

FT-23R

TECHNICAL SUPPLEMENT

This booklet contains supplemental technical information related to the FT-23R for use with the FT-23R Operating Manual. Service or repairs to the FT-23R transceiver should be performed by qualified technicians only.

YAESU MUSEN CO., LTD.
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TOKYO, JAPAN

FT-23R

TECHNICAL SUPPLEMENT



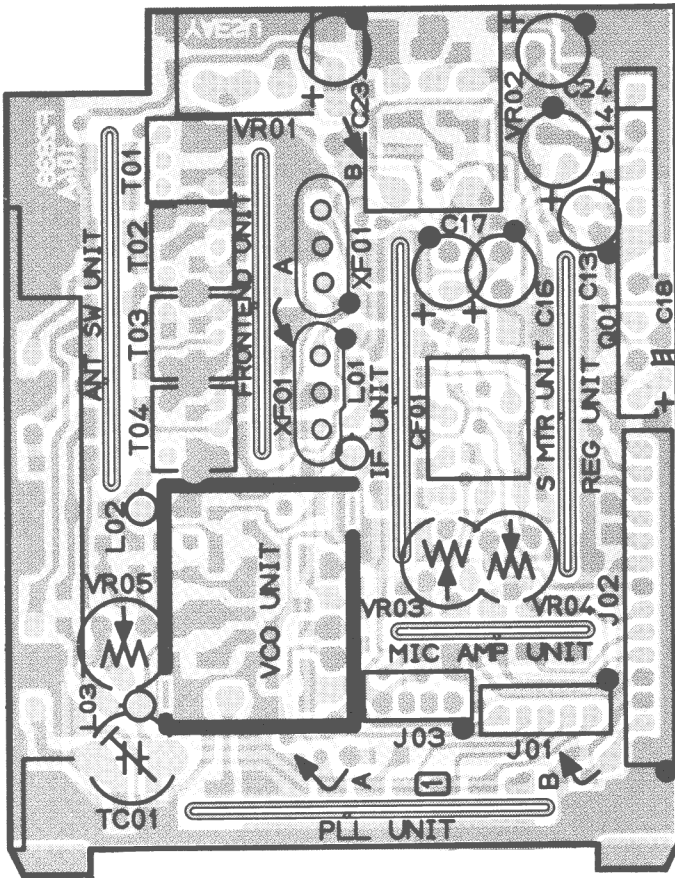
This manual is intended to serve as a supplement to the FT-23R Operating Manual. Detailed information regarding functions, specifications, options and operation has been provided in the Operating Manual, and is not reprinted herein. Therefore, this supplement is not intended to serve as an independent reference, but to be used in conjunction with the information provided in the Operating Manual.

Because of the compactness and complexity of the double-sided glass-epoxy circuit boards used in the FT-23R, four layout diagrams are provided for each board. Each side of the board is identified by the type of the majority of components installed on that side. In most cases one side has only chip components, and the other has either a mixture of both chip and lead components (trimmers, coils, electrolytic capacitors, packaged ICs, etc.), or lead components only. The two "obverse" views depict the board as it is seen when viewed directly with the eye, while the two "reverse" views depict the unseen side of the board as it would appear if one were to peer through the board from the other side without seeing the components and tracks on the near side.

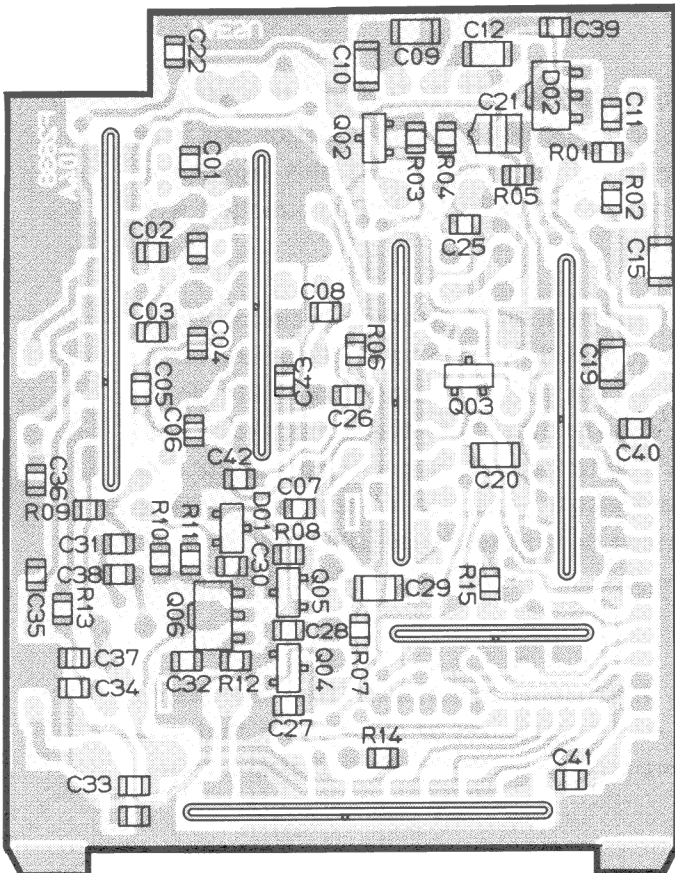
While we believe the technical information in this manual is correct, Yaesu assumes no liability for damage that may occur as a result of typographical or other errors that may be present. Your cooperation in pointing out any inconsistencies in the technical information would be appreciated.

Yaesu Musen reserves the right to make changes in the circuitry of this transceiver, in the interest of technological improvement, without notification of the owners.

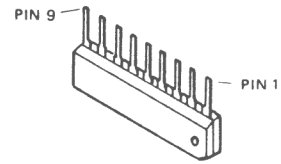
MOTHER BOARD



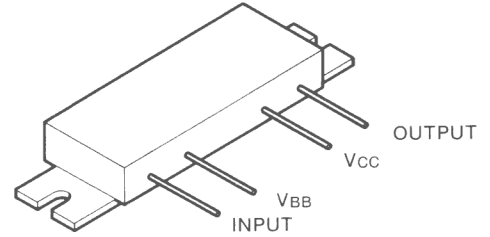
(obverse view of "component" side)



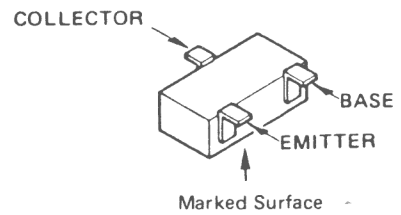
(reverse view of "chip-only" side)



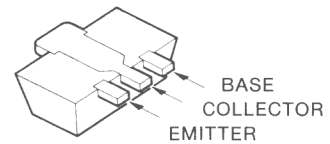
LA4145 (Q101)



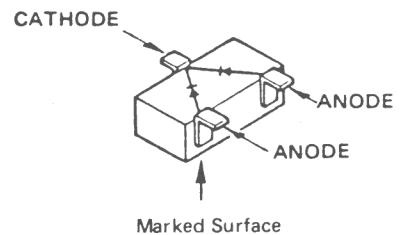
M57796MA (Q107)



2SA1162GR (SG) : (Q102)
 2SC2712GR (LG) : (Q103)
 2SC3356 (R22) : (Q105)
 FA1A4M (L33) : (Q104)

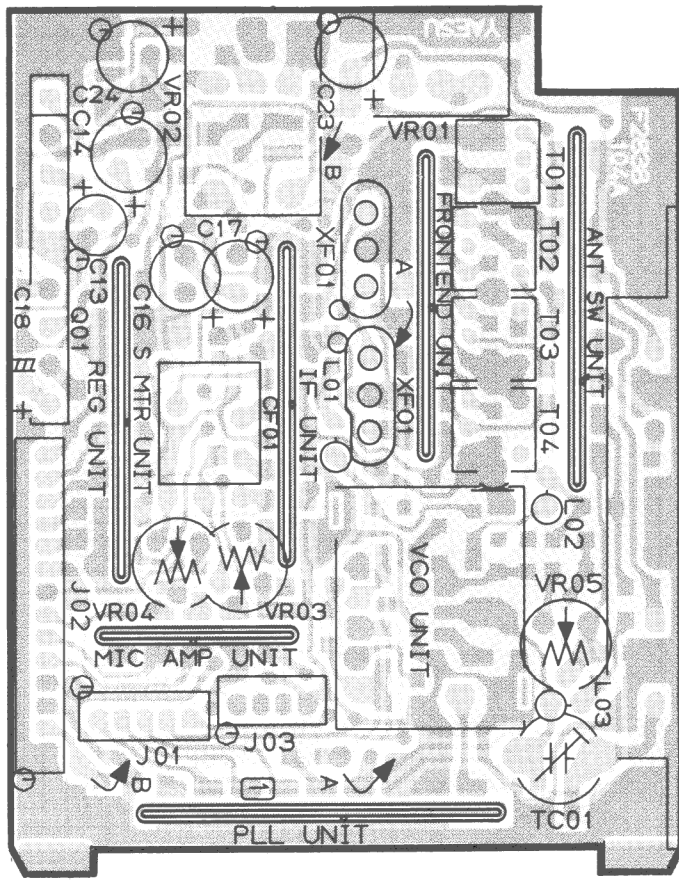


2SC2954 (Q106)



1SS184 (B3) : (D101)

MOTHER BOARD



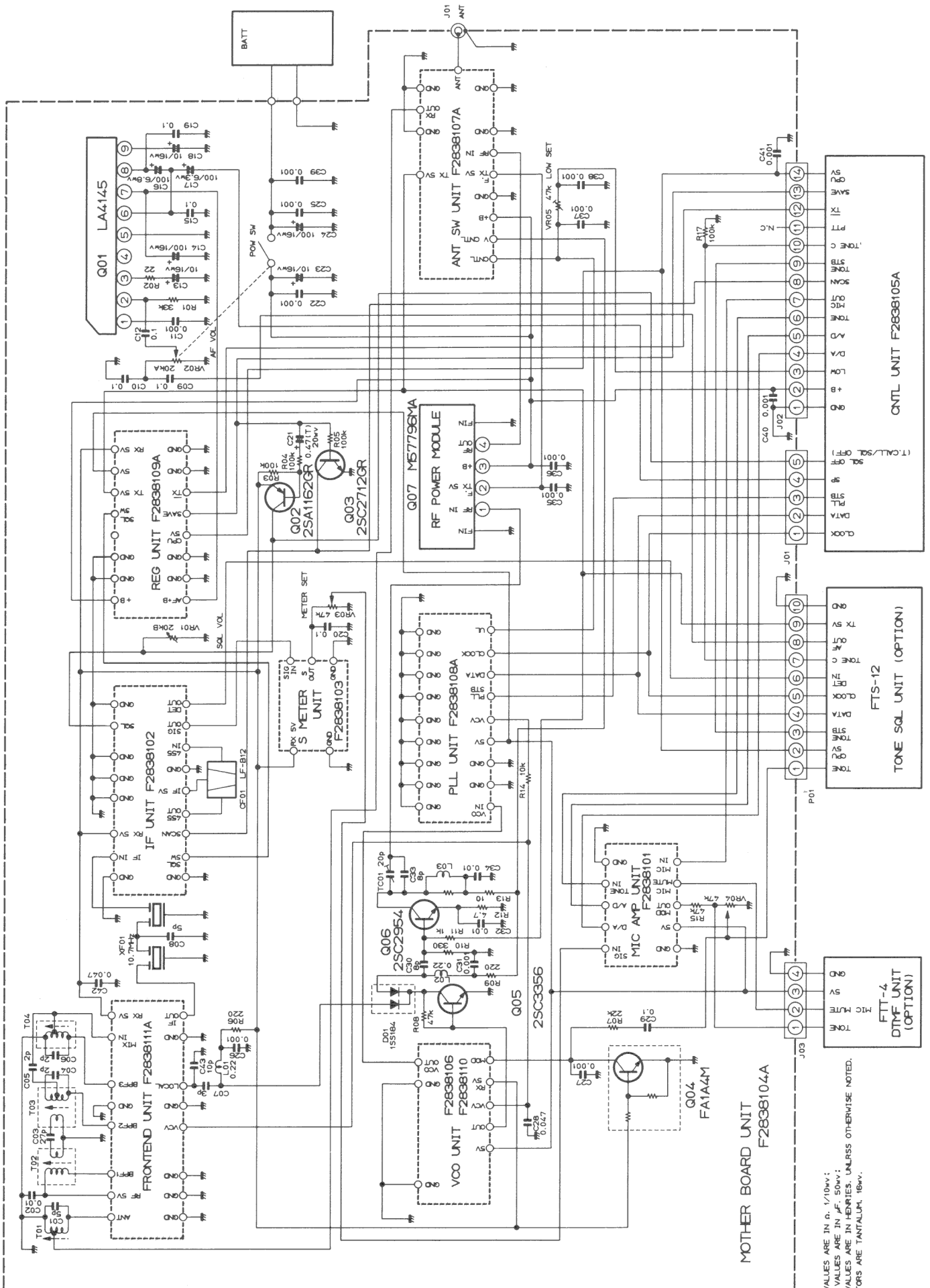
(reverse view of “component” side)

CHIP SEMICONDUCTOR CROSS-REFERENCE

PART LOCATION NO.	ORIGINAL	REPLACEMENT		
	NOMENCLATURE (MARKING) AND PART NUMBER	NOMENCLATURE (MARKING) AND PART NUMBER		
Q102,605,606,607,1002,1012	2SA1162GR(SG) G3111620G	2SA812F/G(M6/M7) G3108120F/G	2SA1052C/D(MC/MD) G3110520 C/D	2SA1179F/G(M6/M7) G3111790 F/G
Q103,602,603,608,801,802,902, 903,904,1003,1004,1005,1006, 1010	2SC2712GR/BL(LG/LL) G3327120G/B	2SC1623F/G(L6/L7) G3316230F/G	2SC2462C/D(LC/LD) G3324620 D/D	2SC2812F/G(L6/L7) G3328120 F/G
Q701	M5224FP G1090726	LA6324M G1090559		
D1001,1002	1SS181(A3) G2070001	MC2836(A4) G2070024	DCA015TA(A4) G2070014	
D603,1007,1008	1SS184(B3) G2070009	MC2838(A6) G2070018	DCB015TA(A6) G20700021	

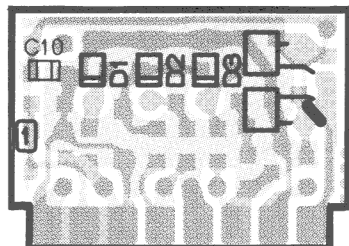
* Semiconductors not listed above may be replaced only with original types.

MOTHER BOARD

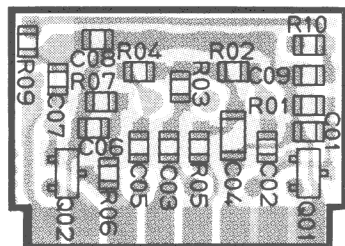


RESISTOR VALUES ARE IN Ω , $\frac{1}{10}\text{W}$,
CAPACITOR VALUES ARE IN μF , 50V;
INDUCTOR VALUES ARE IN HENRIES, UNLESS OTHERWISE NOTED.
(1) CAPACITORS ARE TANTALUM, 16V.

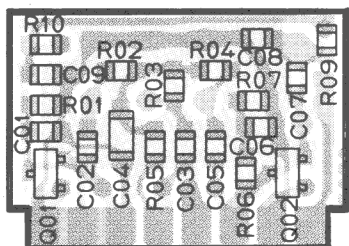
FRONTEND UNIT



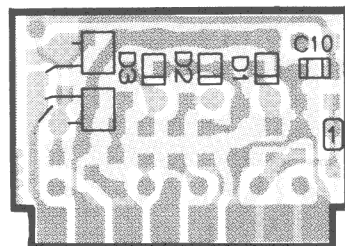
(obverse view of
"diode" side)



(obverse view of
"FET" side)

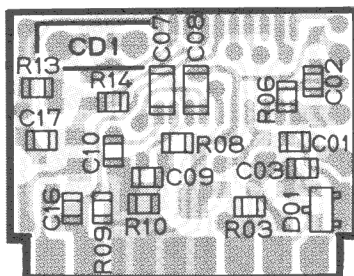


(reverse view of "FET" side)

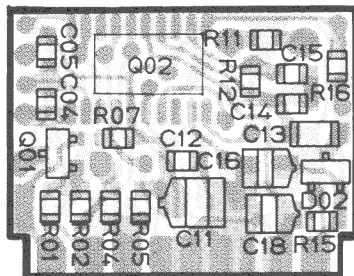


(reverse view of
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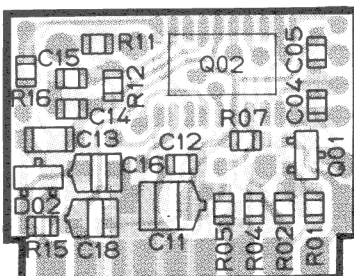
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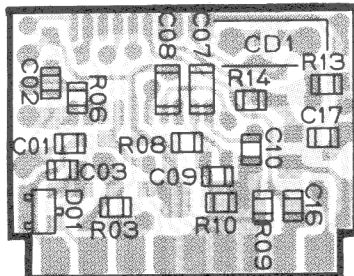
(obverse view of
"mixed-component" side)



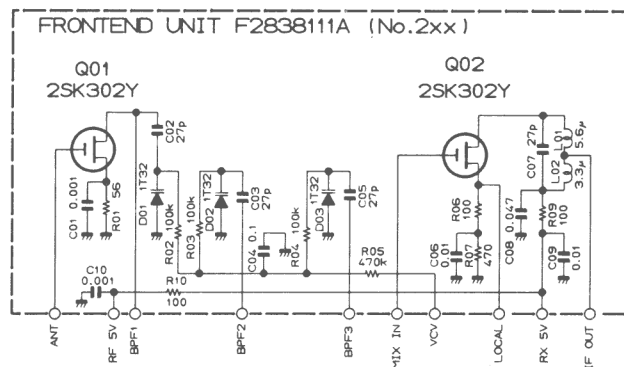
(obverse view of
"chip-only" side)



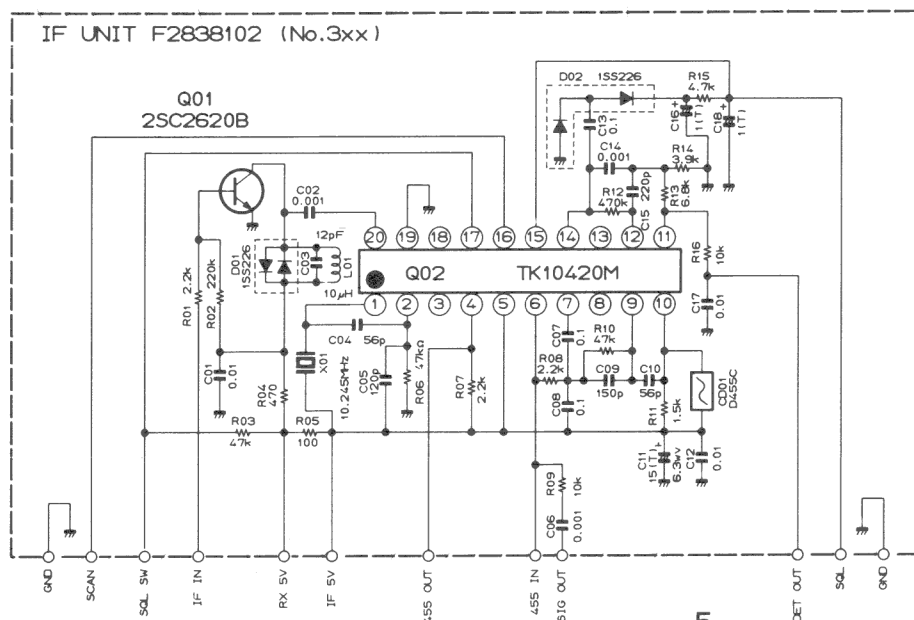
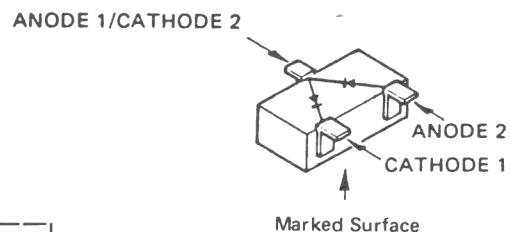
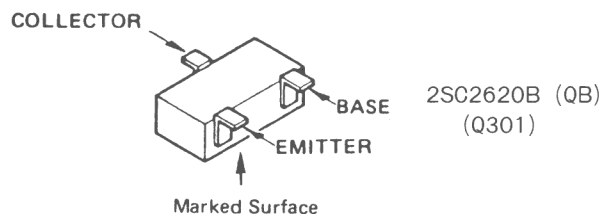
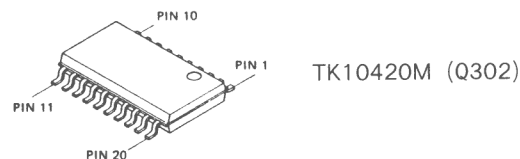
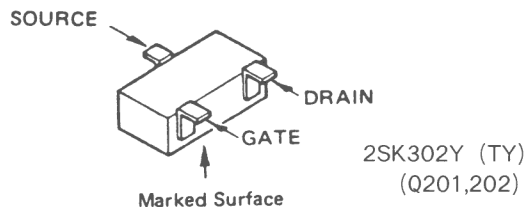
(reverse view of
"chip-only" side)



(reverse view of
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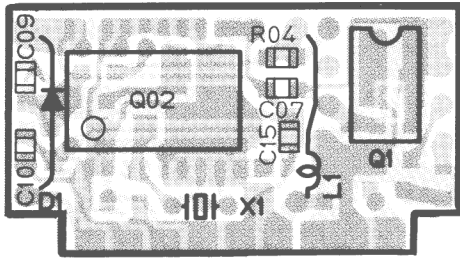


RESISTOR VALUES ARE IN Ω . 1/10W;
CAPACITOR VALUES ARE IN μ F. 50V;
INDUCTOR VALUES ARE IN HENRIES, UNLESS OTHERWISE NOTED.

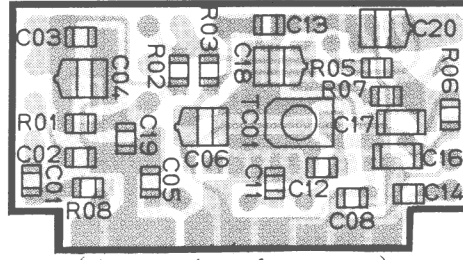


RESISTOR VALUES ARE IN Ω , 1/10W;
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INDUCTOR VALUES ARE IN HENRIES, UNLESS OTHERWISE NOTED.
(T)CAPACITORS ARE TANTALUM, 10WV.

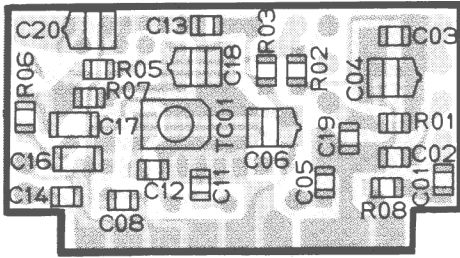
PLL UNIT



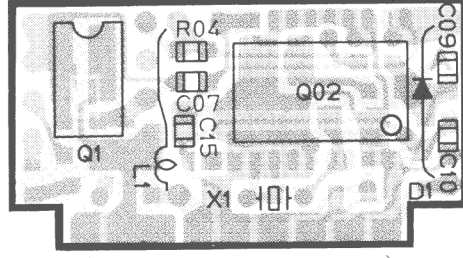
(obverse view of
"mixed-component" side)



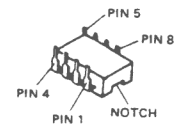
(obverse view of
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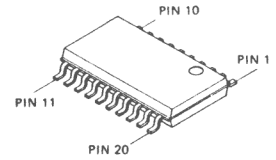
(reverse view of
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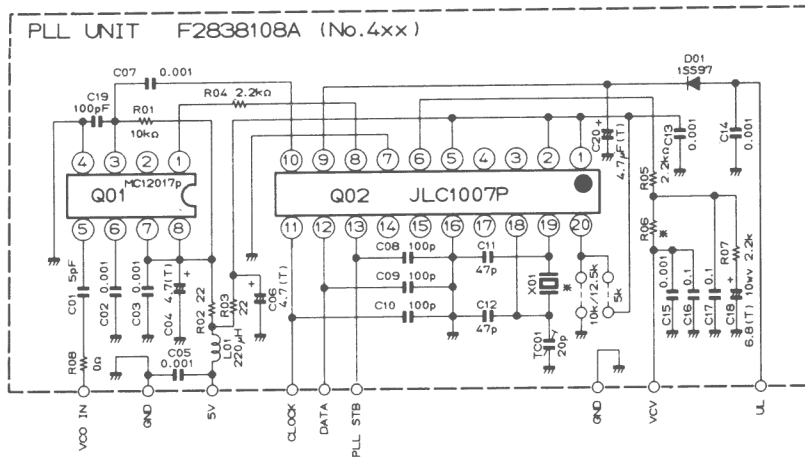
(reverse view of
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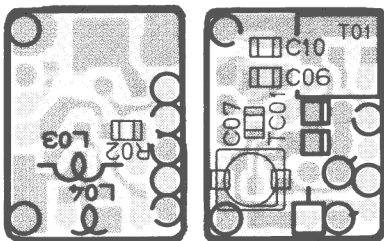
MC12017P (Q401)



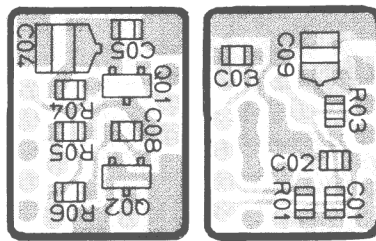
JLC1007P (Q402)



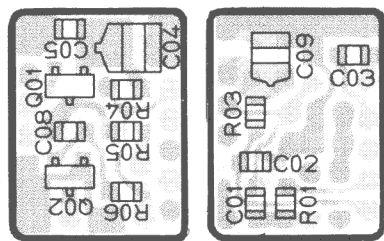
VCO UNIT



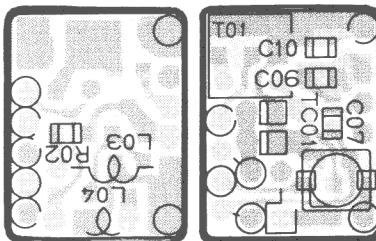
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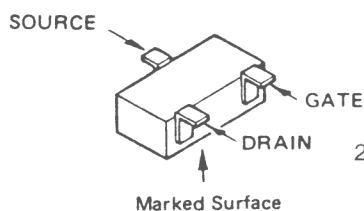
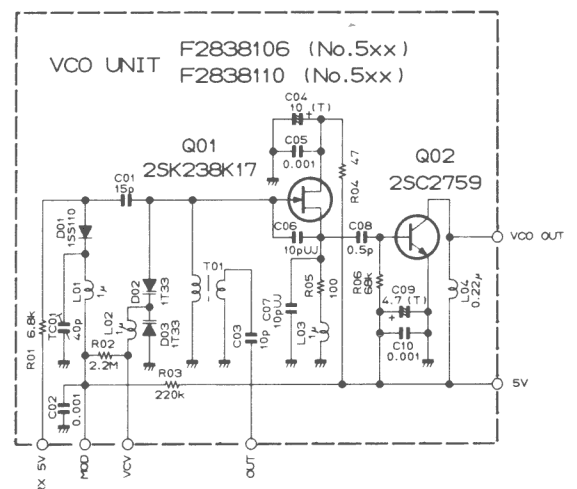
(obverse view of
"chip-only" side)



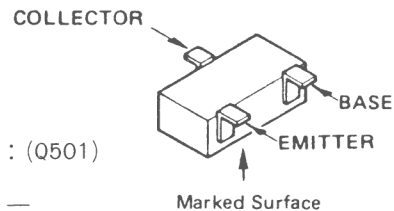
(reverse view of
"chip-only" side)



(reverse view of
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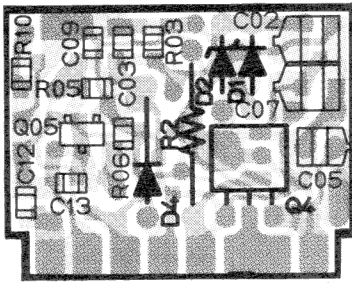


2SK238 (K17) : (Q501)

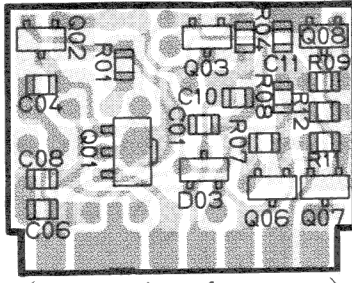


2SC2759 (U22) : (Q502)

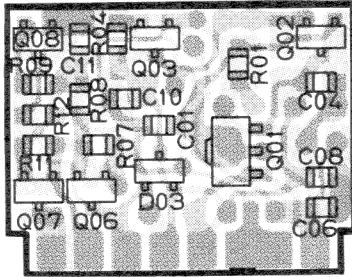
REG UNIT



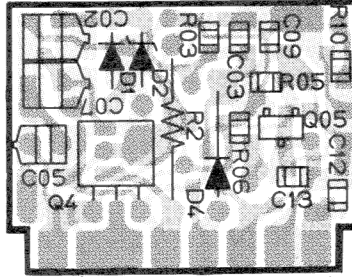
(obverse view of
"mixed-component" side)



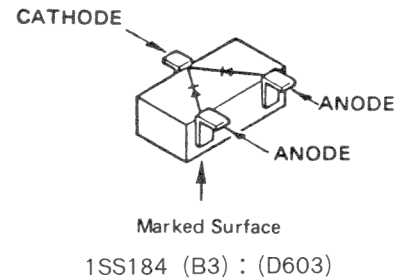
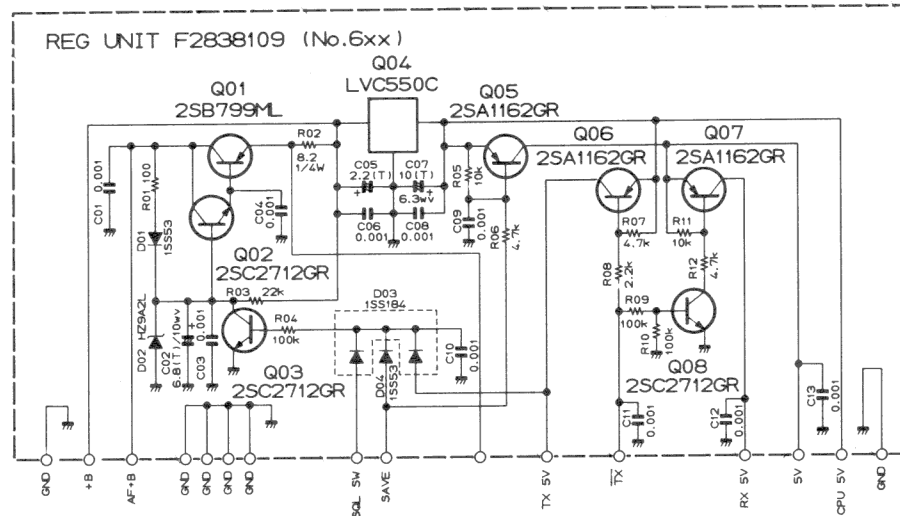
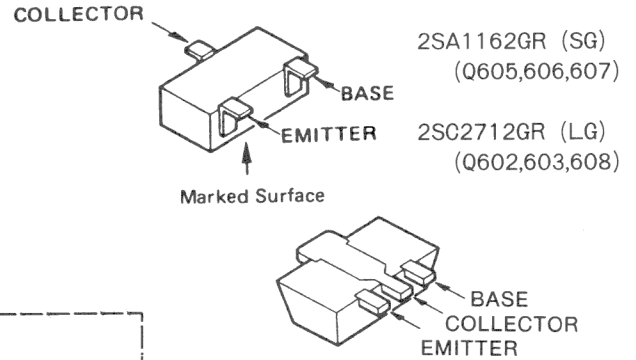
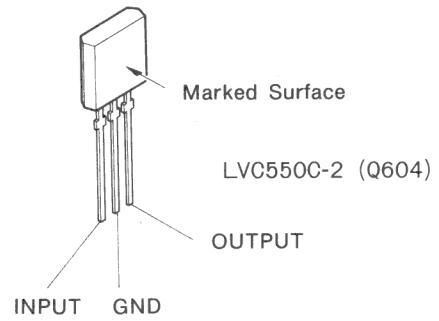
(obverse view of
"chip-only" side)



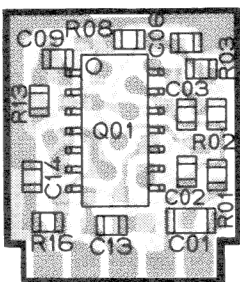
(reverse view of
"chip-only" side)



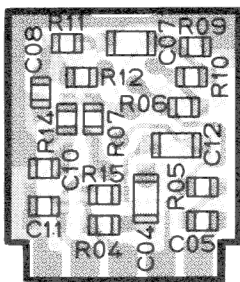
(reverse view of
"mixed-component" side)



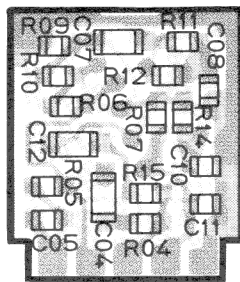
MIC AMP UNIT



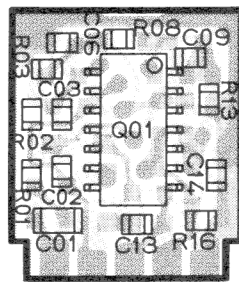
(obverse view of
"IC" side)



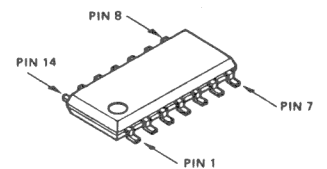
(reverse view of
"C-R" side)



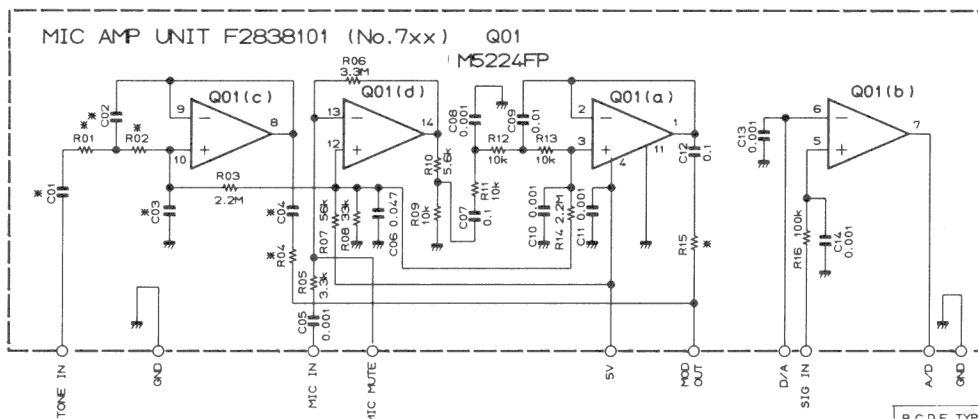
(obverse view of
"C-R" side)



(reverse view of
"IC" side)

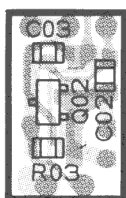


M5224FP (Q701)

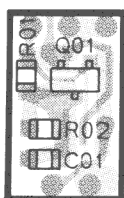


	C01	C02	C03	C04	R01	R02	R04	R15
B.C.D.E TYPE	0.1	0.01	0.0022	0.1	10k	10k	22k	22k
A.F TYPE	—	—	0.01	—	—	—	—	22k

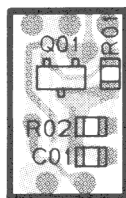
S METER UNIT



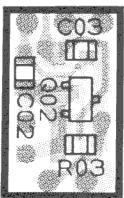
(obverse view of
"top" side)



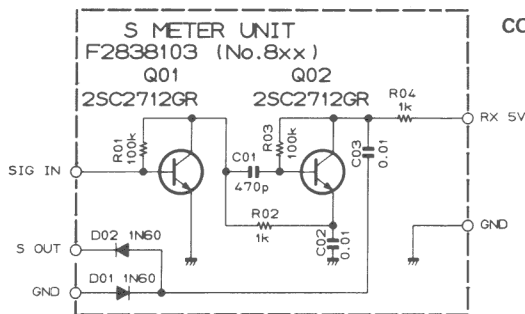
(obverse view of
"bottom" side)



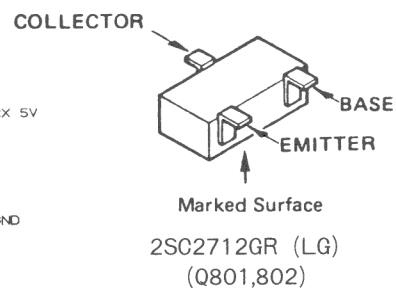
(reverse view of
"bottom" side)



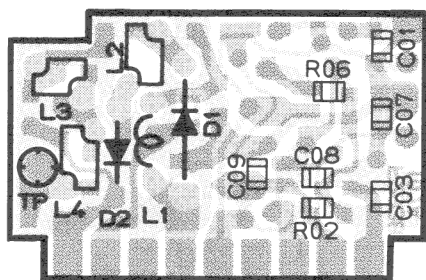
(reverse view of
"top" side)



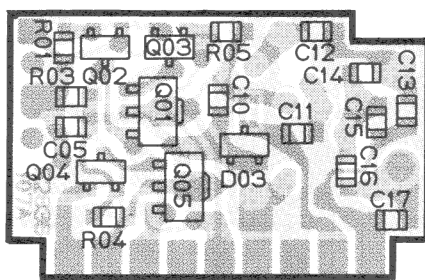
RESISTOR VALUES ARE IN Ω , 1/10W;
CAPACITOR VALUES ARE IN μ F, 50V;
UNLESS OTHERWISE NOTED.



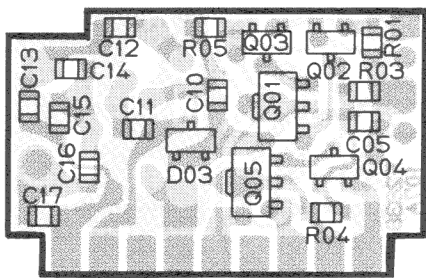
ANT SW UNIT



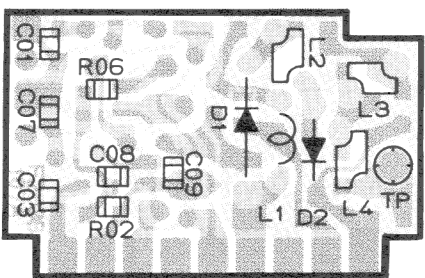
(obverse view of
"mixed-component" side)



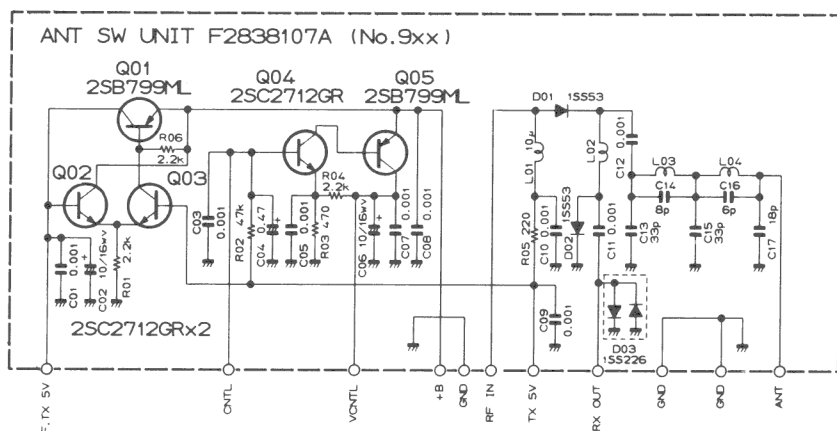
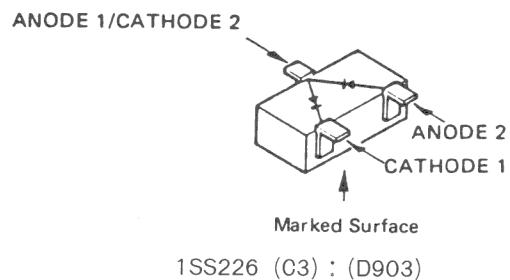
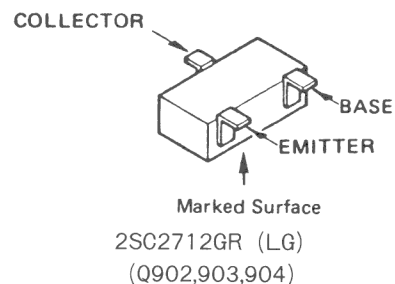
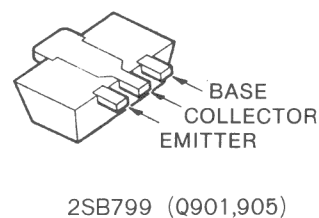
(obverse view of
"chip-only" side)



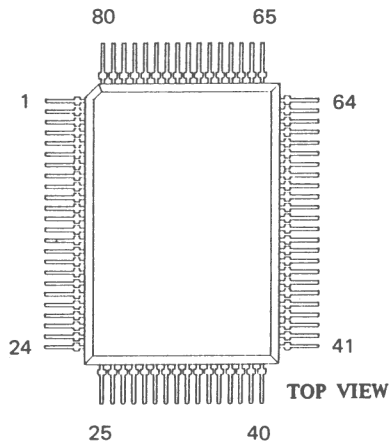
(reverse view of
"chip-only" side)



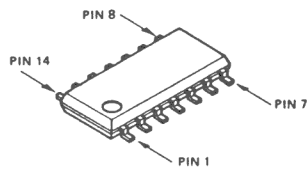
(reverse view of
"mixed-component" side)



RESISTOR VALUES ARE IN Ω , 1/10W;
CAPACITOR VALUES ARE IN μ F, 50V;
INDUCTOR VALUES ARE IN HENRIES, UNLESS OTHERWISE NOTED.

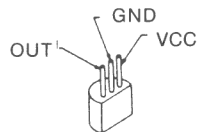


HD613901A51 (Q1001)

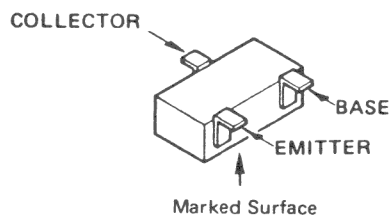


μPD4066BG (Q1008)

μPD4001BG (Q1009)



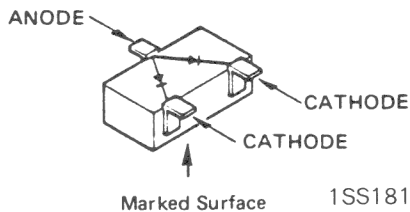
PST523G (Q1007)



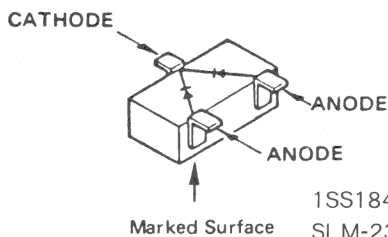
2SA1162GR (SG) : (Q1002,1012)

2SC2712GR (LG) : (Q1003,1004)
1005,1006
1010

FA1A4M (L33) : (Q1011,1013)

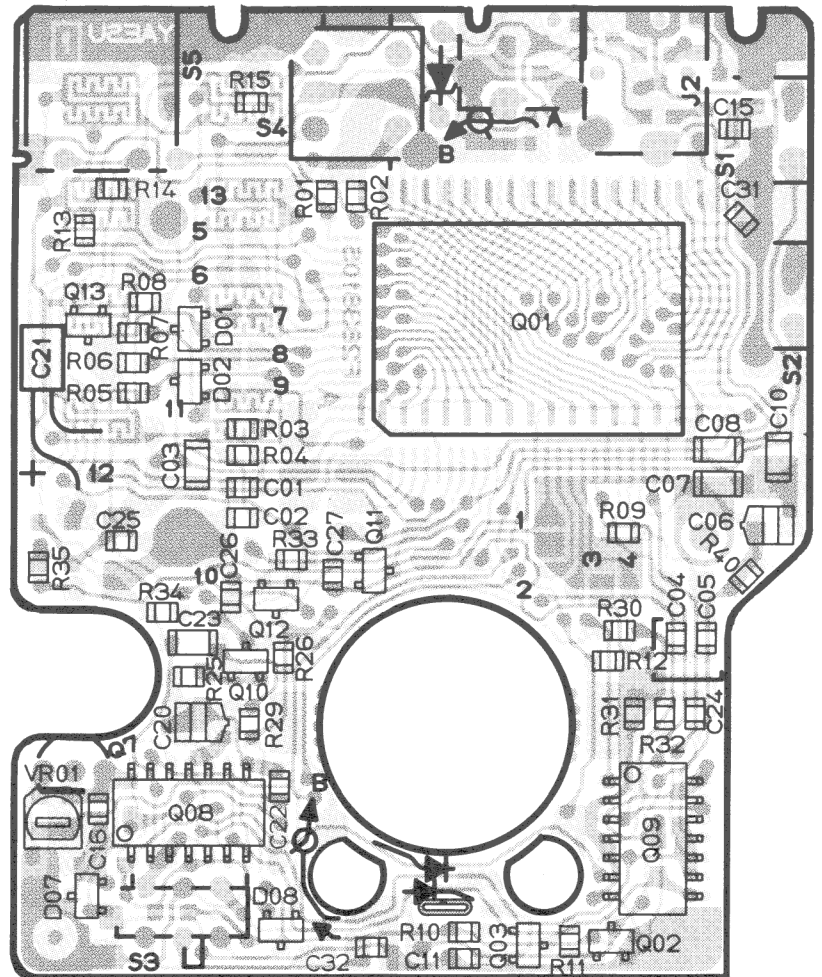


1SS181 (A3) :
(D1001,1002,1008)

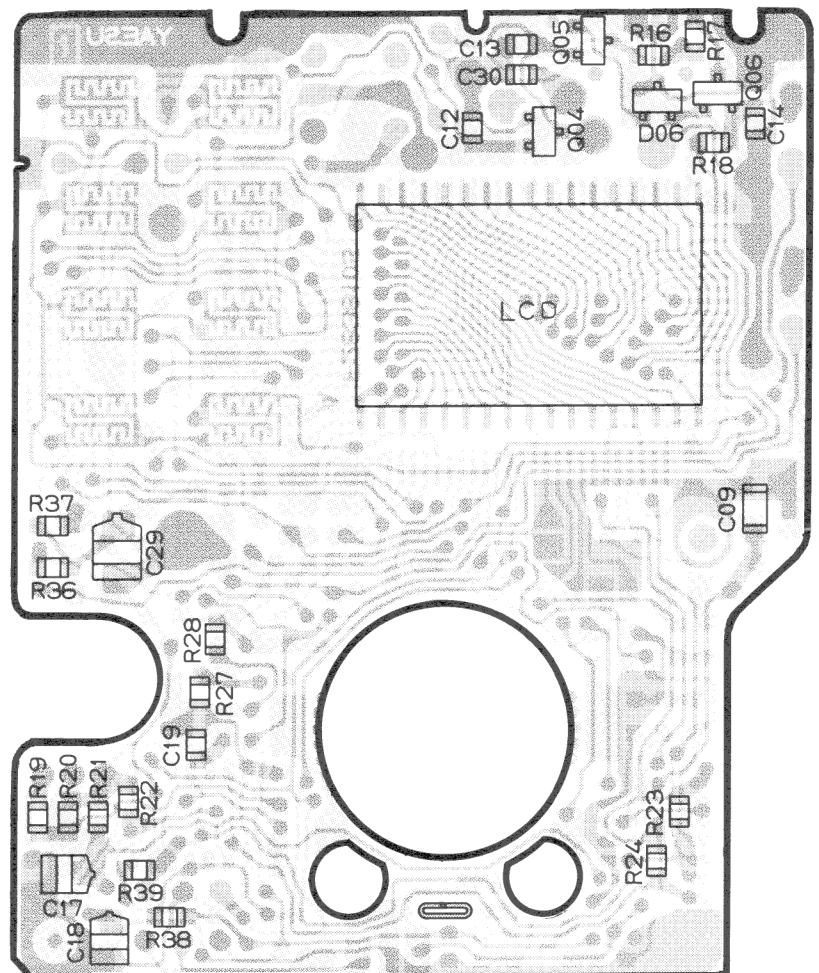


1SS184 (B3) : (D1007)
SLM-23VMW (D1006)
(LED)

CNTL UNIT

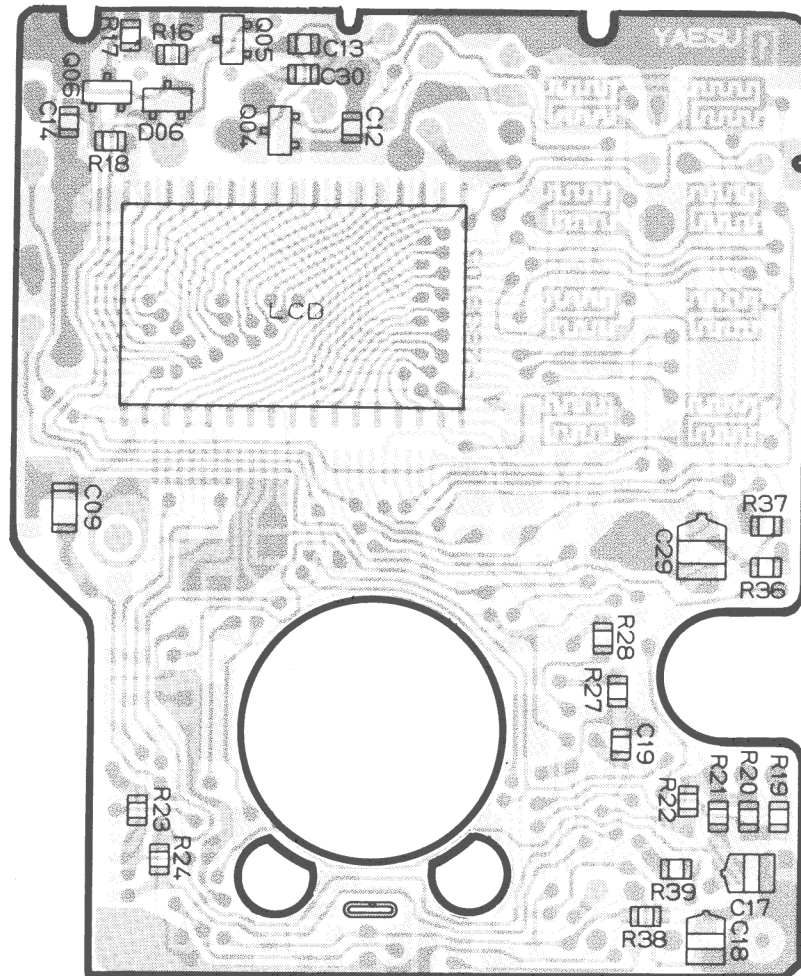


(obverse view of "microprocessor" side)

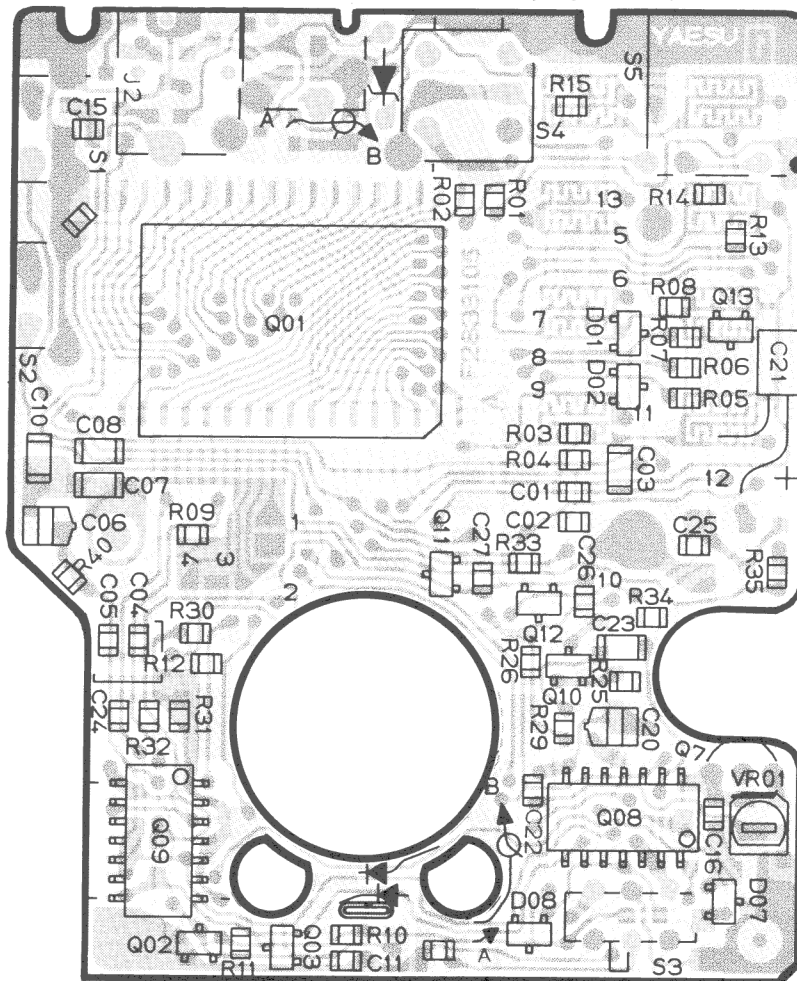


(reverse view of "display" side)

CNTL UNIT

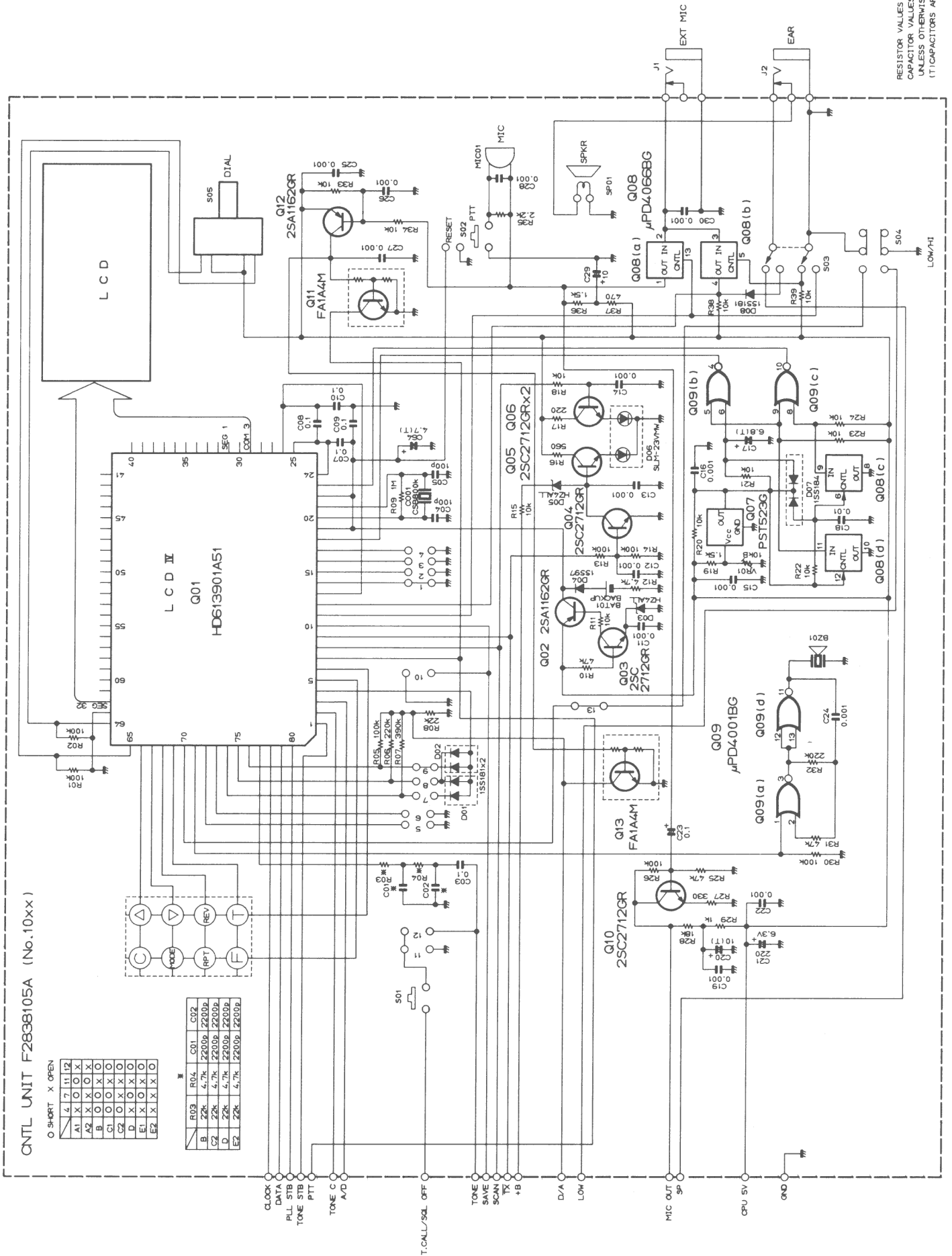


(obverse view of "display" side)



(reverse view of "microprocessor" side)

CNTL UNIT



ALIGNMENT

The FT-23R has been carefully aligned by highly skilled technicians at the factory, and is designed so that no further alignment should ever be required. However, in the unlikely event of a component failure, re-alignment may be necessary. All component replacement and service should be performed only by an authorized Yaesu representative, or the warranty policy may be voided.

The following test equipment is required for alignment:

RF Signal Generator:

calibrated output level at 150 MHz

Deviation Meter (linear detector)

Oscilloscope

AF Millivoltmeter

SINAD Meter

Inline Wattmeter: 150 MHz

Regulated DC Power Supply:
adjustable from 4 to 17V, 2A

50-ohm Non-reactive Dummy Load: 10W at 150 MHz

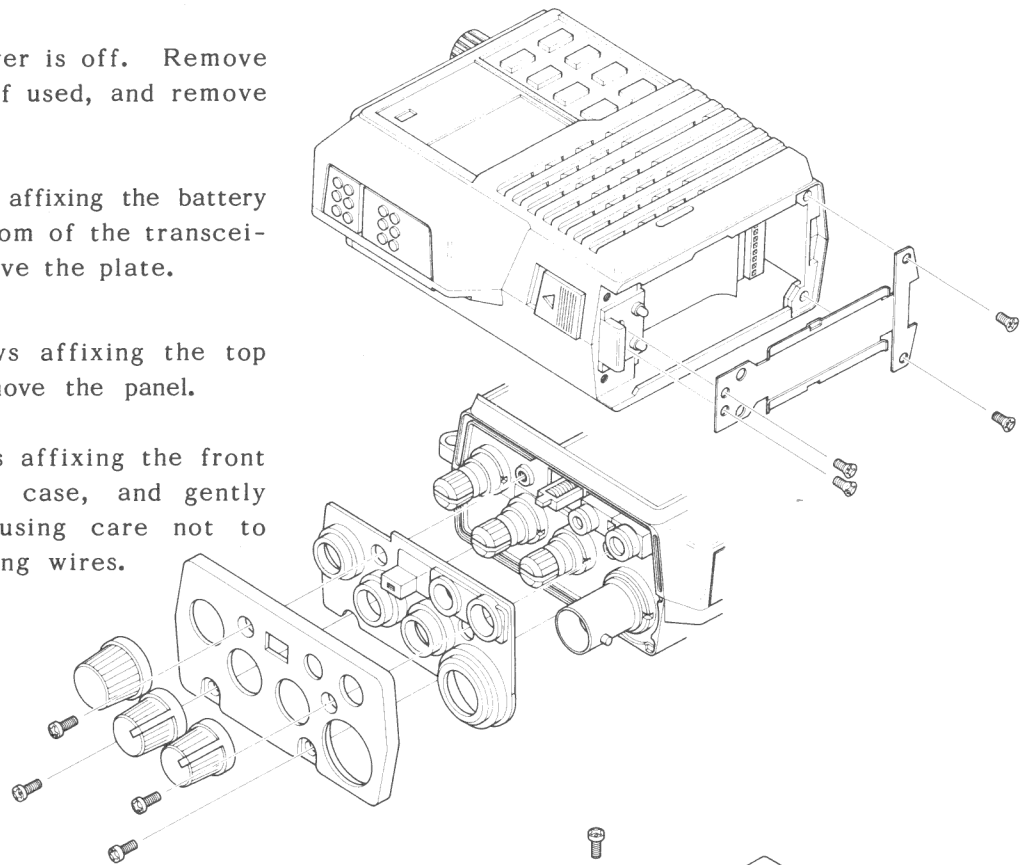
Frequency Counter: 0.2ppm accuracy at 150 MHz

AF Signal Generator

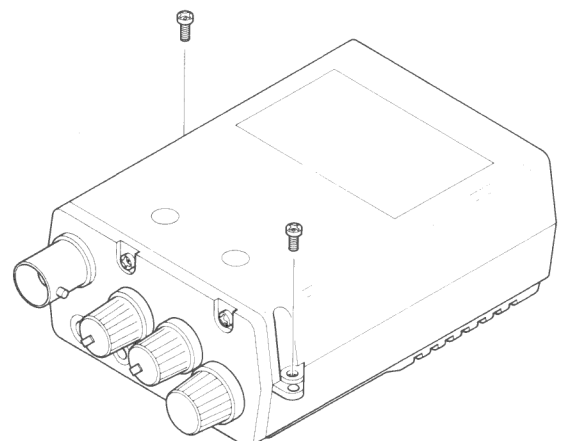
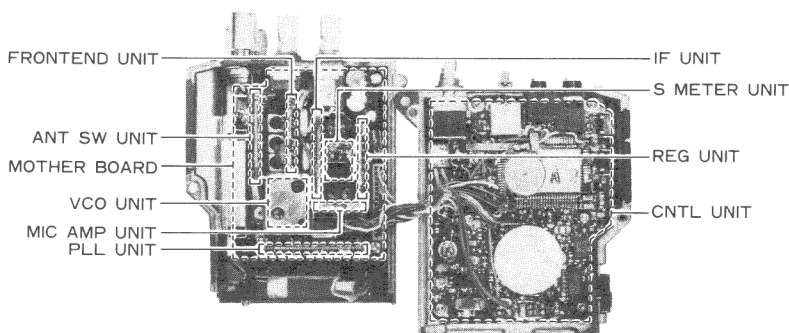
DC Voltmeter: high impedance

CASE DISASSEMBLY

1. Make sure the transceiver is off. Remove the hard or soft case, if used, and remove the battery pack.
2. Remove the four screws affixing the battery spring plate on the bottom of the transceiver, and carefully remove the plate.
3. Remove the four screws affixing the top panel, and carefully remove the panel.
4. Remove the two screws affixing the front and rear halves of the case, and gently separate the halves, using care not to stress the interconnecting wires.



BOARD LAYOUT



I. PLL & TRANSMITTER

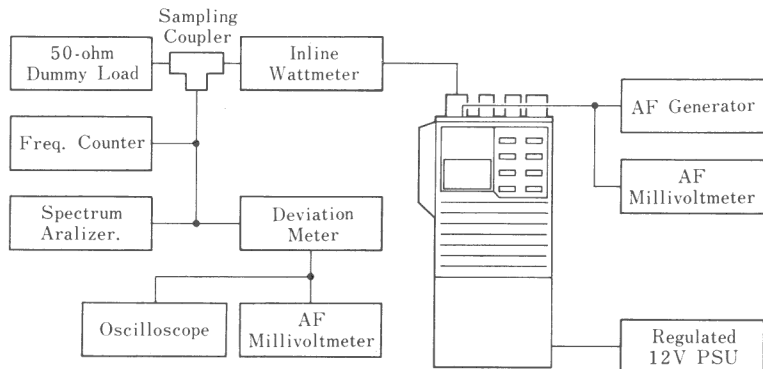
Set up the test equipment as shown in the diagram below for transmitter alignment. Adjust the supply voltage to 12.0V for all steps except Transmitter Output Power alignment (B).

A. PLL VCV (Varactor Control Voltage)

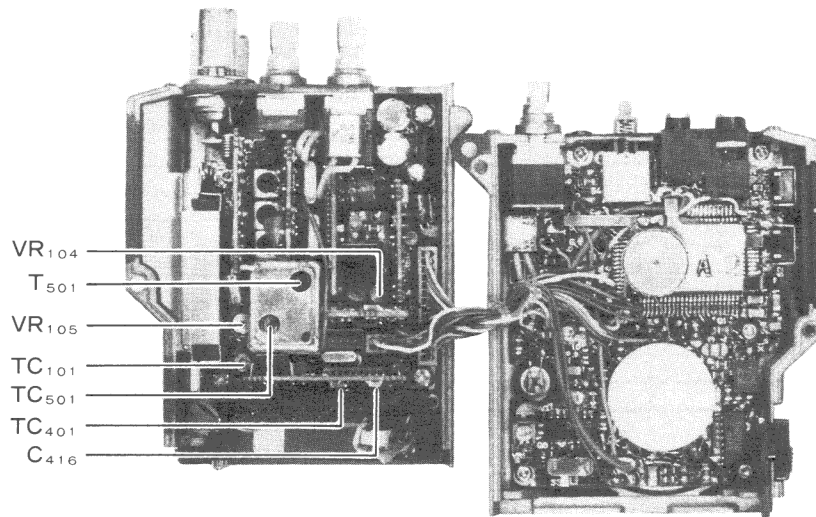
- (1) Connect the DC voltmeter between C416 on the PLL Unit and chassis ground.
- (2) While transmitting on 144.000 MHz adjust transformer T501 on the VCO Unit for 1.35 $\pm$ 0.05 VDC.
- (3) While receiving on 144.000 MHz adjust trimmer TC501 on the VCO Unit for 1.1 $\pm$ 0.05 VDC.
- (4) Retune the transceiver and confirm the high-end VCV for the transceiver version being aligned, as follows:

Version	Frequency	Tx VCV	Rx VCV
A, C, E	148.000	<1.8V	<1.6V
B, D	146.000	<1.7V	<1.5V

PLL & TRANSMITTER ALIGNMENT SETUP



PLL & TRANSMITTER ALIGNMENT POINTS



B. Transmitter Output Power

- (1) Tune the transceiver to band center (145 or 146 MHz), and set the LOW switch to the undepressed position.
- (2) Increase the supply voltage to 12.5V.
- (3) Adjust TC101 on the Mother Board for peak output power on the wattmeter (at least 5W with less than 1.5A supply current).
- (4) Press the LOW switch on the top panel, and adjust VR105 on the Mother Board for 0.5 watts output.
- (5) Return the supply voltage to 12.0V.

C. PLL Reference Frequency

With the transceiver tuned to band center (145 or 146 MHz), adjust TC401 on the PLL Unit, if necessary, so that the display frequency matches the frequency counter when transmitting.

D. Modulation Level

- (1) With the transceiver tuned to band center (145 or 146 MHz), adjust the AF generator for 25mV output at 1 kHz to the MIC jack.
- (2) Adjust VR104 on the Mother Board for $\pm$ 4.5 kHz deviation on the deviation meter.

II. RECEIVER

Set up the test equipment as shown above for receiver alignment.

A. Sensitivity

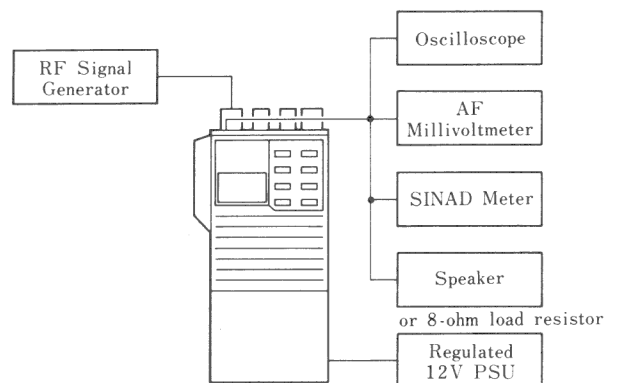
- (1) With the transceiver and RF signal generator both tuned to band center (145 or 146 MHz), set the generator for ± 3.5 kHz deviation of 1 kHz tone modulation, and set the output level for 40 dBu at the antenna jack.
- (2) Preset VR103 on the Mother Board fully clockwise.
- (3) Adjust T101 through T104 on the Mother Board for maximum S-meter indication, reducing the generator level if more than four bargraph segments turn on.

After step (3), generator level should be 0.2 μ V or less for 12dB SINAD. Perform the following adjustment next.

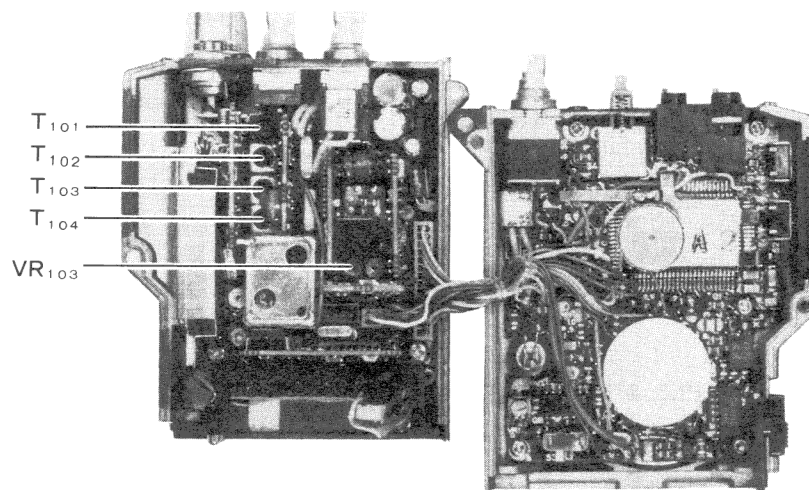
B. S-meter Sensitivity

- (1) With the transceiver and RF signal generator set up as in step (1) of the above Sensitivity adjustment procedure, set the signal generator for 20 dBu output.
- (2) Adjust VR103 on the Mother Board so that all bargraph segments are just turned on.
- (3) Reduce the generator output so that only two bargraph segments are on, and confirm that the generator output level is now 5 dBu or less.

RECEIVER ALIGNMENT SETUP



RECEIVER ALIGNMENT POINTS



PARTS LIST

MAIN CHASSIS					
Symbol No.	Part No.	Name & Description			
		CONNECTOR			
J01	P1090541	BNC-RM ANT			CERAMIC FILTER
			CF101	H3900280	LF-B12
		MISCELLANEOUS			
	R3116390	DIAL Knob			RESISTORS
	R3116620	VOL,SQL Knobs	R112	J24205479	RMC 1/10T4R7J 1/10W 4.7Ω
	R3508300	PTT Button Cover	R113	J24205100	" " 100J " 10Ω
	R3508310	UNLOCK Lever	R102	J24205220	" " 220J " 22Ω
	R0117370	Coil Spring	R106,109	J24205221	" " 221J " 220Ω
	R0507950B	Battery Spring Plate	R110	J24205331	" " 331J " 330Ω
	R3503650A	Top Panel Gasket	R111	J24205102	" " 102J " 1kΩ
	R3507960	Jack Seal Gasket	R114	J24205103	" " 103J " 10kΩ
			R107,118A,F	J24205223	" " 223J " 22kΩ
			R116	J00215223	Carbon film 1/8W 22kΩ
			R101	J24205333	RMC 1/10T333J 1/10W33kΩ
			R108,115	J24205473	" " 473J " 47kΩ
			R103-105,117	J24205104	" " 104J " 100kΩ
MOTHER BOARD					
Symbol No.	Part No.	Name & Description			
	F2838104A	Printed Circuit Board			
	C028384AA	PCB with Components			POTENTIOMETERS
			VR101	J60800128	K091K0004-20KB 20kΩ B
			VR102	J60800129	K0911100D-20KA 20kΩ A
			VR103-105	J51776473	RH0411CS4J 47kΩ B
					CAPACITORS
			C104-106	K22170203	Chip Ceramic 50WV 2pF CH (C2012CH1H020CFA)
			C107	K22170204	" " " 3pF " (C2012CH1H030CFA)
			C101,108	K22170206	" " " 5pF " (C2012CH1H050CFA)
			C130,133	K22170209	" " " 8pF " (C2012CH1H080DFA)
			C143	K22170211	" " " 10pF " (C2012CH1H100DFA)
Q101	G1090558	LA4145	C103	K22170221	" " " 27pF " (C2012CH1H270JFA)
			C111,122,125-127 131,135-141	K22170805	" " " 0.001μF B (C2012B1H102MFA)
		PWR-MODULE	C102,132,134	K22170817	" " " 0.01μF " (C2012B1H103MFA)
Q107	G1090732	M57796MA	C128,142	K22171008	" " " 0.047μF F (C2012F1H473ZFA)
			C109,110,112,115 119,120,129	K22141904	" " 25WV 0.1μF D (C3216D1E104MFA)
		TRANSISTORS	C121	K78130001	Tantalum 20WV 0.47μF (F951D474MRAAF1Q2)
Q102	G3111627G	2SA1162GRTE85R	C113,118,123	K40129052	Electrolytic 16WV 10μF (RC3-16V100M)
Q103	G3327127G	2SC2712GRTE85R	C114,124	K40129038	" " 16WV 100μF (RC2-16V101M)
Q104	G3070001	FA1A4M	C116,117	K40089020	" " 6.3WV 100μF (RC3-6V101M)
Q105	G3333567	2SC3356-T2B			
Q106	G3329547	2SC2954-T2B			
		DIODE			
D101	G2070009	1SS184TE85R Si			
					TRIMMER CAPACITOR
			TC101	K91000149	VCT31E161A 20pF
		CRYSTAL FILTER			
XF101	H1102114	10M15BM 10.7MHz			

			IF UNIT		
T101	L0021416	TRANSFORMERS 145MHz	Symbol No.	Part No.	Name & Description
T102-104	L0021418	"		F2838102	Printed Circuit Board
				C028382AA	PCB with Components
		INDUCTORS			
L101,102	L1190275	LAL02NAR22M 0.22μH			IC
L103	L1020671		Q302	G1090698	TK10420M
		CONNECTORS			TRANSISTOR
J101	P0090599	IL-Y-5P-S15T2-EF	Q301	G3326207B	2SC2620QBTR
J102	P0090601	IL-Y-14P-S15T2-EF			
J103	P0090598	IL-Y-4P-S15T2-EF			
P101(with wire)	T9205436				
					DIODES
			D301,302	G2070007	1SS226TE85L Si
FRONT END UNIT					CRYSTAL
Symbol No.	Part No.	Name & Description	X301	H0102773	UM-1 10.245MHz
	F2838111A	Printed Circuit Board			
	C02838BAA	PCB with Components			
					CERAMIC DISCRIMINATOR
			CD301	H7900260	D455C
		FETS			
Q201,202	G3803027Y	2SK302YTE85R			
					RESISTORS
			R305	J24205101	RMC 1/10T101J 1/10W100Ω
		DIODES	R304	J20205471	" " 471J " 470Ω
D201-203	G2090248	1T32 Varactor	R311	J24205152	" " 152J " 1.5kΩ
			R301,307,308	J24205222	" " 222J " 2.2kΩ
			R314	J24205392	" " 392J " 3.9kΩ
			R315	J24205472	" " 472J " 4.7kΩ
		RESISTORS	R313	J24205682	" " 682J " 6.8kΩ
R201	J24205560	RMC 1/10T 560J 1/10W 56Ω	R309,316	J24205103	" " 103J " 10kΩ
R206,209,210	J24205101	" " 101J " 100Ω	R303,310	J24205473	" " 473J " 47kΩ
R207	J24205471	" " 471J " 470Ω	R306	J24205823	" " 823J " 82kΩ
R202-204	J24205104	" " 104J " 100kΩ	R302	J24205224	" " 224J " 220kΩ
R205	J24205474	" " 474J " 470kΩ	R312	J24205474	" " 474J " 470kΩ
		CAPACITORS			CAPACITORS
C202,203,205,207	K22170221	Chip Ceramic 50WV 27pF CH (C2012CH1H270JFA)	C303	K22170213	Chip Ceramic 50WV 12pF CH (C2012CH1H120JFA)
C201,210	K22170805	" " " 0.001μF B (C2012B1H102MFA)	C304,310	K22170229	" " " 56pF " (C2012CH1H560JFA)
C206,209	K22170817	" " " 0.01μF " (C2012B1H103MFA)	C305	K22170237	" " " 120pF " (C2012CH1H121JFA)
C208	K22171008	" " " 0.047μF F (C2012F1H473ZF)	C309	K22170239	" " " 150pF " (C2012CH1H151JFA)
C204	K22141904	" " 25WV 0.1μF D (C3216D1E104MFA)	C315	K22170243	" " " 220pF " (C2012CH1H221JFA)
			C302,306,314	K22170805	" " " 0.001μF B (C2012B1H102MFA)
			C301,312,317	K22170817	" " " 0.01μF " (C2012B1H103MFA)
		INDUCTORS			
L201	L1190292	LAL02NA5R6K 5.6μH	C307,308,313	K22141904	" " 25V 0.1μF D (C3216D1E104MFA)
L202	L1190289	LAL02NA3R3K 3.3μH	C316,318	K78120013	Chip Tantalum 10WV 1μF (F951C105MRAAF1Q2)

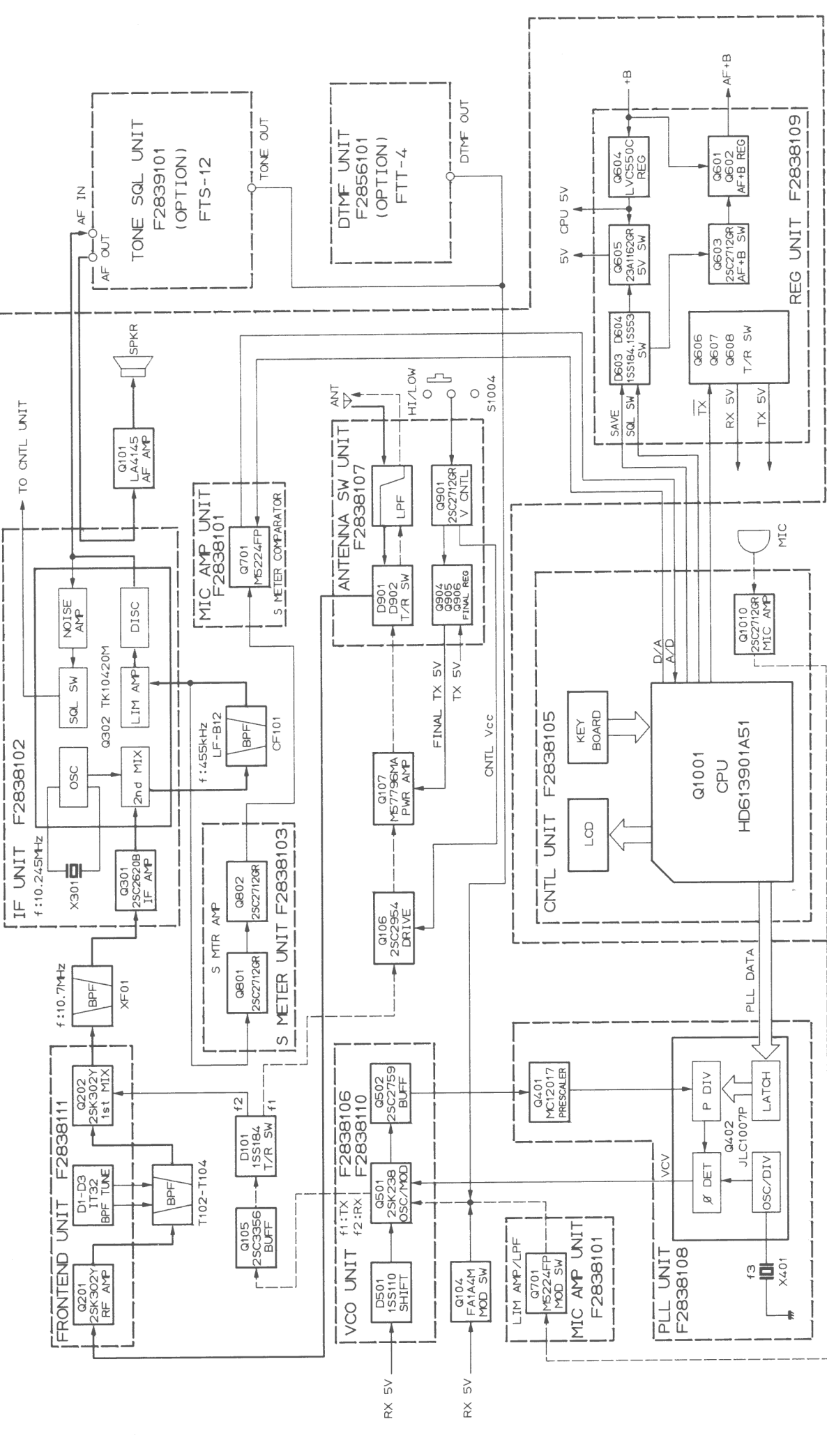
C311	K78080004	Chip Tantalum 6.3W 15 μ F (F950J156MVCAF1Q2)			TRIMMER CAPACITOR
			TC401	K91000154	ECR-KN020E11X 20pF
		INDUCTOR			INDUCTORS
L301	L1190344	LAL02KR100K 10 μ H	L401	L1190311	LAL02NA221K 220 μ H
PLL UNIT			VCO UNIT		
Symbol No.	Part No.	Name & Description	Symbol No.	Part No.	Name & Description
	F2838108A	Printed Circuit Board		F2838106	Printed Circuit Board
	C028388AA	PCB with Components			VCO-LC
		Model A1,A2,D,E2 5kHz steps		F2838110	" " "
	C028388AB	" " "			VCO-OSC
		Model F 10kHz steps		C028386AF	PCB with Components
	C028388AC	" " "			
		Model B,C2 12.5kHz steps			
					FET
		ICs	Q501	G3802387S	2SK238-K17
Q401	G1090725	MC12017P			
Q402	G1090582	JLC1007P			
					TRANSISTOR
			Q502	G3327597C	2SC2759-T2B U23
		DIODE			
D401	G2090118	1SS97 Schottky			
					DIODES
			D501	G2090297	1SS110 Si
			D502,503	G2090271	1T33 Varactor
		CRYSTAL			
X401**	H0102771	UM-1 10.240MHz			
X401■	H0102772	UM-1 12.800MHz			
					RESISTORS
			R504	J24205470	RMC 1/10T 470J 1/10W 47 Ω
		RESISTORS	R505	J24205101	" " 101J " 100 Ω
R408	J24205000	RMC 1/10T 000J 1/10W 0 Ω	R501	J24205682	" " 682J " 6.8k Ω
R402,403	J24205220	" " 220J " 22 Ω	R506	J24205683	" " 683J " 68k Ω
R404,405,407	J24205222	" " 222J " 2.2k Ω	R503	J24205224	" " 224J " 220k Ω
R406■	J24205472	" " 472J " 4.7k Ω	R502	J24205225	" " 225J " 2.2M Ω
R401,406*	J24205103	" " 103J " 10k Ω			
R406°	J24205153	" " 153J " 15k Ω			
					CAPACITORS
			C508	K22170201	Chip Ceramic 50WV 0.5pF CH (C2012CH1HOR5CFA)
C401	K22170206	Chip Ceramic 50WV 5pF CH (C2012CH1H050CFA)	C503	K22170211	" " " 10pF " (C2012CH1H100DFA)
C411,412	K22170227	" " " 47pF " (C2012CH1H470JFA)	C506,507	K22170311	" " " " UJ (C2012UJ1H100DFA)
C408-410,419	K22170235	" " " 100pF " (C2012CH1H101JFA)	C501	K22170215	" " " 15pF CH (C2012CH1H150JFA)
C402,403,405,407 413-415	K22170805	" " " 0.001 μ F B (C2012B1H102MFA)	C502,505,510	K22170805	" " " 0.001 μ F B (C2012B1H102MFA)
C416,417	K22141904	" " 25WV 0.1 μ F D (C3216D1E104MFA)	C509	K78080002	Chip Tantalum 6.3WV 4.7 μ F (F950J475MSAAF1Q2)
C404,406,420	K78080002	Chip Tantalum 6.3WV 4.7 μ F (F950J475MSAAF1Q2)	C504	K78080003	" " " 10 μ F (F950J106MTAAF1Q2)
C418	K78100003	" " 10WV 6.8 μ F (F951A685MTAAF1Q2)			

- Model A1,A2,D,E2
- Model B,C2

		RESISTORS			SPEAKER
R1017	J24205221	RMC 1/10T221J 1/10W 220Ω	SP1001	M4090063	T036S13Y2611
R1027	J24205331	" " 331J " 330Ω			
R1037	J24205471	" " 471J " 470Ω			
R1016	J24205561	" " 561J " 560Ω			
R1029	J24205102	" " 102J " 1kΩ			MIC
R1019, 1036	J24205152	" " 152J " 1.5kΩ	MIC1001	M3290008	EM-78C YE
R1035	J24205222	" " 222J " 2.2kΩ			
R1004*,1012,1020 1038	J24205472	" " 472J " 4.7kΩ			
R1011, 1015,1018 1021-1024,1033 1034,1039	J24205103	" " 103J " 10kΩ	S1001,1002	N5090018	SWITCHES KHH15951 SQL, OFF*, BURST*, PTT
R1028	J24205183	" " 183J " 18kΩ	S1003	N6090063	SSSS22050A
R1003*,1008	J24205223	" " 223J " 22kΩ	S1004	N4090088	SPJ622N09 HI/LO
R1010,1025,1031	J24205473	" " 473J " 47kΩ	S1005	N0190139	SRBMIL066 DIAL
R1001,1002,1005 1013,1014,1026 1030	J24205104	" " 104J " 100kΩ			
R1006,1032	J24205224	" " 224J " 220kΩ			CONNECTORS
R1007	J24205394	" " 394J " 390kΩ	J1001	P1090369	HSJ0838-01-010 MIC
R1009	J24205105	" " 105J " 1MΩ	J1002	P1090370	HSJ0836-01-010 EAR
		POTENTIOMETER			LITHIUM BATTERY
VR1001	J51771103	RVG4F03103-TG 10kΩ	BAT1001	Q9000366	CR2025
					RUBBER CONDUCTOR
		CAPACITORS		S2000026	24.3x1.8x1 SS
C1004,1005	K22170235	Chip Ceramic 50WV 100pF CH (C2012CH1H101MFA)			
C1011-1016,1019 1022,1024-1027 1030	K22170805	" " " 0.001μF B (C2012B1H102MFA)			
C1028	K10176102	Ceramic disc " 0.001μF " (DD104B102K50)	ACCESSORIES*		
			Symbol No.	Part No.	Name & Description
C1001,1002	K22170809	Chip Ceramic " 0.0022μF " (C2012B1H222MFA)		Q3000049	ANTENNA YHA-16
C1018	K22170817	" " " 0.01μF " (C2012B1H103MFA)			
C1003,1007-1010 1023	K22141904	" " 25WV 0.1μF D (C3216D1E104MFA)		S6000098	HAND STRAP
C1006	K78080002	" " 6.3WV 4.7μF (F950J475MSAAF1Q2)			
C1017	K78100003	" " 10WV 6.8μF (F951A685MTAAF1Q2)			BATTERY PACK*
C1020,1029	K78080003	" " 6.3WV 10μF (F950J106MTAAF1Q2)		D3000493	FNB-10
C1021	K40089010	Electrolytic " 220μF (RC2-6V221M)			
					VINYL SOFT CASE*
				D3000477	CSC-23 u/w FNB-10
				D3000504	CSC-25 u/w FNB-10, FTT-4
		CONNECTORS			
P1001*	T9205433				* Optional same models
P1001*	T9205434				
P1002*	T9205432				
P1002*	T9205435A				
		BUZZER			
BZ1001	M4290001	EFBRE-25D02			

- Model A1,A2,F
- * Model B,C2,D,E2

IF UNIT F2838102



	A1,C1,G1	A2,C2,E2	B,D
f1	144-148MHz	140-160MHz	144-146MHz
f2	133.3-137.3MHz	129.3-149.3MHz	133.3-135.3MHz

	A1,A2,D,E1,E2	B,C1,C2
f3	10.240MHz	12.8MHz

RECEIVE
TRANSMIT
COMMON/CNTL

ET-23R
BLOCK DIAGRAM

