

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 $\Omega$
<b>Operating Voltage</b>	rated 9V
<b>Microphone Impedance</b>	2 k $\Omega$
<b>Speaker Impedance</b>	8 $\Omega$
<b>Dimensions</b>	110 (H) $\times$ 53 (W) $\times$ 37 (D) mm (4.3 $\times$ 2.1 $\times$ 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>	$\pm 5$ kHz
<b>Spurious Emission</b>	Less than 60 dB below carrier
<b>Microphone</b>	Built-in Electret Condenser

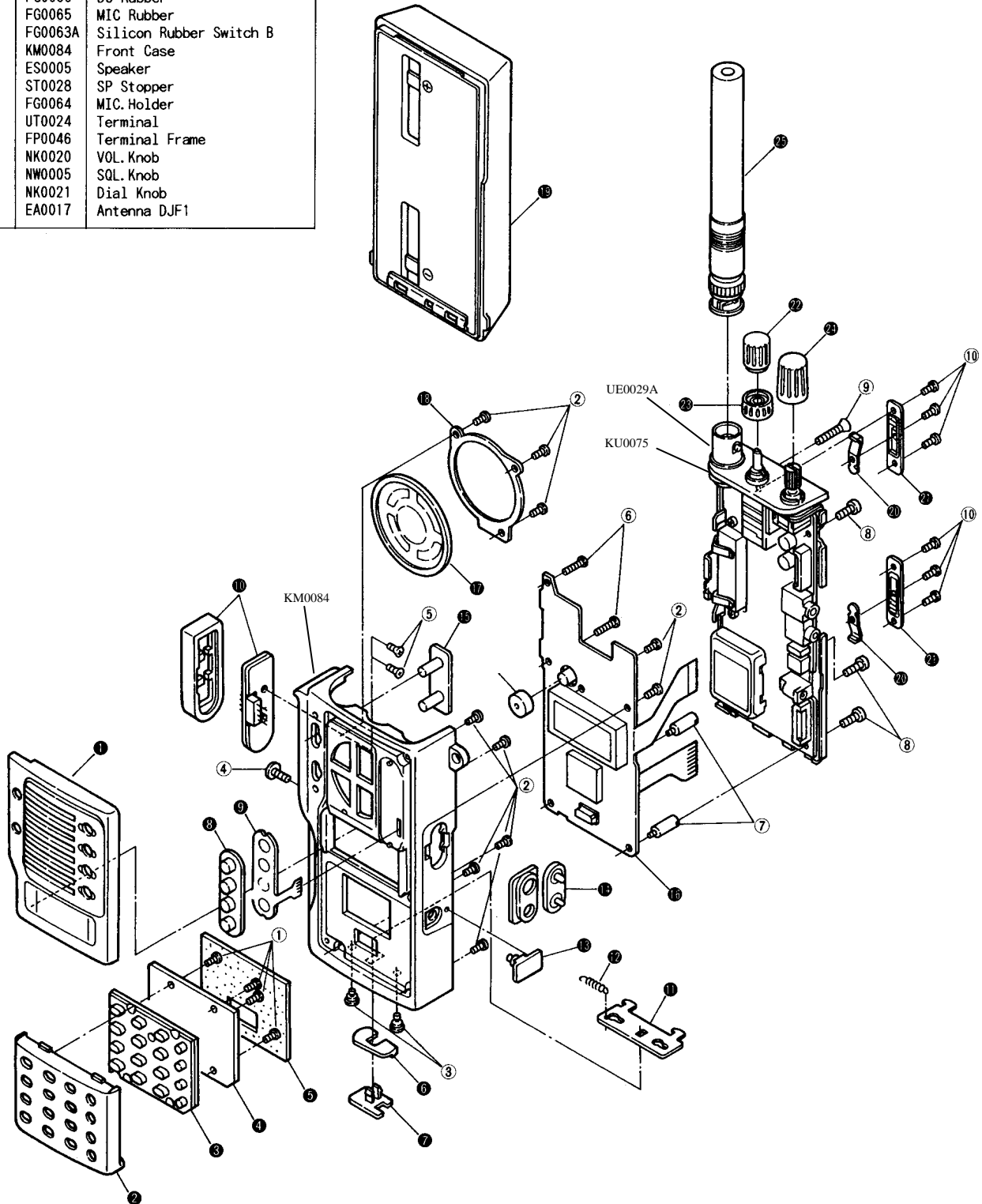
## ■ RECEIVER

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

# ■ DJ-F1T/E CABINET PARTS LOCATION

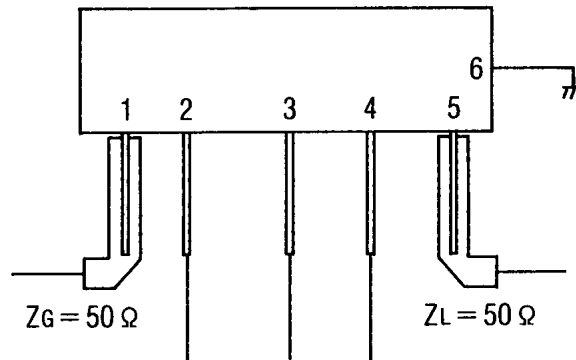
Mechanical Parts		
1	KM0121	Front Panel, F1T
	KM0081	Front panel DJ-S1
	KM0078	Front panel DJ-S1T
2	KM0114	Key Pad Panel
3	FG0069	Rubber Contact
4	UP0210	DJP3 key Board
5	FG0088	Anti-Water Drop Mat C
6	NB0041	Lock Knob
7	NB0040	Release Knob
8	FG0061A	Silicon Rubber Switch A
9	UP0198	SW P. O. Board
10	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)

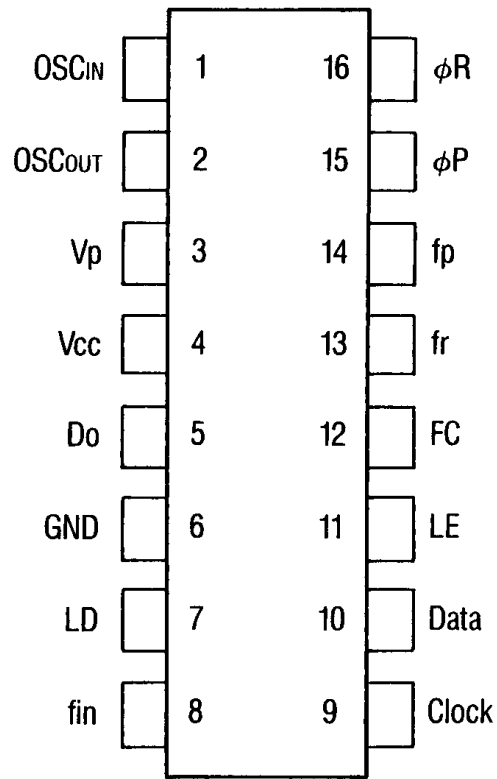


### Electrical Characteristics

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)

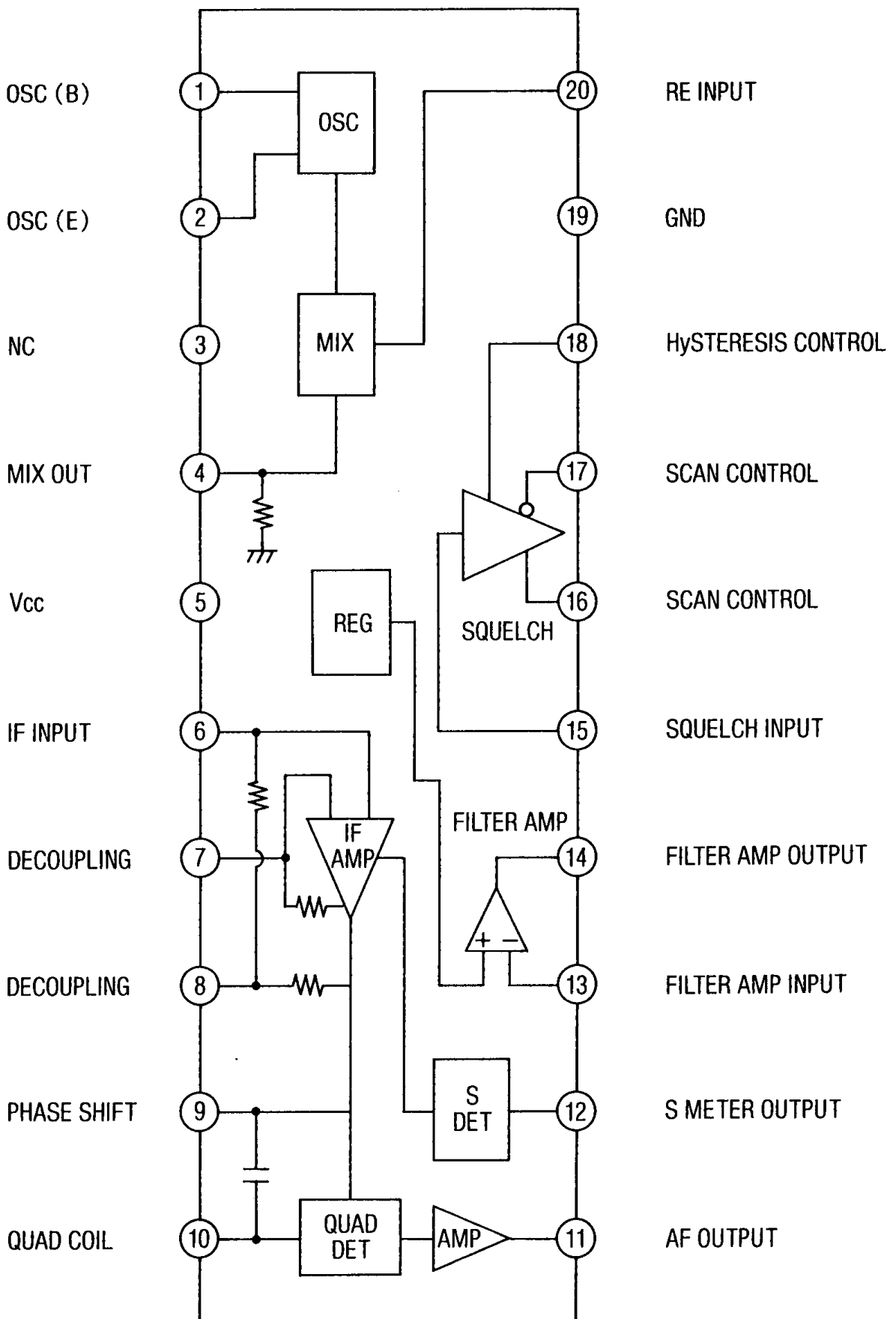
(TOP VIEW)



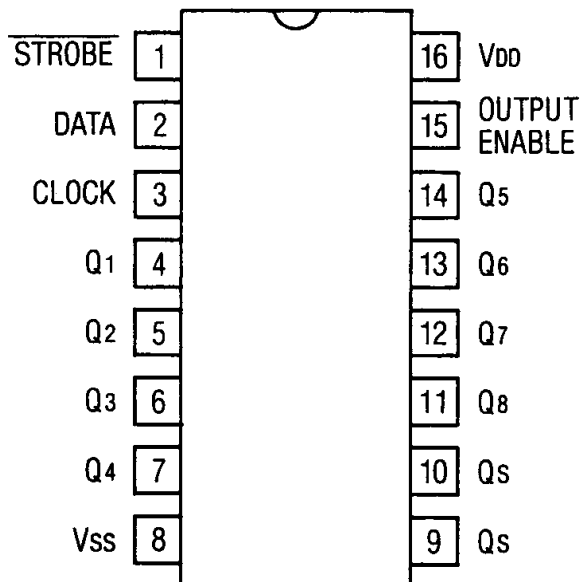
Pin Function Table

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)

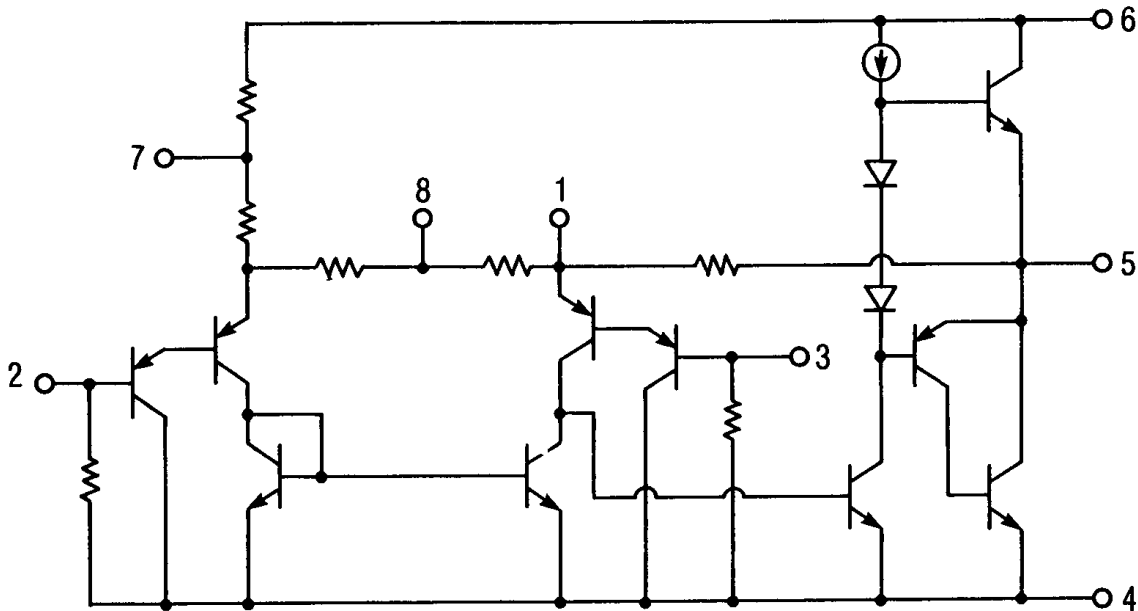
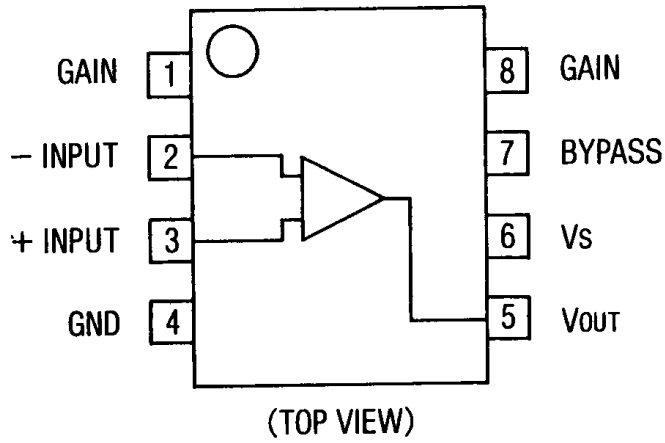


# ■ $\mu$ PD4094BG (MAIN UNIT IC-204)



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)

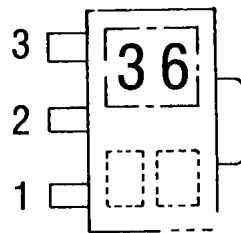
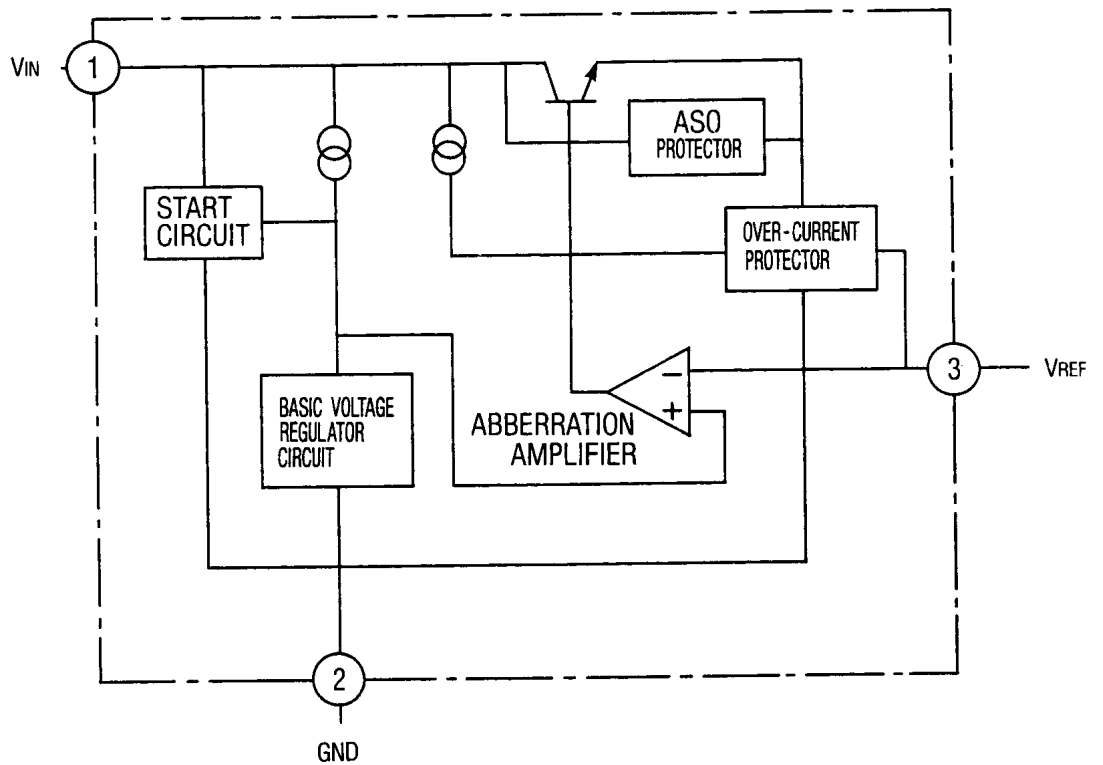


### Electrical Characteristics

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



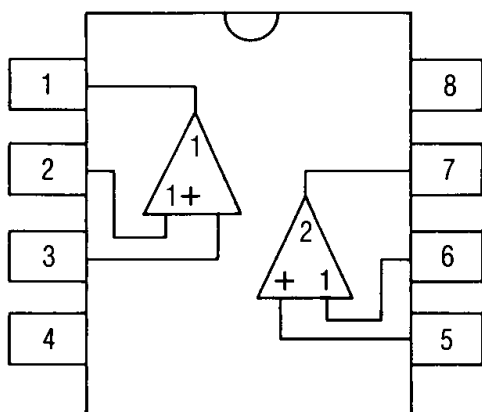
## ■ M5236ML (MAIN UNIT IC-206)



### 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	—	$\mu V_{rms}$

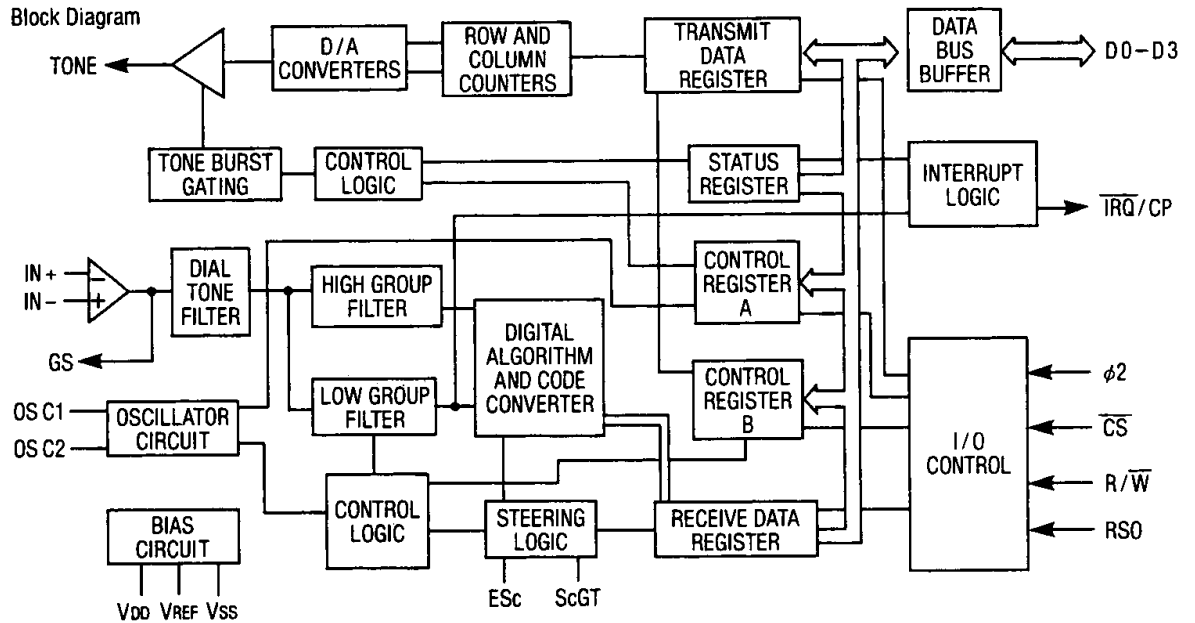
■ M5218 (MAIN UNIT IC-207)



Electrical Characteristics

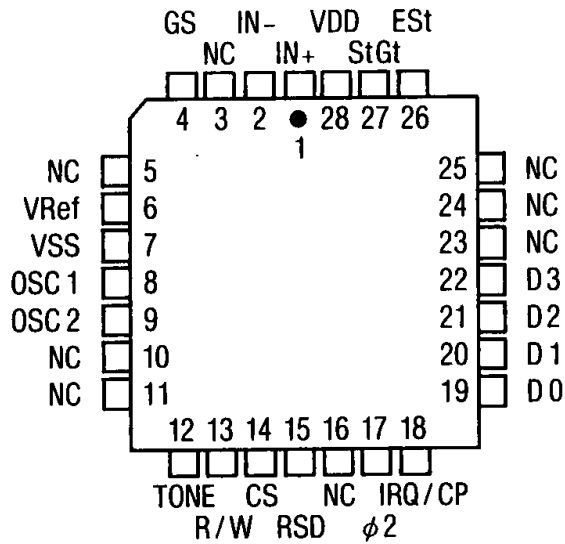
ITEM	SYMBOL	CONDITION	RATING			UNIT
			MIN.	TYP.	MAX.	
I. current circuit	I <sub>cc</sub>	V <sub>in</sub> = 0	—	3.0	6.0	mA
V. input offset	V <sub>io</sub>	R <sub>s</sub> ≤ 10KΩ	—	0.5	6.0	mV
I. input offset	I <sub>io</sub>		—	5	200	nA
I. input bias	I <sub>b</sub>		—	—	500	nA
R. input	R <sub>in</sub>		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)

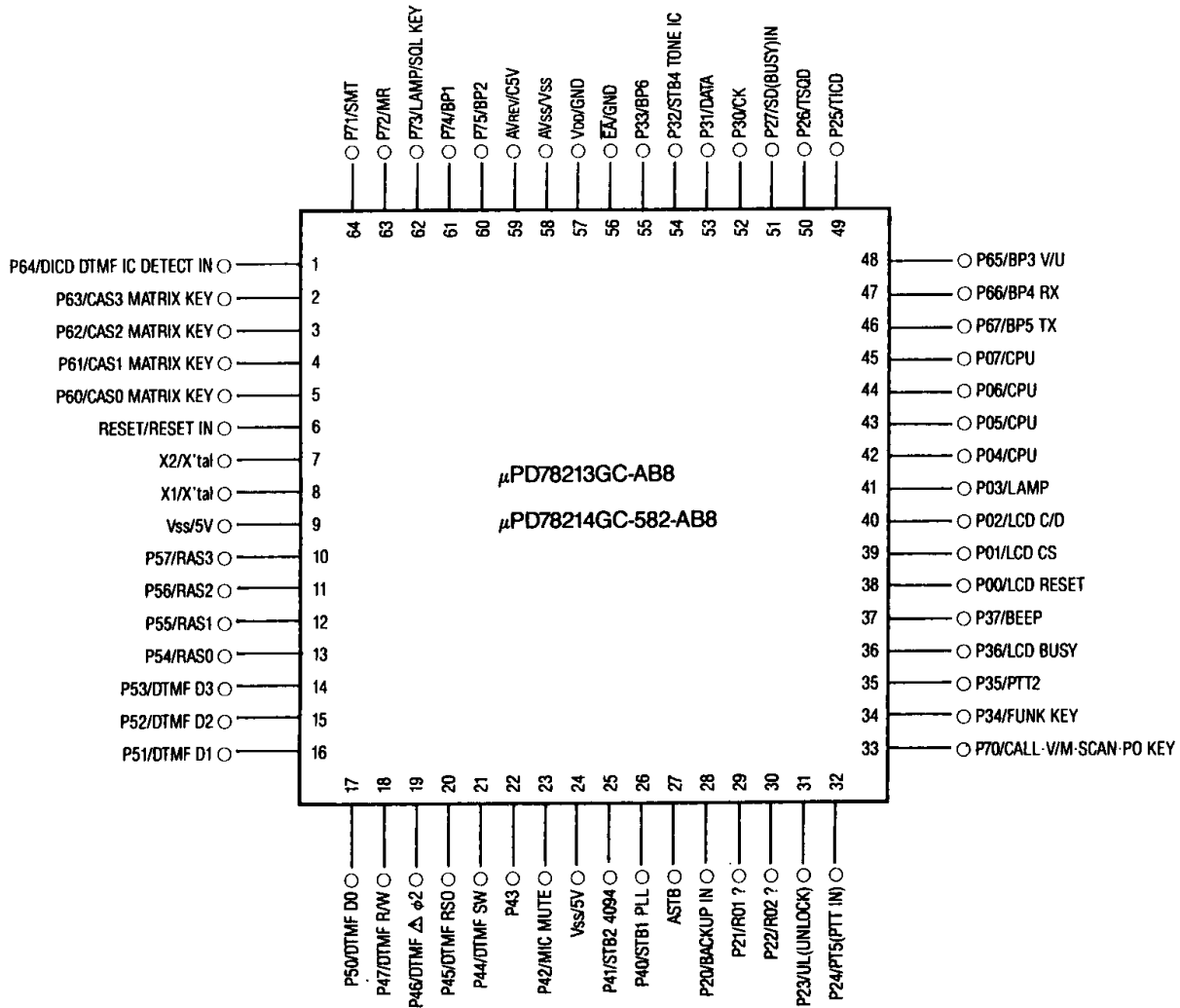


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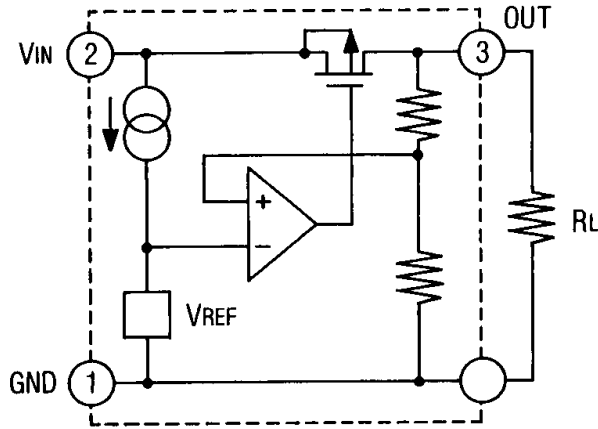
## ■ TM8880 (DTMF UNIT IC-602)



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

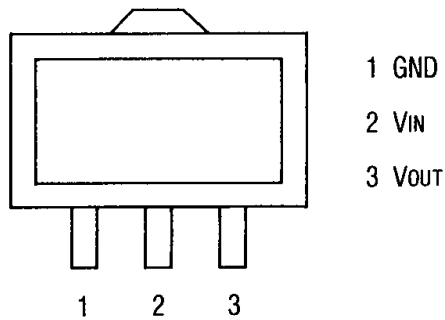


■S-81250HG (CPU UNIT IC-03)

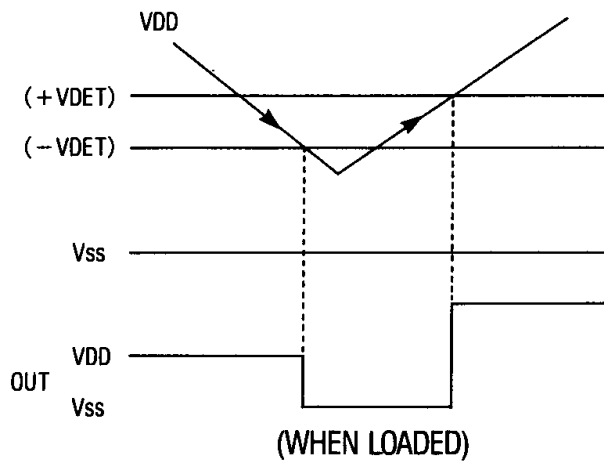
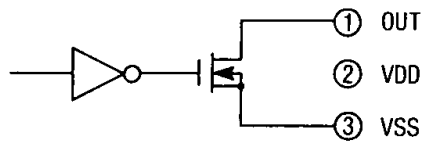
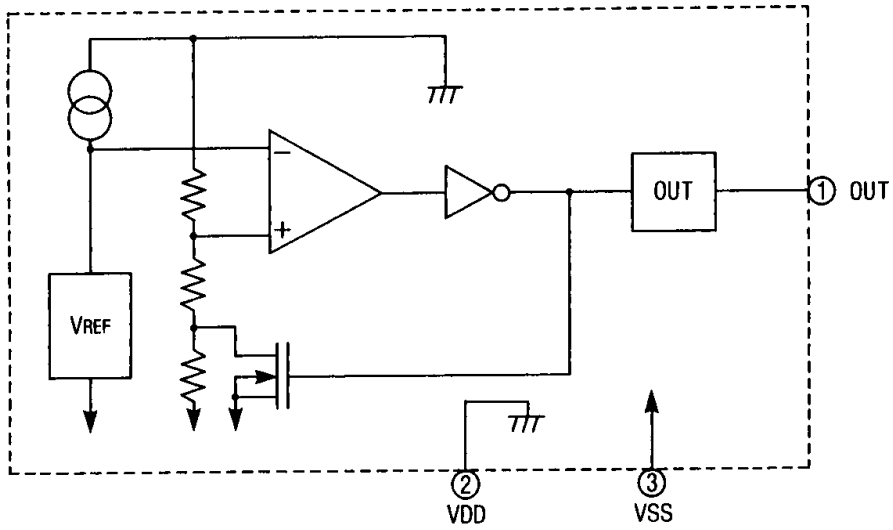


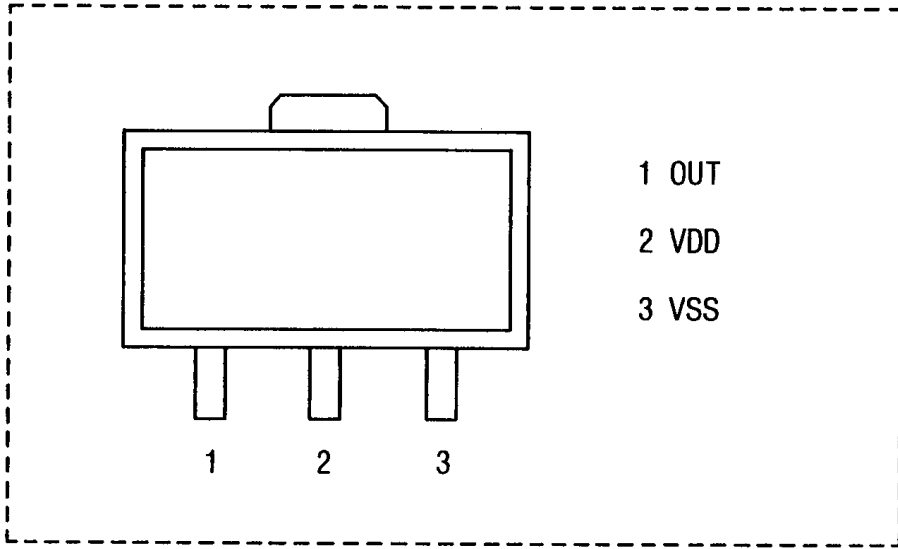
Electric Characteristics (+5V output/high-tention proof) (Unless specified;  $T_a=25^{\circ}\text{C}$ )

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>			R31	RK3050	Chip R, MCR03EZJ103 (T only)		TS0056	VCO Shield K1
IC1	XA0141	IC, $\mu$ PD7225GB-3B7	R31	RK3056	Chip R, MCR03EZJ333 (E only)		TS0057	PM Shield K1
IC2	XA0165	IC, $\mu$ PD78214GC582-AB8	R32	RK3050	Chip R, MCR03EZJ103		UT0019	PC Board Terminal CK-1-2
IC3	XA0142	IC, S-81250HG-RD-TI	R34	RK3050	Chip R, MCR03EZJ103		TS0052A	VCO Case DJF1
IC4	XA0106	IC, S-8054HN-CB-TI	R35	RK3062	Chip R, MCR03EZJ104			
Q1	XU0003	Transistor, DTC114TKT96	R36	RK3062	Chip R, MCR03EZJ104	C101	CU3035	Chip C, CM105W5R102K
Q2	XU0012	Transistor, DTC114EK96	R37	RK3058	Chip R, MCR03EZJ473	C102	CU3035	Chip C, CM105W5R102K
Q3	XT0095	Transistor, 2SC4081T106R	R38	RK3058	Chip R, MCR03EZJ473	C103	CU3035	Chip C, CM105W5R102K
Q4	XT0095	Transistor, 2SC4081T106R	R39	RK3056	Chip R, MCR03EZJ333	C104	CS0063	Chip C, TMC1V104TR
Q5	XU0029	Transistor, DTC114YUT106	R40	RK3050	Chip R, MCR03EZJ103	C105	CU3019	Chip C, CM105CH470K
Q6	XT0077	Transistor, 2SC3326ATE85L	R41	RK3038	Chip R, MCR03EZJ102	C106	CU3035	Chip C, CM105W5R102K
Q7	XT0094	Transistor, 2SA1576T106R	R42	RK3038	Chip R, MCR03EZJ102			
D1	XL0025	Diode, SLE-0022M	R43	RK3039	Chip R, MCR03EZJ122	C107	CU3035	Chip C, CM105W5R102K
D2	XD0128	Diode, MA713-TX	R44	RK3067	Chip R, MCR03EZJ274	C108	CU3002	Chip C, CM105CH010C
D3	XD0128	Diode, MA713-TX	R45	RK3022	Chip R, MCR03EZJ470	C109	CU3047	Chip C, CM105W5R103K
D4	XD0120	Diode, MA704MK-TX	R46	RK3058	Chip R, MCR03EZJ473	C110	CS0216	Chip C, TMC-M1A106MTR
D6	XD0129	Diode, ISS318TT11	R47	RK3046	Chip R, MCR03EZJ472	C111	CU3047	Chip C, CM105W5R103K
C1	CU3047	Chip C, CM105W5R103	R48	RK3046	Chip R, MCR03EZJ472	C112	CU3047	Chip C, CM105W5R103K
C2	CS0235	Chip C, TMC-M1V334MTRA	R49	RK3038	Chip R, MCR03EZJ102	C113	CU3006	Chip C, CM105CH050C
C5	CU3059	Chip C, CM105Y5V104Z (T only)	R50	RK3050	Chip R, MCR03EZJ103	C114	CU3035	Chip C, CM105W5R102K
C5	CU3054	Chip C, CM105W5R223k25V(E only)	R51	RK3056	Chip R, MCR03EZJ333	C115	CU3035	Chip C, CM105W5R102K
C6	CU3047	Chip C, CM105W5R103 (T only)	R52	RK3001	Chip R, MCR03EZJ000 (T only)	C116	CU3021	Chip C, CM105CH680K
C6	CU3054	Chip C, CM105W5R223k25V(E only)	R53	RK3001	Chip R, MCR03EZJ000 (E only)	C117	CU3002	Chip C, CM105CH010C
C7	CU3056	Chip C, CM105Y5V473Z (T only)	R54	RK3035	Chip R, MCR03EZJ561	C118	CU3047	Chip C, CM105W5R103K
C7	CU3054	Chip C, CM105W5R223k25V(E only)	R55	RK3058	Chip R, MCR03EZJ473	C119	CU3035	Chip C, CM105W5R102K
C8	CU3047	Chip C, CM105W5R103	R56	RK3058	Chip R, MCR03EZJ473	C120	CS0049	Chip C, TMC1C105TR
C9	CS0053	Chip C, TMC0J476TRD	R57	RK3050	Chip R, MCR03EZJ103	C121	CU3035	Chip C, CM105W5R102K
C10	CS0050	Chip C, TMC1A475TRB	R58	RK3054	Chip R, MCR03EZJ223	C122	CU3059	Chip C, CM105Y5V104Z
C11	CU3047	Chip C, CM105W5R103	R59	RK3001	Chip R, MCR03EZJ000	R101	RK3026	Chip R, MCR03EZJ101
C12	CS0057	Chip C, TMC0J225TRA	R60	RK3050	Chip R, MCR03EZJ103	R102	RK3022	Chip R, MCR03EZJ470
C13	CS0057	Chip C, TMC0J225TRA	R62	RK3039	Chip R, MCR03EZJ122	R103	RK3030	Chip R, MCR03EZJ221
C14	CU3031	Chip C, CM105W5R471	R64	RK3050	Chip R, MCR03EZJ103	R104	RK3030	Chip R, MCR03EZJ221
C15	CU3047	Chip C, CM105W5R103	L1	QC0048	Chip L, NL322522T100K	R105	RK3054	Chip R, MCR03EZJ223
C16	CU3035	Chip C, CM105W5R102	L2	QC0048	Chip L, NL322522T100K	R106	RK3050	Chip R, MCR03EZJ103
C17	CU3035	Chip C, CM105W5R102	L4	QC0010	Chip L, MLF321611E100M	R107	RK3046	Chip R, MCR03EZJ472
C18	CU3047	Chip C, CM105W5R103	VR1	RH0060	VR, MVR32HXBRN473	R108	RK0052	Chip R, MCR10EZJ103E
C19	CU3047	Chip C, CM105W5R103	VR2	RH0060	VR, MVR32HXBRN473	R109	RK3026	Chip R, MCR03EZJ101
C20	CS0049	Chip C, TMC1C105TRA	VR3	RH0060	VR, MVR32HXBRN473	R110	RK3034	Chip R, MCR03EZJ471
C21	CU3047	Chip C, CM105W5R103	X001	XB0001	X'tal FARC4CA03580000K01	R111	RK3026	Chip R, MCR03EZJ101
C23	CU3011	Chip C, CM105CH100K		ED0002	LITHIUM BATT.	R112	RK3062	Chip R, MCR03EZJ104
C24	CU3023	Chip C, CM105CH101K		TZ0044	CPU Insulate sheet	R113	RK3038	Chip R, MCR03EZJ102
C25	CU3023	Chip C, CM105CH101K	SW1	UU0013	Switch SKHUAB Tape	R114	RK3038	Chip R, MCR03EZJ102
C26	CU3063	Chip C, CM105W5R153K25V(E only)	SW2	UU0013	Switch SKHUAB Tape	R115	RK3063	Chip R, MCR03EZJ124
R1	RK3001	Chip R, MCR03EZJ000	SW3	UU0013	Switch SKHUAB Tape	R116	RK3062	Chip R, MCR03EZJ104
R2	RK3058	Chip R, MCR03EZJ473	CN1	UE0129	Connector, DF9A-9S-1V (22)	R117	RK3038	Chip R, MCR03EZJ102
R3	RK3058	Chip R, MCR03EZJ473	CN2	UE0130	Connector, DF9A-11S-1V (22)	R118	RK3050	Chip R, MCR03EZJ103
R4	RK3058	Chip R, MCR03EZJ473	CN3	UE0131	Connector, DF9A-13S-1V (22)			
R5	RK3065	Chip R, MCR03EZJ184	CN4	UE0135	Connector, 52207-0590	<b>MAIN UNIT</b>		
R6	RK3024	Chip R, MCR03EZJ680	LCD	EL0015	LCD DJ-F1	IC201	XA0148	IC, M67748L
R7	RK3058	Chip R, MCR03EZJ473		ST0026	LCD Flame	IC202	XA0145	IC, MB1504LPF-G-BND-TF
R8	RK3038	Chip R, MCR03EZJ102		DH0006	LCD Reflection Board	IC203	XA0144	IC, TK-10487MTR
R11	RK3102	Chip R, MCR03EZJ203 (T only)		FG0067	LCD Sillicon Rubber Connector	IC204	XA0019	IC, $\mu$ PD40948G-T1
R12	RK3001	Chip R, MCR03EZJ000 (E only)		UP0199	DJF1	IC205	XA0061	IC, NJM386M-T1
R12	RK3050	Chip R, MCR03EZJ103 (T only)		UE0137	Pin Header SB4P-HVQ-28	IC206	XA0104	IC, MS236ML-773A-36
R13	RK3102	Chip R, MCR03EZJ203 (T only)	W1	MACL02AA	#02Blue	IC207	XA0068	IC, MS218FP-T01-1
R14	RK3102	Chip R, MCR03EZJ203 (T only)	W2	MRCL02AA	#02Red	Q201	XT0097	Transistor, 2SC4393TE85L
R15	RK3001	Chip R, MCR03EZJ000 (E only)	<b>VCO UNIT</b>			Q202	XT0097	Transistor, 2SC4393TE85L
R15	RK3050	Chip R, MCR03EZJ103 (T only)	Q101	XT0030	Transistor, 2CS3356T1	Q203	XT0030	Transistor, 2SC3356T1BR25
R16	RK3050	Chip R, MCR03EZJ103 (E only)	Q102	XT0030	Transistor, 2CS3356T1	Q204	XT0095	Transistor, 2SC4081T106R
R16	RK3102	Chip R, MCR03EZJ203 (T only)	Q103	XT0090	Transistor, 2SC2411KT146	Q205	XT0096	Transistor, 2SC4099T106N
R17	RK3001	Chip R, MCR03EZJ000 (E only)	D101	XD0132	Diode, 1SV215TPH4	Q206	XU0029	Transistor, DTC114YUT106
R17	RK3050	Chip R, MCR03EZJ103 (T only)	D102	XD0132	Diode, 1SV215TPH4	Q207	XT0088	Transistor, 2SA1213YTE12L
R18	RK3102	Chip R, MCR03EZJ203 (T only)	D103	XD0131	Diode, 1SV214TPH4	Q208	XU0020	Transistor, FMW1T98
R19	RK3058	Chip R, MCR03EZJ473	L101	QC0003	Chip L, MLF321606A-1R0M	Q209	XT0030	Transistor, 2SC3356T1BR25
R20	RK3050	Chip R, MCR03EZJ103 (E only)	L102	QC0090	Chip L, MLF321606A-4R7M	Q210	XT0030	Transistor, 2SC3356T1BR25
R20	RK3058	Chip R, MCR03EZJ473 (T only)	L103	QC0010	Chip L, MLF321611E-100M	Q211	XT0094	Transistor, 2SA1576T106R
R21	RK3050	Chip R, MCR03EZJ103 (E only)	L104	QA0077	Chip L, Case Coil QA0077	Q212	XT0030	Transistor, 2SC3356T1BR25
R21	RK3058	Chip R, MCR03EZJ473 (T only)	L105	QC0010	Chip L, MLF321611E-100M	Q213	XT0095	Transistor, 2SC4081T106R
R22	RK3067	Chip R, MCR03EZJ274				Q214	XT0095	Transistor, 2SC4081T106R
R23	RK3022	Chip R, MCR03EZJ470				Q215	XT0095	Transistor, 2SC4081T106R
R24	RK3039	Chip R, MCR03EZJ122				Q216	XT0095	Transistor, 2SC4081T106R
R25	RK3038	Chip R, MCR03EZJ102				Q217	XT0095	Transistor, 2SC4081T106R
R26	RK3058	Chip R, MCR03EZJ473				Q218	XT0088	Transistor, 2SA1213YTE12L
R27	RK3067	Chip R, MCR03EZJ274				Q219	XT0095	Transistor, 2SC4081T106R
R28	RK3056	Chip R, MCR03EZJ333				Q220	XU0029	Transistor, DTC114YUT106
R29	RK3062	Chip R, MCR03EZJ104				Q221	XT0088	Transistor, 2SA1213YTE12L
R30	RK3062	Chip R, MCR03EZJ104				Q222	XU0027	Transistor, FMA7T98

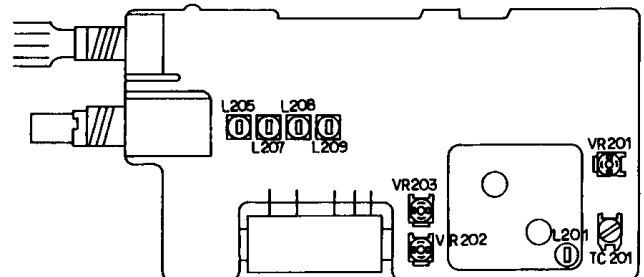
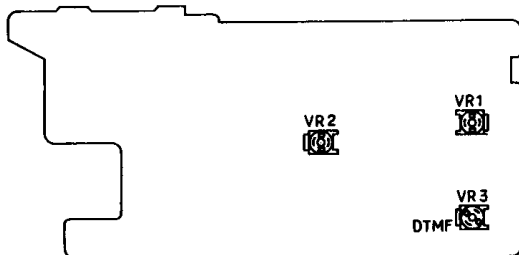


Ref. No.	Part Code	Part Name and Number	Ref. No.	Part Code	Part Name and Number	Ref. No.	Part Code	Part Name and Number
Q223	XU0027	Transistor, FMA7T98	C234	CU3035	Chip C, CM105W5R102K	C319	CU3047	Chip C, CM105W5R103K
Q224	XU0027	Transistor, FMA7T98	C235	CU3047	Chip C, CM105W5R103K	C320	CU3047	Chip C, CM105W5R103K
Q225	XU0029	Transistor, D7C114YUT106	C236	CS0220	Chip C, TMC-M1C225MTRA	C321	CU3035	Chip C, CM105W5R102K
D201	XD0066	Diode, RLS135TE11	C237	CS0216	Chip C, TMC-M1A106MTRB	C323	CU3047	Chip C, CM105W5R103K
D202	XD0066	Diode, RLS135TE11	C238	CU3035	Chip C, CM105W5R102K	C324	CS0049	Chip C, TMC1C105TRA
D203	XD0066	Diode, RLS135TE11	C239	CU3016	Chip C, CM105CH270K	C325	CS0053	Chip C, TMC0J476TRD
D204	XD0129	Diode, 1SS318TT11	C240	CS0049	Chip C, TMC1C105TRA	C326	CU3035	Chip C, CM105W5R102K
D205	XD0132	Diode, 1SV215TPH4	C241	CU3016	Chip C, CM105CH270K	C327	CE0308	Chip C, ECEV0JA101P
D206	XD0132	Diode, 1SV215TPH4	C242	CU3006	ChiP C, CM105CH050C	C328	CU3013	Chip C, CM105CH150K
D207	XD0129	Diode, 1SS318TT11	C243	CU3047	Chip C, CM105W5R103K	C329	CU3059	Chip C, CM105Y5V104Z25V
D208	XD0132	Diode, 1SV215TPH4	C245	CU3035	Chip C, CM105W5R102K	C331	CU3035	Chip C, CM105W5R102K
D209	XD0132	Diode, 1SV215TPH4	C246	CU3003	Chip C, CM105CH020C	C332	CU3035	Chip C, CM105W5R102K
D210	XD0132	Diode, 1SV215TPH4	C247	CU3003	Chip C, CM105CH020C	C334	CU3023	Chip C, CM105CH101K
D211	XD0129	Diode, 1SS318TT11	C248	CU3047	Chip C, CM105W5R103K	C335	CU3023	Chip C, CM105CH101K
D212	XD0132	Diode, 1SV215TPH4	C249	CU3015	Chip C, CM105CH220K	C336	CU3035	Chip C, CM105W5R102K
D213	XD0132	Diode, 1SV215TPH4	C250	CU3023	Chip C, CM105CH101K	C337	CU3035	Chip C, CM105W5R102K
D214	XD0129	Diode, 1SS318TT11	C251	CU3006	ChiP C, CM105CH050C	C338	CU3023	Chip C, CM105CH101K
D215	XD0132	Diode, 1SV215TPH4	C252	CU3047	Chip C, CM105W5R103K	C339	CU3023	Chip C, CM105CH101K
D216	XD0134	Diode, RB450FT106	C253	CS0049	Chip C, TMC1C105TRA	C340	CU3059	Chip C, CM105Y5V104Z25V
D217	XD0129	Diode, 1SS318TT11	C254	CU3059	Chip C, CM105Y5V104Z25V	C341	CU3031	Chip C, CM105W5R471K
D218	XD0129	Diode, 1SS318TT11	C255	CS0220	Chip C, TMC-M1C225MTRA	C342	CU3035	Chip C, CM105W5R102K
D219	XD0129	Diode, 1SS318TT11	C256	CU3059	Chip C, CM105Y5V104Z25V	C343	CU3047	Chip C, CM105W5R103K
D220	XD0127	Diode, MA704WA-TX	C257	CU3059	Chip C, CM105Y5V104Z25V	C344	CU3035	Chip C, CM105W5R102K
D221	XD0136	Diode, DTZ5. 1ATT11	C258	CU3011	Chip C, CM105CH100K	C345	CU3009	ChiP C, CM105CH080C
D222	XD0110	Diode, 1N5551	C259	CU3011	Chip C, CM105CH100K	C346	CU3035	Chip C, CM105W5R102K
D223	XD0128	Diode, MA713-TX	C260	CU3002	Chip C, CM105CH010C	C347	CE0056	Chemical C, 16M100SW
D224	XD0129	Diode, 1SS318TT11	C261	CU3004	Chip C, CM105CH030C	C348	CU3035	Chip C, CM105W5R102K
D225	XD0130	Diode, DA20AUT106	C262	CU3002	Chip C, CM105CH010C	C349	CS0049	Chip C, TMC1C105TRA
D226	XD0118	Diode, MA716-TW	C263	CU3004	Chip C, CM105CH030C	C350	CU3035	Chip C, CM105W5R102K
D228	XD0129	Diode, 1SS318TT11	C264	CU3035	Chip C, CM105W5R102K	R201	RK3030	Chip R, MCR03EZHJ221
D229	XD0129	Diode, 1SS318TT11	C265	CU3035	Chip C, CM105W5R102K	R202	RK3074	Chip R, MCR03EZHJ105
D230	XD0129	Diode, 1SS318TT11	C266	CS0063	Chip C, TMC1V104TRA	R203	RK3050	Chip R, MCR03EZHJ103
D231	XD0137	Diode, DTZ6. 2ATT11	C267	CU3059	Chip C, CM105Y5V104Z25V	R204	RK3022	Chip R, MCR03EZHJ470
D232	XD0129	Diode, 1SS318TT11	C268	CU3039	Chip C, CM105W5R222K	R205	RK3050	Chip R, MCR03EZHJ103
L201	QK0063	Chip L, LK0. 5-3X3. 5TR	C269	CS0049	Chip C, TMC1C105TRA	R206	RK3074	Chip R, MCR03EZHJ105
L202	QK0063	Chip L, LK0. 5-3X3. 5TR	C270	CU3021	Chip C, CM105CH680K	R207	RK3050	Chip R, MCR03EZHJ103
L203	QK0063	Chip L, LK0. 5-3X3. 5TR	C271	CU3059	Chip C, CM105Y5V104Z25V	R208	RK3074	Chip R, MCR03EZHJ105
L204	QC0003	Chip L, MLF321606A1R0M	C272	CU3054	Chip C, CM105W5R223K25V	R210	RK3050	Chip R, MCR03EZHJ103
L205	QA0071	Chip L, QA0071	C273	CU3029	Chip C, CM105W5R331K	R211	RK3056	Chip R, MCR03EZHJ333
L206	QC0009	Chip L, MLF321606DR10M	C274	CU3035	Chip C, CM105W5R102K	R212	RK3038	Chip R, MCR03EZHJ102
L207	QA0071	Chip L, QA0071	C275	CU3054	Chip C, CM105W5R223K25V	R213	RK3038	Chip R, MCR03EZHJ102
L208	QA0071	Chip L, QA0071	C276	CU3056	Chip C, CM105Y5V473Z	R216	RK3062	Chip R, MCR03EZHJ104
L209	QA0071	Chip L, QA0071	C277	CU3054	Chip C, CM105W5R223K25V	R217	RK3050	Chip R, MCR03EZHJ103
L210	QC0009	Chip L, MLF321606DR10M	C278	CS0063	Chip C, TMC1V104TRA	R218	RK3001	Chip R, MCR03EZHJ000
L211	QK0063	Chip L, LK0. 5-3X3. 5TR	C279	CS0049	Chip C, TMC1C105TRA	R219	RK3074	Chip R, MCR03EZHJ105
L212	QC0010	Chip L, MLF321611E100M	C280	CU3043	Chip C, CM105W5R472K	R220	RK3054	Chip R, MCR03EZHJ223
L213	QC0010	Chip L, MLF321611E100M	C281	CU3023	Chip C, CM105CH101K	R221	RK3054	Chip R, MCR03EZHJ223
C201	CU3017	Chip C, CM105CH330K	C282	CS0216	Chip C, TMC-M1A106MTRB	R222	RK3054	Chip R, MCR03EZHJ223
C202	CU3006	ChiP C, CM105CH050C	C285	CU3011	Chip C, CM105CH100K	R223	RK3050	Chip R, MCR03EZHJ103
C203	CU3014	Chip C, CM105CH180K	C286	CS0211	Chip C, TMC-M0J336MTRC	R224	RK3050	Chip R, MCR03EZHJ103
C204	CU3003	Chip C, CM105CH020C	C287	CS0049	Chip C, TMC1C105TRA	R225	RK3050	Chip R, MCR03EZHJ103
C205	CU3017	Chip C, CM105CH330K	C288	CU3047	Chip C, CM105W5R103K	R226	RK3034	Chip R, MCR03EZHJ471
C206	CU3047	Chip C, CM105W5R103K	C289	CU3059	Chip C, CM105Y5V104Z25V	R227	RK3042	Chip R, MCR03EZHJ222
C208	CU3035	Chip C, CM105W5R102K	C290	CU3035	Chip C, CM105W5R102K	R228	RK3001	Chip R, MCR03EZHJ000
C209	CU3035	Chip C, CM105W5R102K	C291	CU3035	Chip C, CM105W5R102K	R229	RK3026	Chip R, MCR03EZHJ101
C210	CU3018	Chip C, CM105CH390K	C292	CU3023	Chip C, CM105CH101K	R230	RK3046	Chip R, MCR03EZHJ472
C211	CU3047	Chip C, CM105W5R103K	C293	CU3019	Chip C, CM105CH470K	R231	RK3052	Chip R, MCR03EZHJ153
C212	CU3035	Chip C, CM105W5R102K	C294	CU3035	Chip C, CM105W5R102K	R232	RK3038	Chip R, MCR03EZHJ102
C213	CU3012	Chip C, CM105CH120K	C295	CU3059	Chip C, CM105Y5V104Z25V	R233	RK3038	Chip R, MCR03EZHJ102
C214	CU3011	Chip C, CM105CH100K	C296	CU3059	Chip C, CM105Y5V104Z25V	R234	RK3059	Chip R, MCR03EZHJ563
C215	CU3018	Chip C, CM105CH390K	C297	CU3021	Chip C, CM105CH680K	R235	RK3050	Chip R, MCR03EZHJ103
C216	CU3011	Chip C, CM105CH100K	C298	CS0235	Chip C, TMC-M1V334MTRA	R236	RK3034	Chip R, MCR03EZHJ471
C217	CU3017	Chip C, CM105CH330K	C299	CU3035	Chip C, CM105W5R102K	R238	RK3056	Chip R, MCR03EZHJ333
C218	CU3016	Chip C, CM105CH270K	C300	CU3047	Chip C, CM105W5R103K	R239	RK3058	Chip R, MCR03EZHJ473
C219	CU3035	Chip C, CM105W5R102K	C301	CU3047	Chip C, CM105W5R103K	R240	RK3070	Chip R, MCR03EZHJ474
C220	CU3003	Chip C, CM105CH020C	C302	CS0049	Chip C, TMC1C105TRA	R241	RK3050	Chip R, MCR03EZHJ103
C221	CU3002	Chip C, CM105CH010C	C303	CU3059	Chip C, CM105Y5V104Z25V	R242	RK3066	Chip R, MCR03EZHJ224
C222	CU3047	Chip C, CM105W5R103K	C304	CS0220	Chip C, TMC-M1C225MTRA	R243	RK3062	Chip R, MCR03EZHJ104
C223	CU3006	ChiP C, CM105CH050C	C305	CU3059	Chip C, CM105Y5V104Z25V	R244	RK3056	Chip R, MCR03EZHJ333
C224	CU3035	Chip C, CM105W5R102K	C306	CU3023	Chip C, CM105CH101K	R245	RK3058	Chip R, MCR03EZHJ473
C225	CU3047	Chip C, CM105W5R103K	C307	CU3044	Chip C, CM105W5R562K	R246	RK3066	Chip R, MCR03EZHJ224
C226	CU3059	Chip C, CM105Y5V104Z25V	C308	CU3059	Chip C, CM105Y5V104Z25V	R247	RK3026	Chip R, MCR03EZHJ101
C227	CU3047	Chip C, CM105W5R103K	C309	CU3059	Chip C, CM105Y5V104Z25V	R248	RK3042	Chip R, MCR03EZHJ222
C228	CU3024	Chip C, CM105CH121K	C310	CS0050	Chip C, TMC1A475TRB	R249	RK3056	Chip R, MCR03EZHJ333
C229	CU3035	Chip C, CM105W5R102K	C311	CE0308	Chip C, ECEV0JA101P	R250	RK3034	Chip R, MCR03EZHJ471
C230	CS0216	Chip C, TMC-M1A106MTRB	C312	CU3035	Chip C, CM105W5R102K	R251	RK3062	Chip R, MCR03EZHJ104
C231	CS0063	Chip C, TMC1V104TRA	C313	CS0049	Chip C, TMC1C105TRA	R252	RK3062	Chip R, MCR03EZHJ104
C232	CU3035	Chip C, CM105W5R102K	C314	CU3047	Chip C, CM105W5R103K	R253	RK3043	Chip R, MCR03EZHJ272
C233	CU3015	Chip C, CM105CH220K	C315	CU3035	Chip C, CM105W5R102K	R254	RK3062	Chip R, MCR03EZHJ104
			C316	CU3054	Chip C, CM105W5R223K25V	R255	RK3046	Chip R, MCR03EZHJ472
			C317	CU3059	Chip C, CM105Y5V104Z25V			
			C318	CU3059	Chip C, CM105Y5V104Z25V			

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, MCR03EZHZJ473	R340	RK1107	Chip R, MCR18EZHJ000E					
R258	RK3001	Chip R, MCR03EZHZJ000	R342	RK3060	Chip R, MCR03EZHZJ683					
R259	RK3035	Chip R, MCR03EZHZJ561	R343	RK3001	Chip R, MCR03EZHZJ000					
R260	RK3042	Chip R, MCR03EZHZJ222								
R261	RK3001	Chip R, MCR03EZHZJ000	TC201	CT0012	Trimmer C, CTZ-10AW					
R262	RK3072	Chip R, MCR03EZHZJ684								
R263	RK3046	Chip R, MCR03EZHZJ472	VR201	RH0064	VR, MVR32HXBRN103					
R264	RK3070	Chip R, MCR03EZHZJ474	VR202	RH0061	VR, MVR32HXBRN472					
R265	RK3044	Chip R, MCR03EZHZJ332	VR203	RH0064	VR, MVR32HXBRN103					
R266	RK3026	Chip R, MCR03EZHZJ101	VR204	RV0014	VR, RK09722115R1211					
R267	RK3067	Chip R, MCR03EZHZJ274								
R268	RK3050	Chip R, MCR03EZHZJ103	X201	XQ0046	X'tal UM-5 23.505MHZ					
R269	RK3046	Chip R, MCR03EZHZJ472	X202	XK0002	X'tal CDBM455C7					
R270	RK3058	Chip R, MCR03EZHZJ473	X203	XQ0022	X'tal UM-1 12.8MHZ					
R271	RK3054	Chip R, MCR03EZHZJ223								
R272	RK3050	Chip R, MCR03EZHZJ103	FL201	XC0004	CeramicFilter, CFUM455E					
R273	RK3042	Chip R, MCR03EZHZJ222	FL202	XF0008	CeramicFilter, 23.05MHZ UM-5					
R274	RK3026	Chip R, MCR03EZHZJ101								
R275	RK3062	Chip R, MCR03EZHZJ104	CN202	UE0110	Connector, 52030-1210					
R276	RK3046	Chip R, MCR03EZHZJ472	CN203	UE0110	Connector, 52030-1210					
R277	RK3051	Chip R, MCR03EZHZJ123								
R279	RK3042	Chip R, MCR03EZHZJ222	JK201	UJ0015	Jack, HEC1781-01-020					
R281	RK3026	Chip R, MCR03EZHZJ101	JK202	UJ0022	Jack, HSJ1102-01-540					
R282	RK3042	Chip R, MCR03EZHZJ222	JK203	UJ0019	Jack, HSJ1423-01-010					
R283	RK3047	Chip R, MCR03EZHZJ562								
R284	RK3026	Chip R, MCR03EZHZJ101	RE201	UR0006	RE EC09P20-51					
R285	RK3026	Chip R, MCR03EZHZJ151								
R286	RK3014	Chip R, MCR03EZHZJ100		MRCK08AA	Lead, #08 RED					
R287	RK3066	Chip R, MCR03EZHZJ224		MRCK04AA	Lead, #04 RED					
R288	RK3042	Chip R, MCR03EZHZJ222								
R289	RK3046	Chip R, MCR03EZHZJ472		YZ0058	Solder-Plated Wire					
R290	RK3030	Chip R, MCR03EZHZJ221		QB0003	Ferrite Beads					
R291	RK0105	Chip R, MCR10EZHZJ2R2E	<b>KEY BOARD UNIT</b>							
R292	RK3047	Chip R, MCR03EZHZJ562	PCB801	UP0210	DJP3 KEY BOARD					
R293	RK3053	Chip R, MCR03EZHZJ183								
R294	RK3044	Chip R, MCR03EZHZJ332	CN0801	UE0133	Connector DF9A-11P-1V(22)					
R295	RK3038	Chip R, MCR03EZHZJ102								
R296	RK3042	Chip R, MCR03EZHZJ222	R801	RK3024	Chip R, MCR03EZHZJ680					
R297	RK3050	Chip R, MCR03EZHZJ103	R802	RK3024	Chip R, MCR03EZHZJ680					
R298	RK3056	Chip R, MCR03EZHZJ333								
R299	RK3038	Chip R, MCR03EZHZJ102	D801	XL0016	Diode, SLM13MWT96B					
R300	RK3042	Chip R, MCR03EZHZJ222	D802	XL0016	Diode, SLM13MWT96B					
R301	RK3038	Chip R, MCR03EZHZJ102	D803	XL0016	Diode, SLM13MWT96B					
R302	RK3046	Chip R, MCR03EZHZJ472	D804	XL0016	Diode, SLM13MWT96B					
R303	RK3034	Chip R, MCR03EZHZJ471	<b>DTMF UNIT</b>							
R304	RK3050	Chip R, MCR03EZHZJ103	IC601	XA0169	IC CM8880-2PEIT					
R305	RK3043	Chip R, MCR03EZHZJ272								
R306	RK3038	Chip R, MCR03EZHZJ102	Q0601	XU0021	Transistor FMC3 T98					
R307	RK3054	Chip R, MCR03EZHZJ223								
R308	RK3066	Chip R, MCR03EZHZJ224	D0601	XD0129	Diode, 1SS318 TT11					
R309	RK3047	Chip R, MCR03EZHZJ562								
R310	RK3034	Chip R, MCR03EZHZJ471	C601	CU3035	Chip C, CM105 W5R 102K					
R311	RK3026	Chip R, MCR03EZHZJ101	C602	CU3035	Chip C, CM105 W5R 102K					
R312	RK3050	Chip R, MCR03EZHZJ103	C603	CU3059	Chip C, CM105 Y5V 104Z					
R313	RK3056	Chip R, MCR03EZHZJ333	C604	CS0050	Chip C, JMC 1A 475TRB					
R314	RK3050	Chip R, MCR03EZHZJ103	C605	CU3059	Chip C, CM105 Y5V 104Z					
R315	RK3050	Chip R, MCR03EZHZJ103	C606	CU3047	Chip C, CM105 W5R 103K					
R316	RK3038	Chip R, MCR03EZHZJ102	C607	CU3017	Chip C, CM105 CH 330K					
R317	RK3038	Chip R, MCR03EZHZJ102	C608	CU3017	Chip C, CM105 CH 330K					
R318	RK3026	Chip R, MCR03EZHZJ151	C609	CU3047	Chip C, CM105 W5R 103K					
			C610	CU3059	Chip C, CM105 Y5V 104Z					
R319	RK3026	Chip R, MCR03EZHZJ101		UP0212	DJF1 DTMFBoard					
R320	RK3074	Chip R, MCR03EZHZJ105	R601	RK3018	Chip R, MCR03 EZHT220					
R321	RK3038	Chip R, MCR03EZHZJ102	R602	RK3066	Chip R, MCR03 EZHT224					
R322	RK3042	Chip R, MCR03EZHZJ222	R603	RK3066	Chip R, MCR03 EZHT224					
R323	RK3056	Chip R, MCR03EZHZJ333	R604	RK3062	Chip R, MCR03 EZHT104					
R324	RK3073	Chip R, MCR03EZHZJ824	R605	RK3059	Chip R, MCR03 EZHT563					
R325	RK3050	Chip R, MCR03EZHZJ103	R606	RK3058	Chip R, MCR03 EZHT473					
R326	RK3001	Chip R, MCR03EZHZJ000	R607	RK3050	Chip R, MCR03 EZHT103					
R327	RK3046	Chip R, MCR03EZHZJ472	R608	RK3038	Chip R, MCR03 EZHT102					
R328	RK3038	Chip R, MCR03EZHZJ102	R609	RK3056	Chip R, MCR03 EZHT333					
R329	RK3038	Chip R, MCR03EZHZJ102								
R330	RK3072	Chip R, MCR03EZHZJ684	X0601	XQ0021	X'tal DSMAT 3.58MHZ					
R331	RK3038	Chip R, MCR03EZHZJ102		TT3008	Elastic Tube X'tal					
R332	RK3038	Chip R, MCR03EZHZJ102		YZ0042	Cement G-17 1g					
R333	RK3050	Chip R, MCR03EZHZJ103	CN601	UE0134	Connector, DF9A-13P-1V(22)					
R334	RK3030	Chip R, MCR03EZHZJ221								
R335	RK1018	Chip R, MCR18EZHZJ101E								
R336	RK3026	Chip R, MCR03EZHZJ101								
R337	RK3050	Chip R, MCR03EZHZJ103								
R338	RK3062	Chip R, MCR03EZHZJ104								
R339	RK3062	Chip R, MCR03EZHZJ104								

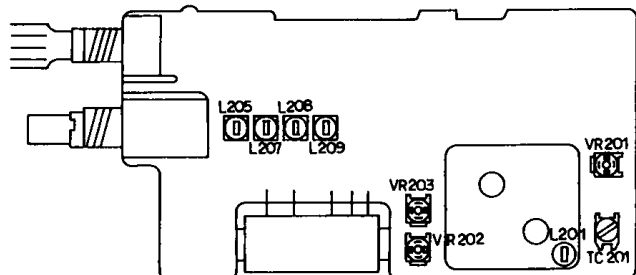
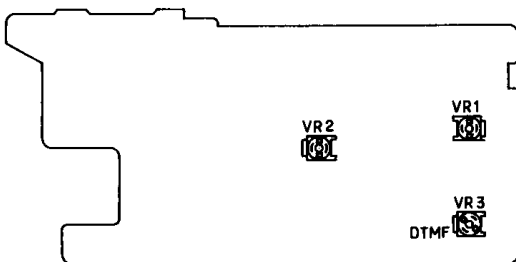
## ■ ADJUSTMENT F1-T/S1-T

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	

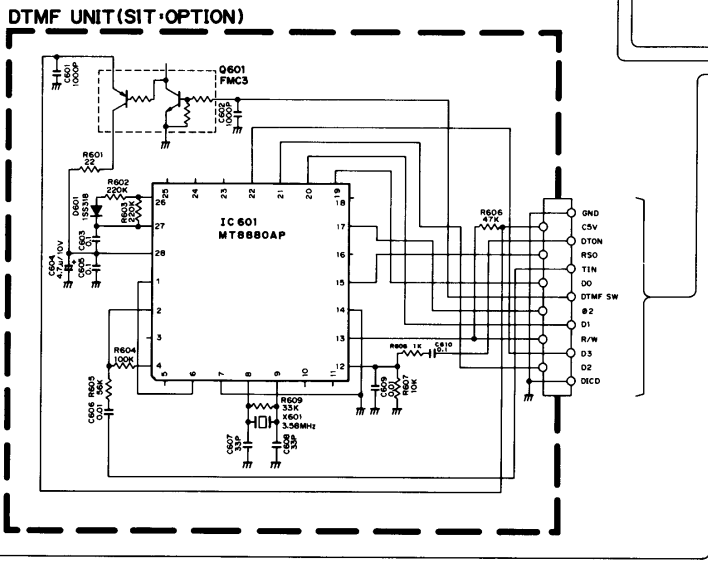
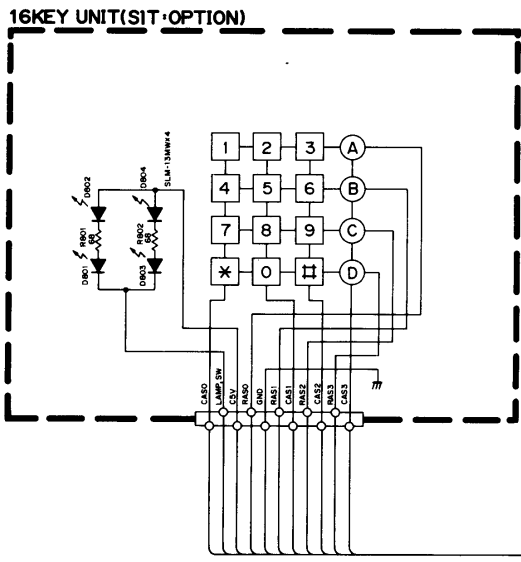
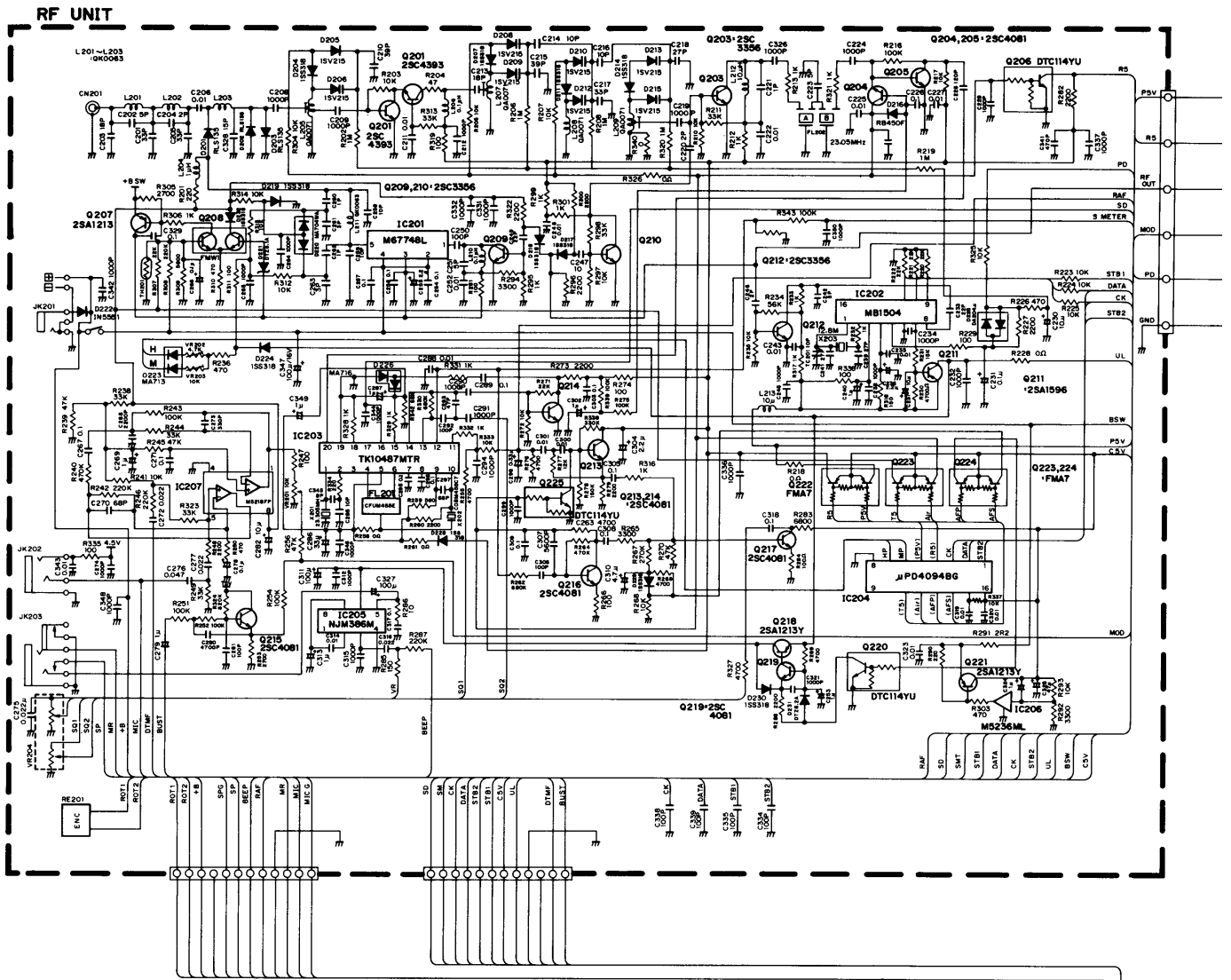


## ■ ADJUSTMENT F1-E/S1-E

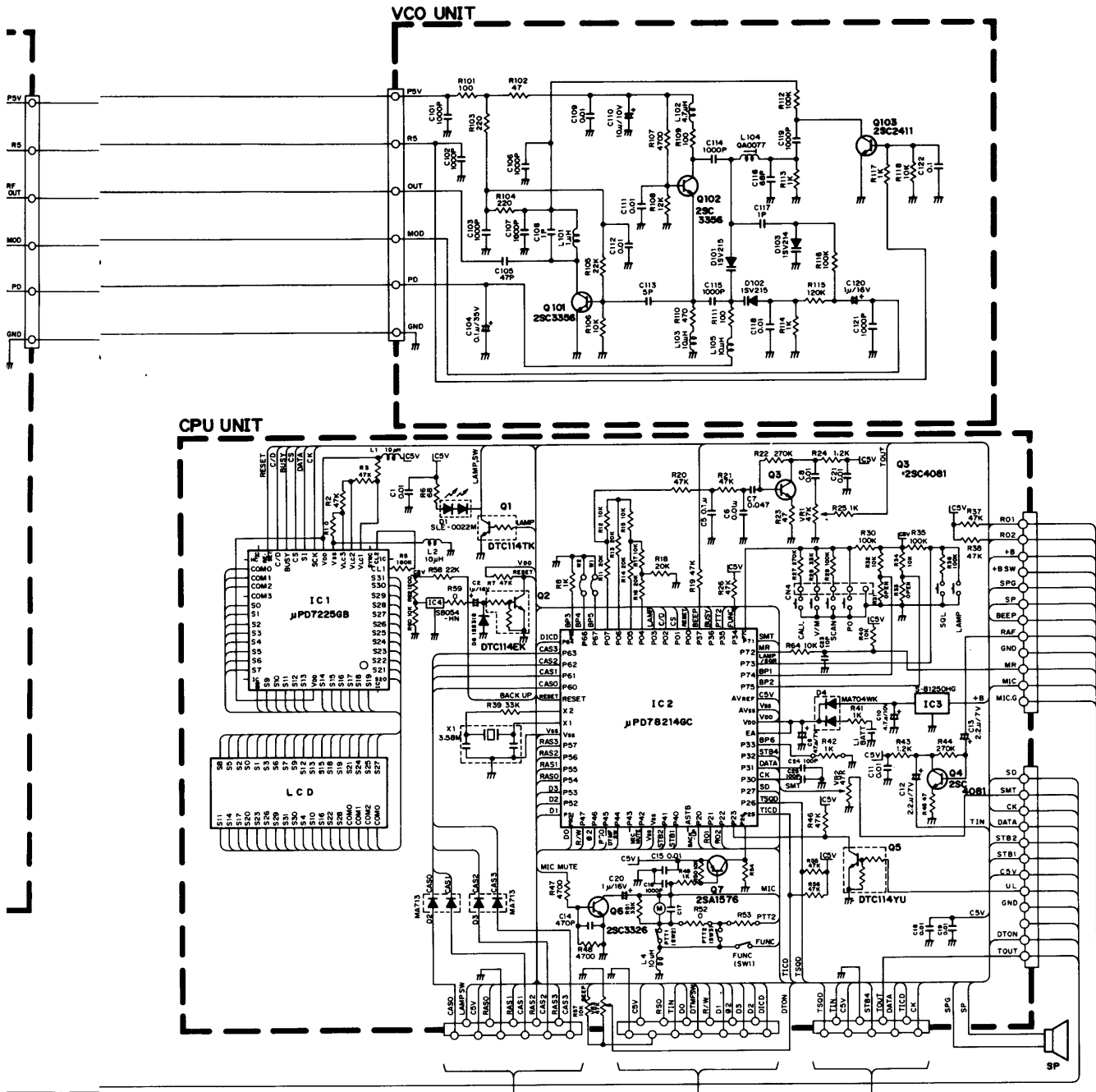
Item	Adjustment method	Spec.
1. Standard frequency	Transmit at 145.05 on L.C.D. board, then adjust TC201 so that the frequency is 145.05MHz $\pm$ 50Hz. Adjusting point(s) TC201	145.05MHz $\pm$ 50Hz
2. Output power		
1) High power	Transmit at 145.05MHz, then adjust VR202 so that the output power is 5.0W 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	



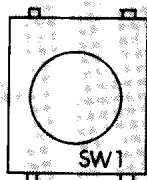
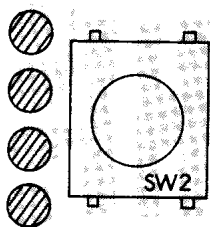
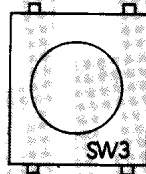
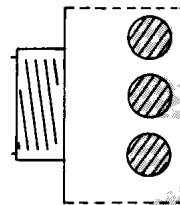
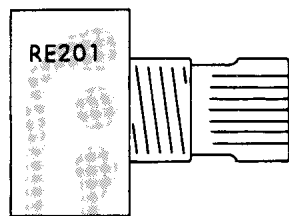
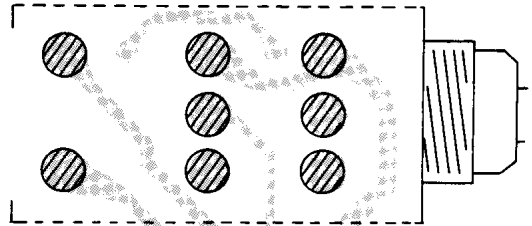
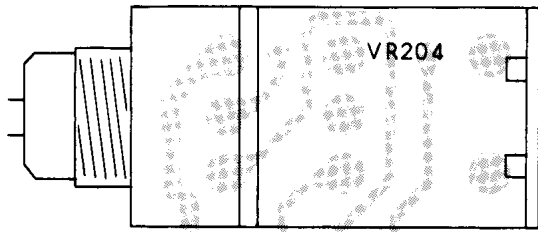
# ■ SCHEMATIC DIAGRAM



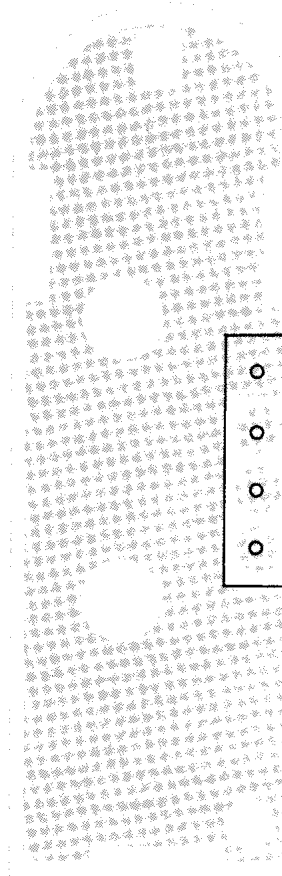
Specifications are subject to change without notice or obligation.



■ VR.RE.SW.PC BOARDS

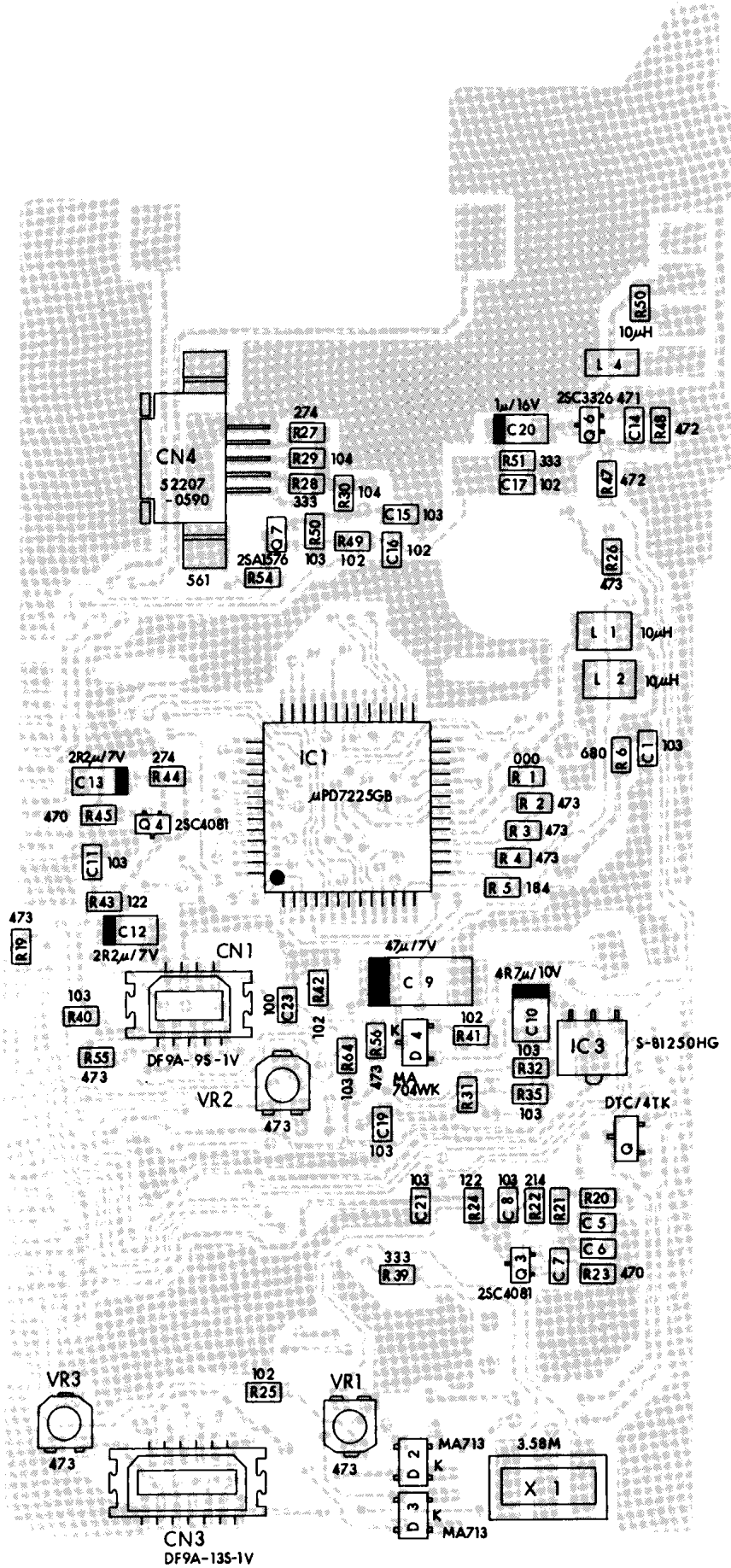


SW1.2.3 (SKHUAB)



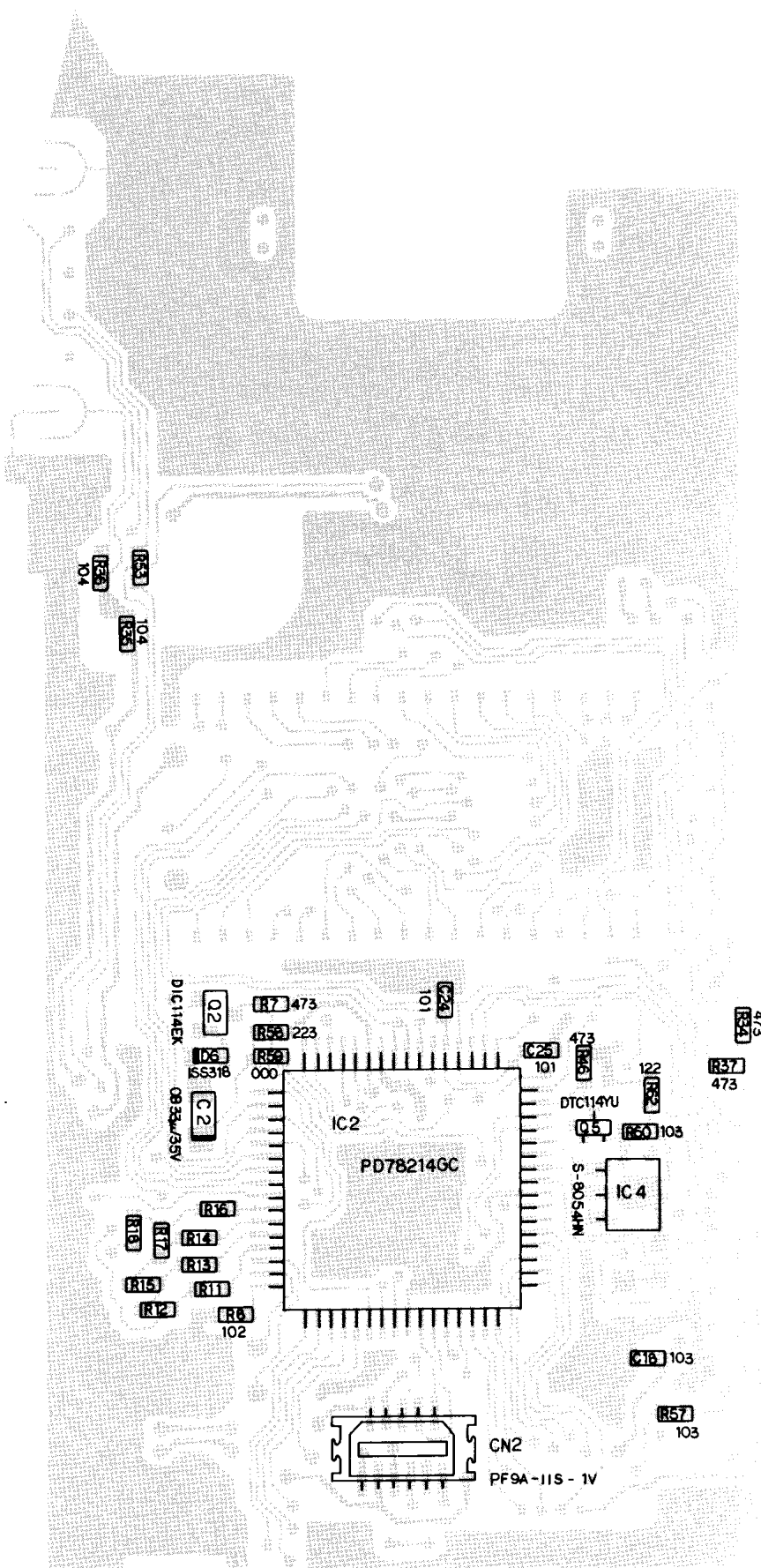
# ■ CPU PC BOARD

Side A

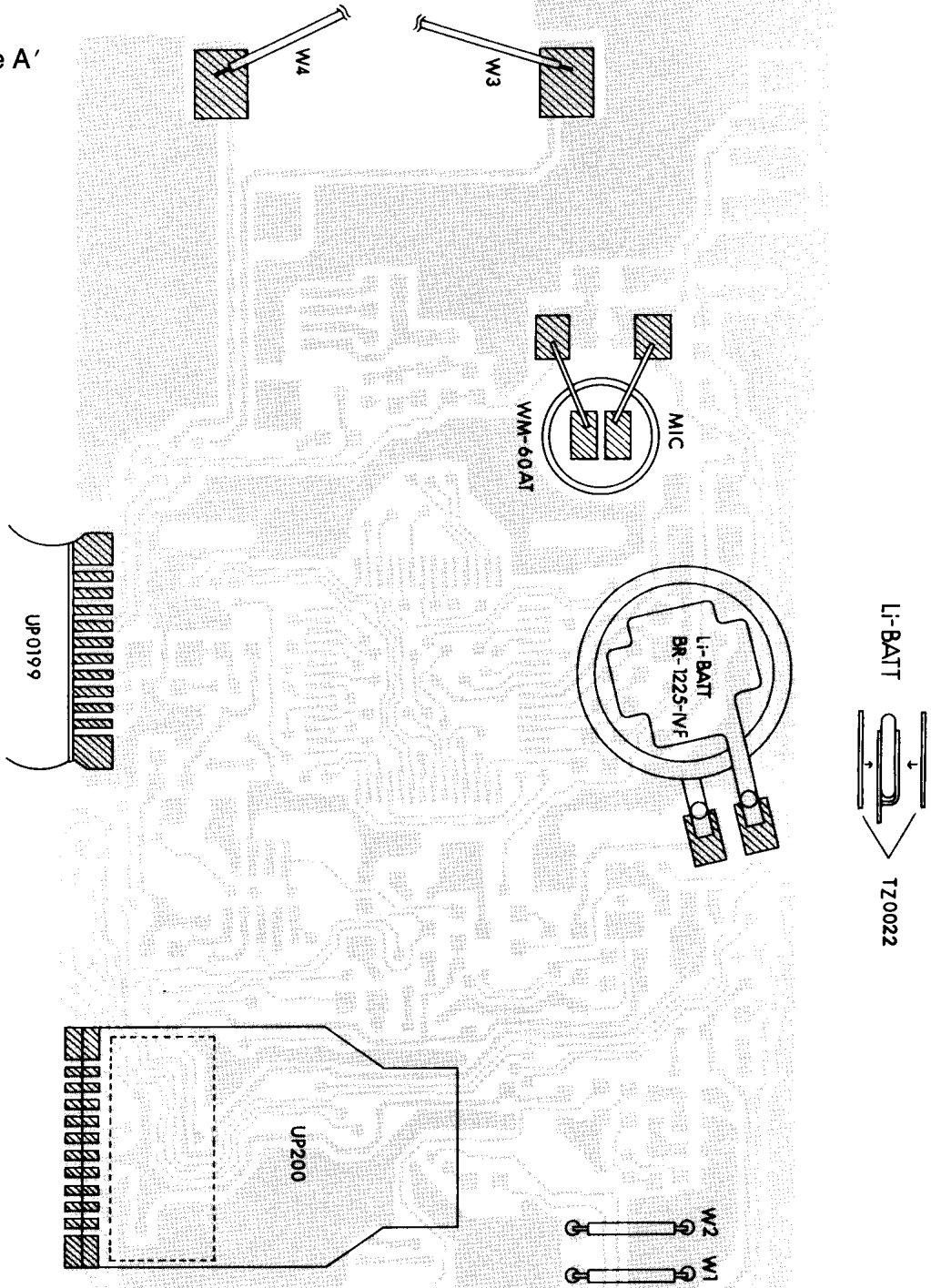




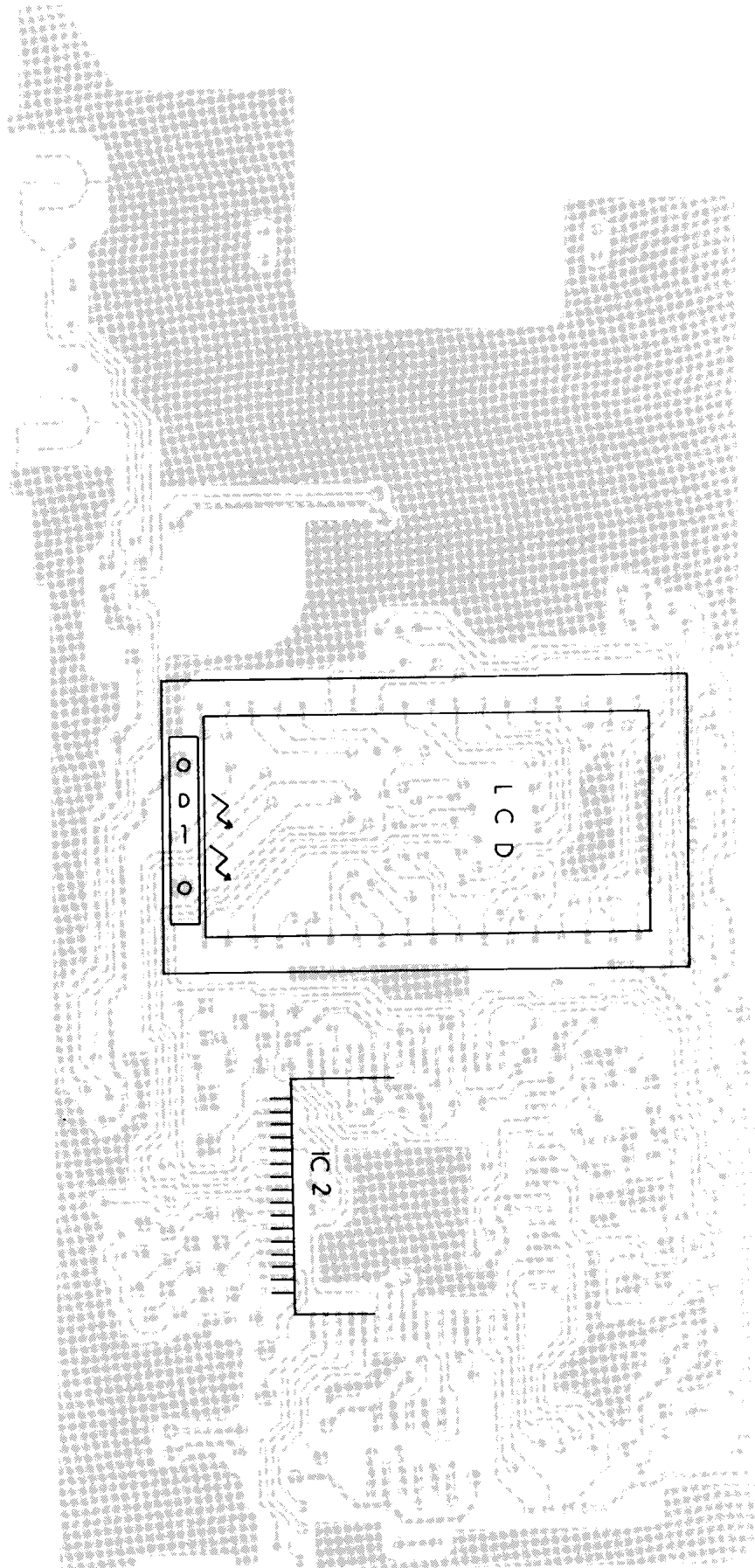
Side B



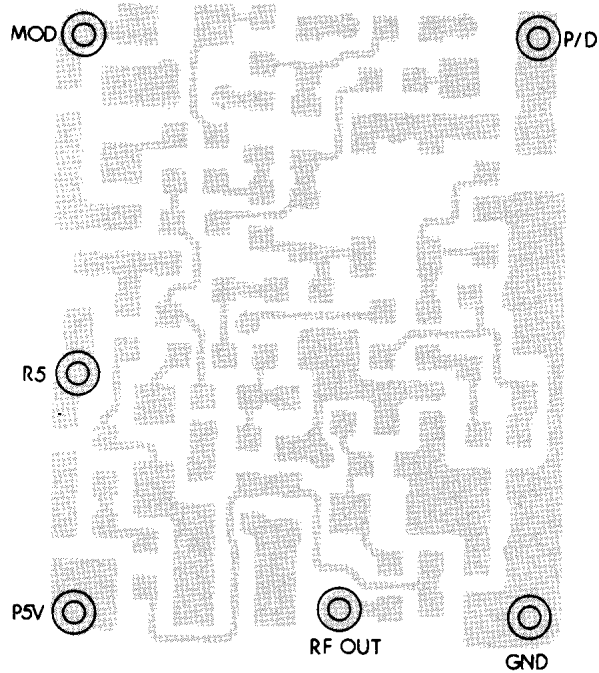
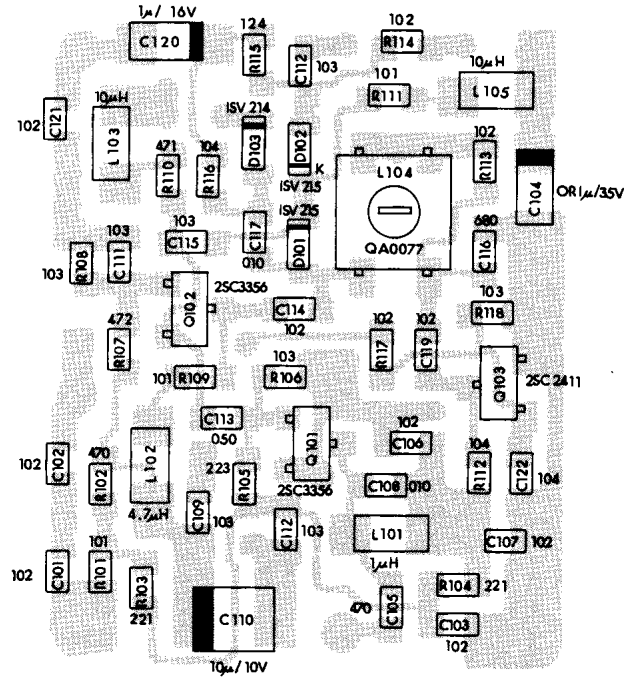
Side A'



Side B'

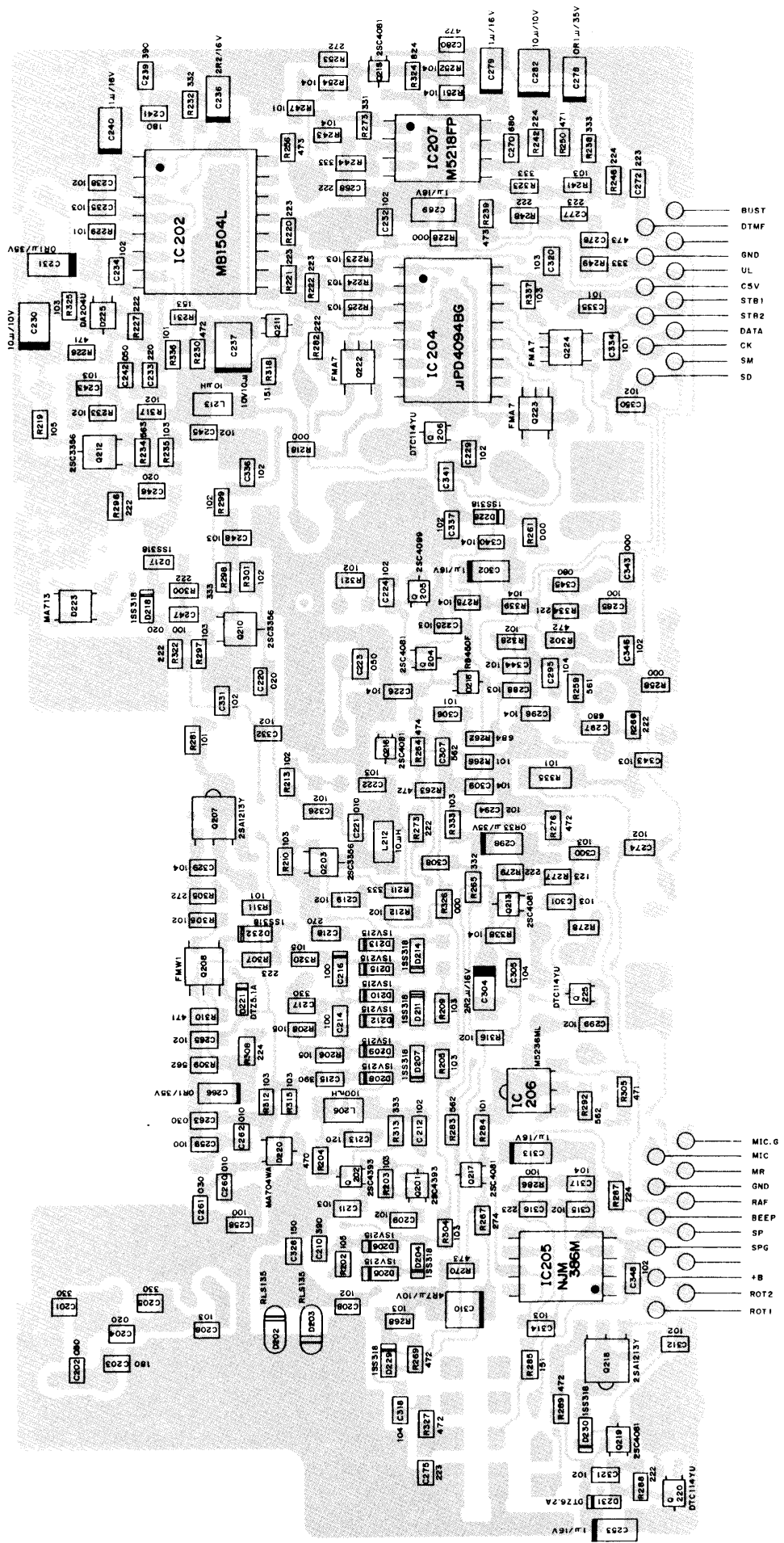


# ■ VCO PC BOARD

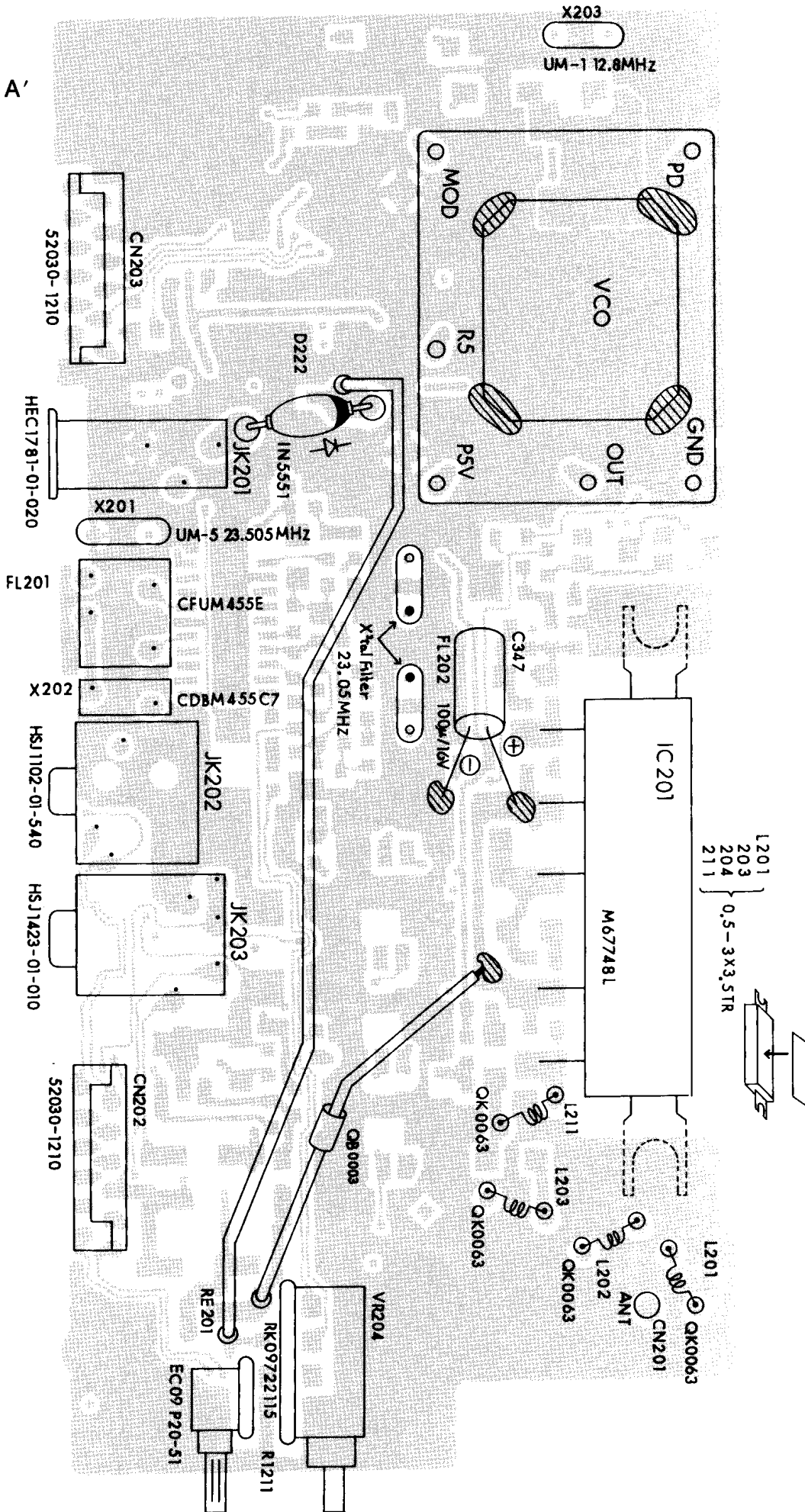




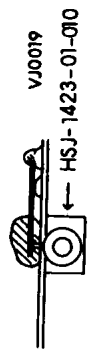
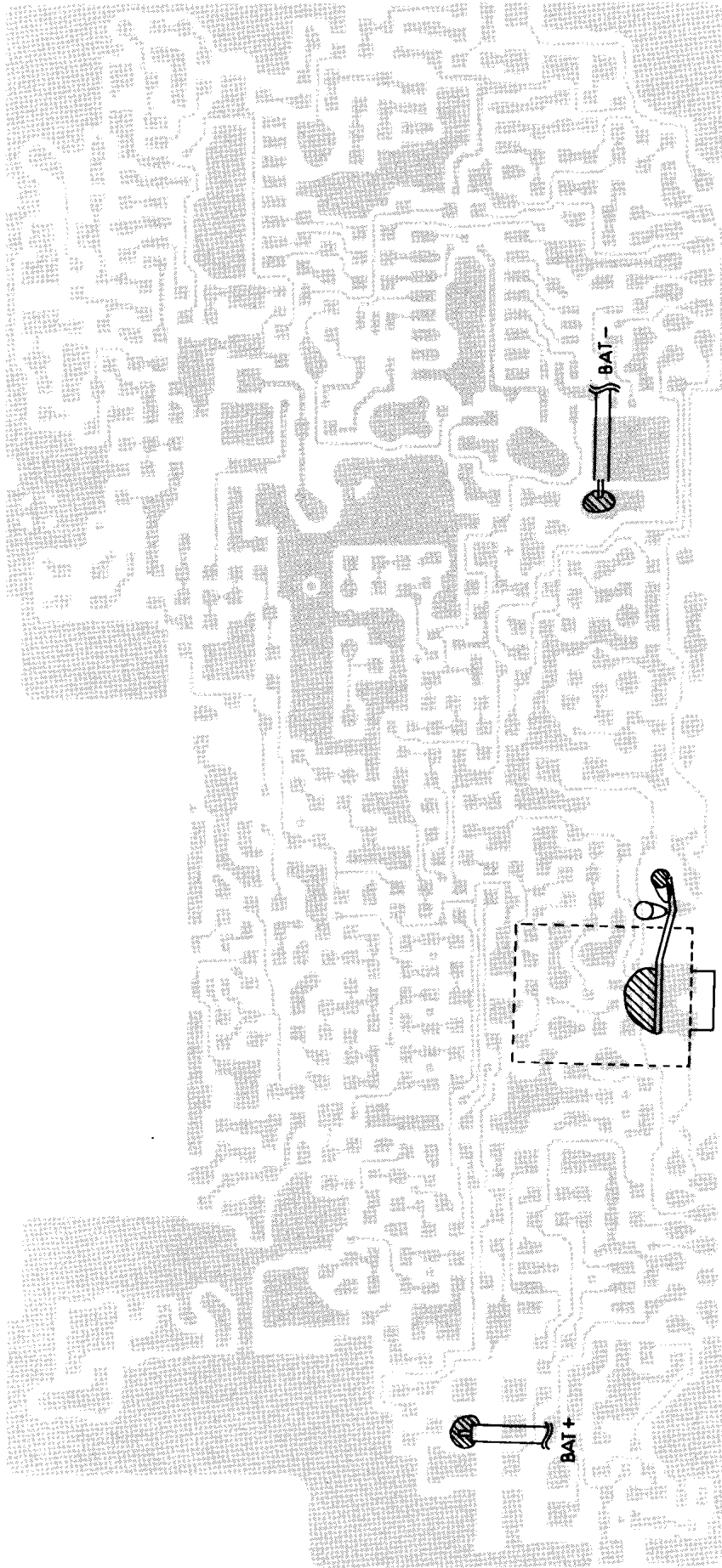
Side B



Side A'



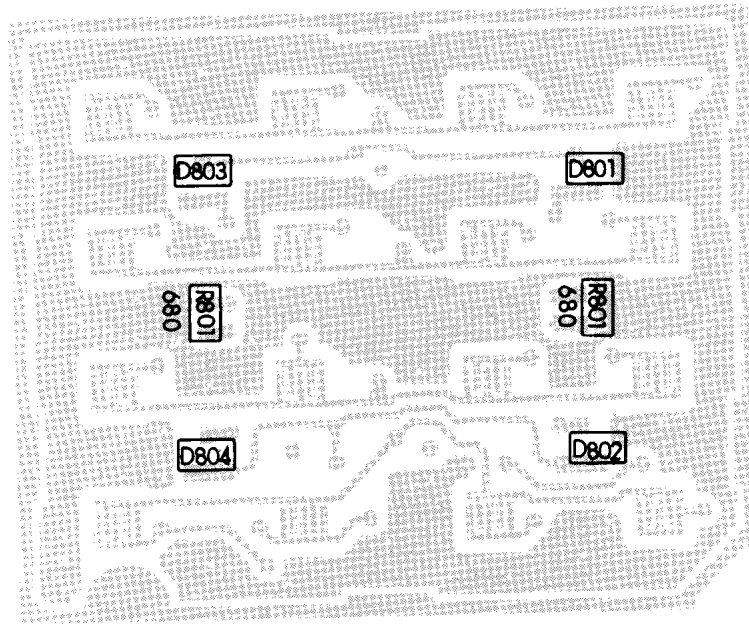
Side B'



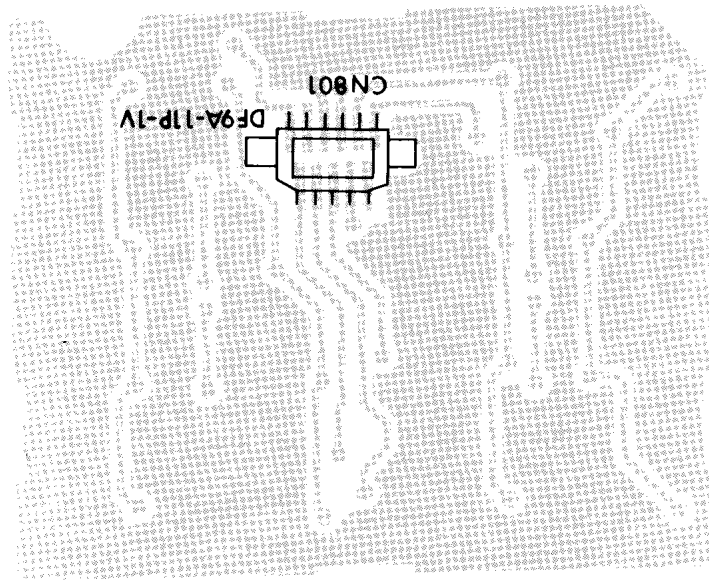


# ■ KEY BOARD

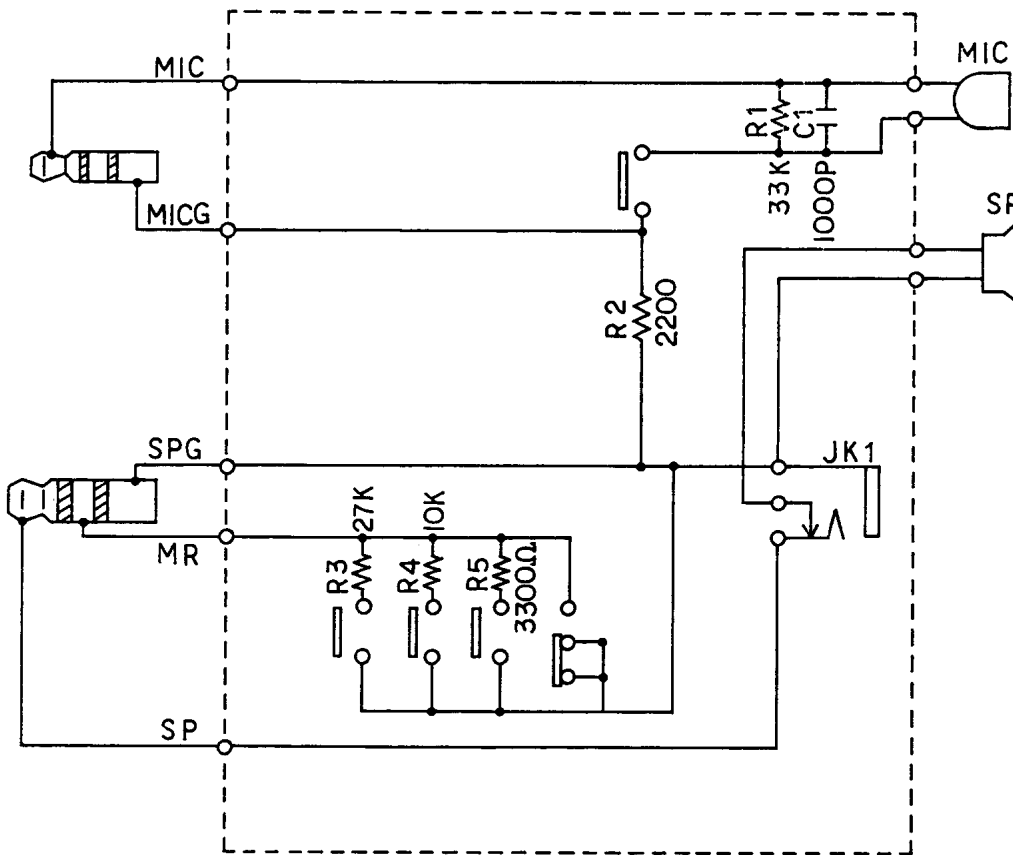
Side A



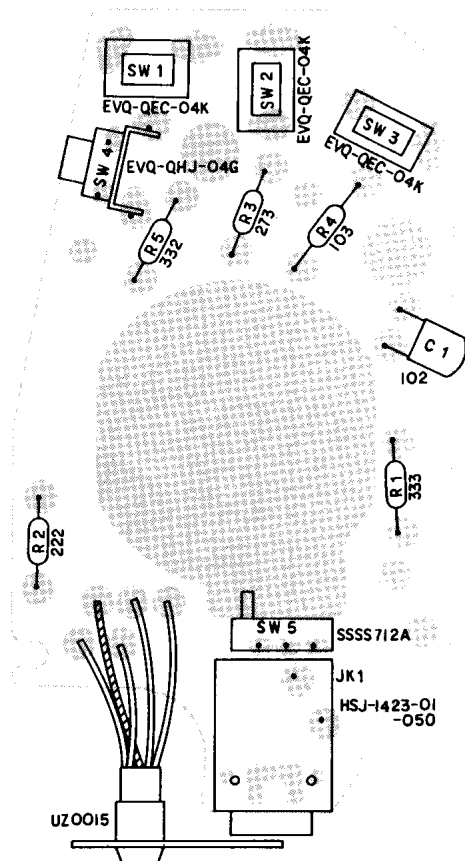
Side B



# 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

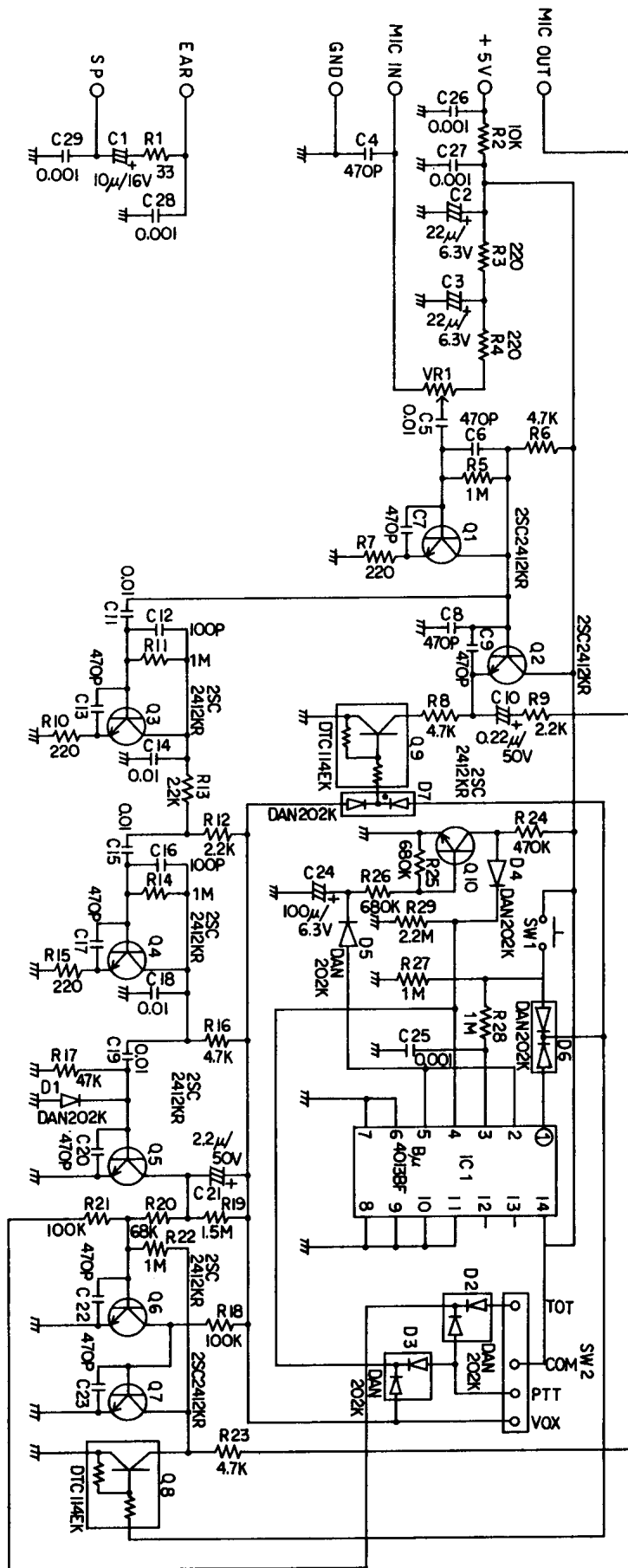


# EME-10K (HEADSET W/PTT VOX)

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

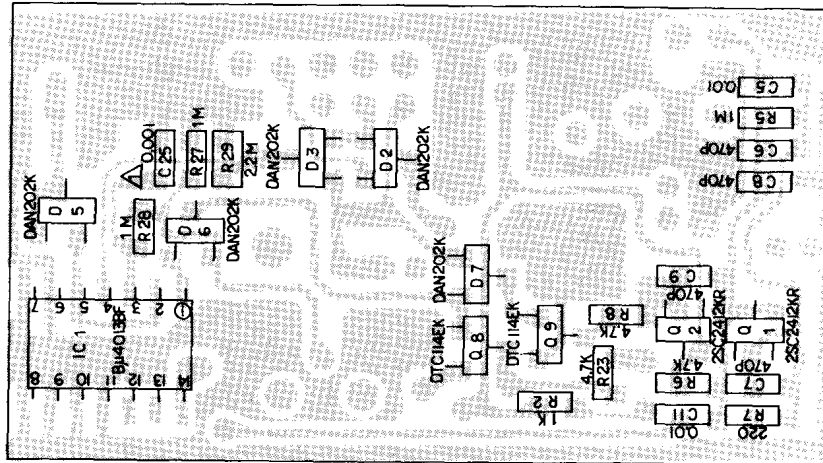
Ref. No.	Part Code	Part Name and Number
Q8	XU0012	Digital Transistor, DTC114EKT96
Q9	XU0012	Digital Transistor, DTC114EKT96
Q10	XT0037	Transistor, 2SC2412K T96R
R1	RK3020	Chip R, MCR03EZ0J 330
R2	RK3038	Chip R, MCR03EZ0J 102
R3	RK3030	Chip R, MCR03EZ0J 221
R4	RK3030	Chip R, MCR03EZ0J 221
R5	RK3074	Chip 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

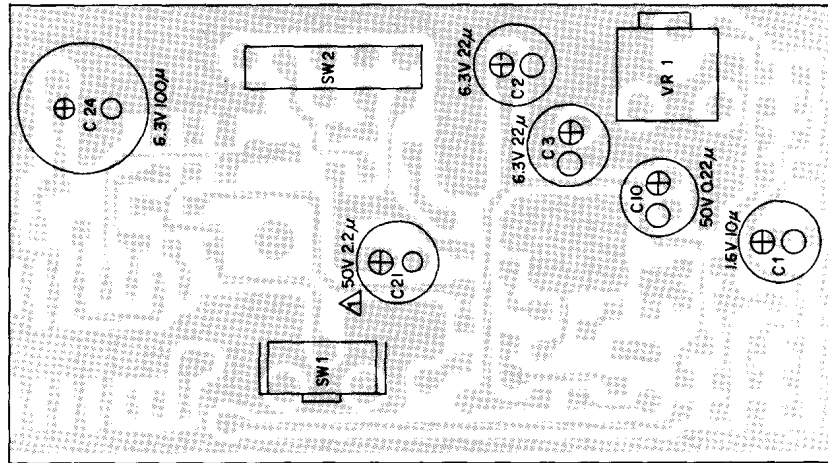


# EME-10K PC BOARD

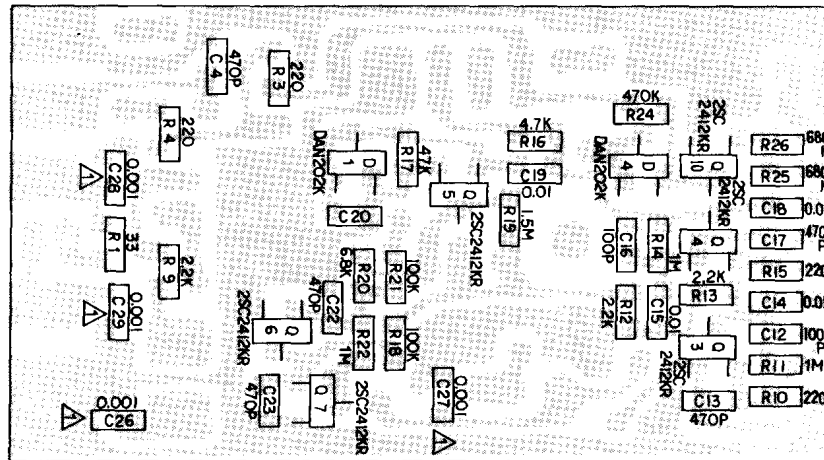
Side A



Side A'



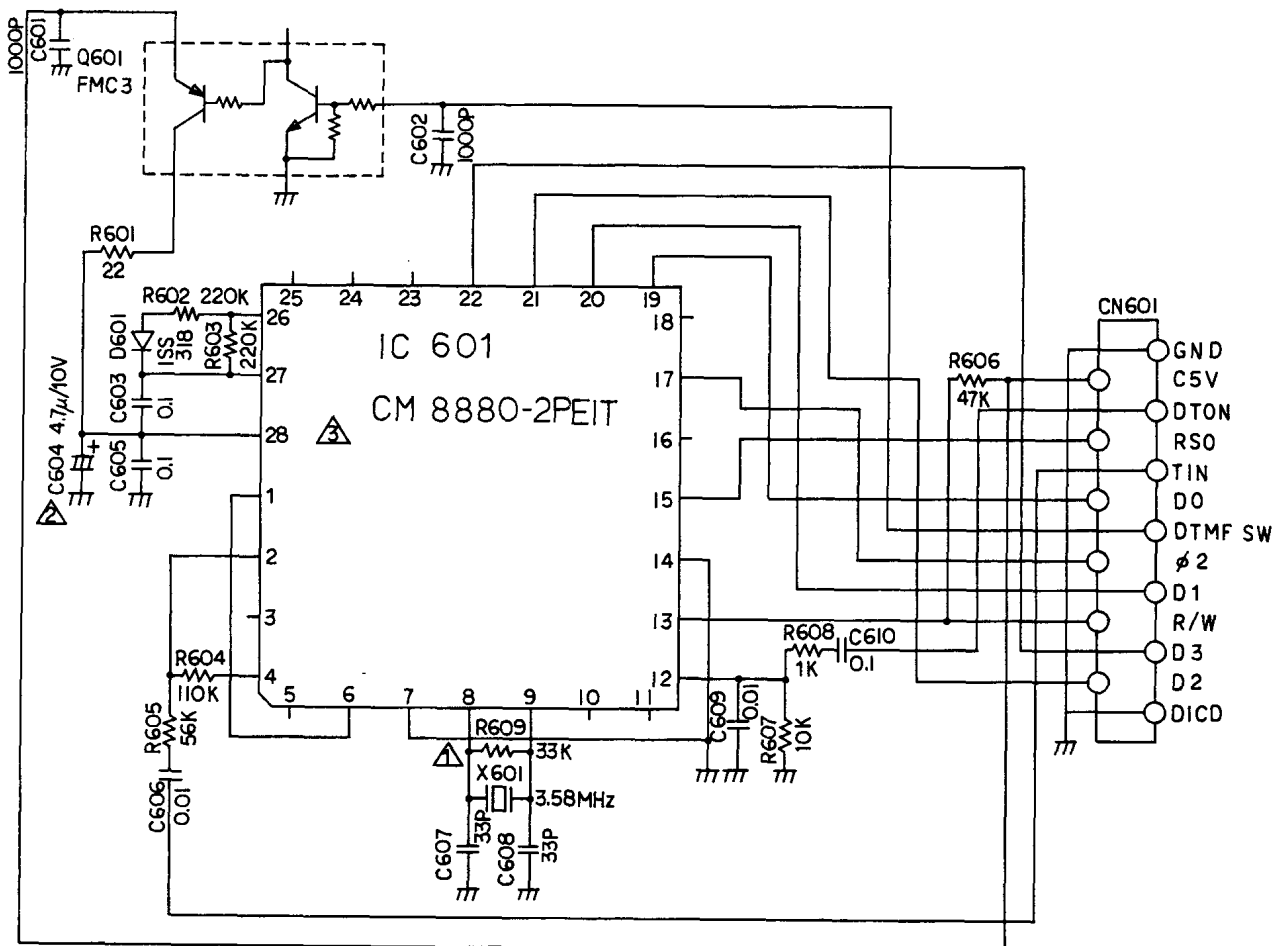
Side B



# 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

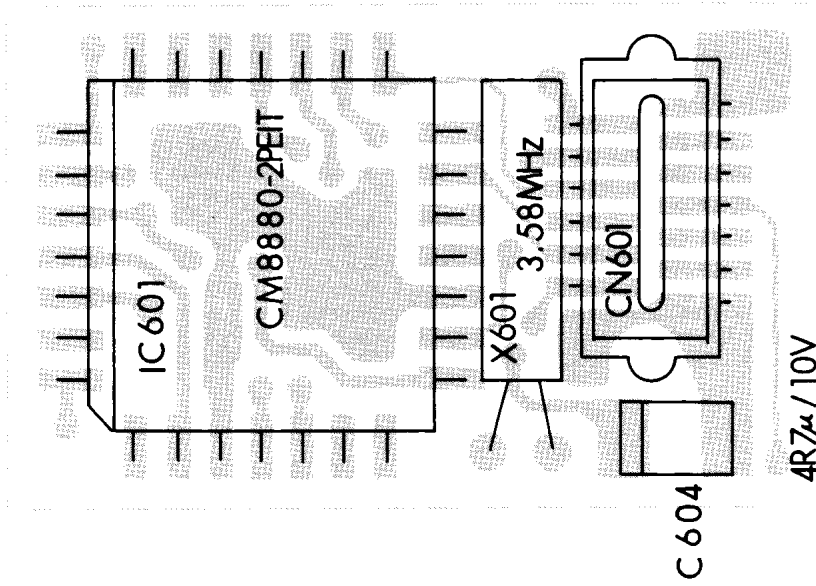
Ref. No.	Part Code	Part Name and Number
C606	CU3047	Chip C, CM105 W5R 103K
C607	CU3017	Chip C, CM105 CH 330K
C608	CU3017	Chip C, CM105 CH 330K
C609	CU3047	Chip C, CM105 W5R 103K
C610	CU3059	Chip C, CM105 Y5V 104Z
R601	RK3018	Chip R, MCR03 EZHJ220
R602	RK3066	Chip R, MCR03 EZHJ224
R603	RK3066	Chip R, 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



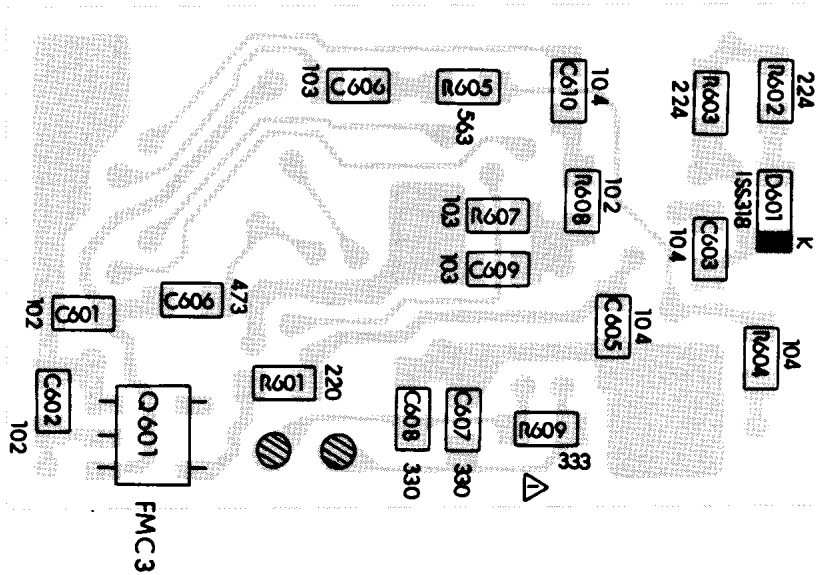
# DTMF PC BOARD

EJ-20U

Side A



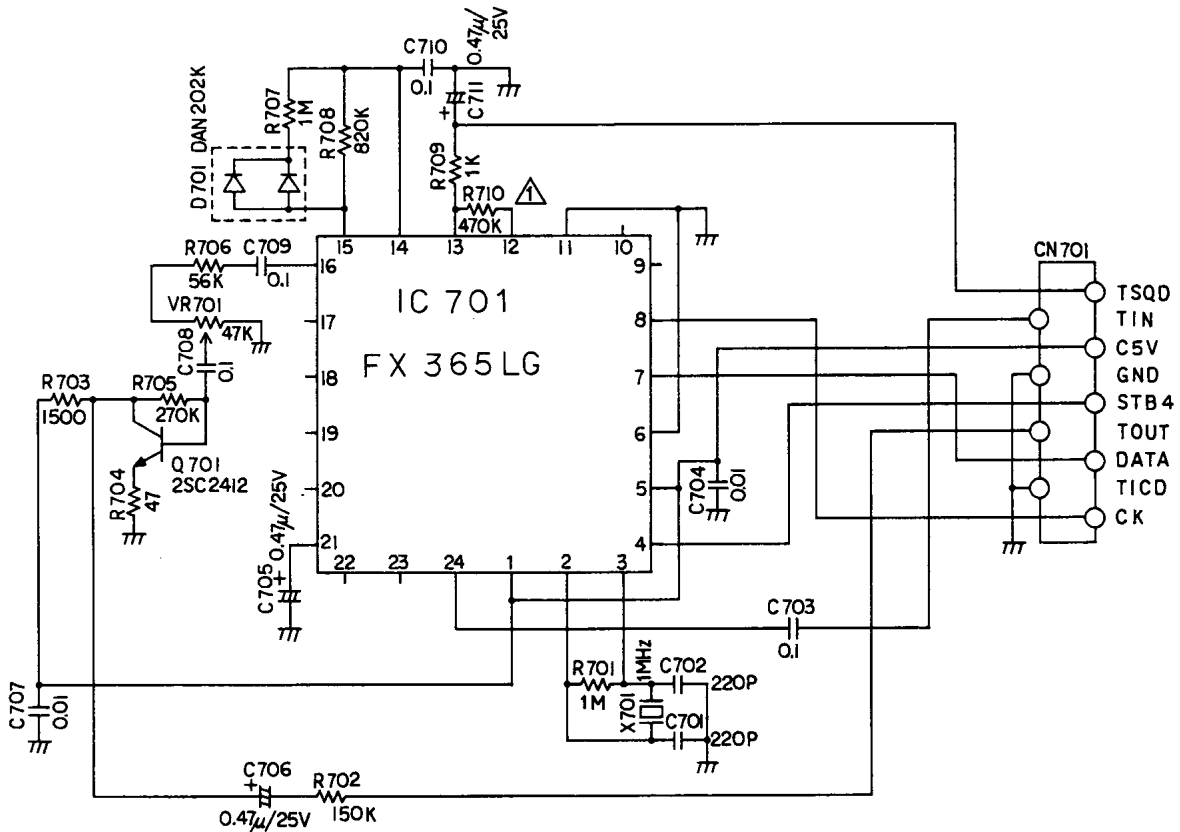
Side B



# 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

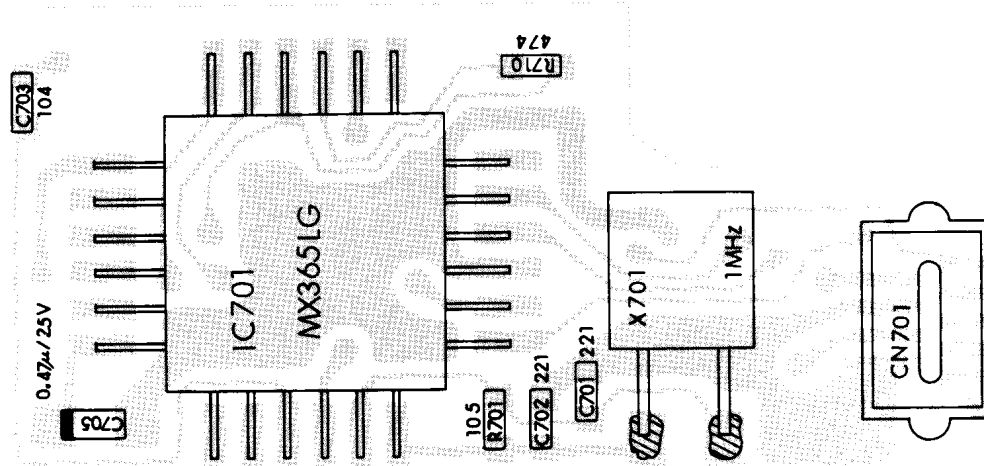
Ref. No.	Part Code	Part Name and Number
C706	CS0060	Chip C, TMC1E474TR
C707	CU3047	Chip C, CM105W5R103K
C708	CU3059	Chip C, CM105Y5V104Z
C709	CU3059	Chip C, CM105Y5V104Z
C710	CU3059	Chip C, CM105Y5V104Z
C711	CS0060	Chip C, TMC1E474TR
R701	RK3074	Chip R, MCR03EZJH105
R702	RK3064	Chip R, MCR03EZJH154
R703	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



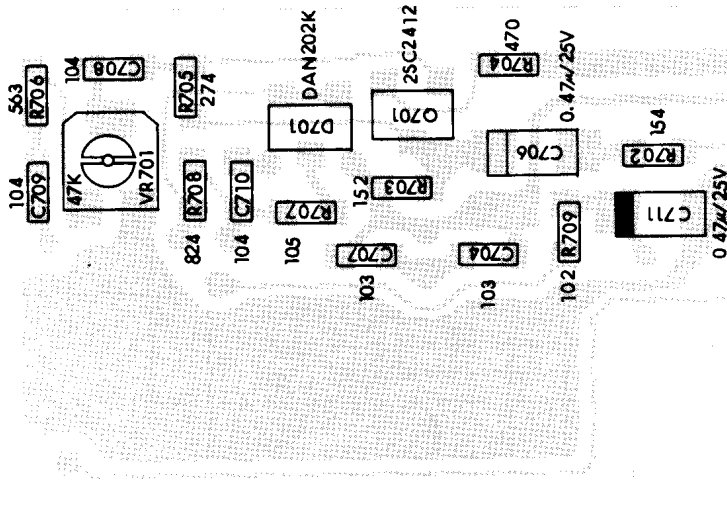


# STONE SQUELCH UNIT PC BOARD

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 4.7K $\Omega$	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, 35V470 $\mu$ 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			
R13		Resistor, 0.2W 100 $\Omega$	C10		Ceramic Condenser, 50V 1 $\mu$ F	X1		Oscillator, 2.0MHz
R14		Resistor, 0.2W 220 $\Omega$	C12		Ceramic Condenser, 50V 470pF			
R15		Resistor, 0.2W 130 $\Omega$	C13		Ceramic Condenser, 50V 470pF	L1		Coil, 2A 180 $\mu$ H
R16		Resistor, 1W 680 $\Omega$				L2		Coil, 1A 200 $\mu$ H
R17		Resistor, 0.2W 12 $\Omega$	D1		Diode, 40V 2.5A	L3		Ferrite Beads
R18		Resistor, 0.2W 12 $\Omega$	D2		Diode, 40V 2.5A			
R19		Resistor, 1W 0.22 $\Omega$	D3		Diode, 40V 100mA	LED1		LED
R20		Resistor, 0.2W 10K $\Omega$	D4		Diode, 40V 100mA	LED2		LED
R21		Resistor, 0.5W 2.7K $\Omega$	D5		Diode, 40V 2.5A			LED, Spacer
R22		Resistor, 0.5W 2.7K $\Omega$	D6		Diode, 40V 100mA			
R23		Resistor, 0.2W 10K $\Omega$	D7		Diode, 40V 100mA	CN1		Jack
R24		Resistor, 0.2W 10K $\Omega$	D8		Diode, 40V 100mA	CN2		Jack
R25		Resistor, 0.2W 33K $\Omega$	D9		Diode, 40V 100mA	CN3		Terminal
R26			D10		Diode, 100V 2A	CN4		Terminal
R27		Resistor, 0.2W 33K $\Omega$	D11		Diode, 40V 100mA	CN5		Terminal
R28		Resistor, 0.2W 39K $\Omega$	D12		Diode, 40V 100mA	CN6		Terminal
R29		Resistor, 0.2W 47K $\Omega$	D13		Diode, 40V 100mA			
R30		Resistor, 0.2W 22K $\Omega$	D14		Diode, 40V 100mA	F1		Fuse, 3.15A 125VULCSA
R31		Resistor, 0.2W 10K $\Omega$	D15		Diode, 40V 100mA			
R32		Resistor, 0.2W 3.3K $\Omega$	D16		Diode, 100V 2A	JP1		Cable, $\Phi$ 0.6 $\times$ 10mm
R33		Resistor, 0.2W 10K $\Omega$	D17		Diode, 40V 100mA	JP2		Cable, $\Phi$ 0.6 $\times$ 10mm
R34		Resistor, 0.2W 10K $\Omega$	D18		Diode, 40V 2A	JP3		Cable, $\Phi$ 0.6 $\times$ 15mm
R35		Resistor, 0.2W 2.7K $\Omega$	D19		Diode, 40V 100mA	JP4		Cable, $\Phi$ 0.6 $\times$ 7.5mm
R36		Resistor, 0.2W 5.6K $\Omega$				JP5		Cable, $\Phi$ 0.6 $\times$ 5mm
R37		Resistor, 0.2W 3.3K $\Omega$	Z1		Zener Diode, 400mW 9V	JP6		Cable, $\Phi$ 0.6 $\times$ 12.5mm
R38		Resistor, 0.2W 3.3K $\Omega$				JP7		Cable, $\Phi$ 0.6 $\times$ 10mm
R39		Resistor, 0.2W 1M $\Omega$				JP8		Cable, $\Phi$ 0.6 $\times$ 10mm
R40		Resistor, 0.2W 1.5K $\Omega$	Q1		Transistor, PNP 40V 100mA	JP9		Cable, $\Phi$ 0.6 $\times$ 5mm
R41		Resistor, 0.2W 47K $\Omega$	Q2		Transistor, PNP 40V 100mA	JP10		Cable, $\Phi$ 0.6 $\times$ 5mm
R42		Resistor, 0.2W 10K $\Omega$	Q3		Transistor, NPN 40V 100mA	JP11		Cable, $\Phi$ 0.6 $\times$ 5mm
R43		Resistor, 0.2W 10K $\Omega$	Q4		Transistor, NPN 80V 3A	JP12		Cable, $\Phi$ 0.6 $\times$ 10mm
R44		Resistor, 0.2W 2.7K $\Omega$	Q5		Transistor, PNP 40V 100mA	JP13		Cable, $\Phi$ 0.6 $\times$ 12.5mm
R45		Resistor, 0.2W 5.6K $\Omega$	Q6		Transistor, PNP 40V 100mA	JP14		Cable, $\Phi$ 0.6 $\times$ 10mm
R46		Resistor, 0.2W 2.7K $\Omega$	Q7		Transistor, PNP 60V 5A	JP15		Cable, $\Phi$ 0.6 $\times$ 7.5mm
R47		Resistor, 0.2W 5.6K $\Omega$	Q8		Transistor, NPN 40V 100mA	JP16		Cable, $\Phi$ 0.6 $\times$ 5mm
R48		Resistor, 0.2W 3.3K $\Omega$	Q9		Transistor, NPN 40V 100mA	JP17		Cable, AWG24 $\times$ 20mm
R49		Resistor, 0.2W 3.3K $\Omega$	Q10		Transistor, NPN 40V 100mA			
R50		Resistor, 0.2W 3.3K $\Omega$	Q11		Transistor, PNP 40V 100mA			

# ■ BLOCK DIAGRAM

