

DR-130T/E/EZ/EA/TA/TE1/TE2

Service Manual

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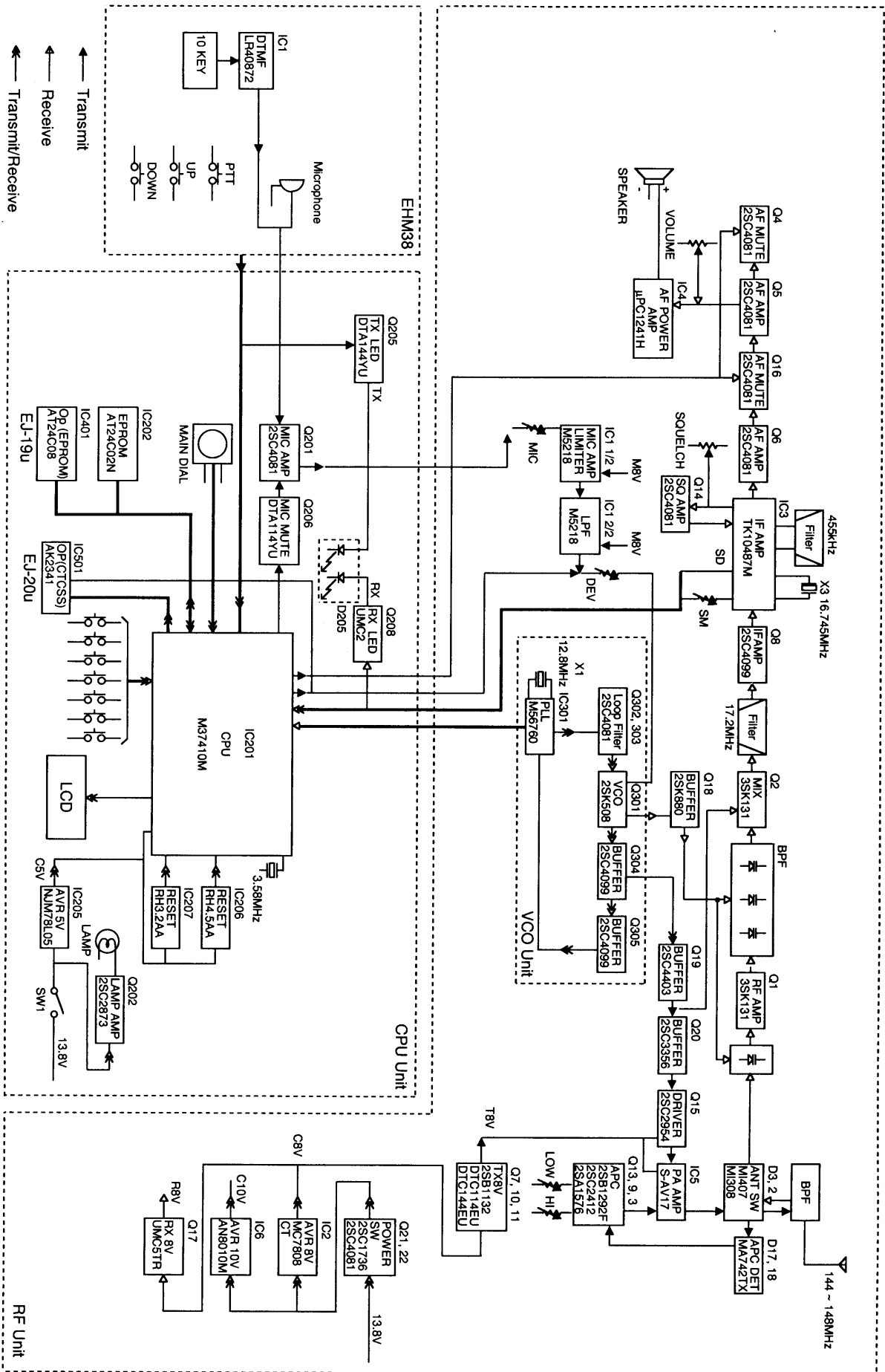
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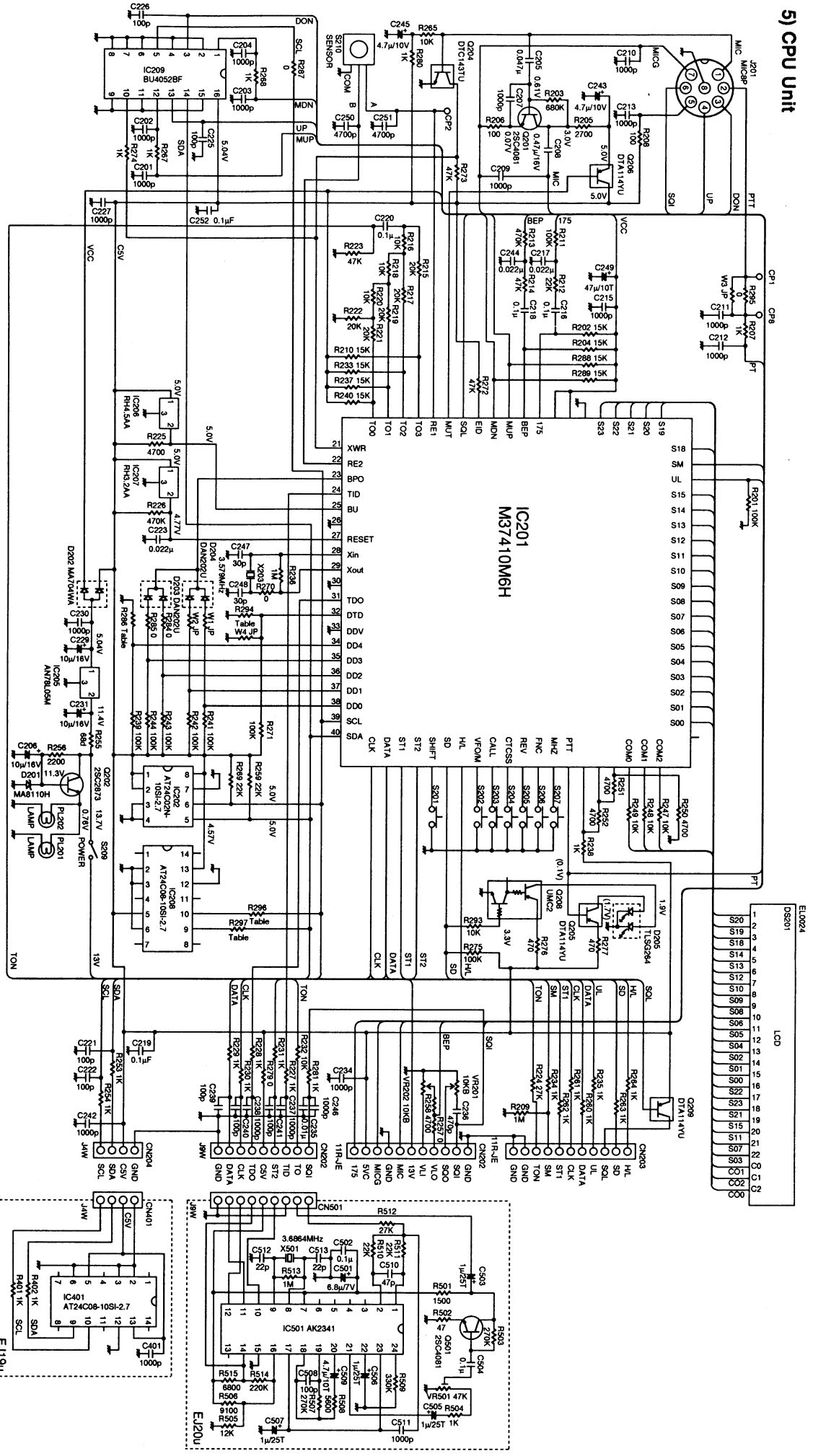
● BLOCK DIAGRAM39

ALINGO, INC.

BLOCK DIAGRAM

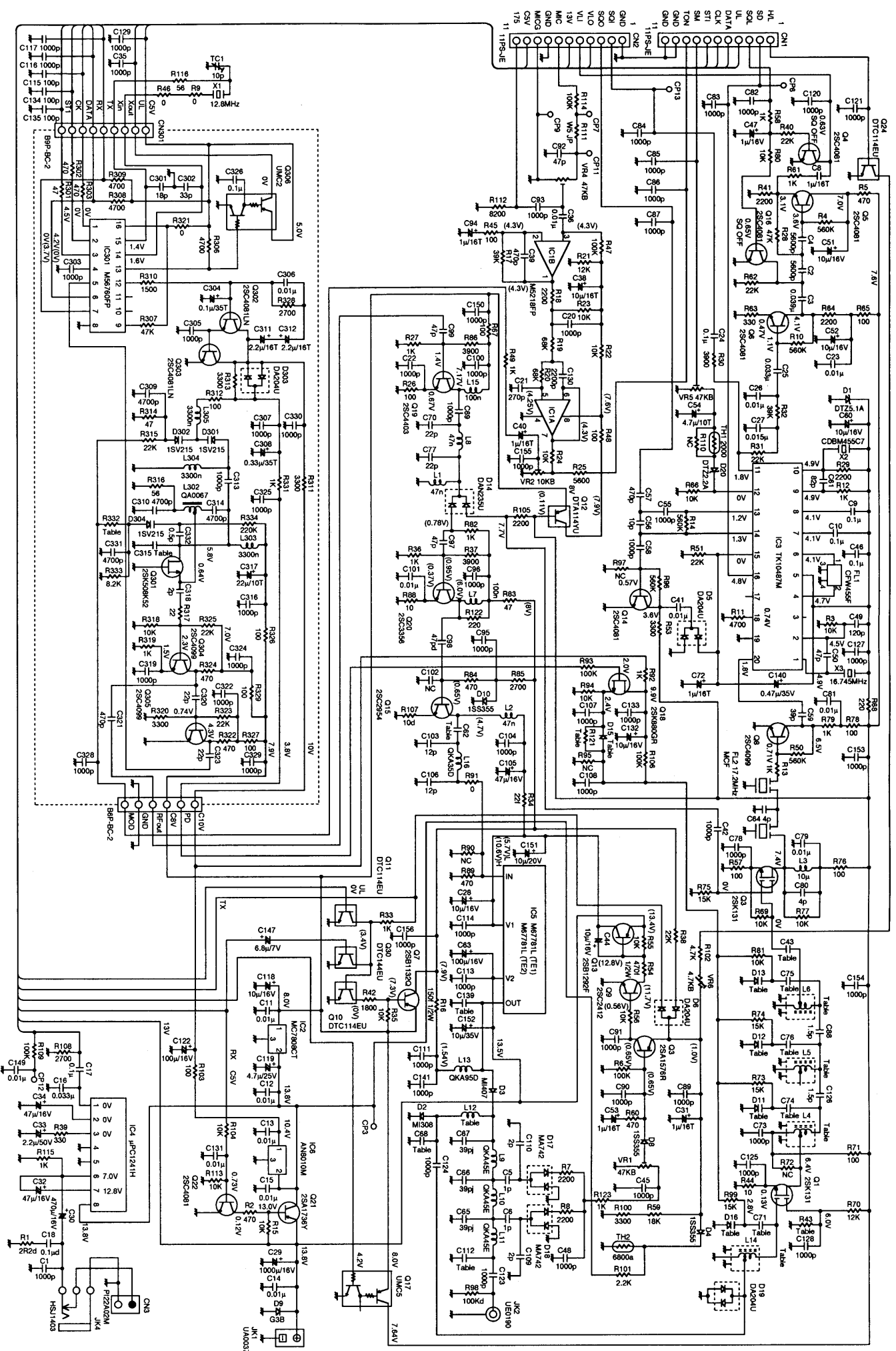


5) CPU Unit



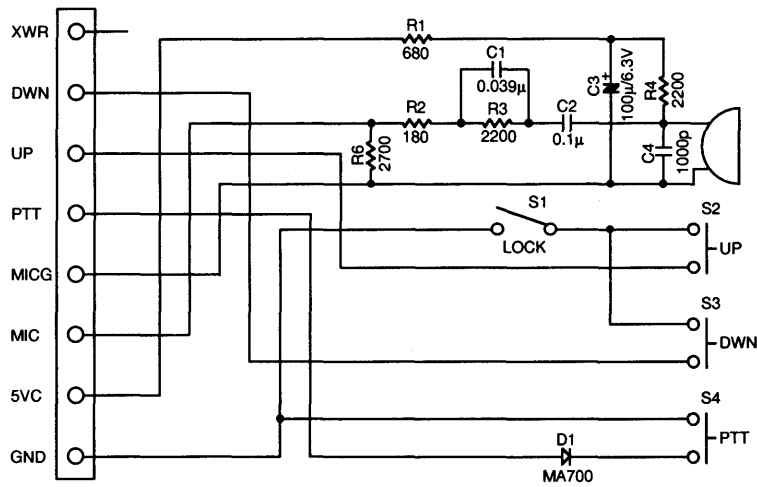
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EZ	JP	JP	JP	JP	0	0	0	0	1K	0	0
EA	JP	JP	JP	JP	0	0	0	0	0	0	0
TA	JP	JP	JP	JP	0	0	0	0	0	0	0
TE1	JP	JP	JP	JP	0	0	0	0	0	0	0
TE2	JP	JP	JP	JP	0	0	0	0	0	0	0

4) Main Unit (TE1/TE2)

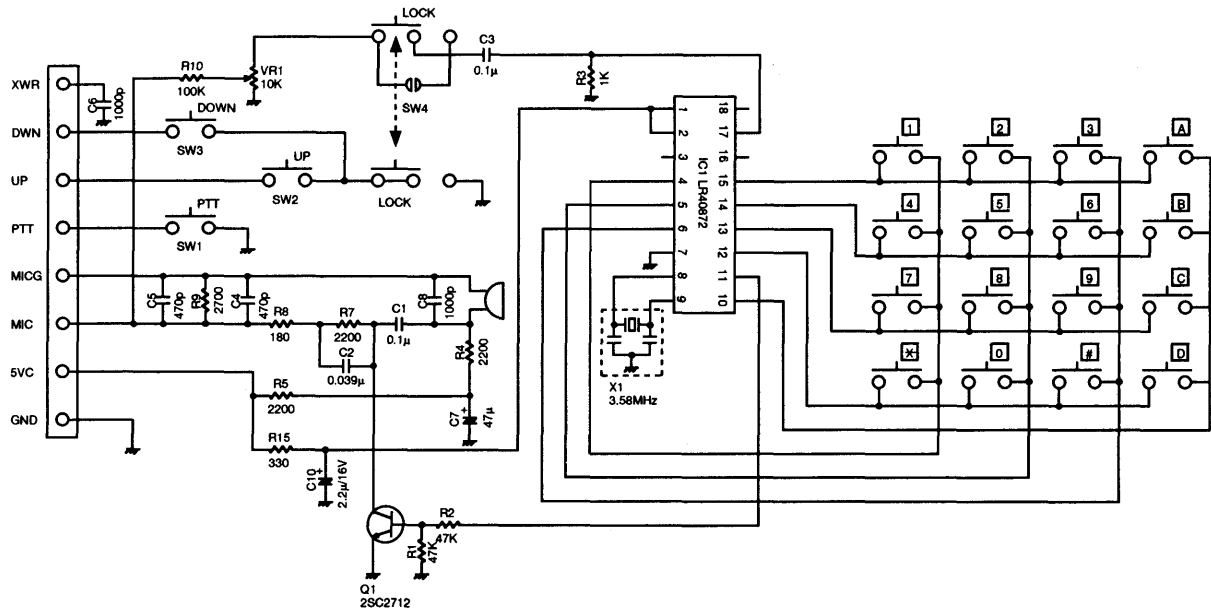


SCHEMATIC DIAGRAM

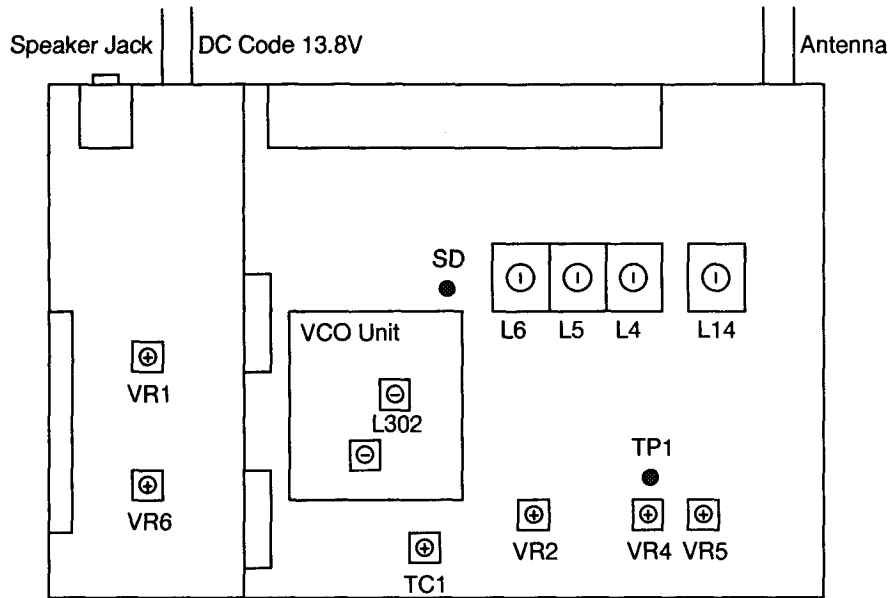
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2) EHM38 CIRCUIT DIAGRAM



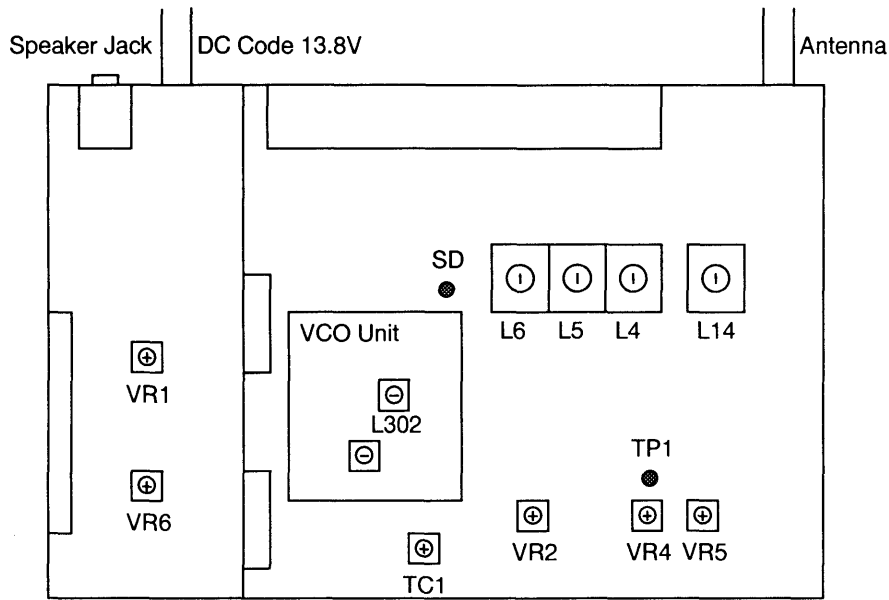
3) Adjustment Points



4) Adjustment Quick Reference

Parts	Item	Specifications
L4	RX Sensitivity	-10dB μ V (12dB SINAD)
L5	RX Sensitivity	-10dB μ V (12dB SINAD)
L6	RX Sensitivity	-10dB μ V (12dB SINAD)
L14	RX Sensitivity	-10dB μ V (12dB SINAD)
L302	VCO Frequency	1.8V ~ 2.2V
TC1	Reference Frequency	145.00MHz +/-100Hz
VR1	TX High Power	52W +/-1.0W
		10.5W +/-0.5W (EZ)
VR2	Deviation	4.7kHz +/-0.2kHz
VR4	Mic Gain	4.0kHz +/-0.2kHz
VR5	S Meter	15dB μ "Full"
VR6	TX Low Power	5W +/-0.5W

3) Adjustment Points



4) Adjustment Quick Reference

Parts	Item	Specifications
L4	RX Sensitivity	-10dB μ V (12dB SINAD)
L5	RX Sensitivity	-10dB μ V (12dB SINAD)
L6	RX Sensitivity	-10dB μ V (12dB SINAD)
L14	RX Sensitivity	-10dB μ V (12dB SINAD)
L302	VCO Frequency	1.8V ~ 2.2V
TC1	Reference Frequency	145.00MHz +/-100Hz
VR1	TX High Power	52W +/-1.0W
		10.5W +/-0.5W (EZ)
VR2	Deviation	4.7kHz +/-0.2kHz
VR4	Mic Gain	4.0kHz +/-0.2kHz
VR5	S Meter	15dB μ "Full"
VR6	TX Low Power	5W +/-0.5W

ADJUSTMENT

1) Required Test Equipment

1. Digital Multimeter

Voltage range: FS = 18V or so
Input resistance: 1M Ω or more

2. Regulated Power Supply

Supply voltage: 13.80V
Current: 15A or more

3. Oscilloscope

Measurable frequency: DC to 30MHz

4. Spectrum Analyzer

Measuring range: Up to 2GHz or more

5. Tracking Generator

Output frequency: Up to 2GHz or more

6. Audio Dummy Load

Impedance: 8 Ω
Dissipation: 5W or more

7. SSG

Output frequency: 1GHz or more
Output level: -20dB/0.1 μ V to 120dB/1V
Moduration: FM

8. Frequency Counter

Measurable frequency: Up to 500MHz
Measurements stability: 0.2ppm or so

9. Power Meter

Measurable frequency: Up to 500MHz
Impedance: 50 Ω , unbalanced
Measuring range: Full scale of 60W or so

10. Audio Voltmeter

Measurable frequency: 50Hz to 10kHz
Sensitivity: 1mV ~ 10V

11. Distortion Meter

Measurable frequency: 1kHz
Input level: Up to 40dB
Distortion level: 1% ~ 100%

12. Audio Generator

Output frequency: 88.5Hz and 1kHz
Output impedance: 600 Ω , unbalanced

13. Linear Detector

Measurable frequency: Up to 500MHz
Characteristics: Flat
CN: 60dB or more

Ref. No.	Parts No.	Description	Parts Name	Ver.	Ref. No.	Parts No.	Description	Parts Name	Ver.	Ref. No.	Parts No.	Description	Parts Name	Ver.	Ref. No.	Parts No.	Description	Parts Name	Ver.
EJ20U					EHM335B					EHM338A									
C501	CS0236	Chip Tantal	TMCOMA0J655MTR		C1	CC5029	Ceramic C.	XTE339KYA		C1	CJ9803	Chip C.	C2012JF1E104Z		AJ0013	Screw	1M2.3+12FeCr		
C502	CU3019	Chip C.	C1608JF1E104ZTA		C2	CK0011	Ceramic C.	SC45-F1C104Z-A		C2	CU8035	Chip C.	C2012B1E393K		AJ0025	Screw	1M3.5+10FeN		
C503	CS0230	Chip Tantal	TMCOMA1E105MTR		C3	CE0037	Electrolytic C	M55 6.3V 100uF		C3	CU8003	Chip C.	C2012JF1E104Z		AP0004	Screw	PM2+5FeCr		
C504	CU3059	Chip C.	C1608JF1E104ZTA		C4	CK0003	Ceramic C.	50V 102		C4	CU8012	Chip C.	C2012B1H471KTA		AP0008	Screw	PM3+8FeBC		
C505	CS0230	Chip Tantal	TMCOMA1E105MTR							C5	CU8012	Chip C.	C2012B1H471KTA		DE0007	Stopper			
C506	CS0230	Chip Tantal	TMCOMA1E105MTR		D1	XD0067	Diode	MA700		C6	CU8016	Chip C.	C2012B1H102K		FG0045	Microphone			
C507	CU3023	Chip C.	C1608CH1H101JTA		R1	RDD031	Resistor	R20 1/4W 680Ω		C8	CE0035	Ceramic C.	CK45-FH102ZTA		FG0045	Mic Rubber Cushion			
C508	CU3023	Chip C.	C1608CH1H101JTA		R2	RDD021	Resistor	R20 1/4W 180Ω		C8	CK0004	Electrolytic C	ECEV1CA470P		FG0055	Rubber Switch			
C509	CS0237	Chip Tantal	TMCOMA1A475MTR		R3	RDD039	Resistor	R20 1/4W 2.2KΩ		C10	CS0066	Chip Tantal	TMCSB1225MTR		HP0036	Protection Bag			
C510	CU3019	Chip C.	C1608CH1H470JTA		R4	RDD039	Resistor	R20 1/4W 2.2KΩ							KB0033	Rear Case			
C511	CU3035	Chip C.	C1608JH1H102KTA		R4	RDD039	Resistor	R20 1/4W 2.2KΩ		FAF1	XB0001	Crystal	FARCA403980000K01R		NP0041	Front Case			
C512	CU3015	Chip C.	C1608CH1H220KTA		R6	RDD040	Resistor	R20 1/4W 2.7KΩ		IC1	XA0042	IC	LR40872		NP0042	PTT Button			
C513	CU3015	Chip C.	C1608CH1H220KTA												NP0043	Up Button			
CN601	UX1050	Wire	EJ20U		S1	US0015	Switch	HSW0890-01-210							NS0003	Down Button			
ICS01	XA0239	IC	AK2341		S2	UU0009	Switch	EVO-QHJ04G		C1	XT0031	Transistor	2SC2712Y TE85L		SC0004	Slide Switch			
Q501	XT0095	Transistor	2SC4081 T106R		S3	UU0009	Switch	EVO-QHJ04G		R1	RK0062	Chip R.	ERJ6G EYJ473V		TT1002	PTT Spring			
R501	RK3040	Chip R.	ERJ3GSYJ152V		S4	UM0002	Switch	Micro Switch SS-5		R2	RK0062	Chip R.	ERJ6G EYJ473V		UE0125A	Slide Switch			
R502	RK3022	Chip R.	ERJ3GSYJ470V							R3	RK0035	Chip R.	ERJ6G EYJ102V		UP0183B	Cur Code EMS3			
R503	RK3067	Chip R.	ERJ3GSYJ274V							R4	RK0039	Chip R.	ERJ6G EYJ222V						
R504	RK3038	Chip R.	ERJ3GSYJ102V							R5	RK0039	Chip R.	ERJ6G EYJ222V						
R505	RK3051	Chip R.	ERJ3GSYJ123V							R7	RK0021	Chip R.	ERJ6G EYJ181V						
R506	RK3089	Chip R.	ERJ3GSYJ912V							R8	RK0021	Chip R.	ERJ6G EYJ181V						
R507	RK3067	Chip R.	ERJ3GSYJ274V							R9	RK0040	Chip R.	ERJ6G EYJ272V						
R508	RK3047	Chip R.	ERJ3GSYJ562V							R10	RK0069	Chip R.	ERJ6G EYJ104V						
R509	RK3068	Chip R.	ERJ3GSYJ334V							R15	RK0025	Chip R.	ERJ6G EYJ331V						
R510	RK3054	Chip R.	ERJ3GSYJ223V							R16	RK3001	Chip R.	ERJ3SYJ000V						
R511	RK3054	Chip R.	ERJ3GSYJ223V							R17	RK3001	Chip R.	ERJ3SYJ000V						
R512	RK3055	Chip R.	ERJ3GSYJ273V																
R513	RK3074	Chip R.	ERJ3GSYJ105V							SW1	UM0002	Switch	Micro Switch SS-5						
R514	RK3066	Chip R.	ERJ3GSYJ224V							SW2	UJ0009	Switch	EVO-QHJ04G						
R515	RK3048	Chip R.	ERJ3GSYJ882V							SW3	UJ0009	Switch	EVO-QHJ04G						
VR501	RH0106	Trim. Pot	EVM1VXSX50BQ4							SW4	US0015	Switch	HSW0890-01-210						
XS01	XQ0057	Crystal	DS-MMAT 3.6864MHZ							VR1	RH0031	Trim. Pot	CVR-42A-109AW1D						
	HK0305	Carton								W1	MA0K02AA	Wire	#28A02-020-02						
	HP0029	Protection Bag								W2	MY0K02AA	Wire	#28Y02-020-02						
	PG0057	Rubber Cushion																	
	UP0243	P.C.B.																	
	YZ0042	Bond Gl7																	

The version is indicated as follows:
 0: T1/EZ/EM7A
 1: TE1
 2: TE2
 Model: all models

Ref. No.	Parts No.	Description	Parts Name	Ver.
EJ20U				
CS01	CS0236	Chip Tantal	TMQMAQJ85MTR	
CS02	CU3059	Chip C.	C1608JF1E104ZTA	
CS03	CS0230	Chip Tantal	TMQMA1E105MTR	
CS04	CU3059	Chip C.	C1608JF1E104ZTA	
CS05	CS0230	Chip Tantal	TMQMA1E105MTR	
CS06	CS0230	Chip Tantal	TMQMA1E105MTR	
CS07	CS0230	Chip Tantal	TMQMA1E105MTR	
CS08	CU3023	Chip C.	C1608CH1H101JTA	
CS09	CS0237	Chip Tantal	TMQMA1A475MTR	
CS10	CU3019	Chip C.	C1608CH1H470JTA	
CS11	CU3035	Chip C.	C1608JB1H1102KTA	
CS12	CU3015	Chip C.	C1608CH1H220KTA	
CS13	CU3015	Chip C.	C1608CH1H220KTA	
CS501	UX1050	Wire	EJ20U	
IC501	XA0239	IC	AK2341	
QS01	XT0095	Tanistor	2SC4081 T106R	
RS01	RK3040	Chip R.	ERJ3GSVJ152V	
RS02	RK3022	Chip R.	ERJ3GSVJ470V	
RS03	RK3067	Chip R.	ERJ3GSVJ274V	
RS04	RK3038	Chip R.	ERJ3GSVJ102V	
RS05	RK3051	Chip R.	ERJ3GSVJ123V	
RS06	RK3089	Chip R.	ERJ3GSVJ912V	
RS07	RK3067	Chip R.	ERJ3GSVJ274V	
RS08	RK3047	Chip R.	ERJ3GSVJ662V	
RS09	RK3068	Chip R.	ERJ3GSVJ334V	
RS10	RK3054	Chip R.	ERJ3GSVJ223V	
RS11	RK3055	Chip R.	ERJ3GSVJ223V	
RS12	RK3066	Chip R.	ERJ3GSVJ273V	
RS13	RK3074	Chip R.	ERJ3GSVJ105V	
RS14	RK3066	Chip R.	ERJ3GSVJ224V	
RS15	RK3048	Chip R.	ERJ3GSVJ662V	
VR501	RH0106	Trim. Pot	EVN1YSX50B04	
XS01	XC0057	Crystal	DS-MA-T 3.6864MHz	
	HK0305	Carton		
	HP0029	Protection Bag		
	PG0057	Rubber Cushion		
	UP0243	P.C.B.		
	YZ0042	Bond G17		
		Adhesion		
EHM35B				
C1	CC5029	Ceramic C.	XTE993KVA	
C2	CK0011	Ceramic C.	SC45-F1C104Z-A	
C3	CE0037	Electrolytic C	MS5 6.3V 100JF	
C4	CK0003	Ceramic C.	50V 102	
	XD0067	Diode	MA700	
R1	RDD031	Resistor	R20 1/4W 680Ω	
R2	RDD021	Resistor	R20 1/4W 180Ω	
R3	RDD039	Resistor	R20 1/4W 22KΩ	
R4	RDD039	Resistor	R20 1/4W 2.2KΩ	
R6	RDD040	Resistor	R20 1/4W 2.7KΩ	
S1	US0015	Switch	HSW0880-01-210	
S2	UU0009	Switch	EVO-QHJ04G	
S3	UU0009	Switch	EVO-QHJ04G	
S4	UM0002	Switch	Micro Switch SS-5	
	AS0142		Screw Set	
	DE0006		Stopper	
	EY0006	Microphone	WM-60AT	
	FG0045		Mic Rubber Cushion	
	HP0036		Protection Bag	
	KB0033		Rear Case	
	KM0071A		Front Case	
	NP0041		PTT Button	
	NP0042		Up Button	
	NP0043		Down Button	
	NS0003		Slide Knob	
	SC0004		PTT Spring	
	UE0051A		P.C.B.	
	UP0193		P.C.B.	
	UX0133	Wire	EMS-5	
EMH38A				
C1	CU8003	Chip C.	CC2012JF1E104Z	
C2	CU8035	Chip C.	C2012B1E393K	
C3	CU8003	Chip C.	C2012JF1E104Z	
C4	CU8012	Chip C.	C2012JB1H471KTA	
C5	CU8012	Chip C.	C2012JB1H471KTA	
C6	CU8016	Chip C.	C2012JB1H1102K	
C7	CE0315	Electrolytic C	ECEV1CA47P	
C8	CK0004	Ceramic C.	CK45-F1H102ZTA	
C10	CS0066	Chip Tantal	TMCSB1D25MTR	
FAR1	XB0001	Crystal	FARCA4C0395000K01R	
IC1	XA0042	IC	LF4087Z	
Q1	XT0031	Transistor	2SC2712Y TE85L	
R1	RK0062	Chip R.	ERJ6GEVJ473V	
R2	RK0062	Chip R.	ERJ6GEVJ473V	
R3	RK0035	Chip R.	ERJ6GEVJ102V	
R4	RK0039	Chip R.	ERJ6GEVJ222V	
R5	RK0039	Chip R.	ERJ6GEVJ222V	
R7	RK0039	Chip R.	ERJ6GEVJ222V	
R8	RK0021	Chip R.	ERJ6GEVJ272V	
R9	RK0040	Chip R.	ERJ6GEVJ181V	
R10	RK0069	Chip R.	ERJ6GEVJ104V	
R15	RK0025	Chip R.	ERJ6GEVJ331V	
R16	RK3001	Chip R.	ERJ3J5VJ000V	
R17	RK3001	Chip R.	ERJ3J5VJ000V	
SW1	UM0002	Switch	Micro Switch SS-5	
SW2	UU0009	Switch	EVO-QHJ04G	
SW3	UU0009	Switch	EVO-QHJ04G	
SW4	US0015	Switch	HSW0880-01-210	
VR1	RH0031	Trim. Pot	CVR-42A-103AW1D	
W1	MACK02AA	Wire	#28A02-020-02	
W2	MYCK02AA	Wire	#28V02-020-02	
EMH38A				
AJ0013		Screw	1M2 3-12FeCr	
AJ0025		Screw	1M3 5-10FeN	
AP0004		Screw	PM2-5FeCr	
AP0008		Screw	PM3-8FeCr	
DE0007			Stopper	
EY0006		Microphone	WM-60AT	
FG0045			Mic Rubber Cushion	
FG0055			Rubber Switch	
HP0036			Protection Bag	
KB0033			Rear Case	
KM0153			Front Case	
NP0041			PTT Button	
NP0042			Up Button	
NP0043			Down Button	
NS0003			Slide Switch	
SC0004			PTT Spring	
TT1002		Tube	1.0x11mm	
UE0125A			Curt Code EMS3	
UP0183B			P.C.B.	

The version is indicated as follows:
 0: TE/EZ/EM/TA
 1: TE
 2: TEZ
 None: all models

VCO Unit

SP Unit / E119U / Mechanical Parts / Others / Packing

Ref. No.	Parts No.	Description	Parts Name	Ver.
C301	CU	Chip C.	C1608CH1H	
C302	CU	Chip C.	C1608CH1H	
C303	CU3035	Chip C.	C1608JB1H102KTA	
C304	CU3035	Chip C.	C1608JB1H102KTA	
C305	CU3035	Chip C.	C1608JB1H102KTA	
C306	CU3047	Chip C.	C1608JB1H103KTA	
C307	CU3035	Chip C.	C1608JB1H102KTA	
C308	CU3035	Chip C.	C1608JB1H102KTA	
C309	CU3043	Chip C.	C1608JB1H472KTA	
C310	CU3043	Chip C.	C1608JB1H472KTA	
C311	CU3022	Chip C.	TMCMCA1C225MTR	
C312	CU3022	Chip C.	TMCMCA1C225MTR	
C313	CU3035	Chip C.	C1608JB1H102KTA	
C314	CU3043	Chip C.	C1608JB1H472KTA	
C315	CU3004	Chip C.	C1608CH1H030CTA	0, 1
C316	CU3002	Chip C.	C1608CH1H102CTA	2
C317	CU30217	Chip C.	TMCMC1A226MTR	
C318	CU3003	Chip C.	C1608CH1H020CTA	
C319	CU3035	Chip C.	C1608JB1H102KTA	
C320	CU3015	Chip C.	C1608CH1H220LTA	
C321	CU3031	Chip C.	C1608JB1H471KTA	
C322	CU3035	Chip C.	C1608JB1H102KTA	
C323	CU3015	Chip C.	C1608CH1H220LTA	
C324	CU3035	Chip C.	C1608JB1H102KTA	
C325	CU3035	Chip C.	C1608JB1H102KTA	
C326	CU3035	Chip C.	C1608JB1H102KTA	
C327	CU3035	Chip C.	C1608JB1H102KTA	
C328	CU3035	Chip C.	C1608JB1H102KTA	
C329	CU3035	Chip C.	C1608JB1H102KTA	
C330	CU3035	Chip C.	C1608JB1H102KTA	
C331	CU3043	Chip C.	C1608JB1H472KTA	0
C332	CU3001	Chip C.	C1608CH1H050CTA	1, 2
CN301	UE0188	Connector	B9P-BC-2	0
CN302	UE0185	Connector	B6P-BC-2	0
D301	XD0132	Diode	1SV215 TPH4	1, 2
D302	XD0132	Diode	1SV215 TPH4	1, 2
D303	XD0130	Diode	DA204U 1T06	0
D304	XD0132	Diode	1SV215 TPH4	1, 2
IC301	XA0235	IC	M56760FP	0
L302	QA0067	Coil	QA0067	0
L303	OC000	Coil	NL322522T-	0
L304	OC000	Coil	NL322522T-3R3M	0
L305	OC0045	Coil	NL322522T-3R3M	0
Q301	XE0010	FET	29K508K62-T2B	0
Q302	XT0111	Transistor	25CA4081LN 1T06S	0

Ref. No.	Parts No.	Description	Parts Name	Ver.
Q303	XT0111	Transistor	25CA4081LN 1T06S	0
Q304	XT0096	Transistor	25CA4099T 106N	0
Q305	XU0060	Transistor	25CA4099T 106N	0
Q306	XU0060	Transistor	UMC27R	0
R301	RK3022	Chip R.	ERJ3GSYJ470V	1, 2
R302	RK3034	Chip R.	ERJ3GSYJ471V	1, 2
R303	RK3034	Chip R.	ERJ3GSYJ471V	1, 2
R304	RK3046	Chip R.	ERJ3GSYJ472V	1, 2
R305	RK3038	Chip R.	ERJ3GSYJ472V	1, 2
R306	RK3046	Chip R.	ERJ3GSYJ472V	1, 2
R307	RK3046	Chip R.	ERJ3GSYJ472V	1, 2
R308	RK3046	Chip R.	ERJ3GSYJ472V	1, 2
R309	RK3046	Chip R.	ERJ3GSYJ472V	1, 2
R310	RK3040	Chip R.	ERJ3GSYJ472V	1, 2
R311	RK3044	Chip R.	ERJ3GSYJ473V	1, 2
R312	RK3026	Chip R.	ERJ3GSYJ101V	1, 2
R313	RK3044	Chip R.	ERJ3GSYJ332V	1, 2
R314	RK3026	Chip R.	ERJ3GSYJ101V	1, 2
R315	RK3050	Chip R.	ERJ3GSYJ103V	1, 2
R316	RK3026	Chip R.	ERJ3GSYJ223V	1, 2
R317	RK3023	Chip R.	ERJ3GSYJ60V	1, 2
R318	RK3050	Chip R.	ERJ3GSYJ220V	1, 2
R319	RK3038	Chip R.	ERJ3GSYJ102V	1, 2
R320	RK3044	Chip R.	ERJ3GSYJ332V	1, 2
R321	RK3001	Chip R.	ERJ3GSYJ000V	1, 2
R322	RK3034	Chip R.	ERJ3GSYJ471V	1, 2
R323	RK3054	Chip R.	ERJ3GSYJ223V	1, 2
R324	RK3034	Chip R.	ERJ3GSYJ471V	1, 2
R325	RK3054	Chip R.	ERJ3GSYJ223V	1, 2
R326	RK3026	Chip R.	ERJ3GSYJ101V	1, 2
R327	RK3026	Chip R.	ERJ3GSYJ101V	1, 2
R328	RK3043	Chip R.	ERJ3GSYJ272V	1, 2
R329	RK3026	Chip R.	ERJ3GSYJ101V	1, 2
R330	RK3038	Chip R.	ERJ3GSYJ102V	1, 2
R331	RK3049	Chip R.	ERJ3GSYJ281V	1, 2
R332	RK3050	Chip R.	ERJ3GSYJ103V	1, 2
R333	RK3050	Chip R.	ERJ3GSYJ103V	1, 2
R334	RK3066	Chip R.	ERJ3GSYJ224V	1, 2
	TS0081	Case	VCO Case	1, 2

Ref. No.	Parts No.	Description	Parts Name	Ver.
SP Unit				
	ES007	Speaker	VS-57-0814-1.5W	
	FG0040	Speaker Cushion	Speaker Cushion	
	UX1047	Wire	Wire E119U	
E119U				
C401	CU3035	Chip C	C1608JB1H102KTA	
IC401	XA0367	IC	AT24C08-10SI-2.7	
R401	RK3038	Chip R	ERJ3GSYJ102V	
R402	RK3038	Chip R	ERJ3GSYJ102V	
FG0057	UX1049	Cushion	Wife E119U	
Mechanical Parts				
ADD0010		Screw	D3+8FANI	
A00014		Screw	B2+6+8F6BG	
A00017		Screw	2.6+6FANI2	
AK0003		Screw	0B2.6+6FANI1	
FF0015		Screw	Light Shield Cloth	
FF0021		Screw	Volume Tape	
FF0028		Screw	Cloth	
FF0030		Screw	Cloth	
FF0031		Screw	Cloth	
FG0138		Screw	Rubber/Cushion DR130	
FM0083		Screw	Washer	
ND0004		Screw	Spring Washer	
ND0004		Screw	Dial Cover	
NK0009B		Screw	Dial Knob	
NK0010		Screw	Volume Knob	
NP0066		Screw	Power Switch Knob	
KS0041B		Screw	Bottom Case	
KZ0001B		Screw	Front Panel DR130T	
KZ0004B		Screw	T/EZTA	
KZ0009A		Screw	Front Panel DR130T	
SS0052B		Screw	Top Case	
TS0080		Screw	Chassis	
		Screw	Front Shield Case	
		Screw	Speaker thim	
		Screw	E/E/A	

Ref. No.	Parts No.	Description	Parts Name	Ver.
Others				
EHM35B		Microphone	(E/EZ/E/A)	
EHM38A		Microphone	(E/EZ/E/A)	
DS0280		Specifications Card	TTA	
DS0280		Specifications Card	TTA	
DS0281		Specifications Card	E/E/A	
PH1009		Registration Card	EZ	
PR0157		Seal TA	T	
PR0161		Seal EA	T	
Packing				
AA0013		Screw	M5+20F6Cr	
AE0012		Screw	F33PM428BC	
AN0002		Nut	Nut M-5F6Cr	
AJ0003		Screw	M5+20F6Cr	
AZ0009		Washer	Spring SW-5F6Cr	
AZ0010		Fuse	W-5F6Cr	
EF0005		Fuse	FBG015A	
FM0078		Fuse	Bracket	
FM0079		Fuse	Spanner	
HH0042		Cushion	Cushion DR130	
HK0306B		Cushion	Item Carton DR130	
HK0308		Cushion	Item Carton DR130	
HM0119		Item Carton	E/E/A/EZ	
HP0006		(Screw set)	Item Carton	
HP0009		(Code)	Protection Bag	
HP0016		(Code)	Protection Bag	
HP0028		(Instr. card)	Protection Bag	
HP0037		(Bracket)	Protection Bag	
HP0035		(Radio)	Protection Bag	
HU0048		Fixture (A)	Fixture (A) DR130 TTA	
HU0048		Fixture (B)	Fixture (B) DR130 TTA	
KZ0003		Button Cover	Button Cover	
PK0047		Schematic Diagram	Schematic Diagram	
PR0215		Seal EZ	Seal EZ	
PS0181		Instruction Card	Instruction Card	
PT0004A		(TTA/E/T/EZ/EZ)	(TTA/E/T/EZ/EZ)	
UA0038		Lot Number Seal	Lot Number Seal	
YZ0118		R-82-0.2M Resistor 15A	R-82-0.2M Resistor 15A	
YZ0121		Tape 50mm	Tape 50mm	
		Tape 10mm	Tape 10mm	

The version is indicated as follows:

- 0: T/EZ/E/A/T/A
 - 1: TEZ
 - 2: TEZ
- Note: all models

VCO Unit

Ref. No.	Parts No.	Description	Parts Name	Ver.
C301	CU	Chip C.	C1608CH1H JTA	
C302	CU	Chip C.	C1608CH1H JTA	
C303	CU3035	Chip C.	C1608JB1H102KTA	
C304	CU3063	Chip Tantal	TMCSA1V104MTR	
C305	CU3035	Chip C.	C1608JB1H102KTA	
C306	CU3047	Chip C.	C1608JB1H103KTA	
C307	CU3045	Chip C.	C1608JB1H102KTA	
C308	CU30235	Chip Tantal	TMCSA1V334MTR	
C309	CU3043	Chip C.	C1608JB1H472KTA	
C310	CU3043	Chip C.	C1608JB1H472KTA	
C311	CU30220	Chip Tantal	TMOMA1C225MTR	
C312	CU30220	Chip Tantal	TMOMA1C225MTR	
C313	CU3035	Chip C.	C1608JB1H102KTA	
C314	CU3043	Chip C.	C1608JB1H472KTA	
C315	CU3004	Chip C.	C1608CH1H030CTA	0, 1
C316	CU3002	Chip C.	C1608CH1H010CTA	2
C317	CU3035	Chip C.	C1608JB1H102KTA	
C318	CU3003	Chip Tantal	TMOMC1A226MTR	
C319	CU3035	Chip C.	C1608JB1H102KTA	
C320	CU3015	Chip C.	C1608CH1H220LTA	
C321	CU3031	Chip C.	C1608JB1H471KTA	
C322	CU3035	Chip C.	C1608JB1H102KTA	
C323	CU3015	Chip C.	C1608CH1H220LTA	
C324	CU3035	Chip C.	C1608JB1H102KTA	
C325	CU3035	Chip C.	C1608JB1H102KTA	
C326	CU3059	Chip C.	C1608JF1E104ZTA	
C328	CU3035	Chip C.	C1608JB1H102KTA	
C329	CU3035	Chip C.	C1608JB1H102KTA	
C330	CU3035	Chip C.	C1608JB1H102KTA	
C331	CU3043	Chip C.	C1608JB1H472KTA	0
C332	CU3001	Chip C.	C1608CH1H0RSC7A	1, 2
CN301	UE0188	Connector	B9P-BC-2	
CN302	UE0185	Connector	B9P-BC-2	
D301	XD0132	Diode	1SV215 7PH4	
D302	XD0132	Diode	1SV215 7PH4	
D303	XD0130	Diode	DA204U T106	
D304	XD0132	Diode	1SV215 7PH4	0
IC301	XAD235	IC	M56760FP	1, 2
L302	QA0067	Coil	QA0067	
L303	QC000	Coil	NL322522T-	
L304	QC000	Coil	NL322522T-3R3M	
L305	QC0045	Coil	NL322522T-3R3M	
Q301	XE0010	FET	2SK508K52-72B	
Q302	XT0111	Transistor	2SC4081LN T106S	

SP Unit / E119u / Mechanical Parts / Others / Packing

Ref. No.	Parts No.	Description	Parts Name	Ver.
C303	XT0111	Transistor	2SC4081LN T106S	
Q304	XT0096	Transistor	2SC4099T 106N	
Q305	XT0096	Transistor	2SC4099T 106N	
Q306	XU0060	Transistor	UMC2TR	
R301	RK3022	Chip R.	ERJ3GSYJ470V	
R302	RK3034	Chip R.	ERJ3GSYJ471V	
R303	RK3034	Chip R.	ERJ3GSYJ471V	
R306	RK3046	Chip R.	ERJ3GSYJ472V	
R307	RK3058	Chip R.	ERJ3GSYJ473V	
R308	RK3046	Chip R.	ERJ3GSYJ472V	
R309	RK3046	Chip R.	ERJ3GSYJ472V	
R310	RK3040	Chip R.	ERJ3GSYJ152V	
R311	RK3044	Chip R.	ERJ3GSYJ322V	
R312	RK3026	Chip R.	ERJ3GSYJ101V	
R313	RK3044	Chip R.	ERJ3GSYJ322V	
R314	RK3022	Chip R.	ERJ3GSYJ103V	
R315	RK3054	Chip R.	ERJ3GSYJ223V	0
R316	RK3026	Chip R.	ERJ3GSYJ560V	1, 2
R317	RK3023	Chip R.	ERJ3GSYJ101V	0
R318	RK3018	Chip R.	ERJ3GSYJ220V	1, 2
R319	RK3058	Chip R.	ERJ3GSYJ103V	
R320	RK3044	Chip R.	ERJ3GSYJ102V	
R321	RK3004	Chip R.	ERJ3GSYJ000V	
R322	RK3034	Chip R.	ERJ3GSYJ471V	
R323	RK3054	Chip R.	ERJ3GSYJ223V	
R324	RK3034	Chip R.	ERJ3GSYJ471V	
R325	RK3054	Chip R.	ERJ3GSYJ223V	
R326	RK3026	Chip R.	ERJ3GSYJ101V	
R327	RK3026	Chip R.	ERJ3GSYJ101V	
R328	RK3043	Chip R.	ERJ3GSYJ272V	
R329	RK3026	Chip R.	ERJ3GSYJ101V	
R331	RK3038	Chip R.	ERJ3GSYJ102V	
R332	RK3049	Chip R.	ERJ3GSYJ821V	0
R333	RK3050	Chip R.	ERJ3GSYJ103V	1
R334	RK3056	Chip R.	ERJ3GSYJ224V	2
	TS0081	Case	VCO Case	0

Ref. No.	Parts No.	Description	Parts Name	Ver.
AD0010	AE0014	Screw	D3+8FenI	
AD0017	AK0003	Screw	B2.6+8FenI2	
AE0003	AK0003	Screw	082.6+6FenI1	
FF0015	FF0021	Light Shield Cloth	Volume Tape	
FF0028	FF0030	Cloth	Cloth	
FF0031	FF0031	Cloth	Cloth	
FF0138	FF0138	Rubber Cushion	DR130	
FM0083	ND0004	Washer	Spring Washer	
NK0008B	NK0010	Dial Knob	Dial Knob	
NK0010	NK0010	Volume Knob	Volume Knob	
NK0035	NK0035	Power Switch Knob	Power Switch Knob	
KZ0004B	KZ0009A	Front Panel	DR130T	
SS0052B	SS0052B	Chassis	Top Case	
TS0080	TS0080	Front Shield Case	Front Panel DR130T	

Ref. No.	Parts No.	Description	Parts Name	Ver.
EHK35B	EHK35A	Microphone	(E/EZ/E)A	T/A
DS0260	DS0260	Specifications Card	Specifications Card	T/A
DS0280	DS0280	Specifications Card	Specifications Card	E/E
PH0009	PH0157	Registration Card	Registration Card	EZ
PR0157	PR0157	Seal TA	Seal TA	T

Ref. No.	Parts No.	Description	Parts Name	Ver.
AA0013	AE0012	Screw	M5-20F-eCr	
AA0002	AN0002	Nut	Fa3PMx8BC	
AZ0009	AZ0010	Washer	M5-20F-eCr	
EF0005	EF0005	Fuse	Spring SW-5F-eCr	
FM0078	FM0078	Bracket	W-5F-eCr	
FM0079	FM0079	Spanner	FGB015A	
HK0306	HK0306	Item Carton	DR130	
HM0119	HM0119	Item Carton	DR130	T/A
HP0006	HP0006	Protection Bag	Item Carton	
HP0016	HP0016	Protection Bag	Protection Bag	
HP0028	HP0028	Protection Bag	Protection Bag	
HP0037	HP0037	Protection Bag	Protection Bag	
HP0035	HP0035	Protection Bag	Protection Bag	
HU00	HU00	Fixture (A)	DR130	
KZ0003	KZ0003	Fixture (B)	DR130	
PK0047	PK0047	Button Cover	Button Cover	
PR0215	PR0215	Schematic Diagram	Schematic Diagram	
PS0181	PS0181	Seal EZ	Seal EZ	
PT0004A	PT0004A	Instruction Card	Instruction Card	E/E
UA0038	UA0038	Instruction Card	(T/A/E)/E/EZ	
YZ0118	YZ0118	Lot Number Seal	Lot Number Seal	
YZ0121	YZ0121	R-52.0x3w Resistor 15A	R-52.0x3w Resistor 15A	
		Tape 50mm	Tape 50mm	
		Tape 10mm	Tape 10mm	

The version is indicated as follows:
 1: TE1
 2: TE2
 None: all models

Ref. No.	Parts No.	Description	Parts Name	Ver.
C201	CU3035	Chp C.	C1608JB1H102KTA	
C202	CU3035	Chp C.	C1608JB1H102KTA	
C203	CU3035	Chp C.	C1608JB1H102KTA	
C204	CU3035	Chp C.	C1608JB1H102KTA	
C205	CU3101	Chp C.	C1608JB1C473KTA	
C206	CE0312	Electronic C	ECEV1CA100R	
C207	CU3035	Chp C.	C1608JB1H102KTA	
C208	CS2032	Chp Tantal	TMCM1V474MTR	
C209	CU3035	Chp C.	C1608JB1H102KTA	
C210	CU3035	Chp C.	C1608JB1H102KTA	
C211	CU3035	Chp C.	C1608JB1H102KTA	
C212	CU3035	Chp C.	C1608JB1H102KTA	
C213	CU3035	Chp C.	C1608JB1H102KTA	
C215	CU3035	Chp C.	C1608JB1H102KTA	
C216	CU3059	Chp C.	C1608JFE104ZTA	
C217	CU3051	Chp C.	C1608JFE104ZTA	
C218	CU3059	Chp C.	C1608JFE104ZTA	
C219	CU3059	Chp C.	C1608JFE104ZTA	
C220	CU3059	Chp C.	C1608JFE104ZTA	
C221	CU3023	Chp C.	C1608CH1H101JTA	
C222	CU3023	Chp C.	C1608CH1H101JTA	
C223	CU3051	Chp C.	C1608CH1H101JTA	
C225	CU3023	Chp C.	C1608CH1H101JTA	
C226	CU3023	Chp C.	C1608CH1H101JTA	
C227	CU3035	Chp C.	C1608JB1H102KTA	
C229	GS2029	Chp Tantal	TMCMBOU108MTR	
C230	CU3035	Chp C.	C1608JB1H102KTA	
C231	CE0312	Electronic C	ECEV1CA100R	
C234	CU3035	Chp C.	C1608JB1H102KTA	
C235	CU3047	Chp C.	C1608JB1H103KTA	
C236	CU3031	Chp C.	C1608JH1H471KTA	
C237	CU3035	Chp C.	C1608JB1H102KTA	
C238	CU3035	Chp C.	C1608JB1H102KTA	
C239	CU3023	Chp C.	C1608CH1H101JTA	
C240	CU3023	Chp C.	C1608CH1H101JTA	
C241	CU3023	Chp C.	C1608CH1H101JTA	
C242	CU3035	Chp C.	C1608JB1H102KTA	
C243	GS2037	Chp Tantal	TMCM1A475MTR	
C244	CU3051	Chp C.	C1608JBE1E23KTA	
C245	GS2037	Chp Tantal	TMCM1A475MTR	
C246	CU3035	Chp C.	C1608JB1H102KTA	
C247	CU3035	Chp C.	C1608JB1H102KTA	
C248	CU3085	Chp C.	C1608CH1H300JTA	
C249	GS2018	Chp Tantal	TMCM1A476MTR	
C250	CU3043	Chp C.	C1608JB1H472KTA	
C251	CU3043	Chp C.	C1608JB1H472KTA	
C252	CU3059	Chp C.	C1608JFE104ZTA	
EN201	UE0170	Connector	BB9-ZR	
EN202	UE0192	Connector	11R-JE	
EN203	UE0192	Connector	11R-JE	
EN204	UE0185	Connector	BA8-ZR	

Ref. No.	Parts No.	Description	Parts Name	Ver.
D201	X00255	Diode	MA8110H	
D202	X00127	Diode	MA704WA TX	
D203	X00230	Diode	DAN202U T106	
D204	X00230	Diode	DAN202U T106	
D205	X10029	LED	TLSG264	
IC201	XA0289	IC	M37410M6H	
IC202	XA0384	IC	A124C02N-10S1:2.7	
IC205	XA0238	IC	AN78L05M	
IC206	XA0208	IC	RH5VA45AA-T1	
IC207	XA0198	IC	RH5VA92AA-T1	
IC209	XA0367	IC	A124C06-10S1:2.7	
IC209	XA0236	IC	BU4052BF	EZ
JK201	UE0035	Connector	FM214-8SMPY	
PL201	EP0003	Lamp	BO031-30403A	
PL202	EP0003	Lamp	BO031-30403A	
Q201	XT0095	Transistor	2SC4081 T106R	
Q202	XT0113	Transistor	2SC8283Y TE12L	
Q203	XU0029	Transistor	DTG14YU T106	
Q204	XU0145	Transistor	DTG143TU T106	
Q205	XU0112	Transistor	DTA114YU T106	
Q206	XU0112	Transistor	DTA114YU T106	
Q208	XU0060	Transistor	UMC27R	
Q209	XU0112	Transistor	DTA114YU T106	
R201	RK3082	Chp. R	ERJ3G5YJ104V	
R202	RK3082	Chp. R	ERJ3G5YJ153V	
R203	RK3072	Chp. R	ERJ3G5YJ684V	
R204	RK3082	Chp. R	ERJ3G5YJ153V	
R205	RK3043	Chp. R	ERJ3G5YJ272V	
R206	RK3026	Chp. R	ERJ3G5YJ101V	
R207	RK3038	Chp. R	ERJ3G5YJ102V	
R208	RK3026	Chp. R	ERJ3G5YJ101V	
R209	RK3074	Chp. R	ERJ3G5YJ06V	
R210	RK3082	Chp. R	ERJ3G5YJ106V	
R211	RK3082	Chp. R	ERJ3G5YJ153V	
R212	RK3082	Chp. R	ERJ3G5YJ104V	
R213	RK3070	Chp. R	ERJ3G5YJ474V	
R214	RK3088	Chp. R	ERJ3G5YJ473V	
R215	RK3102	Chp. R	ERJ3G5YJ103V	
R216	RK3050	Chp. R	ERJ3G5YJ103V	
R217	RK3102	Chp. R	ERJ3G5YJ203V	
R218	RK3050	Chp. R	ERJ3G5YJ203V	
R219	RK3102	Chp. R	ERJ3G5YJ203V	
R220	RK3050	Chp. R	ERJ3G5YJ103V	
R221	RK3102	Chp. R	ERJ3G5YJ203V	
R222	RK3102	Chp. R	ERJ3G5YJ203V	
R223	RK3058	Chp. R	ERJ3G5YJ473V	

Ref. No.	Parts No.	Description	Parts Name	Ver.
R224	RK3055	Chp. R	ERJ3G5YJ273V	
R225	RK3046	Chp. R	ERJ3G5YJ472V	
R226	RK3070	Chp. R	ERJ3G5YJ474V	
R227	RK3038	Chp. R	ERJ3G5YJ102V	
R228	RK3038	Chp. R	ERJ3G5YJ102V	
R229	RK3038	Chp. R	ERJ3G5YJ102V	
R230	RK3038	Chp. R	ERJ3G5YJ102V	
R231	RK3038	Chp. R	ERJ3G5YJ102V	
R232	RK3050	Chp. R	ERJ3G5YJ103V	
R233	RK3038	Chp. R	ERJ3G5YJ102V	
R234	RK3038	Chp. R	ERJ3G5YJ102V	
R235	RK3038	Chp. R	ERJ3G5YJ102V	
R236	RK3074	Chp. R	ERJ3G5YJ105V	
R238	RK3038	Chp. R	ERJ3G5YJ102V	
R239	RK3082	Chp. R	ERJ3G5YJ104V	
R241	RK3082	Chp. R	ERJ3G5YJ104V	
R242	RK3082	Chp. R	ERJ3G5YJ104V	
R243	RK3082	Chp. R	ERJ3G5YJ104V	
R244	RK3082	Chp. R	ERJ3G5YJ104V	
R247	RK3050	Chp. R	ERJ3G5YJ103V	
R248	RK3050	Chp. R	ERJ3G5YJ103V	
R249	RK3050	Chp. R	ERJ3G5YJ103V	
R250	RK3046	Chp. R	ERJ3G5YJ472V	
R251	RK3046	Chp. R	ERJ3G5YJ472V	
R252	RK3046	Chp. R	ERJ3G5YJ472V	
R253	RK3038	Chp. R	ERJ3G5YJ102V	
R254	RK3038	Chp. R	ERJ3G5YJ102V	
R255	RK0014	Chp. R	ERJ6GEYJ680V	
R256	RK3042	Chp. R	ERJ3G5YJ222V	
R257	RK3001	Chp. R	ERJ3G5YJ000V	
R258	RK3046	Chp. R	ERJ3G5YJ472V	
R259	RK3054	Chp. R	ERJ3G5YJ223V	
R260	RK3038	Chp. R	ERJ3G5YJ102V	
R261	RK3038	Chp. R	ERJ3G5YJ102V	
R262	RK3038	Chp. R	ERJ3G5YJ102V	
R263	RK3038	Chp. R	ERJ3G5YJ102V	
R264	RK3038	Chp. R	ERJ3G5YJ102V	
R265	RK3050	Chp. R	ERJ3G5YJ103V	
R266	RK3038	Chp. R	ERJ3G5YJ102V	
R267	RK3038	Chp. R	ERJ3G5YJ102V	
R268	RK3038	Chp. R	ERJ3G5YJ102V	
R269	RK3054	Chp. R	ERJ3G5YJ223V	
R270	RK3001	Chp. R	ERJ3G5YJ000V	
R271	RK3082	Chp. R	ERJ3G5YJ104V	
R272	RK3082	Chp. R	ERJ3G5YJ104V	
R273	RK3058	Chp. R	ERJ3G5YJ473V	
R274	RK3038	Chp. R	ERJ3G5YJ473V	
R275	RK3082	Chp. R	ERJ3G5YJ102V	
R276	RK3034	Chp. R	ERJ3G5YJ471V	
R277	RK3034	Chp. R	ERJ3G5YJ471V	
R279	RK3001	Chp. R	ERJ3G5YJ000V	
R280	RK3038	Chp. R	ERJ3G5YJ102V	
R281	RK3038	Chp. R	ERJ3G5YJ102V	
R284	-	-	-	
R287	RK3001	Chp. R	ERJ3G5YJ000V	EEA

Ref. No.	Parts No.	Description	Parts Name	Ver.
R288	RK3052	Chp. R	ERJ3G5YJ153V	
R289	RK3052	Chp. R	ERJ3G5YJ153V	
R290	RK3052	Chp. R	ERJ3G5YJ153V	
R291	RK3052	Chp. R	ERJ3G5YJ153V	
R292	RK3052	Chp. R	ERJ3G5YJ153V	
R293	RK3050	Chp. R	ERJ3G5YJ103V	
R294	RK3001	Chp. R	ERJ3G5YJ000V	0
R295	RK3001	Chp. R	ERJ3G5YJ000V	1.2
R296	-	-	-	0
R297	RK3038	Chp. R	ERJ3G5YJ102V	1.2
S201	UU0015	Switch	SKOD-901	EZ
S202	UU0015	Switch	SKOD-901	
S203	UU0015	Switch	SKOD-901	
S204	UU0015	Switch	SKOD-901	
S205	UU0015	Switch	SKOD-901	
S206	UU0015	Switch	SKOD-901	
S207	UU0015	Switch	SKOD-901	
S209	UU0015	Switch	SKOD-901	
S210	UH0002	Switch	ESB-64801	
VR201	RK0009	Trim. Pot	EVU-FA2F20B14	
VR202	RK0009	Trim. Pot	EVU-FA2F20B14	
W1	MACL04AA		#30 Blue 02-040-02	
W2	MRCL04AA		T/E/EZ	EZ
X203	XK0045	Crystal	DSMT3.58MHz18P	
DG0013	FG0133	Crystal	LCD Light	
FP0069	FP0069	Crystal Sheet	LCD Rubber Connector	
TL0008	TL0008	Tube	LCD Holder	
TT1002	TT1002	Tube	Mic Connector Spacer	
YZ0042	YZ0042	Adhesion	Crystal Sheet	

The version is indicated as follows:
0: T/E/EZ/JTA
1: TE1
2: TE2
None: all models

Ref. No.	Parts No.	Description	Parts Name	Ver.
JK2	UE0190	Connector	ANT Cable	
JK4	U00024	Connector	HSJ1403-01-010	
L1	OC0063	Coil	NL322522T-047M	
L2	OC0063	Coil	NL322522T-047M	
L3	OC0048	Coil	NL322522T-100K	
L4	QA0084	Coil		0, 1
L5	QA0100	Coil		2
L6	QA0084	Coil		0, 1
L7	QA0100	Coil		2
L8	OC0067	Coil	NL322522T-R10M	
L9	OC0063	Coil	NL322522T-047M	
L10	OKA45E	Coil	MR3.0 4.5T 0.8	
L11	OKA45E	Coil	MR3.0 4.5T 0.8	
L12	OKA45D	Coil	MR3.0 4.5T 0.8	0, 1
L13	OKA45D	Coil	MR3.0 9.5T 0.6	2
L14	QA0084	Coil		0, 1
L15	QA0100	Coil		2
L16	OKA35D	Coil	MR3.0 3.5T 0.6	
M106	SD0034		Earth Spring DR130	
Q1	XE0012	FET	3SK131V11, 12T1	
Q2	XE0012	FET	3SK131V11, 12T1	
Q3	XT0094	Transistor	2SA1576 T106R	
Q4	XT0096	Transistor	2SC4081 T106R	
Q5	XT0095	Transistor	2SC4081 T106R	
Q6	XT0095	Transistor	2SC4081 T106R	
Q7	XT0061	Transistor	2SB1132 T100N	
Q8	XT0096	Transistor	2SC4099 T106R	
Q9	XT0037	Transistor	2SC2412K T146R	
Q10	XU0131	Transistor	DT0144EU T106	
Q11	XU0148	Transistor	DT0144EU T106	
Q12	XU0112	Transistor	DTA114YU T106	
Q13	XT0112	Transistor	2SB1229F	
Q14	XT0095	Transistor	2SC4081 T106R	
Q15	XT0084	Transistor	2SC2954-T1	
Q16	XT0095	Transistor	2SC4081 T106R	
Q17	XU0152	Transistor	UMCSTR	
Q18	XE0021	Transistor	2SK8800G TE95L	
Q19	XT0114	Transistor	2SC4403	
Q20	XT0030	Transistor	2SC3595-T1	
Q21	XT0099	Transistor	2SA1736V TE12L	
Q22	XT0095	Transistor	ZSC4081 T106R	
Q24	XU0131	Transistor	DT0144EU T106	
Q30	XU0148	Transistor	DT0144EU T106	
R1	RK0105	Chip R.	ERJ6GEY2R2V	
R2	RK2024	Chip R.	MCR60JLZHM471	
R3	RK3050	Chip R.	ERJ3GSYJ103V	
R4	RK3071	Chip R.	ERJ3GSYJ564V	
R5	RK3034	Chip R.	ERJ3GSYJ471V	
R6	RK3082	Chip R.	ERJ3GSYJ104V	
R7	RK3042	Chip R.	ERJ3GSYJ222V	
R8	RK3042	Chip R.	ERJ3GSYJ222V	
R9	RK3001	Chip R.	ERJ3GSYJ000V	
R10	RK3071	Chip R.	ERJ3GSYJ564V	
R11	RK3046	Chip R.	ERJ3GSYJ472V	
R12	RK3038	Chip R.	ERJ3GSYJ102V	
R13	RK3038	Chip R.	ERJ3GSYJ102V	
R14	RK3071	Chip R.	ERJ3GSYJ564V	
R15	RK3050	Chip R.	ERJ3GSYJ103V	
R16	RK4028	Chip R.	ERJ12YJ151	
R17	RK3057	Chip R.	ERJ3GSYJ222V	
R18	RK3042	Chip R.	ERJ3GSYJ222V	
R19	RK3060	Chip R.	ERJ3GSYJ893V	
R20	RK3060	Chip R.	ERJ3GSYJ893V	
R21	RK3051	Chip R.	ERJ3GSYJ123V	
R22	RK3050	Chip R.	ERJ3GSYJ103V	
R23	RK3050	Chip R.	ERJ3GSYJ103V	
R24	RK3050	Chip R.	ERJ3GSYJ103V	
R25	RK3047	Chip R.	ERJ3GSYJ562V	
R26	RK3026	Chip R.	ERJ3GSYJ101V	
R27	RK3038	Chip R.	ERJ3GSYJ102V	
R28	RK3038	Chip R.	ERJ3GSYJ102V	
R29	RK3058	Chip R.	ERJ3GSYJ473V	
R30	RK3045	Chip R.	ERJ3GSYJ222V	
R31	RK3054	Chip R.	ERJ3GSYJ392V	
R32	RK3057	Chip R.	ERJ3GSYJ393V	
R33	RK3038	Chip R.	ERJ3GSYJ102V	
R34	RK4018	Chip R.	ERJ12YJ220	
R35	RK3050	Chip R.	ERJ3GSYJ103V	
R36	RK3038	Chip R.	ERJ3GSYJ102V	
R37	RK3045	Chip R.	ERJ3GSYJ223V	
R38	RK3054	Chip R.	ERJ3GSYJ223V	
R39	RK3032	Chip R.	ERJ3GSYJ331V	
R40	RK3054	Chip R.	ERJ3GSYJ223V	
R41	RK3042	Chip R.	ERJ3GSYJ182V	
R42	RK3042	Chip R.	ERJ3GSYJ222V	
R43	RK3058	Chip R.	ERJ3GSYJ473V	
R44	RK3055	Chip R.	ERJ3GSYJ273V	
R45	RK3026	Chip R.	ERJ3GSYJ100V	0, 1
R46	RK3001	Chip R.	ERJ3GSYJ101V	2
R47	RK3082	Chip R.	ERJ3GSYJ000V	
R48	RK3026	Chip R.	ERJ3GSYJ101V	
R49	RK3038	Chip R.	ERJ3GSYJ101V	
R50	RK3071	Chip R.	ERJ3GSYJ564V	
R51	RK3054	Chip R.	ERJ3GSYJ223V	
R54	RK4034	Chip R.	ERJ12YJ471	
R55	RK3050	Chip R.	ERJ3GSYJ103V	
R56	RK3050	Chip R.	ERJ3GSYJ103V	
R57	RK3026	Chip R.	ERJ3GSYJ220V	0
R58	RK3038	Chip R.	ERJ3GSYJ101V	1, 2
R59	RK3053	Chip R.	ERJ3GSYJ102V	
R60	RK3034	Chip R.	ERJ3GSYJ183V	
R61	RK3038	Chip R.	ERJ3GSYJ471V	
R62	RK3054	Chip R.	ERJ3GSYJ102V	
R63	RK3032	Chip R.	ERJ3GSYJ223V	
R64	RK3042	Chip R.	ERJ3GSYJ331V	
R65	RK3026	Chip R.	ERJ3GSYJ101V	
R66	RK3050	Chip R.	ERJ3GSYJ103V	
R67	RK3026	Chip R.	ERJ3GSYJ101V	
R68	RK3030	Chip R.	ERJ3GSYJ221V	
R69	RK3050	Chip R.	ERJ3GSYJ103V	
R70	RK3051	Chip R.	ERJ3GSYJ123V	
R71	RK3026	Chip R.	ERJ3GSYJ101V	
R72	RK3052	Chip R.	ERJ3GSYJ153V	
R73	RK3052	Chip R.	ERJ3GSYJ153V	
R74	RK3052	Chip R.	ERJ3GSYJ153V	
R75	RK3052	Chip R.	ERJ3GSYJ153V	
R76	RK3026	Chip R.	ERJ3GSYJ101V	
R77	RK3050	Chip R.	ERJ3GSYJ103V	
R78	RK3026	Chip R.	ERJ3GSYJ101V	
R79	RK3038	Chip R.	ERJ3GSYJ102V	
R80	RK3050	Chip R.	ERJ3GSYJ103V	
R81	RK3052	Chip R.	ERJ3GSYJ153V	
R82	RK3038	Chip R.	ERJ3GSYJ102V	
R83	RK3022	Chip R.	ERJ3GSYJ470V	
R84	RK3034	Chip R.	ERJ3GSYJ471V	
R85	RK3043	Chip R.	ERJ3GSYJ272V	
R86	RK3045	Chip R.	ERJ3GSYJ392V	
R88	RK3014	Chip R.	ERJ3GSYJ100V	
R89	RK0028	Chip R.	ERJ6GSYJ102V	
R91	RK3001	Chip R.	ERJ3GSYJ000V	
R92	RK3038	Chip R.	ERJ3GSYJ102V	
R93	RK3062	Chip R.	ERJ3GSYJ104V	
R94	RK3050	Chip R.	ERJ3GSYJ103V	
R96	RK3071	Chip R.	ERJ3GSYJ564V	
R98	RK0069	Chip R.	ERJ6GSYJ104V	
R99	RK3052	Chip R.	ERJ3GSYJ153V	
R100	RK3044	Chip R.	ERJ3GSYJ332V	
R101	RK3052	Chip R.	ERJ6GSYJ153V	0
R102	RK0039	Chip R.	ERJ6GSYJ222V	1, 2
R103	RK3046	Chip R.	ERJ3GSYJ102V	0
R104	RK3026	Chip R.	ERJ3GSYJ101V	1, 2
R105	RK3050	Chip R.	ERJ3GSYJ103V	
R106	RK3042	Chip R.	ERJ3GSYJ101V	
R107	RK0001	Chip R.	ERJ6GSYJ100V	
R108	RK3043	Chip R.	ERJ3GSYJ272V	
R109	RK3062	Chip R.	ERJ3GSYJ104V	
R111	RK3001	Chip R.	ERJ3GSYJ000V	0
TH1	XS0012	Thermistor	TDS-C220DH	
TH2	XS0013	Thermistor	TDS-C2680DH	
TC1	CT0012	Trimmer	CTZ-10AW	
VR1	RH0106	Trim. Pot	EWMIYSK50B04	
VR2	RH0108	Trim. Pot	EWMIYSK50B14	
VR4	RH0080	Trim. Pot	MVR32HXBRM473	
VR5	RH0106	Trim. Pot	EWMIYSK50B04	
VR6	RH0061	Trim. Pot	MVR32HXBR N472	
X1	X00054	Crystal	X 48U-12.8MHz	
X2	XK0002	Discriminator	CDBM455C7	
X3	X00059	Crystal	X 48U-16.745MHz	
TS0092	TS0092		VCO Shield	
TT1001	TT1001	Tube	0.7 trim x 6	
TZ0049	TZ0049	Silicon Dumper	Silicon Dumper 49U	
TZ0056	TZ0056	Silicon Dumper	Silicon Dumper 49U	
YZ0001	YZ0001		Silicon Grease G746	

The version is indicated as follows:
 0: TFEZ/DATA
 1: TFEZ
 2: TFEZ
 None: all models

VERSION TABLE

1) CPU UNIT

	W1	W2	W3	W4	R284	R294	R295	R296	R297	CN204	IC208
T	JP	-	-	-	-	0	0	-	-	-	-
E	JP	JP	-	-	0	0	0	-	-	-	-
EZ	JP	JP	-	-	-	0	0	1K	1K	0	AT24C08-10SI-2.7
EA	-	-	-	-	0	0	0	-	-	-	-
TA	-	-	-	-	-	0	0	-	-	-	-
TE1	-	-	JP	JP	-	-	-	-	-	-	-
TE2	-	-	JP	JP	-	-	-	-	-	-	-

2) MAIN UNIT

	C7	C43	C62	C63	C68	C71, 74, 75, 76	C112	C139	C149
T/E/EZ/EA/TA	1000p	33p	47p	10 μ /16V	15p	47p	22p	22p	-
TE1	-	33p	100p	100 μ /16V	22p	56p	22p	12p	0.01 μ F
TE2	-	47p	33p	100 μ /16V	10p	1000p	18p	10p	0.01 μ F

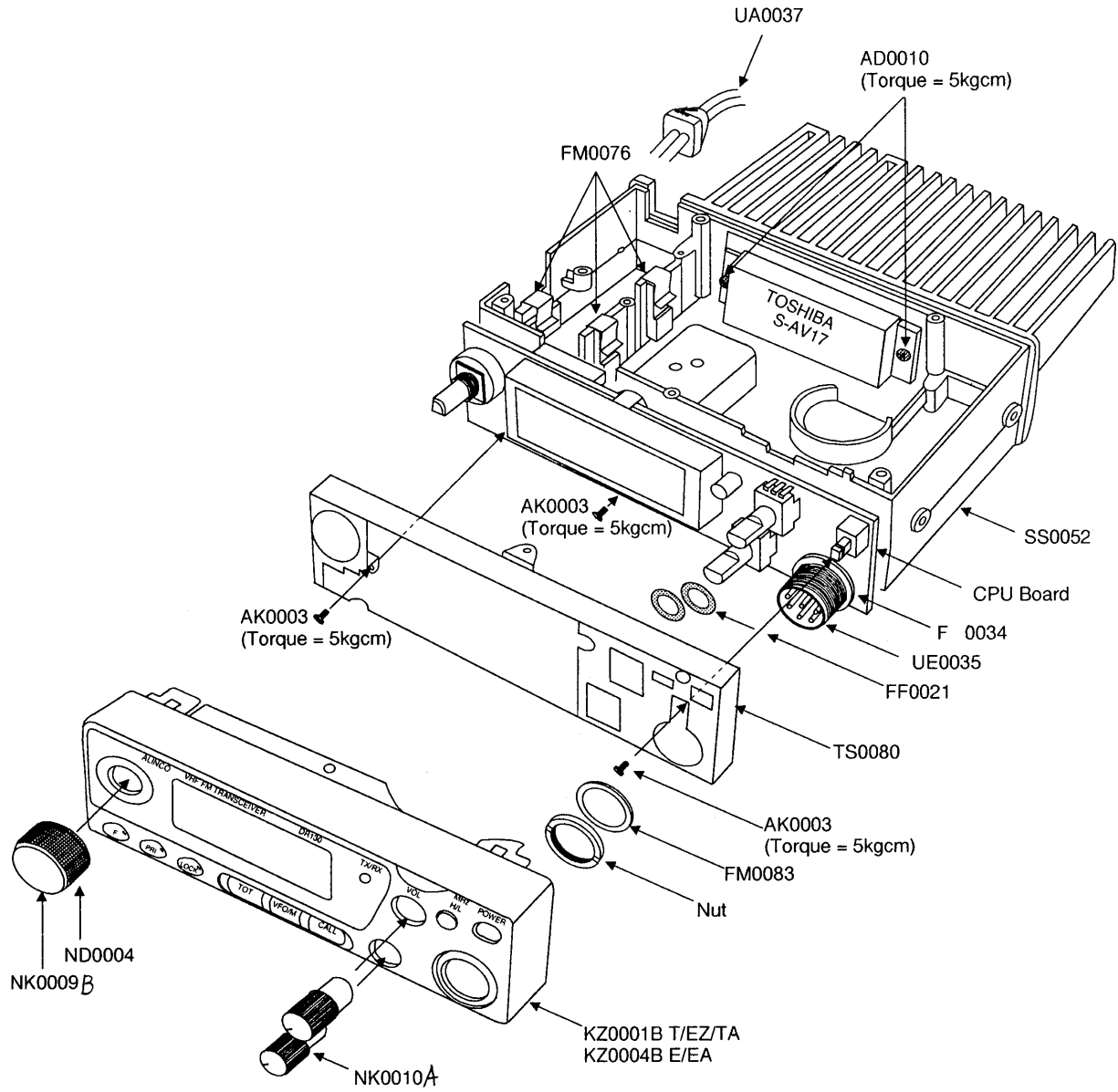
	C150, 153, 154, 155, 156	C151	C152	D4	D11, 12, 13, 16	D15	IC5	L4, 5, 6, 14
T/E/EZ/EA/TA	-	-	-	-	1SV215	1SS355	S-AV7	QA0084
TE1	1000p	10 μ /20V	10 μ /35V	1SS355	1SV215	1SS355	M67781L	QA0084
TE2	1000p	10 μ /20V	10 μ /35V	1SS355	1SV214	-	M67781H	QA0100

	L12	P3	R43	R57	R101	R102	R111	R121	R122	R130	W5
T/E/EZ/EA/TA	QKA35D	-	47k	22	15k	1k	0	-	-	47k	-
TE1	QKA35D	0	47k	100	2.2k	4.7k	-	-	220	-	JP
TE2	QKA45D	0	27k	100	2.2k	4.7k	-	0	220	-	JP

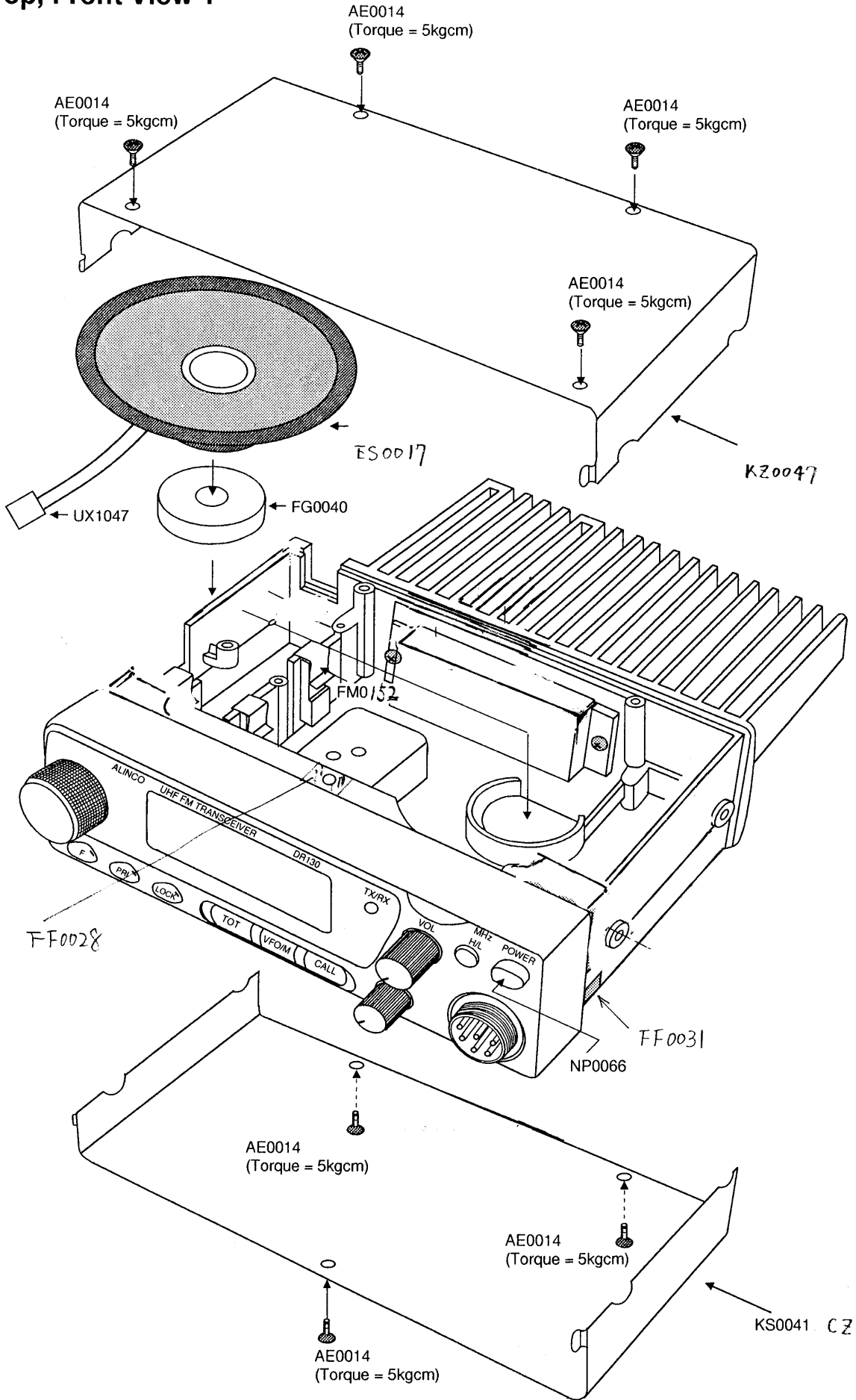
3) VCO UNIT

	C315	C331	C332	D304	R315	R316	R332	R333	R334
T/E/EZ/EA/TA	3p	-	-	-	10k	100	-	-	-
TE1	3p	4700p	0.5p	1SV215	22k	56	8.2k	8.2k	220k
TE2	1p	4700p	0.5p	1SV215	22k	56	10k	8.2k	220k

4) Top, Front View 2

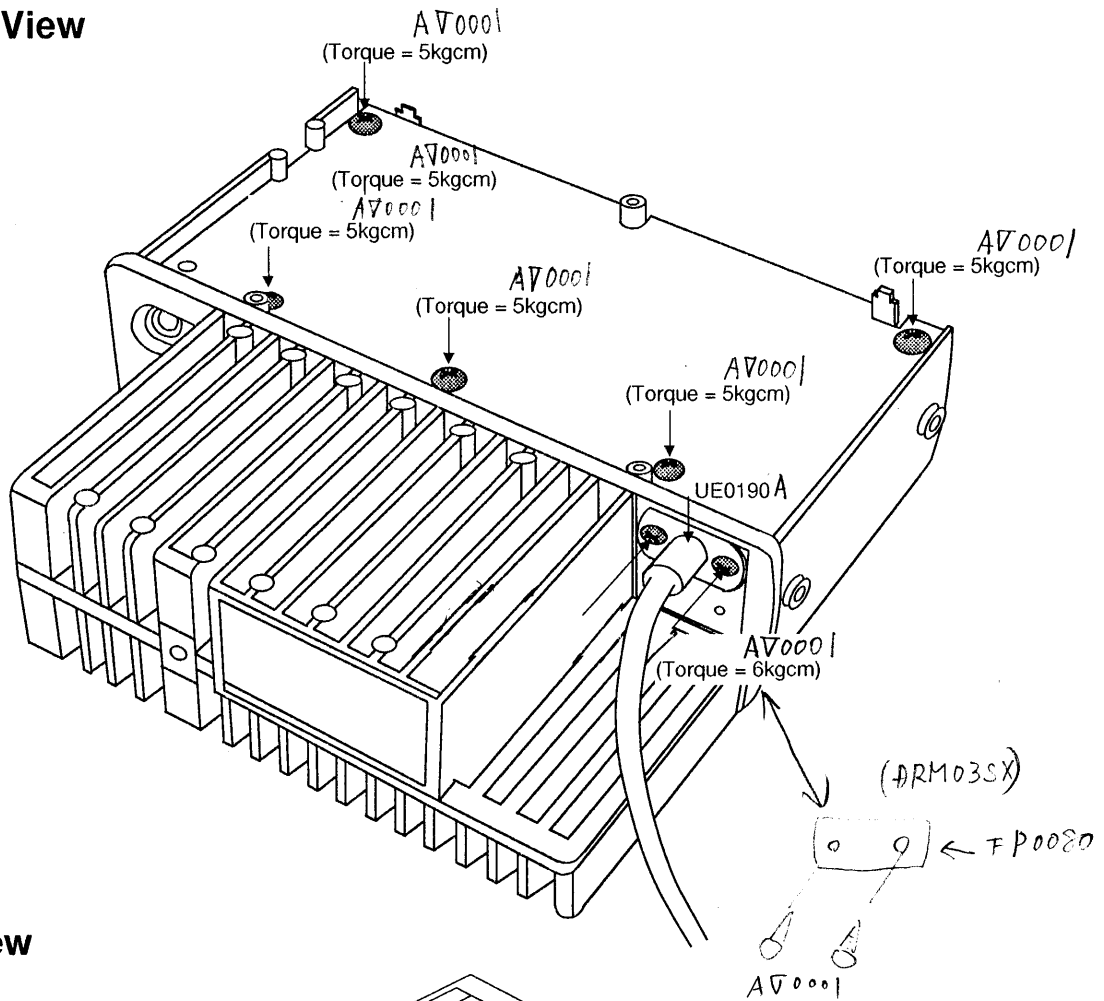


3) Top, Front View 1

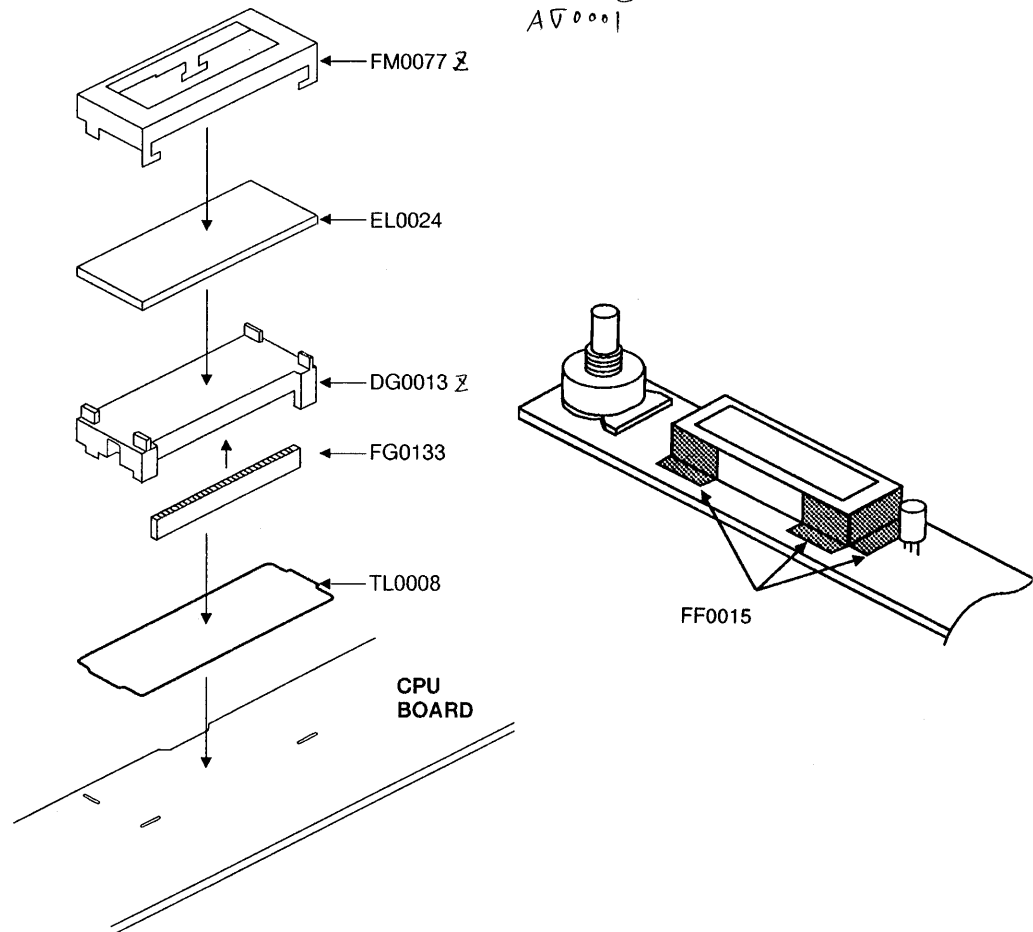


EXPLODED VIEW

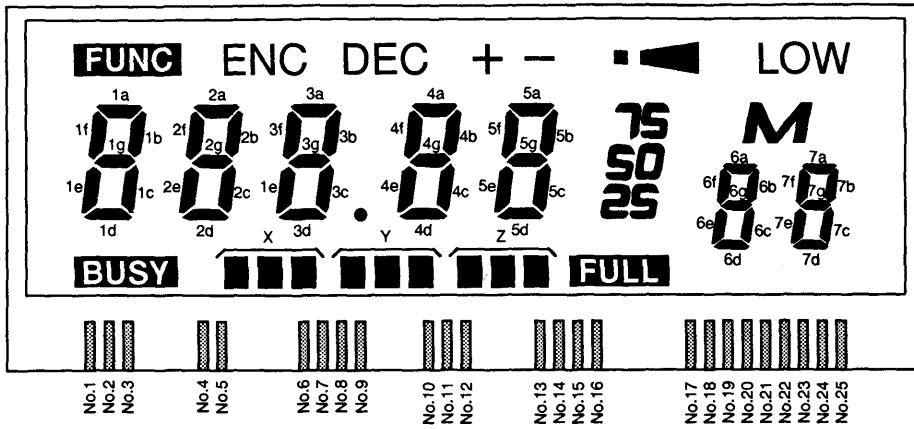
1) Bottom View



2) LCD View



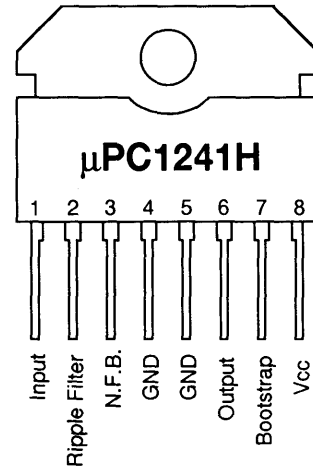
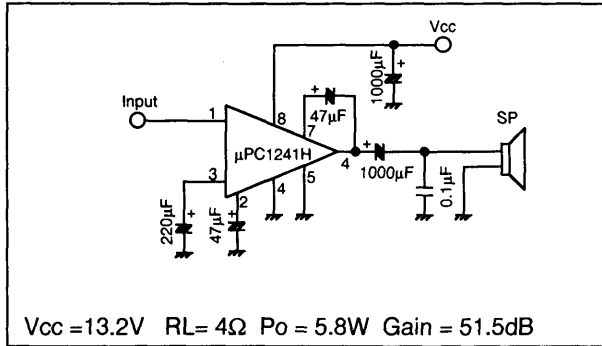
17) LCD Connection (EL0024)



Pin No.	COMMON1	COMMON2	COMMON3
1	FUNC	1e	1f
2	1d	1g	1a
3	BUSY	1c	1b
4	ENC	2e	2f
5	2d	2g	2a
6	X	2c	2b
7	DEC	3e	3f
8	3d	3g	3a
9	●	3c	3b
10	Y	4e	4f
11	4d	4g	4a
12	+	4c	4b
13	Z	5e	5f
14	5d	5g	5a
15	-	5c	5b
16	FULL	25	50
17	75	6e	6f
18	6d	6g	6a
19	■	6c	6b
20	M	7e	7f
21	7d	7g	7a
22	LOW	7c	7b
23		COM.1	
24			COM.2
25	COM.0		

15) μ PC1241H (XA0079) Audio Power Amplifiers

Test Circuit



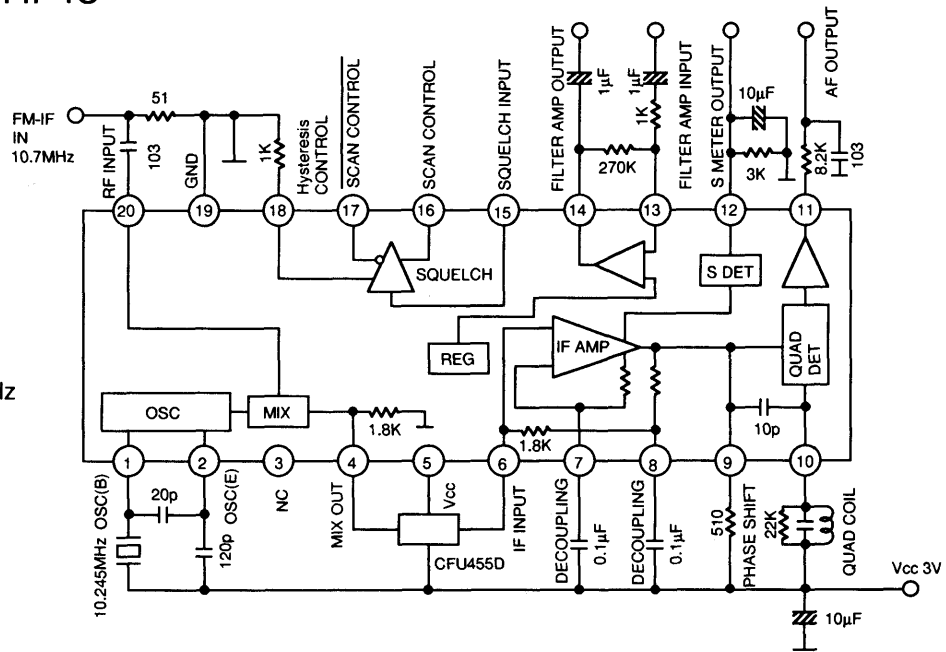
16) Transistor, Diode and LED Outline Drawings

Top View

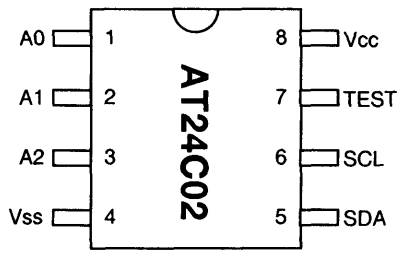
1SS355 XD0254	1SV215 XD0132	DA204U XD0130	DAN202U XD0230	DAN235U XD0246	DTZ2.2A XD0145	DTZ5.1A XD0136	G3B XD0107
MA704WA XD0127	MA742 XD0250	MA8110H XD0255	MI308 XD0014	MI407 XD0013	2SK508 XE0010	2SK880 XE0021	3SK131 XE0012
TLSG264 XL0029	2SA1576 XT0094	2SA1736 XT0099	2SB1132 XT0061	2SB1292 XT0112	2SC2412K XT0037	2SC2873 XT0099	2SC2954 XT0084
2SC3356 XT0030	2SC4081LN XT0111	2SC4081 XT0095	2SC4099 XT0096	2SC4403 XT0114	UMC2 XU0060	UMC5 XU0152	
DTA114YU XU0112	DTC114EU XU0131	DTC114YU XU0029	DTC124EU XU0140	DTC143TU XU0145			
DTC144EU XU0148							

12) TK10487MTR (XA0144) Narrow Band FM IF IC

Vcc=3V
 F=10.7MHz
 Icc 5mA
 Limit 2µV -3dB
 Vo 180mV Dev=3kHz
 THD 1.0%



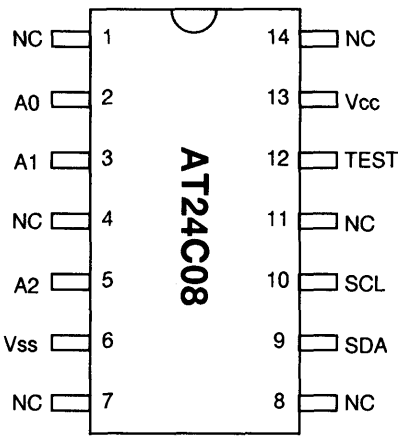
13) AT24C02N-10SI-2.7 (XA0364) EEPROM 256 x 8Bit



Pin Names

A0 ~ A2	Address inputs
SDA	Serial Data
SCL	Serial Clock
TEST	Write Control
Vss	Ground
Vcc	+5V

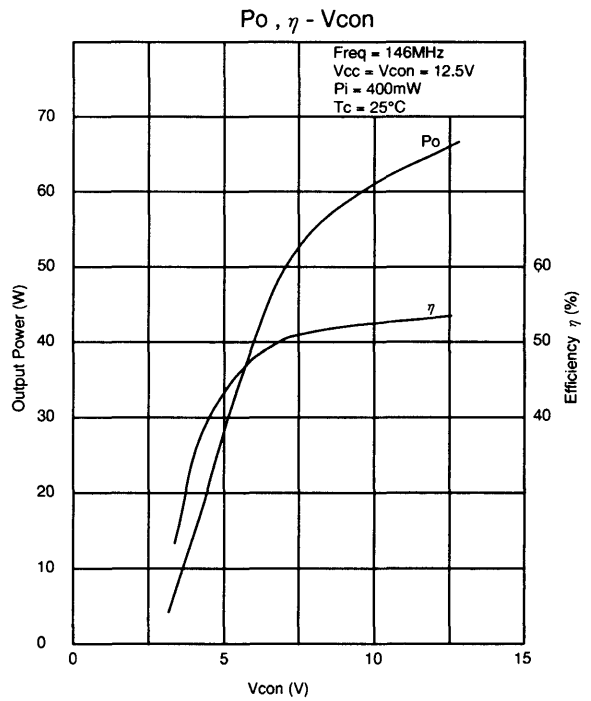
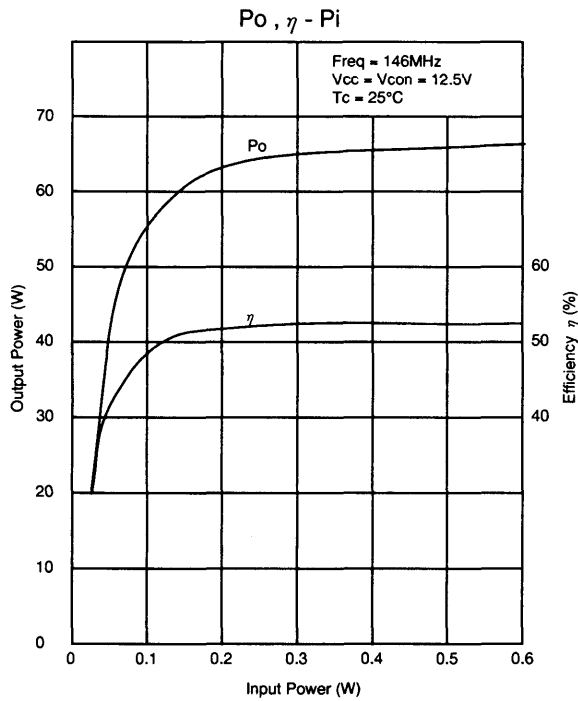
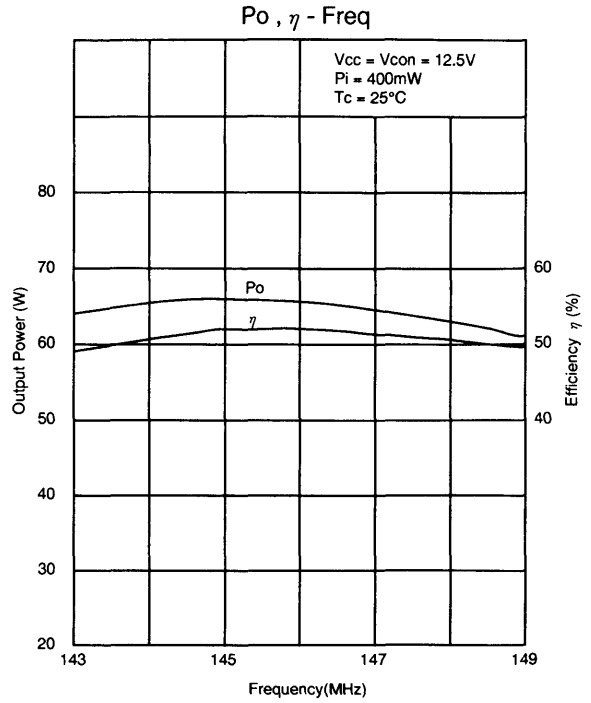
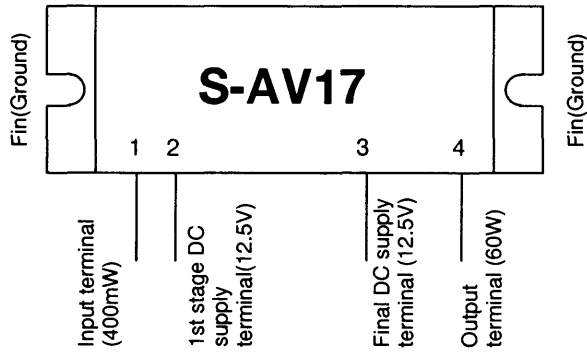
14) AT24C08-10SI-2.7 (XA0367) EEPROM 1024 x 8Bit



Pin Names

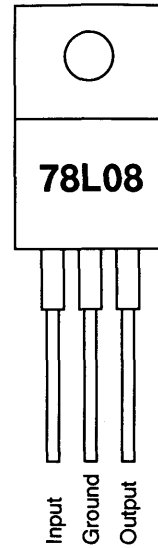
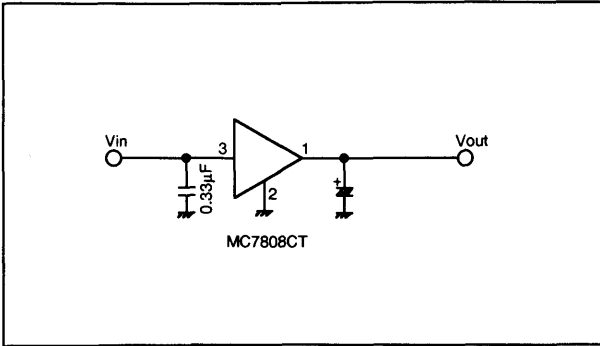
A0 ~ A2	Address inputs
SDA	Serial Data
SCL	Serial Clock
TEST	Hold at Vss
Vss	Ground
Vcc	+5V

11) S-AV17 (XA0185)
 144 ~ 148MHz 60W
 RF Power Module



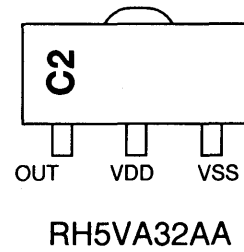
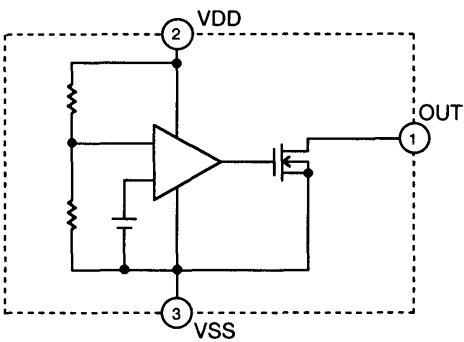
8) MC7808CT (XA0082)
8V Voltage Regulator

Test Circuit



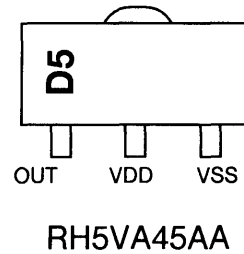
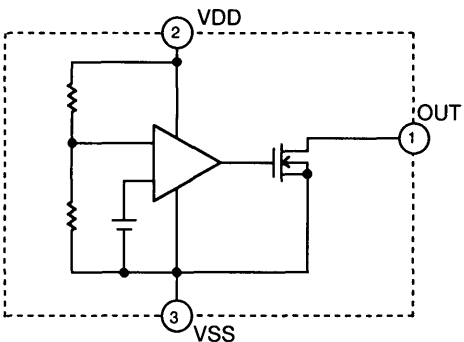
9) RH5VA32AA-T1 (XA0198)
C-MOS Voltage Detector

Equivalent Circuit

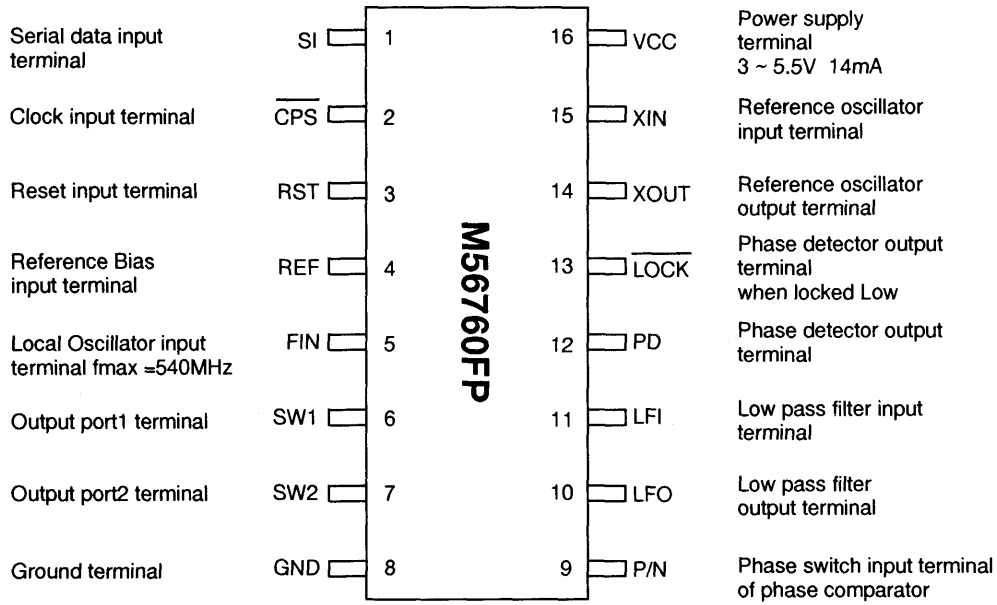


10) RH5VA45AA-T1 (XA0208)
C-MOS Voltage Detector

Equivalent Circuit

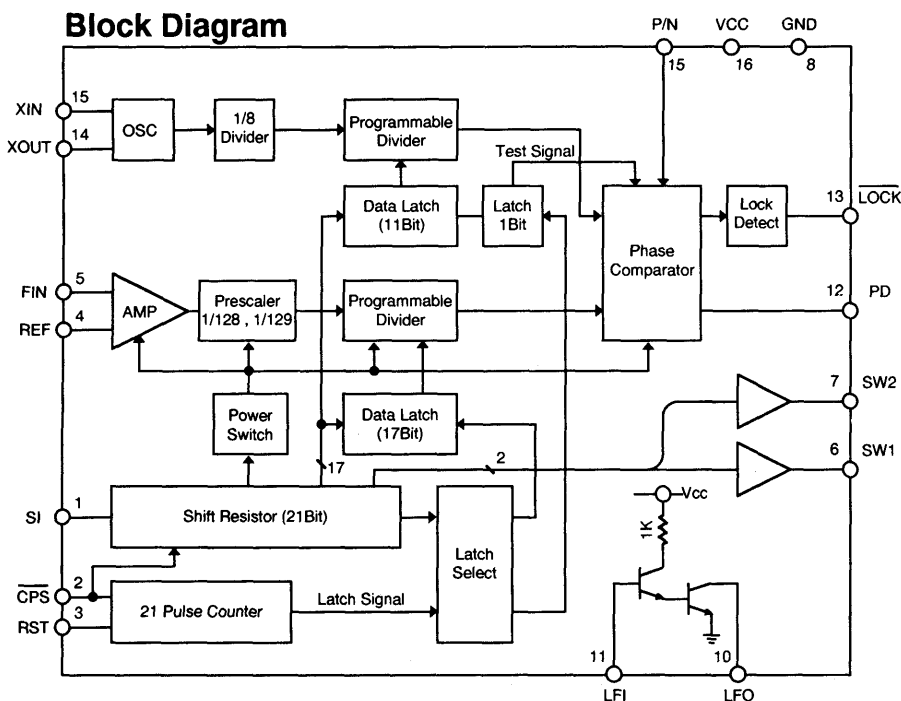


7) M56760FP (XA0235) 540MHz Frequency Synthesizer

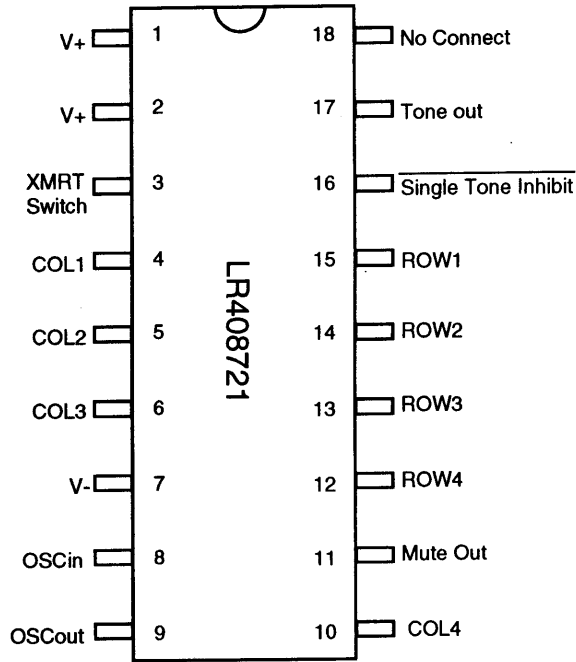


Function Table

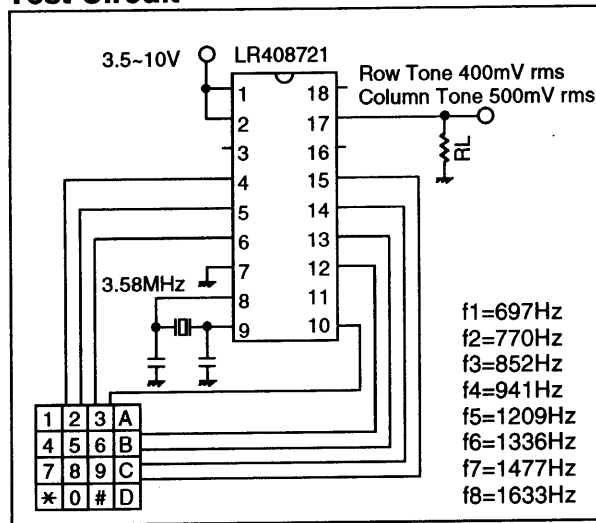
P/N input	Phase	PD output
High or Low	Locked	Hi-Z
High	Lead	High
High	Lag	Low
Low	Lead	Low
Low	Lag	High



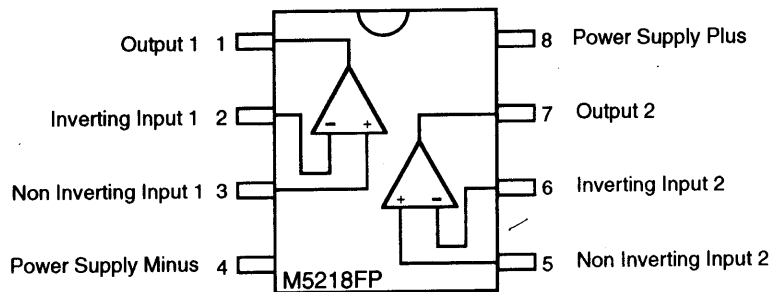
5) LR408721 (XA0042)
Tone Dialer



Test Circuit

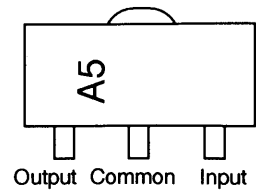
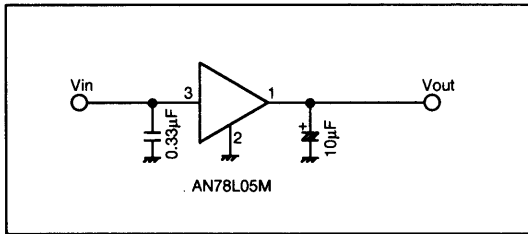


6) M5218FP (XA0068)
Dual Low Noise
Operational Amplifiers



2) AN78L05M (XA0238)
5V Voltage Regulator

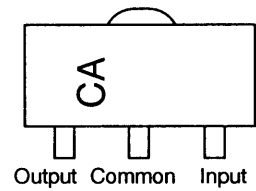
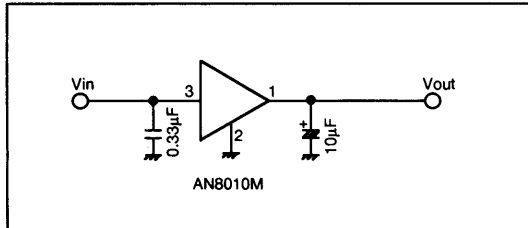
Test Circuit



AN78L05M

3) AN8010M (XA0119)
Voltage Regulator

Test Circuit

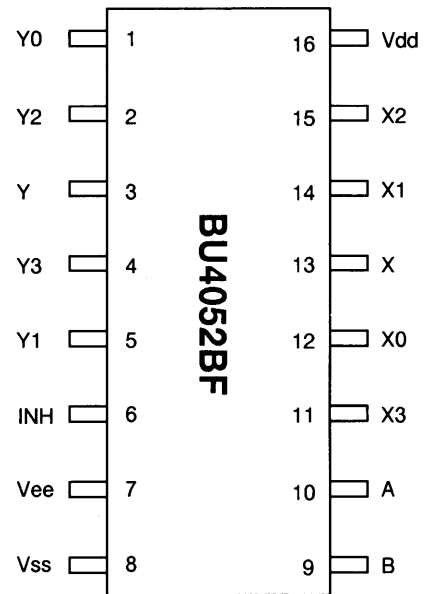


AN8010M

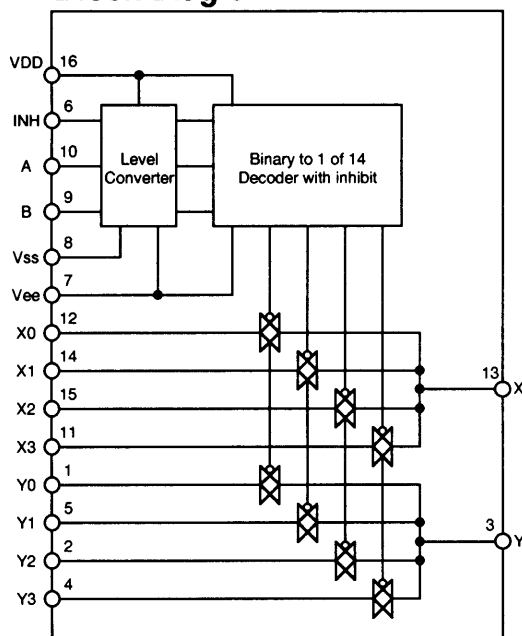
4) BU4052BF (XA0236)
Analog Multiplexers/Demultiplexers

Function Table

INHIBIT	A	B	ON Switch
Low	Low	Low	X0 Y0
Low	High	Low	X1 Y1
Low	Low	High	X2 Y2
Low	High	High	X3 Y3
High	Don't Care	Don't Care	None



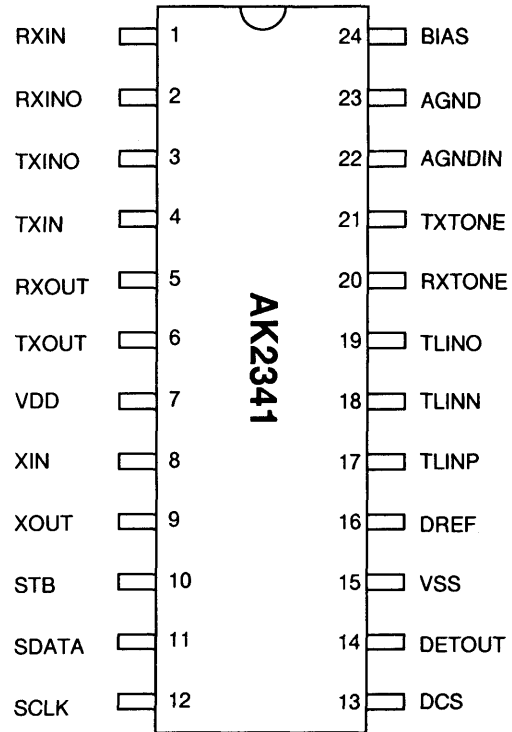
Block Diagram



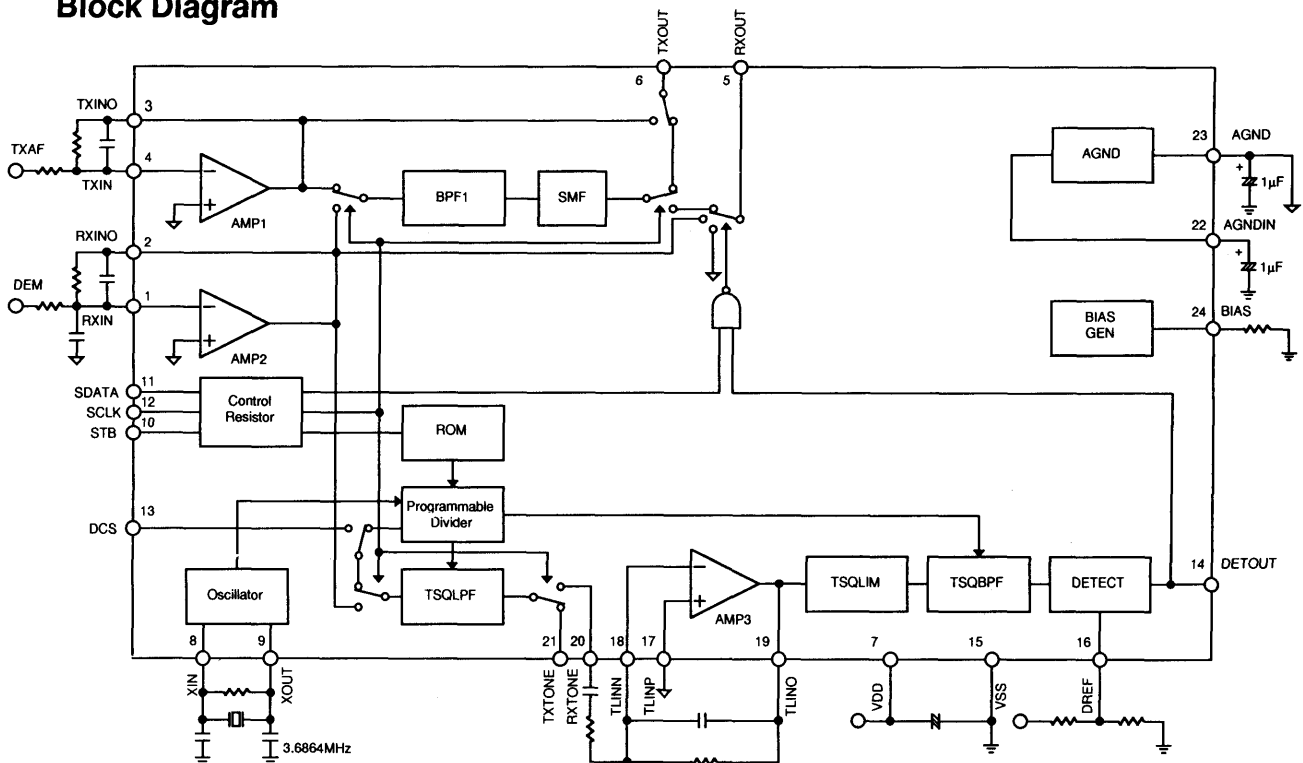
SEMICONDUCTOR DATA

1) AK2341 (XA0239) CTCSS Encoder/Decoder

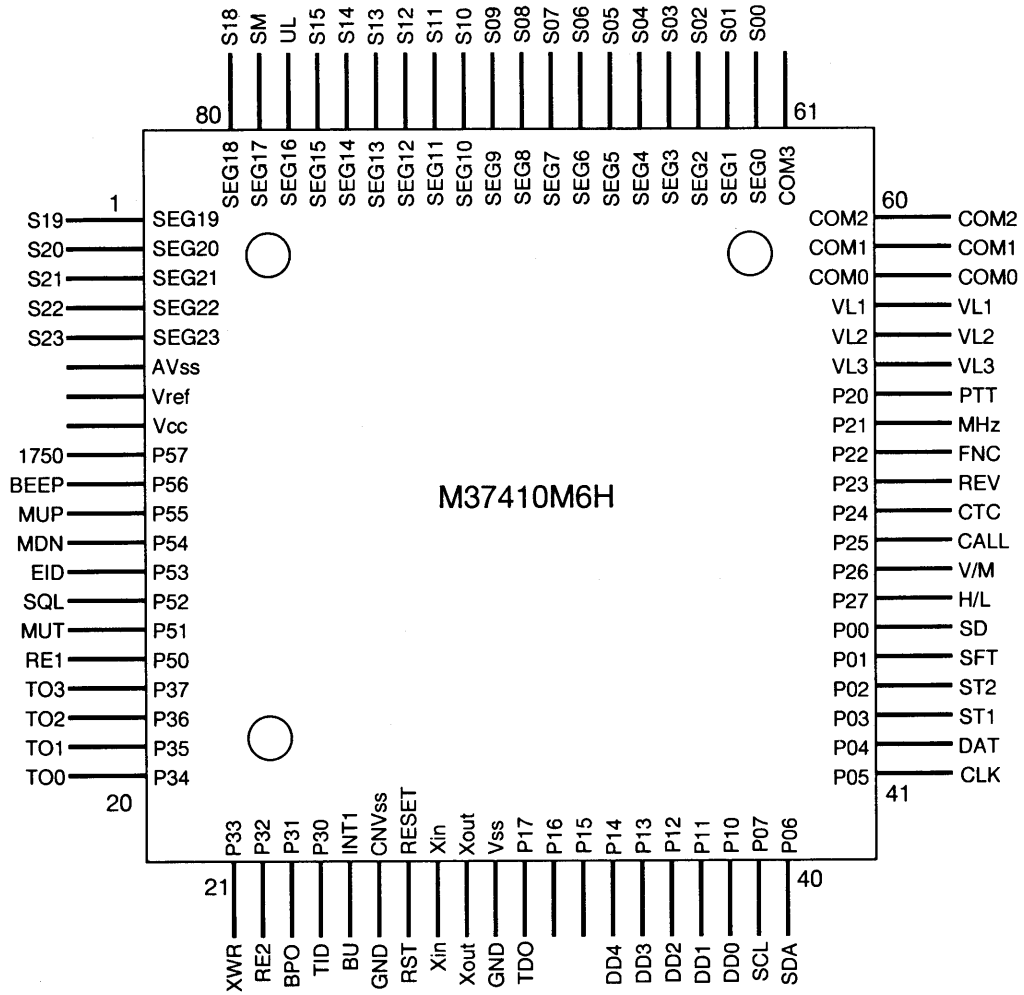
Pin No.	Pin Name	I/O	Function
1	RXIN	I	RX Signal Input
2	RXINO	O	AMP2 Output
3	TXINO	O	AMP1 Output
4	TXIN	I	TX Audio Input
5	RXOUT	O	RX Audio Output
6	TXOUT	O	TX Audio Output
7	VDD	-	Power Supply (1.8 ~ 5.5V)
8	XIN	I	Crystal Terminal (3.6864MHz)
9	XOUT	O	Crystal Terminal (3.6864MHz)
10	STB	I	Strobe for Serial Data
11	SDATA	I	Serial Data
12	SCLK	I	Serial Clock
13	DCS	I	DCS Input
14	DETOUT	O	Tone Detection Output (Detect: Low)
15	VSS	-	Ground
16	DREF	I	Tone Detection Level Adjust Input
17	TLINP	I	RX Tone Signal Reference Input
18	TLINN	I	RX Tone Signal Input
19	TLINO	O	AMP3 Output
20	RXTONE	O	RX Tone Signal Output
21	TXTONE	O	TX Tone Signal Output
22	AGNDIN	I	Analog Ground Input
23	AGND	O	Analog Ground Output
24	BIAS	I	Bias Input



Block Diagram



5) Terminal Connection of Microprocessor



Port No.	I/O	Logic	Pin Name	Description
64	O	-	SEG02	LCD Segment 02 Output
65	O	-	SEG03	LCD Segment 03 Output
66	O	-	SEG04	LCD Segment 04 Output
67	O	-	SEG05	LCD Segment 05 Output
68	O	-	SEG06	LCD Segment 06 Output
69	O	-	SEG07	LCD Segment 07 Output
70	O	-	SEG08	LCD Segment 08 Output
71	O	-	SEG09	LCD Segment 09 Output
72	O	-	SEG10	LCD Segment 10 Output
73	O	-	SEG11	LCD Segment 11 Output
74	O	-	SEG12	LCD Segment 12 Output
75	O	-	SEG13	LCD Segment 13 Output
76	O	-	SEG14	LCD Segment 14 Output
77	O	-	SEG15	LCD Segment 15 Output
78	I	Active High	UL	Unlock Input
79	I	Analog	SM	Signal Meter Input
80	O	-	SEG18	LCD Segment 18 Output

Port No.	I/O	Logic	Pin Name	Description
32	O	No Use	-	
33	O	No Use	-	
34	I	Active Low	DD4	Band Plan 4 (V/U Selection)
35	I	Active Low	DD3	Band Plan 3 (445/435 Selection)
36	I	Active Low	DD2	Band Plan 2 (5k/12.5k Selection)
37	I	Active Low	DD1	Band Plan 1
38	I	Active Low	DD0	Band Plan 0
39	O	Clock	SCL	Clock Output for EEPROM
40	I/O	Clock	SDA	Data Output for EEPROM
41	O	Clock	CLK	Clock Output
42	O	Clock	DAT	Data Output
43	O	Clock	ST1	Strobe Output for PLL IC
44	O	Clock	ST2	Strobe Output for CTCSS IC
45	I	Active Low	SFT	Shift Key Input
46	I	Active High	SD	Signal Detection Input
47	O	Active High	H/L	Transmission Power (H: Low Power)
48	I	Active Low	V/M	VFO/Memory Key Input
49	I	Active Low	CAL	Call Key Input
50	I	Active Low	CTC	CTCSS Mode Set Input
51	I	Active Low	REV	Reverse Key Input
52	I	Active Low	FNC	Function Key Input
53	I	Active Low	MHz	MHz Key Input
54	I	Active Low	PTT	PTT Key Input
55	I	-	LV3	Power Supply Input for LCD
56	I	-	LV2	Power Supply Input for LCD
57	I	-	LV1	Power Supply Input for LCD
58	I	-	COM0	LCD Common 0 Output
59	I	-	COM1	LCD Common 1 Output
60	I	-	COM2	LCD Common 2 Output
61	I	No Use		
62	O	-	SEG00	LCD Segment 00 Output
63	O	-	SEG01	LCD Segment 01 Output

4) Terminal Function of Microprocessor

Port No.	I/O	Logic	Pin Name	Description
01	O	-	SEG19	LCD Segment 19 Output
02	O	-	SEG20	LCD Segment 20 Output
03	O	-	SEG21	LCD Segment 21 Output
04	O	-	SEG22	LCD Segment 22 Output
05	O	-	SEG23	LCD Segment 23 Output
06	I	-	GND	Analog Ground 0V
07	I	-	Vref	Reference Voltage Input 5V
08	I	-	Vcc	CPU Power Supply Input 5V
09	O	-	1750	Tone Burst Output
10	O	Clock	BEEP	Beep Tone Output
11	I	Active Low	MUP	Channel Up Input (Microphone Control)
12	I	Active Low	MDN	Channel Down Input (Microphone Control)
13	I	No Use	EID	
14	O	Active Low	SQL	Squelch Control (L: Audio is off.)
15	O	Active High	MUT	Microphone Mute (H: Mic Amp is off.)
16	I	Active Low	RE1	Rotary Encoder Input
17	O	Clock	T03	Tone Output
18	O	Clock	T02	Tone Output
19	O	Clock	T01	Tone Output
20	O	Clock	T00	Tone Output
21	I	Active High	XWR	EEPROM Write Status External Input
22	I	Active Low	RE2	Rotary Encoder Input
23	O	Active Low	BPO	Band Plan Detection Input (Common)
24	I	Active Low	TID	Tone Unit Detection Input
25	I	Active Low	BU	Back Up Signal Detection Input
26	I	-	GND	Ground
27	I	Active Low	RST	Reset Input
28	I	-	Xin	Crystal Oscillator Terminal (3.58MHz)
29	O	-	Xout	Crystal Oscillator Terminal (3.58MHz)
30	I	-	GND	Ground
31	O	Active Low	TDO	CTCSS Tone Detection Output

2) Transmitter System

1. Modulation Circuit

The microphone amplifier IC1 (IDC, LPF) consists of two operational amplifiers. The signal from the microphone is led to pre-emphasis circuit consisting of C36 and R47 and then to the limiter circuit. The limiter circuit uses the saturation of the OP amplifier. The amplified signal is input to the low-pass filter IC1A. The output signal from the microphone amplifier is passed through variable resistors VR2 for modulation adjustment and input to the VCO unit. Sub tone deviation is determined by R24, R25 and VR2. The radio does not have the adjustment variable resistor for sub tone deviation.

2. TX Amp. Circuit

The signal from VCO is amplified by TX, RX wide band LO amplifier Q19. The signal from Q19 is passed through the transmission/reception selector, and amplified by Q20 and Q15. The PA unit is driven at 200mW driving power.

3. PA Circuit

IC5 is 50W powered amplifier module. The output power is controlled by the voltage of V1. The RF signal amplified 50W in PA is passed through D3 and three-stage transmission/reception low-pass filter, and input to the antenna connector.

4. ALC Circuit

The power detection circuit consisting of D17 and D18 rectifies the output signal voltage. The detected DC voltage is led to the VR1 (power adjust trimmer), and amplified by Q3, Q9 and Q13. Output power is controlled by voltage of V1 in IC5 and collector voltage of Q15. When the temperature goes up unusually, the power down circuit consisting of R101 and TH2 works to prevent the device from the destruction.

3) PLL Circuit

The VCO unit is designed for the PLL circuit, putting the VCO on one side, and PLL circuit on the other side.

Q301 in the VCO is grounded using the gate oscillator, and its frequency covers 134MHz to 174MHz without transmission/reception shift circuit. IC301 is pulse swallow system based PLL IC with the built-in prescaler, which synthesizes 150MHz-band signal.

The loop filter consisting of Q302 and Q303 is the active type.

CIRCUIT DESCRIPTION

1) Receiver System

1. Front End

The signal from the antenna is passed through a low-pass filter and input to the voltage step up circuit consisting of L14. The signal from L14 is led to the gate of Q1. D19 is the diode limiter circuit against the excessive input power of more than 20dBm. Q1 is the FET which has two gates. The voltage of the gate 2 is set higher to get the high gain and sensitivity. The signal from Q1 is led to the triple band pass filter (L4, L5, L6), and gets the high image rejection ratio.

2. Mixer Circuit

The signal from the triple band pass filter is converted into the first IF signal of 17.2MHz. The receiving signal is led to the gate 1 of Q2, and the first local oscillator signal is led to the gate 2 of Q2. To get the high conversion gain, the local oscillator signal voltage is set to about 1V. To reduce the high adjacent channel interference, the band width of the FL2 is set to 20kHz. The signal from FL2 is amplified by Q8, and input to FM IF system IC3 of TK10487.

3. IF Circuit

The TK10487 has the second local oscillator circuit, mixer circuit, detector circuit, squelch circuit, and so on. Pin1 and 2 are the terminals of the crystal oscillator circuit. Pin2 (emitter) is connected to the ground via the resistor R3 to prevent the oscillator from decreasing the power at the low temperature. Pin4 of IC3 is connected to FL1 directly because the matching resistor for ceramic filter is built-in. The quadrature circuit (pin10 of IC3) is connected to the ceramic resonator X2 for the temperature stability and good quality. The signal from pin11 of IC3 is connected to the LPF. The detected AF signal, which has flat frequency characteristics, is led to the control unit and used as both squelch signal and tone squelch signal. De-emphasis circuit consists of R31, R32, C26 and C27. The LPF amplifier consisting of Q5 and Q6 is located far away from the VR in the control unit, so it outputs the high voltage signal to prevent S/N from the deterioration. The squelch switch circuit consists of Q4 and Q16, and switches on/off at the point where there is no voltage to prevent from the switching noise. The S meter signal from pin12 of IC3 is led to the CPU in the control unit after adjusting the level at D20 and VR5. The S meter signal is thermal compensated by TH1 and stabilized. The noise amplifier consists of pin13 and 14, the built-in OP amplifier in IC3. The output signal of noise amplifier is amplified by Q14, rectified by D5, and then led to the pin15 (hysteresis comparator input) of IC3.

4. AF Circuit

IC4 is about 5W audio power amplifier IC. When the capacity of pin1 in C16 is increased more, the output incidental noise becomes smaller. The high-pitched tone becomes smaller at the same time. This radio's capacity of C16 is determined considering the high-pitched tone.

SPECIFICATIONS

1) General

Frequency Coverage:	RX: 136.000 ~ 174.000MHz (T version)
	TX: 144.000 ~ 148.000MHz (T version)
	RX: 144.000 ~ 146.000MHz (E/EZ version)
	TX: 144.000 ~ 146.000MHz (E/EZ version)
	RX: 130.000 ~ 174.000MHz (EA/TA version)
	TX: 130.000 ~ 174.000MHz (EA/TA version)
	RX: 136.000 ~ 155.000MHz (TE1 version)
	TX: 136.000 ~ 155.000MHz (TE1 version)
	RX: 150.000 ~ 174.000MHz (TE2 version)
	TX: 150.000 ~ 174.000MHz (TE2 version)

Frequency Resolution:	5, 10, 12.5, 15, 20, 25kHz steps
Antenna Impedance:	50Ω unbalanced
Power Supply Requirements:	DC 13.8 +/-10% Volts DC
Current Drain at 13.8V	Receiving: Squelched less than 800mA
	Transmitting: High/10.0A (approx.)
	Low/3.5A (approx.)
Dimensions:	140mm(W) x 40mm(H) x 154mm(D)
Weight:	0.86kg (approx.)

2) Transmitter

Output Power:	High: 50Watts (DR-130T/E)
	High: 35Watts (DR-130TE1/2)
	High: 10Watts (DR-130EZ)
	Low: 5Watts (Approx.)
Emission Mode:	F3E(FM)
Modulation System:	Variable Reactance Frequency Modulation
Max. Frequency Deviation:	+/-5kHz
Spurious Emission:	-60dB or below carrier
Microphone:	Electret Condenser Microphone
Operating Mode:	Simplex/Semi-Duplex
Offset:	Offset from 0 to 15.995MHz

3) Receiver

Receiving System:	Superheterodyne Dual Conversion
Intermediate Frequency:	1st IF: 17.2MHz
	2nd IF: 455kHz
Sensitivity:	12dB SINAD less than -16dBμ (144.000MHz ~ 147.995MHz)
Selectivity:	More than +/-6kHz at -6dB
	Less than +/-15kHz at -60dB
Audio Power Output:	More than 2.5W 10% Distortion
Speaker Impedance:	8Ω