

FT-23R

TECHNICAL SUPPLEMENT



YAESU MUSEN CO., LTD.

C.P.O. BOX 1500, TOKYO, JAPAN

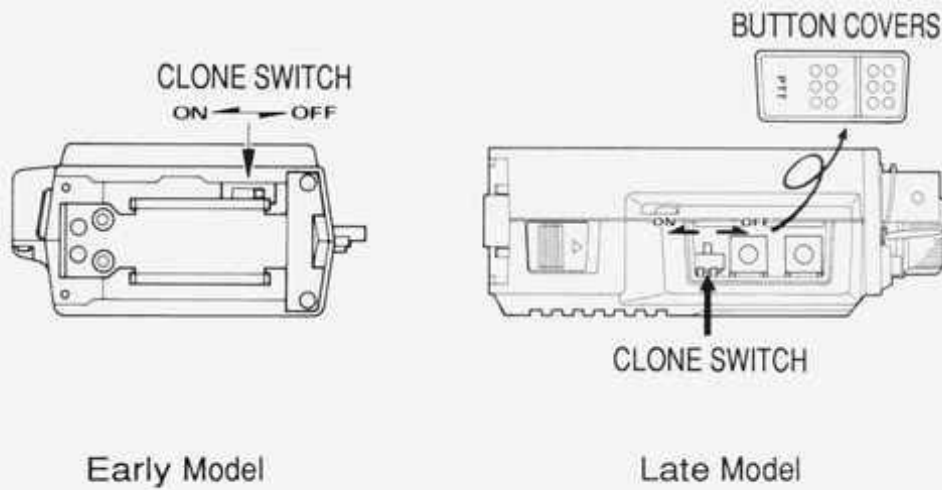
YAESU U.S.A.

17210 Edwards Rd., Cerritos, California 90701, U.S.A.

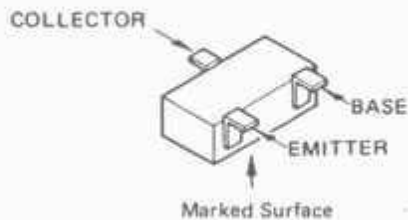
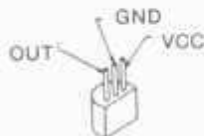
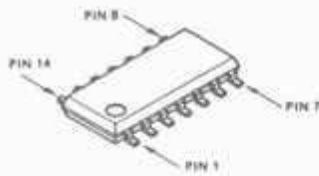
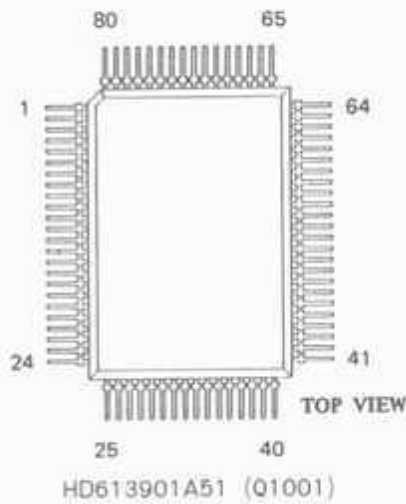
YAESU EUROPE B.V.

Snipweg 3. 1118AA Schiphol, The Netherlands

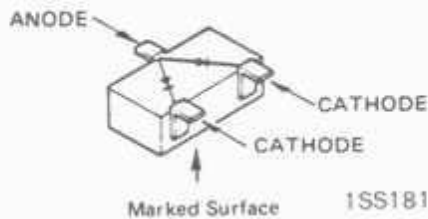
Early and late models can be distinguished by the location of the clone switch, as shown below.



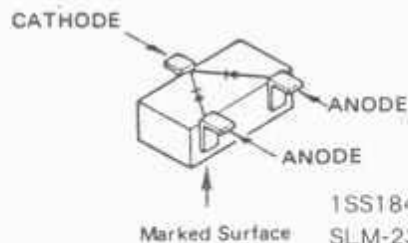
CNTL UNIT



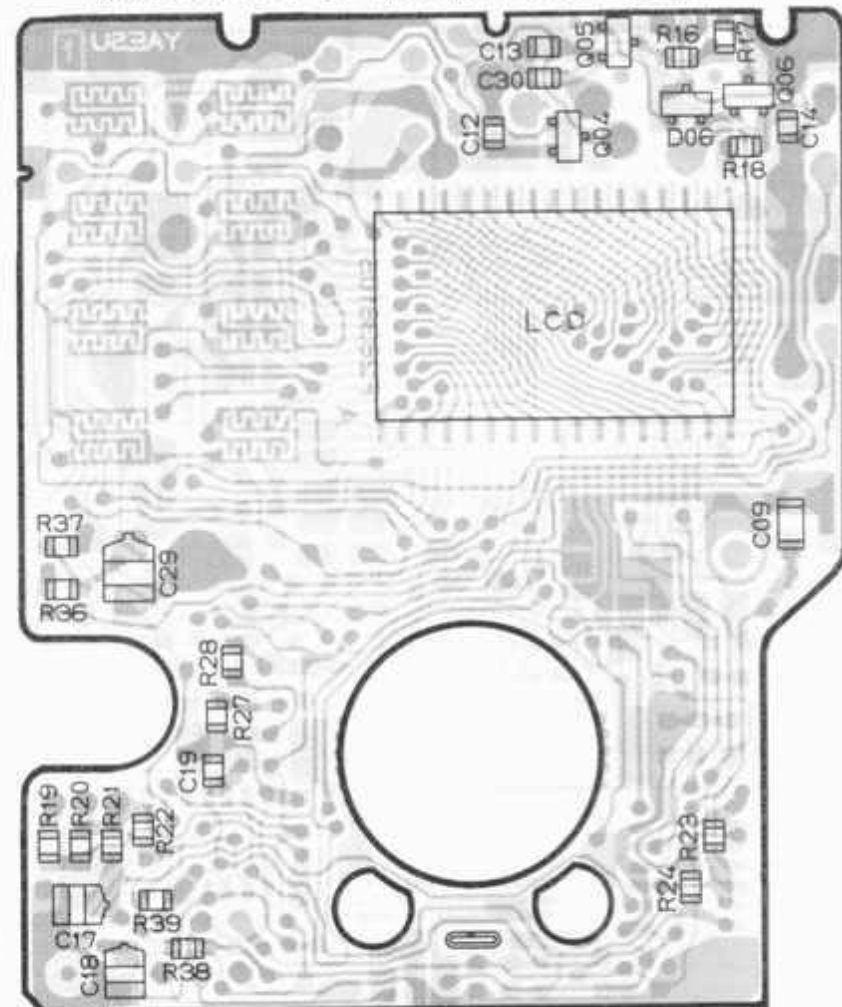
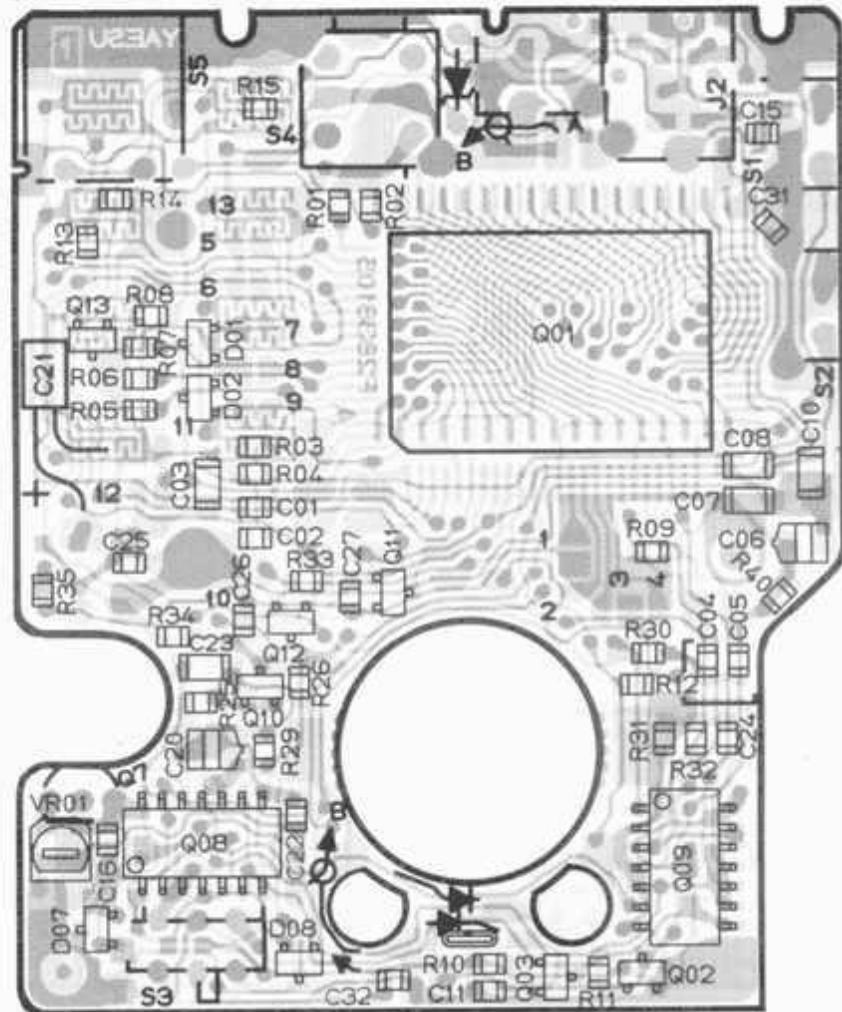
2SA1162GR (SG) : (Q1002,1012)
2SC2712GR (LG) : (Q1003,1004)
1005,1006
1010
FA1A4M (L33) : (Q1011,1013)



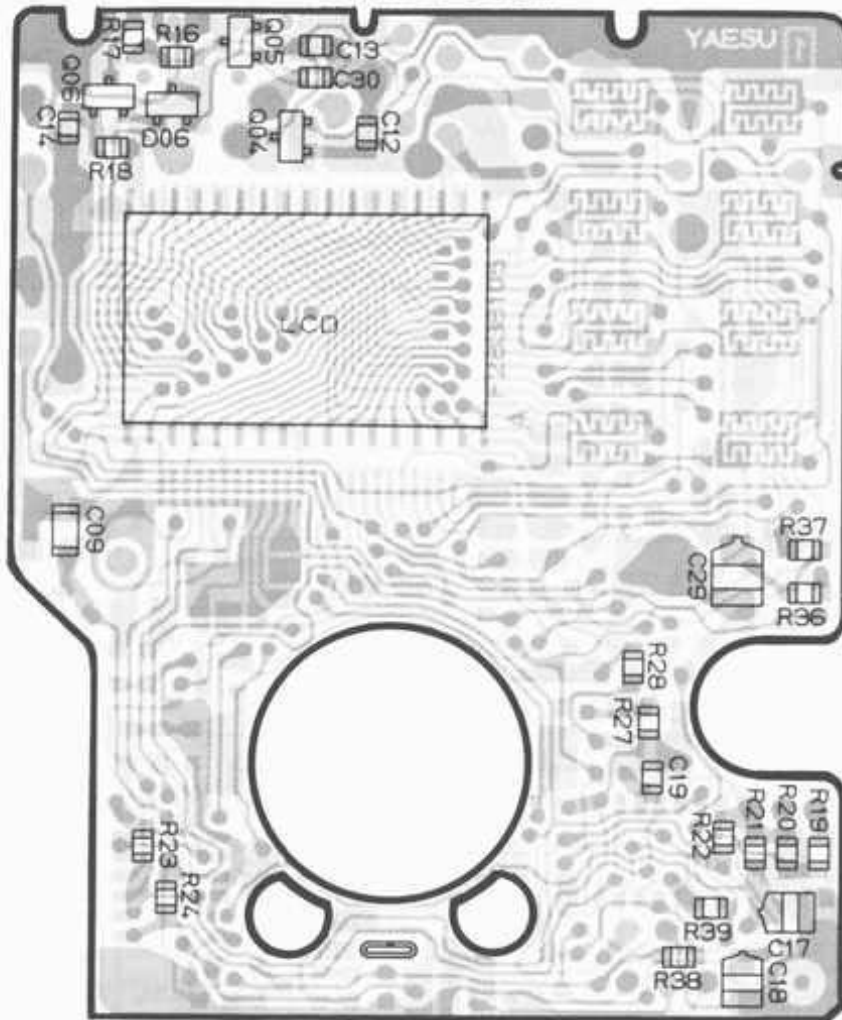
1SS181 (A3) :
(D1001,1002,1008)



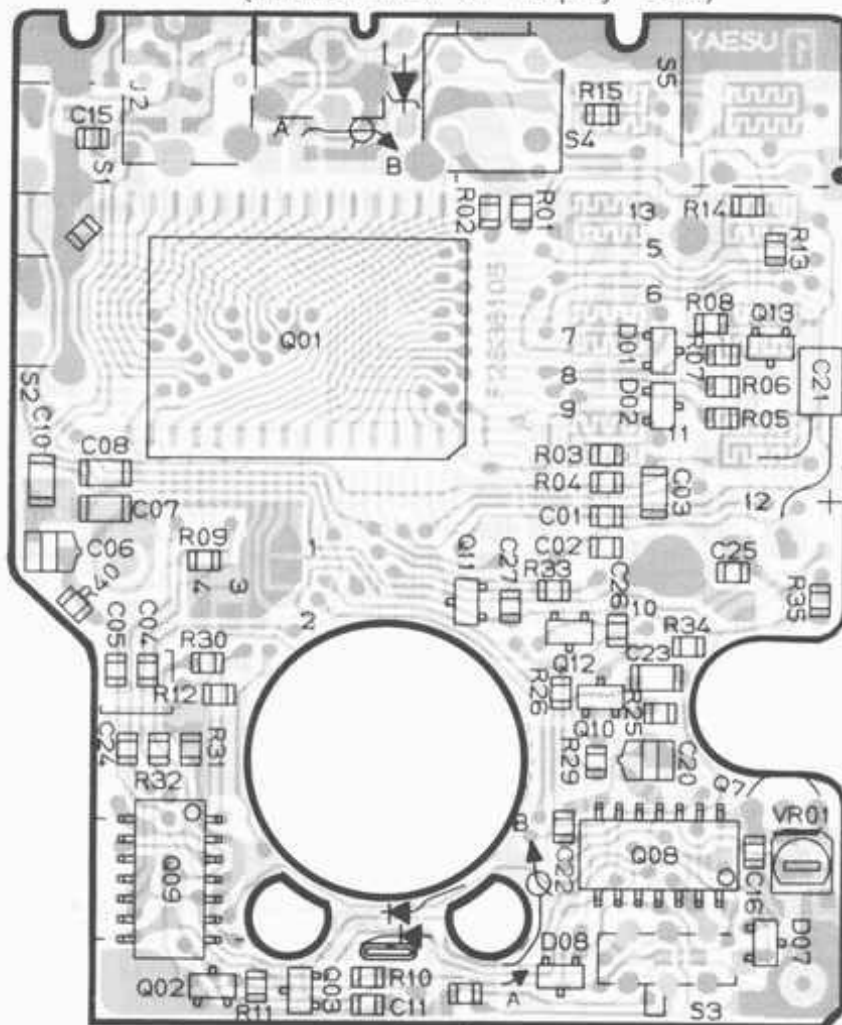
1SS184 (B3) : (D1007)
SLM-23VMW (D1006)
(LED)



CNTL UNIT



(obverse view of "display" side)



(reverse view of "microprocessor" side)

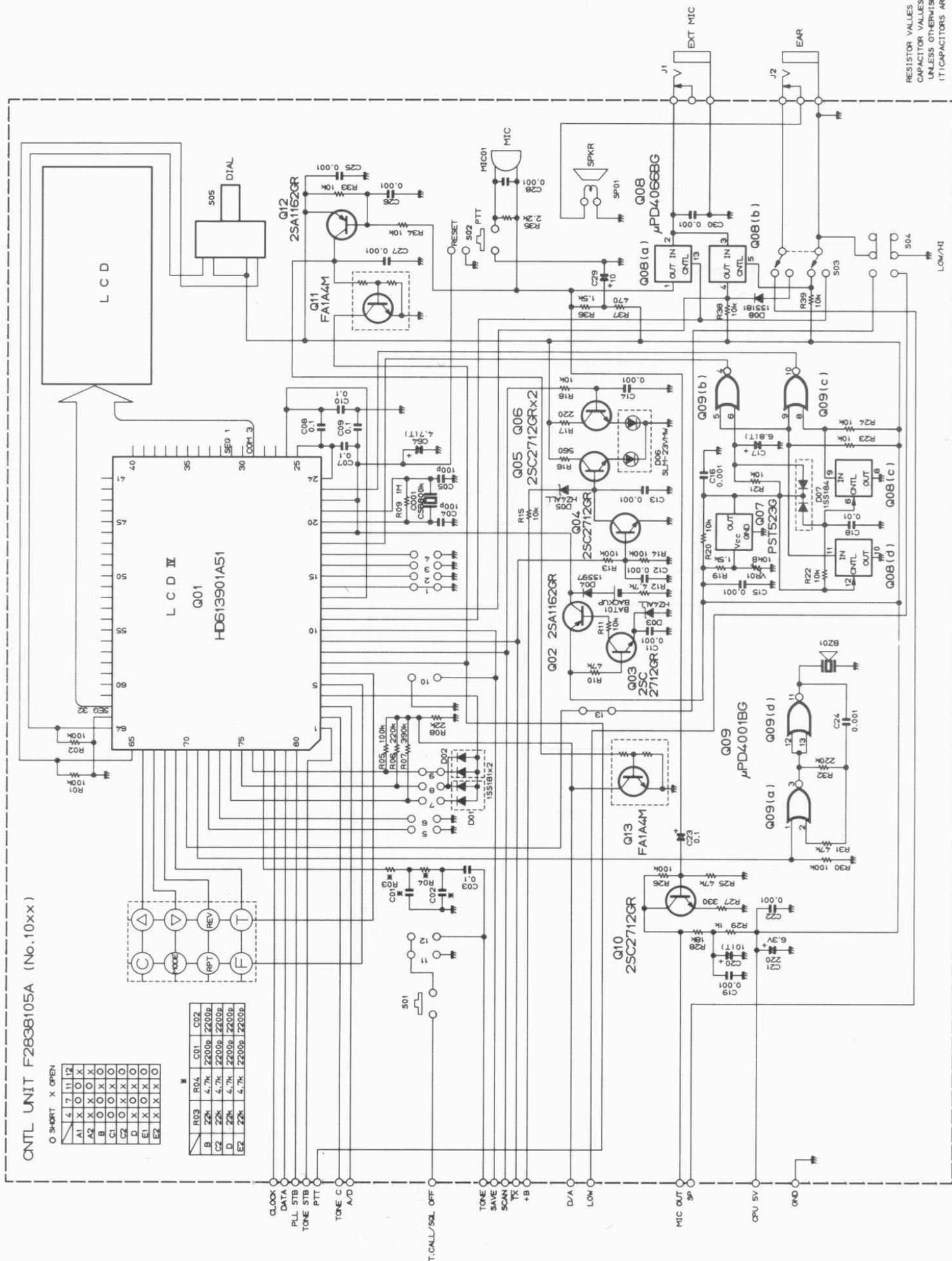
CNTL UNIT

CNTRL UNIT F2838105A (No.10xx)

SHORT X OPEN

12	X	X	O	O	O	O	O
11	O	O	X	X	X	X	X
7	O	X	O	O	X	O	X
4	X	X	O	O	O	X	X
A1	A2	B	C1	C2	D	E1	E2

	R03	R04	C01	C02
B	22k	4.7k	2200p	2200p
C	22k	4.7k	2200p	2200p
D	22k	4.7k	2200p	2200p
E	22k	4.7k	2200p	2200p



RESISTOR VALUES ARE IN Ω , 1/10W;
CAPACITOR VALUES ARE IN μ F, 50V;
UNLESS OTHERWISE NOTED.
(T) CAPACITORS ARE TANTALUM, 16V.

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

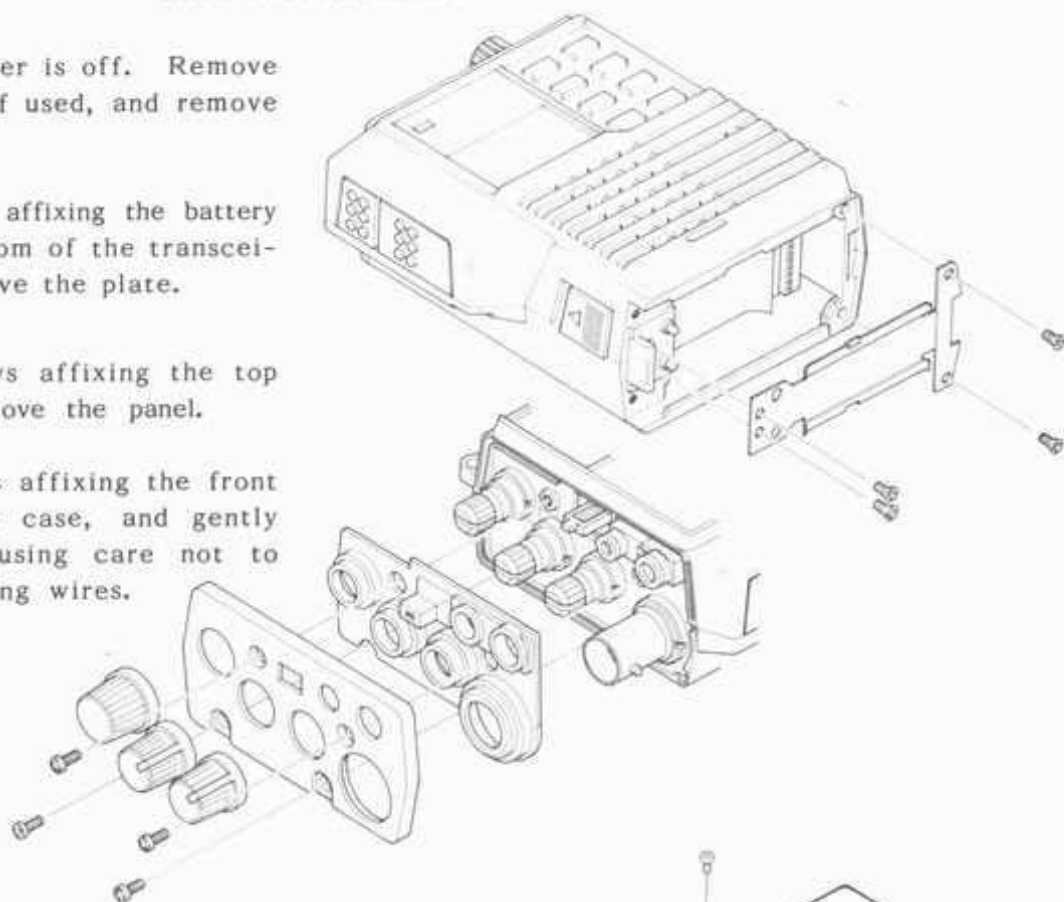
Frequency Counter: 0.2ppm accuracy at 150 MHz

AF Signal Generator

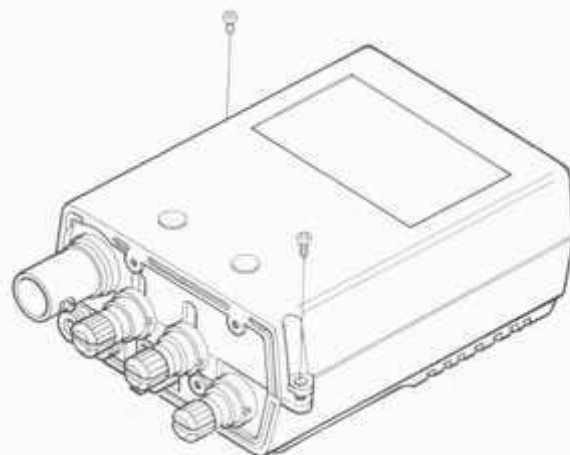
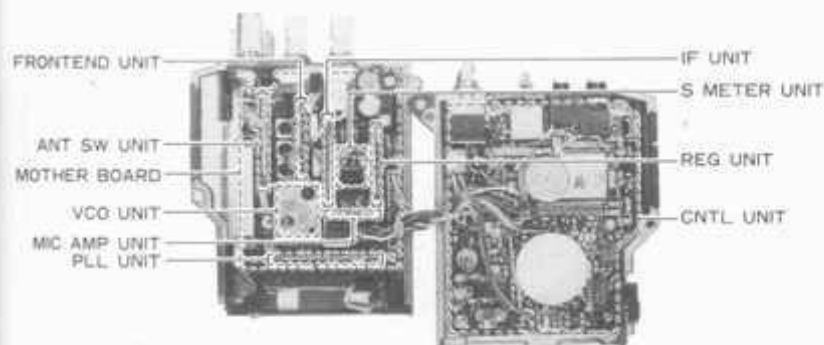
DC Voltmeter: high impedance

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

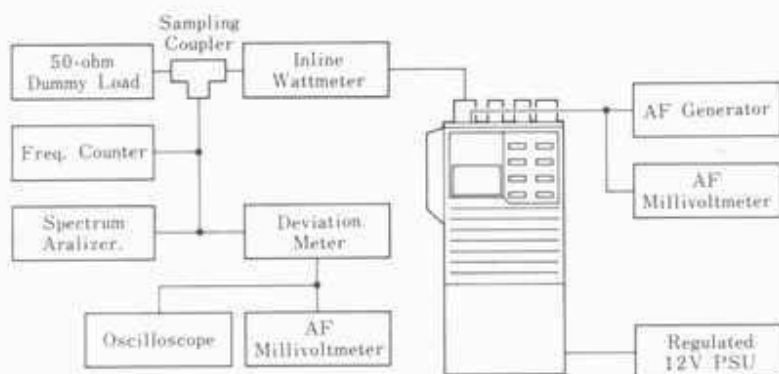
Set up the test equipment as shown in the diagram below for transmitter alignment. Adjust the supply voltage to 12.0V for all steps except Transmitter Output Power alignment (B).

A. PLL VCV (Varactor Control Voltage)

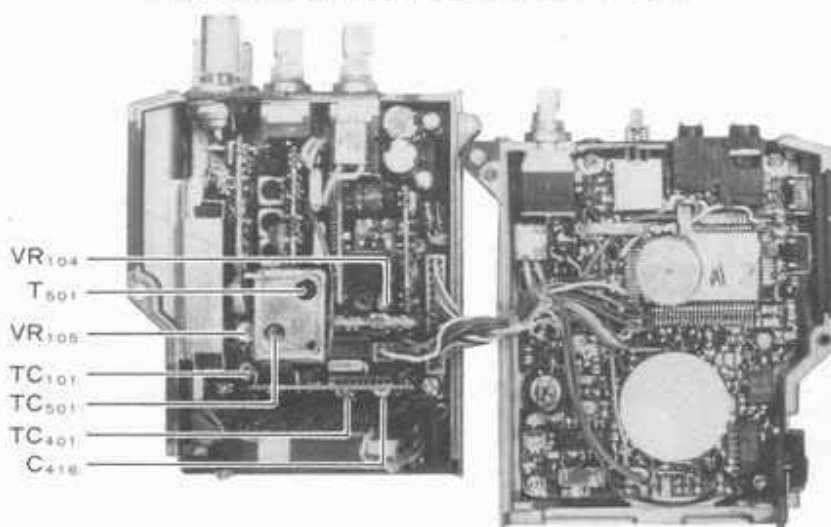
- (1) Connect the DC voltmeter between C416 on the PLL Unit and chassis ground.
- (2) While transmitting on 144.000 MHz adjust transformer T501 on the VCO Unit for 1.35 ± 0.05 VDC.
- (3) While receiving on 144.000 MHz adjust trimmer TC501 on the VCO Unit for 1.1 ± 0.05 VDC.
- (4) Retune the transceiver 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 ± 4.5 kHz deviation on the deviation meter.

II. RECEIVER

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

A. Sensitivity

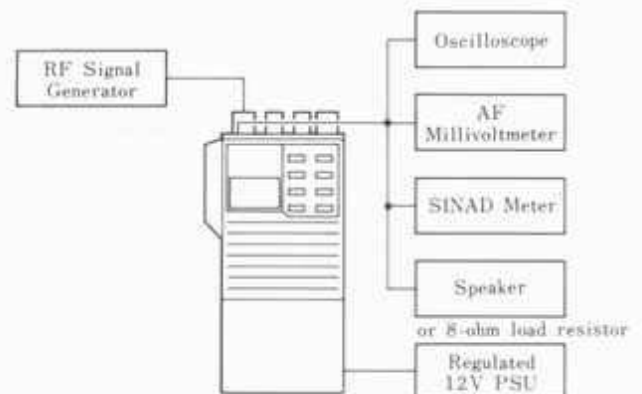
- (1) With the transceiver and RF signal generator both tuned to band center (145 or 146 MHz), set the generator for ± 3.5 kHz deviation of 1 kHz tone modulation, and set the output level for 40 dBu at the antenna jack.
- (2) Preset VR103 on the Mother Board fully clockwise.
- (3) Adjust T101 through 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.

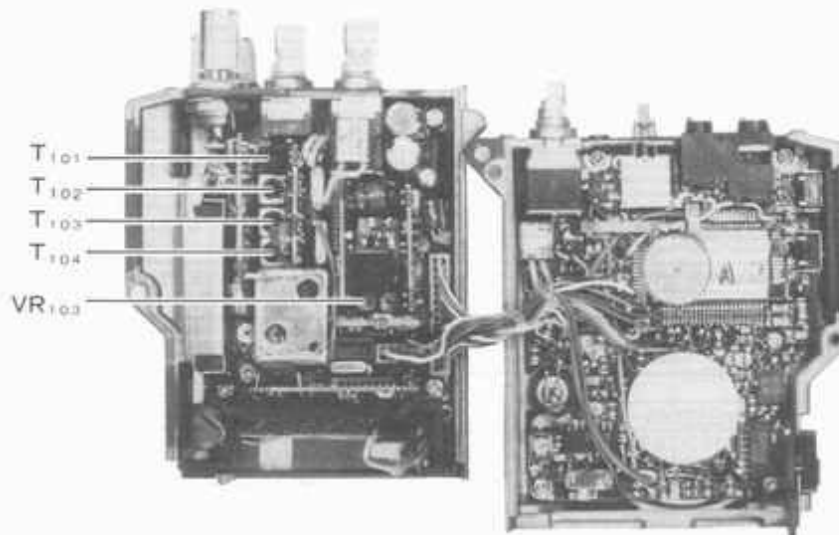
B. S-meter Sensitivity

- (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)
		IC			
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			
Q102	G3111627G	2SA1162GRTE85R	C121	K78130001	Tantalum 20WV 0.47μF (F951D474MRAAF1Q2)
Q103	G3327127G	2SC2712GRTE85R			Electrolytic 16WV 10μF (RC3-16V100M)
Q104	G3070001	FA1A4M	C113,118,123	K40129052	" " " 16WV 100μF (RC2-16V101M)
Q105	G3333567	2SC3356-T2B	C114,124	K40129038	" " " 6.3WV 100μF (RC3-6V101M)
Q106	G3329547	2SC2954-T2B	C116,117	K40089020	
		DIODE			
D101	G2070009	1SS184TE85R Si			
					TRIMMER CAPACITOR
			TC101	K91000149	VCT31E161A 20pF
		CRYSTAL FILTER			
XF101	H1102114	10M15BM 10.7MHz			

Early Model FT-23R

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REG UNIT	• • • • •	• 1-6
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		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-78CYE
R1035	J24205222	" " 222J " 2.2kΩ			
R1004*, 1012, 1020 1038	J24205472	" " 472J " 4.7kΩ			
R1011, 1015, 1018 1021-1024, 1033 1034, 1039	J24205103	" " 103J " 10kΩ			SWITCHES
R1028	J24205183	" " 183J " 18kΩ	S1001, 1002	N5090018	KHH15951 SQL, OFF*, BURST*, PTT
R1003*, 1008	J24205223	" " 223J " 22kΩ	S1003	N6090063	SSSS22050A
R1010, 1025, 1031	J24205473	" " 473J " 47kΩ	S1004	N4090088	SPJ622N09 HI/LO
R1001, 1002, 1005 1013, 1014, 1026 1030	J24205104	" " 104J " 100kΩ	S1005	N0190139	SRBMIL066 DIAL
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*
C1001, 1002	K22170809	Chip Ceramic " 0.0022μF " (C2012B1H222MFA)	Symbol No.	Part No.	Name & Description
C1018	K22170817	" " " 0.01μF " (C2012B1H103MFA)		Q3000049	ANTENNA YHA-16
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			

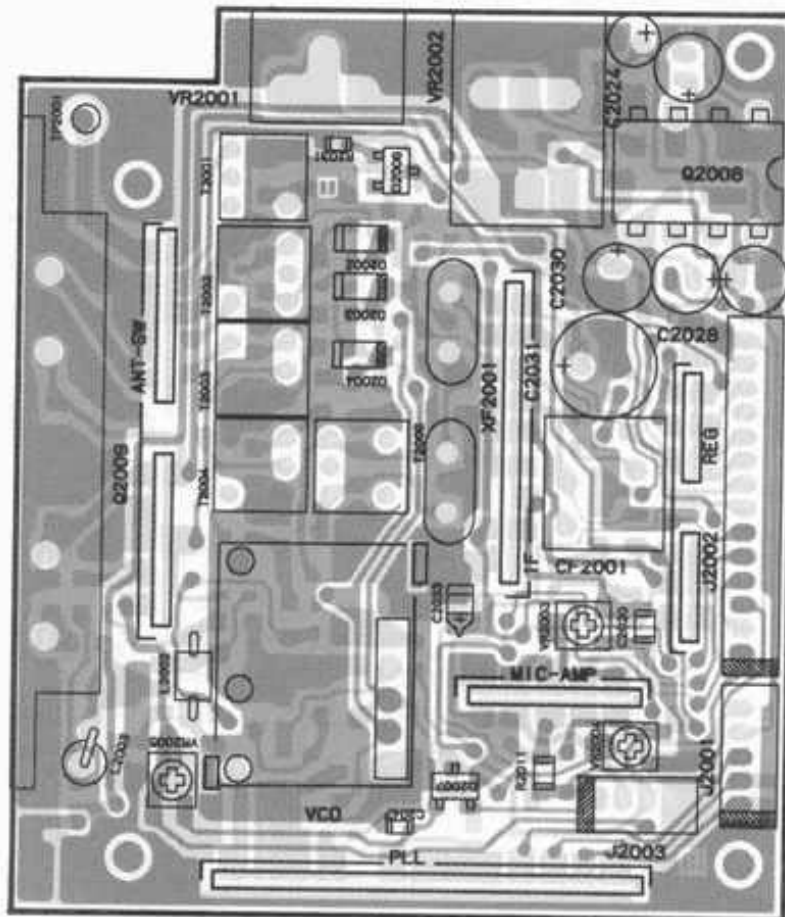
- * Model A1, A2, F
- * Model B, C2, D, E2

Late Model FT-23R

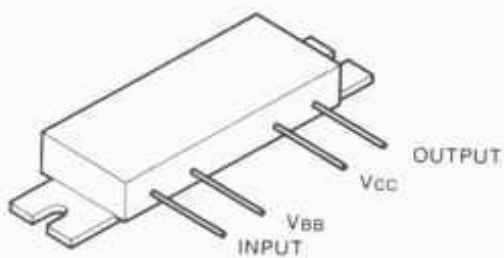
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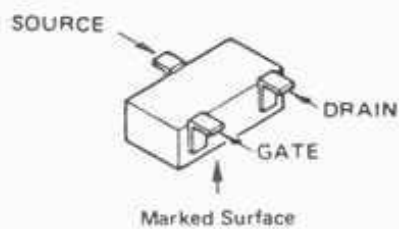
MOTHER BOARD



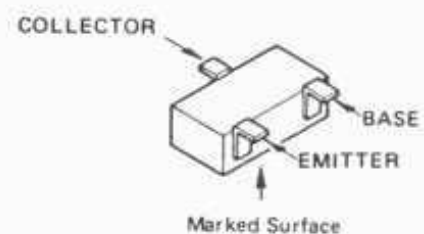
(obverse view of "mixed-component" side)



M57796MA (Q2009)



2SK302Y (TY) : (Q2001)

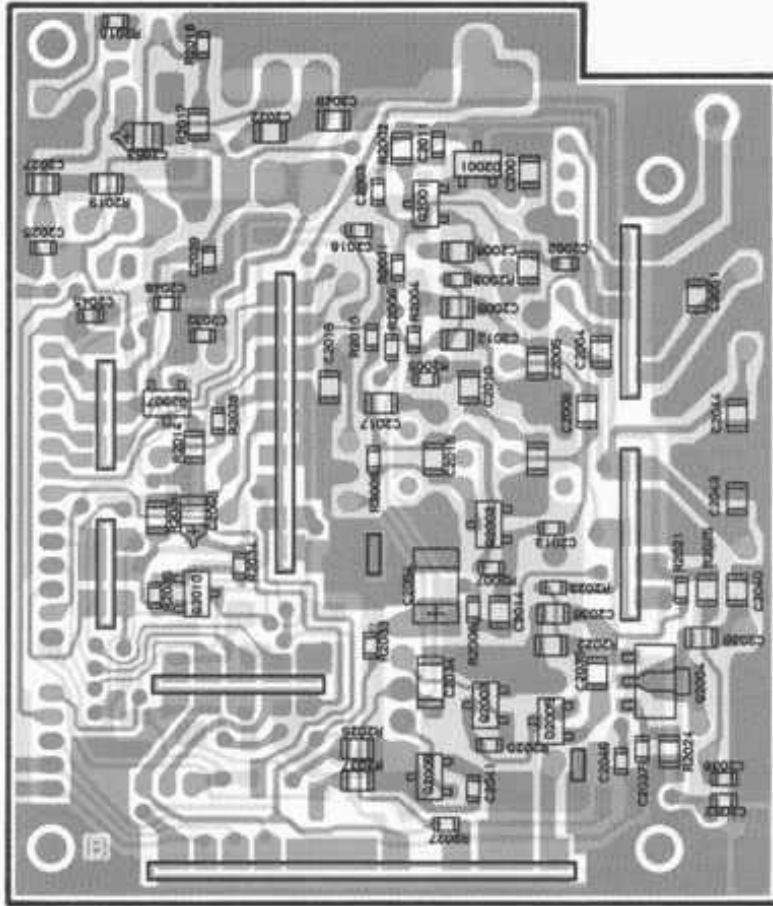


- 2SC3120 (HB) : (Q2002)
- 2SC3356 (R22) : (Q2003)
- FA1A4M (L33) : (Q2005)
- 2SC2712GR (LG) : (Q2007)
- 2SA1162GR (SG) : (Q2010)

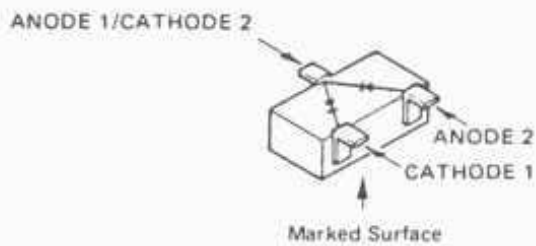


2SC2954 (QK) : (2004)

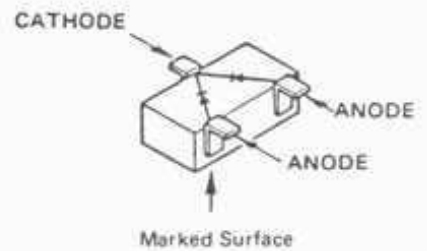
MOTHER BOARD



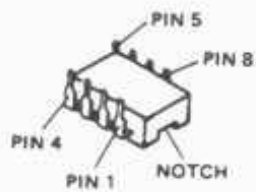
(obverse view of "chip-only" side)



1SS226-(03) : (D2001,D2007)

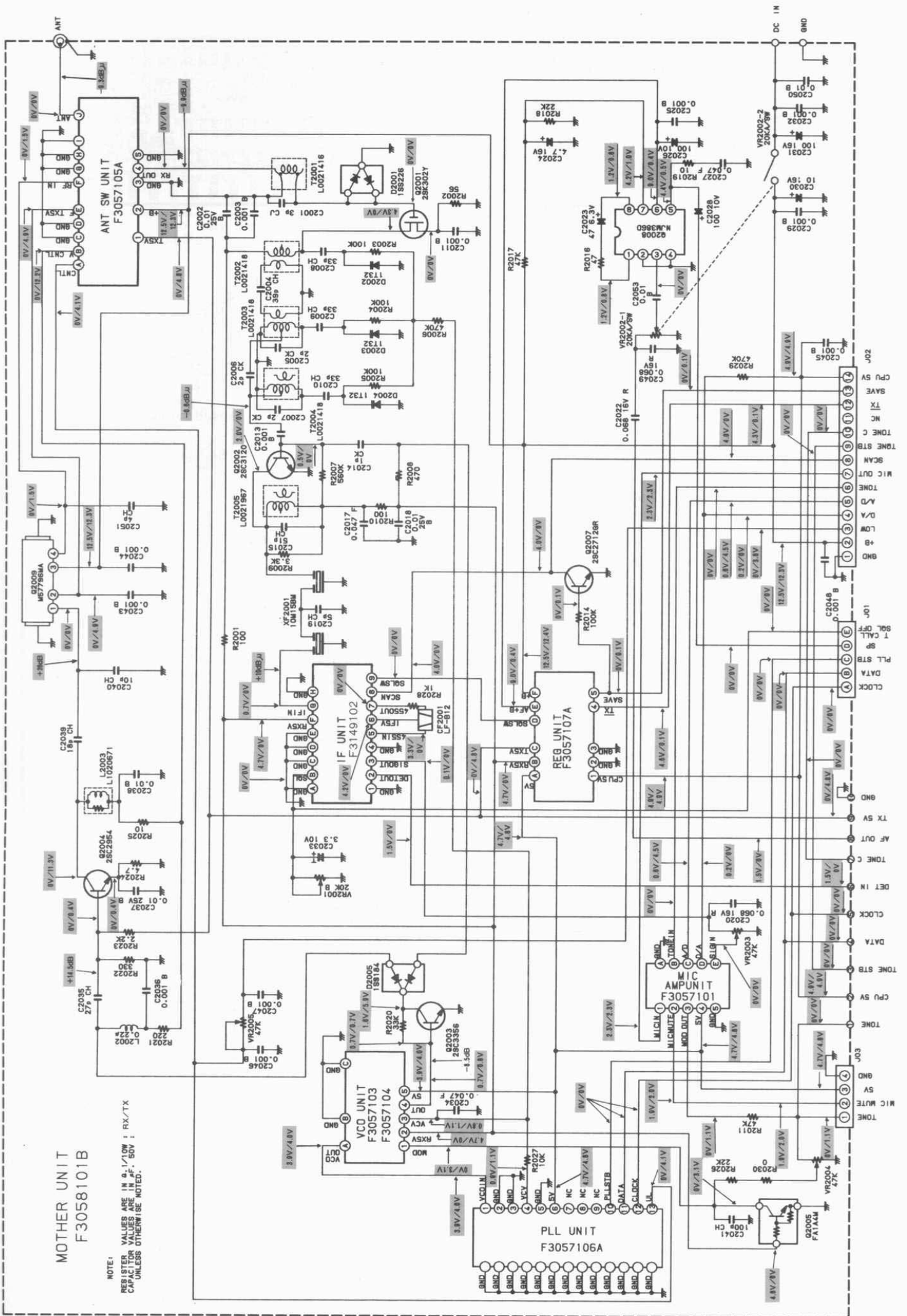


1SS184 (B3) : (D2005)

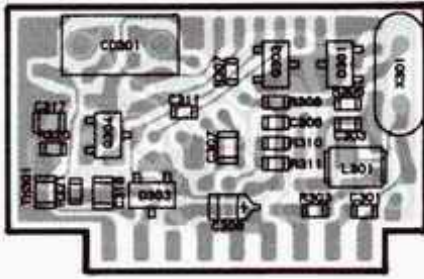


NJM386D (Q2008)

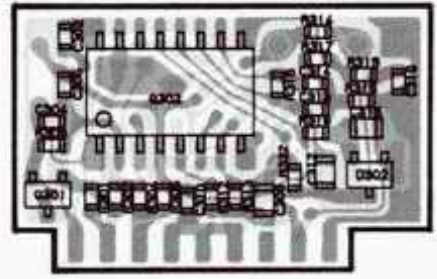
MOTHER BOARD



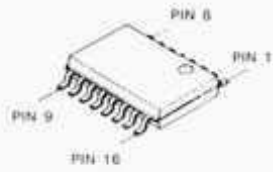
IF UNIT



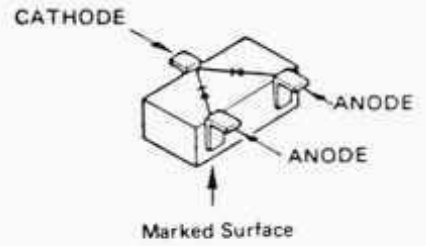
(obverse view of
"mixed-component" side)



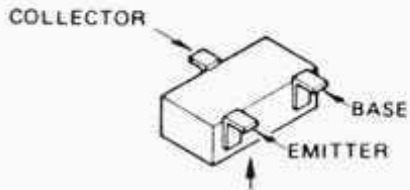
(obverse view of
"chip-only" side)



MC3372ML (Q302)



1SS184 (B3) : (D303)

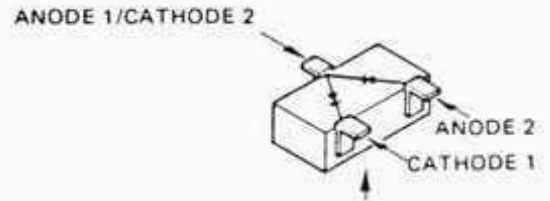


Marked Surface

2SC2620B (QB)
(Q301)

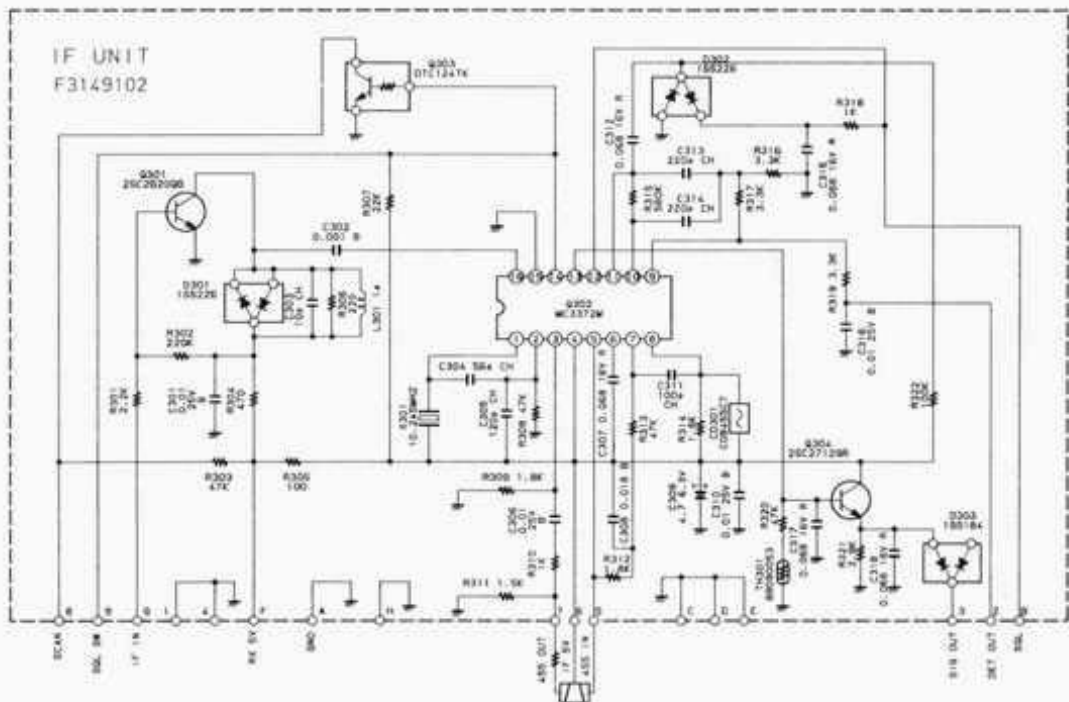
2SC2712GR (LG)
(Q304)

DTC124TK (05)
(Q303)

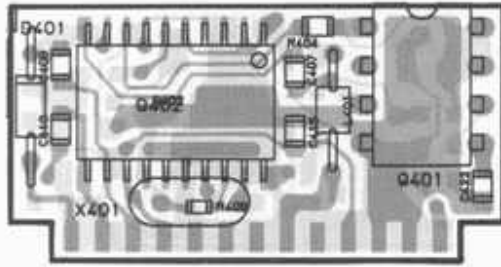


Marked Surface

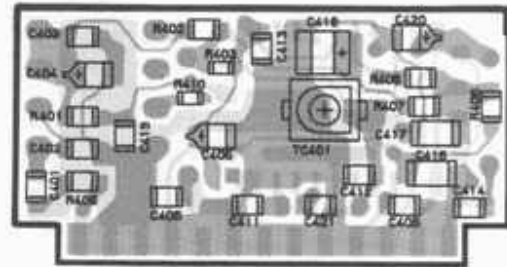
1SS226 (C3)
(D301,302)



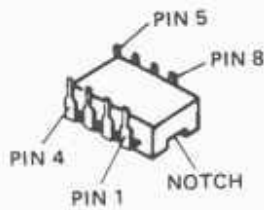
PLL UNIT



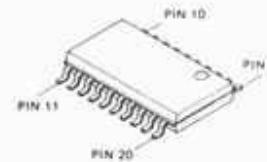
(obverse view of
"mixed-component" side)



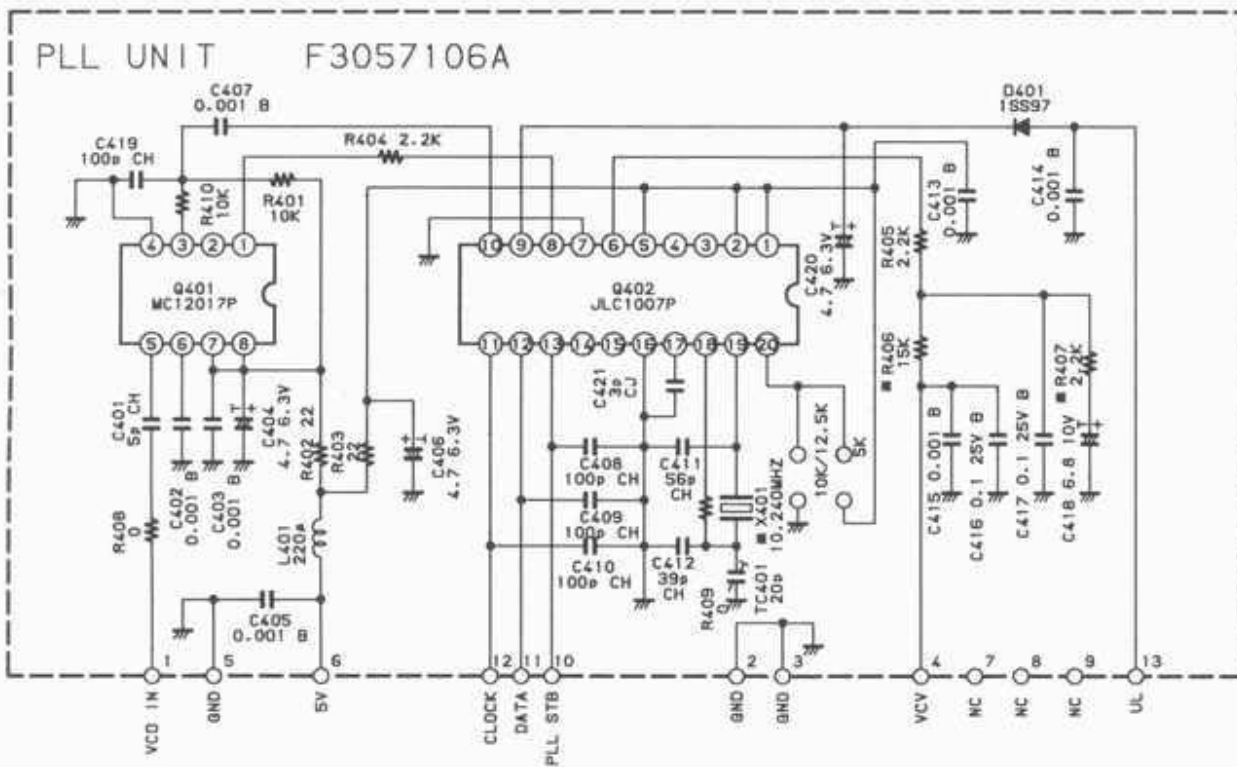
(obverse view of
"chip-only" side)



MC12017P (Q401)



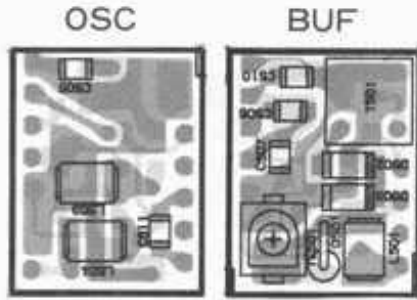
JLC1007P (Q402)



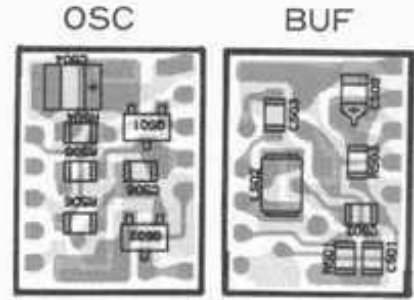
	XF401	R406	R407
A1, A2, D, E2, A3 TYPE	10.240MHZ	15K Ω	1.5K Ω
B, C2 TYPE	12.800MHZ	4.7K Ω	1K Ω

NOTE:
RESISTOR VALUES ARE IN Ω , 1/10W ;
CAPACITOR VALUES ARE IN μ F, 50V ;
(T) CAPACITOR VALUES ARE TANTALUM ;
INDUCTOR VALUES ARE IN H
UNLESS OTHERWISE NOTED.

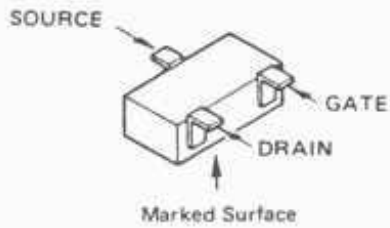
VCO UNIT



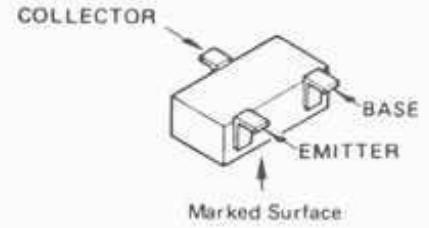
(obverse view of "top" side)



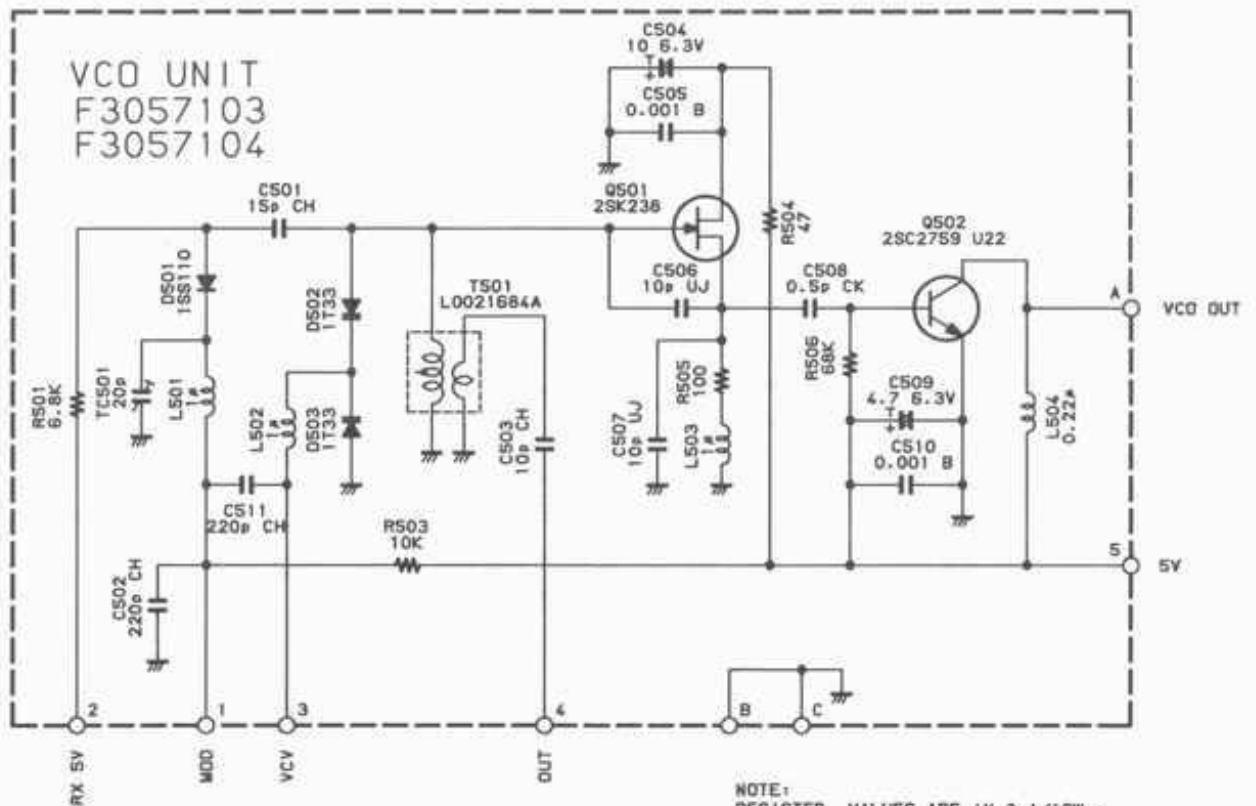
(obverse view of "bottom" side)



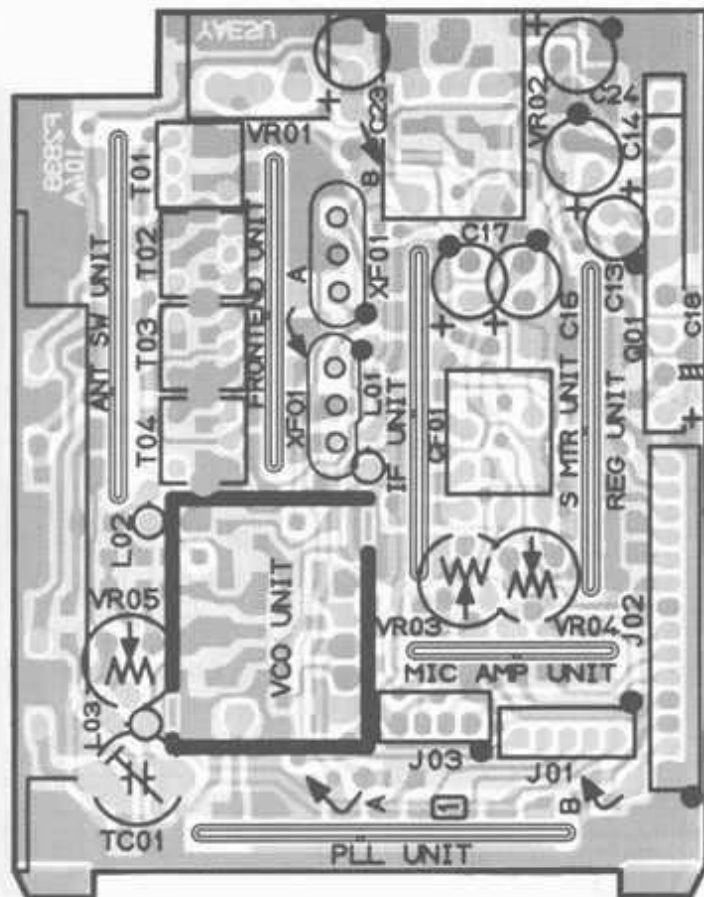
2SK238 (K17) : (Q501)



2SC2759 (U22) : (Q502)



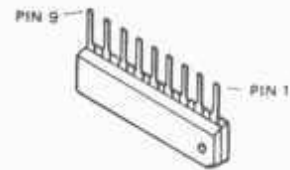
MOTHER BOARD



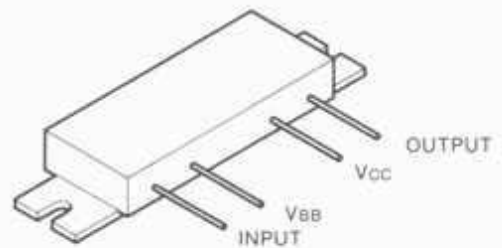
(obverse view of "component" side)



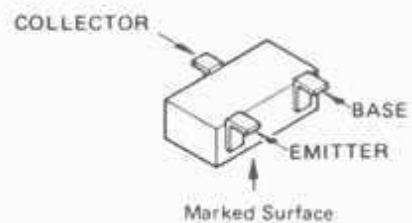
(reverse view of "chip-only" side)



LA4145 (Q101)



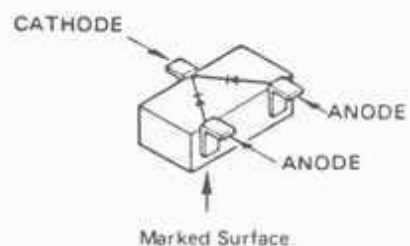
M57796MA (Q107)



2SA1162GR (S0) : (Q102)
2SC2712GR (LG) : (Q103)
2SC3356 (R22) : (Q105)
FA1A4M (L33) : (Q104)

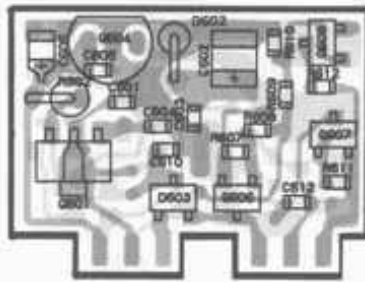


2SC2954 (Q106)

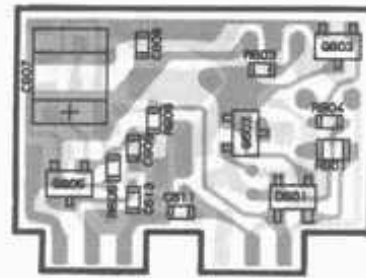


1SS184 (B3) : (D101)

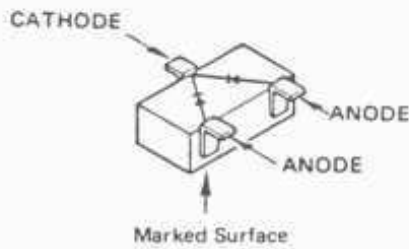
REG UNIT



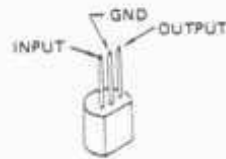
(obverse view of
"top" side)



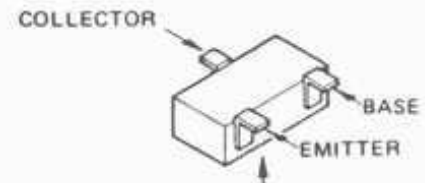
(obverse view of
"bottom" side)



1SS184 (B3) : (D603)



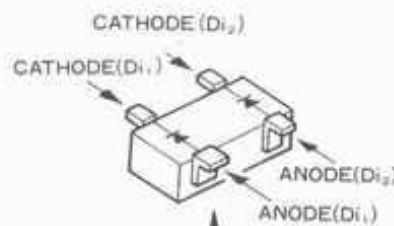
LM2931AZ-5.0
(Q604)



2SA1162GR (SG)
(Q605,606,607)



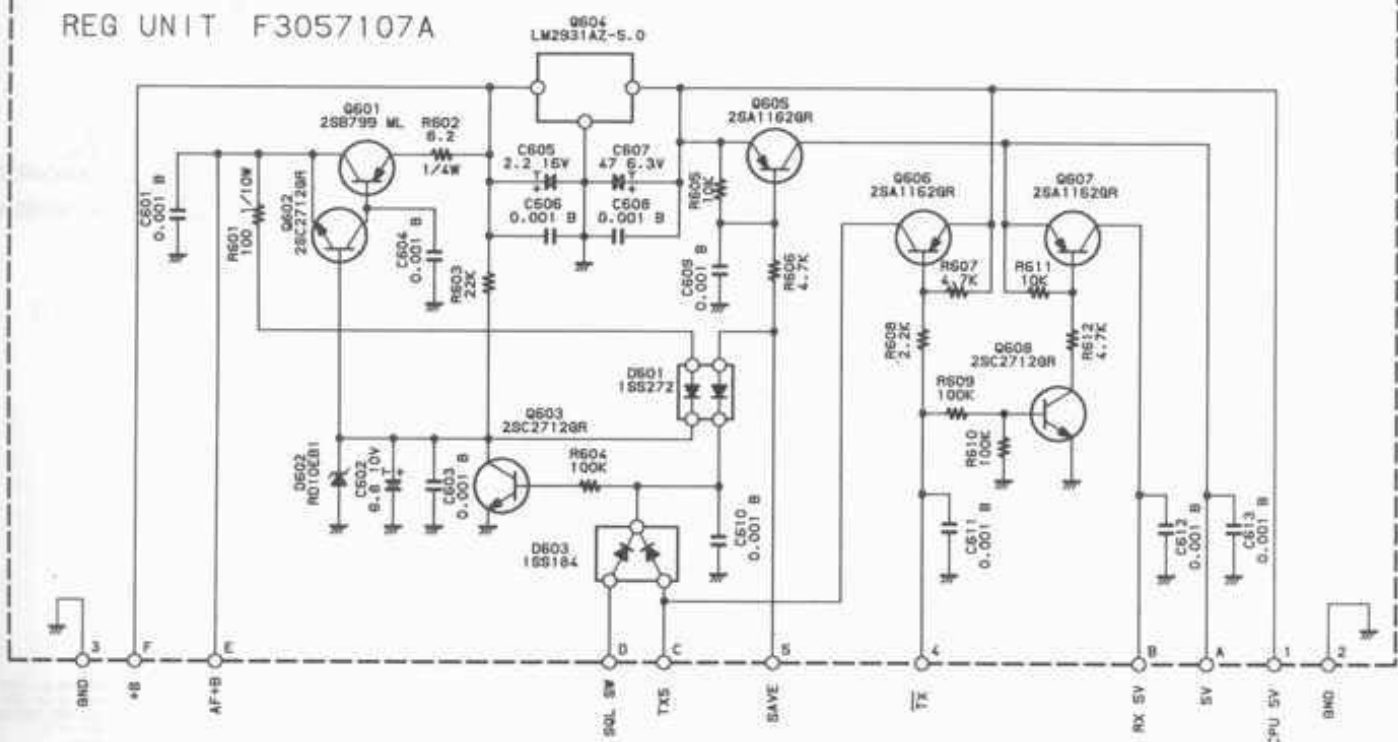
2SB799 (Q601)



1SS272 (A1) : (D601)

2SC2712GR (LG)
(Q602,603,608)

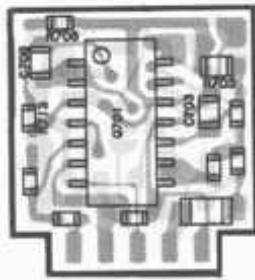
REG UNIT F3057107A



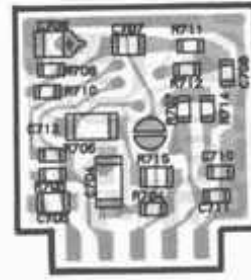
NOTE:

RESISTOR VALUES ARE IN Ω , 1/10W ;
CAPACITOR VALUES ARE IN μ F, 50V ;
(T) CAPACITOR VALUES ARE TANTALUM ;
INDUCTOR VALUES ARE IN H
UNLESS OTHERWISE NOTED.

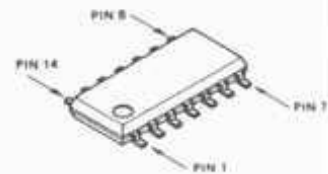
MIC AMP UNIT



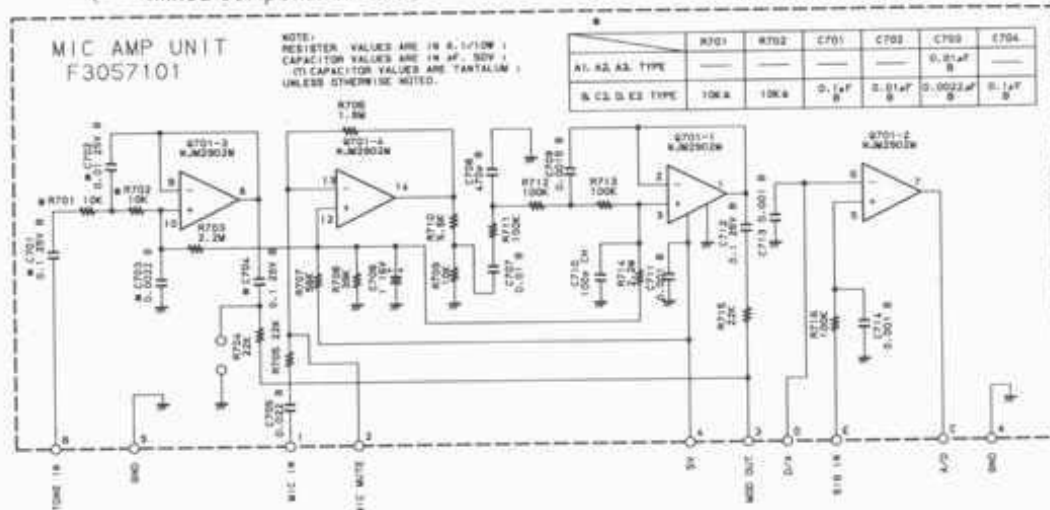
(obverse view of
"mixed-component" side)



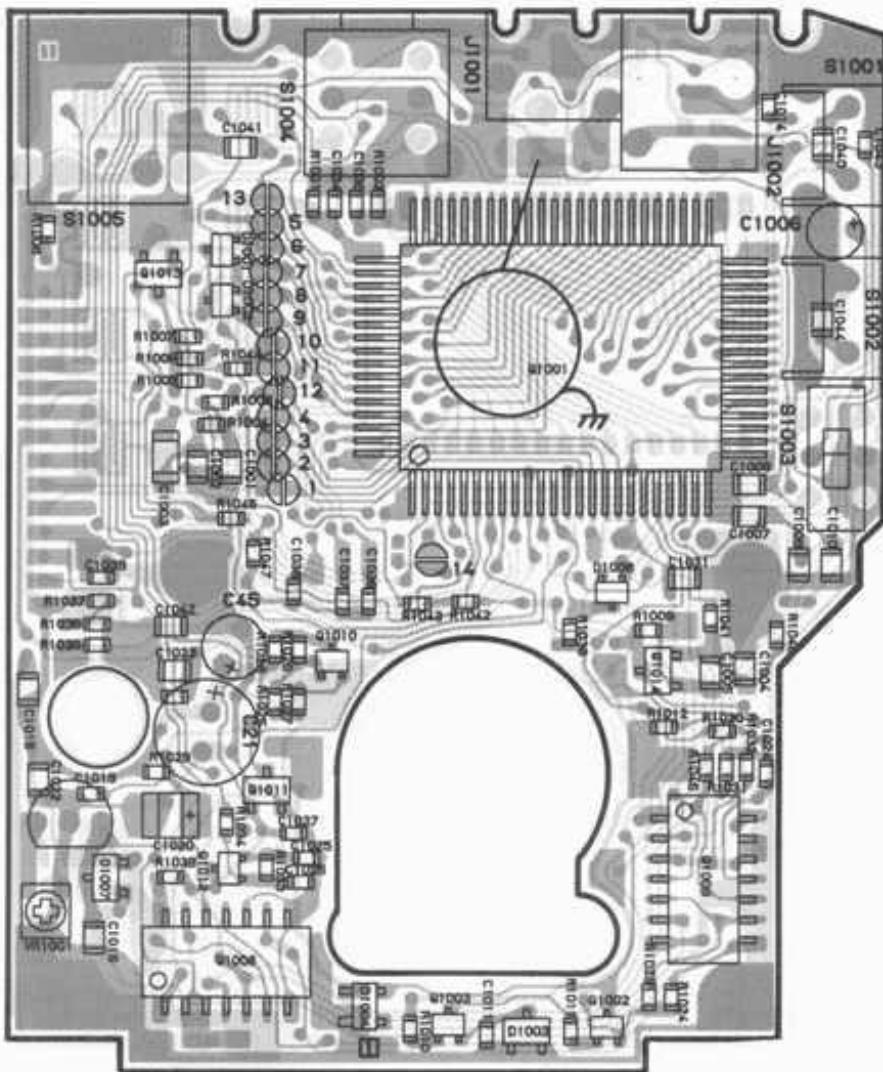
(obverse view of
"chip-only" side)



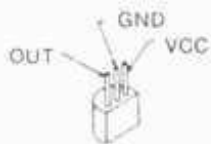
NJM2902M (Q701)



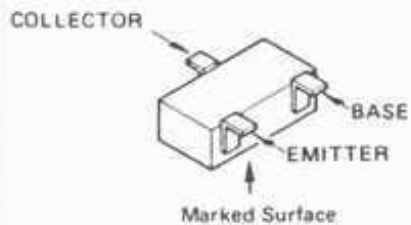
CNTL UNIT



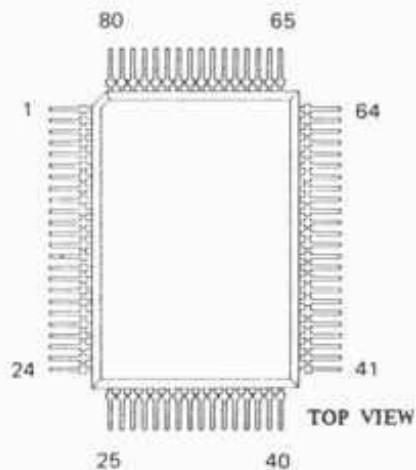
(obverse view of "mixed-component" side)



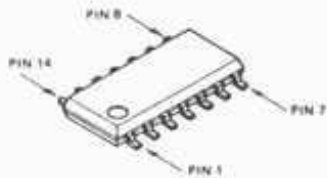
PST523G (Q1007)



2SA1586Y (SY): (Q1002, Q1012)
 2SC4116GR (LG): (Q1003, Q1004)
 (Q1005, Q1006)
 (Q1010)
 FA1A4M (L33): (Q1011, Q1013)
 2SC1623 (L6): (Q1014)

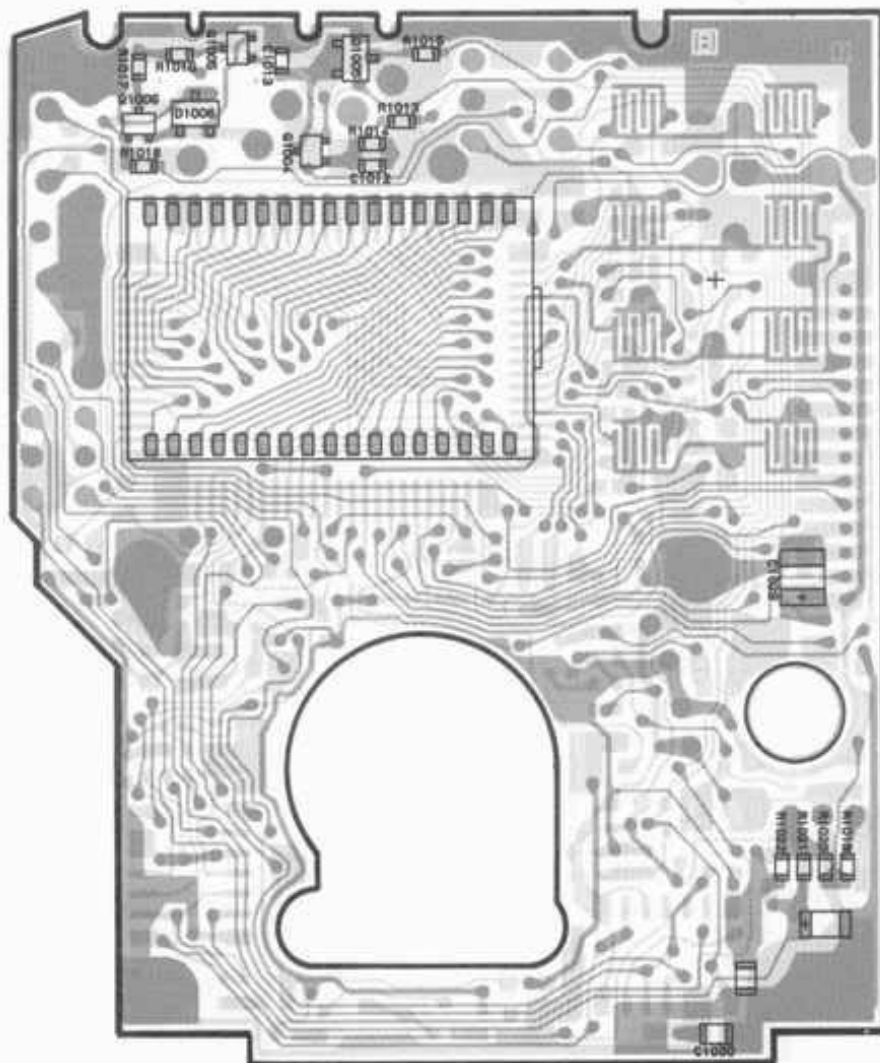


HD613901A78 (Q1001)

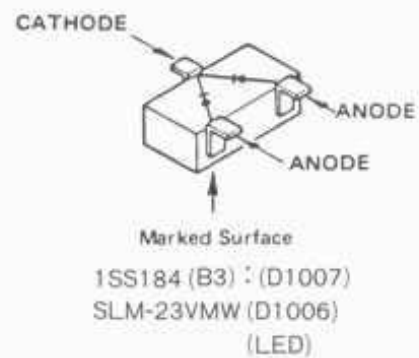
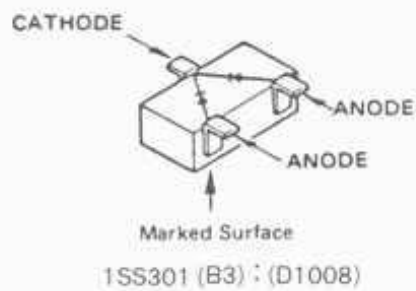
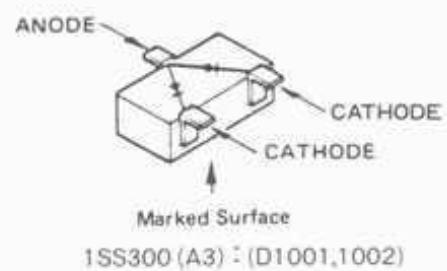
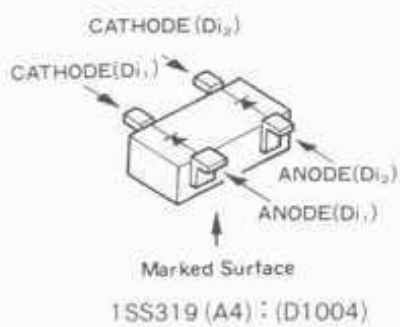


μPD4066BG (Q1008)
μPD4001BG (Q1009)

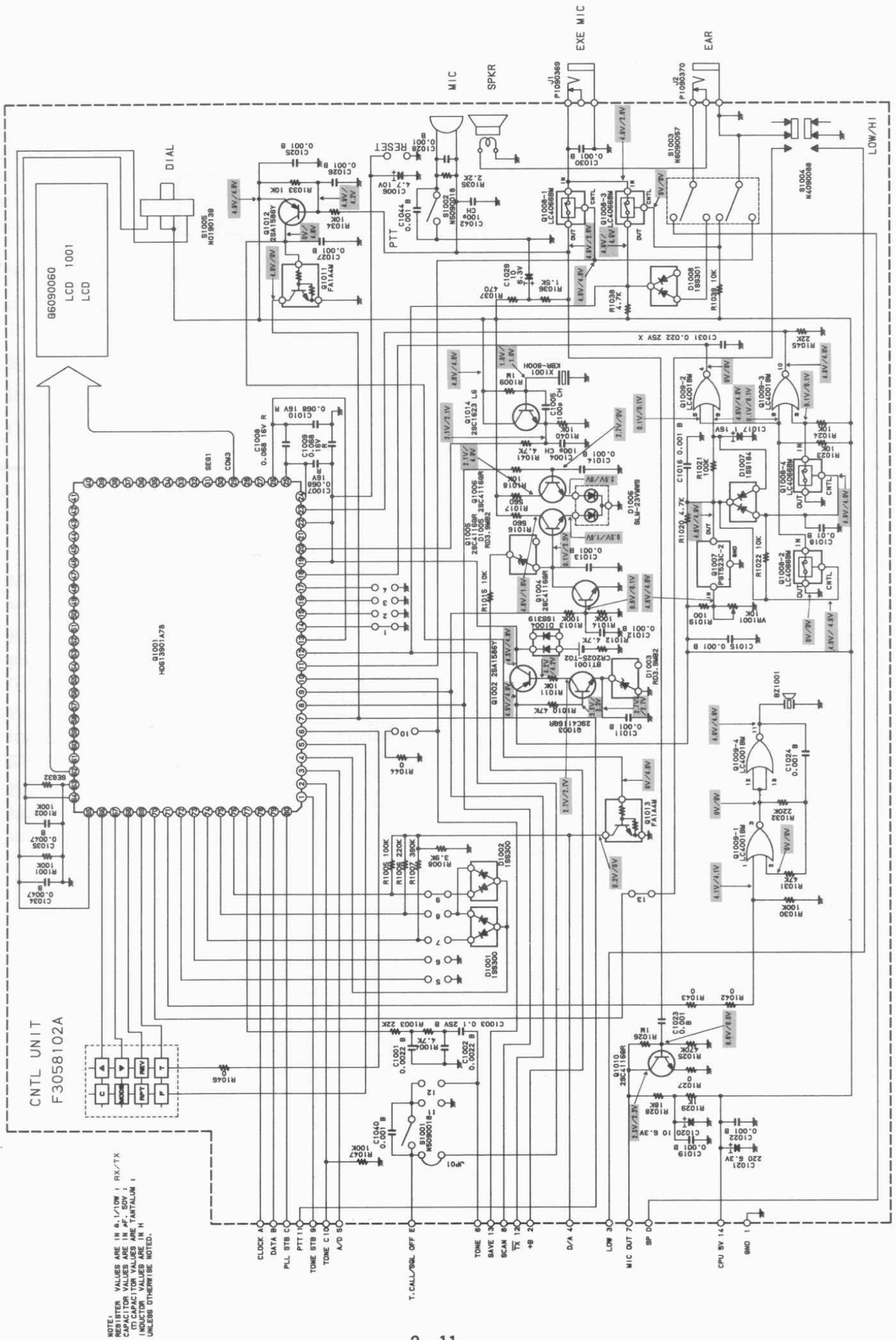
CNTL UNIT



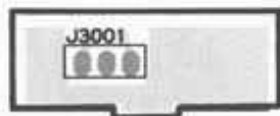
(obverse view of "chip-only" side)



CNTL UNIT



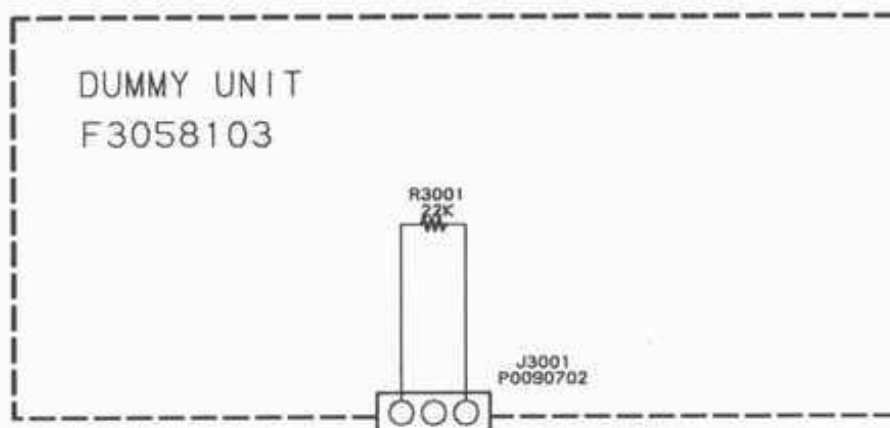
DUMMY UNIT



(obverse view of
"connector" side)



(obverse view of
"chip-only" side)



NOTE:
RESISTOR VALUES ARE IN Ω , 1/16W ;
UNLESS OTHERWISE NOTED.

ALIGNMENT

The FT-23R has been 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, realignment may be necessary. All component replacement and service should be performed only by an authorized Yaesu representative, or the warranty policy may be voided.

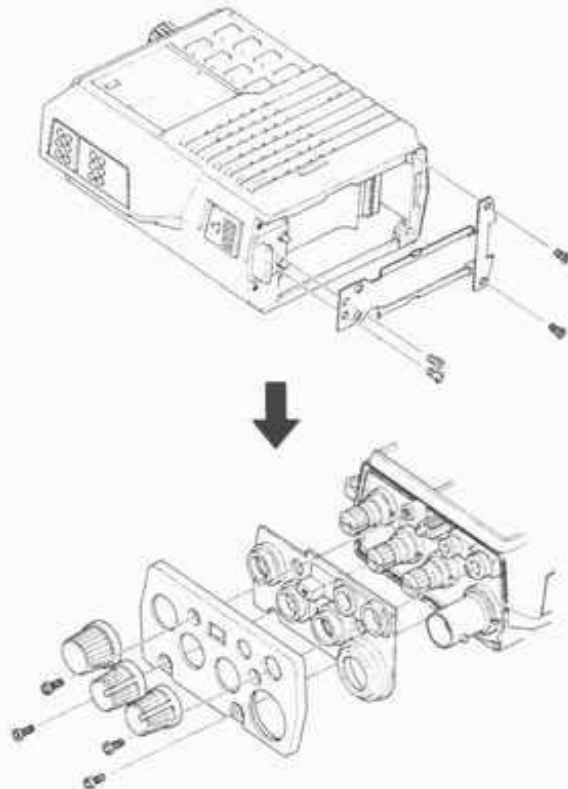
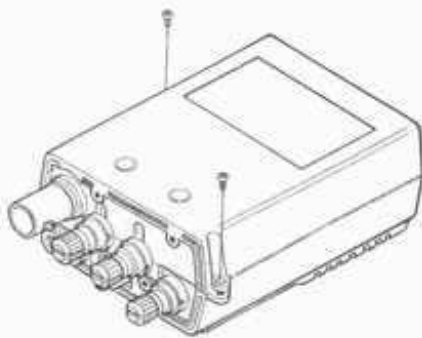
Required Test Equipment

- RF Signal Generator with calibrated output level at 150 MHz
- Spectrum Analyzer
- RF Sampling Coupler
- Oscilloscope

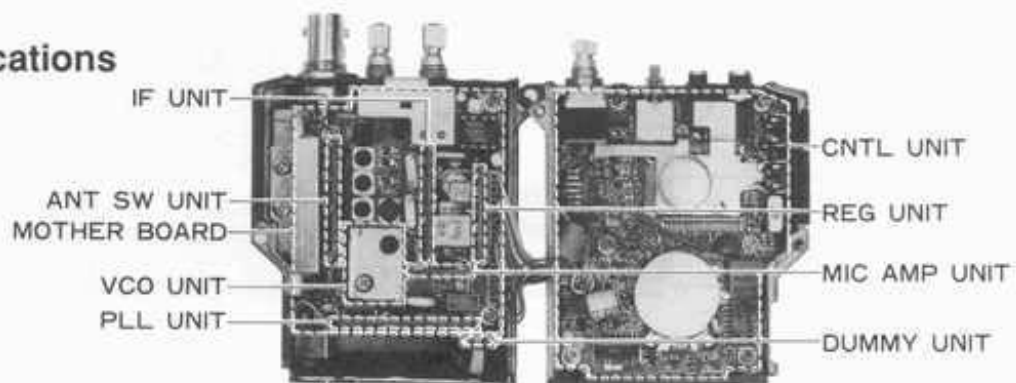
- AF Millivoltmeter
- Deviation Meter
- SINAD Meter
- Inline Wattmeter with 5% accuracy at 150 MHz
- Regulated DC Power Supply adjustable from 10 to 15V, 2A
- 50- Ω Non-reactive Dummy Load: 10W at 150 MHz
- Frequency Counter: ± 0.2 ppm accuracy at 150 MHz
- AF Signal Generator
- DC Voltmeter: high impedance
- External Loudspeaker or 8- Ω load resistor.

Case Disassembly

- Make sure the transceiver is off. Remove the hard or soft case, if used, and remove the battery pack.
- Remove the four screws affixing the battery spring plate on the bottom of the transceiver, and carefully remove the plate.
- Pull off the knobs, and remove the four screws affixing the top panel. Remove the panel and rubber gasket under it.
- 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 Locations



PLL & Transmitter

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

PLL VCV (Varactor Control Voltage)

- (1) Connect the DC voltmeter between C417 on the PLL Unit and chassis ground.
- (2) Set the transceiver to 144.00 MHz. Key the transmitter and adjust transformer T501 on the VCO Buffer Unit for 11.5 ± 0.05 V DC on the voltmeter.
- (3) While receiving on 144.00 MHz, adjust trimmer TC501 on the VCO Unit for 0.8 ± 0.05 V DC.
- (4) Tune the transceiver to the high band edge and confirm the correct high-end VCV for the transceiver version being aligned, in both transmit and receive, as follows:

Version	High Band Edge	Tx VCV	Rx VCV
A, C & E	148.000 MHz	<1.6 V	<1.3 V
B & D	146.000 MHz	<1.5 V	<1.2 V

Transmitter Output Power

- (1) Tune the transceiver to band center (145 or 146 MHz), and select high power output (LOW switch not depressed).
- (2) Increase the supply voltage to 12.5 V, and then adjust VR2005 on the Mother Board for peak output power on the wattmeter (at least 5 watts with less than 1.5 A supply current).
- (3) Now press the LOW button, and adjust VR2005 (again), this time for 0.5 ± 0.1 watt.

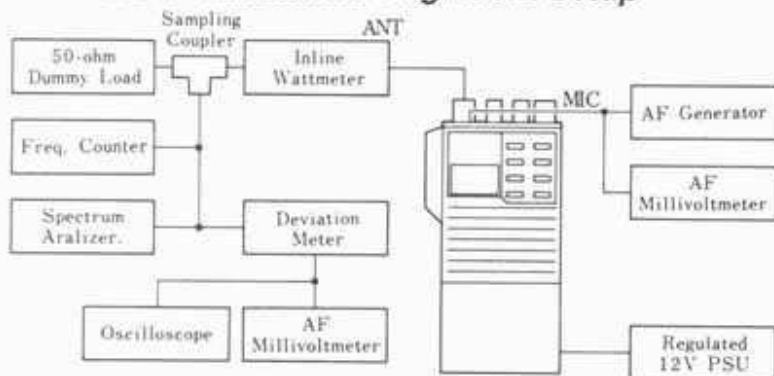
PLL Reference Frequency

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

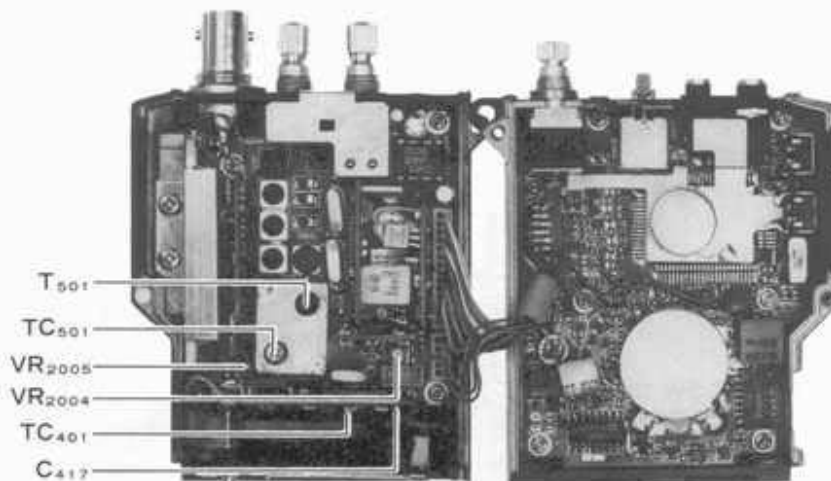
Modulation Level

- (1) With the transceiver tuned to band center (145 or 146 MHz), adjust the AF generator for 25-mV output at 1 kHz to the MIC jack.
- (2) Adjust VR2004 on the Mother Board for ± 4.8 -kHz deviation on the deviation meter.

PLL & Transmitter Alignment Setup



PLL & Transmitter Alignment Points



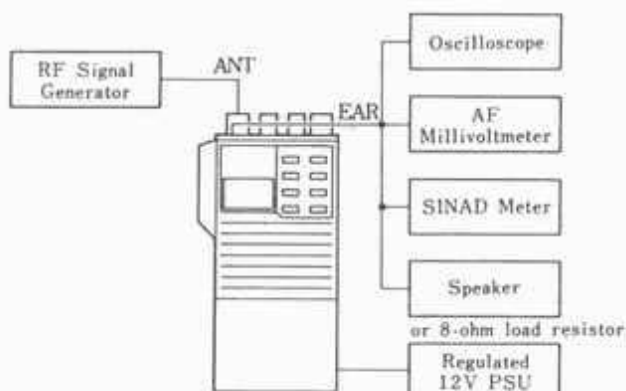
Receiver

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

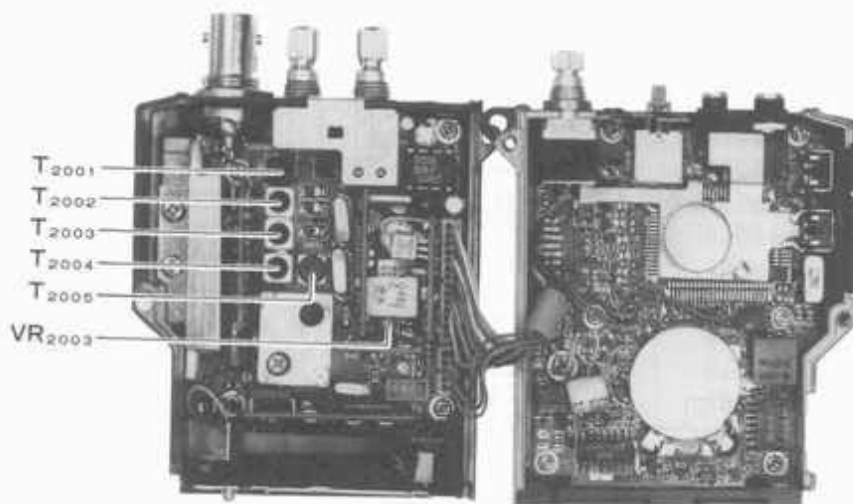
- (1) With the transceiver and the RF signal generator both tuned to band center (145 or 146 MHz), set the generator for ± 3.5 kHz deviation of 1-kHz tone modulation, and set the output level for 40 dB μ at the antenna jack.
- (2) Preset VR2003 on the Mother Board fully clockwise.

- (3) Adjust T2001 through T2005 on the Mother Board for maximum S-meter indication, reducing the generator level if more than 4 bargraph segments turn on.
- (4) After adjusting the transformers, generator level should be 0.2 μ V or less for 12dB SINAD.
- (5) Reduce the RF injection from the signal generator to 20 dB μ .
- (6) Adjust VR2003 on the Mother Board so that all bargraph segments are just turned on.
- (7) Reduce the generator output so that only 2 segments are on, and confirm that the injection level is 5 dB μ or less.

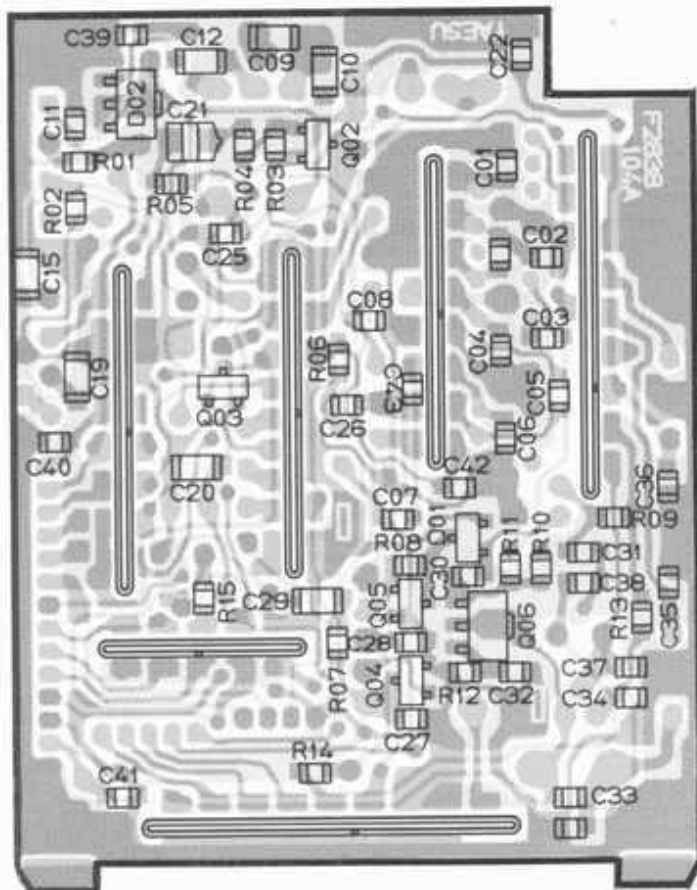
Receiver Alignment Setup



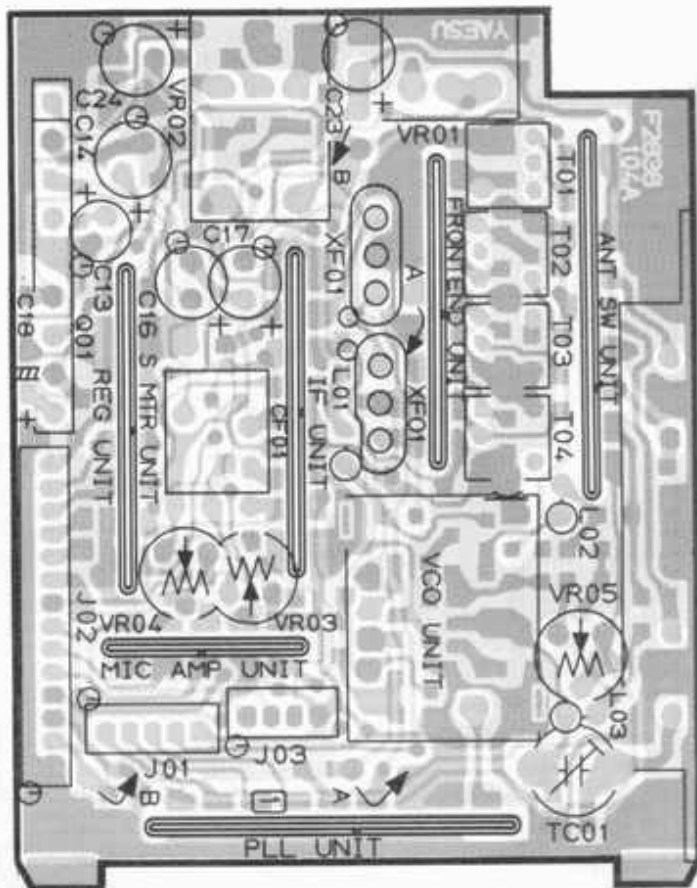
Receiver Alignment Points



MOTHER BOARD



(obverse view of "chip-only" side)



(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) G3110520C/D	2SA1179F/G(M6/M7) G3111790F/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) G3324620D/D	2SC2812F/G(L6/L7) G3328120F/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.

*** IF UNIT ***

C40007001 P.C.B. W/COMP.
F3149100 P.C.B. W/O COMP.

C 0301	K22144801	CHIP CAP.	GRM300103M25PT	0.01uF	25V	B
C 0302	K22174809	CHIP CAP.	GRM300102M50PT	0.001uF	50V	B
C 0303	K22174211	CHIP CAP.	GRM30CH100050PT	10pF	50V	CH
C 0304	K22174229	CHIP CAP.	GRM30CH080350PT	56pF	50V	CH
C 0305	K22174237	CHIP CAP.	GRM30CH121350PT	120pF	50V	CH
C 0306	K22144802	CHIP CAP.	GRM300103M25PT	0.01uF	25V	B
C 0307	K22120805	CHIP CAP.	GRM400003M16PT	0.000uF	16V	E
C 0308	K22170820	CHIP CAP.	GRM400103M50PT	0.010uF	50V	B
C 0309	K78000002	CHIP TANTALUM CAP.	F950J475M5A4F1Q2	4.7uF	6.3V	
C 0310	K22144802	CHIP CAP.	GRM300103M25PT	0.01uF	25V	B
C 0311	K22174235	CHIP CAP.	GRM30CH101350PT	100pF	50V	CH
C 0312	K22120805	CHIP CAP.	GRM400003M16PT	0.000uF	16V	E
C 0313	K22174243	CHIP CAP.	GRM30CH221350PT	220pF	50V	CH
C 0314	K22174243	CHIP CAP.	GRM30CH221350PT	220pF	50V	CH
C 0315	K22120805	CHIP CAP.	GRM400003M16PT	0.000uF	16V	E
C 0316	K22144802	CHIP CAP.	GRM300103M25PT	0.01uF	25V	B
C 0317	K22120805	CHIP CAP.	GRM400003M16PT	0.000uF	16V	E
C 0318	K22120805	CHIP CAP.	GRM400003M16PT	0.000uF	16V	E
C00301	87900180	CERAMIC DISC.	C08455C7			
D 0301	Q2070003	DIODE	15S226 TERSA			
D 0302	Q2070003	DIODE	15S226 TERSA			
D 0303	Q2070009	DIODE	15S184 TERSA			
L 0301	L1000016	COIL	32CS 300AB-100M-F	1uH		
Q 0301	Q33262078	TRANSISTOR	25C2620Q8TE			
Q 0302	Q1001100	IC	MC3373ML			
Q 0303	Q3070031	TRANSISTOR	0T1234TE T97			
Q 0304	Q33271276	TRANSISTOR	25C2712GE TERSA			
R 0301	J24185222	CHIP RES.	RMC1/16 222JATP	2.2K	1/16W	
R 0302	J24185224	CHIP RES.	RMC1/16 224JATP	220K	1/16W	
R 0303	J24185473	CHIP RES.	RMC1/16 473JATP	47K	1/16W	
R 0304	J24185471	CHIP RES.	RMC1/16 471JATP	470	1/16W	
R 0305	J24185101	CHIP RES.	RMC1/16 101JATP	100	1/16W	
R 0306	J24185473	CHIP RES.	RMC1/16 221JATP	220	1/16W	
R 0307	J24185223	CHIP RES.	RMC1/16 223JATP	22K	1/16W	
R 0308	J24185473	CHIP RES.	RMC1/16 473JATP	47K	1/16W	
R 0309	J24185602	CHIP RES.	RMC1/16 102JATP	1.0K	1/16W	
R 0310	J24185102	CHIP RES.	RMC1/16 103JATP	1K	1/16W	
R 0311	J24185152	CHIP RES.	RMC1/16 152JATP	1.5K	1/16W	
R 0312	J24205182	CHIP RES.	RMC1/16 1H2JATP	1.0K	1/16W	
R 0313	J24205473	CHIP RES.	RMC1/16T 473J	47K	1/16W	
R 0314	J24185182	CHIP RES.	RMC1/16 1H2JATP	1.0K	1/16W	
R 0315	J24185504	CHIP RES.	RMC1/16 504JATP	500K	1/16W	
R 0316	J24185322	CHIP RES.	RMC1/16 332JATP	3.3K	1/16W	
R 0317	J24185322	CHIP RES.	RMC1/16 332JATP	3.3K	1/16W	
R 0318	J24185102	CHIP RES.	RMC1/16 102JATP	1K	1/16W	
R 0319	J24185332	CHIP RES.	RMC1/16 332JATP	3.3K	1/16W	
R 0320	J24185473	CHIP RES.	RMC1/16 473JATP	47K	1/16W	
R 0321	J24185302	CHIP RES.	RMC1/16 302JATP	3.0K	1/16W	
R 0322	J24185104	CHIP RES.	RMC1/16 104JATP	100K	1/16W	
TH0301	G8000053	THERMISTOR	157-252-0300ATP			
X 0301	H0102773	X-TAL	UM-1 10.245MHz			

PARTS LIST

*** MOTHER BOARD UNIT ***

CS0851002	P.C.B. W/COMP./MIC AMP/IF/VCO/ ANT SW/PLL/REG UNITS(TYP A1)
CS0851003	P.C.B. W/COMP./MIC AMP/IF/VCO/ ANT SW/PLL/REG UNITS(TYP A2)
CS0851004	P.C.B. W/COMP./MIC AMP/IF/VCO/ ANT SW/PLL/REG UNITS(TYP A3)
CS0851005	P.C.B. W/COMP./MIC AMP/IF/VCO/ ANT SW/PLL/REG UNITS(TYP B)
CS0851006	P.C.B. W/COMP./MIC AMP/IF/VCO/ ANT SW/PLL/REG UNITS(TYP C2)
CS0851007	P.C.B. W/COMP./MIC AMP/IF/VCO/ ANT SW/PLL/REG UNITS(TYP D)
CS0851008	P.C.B. W/COMP./MIC AMP/IF/VCO/ ANT SW/PLL/REG UNITS(TYP E2)
F30581018	P.C.B. W/O COMP.

C 2001	K22170204	CHIP CAP.	GRM40CJ030C50PT	3pF	50V	CJ
C 2002	K22144802	CHIP CAP.	GRM39B103M25PT	0.01uF	25V	B
C 2003	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B
C 2004	K22170223	CHIP CAP.	GRM40CH330J50PT	33pF	50V	CH
C 2005	K22170203	CHIP CAP.	GRM40CX020C50PT	2pF	50V	CX
C 2006	K22170203	CHIP CAP.	GRM40CX020C50PT	2pF	50V	CX
C 2008	K22170223	CHIP CAP.	GRM40CH330J50PT	33pF	50V	CH
C 2009	K22170223	CHIP CAP.	GRM40CH330J50PT	33pF	50V	CH
C 2010	K22170223	CHIP CAP.	GRM40CH330J50PT	33pF	50V	CH
C 2011	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B
C 2012	K22120805	CHIP CAP.	GRM40863M16PT	0.068uF	16V	B
C 2013	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B
C 2014	K22170203	CHIP CAP.	GRM40CX010C50PT	1pF	50V	CX
C 2015	K22170228	CHIP CAP.	GRM40CH560J50PT	56pF	50V	CH
C 2017	K22170817	CHIP CAP.	GRM40B103M50PT	0.01uF	50V	B
C 2018	K22144802	CHIP CAP.	GRM39B103M25PT	0.01uF	25V	B
C 2019	K22170208	CHIP CAP.	GRM40CH050C50PT	5pF	50V	CH
C 2020	K22120805	CHIP CAP.	GRM40863M16PT	0.068uF	16V	B
C 2022	K22120805	CHIP CAP.	GRM40863M16PT	0.068uF	16V	B
C 2023	K40088023	AL. ELECTRO. CAP.	EC2-5V470MS	47uF	5V	
C 2024	K40129039	AL. ELECTRO. CAP.	EC3-16V487MS	4.7uF	16V	
C 2025	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B
C 2026	K40106028	AL. ELECTRO. CAP.	10V8-100(M)CC	100uF	10V	
C 2027	K22120805	CHIP CAP.	GRM40863M16PT	0.068uF	16V	B
C 2028	K70107476	TANTALUM CAP.	DN1A470M15	47uF	10V	
C 2029	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B
C 2030	K40129039	AL. ELECTRO. CAP.	EC3-16V100M	10uF	16V	
C 2031	K40129038	AL. ELECTRO. CAP.	EC2-16V101MS	100uF	16V	
C 2032	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B
C 2033	K70100002	CHIP TANTALUM CAP.	F851A335MSAA21Q2	3.3uF	6.3V	
C 2034	K22141808	CHIP CAP.	GRM42-08473M25PT	0.047uF	50V	B
C 2035	K22170221	CHIP CAP.	GRM40CH270J50PT	27pF	50V	CH
C 2036	K22170885	CHIP CAP.	GRM40B102M50PT	0.001uF	50V	B
C 2037	K22144802	CHIP CAP.	GRM39B103M25PT	0.01uF	25V	B
C 2038	K22144802	CHIP CAP.	GRM39B103M25PT	0.01uF	25V	B
C 2039	K22170221	CHIP CAP.	GRM40CH270J50PT	27pF	50V	CH
C 2040	K22170211	CHIP CAP.	GRM40CH100B50PT	10pF	50V	CH
C 2041	K22174235	CHIP CAP.	GRM39CH101J50PT	100pF	50V	CH
C 2043	K22170885	CHIP CAP.	GRM40B102M50PT	0.001uF	50V	B
C 2044	K22170885	CHIP CAP.	GRM40B102M50PT	0.001uF	50V	B
C 2045	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B
C 2046	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B
C 2047	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B

*** VCU LIST ***

	CP1992081	P.C.B. W/COMP.				
	F3057103	P.C.B. W/O COMP.				
	F3057104	P.C.B. W/O COMP.				
C 0501	K22170215	CHIP CAP.	GRM40CH150J50PT	15pF	50V	CH
C 0502	K22170243	CHIP CAP.	GRM40CH221J50PT	225pF	50V	CH
C 0503	K22170211	CHIP CAP.	GRM40CH1000S0PT	10pF	50V	CH
C 0504	K76080000	CHIP TANTALUM CAP.	F950J100MTAAF1Q2	10uF	6.3V	
C 0505	K22170005	CHIP CAP.	GRM40B102M50PT	0.001uF	50V	B
C 0506	K22170311	CHIP CAP.	GRM40UJ1000S0PT	10pF	50V	UJ
C 0507	K22170311	CHIP CAP.	GRM40UJ1000S0PT	10pF	50V	UJ
C 0508	K22170301	CHIP CAP.	GRM40CX055CS0PT	0.5pF	50V	CX
C 0509	K76080000	CHIP TANTALUM CAP.	F950J475M8AAF1Q2	4.7uF	6.3V	
C 0510	K22170005	CHIP CAP.	GRM40B102M50PT	0.001uF	50V	B
C 0511	K22170243	CHIP CAP.	GRM40CH221J50PT	220pF	50V	CH
D 0501	G3090287	DIODE	1S5110			
D 0502	G3070040	DIODE	1X32-T7			
D 0503	G3070040	DIODE	1X33-T7			
L 0501	L1690016	COIL	32CS 380LB-180M-P	1uH		
L 0502	L1690016	COIL	32CS 280LB-180M-P	1uH		
L 0503	L1690016	COIL	32CS 380LB-180M-P	1uH		
L 0504	L1690025	COIL	32CS 360NB-822M-P	0.22uH		
Q 0501	G38023875	FET	2SK238-T2B R11			
Q 0502	G33275978	TRANSISTOR	2SC2759 T2B-L22			
R 0501	J24205003	CHIP RES.	RMC1/10 68J	6.8K	1/10W	
R 0502	J24205103	CHIP RES.	RMC1/10T 10J	10K	1/10W	
R 0504	J24205470	CHIP RES.	RMC1/10 470J	47	1/10W	
R 0505	J24205101	CHIP RES.	RMC1/10T 101J	100	1/10W	
R 0506	J24205683	CHIP RES.	RMC1/10 68J	68K	1/10W	
T 0501	L0021684A	COIL	R12-C9311			
TC0501	K91000151	TRIMMER CAP.	ECR-JA020E121	20p		
	RD130300	TERMINAL		20cm		

*** RES UNIT ***

C48051001 P.C.B. W/COMP.
F3857107A P.C.B. W/O COMP.

C 0601	K22174809	CHIP CAP.	GRM398102M50PT	0.001uF	50V	E
C 0602	K76100003	CHIP TANTALUM CAP.	F851A6R5MTAAFIQ2	6.8uF	6.3V	
C 0603	K22174809	CHIP CAP.	GRM398102M50PT	0.001uF	50V	E
C 0604	K22174809	CHIP CAP.	GRM398102M50PT	0.001uF	50V	E
C 0605	K76100002	CHIP TANTALUM CAP.	F851C225MSAAF1Q2	2.2uF	6.3V	
C 0606	K22174809	CHIP CAP.	GRM398102M50PT	0.001uF	50V	E
C 0607	K76080013	CHIP TANTALUM CAP.	F850J475MPCAF1	47uF	6.3V	
C 0608	K22174809	CHIP CAP.	GRM398102M50PT	0.001uF	50V	E
C 0609	K22174809	CHIP CAP.	GRM398102M50PT	0.001uF	50V	E
C 0610	K22174809	CHIP CAP.	GRM398102M50PT	0.001uF	50V	E
C 0611	K22174809	CHIP CAP.	GRM398102M50PT	0.001uF	50V	E
C 0612	K22174809	CHIP CAP.	GRM398102M50PT	0.001uF	50V	E
C 0613	K22174809	CHIP CAP.	GRM398102M50PT	0.001uF	50V	E

D 0601	G2870048	DIODE	1SS272 TRAGE
D 0602	G2880153	DIODE	BD168B1
D 0603	G2870009	DIODE	1SS184 TRAGE

Q 0601	G33271276	TRANSISTOR	2SC2712GE TRAGE
Q 0602	G33271276	TRANSISTOR	2SC2712GE TRAGE
Q 0603	G33271276	TRANSISTOR	2SC2712GE TRAGE
Q 0604	S1890785	IC	LM2931AZ-5.0
Q 0605	G31116270	TRANSISTOR	2SA1162GE TRAGE
Q 0606	G31116270	TRANSISTOR	2SA1162GE TRAGE
Q 0607	G31116270	TRANSISTOR	2SA1162GE TRAGE
Q 0608	G33271276	TRANSISTOR	2SC2712GE TRAGE

R 0601	J24185101	CHIP RES.	RMC 1/10T 101J	100	1/10W
R 0602	J02245828	CARBON FILM RES.	ED145J8R2	8.2	1/4W
R 0603	J24185323	CHIP RES.	RMC1/16 22JATP	22K	1/10W
R 0604	J24185104	CHIP RES.	RMC1/16 104JATP	100K	1/10W
R 0605	J24185103	CHIP RES.	RMC1/16 103JATP	10K	1/10W
R 0606	J24185472	CHIP RES.	RMC1/16 472JATP	4.7K	1/10W
R 0607	J24185472	CHIP RES.	RMC1/16 472JATP	4.7K	1/10W
R 0608	J24185322	CHIP RES.	RMC1/16 22JATP	2.2K	1/10W
R 0609	J24185104	CHIP RES.	RMC1/16 104JATP	100K	1/10W
R 0610	J24185104	CHIP RES.	RMC1/16 104JATP	100K	1/10W
R 0611	J24185103	CHIP RES.	RMC1/16 103JATP	10K	1/10W
R 0612	J24185472	CHIP RES.	RMC1/16 472JATP	4.7K	1/10W

*** CONTROL UNIT ***

C50847002 P.C.B. W/COMP.(TYP A1)
 C50847003 P.C.B. W/COMP.(TYP A2)
 C50847004 P.C.B. W/COMP.(TYP A3)
 C50847005 P.C.B. W/COMP.(TYP B)
 C50847006 P.C.B. W/COMP.(TYP C2)
 C50847007 P.C.B. W/COMP.(TYP D)
 C50847008 P.C.B. W/COMP.(TYP E2)
 F30581028 P.C.B. W/O COMP.

RT1001 Q9000306 LITHIUM BATTERY CR2025-T02

BZ1001 M4290083 BUZZER EFB-6525007

C 1001	K22170809	CHIP CAP.	GRM40B222M50PT	0.0022uF	50V	B	TYP B
C 1001	K22170809	CHIP CAP.	GRM40B222M50PT	0.0022uF	50V	B	TYP C2
C 1001	K22170809	CHIP CAP.	GRM40B222M50PT	0.0022uF	50V	B	TYP D
C 1001	K22170809	CHIP CAP.	GRM40B222M50PT	0.0022uF	50V	B	TYP E2
C 1002	K22170809	CHIP CAP.	GRM40B222M50PT	0.0022uF	50V	B	TYP B
C 1002	K22170809	CHIP CAP.	GRM40B222M50PT	0.0022uF	50V	B	TYP C2
C 1002	K22170809	CHIP CAP.	GRM40B222M50PT	0.0022uF	50V	B	TYP D
C 1002	K22170809	CHIP CAP.	GRM40B222M50PT	0.0022uF	50V	B	TYP E2
C 1003	K22170809	CHIP CAP.	GRM42-58104M25PT	0.1uF	25V	B	
C 1004	K22170835	CHIP CAP.	GRM40CH101J50PT	100pF	50V	CH	
C 1005	K22170823	CHIP CAP.	GRM40CH101J50PT	100pF	50V	CH	
C 1006	K70107475	TANTALUM CHIP CAP.	DN144E7M15	4.7uF	10V		
C 1007	K22120805	CHIP CAP.	GRM40B683M16PT	0.0068uF	16V	B	
C 1008	K22120805	CHIP CAP.	GRM40B683M16PT	0.0068uF	16V	B	
C 1009	K22120805	CHIP CAP.	GRM40B683M16PT	0.0068uF	16V	B	
C 1010	K22120805	CHIP CAP.	GRM40B683M16PT	0.0068uF	16V	B	
C 1011	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B	
C 1012	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B	
C 1013	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B	
C 1014	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B	
C 1015	K22170805	CHIP CAP.	GRM40B102M50PT	0.001uF	50V	B	
C 1016	K22170805	CHIP CAP.	GRM40B102M50PT	0.001uF	50V	B	
C 1017	K70120009	TANTALUM CHIP CAP.	TE5VA1C105M1-8R	1uF	10V		
C 1018	K22170817	CHIP CAP.	GRM40B103M50PT	0.01uF	50V	B	
C 1019	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B	
C 1020	K70060003	TANTALUM CHIP CAP.	F350J105MTAAF1Q2	10uF	0.3V		
C 1021	K40060010	AL. ELECTRO. CAP.	HC2-6V221R	220uF	0.3V		
C 1022	K22170805	CHIP CAP.	GRM40B102M50PT	0.001uF	50V	B	
C 1023	K22170805	CHIP CAP.	GRM40B102M50PT	0.001uF	50V	B	
C 1024	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B	
C 1025	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B	
C 1026	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B	
C 1027	K22174809	CHIP CAP.	GRM39B102M50PT	0.001uF	50V	B	
C 1028	K10176102	CERAMIC CAP.	DD1048102K50	0.001uF	50V	B	
C 1029	K70060003	TANTALUM CHIP CAP.	F350J105MTAAF1Q2	10uF	0.3V		
C 1030	K22170805	CHIP CAP.	GRM40B102M50PT	0.001uF	50V	B	
C 1031	K22170821	CHIP CAP.	GRM40B222M50PT	0.0022uF	50V	B	
C 1034	K22174817	CHIP CAP.	GRM39B472M50PT	0.0047uF	50V	B	
C 1035	K22174817	CHIP CAP.	GRM39B472M50PT	0.0047uF	50V	B	
C 1040	K22170805	CHIP CAP.	GRM40B102M50PT	0.001uF	50V	B	
C 1042	K22170235	CHIP CAP.	GRM40CH101J50PT	100pF	50V	CH	
C 1044	K22170805	CHIP CAP.	GRM40B102M50PT	0.001uF	50V	B	

CO1001 K7000400 CERAMIC OSC. ERE-500H

D 1001 Q2070084 DIODE YSS300 TF55H

R 0713	J24185104	CHFP RES.	ENC1/16 104JATP	100K	1/10W
R 0714	J24185225	CHFP RES.	ENC1/16 225JATP	2.2K	1/10W
R 0715	J24205222	CHFP RES.	ENC1/16 222J	22K	1/10W
R 0716	J24185104	CHFP RES.	ENC1/16 104JATP	100K	1/10W

R 1008	J24185183	CHIP RES.	ENC1/18 183JATP	10K	1/16W
R 1009	J24185185	CHIP RES.	ENC1/18 185JATP	1K	1/16W
R 1010	J24185473	CHIP RES.	ENC1/16 473JATP	47K	1/16W
R 1011	J24185183	CHIP RES.	ENC1/16 183JATP	10K	1/16W
R 1012	J24185472	CHIP RES.	ENC1/16 472JATP	4.7K	1/16W
R 1013	J24185184	CHIP RES.	ENC1/18 184JATP	100K	1/16W
R 1014	J24185184	CHIP RES.	ENC1/18 184JATP	100K	1/16W
R 1015	J24185183	CHIP RES.	ENC1/16 183JATP	10K	1/16W
R 1016	J24185561	CHIP RES.	ENC1/16 561JATP	560	1/16W
R 1017	J24185561	CHIP RES.	ENC1/16 561JATP	560	1/16W
R 1018	J24185183	CHIP RES.	ENC1/16 183JATP	10K	1/16W
R 1019	J24185181	CHIP RES.	ENC1/18 181JATP	100	1/16W
R 1020	J24185472	CHIP RES.	ENC1/18 472JATP	4.7K	1/16W
R 1021	J24185184	CHIP RES.	ENC1/18 184JATP	100K	1/16W
R 1022	J24185183	CHIP RES.	ENC1/18 183JATP	10K	1/16W
R 1023	J24185183	CHIP RES.	ENC1/16 183JATP	10K	1/16W
R 1024	J24185183	CHIP RES.	ENC1/18 183JATP	10K	1/16W
R 1025	J24185474	CHIP RES.	ENC1/16 474JATP	470K	1/16W
R 1026	J24185185	CHIP RES.	ENC1/16 185JATP	1K	1/16W
R 1027	J24185000	CHIP RES.	ENC1/16 000JATP	0	1/16W
R 1028	J24185183	CHIP RES.	ENC1/18 183JATP	18K	1/16W
R 1029	J24185182	CHIP RES.	ENC1/18 182JATP	1K	1/16W
R 1030	J24185184	CHIP RES.	ENC1/18 184JATP	100K	1/16W
R 1031	J24185473	CHIP RES.	ENC1/16 473JATP	47K	1/16W
R 1032	J24185224	CHIP RES.	ENC1/16 224JATP	220K	1/16W
R 1033	J24185183	CHIP RES.	ENC1/18 183JATP	10K	1/16W
R 1034	J24185183	CHIP RES.	ENC1/18 183JATP	10K	1/16W
R 1035	J24185222	CHIP RES.	ENC1/16 222JATP	2.2K	1/16W
R 1036	J24185152	CHIP RES.	ENC1/16 152JATP	1.5K	1/16W
R 1037	J24185471	CHIP RES.	ENC1/16 471JATP	470	1/16W
R 1038	J24185472	CHIP RES.	ENC1/16 472JATP	4.7K	1/16W
R 1039	J24185183	CHIP RES.	ENC1/16 183JATP	10K	1/16W
R 1040	J24185183	CHIP RES.	ENC1/16 183JATP	10K	1/16W
R 1041	J24185472	CHIP RES.	ENC1/16 472JATP	4.7K	1/16W
R 1042	J24185000	CHIP RES.	ENC1/16 000JATP	0	1/16W
R 1043	J24185000	CHIP RES.	ENC1/16 000JATP	0	1/16W
R 1044	J24185000	CHIP RES.	ENC1/16 000JATP	0	1/16W
R 1045	J24185223	CHIP RES.	ENC1/16 223JATP	22K	1/16W
R 1046	J24185000	CHIP RES.	ENC1/16 000JATP	0	1/16W
R 1047	J24185184	CHIP RES.	ENC1/18 184JATP	100K	1/16W

S 1001	N5090018	TACT SWITCH	KHH-15951
S 1002	N5090018	TACT SWITCH	KHH-15951
S 1003	N8090057	SLIDE SWITCH	SSSS22
S 1004	N4090088	PUSH SWITCH	SPJ822N F19
S 1005	N0190138	ROTARY SWITCH	S8M1L0178

X 1001	H7880458	CERAMIC OSC.	KBE-8088
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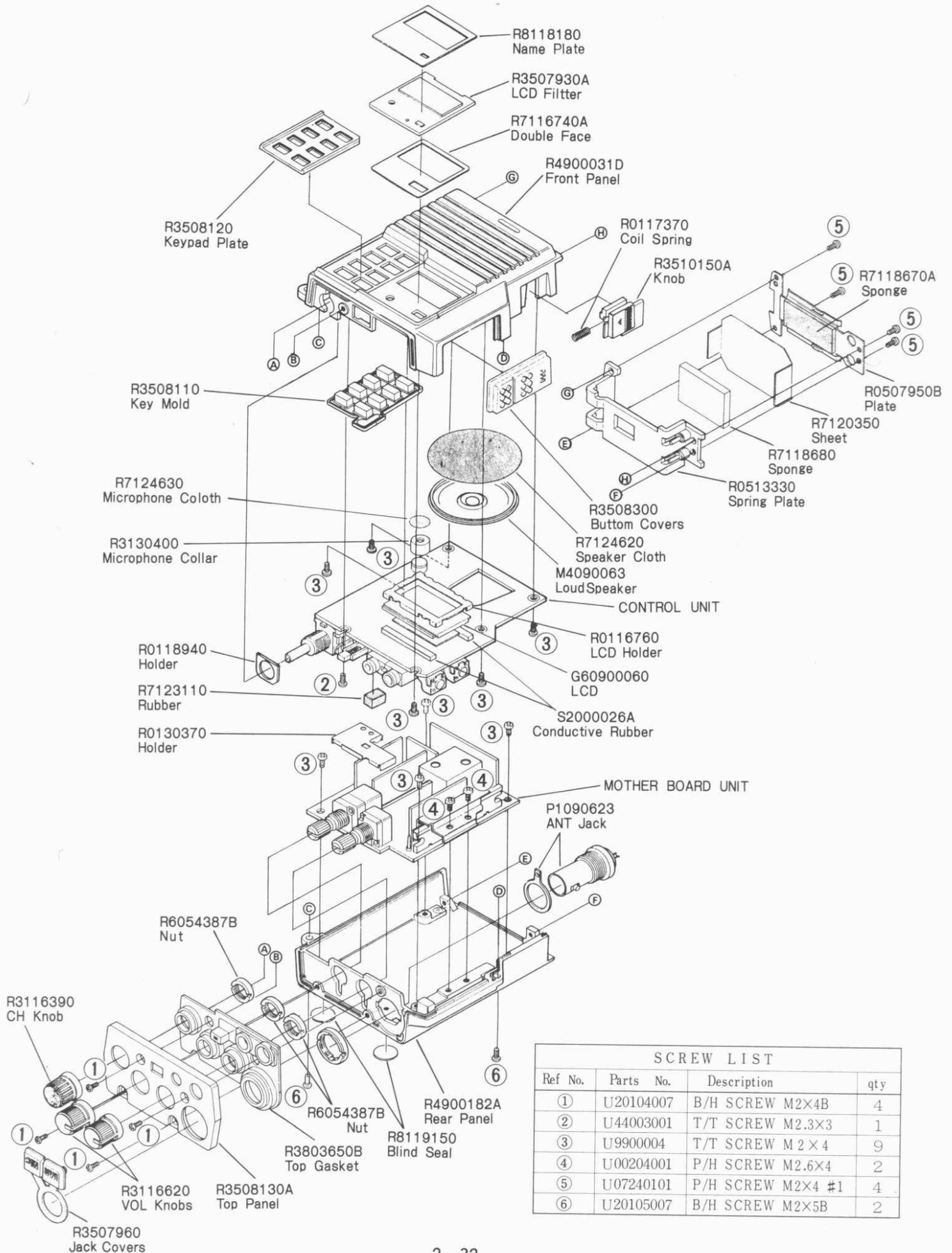
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W7132748	MYLAR
W7132758	MYLAR
W0130388	SHIELD PLATE
W7074938	DOUBLE FACE ADHESIVE
W7108658	DOUBLE FACE ADHESIVE

*** BUNNY UNIT ***

C50853001 P.C.E. W/COMP.
V3858103 P.C.E. W/O COMP.

P 3001 D0890702 CONVICTOR 82308-1-032003-T
B 3001 J24185223 CHIP RES. ENCL/16 223JATP 228

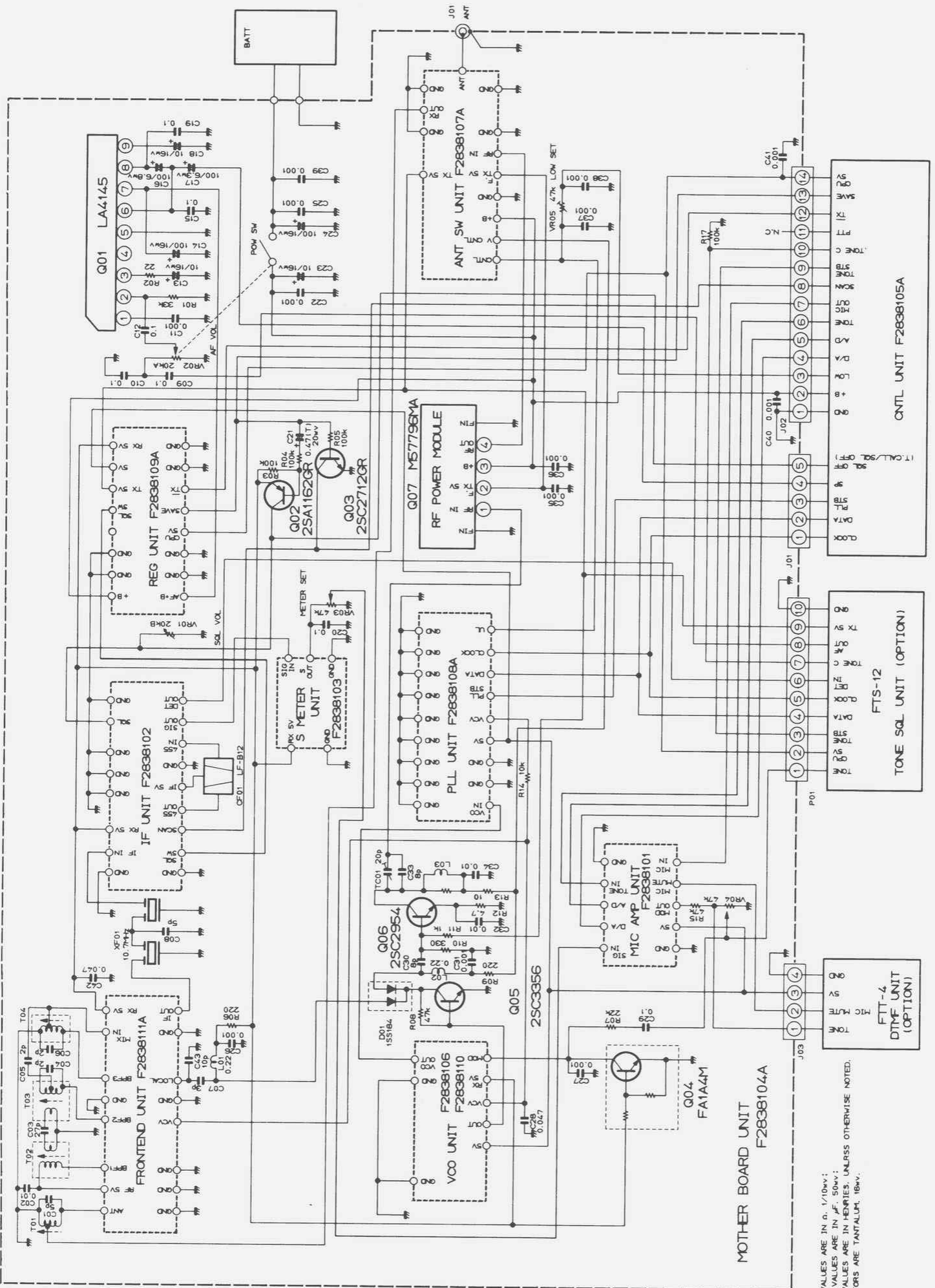
EXPLODED VIEW



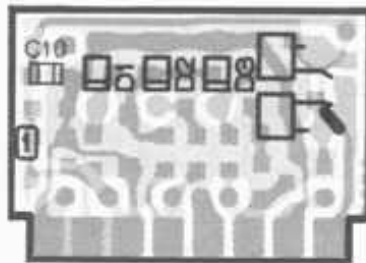
SCREW LIST

Ref No.	Parts No.	Description	qty
①	U20104007	B/H SCREW M2×4B	4
②	U44003001	T/T SCREW M2.3×3	1
③	U9900004	T/T SCREW M2×4	9
④	U00204001	P/H SCREW M2.6×4	2
⑤	U07240101	P/H SCREW M2×4 #1	4
⑥	U20105007	B/H SCREW M2×5B	2

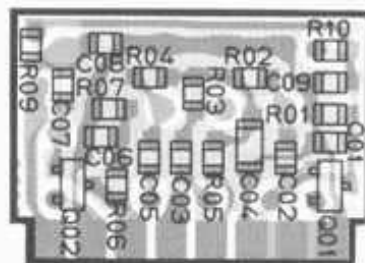
MOTHER BOARD



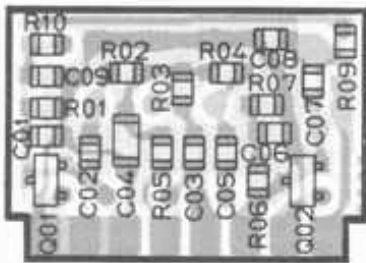
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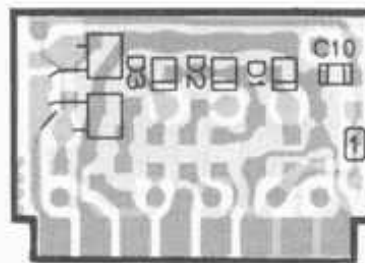
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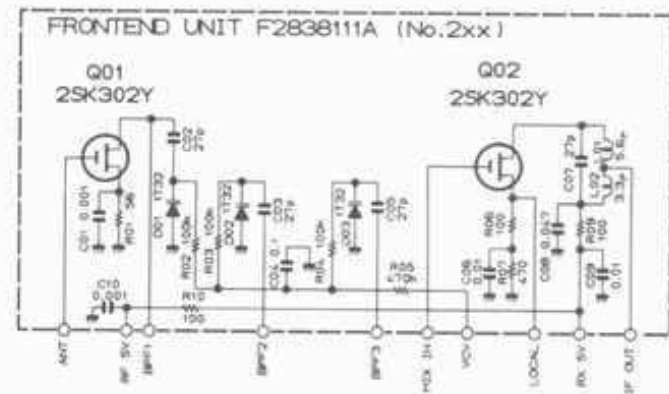
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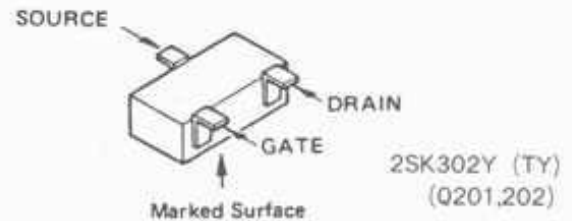
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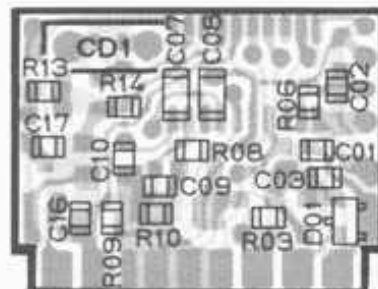
(reverse view of
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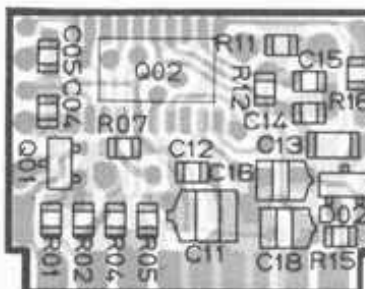
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CAPACITOR VALUES ARE IN μ F, 50V
INDUCTOR VALUES ARE IN HENRIES, UNLESS OTHERWISE NOTED.



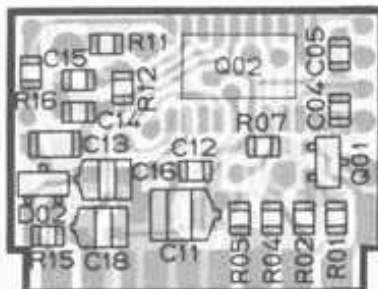
IF UNIT



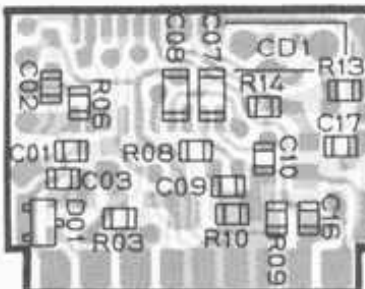
(obverse view of
"mixed-component" side)



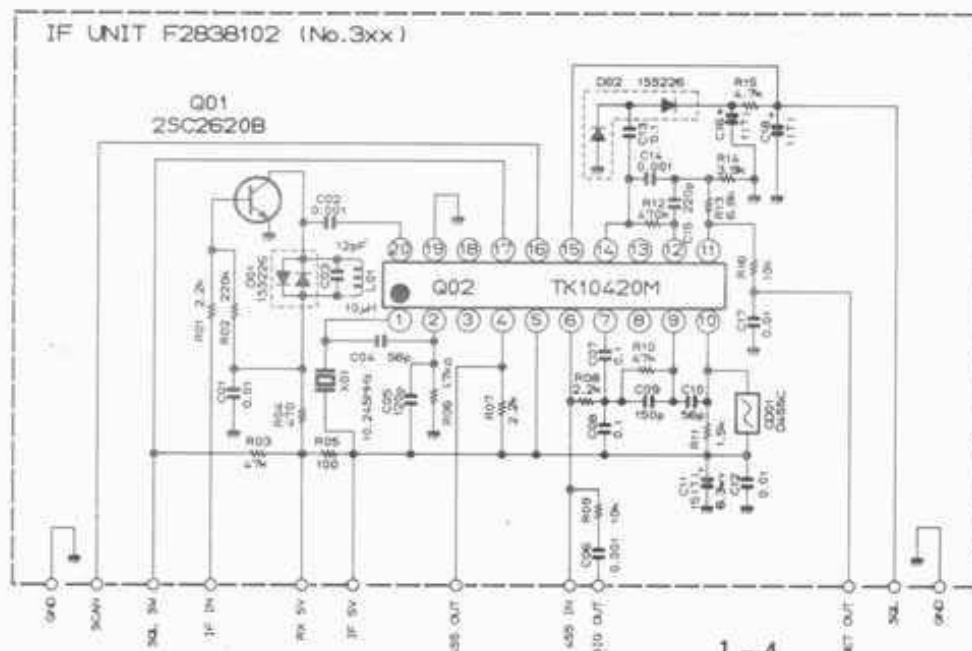
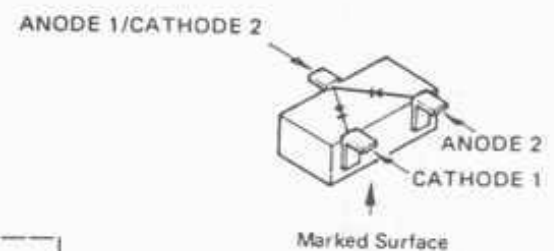
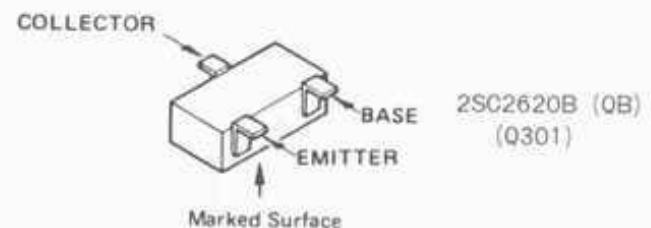
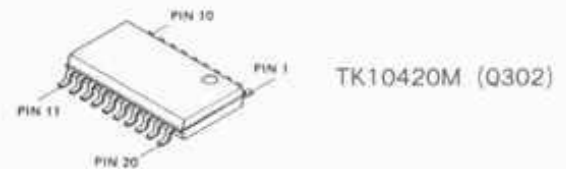
(obverse view of
"chip-only" side)



(reverse view of
"chip-only" side)

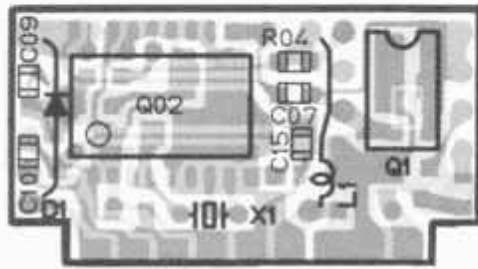


(reverse view of
"mixed-component" side)

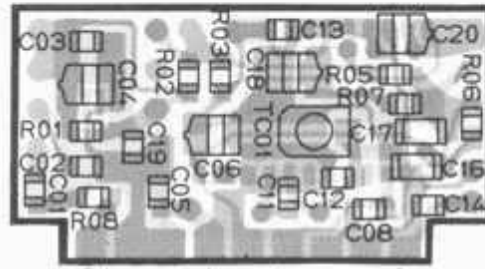


RESISTOR VALUES ARE IN Ω , 1/10W
CAPACITOR VALUES ARE IN μ F, 50V
INDUCTOR VALUES ARE IN HENRIES, UNLESS OTHERWISE NOTED.
(T) CAPACITORS ARE TANTALUM, 10V.

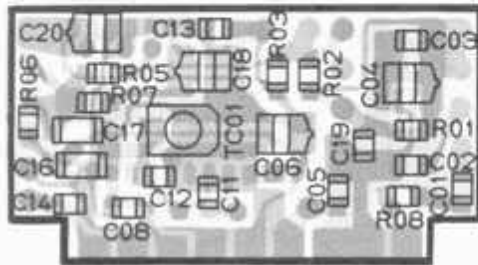
PLL UNIT



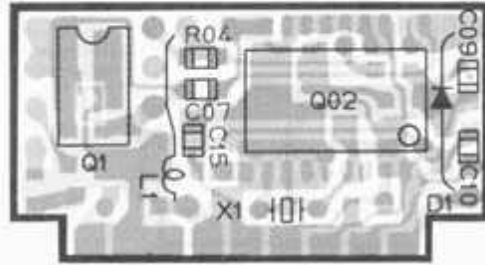
(obverse view of
"mixed-component" side)



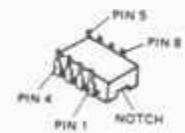
(obverse view of
"chip-only" side)



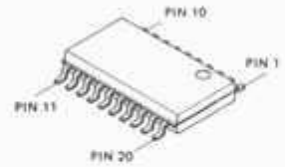
(reverse view of
"chip-only" side)



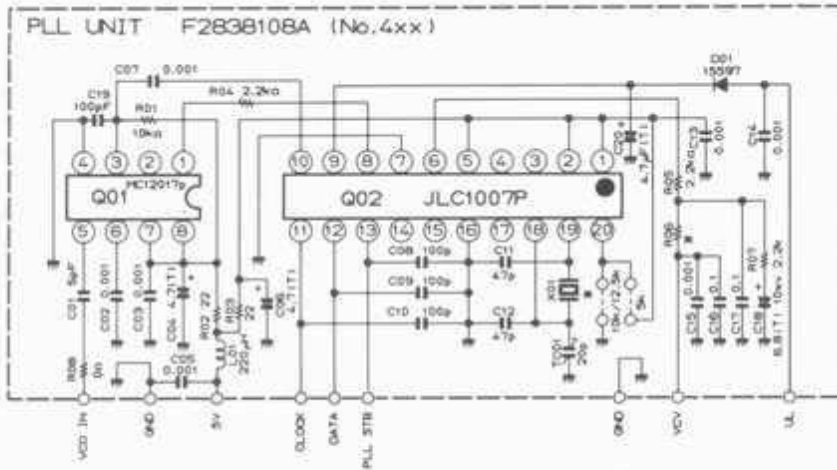
(reverse view of
"mixed-component" side)



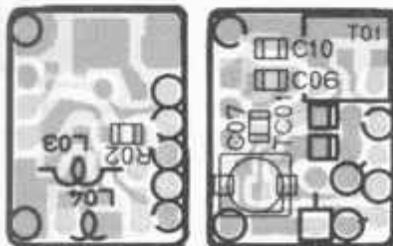
MC12017P (Q401)



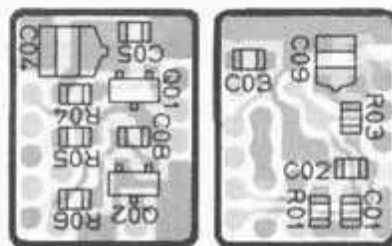
JLC1007P (Q402)



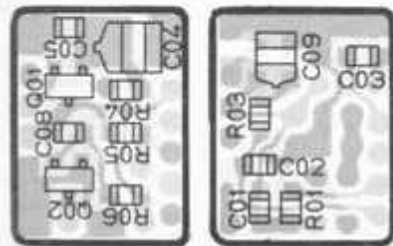
VCO UNIT



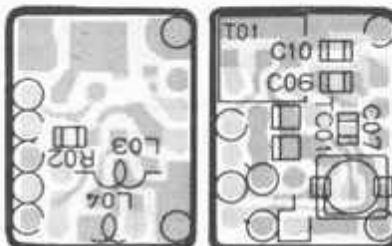
(obverse view of
"mixed-component" side)



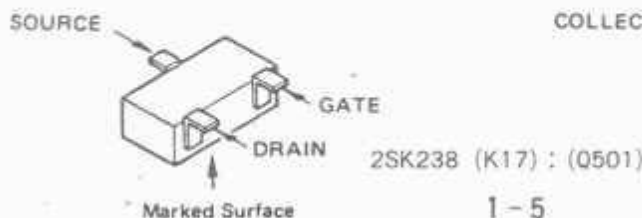
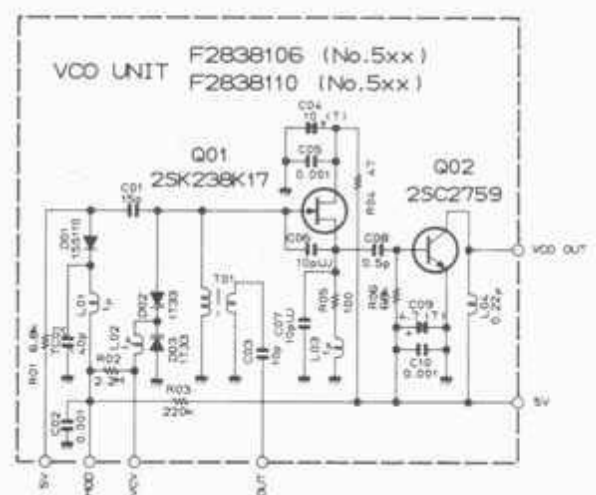
(obverse view of
"chip-only" side)



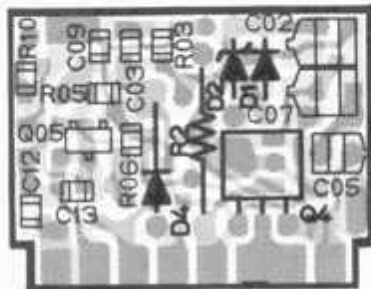
(reverse view of
"chip-only" side)



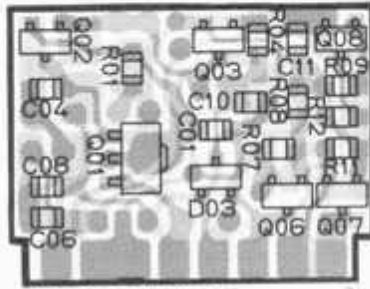
(reverse view of
"mixed-component" side)



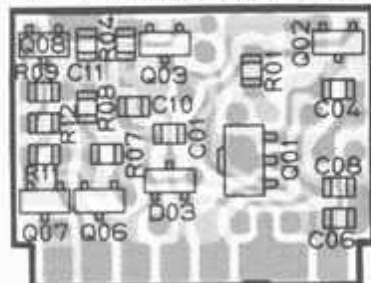
REG UNIT



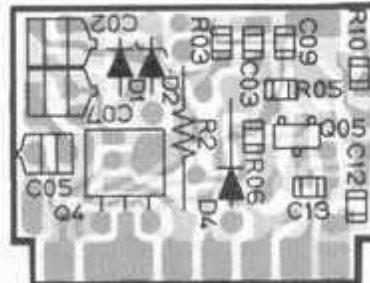
(obverse view of "mixed-component" side)



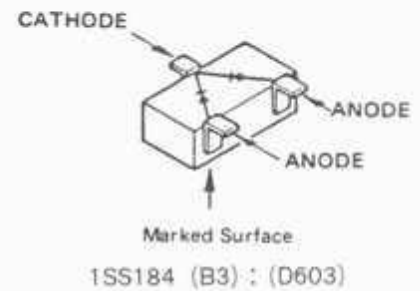
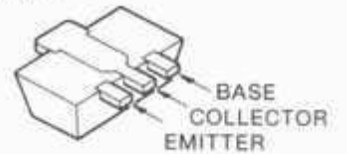
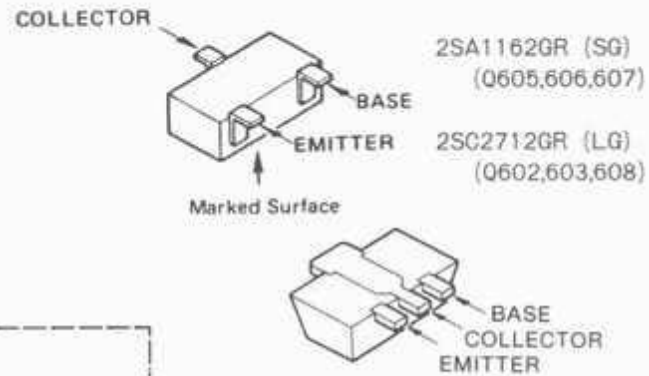
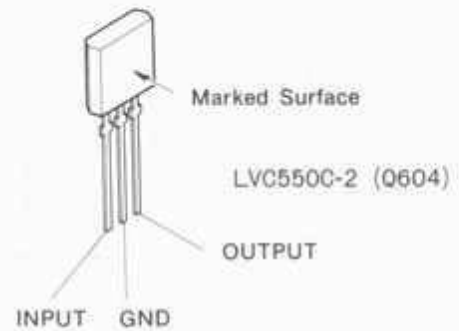
(obverse view of "chip-only" side)



(reverse view of "chip-only" side)

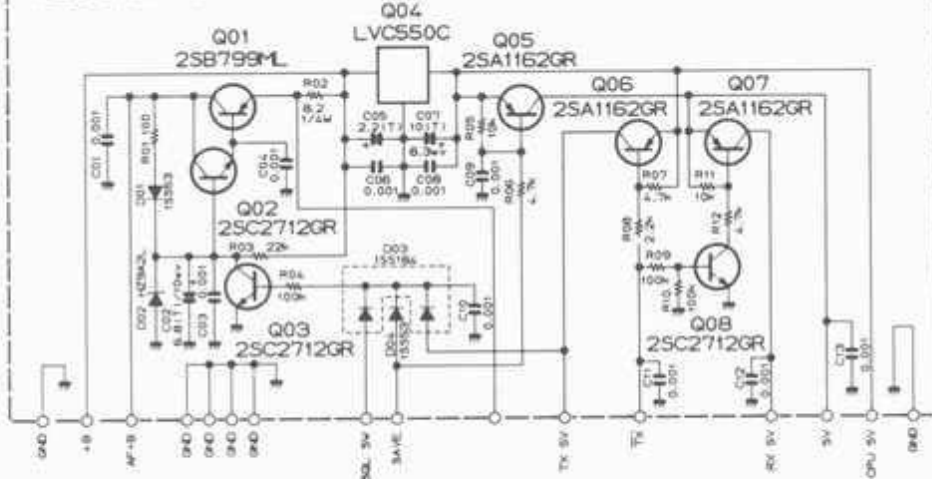


(reverse view of "mixed-component" side)

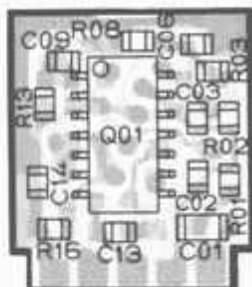


RESISTOR VALUES ARE IN Ω , 1/10W;
CAPACITOR VALUES ARE IN μ F, 50V;
UNLESS OTHERWISE NOTED.
1T: CAPACITORS ARE TANTALUM, 10V.

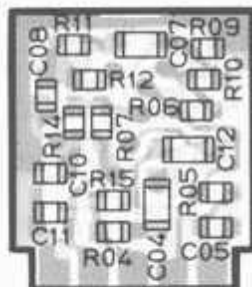
REG UNIT F2838109 (No.6xx)



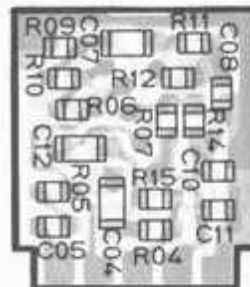
MIC AMP UNIT



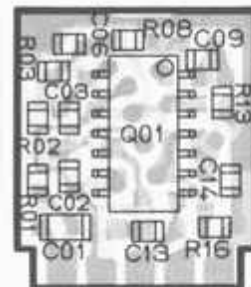
(obverse view of "IC" side)



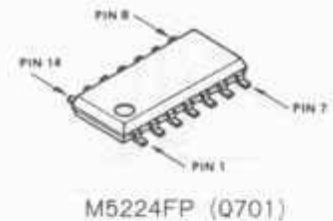
(reverse view of "C-R" side)



(obverse view of "C-R" side)

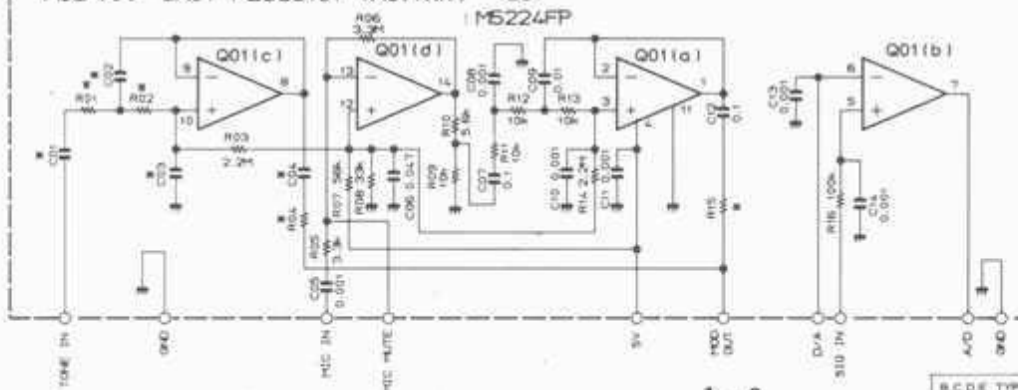


(reverse view of "IC" side)



M5224FP (Q701)

MIC AMP UNIT F2838101 (No.7xx)



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

	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



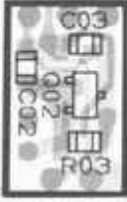
(obverse view of
"top" side)



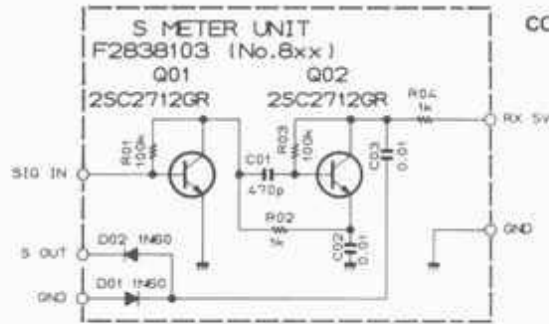
(obverse view of
"bottom" side)



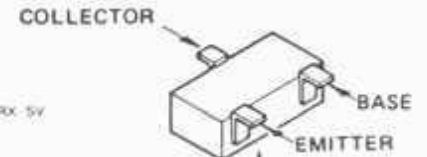
(reverse view of
"bottom" side)



(reverse view of
"top" side)

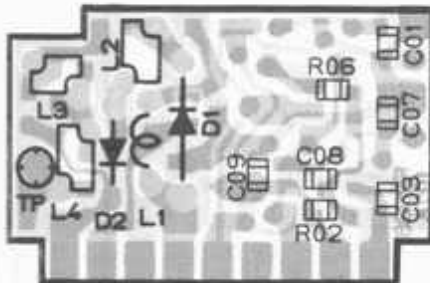


RESISTOR VALUES ARE IN Ω , 1/10W;
CAPACITOR VALUES ARE IN μ F, 50V;
UNLESS OTHERWISE NOTED.

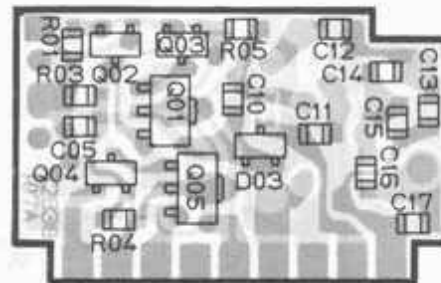


Marked Surface
2SC2712GR (LG)
(Q01,802)

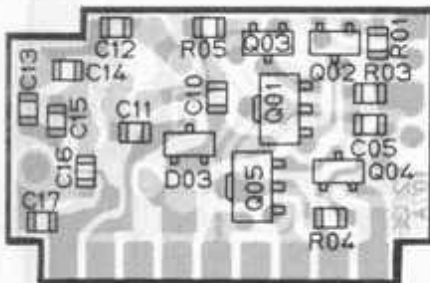
ANT SW UNIT



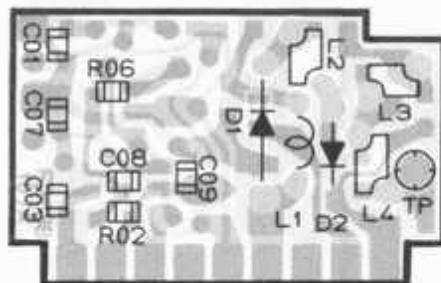
(obverse view of
"mixed-component" side)



(obverse view of
"chip-only" side)



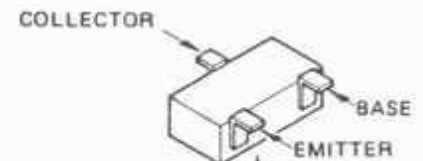
(reverse view of
"chip-only" side)



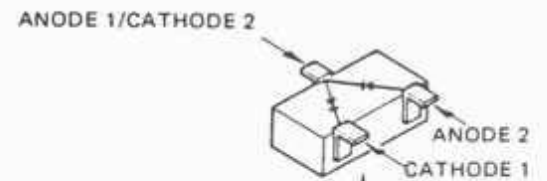
(reverse view of
"mixed-component" side)



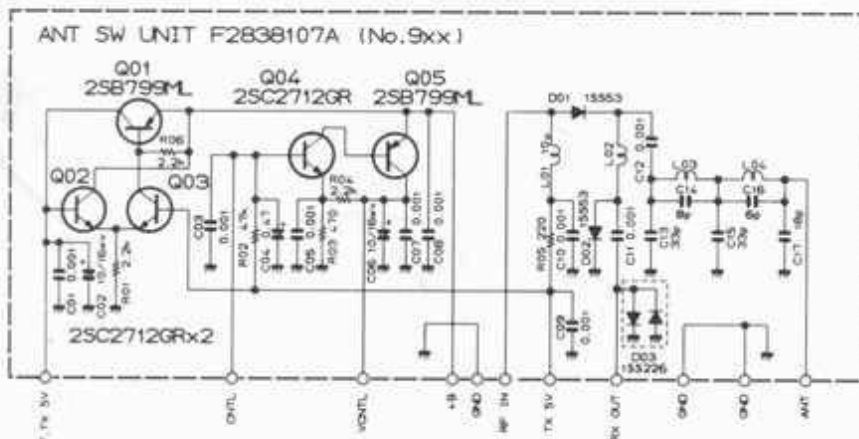
2SB799 (Q901,905)



Marked Surface
2SC2712GR (LG)
(Q902,903,904)



Marked Surface
1SS226 (C3) : (D903)



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



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