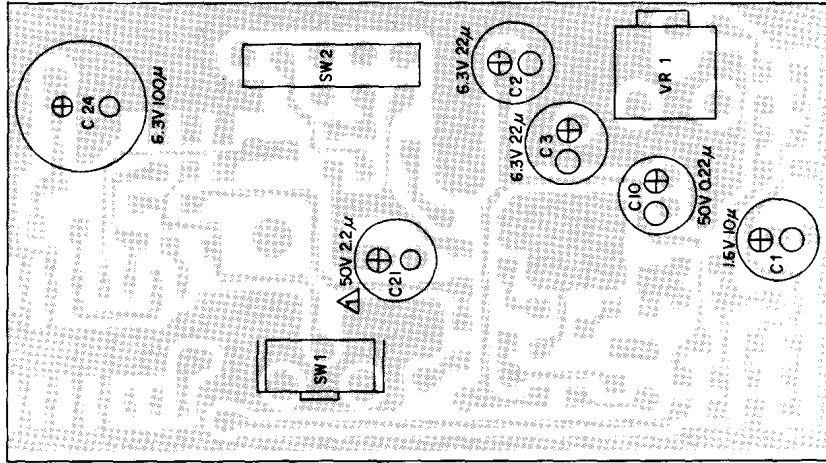


# EME-10K PC BOARD

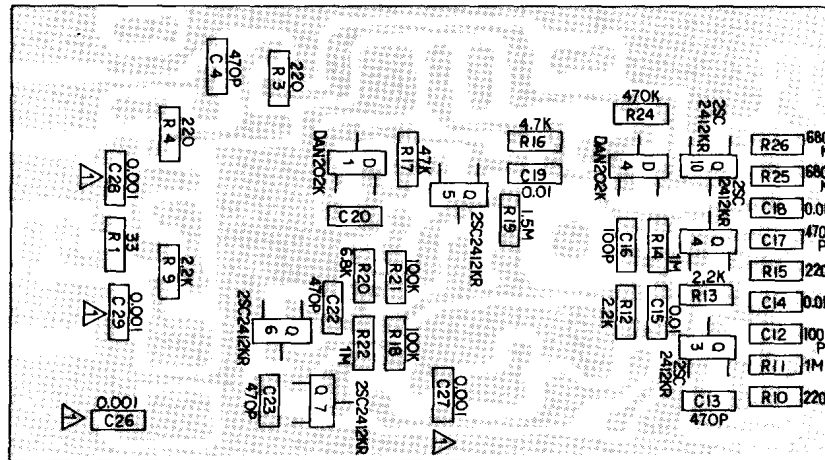
Side A



Side A'



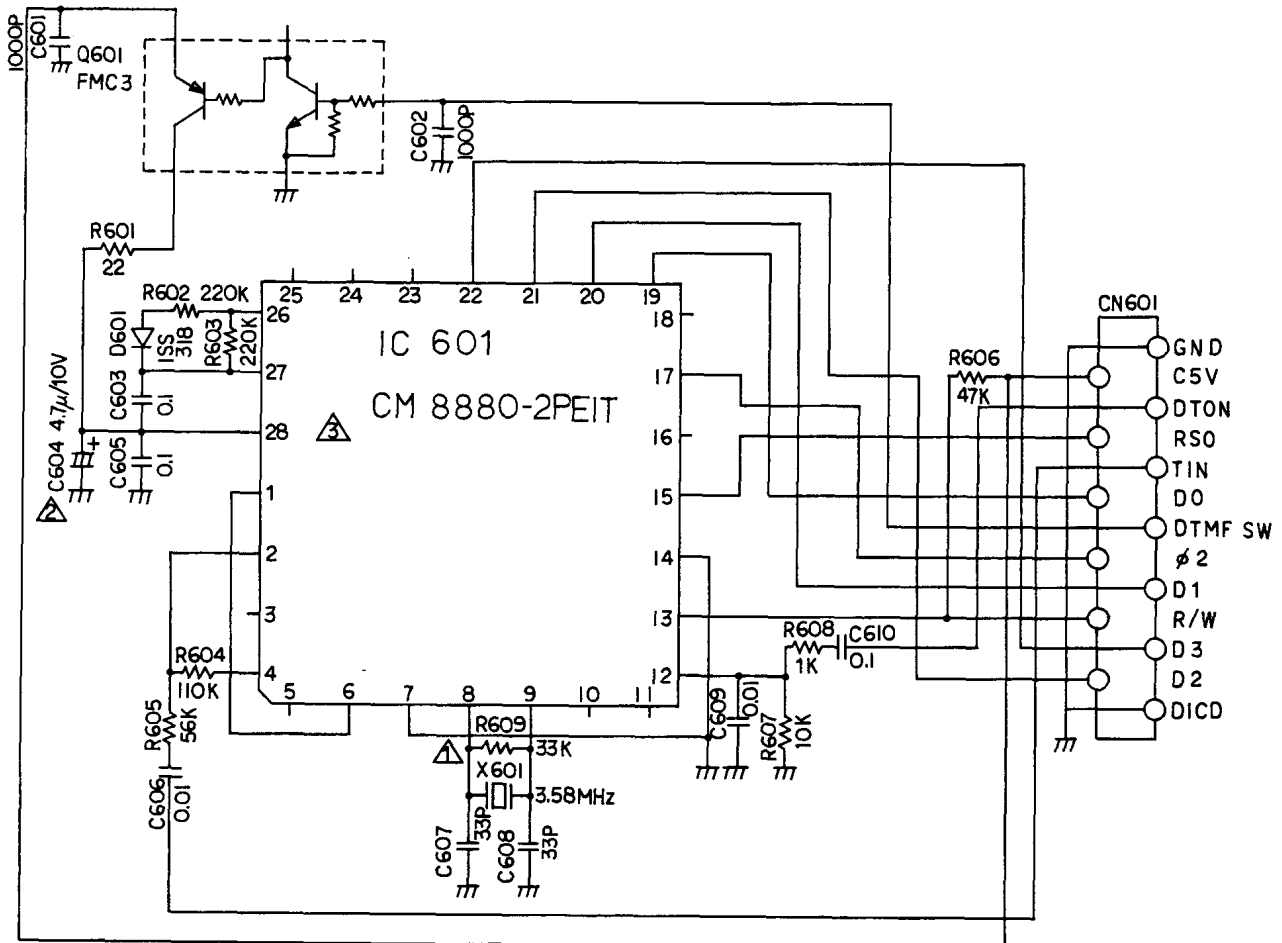
Side B



# EJ-10U (DTMF ENC/DEC UNIT)

Ref. No.	Part Code	Part Name and Number
IC601	XA0169	IC, CM8880-2PEIT
Q0601	XU0021	Transistor, FMC3 T98
D0601	XD0129	Diode, 1SS318 TT11
	UP0212	DTMF Board
X0601	XQ0021	X'talDSMAT 3.58MHZ
	TT3008	Elastic Tube
CN601	UE0134	Connector, DF9A-13P-1V(22)
	YZ0042	Cement G-17 1g
	YZ0082	Mending Tape, 12mmW
C601	CU3035	Chip C, CM105 W5R 102K
C602	CU3035	Chip C, CM105 W5R 102K
C603	CU3059	Chip C, CM105 Y5V 104Z
C604	CS0050	Chip C, TMC-1A 475MTR
C605	CU3059	Chip C, CM105 Y5V 104Z

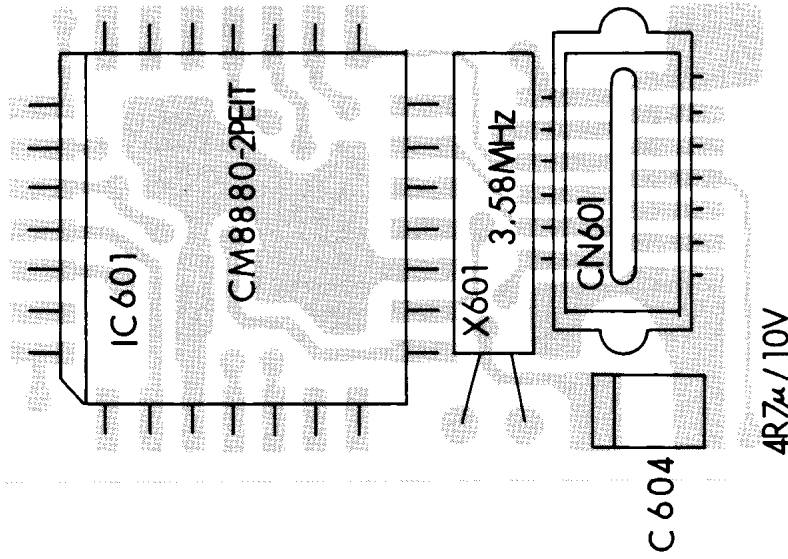
Ref. No.	Part Code	Part Name and Number
C606	CU3047	Chip C, CM105 W5R 103K
C607	CU3017	Chip C, CM105 CH 330K
C608	CU3017	Chip C, CM105 CH 330K
C609	CU3047	Chip C, CM105 W5R 103K
C610	CU3059	Chip C, CM105 Y5V 104Z
R601	RK3018	Chip R, MCR03 EZHJ220
R602	RK3066	Chip R, MCR03 EZHJ224
R603	RK3066	Chip R, MCR03 EZHJ224
R604	RK3062	Chip R, MCR03 EZHJ104
R605	RK3059	Chip R, MCR03 EZHJ563
R606	RK3058	Chip R, MCR03 EZHJ473
R607	RK3050	Chip R, MCR03 EZHJ103
R608	RK3038	Chip R, MCR03 EZHJ102
R609	RK3056	Chip R, MCR03 EZHJ333



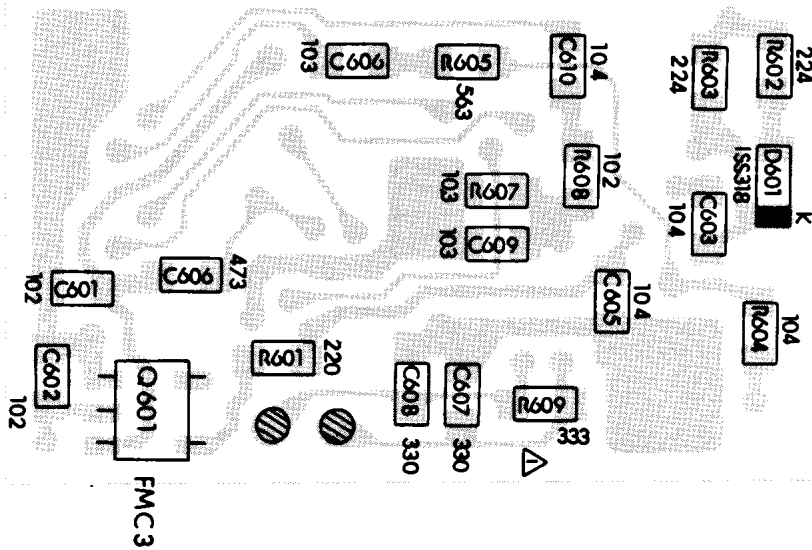
# DTMF PC BOARD

EJ-20U

Side A



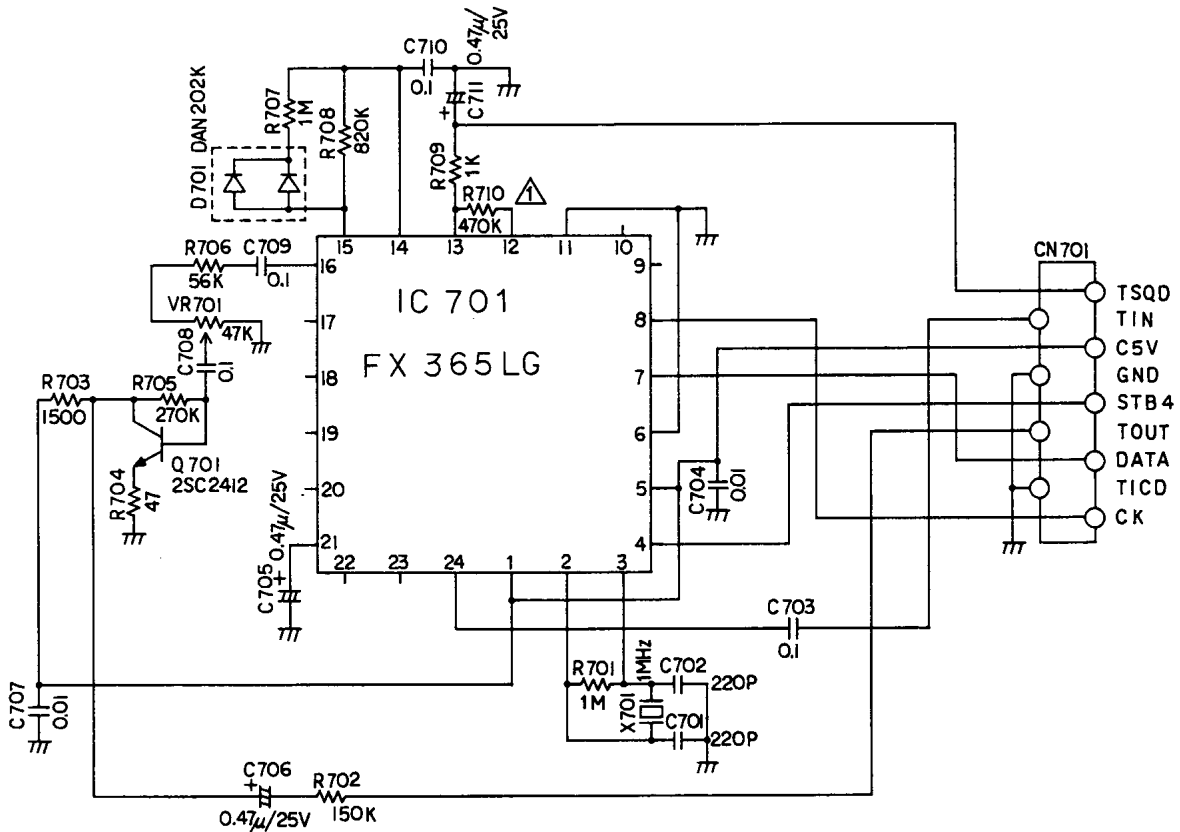
Side B



# EJ-12U (TONE SQUELCH UNIT)

Ref. No.	Part Code	Part Name and Number
IC701	XA0163	IC, FX365LG/TR
Q701	XT0037	Transistor, 2SC2412K T96R
D701	XD0040	Diode, DAN202K T96R
VR701	RH0060	VR, MVR32 HXBRN473
X701	XB0006	X'tal CSB1000J221
CN701	UE0132	Connector, DF9A-9P-1V(22)
C701	CU3060	Chip C, CM105CH221K
C702	CU3060	Chip C, CM105CH221K
C703	CU3059	Chip C, CM105Y5V104Z
C704	CU3047	Chip C, CM105W5R103K
C705	CS0060	Chip C, TMC1E474TR

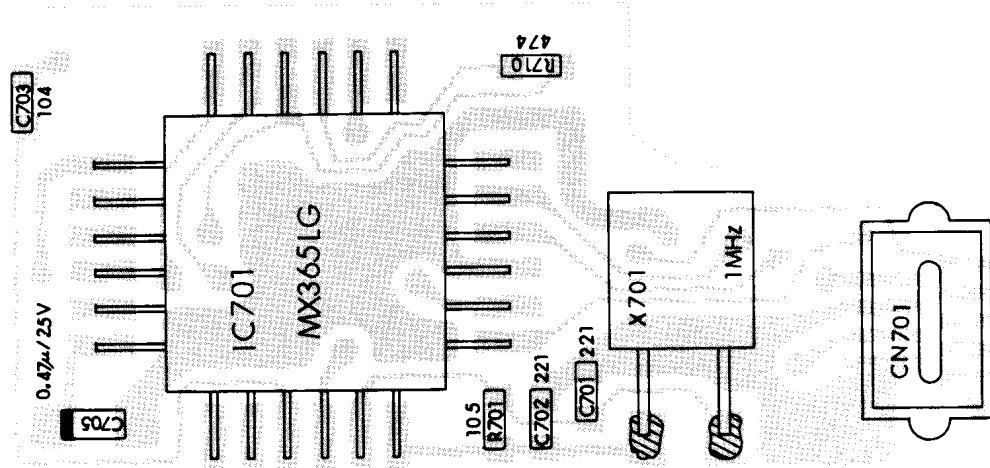
Ref. No.	Part Code	Part Name and Number
C706	CS0060	Chip C, TMC1E474TR
C707	CU3047	Chip C, CM105W5R103K
C708	CU3059	Chip C, CM105Y5V104Z
C709	CU3059	Chip C, CM105Y5V104Z
C710	CU3059	Chip C, CM105Y5V104Z
C711	CS0060	Chip C, TMC1E474TR
R701	RK3074	Chip R, MCR03EZJH105
R702	RK3064	Chip R, MCR03EZJH154
R703	RK3036	Chip R, MCR03EZJH152
R704	RK3022	Chip R, MCR03EZJH470
R705	RK3067	Chip R, MCR03EZJH274
R706	RK3059	Chip R, MCR03EZJH563
R707	RK3074	Chip R, MCR03EZJH105
R708	RK3073	Chip R, MCR03EZJH824
R709	RK3038	Chip R, MCR03EZJH102
R710	RK3070	Chip R, MCR03EZJH474



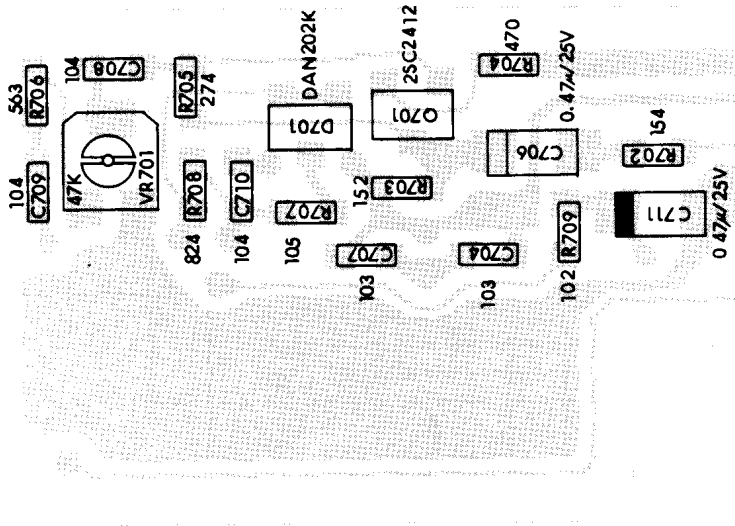


# STONE SQUELCH UNIT PC BOARD

Side A



Side B



# EDC-34 (QUICK CHARGER 120V)

Ref. No.	Part Code	Part Name and Number	Ref. No.	Part Code	Part Name and Number	Ref. No.	Part Code	Part Name and Number
R1		Resistor, 0.2W 4.7K $\Omega$	R51		Resistor, 0.2W 3.3K $\Omega$	Q12		Transistor, NPN 40V 100mA
R2		Resistor, 0.2W 1.5K $\Omega$	R52		Resistor, 0.2W 10K $\Omega$	Q13		Transistor, PNP 40V 100mA
R3		Resistor, 0.2W 10K $\Omega$				Q14		Transistor, NPN 40V 100mA
R4		Resistor, 0.2W 6.8K $\Omega$	C1		Ceramic Condenser, 50V 1 $\mu$ F	Q15		Transistor, PNP 40V 100mA
R5		Resistor, 1W 0.1 $\Omega$	C2		Electric Condenser, 35V 470 $\mu$ F	Q16		Transistor, PNP 40V 100mA
R6		Resistor, 1W 1.2K $\Omega$	C3		Film Condenser, 50V 821 $\mu$ F	IC1		Regulator,
R7		Resistor, 0.2W 680 $\Omega$	C4		Ceramic Condenser, 50V 101pF	IC2		Regulator,
R8		Resistor, 0.2W 100 $\Omega$	C5		Electric Condenser, 35V 220 $\mu$ F	IC3		Regulator,
R9		Resistor, 0.2W 1.5K $\Omega$	C6		Ceramic Condenser, 50V 104pF	IC4		Regulator,
R10		Resistor, 0.2W 27K $\Omega$	C7		Ceramic Condenser, 50V 101pF	IC5		IC
R11		Resistor, 0.2W 3.3K $\Omega$	C8		Electric Condenser, 16V 100 $\mu$ F	IC6		CPU
R12		Resistor, 0.2W 220 $\Omega$	C9		Electric Condenser, 35V 220 $\mu$ F	X1		Oscillator, 2.0MHz
R13		Resistor, 0.2W 100 $\Omega$	C10		Ceramic Condenser, 50V 1 $\mu$ F	L1		Coil, 2A 180 $\mu$ H
R14		Resistor, 0.2W 220 $\Omega$	C12		Ceramic Condenser, 50V 470pF	L2		Coil, 1A 200 $\mu$ H
R15		Resistor, 0.2W 130 $\Omega$	C13		Ceramic Condenser, 50V 470pF	L3		Ferrite Beads
R16		Resistor, 1W 680 $\Omega$	D1		Diode, 40V 2.5A	LED1		LED
R17		Resistor, 0.2W 12 $\Omega$	D2		Diode, 40V 2.5A	LED2		LED
R18		Resistor, 0.2W 12 $\Omega$	D3		Diode, 40V 100mA			LED, Spacer
R19		Resistor, 1W 0.22 $\Omega$	D4		Diode, 40V 100mA	CN1		Jack
R20		Resistor, 0.2W 10K $\Omega$	D5		Diode, 40V 2.5A	CN2		Jack
R21		Resistor, 0.5W 2.7K $\Omega$	D6		Diode, 40V, 100mA	CN3		Terminal
R22		Resistor, 0.5W 2.7K $\Omega$	D7		Diode, 40V 100mA	CN4		Terminal
R23		Resistor, 0.2W 10K $\Omega$	D8		Diode, 40V 100mA	CN5		Terminal
R24		Resistor, 0.2W 10K $\Omega$	D9		Diode, 40V 100mA	CN6		Terminal
R25		Resistor, 0.2W 33K $\Omega$	D10		Diode, 100V 2A	F1		Fuse, 3.15A 125VULCSA
R26			D11		Diode, 40V 100mA	JP1		Cable, $\Phi$ 0.6 $\times$ 10mm
R27		Resistor, 0.2W 33K $\Omega$	D12		Diode, 40V 100mA	JP2		Cable, $\Phi$ 0.6 $\times$ 10mm
R28		Resistor, 0.2W 39K $\Omega$	D13		Diode, 40V 100mA	JP3		Cable, $\Phi$ 0.6 $\times$ 15mm
R29		Resistor, 0.2W 47K $\Omega$	D14		Diode, 40V 100mA	JP4		Cable, $\Phi$ 0.6 $\times$ 7.5mm
R30		Resistor, 0.2W 22K $\Omega$	D15		Diode, 40V 100mA	JP5		Cable, $\Phi$ 0.6 $\times$ 5mm
R31		Resistor, 0.2W 10K $\Omega$	D16		Diode, 40V 100mA	JP6		Cable, $\Phi$ 0.6 $\times$ 12.5mm
R32		Resistor, 0.2W 3.3K $\Omega$	D17		Diode, 100V 2A	JP7		Cable, $\Phi$ 0.6 $\times$ 10mm
R33		Resistor, 0.2W 10K $\Omega$	D18		Diode, 40V 100mA	JP8		Cable, $\Phi$ 0.6 $\times$ 10mm
R34		Resistor, 0.2W 10K $\Omega$	D19		Diode, 40V 2A	JP9		Cable, $\Phi$ 0.6 $\times$ 5mm
R35		Resistor, 0.2W 2.7K $\Omega$	Z1		Zenner Diode, 400mW 9V	JP10		Cable, $\Phi$ 0.6 $\times$ 5mm
R36		Resistor, 0.2W 5.6K $\Omega$	Q1		Transistor, PNP 40V 100mA	JP11		Cable, $\Phi$ 0.6 $\times$ 5mm
R37		Resistor, 0.2W 3.3K $\Omega$	Q2		Transistor, PNP 40V 100mA	JP12		Cable, $\Phi$ 0.6 $\times$ 10mm
R38		Resistor, 0.2W 3.3K $\Omega$	Q3		Transistor, NPN 40V 100mA	JP13		Cable, $\Phi$ 0.6 $\times$ 12.5mm
R39		Resistor, 0.2W 1M $\Omega$	Q4		Transistor, NPN 80V 3A	JP14		Cable, $\Phi$ 0.6 $\times$ 10mm
R40		Resistor, 0.2W 1.5K $\Omega$	Q5		Transistor, PNP 40V 100mA	JP15		Cable, $\Phi$ 0.6 $\times$ 7.5mm
R41		Resistor, 0.2W 47K $\Omega$	Q6		Transistor, PNP 40V 100mA	JP16		Cable, $\Phi$ 0.6 $\times$ 5mm
R42		Resistor, 0.2W 10K $\Omega$	Q7		Transistor, PNP 60V 5A	JP17		Cable, AWG24 $\times$ 20mm
R43		Resistor, 0.2W 10K $\Omega$	Q8		Transistor, NPN 40V 100mA			
R44		Resistor, 0.2W 2.7K $\Omega$	Q9		Transistor, NPN 40V 100mA			
R45		Resistor, 0.2W 5.6K $\Omega$	Q10		Transistor, NPN 40V 100mA			
R46		Resistor, 0.2W 2.7K $\Omega$	Q11		Transistor, PNP 40V 100mA			
R47		Resistor, 0.2W 5.6K $\Omega$						
R48		Resistor, 0.2W 3.3K $\Omega$						
R49		Resistor, 0.2W 3.3K $\Omega$						
R50		Resistor, 0.2W 3.3K $\Omega$						

# EDC-35 (QUICK CHARGER 220V)

Ref. No.	Part Code	Part Name and Number	Ref. No.	Part Code	Part Name and Number	Ref. No.	Part Code	Part Name and Number
R1		Resistor, 0.2W 4.7KΩ	R51		Resistor, 0.2W 3.3KΩ	Q12		Transistor, NPN 40V 100mA
R2		Resistor, 0.2W 1.5KΩ	R52		Resistor, 0.2W 10KΩ	Q13		Transistor, PNP 40V 100mA
R3		Resistor, 0.2W 10KΩ				Q14		Transistor, NPN 40V 100mA
R4		Resistor, 0.2W 6.8KΩ	C1		Ceramic Condenser, 50V 1μF	Q15		Transistor, PNP 40V 100mA
R5		Resistor, 1W 0.1Ω	C2		Electric Condenser, 35V470μF	Q16		Transistor, PNP 40V 100mA
R6		Resistor, 1W 1.2KΩ	C3		Film Condenser, 50V 821μF	IC1		Regulator,
R7		Resistor, 0.2W 680Ω	C4		Ceramic Condenser, 50V 101pF	IC2		Regulator,
R8		Resistor, 0.2W 100Ω	C5		Electric Condenser, 35V 220μF	IC3		Regulator,
R9		Resistor, 0.2W 1.5KΩ	C6		Ceramic Condenser, 50V 104pF	IC4		Regulator,
R10		Resistor, 0.2W 27KΩ	C7		Ceramic Condenser, 50V 101pF	IC5		IC
R11		Resistor, 0.2W 3.3KΩ	C8		Electric Condenser, 16V 100μF	IC6		CPU
R12		Resistor, 0.2W 220Ω	C9		Electric Condenser, 35V 220μF	X1		Oscillator, 2.0MHz
R13		Resistor, 0.2W 100Ω	C10		Ceramic Condenser, 50V 1μF	L1		Coil, 2A 180μH
R14		Resistor, 0.2W 220Ω	C12		Ceramic Condenser, 50V 470pF	L2		Coil, 1A 200μH
R15		Resistor, 0.2W 130Ω	C13		Ceramic Condenser, 50V 470pF	L3		Ferrite Beads
R16		Resistor, 1W 680Ω	D1		Diode, 40V 2.5A	LED1		LED
R17		Resistor, 0.2W 12Ω	D2		Diode, 40V 2.5A	LED2		LED
R18		Resistor, 0.2W 12Ω	D3		Diode, 40V 100mA			LED, Spacer
R19		Resistor, 1W 0.22Ω	D4		Diode, 40V 100mA	CN1		Jack
R20		Resistor, 0.2W 10KΩ	D5		Diode, 40V 2.5A	CN2		Jack
R21		Resistor, 0.5W 2.7KΩ	D6		Diode, 40V 100mA	CN3		Terminal
R22		Resistor, 0.5W 2.7KΩ	D7		Diode, 40V 100mA	CN4		Terminal
R23		Resistor, 0.2W 10KΩ	D8		Diode, 40V 100mA	CN5		Terminal
R24		Resistor, 0.2W 10KΩ	D9		Diode, 40V 100mA	CN6		Terminal
R25		Resistor, 0.2W 33KΩ	D10		Diode, 100V 2A	F1		Fuse, 3.15A 125VULCSA
R26			D11		Diode, 40V 100mA	JP1		Cable, Φ0.6 × 10mm
R27		Resistor, 0.2W 33KΩ	D12		Diode, 40V 100mA	JP2		Cable, Φ0.6 × 10mm
R28		Resistor, 0.2W 39KΩ	D13		Diode, 40V 100mA	JP3		Cable, Φ0.6 × 15mm
R29		Resistor, 0.2W 47KΩ	D14		Diode, 40V 100mA	JP4		Cable, Φ0.6 × 7.5mm
R30		Resistor, 0.2W 22KΩ	D15		Diode, 40V 100mA	JP5		Cable, Φ0.6 × 5mm
R31		Resistor, 0.2W 10KΩ	D16		Diode, 100V 2A	JP6		Cable, Φ0.6 × 12.5mm
R32		Resistor, 0.2W 3.3KΩ	D17		Diode, 40V 100mA	JP7		Cable, Φ0.6 × 10mm
R33		Resistor, 0.2W 10KΩ	D18		Diode, 40V 2A	JP8		Cable, Φ0.6 × 10mm
R34		Resistor, 0.2W 10KΩ	D19		Diode, 40V 100mA	JP9		Cable, Φ0.6 × 5mm
R35		Resistor, 0.2W 2.7KΩ	Z1		Zenner Diode, 400mW 9V	JP10		Cable, Φ0.6 × 5mm
R36		Resistor, 0.2W 5.6KΩ	Q1		Transistor, PNP 40V 100mA	JP11		Cable, Φ0.6 × 5mm
R37		Resistor, 0.2W 3.3KΩ	Q2		Transistor, PNP 40V 100mA	JP12		Cable, Φ0.6 × 10mm
R38		Resistor, 0.2W 3.3KΩ	Q3		Transistor, NPN 40V 100mA	JP13		Cable, Φ0.6 × 12.5mm
R39		Resistor, 0.2W 1MΩ	Q4		Transistor, NPN 80V 3A	JP14		Cable, Φ0.6 × 10mm
R40		Resistor, 0.2W 1.5KΩ	Q5		Transistor, PNP 40V 100mA	JP15		Cable, Φ0.6 × 7.5mm
R41		Resistor, 0.2W 47KΩ	Q6		Transistor, PNP 40V 100mA	JP16		Cable, Φ0.6 × 5mm
R42		Resistor, 0.2W 10KΩ	Q7		Transistor, PNP 60V 5A	JP17		Cable, AWG24 × 20mm
R43		Resistor, 0.2W 10KΩ	Q8		Transistor, NPN 40V 100mA			
R44		Resistor, 0.2W 2.7KΩ	Q9		Transistor, NPN 40V 100mA			
R45		Resistor, 0.2W 5.6KΩ	Q10		Transistor, NPN 40V 100mA			
R46		Resistor, 0.2W 2.7KΩ	Q11		Transistor, PNP 40V 100mA			
R47		Resistor, 0.2W 5.6KΩ						
R48		Resistor, 0.2W 3.3KΩ						
R49		Resistor, 0.2W 3.3KΩ						
R50		Resistor, 0.2W 3.3KΩ						

# ■ BLOCK DIAGRAM

