

5.2 FINAL XYZ AMPLIFIER A2

5.2.1 Description of A2-200 MHz version

5.2.1.1 Final Y amplifier

Diagram 1

The output signal from the delay line is applied to the input pins 6 and 9 of amplifier IC D1001. Also the vertical output signals YTXT0 and YTXT1 from the digitizer unit A8 are applied to D1001 (pin 15 and 16). The switching between digital and analog mode is done via control signals that are applied to pin 17 and 18 of D1001. Digital mode is active if the voltage at pin 18 is higher than at pin 17. This switching signal is derived from the collector of the transistors V1201 and V1202. The control signals XYSW1 and XYSW0 come from the output stage V8036/V8041 on the digitizer unit A8. Via the transistors V1203 and V1204 similar switching signals XSW1 and XSW0 are routed to the X-deflection section for switching between digital and analog mode.

The output signals from pin 21 and 22 of D1001 are routed to the final Y-amplifier that drives the vertical deflection plates of the CRT. This final stage is indicated on the next diagram.

The delay line leads are terminated into 50Ω . The impedance is composed by 300Ω inside D1001 paralleled by external impedances of 60Ω formed by the external resistors R1024/R1026 and R1027/R1028. All termination resistors are applied to a voltage controlled by D1001/pin 13. Pin 13 determines the common mode voltage level of the D1001 inputs. The HF square wave compensation is achieved by the two dual varicap diodes V1009 and V1011 together with associated resistors. A fixed mid-frequency compensation network is formed by C1006 and associated resistors.

Varicap V1009 is controlled by the output signal at pin 20 of octal DAC N1001. This output voltage can be in the range 0 to 10 V and controls varicap V1009 via operational amplifier N1002/1,2,3. This operational amplifier converts the N1001 output voltage (that is related to 0 V) into a voltage related to the voltage at D1001/pin 13.

Varicap V1011 is controlled by the output signal at pin 18 of octal DAC N1001. This output voltage can be in the range 0 to 10 V and controls varicap V1011 via operational amplifier N1002/5,6,7. This operational amplifier converts the N1001 output voltage (that is related to 0 V) into a voltage related to the voltage at D1001/pin 13.

LF square wave compensation is also done inside D1001. This is controlled via currents applied to pin 27 and 28. These currents are derived from the N1001 DAC voltage outputs 13 and 11 via the transistors V1014 and V1016. The actual compensating components are situated outside D1001 and are R1037/C1011/R1038 and R1029/C1009/R1031. V1023 and V1024 form a 20 mA current source to supply the bias current for the final stage inside D1001. V1024 is switched as a diode and gives temperature compensation.

Offset is adjusted via the currents from the collectors of V1021 and V1022. These currents are controlled by the DAC output pins 17 (Most Significant DAC) and 16 (Least Significant DAC). Two parallel DAC outputs are used to obtain sufficient resolution. V1018 is a current source and V1019 is for temperature compensation. Gain control occurs via an adjustable current applied to D1001/pin 26. This is done via N1001/pin 14 and R1051

DAC output N1001/15 applies via operational amplifier N1003/1,2,3 the signal YFSHF to the final stage on the next diagram. YFSHF is an adjustable dc voltage that is applied to varicap diodes that control the HF square wave response.

Diagram 2

This diagram shows the push-pull output amplifier. The input signal is a current and the output signal is a voltage. The output signal is applied to the vertical upper and lower plates of the CRT. The total sensitivity at the plates is 4V/div. One plate is driven by push-pull stage V1106/V1111. The driver transistors are V1102 and V1103. The input signal is YPREOUT1.

The other plate is driven by push-pull stage V1107/V1112. The driver transistors are V1101 and V1104. The input signal is YPREOUT0. The output voltage applied to the CRT deflection plates is controlled by the feedback networks R1101/R1141/R1143/C1101/V1113/R1140/C1121 and R1102/R1142/R1144/C1102/V1113/R1145/C1122.

The push-pull amplifier stages are connected between +18 V and -18V supply voltages via current sources. One of these is V1122 with temperature compensation via V1121. The other is V1123 and is adjusted via operational amplifier N1003/5,6,7. This assures that the common mode voltage at the plates of the CRT is 0 V.

The resistance network between L1101 and L1102 avoids extreme differences in power dissipation in the output transistors when a dc voltage difference exists between the CRT deflection plates.

The input of the final stage is at a common mode level of 9V dc because of the output level from D1001. This voltage is made by the dc current sources V1021 and V1022. The current from these sources is partly used by the D1001 output stage (pin 21 and 22). The remaining currents give a 9 V dc across the feedback resistors R1101/R1141 and R1102/1142. Because the output lines to the CRT plates are at 0V common mode level, the inputs are at 9V common mode level. The current in the feedback resistors runs via L1101, L1102 and V1126 to the -18V supply.

The bias current for the driver stage V1101/V1102/V1103/V1104 is controlled by V1127 and V1128 via R1167 and R1168. V1127 converts voltage into current. This current is compared with current from source V1128/R1166. In case of a difference between these currents, the resulting current feeds the base of V1103 and V1104.

The circuit with operational amplifier N1004/2,3,6 is used for automatic calibration of the vertical deflection. It measures the voltage at the vertical deflection plates of the CRT. This value is applied as signal YCAL to the microprocessor on unit A3.

5.2.1.2 *Final X and Z amplifiers*

Diagram 3

This diagram shows the final X amplifier. It drives the horizontal plates of the CRT. The plate sensitivity equals 8.5 V/div. The input circuit is formed by IC D2001. The octal DAC N2002 supplies the analog control signals that are used throughout the circuit.

Input pin 5 and 6 of D2001 receive the analog time base sawtooth or the X-deflection signal. Input pin 9 and 10 receive the X-deflection signals XTXT0 and XTXT1 from digitizer unit A8. The selection between analog and digital mode is done via the signals XSW0 and XSW1 that are applied to pin 7 and pin 8 of D2001. These signals are derived from XYSW0 and XYSW1 that come from output stage V8036/V8041 on the digitizer unit A8. Digital mode is on with XSW0 at 0 mA and XSW1 at 1 mA. Analog mode is on with XSW0 at 1 mA and XSW1 at 0 mA.

Gain control is possible via pin 1 of D2001. This is used for trace gain control via signal XTRAGC. Gain control to compensate for CRT tolerances is achieved via pin 14 of D2001. This is controlled via the DAC output signals XCRTGCL and XCRTGCH. Offset control to compensate for CRT tolerances is achieved via pin 15 of D2001. This is controlled via the DAC output signals XCRTOFH and XCRTOFL. Adjustment of the HF response (and linearity) is achieved via signal XHFADJ via pin 17 and 26 of D2001.

The final X-amplifier consists of two identical halves that receive input signals that are in opposite phase. These signals originate from the D2001 outputs pin 24/25 (XDRIL0/XDRIL1) and pin 18/19 (XDRIR0/XDRIR1). The two X-amplifier sections drive respectively the left and right deflection plate of the CRT.

The final X amplifier half that drives the left deflection plate is explained now. Its function is identical to that of the other amplifier half. The balanced input signals XDRIL1 and XDRIL0 are applied to input stage V2101. V2104 is a current source. XDRIL0 is not used and connected to +5 V. In the collector circuit of V2101 are the zener diodes V2102/V2103 that function as level shifters. The emitter followers V2132 and V2111 supply the output stage V2134/V2113 with signal. V2113 functions as an amplifier stage and V2134 mainly as a current source. V2134 receives signal via C2131 and mainly functions as amplifier stage in the fastest sweep speeds. Via R2133/R2134 however some dc drive is also applied to V2134.

The circuit with operational amplifier N2003 is used to measure the output voltage that is applied to the X-deflection plates of the CRT. This measurement is done via high-ohmic resistors R2301 and R2302. The analog output voltage XCAL of N2003 is applied to an ADC incorporated in the microprocessor on unit A3. This enables the microprocessor to exactly measure the horizontal output voltage. This is used for automatic calibration of the horizontal deflection.

Diagram 4

This diagram shows the final intensity (Z) and focusing amplifiers. These amplifiers drive the intensity electrode G1 and the focusing electrode G3 of the CRT. The input circuit is formed by IC D3001.

Input pin 5 and 6 of D3001 receive the Z-pulses that determine intensity during the analog mode. Input pin 9 and 10 receive the Z-pulses ZTXT0 and ZTXT1 from output stage V8027/V8028 on digitizer unit A8. The selection between analog and digital mode is done via the signals ZSW0 and ZSW1 that are applied to pin 7 and 8 of D3001. These signals are coming from output stage V8042/V8033 on the digitizer unit A8. Digital mode is on with ZSW0 at 0 mA and ZSW1 at 1 mA. Analog mode is on with ZSW0 at 1 mA and ZSW1 at 0 mA.

The final Z-amplifier and the focusing amplifier are identical halves that receive input signals that are in opposite phase. These signals originate from the D3001 outputs pin 24/25 (ZDRIF1/ZDRIF0) and pin 18/19 (ZDRIF0/ZDRIF1).

Via V3002 part of the ripple on the negative CRT cathode voltage (ZRIPPLE) is applied to pin 15 of D3001. This compensates for unwanted intensity modulation due to this ripple.

The diodes V3236, V3136, V3237 and V3137 protect D3001 against possible high voltage surges.

V3301 supplies the intensity determining signal INTEN-DA. This signal adjusts the "dark level" of the CRT. V3301 is controlled by DAC N2002 output signal DARK. V3311 supplies signal ASTIG that determines the astigmatism of the CRT. V3311 is controlled by DAC N2002 output signal ASTDR.

The upper amplifier half that is used for the dynamic focus control is explained now. Its function is identical to that of the lower amplifier half that is used for intensity (Z) control. The balanced input signals ZDRIF1 and ZDRIF0 are applied to input stage V3101. V3104 is a current source. ZDRIF0 is not used and connects to +5 V. In the collector circuit of V3101 are the zener diodes V3102/V3103 that function as level shifters. The emitter followers V3132 and V3111 supply the output stage V3134/V3113 with signal. V3113 functions as an amplifier stage and V3134 mainly as a current source. V3134 receives signal via C3131 and mainly functions as amplifier stage for fast input signals. Via R3133/R3134 however some dc drive is also applied to V3134.

The circuit with V3282/V3212 suppresses the light on the screen at power down. V3282 becomes conductive via the fast falling +12 V and the slowly falling charge in C3281.

Diagram 5

In this diagram the circuit is shown that forms an interface between the signals that determine the intensity/focusing and the CRT electrodes G1/G3 that control intensity/focusing. These electrodes, the cathode and filament (heater) of the CRT are at a high negative voltage. This voltage is separated from the other oscilloscope circuits via the 3kV capacitors C4004, C4061, C4036 and C4037.

The intensity is influenced by the output signal INTEN-AA of the Z- amplifier and the signal INTEN-DA. INTEN-AA is determined via the front-panel INTENS TRACE, INTENS TEXT, MTBI and chopper blanking control signals. The HF component in the INTEN-AA signal is applied to G1 of the CRT via C4037. The DC and LF components are applied to the base of V4034. The INTEN-DA signal is applied to the base of V4032 and forms the clamp level (dark level) of the DC and LF part of INTEN-AA derived from V4034. These two transistors form the inputs of a 150kHz modulator that basically consists of V4031 and V4033. The LF and DC components that are modulated on the 150 kHz carrier signal can pass via buffer stage V4038/V4039 and then via high voltage blocking capacitor C4036. Behind capacitor C4036 demodulation takes place via the diodes V4043 and V4044. This results in the original INTEN-AA signal that is superpositioned on the INTEN-DA voltage that corrects the cut-off voltage of the CRT applied to G1 and via R4051 also to G3. Across R4044 a small negative voltage (compared with the cathode) is developed for G1. This voltage is not big enough to make the CRT screen dark. This means that the signals to darken the screen and to control intensity are applied via C4036 and C4037.

The HF component from the focusing amplifier output signal FOCUS-AA is applied to G3 via C4004 and voltage divider R4008/R4009/C4002/C4003. This assures optimal tracking between focus and intensity. The signal FOCUS-DA is determined via the FOCUS control at the instruments front panel. The signal FOCUS-DA is then mixed with the LF component of FOCUS-AA before its level is adapted to the nominal G3 voltage via transistors V4002/V4003/V4004.

Diagram 6

This diagram shows the RC-branches and regulators N5131 that give the supply voltages for the various circuits. Also the connectors X2501 and X2301 are indicated here. X2301 is the connector where the flat cable leaves for the small unit that incorporates the CRT-socket X2403. The flat cable arrives at the small CRT-socket unit at X2401.

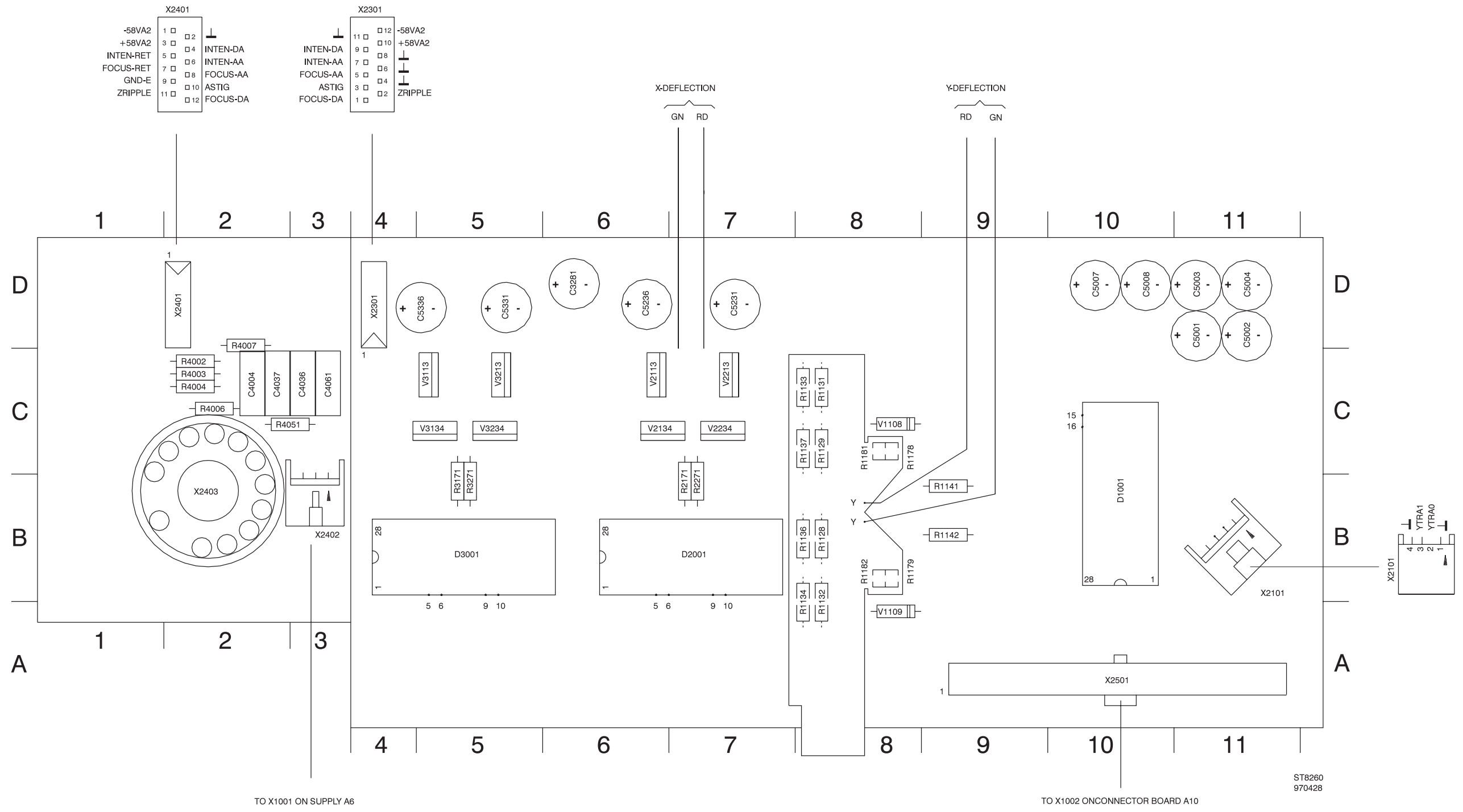
5.2.2 Signal name list A2-200 MHz version

Note: In the signal name list you find the itemnumber of the component that is source or destination. Behind this itemnumber (separated by ":") you find the number of the diagram where the source/destination can be found.

NAME	MEANING	SOURCE	DESTINATION
ASTDR	DRIVER SIGNAL FOR ASTIGMATISM	N2002:03	R3313:04
ASTIG	ASTIGMATISM CONTROL	V3311:04	X2301:06 X2401:05 X2403:05
DARK	DRIVER SIGNAL FOR DC PART INTENS	N2002:03	V3301:04
FOCUS-AA	AC PART FOCUSING SIGNAL	R3161:04	X2301:06 X2401:05 R4008:05
FOCUS-DA	DC PART FOCUSING SIGNAL	X2501:06	X2301:06 X2401:05 C4001:05 R4001:05
G1	INTENSITY GRID 1 OF CRT	C4037:05 R4044:05	X2403:05
G3	FOCUSING GRID 3 OF CRT	C4004:05 R4051:05	X2403:05
HEATER1	FILAMENT SUPPLY F1 OF CRT	X2402:05	X2403:05
HEATER2	FILAMENT SUPPLY F2 OF CRT	X2402:05	X2403:05
INTEN-AA	AC PART OF INTENSITY SIGNAL	R3261:04	X2401:05 C4037:05
INTEN-DA	DC PART OF INTENSITY SIGNAL	V3301:04	X2301:06 X2401:05 V4032:05
SCL	SERIAL CLOCK	X2501:06	J1002:06 J2002:06
SDA	SERIAL DATA	X2501:06	J1001:06 J2001:06
XCAL	AUTOCAL SIGNAL X DEFLECTION	R2313:03	X2501:06
XDRIL0	DRIVE SIGNAL 0 LEFT X AMPLIFIER	D2001:03	R2101:03
XDRIL1	DRIVE SIGNAL 1 LEFT X AMPLIFIER	D2001:03	R2103:03
XDRIR0	DRIVE SIGNAL 0 RIGHT X AMPLIFIER	D2001:03	R2203:03
XDRIR1	DRIVE SIGNAL 1 RIGHT X AMPLIFIER	D2001:03	R2201:03
XHFADJ	HF ADJUSTMENT X AMPLIFIER	N2002:03	R2018:03
XLTXT0	X SHIFT TEXT 0	V2062:03	D2001:03
XLTXT1	X SHIFT TEXT 1	V2061:03	D2001:03
XOUT0	X OUTPUT 0	V2134:03 V2113:03	R2171:03
XOUT1	X OUTPUT 1	V2234:03 V2213:03	R2271:03
XPLATE0	X OUTPUT 0 TO CRT	R2161:03	CRT LEFT PLATE
XPLATE1	X OUTPUT 1 TO CRT	R2261:03	CRT RIGHT PLATE

XSCL	SERIAL CLOCK X SECTION	J2002:06	N2002:03
XSDA	SERIAL DATA X SECTION	J2001:06	N2002:03
XSW0	X SWITCH SIGNAL 0 TRACE/TEXT	V1204:01	D2001:03
XSW1	X SWITCH SIGNAL 1 TRACE/TEXT	V1203:01	D2001:03
XYSW0	X/Y SWITCH SIGNAL 0 TRACE/TEXT	X2501:06	R1204:01
XYSW1	X/Y SWITCH SIGNAL 1 TRACE/TEXT	X2501:06	R1201:01
XTRA0	X TRACE 0 SIGNAL	X2501:06	R2004:03
XTRA1	X TRACE 1 SIGNAL	X2501:06	R2006:03
XTXT0	X TEXT 0 SIGNAL	X2501:06	R2063:03
XTXT1	X TEXT 1 SIGNAL	X2501:06	R2064:03
YCAL	AUTOCAL SIGNAL Y DEFLECTION	R1309:02	X2501:06
YFSH	HF SQ WAVE RESPONSE FINAL Y	N1003:01	R1146:02
			R1147:02
YPREOUT0	Y PREAMPLIFIER OUT 0	R1061:01	V1101:01
YPREOUT1	Y PREAMPLIFIER OUT 1	R1059:01	V1102:01
YSCL	SERIAL CLOCK Y SECTION	J1002:06	N1001:01
YSDA	SERIAL DATA Y SECTION	J1001:06	N1001:01
YSW0	Y SWITCH SIGNAL 0 TRACE/TEXT	V1202:01	D1001:01
YSW1	Y SWITCH SIGNAL 1 TRACE/TEXT	V1201:01	D1001:01
YTRA0	Y TRACE 0 OUT FROM DELAY LINE	X2101:01	D1001:01
YTRA1	Y TRACE 1 OUT FROM DELAY LINE	X2102:01	D1001:01
YTXT0	Y TEXT 0 SIGNAL	X2501:01	D1001:01
YTXT1	Y TEXT 1 SIGNAL	X2501:01	D1001:01
ZDRIF0	DRIVER SIGNAL 0 FOCUS AMPLIFIER	D3001:04	R3101:04
ZDRIF1	DRIVER SIGNAL 1 FOCUS AMPLIFIER	D3001:04	R3103:04
ZDRII0	DRIVER SIGNAL 0 INTENS AMPLIFIER	D3001:04	R3203:04
ZDRII1	DRIVER SIGNAL 1 INTENS AMPLIFIER	D3001:04	R3201:04
ZLTRA0	Z LEVEL TRACE INTENSITY 0	V3062:04	R3004:04
ZLTRA1	Z LEVEL TRACE INTENSITY 1	V3061:04	R3006:04
ZOUTF	FEEDBACK SIGNAL FOCUS AMPLIFIER	V3113:04	R3171:04
ZOUTI	FEEDBACK SIGNAL INTENSITY AMPL.	V3213:04	R3271:04
ZRIPPLE	RIPPLE ON NEGATIVE HIGH VOLTAGE	C4061:05	V3001:04
ZSW0	Z SWITCH SIGNAL 0 TEXT/TRACE	X2501:06	D3001:04
ZSW1	Z SWITCH SIGNAL 1 TEXT/TRACE	X2501:06	D3001:04
ZTRA0	Z TRACE INTENSITY 0	X2501:06	R3063:04
ZTRA1	Z TRACE INTENSITY 1	X2501:06	R3064:04
ZTXT0	Z TEXT 0 SIGNAL	X2501:06	R3007:04
ZTXT1	Z TEXT 1 SIGNAL	X2501:06	R3008:04

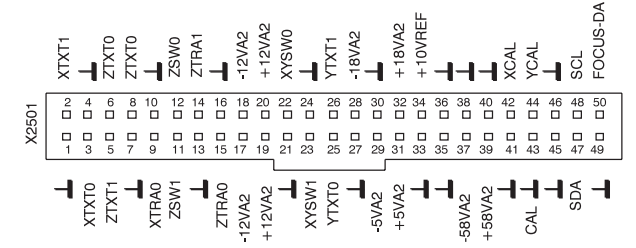
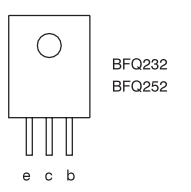
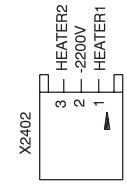
5.2.3 Unit lay-outs A2-200 MHz version



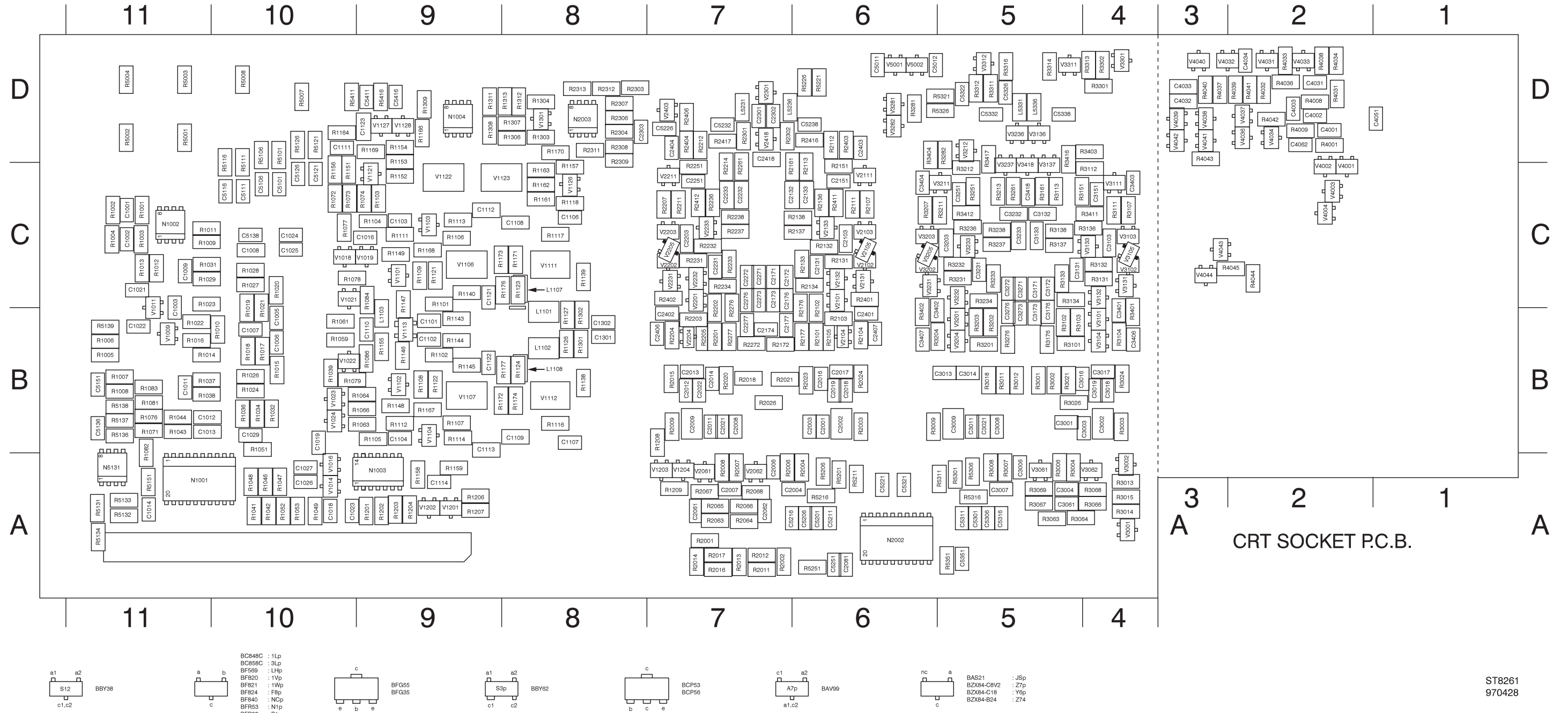
ST8260
970428

TO X1001 ON SUPPLY A6

TO X1002 ON CONNECTOR BOARD A10



Lay-out 1 - Large component side of XYZ amplifier unit A2-200 MHz



Lay-out 2 - Small component side of XYZ amplifier unit A2-200 MHz

ST8261
970428

5.2.4 Location list A2-200 MHz version

'-L' means that the component is located on the side with the large components. Otherwise the component is located on the side with small components.

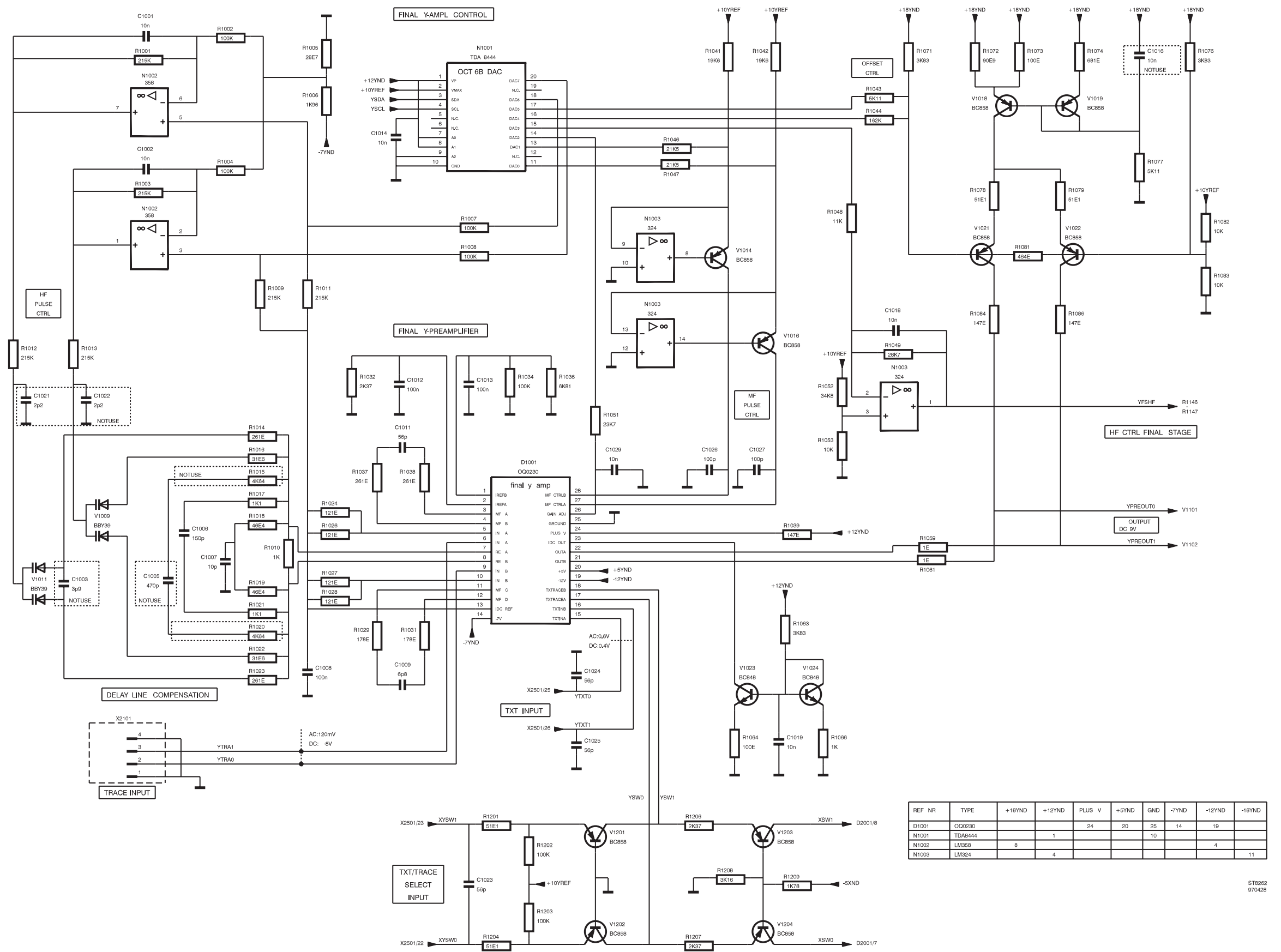
C1001 C11	C2013 B7	C3013 B6	C5007 D10-L
C1002 C11	C2014 B7	C3014 B5	C5008 D10-L
C1003 B11	C2016 B6	C3016 B5	C5011 D6
C1005 B10	C2017 B6	C3017 B4	C5012 D6
C1006 B10	C2018 B6	C3018 B4	C5101 C10
C1007 B10	C2019 B6	C3019 B4	C5106 C10
C1008 C10	C2021 B7	C3021 B5	C5111 C10
C1009 C11	C2022 B7	C3061 A5	C5116 C10
C1011 B11	C2061 A7	C3103 C4	C5121 C10
C1012 B11	C2062 A7	C3131 C5	C5126 C10
C1013 B11	C2081 A6	C3132 C5	C5136 B11
C1014 A11	C2103 C6	C3133 C5	C5138 C10
C1016 C10	C2131 C6	C3151 C4	C5151 B11
C1018 A10	C2132 C7	C3171 C5	C5201 A6
C1019 B10	C2133 C6	C3172 C5	C5206 A6
C1021 C11	C2151 C6	C3173 B5	C5211 A6
C1022 B11	C2171 C7	C3176 B5	C5216 A7
C1023 A10	C2172 C7	C3203 C5	C5221 A6
C1024 C10	C2173 C7	C3231 C5	C5226 D7
C1025 C10	C2174 B7	C3232 C5	C5231 D7-L
C1026 A10	C2176 C7	C3233 C5	C5232 D7
C1027 A10	C2177 B7	C3251 C5	C5236 D6-L
C1029 B10	C2203 C7	C3271 C5	C5238 D6
C1101 B9	C2231 C7	C3272 C5	C5251 A6
C1102 B9	C2232 C7	C3273 B5	C5301 A5
C1103 C9	C2233 C7	C3276 B5	C5306 A5
C1104 B9	C2251 C7	C3281 D6-L	C5311 A5
C1106 C8	C2271 C7	C3401 B4	C5316 A5
C1107 B8	C2272 C7	C3402 B6	C5321 A6
C1108 C9	C2273 C7	C3403 C4	C5322 D5
C1109 B9	C2276 C7	C3404 C6	C5326 D5
C1110 B9	C2277 B7	C3406 B4	C5331 D5-L
C1111 D10	C2301 D7	C3407 B6	C5332 D5
C1112 C9	C2302 D7	C3418 C5	C5336 D5-L
C1113 B9	C2303 D7	C4001 D2	C5338 D5
C1114 A9	C2401 B6	C4002 D2	C5351 A5
C1121 C9	C2402 B7	C4003 D2	C5411 D9
C1122 B9	C2403 D6	C4004 C2-L	C5416 D9
C1123 D9	C2404 D7	C4031 D2	D1001 B10-L
C1301 B8	C2406 B7	C4032 D3	D2001 B7-L
C1302 B8	C2407 B6	C4033 D3	D3001 B5-L
C2001 B6	C2418 D7	C4034 D2	L1101 B8
C2002 B6	C3001 B5	C4036 C3-L	L1102 B8
C2003 B6	C3002 B4	C4037 C2-L	L1103 B9
C2004 A7	C3003 B5	C4051 D2	L1107 C8
C2006 A7	C3004 A5	C4061 C3-L	L1108 B8
C2007 A7	C3006 A5	C4062 D2	L5231
C2008 B7	C3007 A5	C5001 D11-L	L5236
C2009 B7	C3008 B5	C5002 D11-L	L5331
C2011 B7	C3009 B5	C5003 D11-L	L5336
C2012 B7	C3011 B5	C5004 D11-L	N1001 A11

N1002 C11	R1066 B10	R1150 B9	R2011 A7
N1003 A9	R1071 B11	R1151 C10	R2012 A7
N1004 D9	R1072 C10	R1152 C9	R2013 A7
N2002 A6	R1073 C10	R1153 D9	R2014 A7
N2003 D8	R1074 C10	R1154 D9	R2015 B7
N5131 A11	R1076 B11	R1155 B9	R2016 A7
R1001 C11	R1077 C10	R1156 C10	R2017 A7
R1002 C11	R1078 C10	R1157 D8	R2018 B7
R1003 C11	R1079 B10	R1158 A9	R2020 B7
R1004 C11	R1081 B11	R1159 A9	R2021 B7
R1005 B11	R1082 A11	R1161 C8	R2023 B6
R1006 B11	R1083 B11	R1162 C8	R2024 B6
R1007 B11	R1084 C9	R1163 C8	R2026 B7
R1008 B11	R1086 B9	R1164 D10	R2063 A7
R1009 C11	R1101 C9	R1166 D9	R2064 A7
R1010 B11	R1102 B9	R1167 B9	R2065 A7
R1011 C11	R1103 C9	R1168 C9	R2066 A7
R1012 C11	R1104 C9	R1169 D10	R2067 A7
R1013 C11	R1105 B9	R1170 D8	R2068 A7
R1014 B11	R1106 C9	R1171 C8-L	R2101 B6
R1015 B10	R1107 B9	R1172 B8-L	R2102 B6
R1016 B11	R1108 B9	R1173 C8-L	R2103 B6
R1017 B10	R1109 C9	R1174 B8-L	R2104 B6
R1018 B10	R1111 C9	R1176 C9	R2105 B6
R1019 B10	R1112 B9	R1177 B9	R2107 C6
R1020 C10	R1113 C9	R1178 C8-L	R2111 C6
R1021 B10	R1114 B9	R1179 B8-L	R2112 D6
R1022 B11	R1116 B9	R1181 C8-L	R2113 C6
R1023 C11	R1117 C9	R1182 B8-L	R2131 C6
R1024 B10	R1118 C8	R1201 A9	R2132 C6
R1026 B10	R1121 C8	R1202 A9	R2133 C6
R1027 C10	R1122 B8	R1203 A9	R2134 C6
R1028 C10	R1123 C8	R1204 A9	R2136 C6
R1029 C11	R1124 B8	R1206 A9	R2137 C7
R1031 C11	R1126 B8	R1207 A9	R2138 C7
R1032 B10	R1127 B8	R1208 B7	R2151 D6
R1034 B10	R1128 B8-L	R1209 A7	R2161 C7
R1036 B10	R1129 C8-L	R1301 B8	R2171 B7-L
R1037 B11	R1131 C8-L	R1302 B8	R2172 B7
R1038 B11	R1132 A8-L	R1303 D8	R2176 B6
R1039 B10	R1133 C8-L	R1304 D8	R2177 B6
R1041 A10	R1134 A8-L	R1306 D9	R2201 B7
R1042 A10	R1136 B8-L	R1307 D9	R2202 B7
R1043 B11	R1137 C8-L	R1308 D9	R2203 B7
R1044 B11	R1138 B8	R1309 D9	R2204 B7
R1046 A10	R1139 C8	R1311 D9	R2205 B7
R1047 A10	R1140 C9	R1312 D8	R2207 C7
R1048 A10	R1141 C9-L	R1313 D9	R2211 C7
R1049 A10	R1142 B9-L	R2001 A7	R2212 D7
R1051 B10	R1143 B9	R2002 A7	R2214 C7
R1052 A10	R1144 B9	R2003 B6	R2231 C7
R1053 A10	R1145 B9	R2004 A6	R2232 C7
R1059 B10	R1146 B9	R2006 A7	R2233 C7
R1061 B10	R1147 B9	R2007 A7	R2234 C7
R1063 B10	R1148 B9	R2008 A7	R2236 C7
R1064 B10	R1149 C9	R2009 B7	R2237 C7

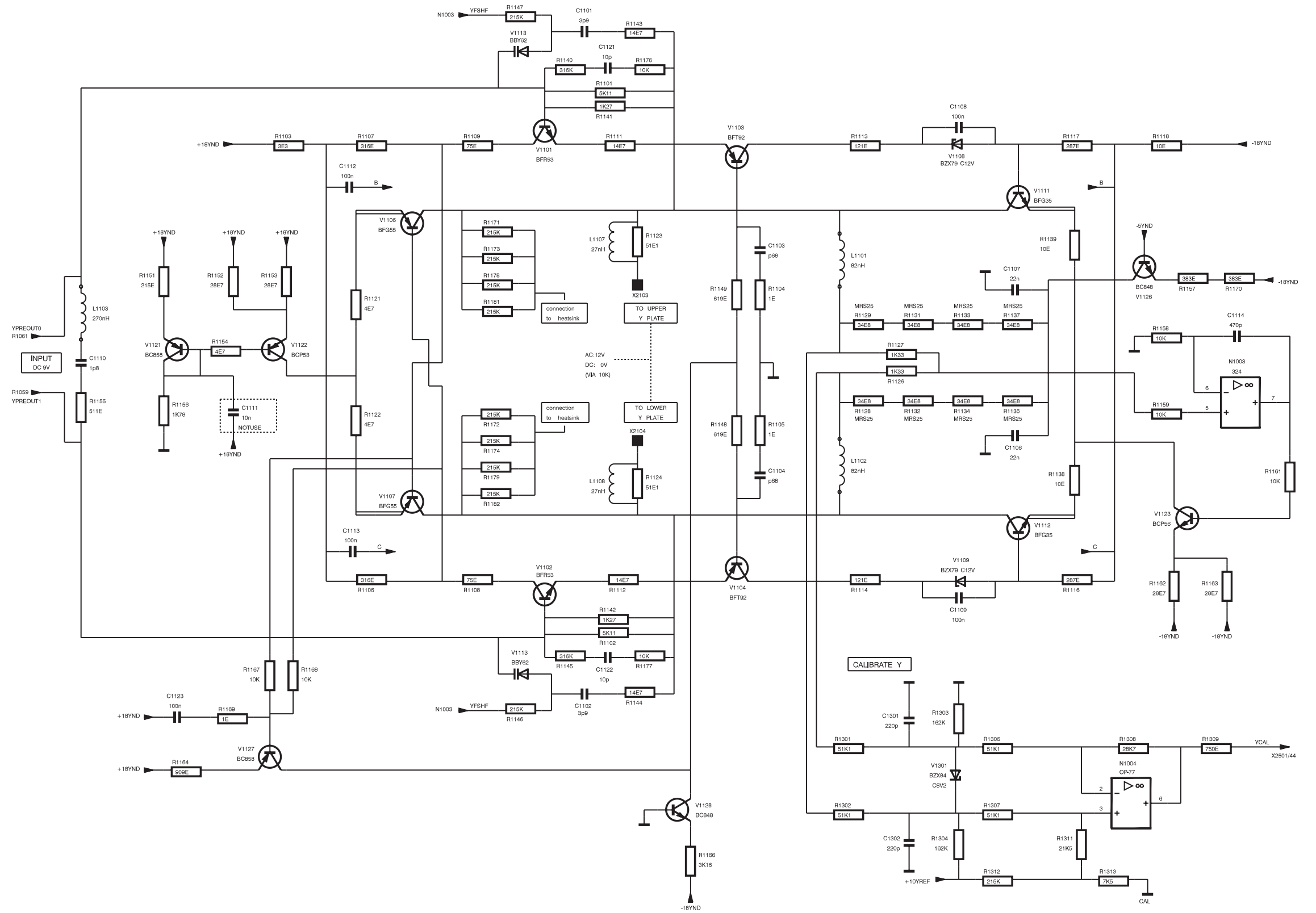
R2238 C7	R3112 C5	R4009 D2	R5416 D9
R2251 D7	R3113 C5	R4031 D2	V1009 B11
R2261 C7	R3131 C4	R4032 D2	V1011 B11
R2271 B7-L	R3132 C4	R4033 D2	V1014 A10
R2272 B7	R3133 C5	R4034 D2	V1016 A10
R2276 B7	R3134 C5	R4036 D2	V1018 C10
R2277 B7	R3136 C5	R4037 D3	V1019 C10
R2301 D7	R3137 C5	R4038 D2	V1021 C10
R2302 D7	R3138 C5	R4039 D2	V1022 B10
R2303 D8	R3151 C5	R4040 D3	V1023 B10
R2304 D8	R3161 C5	R4041 D2	V1024 B10
R2306 D8	R3171 B5-L	R4042 D2	V1101 C9
R2307 D8	R3176 B5	R4043 D3	V1102 B9
R2308 D8	R3201 B5	R4044 C2	V1103 C9
R2309 D8	R3202 B5	R4045 C3	V1104 B9
R2311 D8	R3203 B5	R4051 C2-L	V1106 C9
R2312 D8	R3204 B6	R5001 D11	V1107 B9
R2313 D8	R3207 C6	R5002 D11	V1108 C8-L
R2401 C6	R3211 C6	R5003 D11	V1109 B8-L
R2402 C7	R3212 C5	R5004 D11	V1111 C8
R2403 D6	R3213 C5	R5007 D10	V1112 B8
R2404 D7	R3231 C5	R5008 D10	V1113 B9
R2406 D7	R3232 C5	R5101 D10	V1121 C9
R2411 C6	R3233 C5	R5106 D10	V1122 C9
R2412 C7	R3234 C5	R5111 C10	V1123 C9
R2416 D6	R3236 C5	R5116 C10	V1126 C8
R2417 D7	R3237 C5	R5121 D10	V1127 D9
R3001 B5	R3238 C5	R5126 D10	V1128 D9
R3002 B5	R3251 C5	R5131 A11	V1201 A9
R3003 B4	R3261 C5	R5132 A11	V1202 A9
R3004 A5	R3271 B5-L	R5133 A11	V1203 A7
R3006 A5	R3276 B5	R5134 A11	V1204 A7
R3007 A5	R3281 D6	R5136 B11	V1301 D8
R3008 A5	R3282 D5	R5137 B11	V2019 B6
R3009 B6	R3301 D4	R5138 B11	V2061 A7
R3011 B5	R3302 D4	R5139 B11	V2062 A7
R3012 B5	R3311 D5	R5151 A11	V2101 C6
R3013 A4	R3312 D5	R5201 A6	V2102 C6
R3014 A4	R3313 D4	R5206 A6	V2103 C6
R3015 A4	R3314 D5	R5211 A6	V2104 B6
R3018 B5	R3316 D5	R5216 A6	V2105 C6
R3021 B5	R3401 B4	R5221 D6	V2111 C6
R3024 B4	R3402 B6	R5226 D6	V2113 C6-L
R3026 B5	R3403 D5	R5231 D7	V2131 C6
R3063 A5	R3404 D6	R5236 D7	V2132 C6
R3064 A5	R3411 C5	R5251 A6	V2133 C6
R3066 A5	R3412 C5	R5301 A5	V2134 C7-L
R3067 A5	R3416 D5	R5306 A5	V2201 C7
R3068 A5	R3417 D5	R5311 A6	V2202 C7
R3069 A5	R4001 D2	R5316 A5	V2203 C7
R3101 B5	R4002 C2-L	R5321 D6	V2204 B7
R3102 B5	R4003 C2-L	R5326 D6	V2205 C7
R3103 B5	R4004 C2-L	R5331 D5	V2211 C7
R3104 B4	R4006 C2-L	R5336 D5	V2213 C7-L
R3107 C4	R4007 D2-L	R5351 A5	V2231 C7
R3111 C4	R4008 D2	R5411 D10	V2232 C7

V2233 C7	V3132 C4	V3236 D5	V4037 D2
V2234 C7-L	V3133 C4	V3237 D5	V4038 D3
V2301 D7	V3134 C5-L	V3281 D6	V4039 D3
V2403 D7	V3136 D5	V3282 D6	V4040 D3
V2418 D7	V3137 D5	V3301 D4	V4041 D3
V3001 A4	V3201 B5	V3311 D5	V4042 D3
V3002 A4	V3202 C6	V3312 D5	V4043 C3
V3061 A5	V3203 C6	V3418 D5	V4044 C3
V3062 A5	V3204 B5	V4001 D2	V5001 D6
V3101 B4	V3205 C6	V4002 D2	V5002 D6
V3102 C4	V3211 C6	V4003 C2	X2101 A11-L
V3103 C4	V3212 D5	V4004 C2	X2301 D4-L
V3104 B4	V3213 C5-L	V4031 D2	X2401 D2-L
V3105 C4	V3231 C6	V4032 D3	X2402 B3-L
V3111 C4	V3232 C5	V4033 D2	X2403 B3-L
V3113 C5-L	V3233 C5	V4034 D2	X2501 A10-L
V3131 C4	V3234 C5-L	V4036 D2	

5.2.5 Circuit diagrams A2-200 MHz version



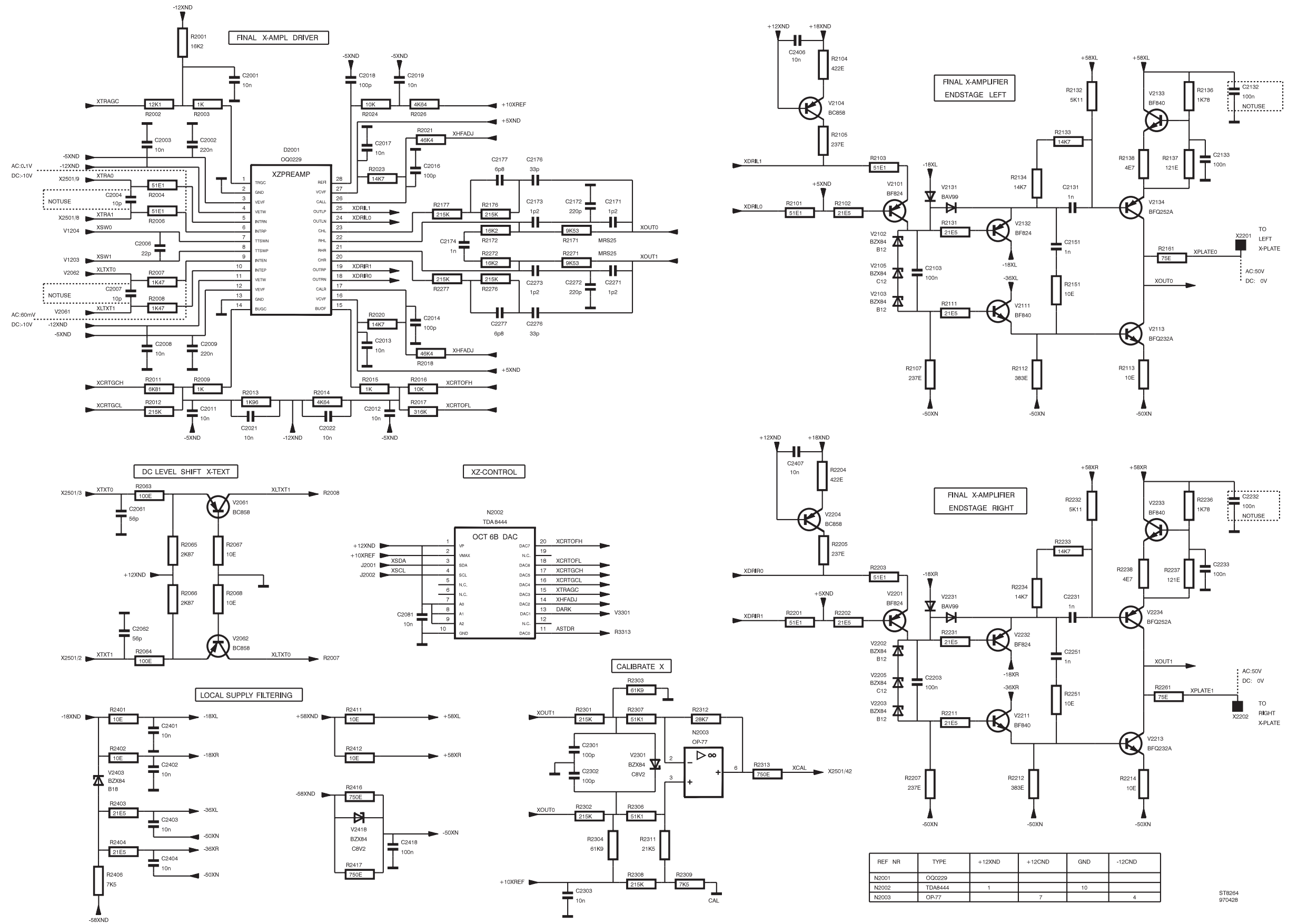
A2 (200 MHz) - Diagram 1 ; Final Y preamplifier and control



REF NR	TYPE	+12VND	+12CND	GND	-12CND	-18VND
N1003	LM324	4				11
N1004	OP-77		7		4	

SR203
970428

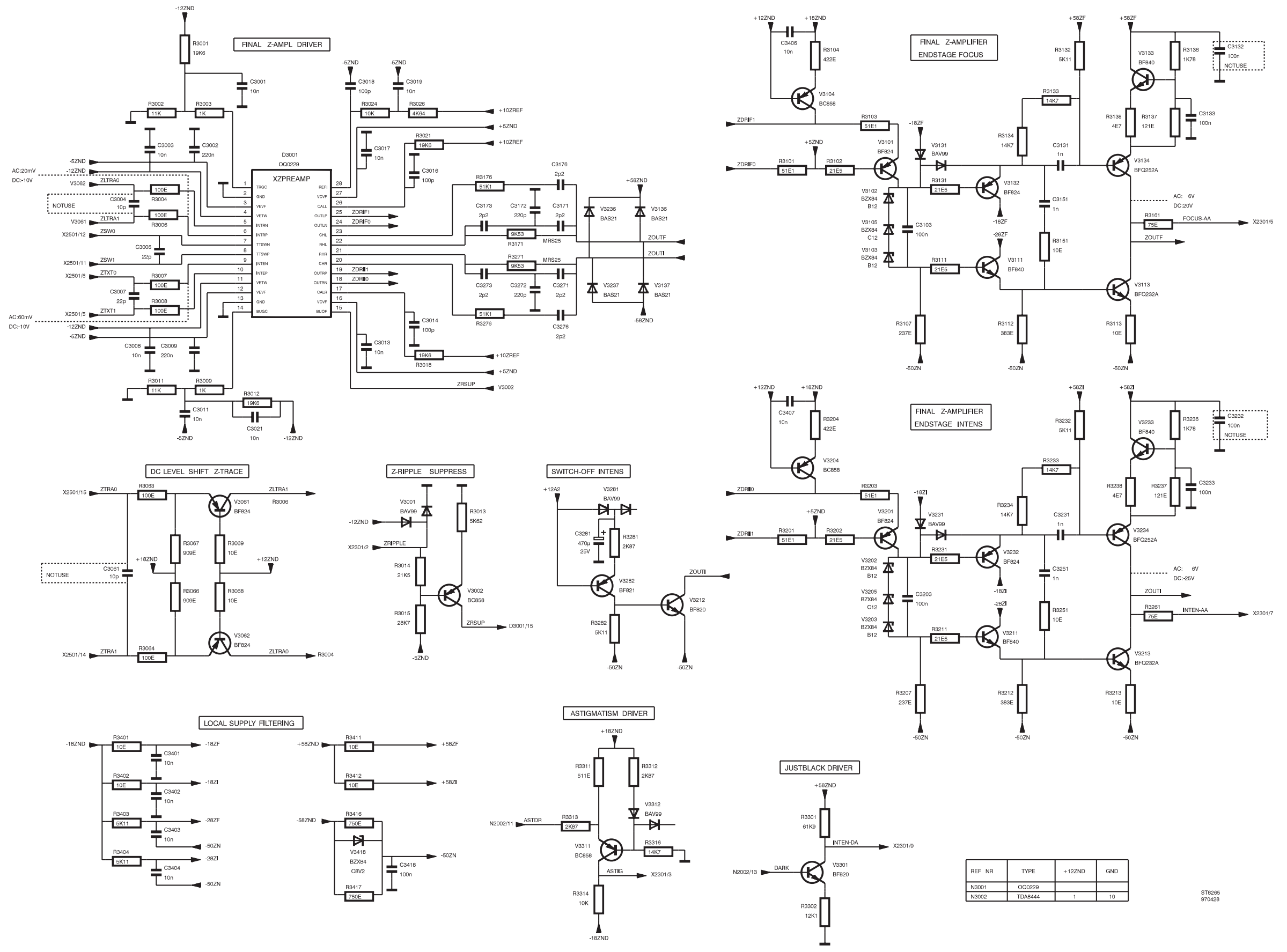
A2 (200 MHz) - Diagram 2 ; Final Y output stage



REF NR	TYPE	+12XND	+12CND	GND	-12CND
N2001	OQ0229				
N2002	TDA8444	1		10	4
N2003	OP-77		7		

STR254
970428

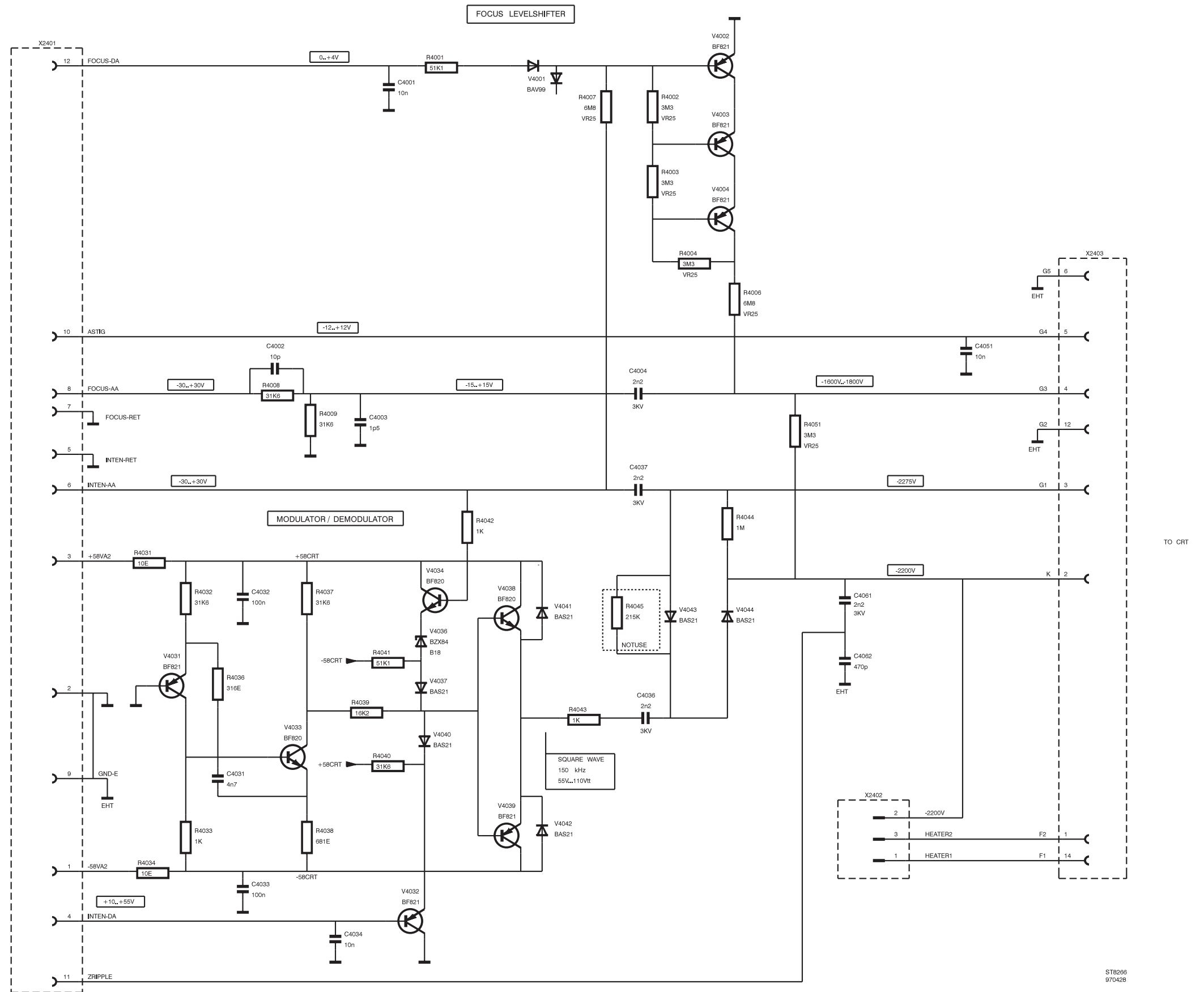
A2 (200 MHz) - Diagram 3 ; Final X amplifier and control



REF NR	TYPE	+12ZND	GND
N3001	OQ0229		
N3002	TD48444	1	10

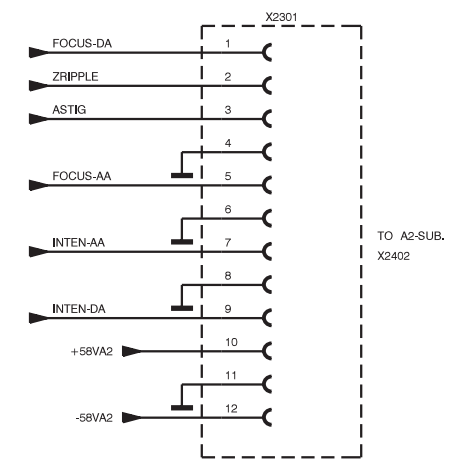
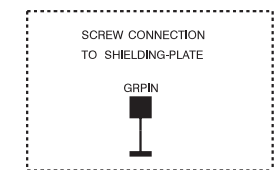
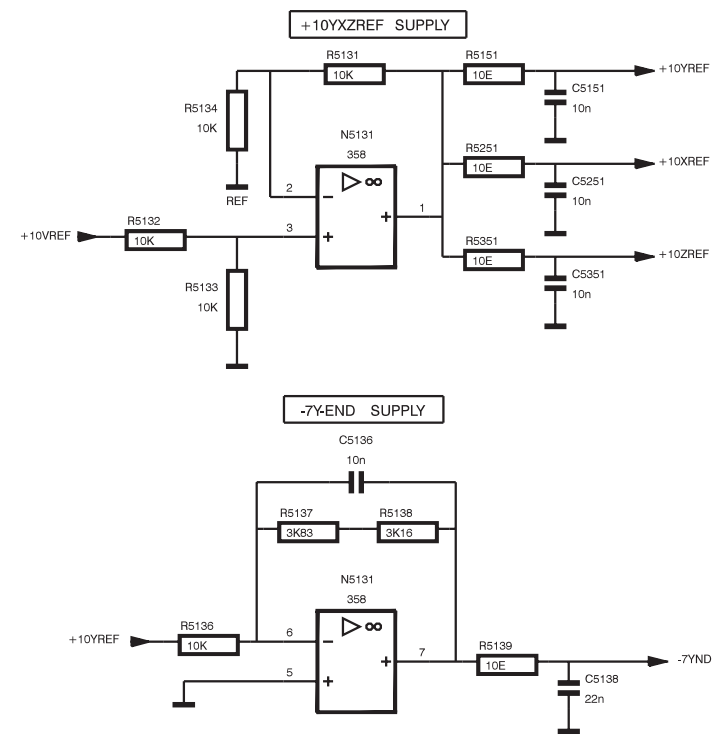
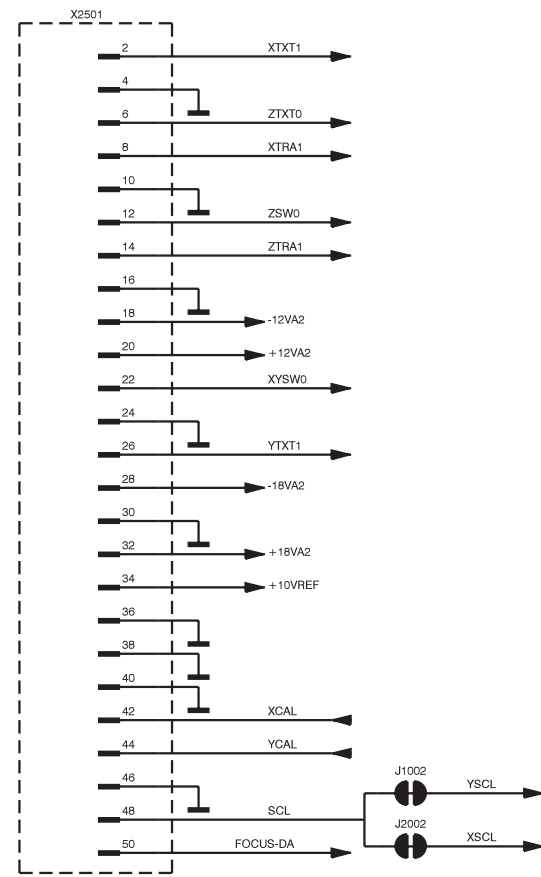
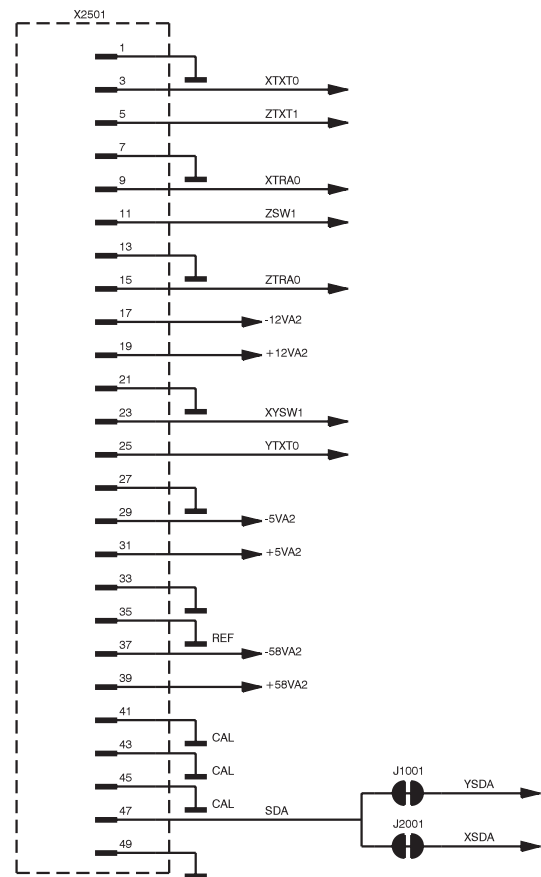
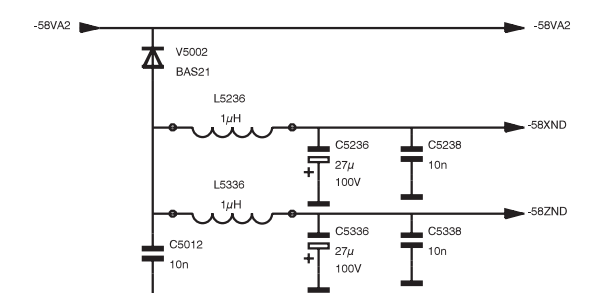
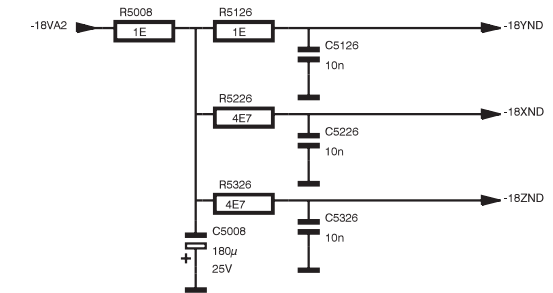
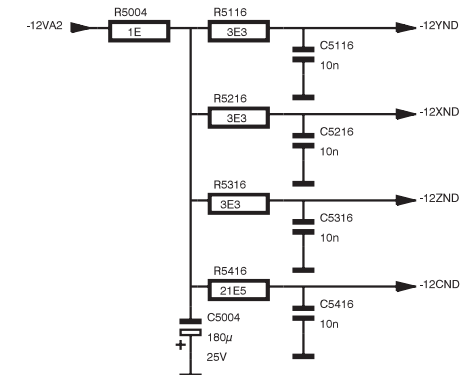
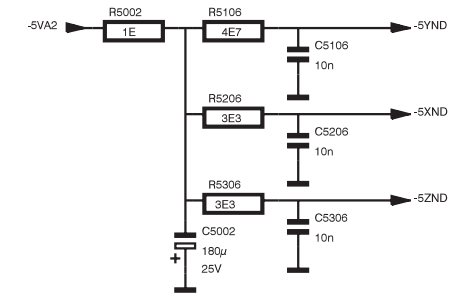
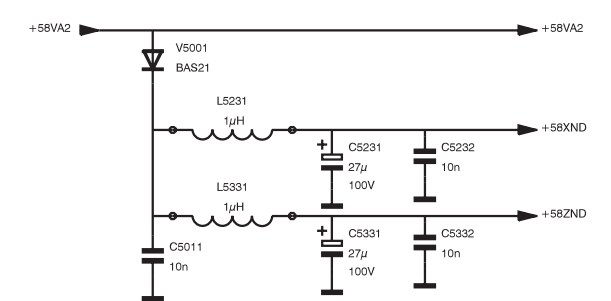
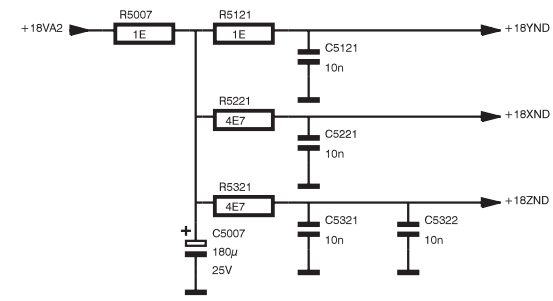
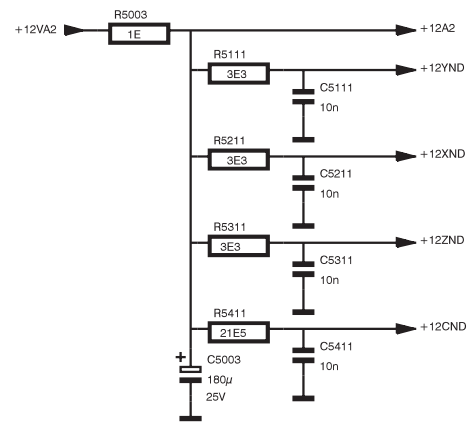
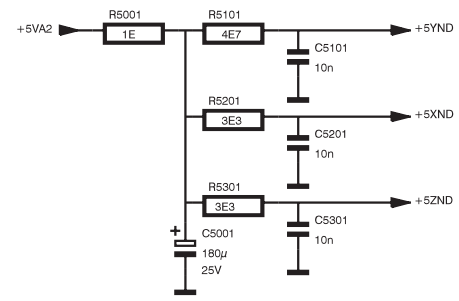
ST8295
970428

A2 (200 MHz) - Diagram 4 ; Final Z amplifier



A2 (200 MHz) - Diagram 5 ; Modulator/demodulator and focus control

ST8266
970428



REF NR	TYPE	-12YND	+18YND
N5131	LM358	4	8

ST8267
970428

A2 (200 MHz) - Diagram 6 ; Supply circuits

Item	Description	Ordering code
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5.2.6 Parts list A2-200 MHz version

MECHANICAL

0001	CABLE,CONNECT.	ASSY CABLE CRT	5322 321 62202
0003	CABLE,CONNECT.	ASSY CABLE CRT	5322 321 62198
0004	CABLE,CONNECT.	ASSY CABLE CRT	5322 321 62199

CAPACITORS

C1001	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C1002	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C1003	CAP.CERAMIC	AP 63V 0.25PF 3.9PF	5322 122 31944
C1005	CAP.CHIP	AP 63V 5% 470PF	5322 122 32268
C1006	CAP.CHIP	AP 63V 5% 150PF	5322 122 33538
C1007	CAP.CERAMIC	AP 63V 5% 10PF	5322 122 32448
C1008	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C1009	CAP.CHIP	AP 63V 0.5PF 6.8PF	5322 122 32269
C1011	CAP.CHIP	AP 63V 5% 56PF	5322 122 32661
C1012	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C1013	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C1014	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C1016	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C1018	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C1019	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C1021	CAP.CHIP	AP 63V 0.25PF 2.2PF	5322 122 33063
C1022	CAP.CHIP	AP 63V 0.25PF 2.2PF	5322 122 33063
C1023	CAP.CHIP	AP 63V 5% 56PF	5322 122 32661
C1024	CAP.CHIP	AP 63V 5% 56PF	5322 122 32661
C1025	CAP.CHIP	AP 63V 5% 56PF	5322 122 32661
C1026	CAP.CHIP	AP 63V 5% 100PF	5322 122 32531
C1027	CAP.CHIP	AP 63V 5% 100PF	5322 122 32531
C1029	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C1101	CAP.CERAMIC	AP 63V 0.25PF 3.9PF	5322 122 31944
C1102	CAP.CERAMIC	AP 63V 0.25PF 3.9PF	5322 122 31944
C1103	CAP.CHIP	AP 63V 0.25PF 0.68PF	4822 126 12342
C1104	CAP.CHIP	AP 63V 0.25PF 0.68PF	4822 126 12342
C1106	CAP.CHIP	AP 63V 10% 22NF	5322 122 32654
C1107	CAP.CHIP	AP 63V 10% 22NF	5322 122 32654
C1108	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C1109	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C1110	CAP.CHIP	AP 63V 0.25PF 1.8PF	5322 126 10343
C1111	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C1112	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C1113	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C1114	CAP.CHIP	AP 63V 5% 470PF	5322 122 32268
C1121	CAP.CERAMIC	AP 63V 5% 10PF	5322 122 32448
C1122	CAP.CERAMIC	AP 63V 5% 10PF	5322 122 32448
C1123	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C1301	CAP.CHIP	AP 63V 5% 220PF	4822 122 33575

Item	Description		Ordering code
C1302	CAP.CHIP	AP 63V 5% 220PF	4822 122 33575
C2001	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2002	CAP.CHIP	AP 63V 10% 220NF	4822 122 32916
C2003	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2004	CAP.CERAMIC	AP 63V 5% 10PF	5322 122 32448
C2006	CAP.CHIP	AP 63V 5% 22PF	5322 122 32658
C2007	CAP.CERAMIC	AP 63V 5% 10PF	5322 122 32448
C2008	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2009	CAP.CHIP	AP 63V 10% 220NF	4822 122 32916
C2011	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2012	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2013	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2014	CAP.CHIP	AP 63V 5% 100PF	5322 122 32531
C2016	CAP.CHIP	AP 63V 5% 100PF	5322 122 32531
C2017	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2018	CAP.CHIP	AP 63V 5% 100PF	5322 122 32531
C2019	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2021	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2022	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2061	CAP.CHIP	AP 63V 5% 56PF	5322 122 32661
C2062	CAP.CHIP	AP 63V 5% 56PF	5322 122 32661
C2081	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2103	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C2131	CAP.CHIP	AP 63V 5% 1NF	5322 126 10511
C2132	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C2133	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C2151	CAP.CHIP	AP 63V 5% 1NF	5322 126 10511
C2171	CAP.CHIP	AP 63V 0.25PF 1.2PF	5322 122 33537
C2172	CAP.CHIP	AP 63V 5% 220PF	4822 122 33575
C2173	CAP.CHIP	AP 63V 0.25PF 1.2PF	5322 122 33537
C2174	CAP.CHIP	AP 63V 5% 1NF	5322 126 10511
C2176	CAP.CHIP	AP 63V 5% 33PF	5322 122 32659
C2177	CAP.CHIP	AP 63V 0.5PF 6.8PF	5322 122 32269
C2203	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C2231	CAP.CHIP	AP 63V 5% 1NF	5322 126 10511
C2232	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C2233	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C2251	CAP.CHIP	AP 63V 5% 1NF	5322 126 10511
C2271	CAP.CHIP	AP 63V 0.25PF 1.2PF	5322 122 33537
C2272	CAP.CHIP	AP 63V 5% 220PF	4822 122 33575
C2273	CAP.CHIP	AP 63V 0.25PF 1.2PF	5322 122 33537
C2276	CAP.CHIP	AP 63V 5% 33PF	5322 122 32659
C2277	CAP.CHIP	AP 63V 0.5PF 6.8PF	5322 122 32269
C2301	CAP.CHIP	AP 63V 5% 100PF	5322 122 32531
C2302	CAP.CHIP	AP 63V 5% 100PF	5322 122 32531
C2303	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2401	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098

Item	Description		Ordering code
C2402	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2403	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2404	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2406	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2407	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C2418	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C3001	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C3002	CAP.CHIP	AP 63V 10% 220NF	4822 122 32916
C3003	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C3004	CAP.CERAMIC	AP 63V 5% 10PF	5322 122 32448
C3006	CAP.CHIP	AP 63V 5% 22PF	5322 122 32658
C3007	CAP.CHIP	AP 63V 5% 22PF	5322 122 32658
C3008	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C3009	CAP.CHIP	AP 63V 10% 220NF	4822 122 32916
C3011	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C3013	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C3014	CAP.CHIP	AP 63V 5% 100PF	5322 122 32531
C3016	CAP.CHIP	AP 63V 5% 100PF	5322 122 32531
C3017	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C3018	CAP.CHIP	AP 63V 5% 100PF	5322 122 32531
C3019	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C3021	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C3061	CAP.CERAMIC	AP 63V 5% 10PF	5322 122 32448
C3103	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C3131	CAP.CHIP	AP 63V 5% 1NF	5322 126 10511
C3132	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C3133	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C3151	CAP.CHIP	AP 63V 5% 1NF	5322 126 10511
C3171	CAP.CHIP	AP 63V 0.25PF 2.2PF	5322 122 33063
C3172	CAP.CHIP	AP 63V 5% 220PF	4822 122 33575
C3173	CAP.CHIP	AP 63V 0.25PF 2.2PF	5322 122 33063
C3176	CAP.CHIP	AP 63V 0.25PF 2.2PF	5322 122 33063
C3203	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C3231	CAP.CHIP	AP 63V 5% 1NF	5322 126 10511
C3232	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C3233	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C3251	CAP.CHIP	AP 63V 5% 1NF	5322 126 10511
C3271	CAP.CHIP	AP 63V 0.25PF 2.2PF	5322 122 33063
C3272	CAP.CHIP	AP 63V 5% 220PF	4822 122 33575
C3273	CAP.CHIP	AP 63V 0.25PF 2.2PF	5322 122 33063
C3276	CAP.CHIP	AP 63V 0.25PF 2.2PF	5322 122 33063
C3281	CAP.FOIL	25V 20% 470UF	5322 121 43885
C3401	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C3402	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C3403	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C3404	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C3406	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098

Item	Description		Ordering code
C3407	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C3418	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C4001	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C4002	CAP.CERAMIC	AP 63V 5% 10PF	5322 122 32448
C4003	CAP.CHIP	AP 63V 0.25PF 1.5PF	5322 126 10225
C4004	CAP.	-10+10% 2.2NF	5322 122 33851
C4031	CAP.CHIP	AP 63V 10% 4.7NF	5322 126 10223
C4032	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C4033	CAP.CHIP	AP 63V 10% 100NF	4822 122 33496
C4034	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C4036	CAP.	-10+10% 2.2NF	5322 122 33851
C4037	CAP.	-10+10% 2.2NF	5322 122 33851
C4051	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C4061	CAP.	-10+10% 2.2NF	5322 122 33851
C4062	CAP.CHIP	AP 63V 5% 470PF	5322 122 32268
C5001	CAP.ELECTROLYT.	25V 20% 180UF	5322 124 42228
C5002	CAP.ELECTROLYT.	25V 20% 180UF	5322 124 42228
C5003	CAP.ELECTROLYT.	25V 20% 180UF	5322 124 42228
C5004	CAP.ELECTROLYT.	25V 20% 180UF	5322 124 42228
C5007	CAP.ELECTROLYT.	25V 20% 180UF	5322 124 42228
C5008	CAP.ELECTROLYT.	25V 20% 180UF	5322 124 42228
C5011	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5012	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5101	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5106	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5111	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5116	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5121	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5126	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5136	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5138	CAP.CHIP	AP 63V 10% 22NF	5322 122 32654
C5151	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5201	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5206	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5211	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5216	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5221	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5226	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5231	CAP.ELECTROLYT.	100V 20% 27UF	5322 124 42193
C5232	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5236	CAP.ELECTROLYT.	100V 20% 27UF	5322 124 42193
C5238	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5251	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5301	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5306	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5311	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5316	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098

Item	Description		Ordering code
C5321	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5322	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5326	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5331	CAP.ELECTROLYT.	100V 20% 27UF	5322 124 42193
C5332	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5336	CAP.ELECTROLYT.	100V 20% 27UF	5322 124 42193
C5338	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5351	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5411	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098
C5416	CAP.CHIP	AP 63V 10% 10NF	5322 122 34098

INTEGRATED CIRCUITS

D1001	INTEGR.CIRCUIT	OQ0230 FINAL Y AMPL	5322 209 12467
D2001	INTEGR.CIRCUIT	OQ0229 FINAL X-Z AMP	5322 209 12459
D3001	INTEGR.CIRCUIT	OQ0229 FINAL X-Z AMP	5322 209 12459
N1001	INTEGR.CIRCUIT	TDA8444AT/N4 PEL	5322 209 30233
N1002	INTEGR.CIRCUIT	LM358M NSC	4822 209 60175
N1003	INTEGR.CIRCUIT	LM324D NSC	5322 209 83125
N1004	I.C. ANALOGUE	OP-77GSR PMI	5322 130 62791
N2002	INTEGR.CIRCUIT	TDA8444AT/N4 PEL	5322 209 30233
N2003	I.C. ANALOGUE	OP-77GSR PMI	5322 130 62791
N5131	INTEGR.CIRCUIT	LM358M NSC	4822 209 60175

COILS

L1101	COIL	0.082UH 5% TDK	5322 157 63382
L1102	COIL	0.082UH 5% TDK	5322 157 63382
L1103	COIL	0.27UH 5% TDK	5322 157 70204
L1107	COIL	0.027UH	5322 157 70857
L1108	COIL	0.027UH	5322 157 70857
L5231	COIL	1UH 5% TDK	5322 157 63648
L5236	COIL	1UH 5% TDK	5322 157 63648
L5331	COIL	1UH 5% TDK	5322 157 63648
L5336	COIL	1UH 5% TDK	5322 157 63648

RESISTORS

R1001	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1002	RES.CHIP	HIP RC-02H 1% 100K	4822 051 10104
R1003	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1004	RES.CHIP	HIP RC-02H 1% 100K	4822 051 10104
R1005	RES.CHIP	RMC1/8 1% 28E7	5322 111 92015
R1006	RES.METAL FILM	HIP RC-02H 1% 1K96	5322 117 10539
R1007	RES.CHIP	HIP RC-02H 1% 100K	4822 051 10104
R1008	RES.CHIP	HIP RC-02H 1% 100K	4822 051 10104
R1009	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1010	RES.CHIP	HIP RC-02H 1% 1K	4822 051 10102
R1011	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1012	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1013	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543

Item	Description		Ordering code
R1014	RES.CHIP	HIP RC-02H 1% 261E	4822 051 52611
R1015	RES.CHIP	HIP RC-02H 1% 4K64	4822 051 54642
R1016	RES.CHIP	RMC1/8 1% 31E6	5322 117 11732
R1017	RES.CHIP	HIP RC-02H 1% 1K1	4822 051 51102
R1018	RES.MET.GLAZED	RMC1/8 1% 46E4	5322 116 82896
R1019	RES.MET.GLAZED	RMC1/8 1% 46E4	5322 116 82896
R1020	RES.CHIP	HIP RC-02H 1% 4K64	4822 051 54642
R1021	RES.CHIP	HIP RC-02H 1% 1K1	4822 051 51102
R1022	RES.CHIP	RMC1/8 1% 31E6	5322 117 11732
R1023	RES.CHIP	HIP RC-02H 1% 261E	4822 051 52611
R1024	RES.METAL FILM	HIP RC-02H 1% 121E	5322 117 10519
R1026	RES.METAL FILM	HIP RC-02H 1% 121E	5322 117 10519
R1027	RES.METAL FILM	HIP RC-02H 1% 121E	5322 117 10519
R1028	RES.METAL FILM	HIP RC-02H 1% 121E	5322 117 10519
R1029	RES.METAL FILM	HIP RC-02H 1% 178E	5322 117 10534
R1031	RES.METAL FILM	HIP RC-02H 1% 178E	5322 117 10534
R1032	RES.METAL FILM	HIP RC-02H 1% 2K37	5322 117 10545
R1034	RES.CHIP	HIP RC-02H 1% 100K	4822 051 10104
R1036	RES.METAL FILM	HIP RC-02H 1% 6K81	5322 117 10581
R1037	RES.CHIP	HIP RC-02H 1% 261E	4822 051 52611
R1038	RES.CHIP	HIP RC-02H 1% 261E	4822 051 52611
R1039	RES.METAL FILM	HIP RC-02H 1% 147E	5322 117 10526
R1041	RES.METAL FILM	HIP RC-02H 1% 19K6	5322 117 10541
R1042	RES.METAL FILM	HIP RC-02H 1% 19K6	5322 117 10541
R1043	RES.CHIP	HIP RC-02H 1% 5K11	5322 117 10487
R1044	RES.METAL FILM	HIP RC-02H 1% 162K	5322 117 10533
R1046	RES.METAL FILM	HIP RC-02H 1% 21K5	5322 117 10542
R1047	RES.METAL FILM	HIP RC-02H 1% 21K5	5322 117 10542
R1048	RES.CHIP	HIP RC-02H 1% 11K	4822 051 10113
R1049	RES.METAL FILM	HIP RC-02H 1% 28K7	5322 117 10551
R1051	RES.METAL FILM	HIP RC-02H 1% 23K7	5322 117 10546
R1052	RES.METAL FILM	HIP RC-02H 1% 34K8	5322 117 10558
R1053	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R1059	RES.CHIP	HIP RC-01 5% 1E	4822 051 10108
R1061	RES.CHIP	HIP RC-01 5% 1E	4822 051 10108
R1063	RES.METAL FILM	HIP RC-02H 1% 3K83	5322 117 10561
R1064	RES.CHIP	HIP RC-02H 1% 100E	4822 051 10101
R1066	RES.CHIP	HIP RC-02H 1% 1K	4822 051 10102
R1071	RES.METAL FILM	HIP RC-02H 1% 3K83	5322 117 10561
R1072	RES.CHIP	HIP RC-02H 1% 90E9	5322 117 12557
R1073	RES.CHIP	HIP RC-02H 1% 100E	4822 051 10101
R1074	RES.METAL FILM	HIP RC-02H 1% 681E	5322 117 10579
R1076	RES.METAL FILM	HIP RC-02H 1% 3K83	5322 117 10561
R1077	RES.CHIP	HIP RC-02H 1% 5K11	5322 117 10487
R1078	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R1079	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R1081	RES.METAL FILM	HIP RC-02H 1% 464E	5322 117 10567

Item	Description		Ordering code
R1082	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R1083	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R1084	RES.METAL FILM	HIP RC-02H 1% 147E	5322 117 10526
R1086	RES.METAL FILM	HIP RC-02H 1% 147E	5322 117 10526
R1101	RES.CHIP	HIP RC-02H 1% 5K11	5322 117 10487
R1102	RES.CHIP	HIP RC-02H 1% 5K11	5322 117 10487
R1103	RES.CHIP	HIP RC-01 5% 3E3	4822 051 10338
R1104	RES.CHIP	HIP RC-01 5% 1E	4822 051 10108
R1105	RES.CHIP	HIP RC-01 5% 1E	4822 051 10108
R1106	RES.METAL FILM	HIP RC-02H 1% 316E	5322 117 10552
R1107	RES.METAL FILM	HIP RC-02H 1% 316E	5322 117 10552
R1108	RES.CHIP	RMC1/8 1% 75E	4822 111 91937
R1109	RES.CHIP	RMC1/8 1% 75E	4822 111 91937
R1111	RES.CHIP	HIP RC-01 5% 14E7	5322 117 12555
R1112	RES.CHIP	HIP RC-01 5% 14E7	5322 117 12555
R1113	RES.METAL FILM	HIP RC-02H 1% 121E	5322 117 10519
R1114	RES.METAL FILM	HIP RC-02H 1% 121E	5322 117 10519
R1116	RES.CHIP	HIP RC-02H 1% 287E	4822 051 52871
R1117	RES.CHIP	HIP RC-02H 1% 287E	4822 051 52871
R1118	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R1121	RES.CHIP	HIP RC-01 5% 4E7	4822 051 10478
R1122	RES.CHIP	HIP RC-01 5% 4E7	4822 051 10478
R1123	RES.CHIP	HIP RC-01 5% 1E	4822 051 10108
R1124	RES.CHIP	HIP RC-01 5% 1E	4822 051 10108
R1126	RES.METAL FILM	HIP RC-02H 1% 1K33	5322 117 10524
R1127	RES.METAL FILM	HIP RC-02H 1% 1K33	5322 117 10524
R1128	RES.METAL FILM	ST MRS25 1% 34E8	4822 050 23489
R1129	RES.METAL FILM	ST MRS25 1% 34E8	4822 050 23489
R1131	RES.METAL FILM	ST MRS25 1% 34E8	4822 050 23489
R1132	RES.METAL FILM	ST MRS25 1% 34E8	4822 050 23489
R1133	RES.METAL FILM	ST MRS25 1% 34E8	4822 050 23489
R1134	RES.METAL FILM	ST MRS25 1% 34E8	4822 050 23489
R1136	RES.METAL FILM	ST MRS25 1% 34E8	4822 050 23489
R1137	RES.METAL FILM	ST MRS25 1% 34E8	4822 050 23489
R1138	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R1139	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R1140	RES.METAL FILM	HIP RC-02H 1% 316K	5322 117 10555
R1141	RES.METAL FILM	ST MRS25 1% 1K47	4822 050 21472
R1142	RES.METAL FILM	ST MRS25 1% 1K47	4822 050 21472
R1143	RES.CHIP	HIP RC-01 5% 14E7	5322 117 12555
R1144	RES.CHIP	HIP RC-01 5% 41E7	5322 117 12555
R1145	RES.METAL FILM	HIP RC-02H 1% 316K	5322 117 10555
R1146	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1147	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1148	RES.METAL FILM	HIP RC-02H 1% 619E	5322 117 10576
R1149	RES.METAL FILM	HIP RC-02H 1% 619E	5322 117 10576
R1151	RES.CHIP	HIP RC-02H 1% 215E	5322 117 10484

Item	Description		Ordering code
R1152	RES.CHIP	RMC1/8 1% 28E7	5322 111 92015
R1153	RES.CHIP	RMC1/8 1% 28E7	5322 111 92015
R1154	RES.CHIP	HIP RC-01 5% 4E7	4822 051 10478
R1155	RES.METAL FILM	HIP RC-02H 1% 511E	5322 117 10569
R1156	RES.METAL FILM	HIP RC-02H 1% 1K78	5322 117 10535
R1157	RES.METAL FILM	HIP RC-02H 1% 383E	5322 117 10559
R1158	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R1159	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R1161	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R1162	RES.CHIP	RMC1/8 1% 28E7	5322 111 92015
R1163	RES.CHIP	RMC1/8 1% 28E7	5322 111 92015
R1164	RES.METAL FILM	HIP RC-02H 1% 909E	5322 117 10588
R1166	RES.METAL FILM	HIP RC-02H 1% 3K16	5322 117 10553
R1167	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R1168	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R1169	RES.CHIP	HIP RC-01 5% 1E	4822 051 10108
R1170	RES.METAL FILM	HIP RC-02H 1% 383E	5322 117 10559
R1171	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1172	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1173	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1174	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1176	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R1177	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R1178	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1179	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1181	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1182	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1201	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R1202	RES.CHIP	HIP RC-02H 1% 100K	4822 051 10104
R1203	RES.CHIP	HIP RC-02H 1% 100K	4822 051 10104
R1204	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R1206	RES.METAL FILM	HIP RC-02H 1% 2K37	5322 117 10545
R1207	RES.METAL FILM	HIP RC-02H 1% 2K37	5322 117 10545
R1208	RES.METAL FILM	HIP RC-02H 1% 3K16	5322 117 10553
R1209	RES.METAL FILM	HIP RC-02H 1% 1K78	5322 117 10535
R1301	RES.CHIP	HIP RC-02H 1% 51K1	4822 051 55113
R1302	RES.CHIP	HIP RC-02H 1% 51K1	4822 051 55113
R1303	RES.METAL FILM	HIP RC-02H 1% 162K	5322 117 10533
R1304	RES.METAL FILM	HIP RC-02H 1% 162K	5322 117 10533
R1306	RES.CHIP	HIP RC-02H 1% 51K1	4822 051 55113
R1307	RES.CHIP	HIP RC-02H 1% 51K1	4822 051 55113
R1308	RES.METAL FILM	HIP RC-02H 1% 28K7	5322 117 10551
R1309	RES.METAL FILM	HIP RC-02H 1% 750E	5322 117 10582
R1311	RES.METAL FILM	HIP RC-02H 1% 21K5	5322 117 10542
R1312	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R1313	RES.METAL FILM	HIP RC-02H 1% 7K5	5322 117 10583
R2001	RES.METAL FILM	HIP RC-02H 1% 16K2	5322 117 10532

Item	Description		Ordering code
R2002	RES.METAL FILM	HIP RC-02H 1% 12K1	5322 117 10522
R2003	RES.CHIP	HIP RC-02H 1% 1K	4822 051 10102
R2004	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R2006	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R2007	RES.METAL FILM	HIP RC-02H 1% 1K47	5322 117 10527
R2008	RES.METAL FILM	HIP RC-02H 1% 1K47	5322 117 10527
R2009	RES.CHIP	HIP RC-02H 1% 1K	4822 051 10102
R2011	RES.METAL FILM	HIP RC-02H 1% 6K81	5322 117 10581
R2012	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R2013	RES.METAL FILM	HIP RC-02H 1% 1K96	5322 117 10539
R2014	RES.CHIP	HIP RC-02H 1% 4K64	4822 051 54642
R2015	RES.CHIP	HIP RC-02H 1% 1K	4822 051 10102
R2016	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R2017	RES.METAL FILM	HIP RC-02H 1% 316K	5322 117 10555
R2018	RES.CHIP	HIP RC-02H 1% 46K4	5322 117 10486
R2020	RES.METAL FILM	HIP RC-02H 1% 14K7	5322 117 10528
R2021	RES.CHIP	HIP RC-02H 1% 46K4	5322 117 10486
R2023	RES.METAL FILM	HIP RC-02H 1% 14K7	5322 117 10528
R2024	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R2026	RES.CHIP	HIP RC-02H 1% 4K64	4822 051 54642
R2063	RES.CHIP	HIP RC-02H 1% 100E	4822 051 10101
R2064	RES.CHIP	HIP RC-02H 1% 100E	4822 051 10101
R2065	RES.METAL FILM	HIP RC-02H 1% 2K87	5322 117 10549
R2066	RES.METAL FILM	HIP RC-02H 1% 2K87	5322 117 10549
R2067	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R2068	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R2101	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R2102	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R2103	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R2104	RES.METAL FILM	RC-02H 1% 422E	5322 117 10564
R2105	RES.CHIP	RC-02H 1% 237E	5322 117 10544
R2107	RES.METAL FILM	RC-02H 1% 237E	5322 117 10544
R2111	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R2112	RES.METAL FILM	RC-02H 1% 383E	5322 117 10559
R2113	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R2131	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R2132	RES.CHIP	HIP RC-02H 1% 5K11	5322 117 10487
R2133	RES.METAL FILM	HIP RC-02H 1% 14K7	5322 117 10528
R2134	RES.METAL FILM	HIP RC-02H 1% 14K7	5322 117 10528
R2136	RES.METAL FILM	HIP RC-02H 1% 1K78	5322 117 10535
R2137	RES.METAL FILM	HIP RC-02H 1% 121E	5322 117 10519
R2138	RES.CHIP	HIP RC-01 5% 4E7	4822 051 10478
R2151	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R2161	RES.CHIP	RMC1/8 1% 75E	4822 111 91937
R2171	RES.METAL FILM	ST MRS25 1% 9K53	4822 050 29532
R2172	RES.METAL FILM	HIP RC-02H 1% 16K2	5322 117 10532
R2176	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543

Item	Description		Ordering code
R2177	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R2201	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R2202	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R2203	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R2204	RES.METAL FILM	RC-02H 1% 422E	5322 117 10564
R2205	RES.CHIP	RC-02H 1% 237E	5322 117 10544
R2207	RES.METAL FILM	HIP RC-02H 1% 237E	5322 117 10544
R2211	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R2212	RES.METAL FILM	HIP RC-02H 1% 383E	5322 117 10559
R2214	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R2231	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R2232	RES.CHIP	HIP RC-02H 1% 5K11	5322 117 10487
R2233	RES.METAL FILM	HIP RC-02H 1% 14K7	5322 117 10528
R2234	RES.METAL FILM	HIP RC-02H 1% 14K7	5322 117 10528
R2236	RES.METAL FILM	HIP RC-02H 1% 1K78	5322 117 10535
R2237	RES.METAL FILM	HIP RC-02H 1% 121E	5322 117 10519
R2238	RES.CHIP	HIP RC-01 5% 4E7	4822 051 10478
R2251	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R2261	RES.CHIP	RMC1/8 1% 75E	4822 111 91937
R2271	RES.METAL FILM	ST MRS25 1% 9K53	4822 050 29532
R2272	RES.METAL FILM	HIP RC-02H 1% 16K2	5322 117 10532
R2276	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R2277	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R2301	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R2302	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R2303	RES.METAL FILM	HIP RC-02H 1% 61K9	5322 117 10578
R2304	RES.METAL FILM	HIP RC-02H 1% 61K9	5322 117 10578
R2306	RES.CHIP	HIP RC-02H 1% 51K1	4822 051 55113
R2307	RES.CHIP	HIP RC-02H 1% 51K1	4822 051 55113
R2308	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R2309	RES.METAL FILM	HIP RC-02H 1% 7K5	5322 117 10583
R2311	RES.METAL FILM	HIP RC-02H 1% 21K5	5322 117 10542
R2312	RES.METAL FILM	HIP RC-02H 1% 28K7	5322 117 10551
R2313	RES.METAL FILM	HIP RC-02H 1% 750E	5322 117 10582
R2401	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R2402	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R2403	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R2404	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R2406	RES.METAL FILM	HIP RC-02H 1% 7K5	5322 117 10583
R2411	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R2412	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R2416	RES.METAL FILM	HIP RC-02H 1% 750E	5322 117 10582
R2417	RES.METAL FILM	HIP RC-02H 1% 750E	5322 117 10582
R3001	RES.METAL FILM	HIP RC-02H 1% 19K6	5322 117 10541
R3002	RES.CHIP	HIP RC-02H 1% 11K	4822 051 10113
R3003	RES.CHIP	HIP RC-02H 1% 1K	4822 051 10102
R3004	RES.CHIP	HIP RC-02H 1% 100E	4822 051 10101

Item	Description		Ordering code
R3006	RES.CHIP	HIP RC-02H 1% 100E	4822 051 10101
R3007	RES.CHIP	HIP RC-02H 1% 100E	4822 051 10101
R3008	RES.CHIP	HIP RC-02H 1% 100E	4822 051 10101
R3009	RES.CHIP	HIP RC-02H 1% 1K	4822 051 10102
R3011	RES.CHIP	HIP RC-02H 1% 11K	4822 051 10113
R3012	RES.METAL FILM	HIP RC-02H 1% 19K6	5322 117 10541
R3013	RES.METAL FILM	HIP RC-02H 1% 5K62	5322 117 10573
R3014	RES.METAL FILM	HIP RC-02H 1% 21K5	5322 117 10542
R3015	RES.METAL FILM	HIP RC-02H 1% 28K7	5322 117 10551
R3018	RES.METAL FILM	HIP RC-02H 1% 19K6	5322 117 10541
R3021	RES.METAL FILM	HIP RC-02H 1% 19K6	5322 117 10541
R3024	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R3026	RES.CHIP	HIP RC-02H 1% 4K64	4822 051 54642
R3063	RES.CHIP	HIP RC-02H 1% 100E	4822 051 10101
R3064	RES.CHIP	HIP RC-02H 1% 100E	4822 051 10101
R3066	RES.METAL FILM	HIP RC-02H 1% 909E	5322 117 10588
R3067	RES.METAL FILM	HIP RC-02H 1% 909E	5322 117 10588
R3068	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R3069	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R3101	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R3102	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R3103	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R3104	RES.METAL FILM	HIP RC-02H 1% 422E	5322 117 10564
R3107	RES.METAL FILM	HIP RC-02H 1% 237E	5322 117 10544
R3111	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R3112	RES.METAL FILM	HIP RC-02H 1% 383E	5322 117 10559
R3113	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R3131	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R3132	RES.CHIP	HIP RC-02H 1% 5K11	5322 117 10487
R3133	RES.METAL FILM	HIP RC-02H 1% 14K7	5322 117 10528
R3134	RES.METAL FILM	HIP RC-02H 1% 14K7	5322 117 10528
R3136	RES.METAL FILM	HIP RC-02H 1% 1K78	5322 117 10535
R3137	RES.METAL FILM	HIP RC-02H 1% 121E	5322 117 10519
R3138	RES.CHIP	HIP RC-01 5% 4E7	4822 051 10478
R3151	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R3161	RES.CHIP	RMC1/8 1% 75E	4822 111 91937
R3171	RES.METAL FILM	ST MRS25 1% 9K53	4822 050 29532
R3176	RES.CHIP	HIP RC-02H 1% 51K1	4822 051 55113
R3201	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R3202	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R3203	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R3204	RES.METAL FILM	HIP RC-02H 1% 422E	5322 117 10564
R3207	RES.METAL FILM	HIP RC-02H 1% 237E	5322 117 10544
R3211	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R3212	RES.METAL FILM	HIP RC-02H 1% 383E	5322 117 10559
R3213	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R3231	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014

Item	Description		Ordering code
R3232	RES.CHIP	HIP RC-02H 1% 5K11	5322 117 10487
R3233	RES.METAL FILM	HIP RC-02H 1% 14K7	5322 117 10528
R3234	RES.METAL FILM	HIP RC-02H 1% 14K7	5322 117 10528
R3236	RES.METAL FILM	HIP RC-02H 1% 1K78	5322 117 10535
R3237	RES.METAL FILM	HIP RC-02H 1% 121E	5322 117 10519
R3238	RES.CHIP	HIP RC-01 5% 4E7	4822 051 10478
R3251	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R3261	RES.CHIP	RMC1/8 1% 75E	4822 111 91937
R3271	RES.METAL FILM	ST MRS25 1% 9K53	4822 050 29532
R3276	RES.CHIP	HIP RC-02H 1% 51K1	4822 051 55113
R3281	RES.METAL FILM	HIP RC-02H 1% 2K87	5322 117 10549
R3282	RES.CHIP	HIP RC-02H 1% 5K11	5322 117 10487
R3301	RES.METAL FILM	HIP RC-02H 1% 61K9	5322 117 10578
R3302	RES.CHIP	HIP RC-02H 1% 12K1	4822 051 51213
R3311	RES.METAL FILM	HIP RC-02H 1% 511E	5322 117 10569
R3312	RES.METAL FILM	HIP RC-02H 1% 2K87	5322 117 10549
R3313	RES.METAL FILM	HIP RC-02H 1% 2K87	5322 117 10549
R3314	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R3316	RES.METAL FILM	HIP RC-02H 1% 14K7	5322 117 10528
R3401	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R3402	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R3403	RES.CHIP	HIP RC-02H 1% 5K11	5322 117 10487
R3404	RES.CHIP	HIP RC-02H 1% 5K11	5322 117 10487
R3411	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R3412	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R3416	RES.METAL FILM	HIP RC-02H 1% 750E	5322 117 10582
R3417	RES.METAL FILM	HIP RC-02H 1% 750E	5322 117 10582
R4001	RES.CHIP	HIP RC-02H 1% 51K1	4822 051 55113
R4002	RES.HI-TENSION	RST VR25 5% 3M3	4822 053 20335
R4003	RES.HI-TENSION	RST VR25 5% 3M3	4822 053 20335
R4004	RES.HI-TENSION	RST VR25 5% 3M3	4822 053 20335
R4006	RES.HI-TENSION	RST VR25 5% 6M8	4822 053 20685
R4007	RES.HI-TENSION	RST VR25 5% 6M8	4822 053 20685
R4008	RES.METAL FILM	HIP RC-02H 1% 31K6	5322 117 10554
R4009	RES.METAL FILM	HIP RC-02H 1% 31K6	5322 117 10554
R4031	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R4032	RES.METAL FILM	HIP RC-02H 1% 31K6	5322 117 10554
R4033	RES.CHIP	HIP RC-02H 1% 1K	4822 051 10102
R4034	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R4036	RES.METAL FILM	HIP RC-02H 1% 316E	5322 117 10552
R4037	RES.METAL FILM	HIP RC-02H 1% 31K6	5322 117 10554
R4038	RES.METAL FILM	HIP RC-02H 1% 681E	5322 117 10579
R4039	RES.METAL FILM	HIP RC-02H 1% 16K2	5322 117 10532
R4040	RES.METAL FILM	HIP RC-02H 1% 31K6	5322 117 10554
R4041	RES.CHIP	HIP RC-02H 1% 51K1	4822 051 55113
R4042	RES.CHIP	HIP RC-02H 1% 1K	4822 051 10102
R4043	RES.CHIP	HIP RC-02H 1% 1K	4822 051 10102

Item	Description		Ordering code
R4044	RES.CHIP	HIP RC-02H 1% 1M	4822 051 10105
R4045	RES.METAL FILM	HIP RC-02H 1% 215K	5322 117 10543
R4051	RES.HI-TENSION	RST VR25 5% 3M3	4822 053 20335
R5001	RES.CHIP	HIP RC-01 5% 1E	4822 051 10108
R5002	RES.CHIP	HIP RC-01 5% 1E	4822 051 10108
R5003	RES.CHIP	HIP RC-01 5% 1E	4822 051 10108
R5004	RES.CHIP	HIP RC-01 5% 1E	4822 051 10108
R5007	RES.CHIP	HIP RC-01 5% 1E	4822 051 10108
R5008	RES.CHIP	HIP RC-01 5% 1E	4822 051 10108
R5101	RES.CHIP	HIP RC-01 5% 4E7	4822 051 10478
R5106	RES.CHIP	HIP RC-01 5% 4E7	4822 051 10478
R5111	RES.CHIP	HIP RC-01 5% 3E3	4822 051 10338
R5116	RES.CHIP	HIP RC-01 5% 3E3	4822 051 10338
R5121	RES.CHIP	HIP RC-01 5% 1E	4822 051 10108
R5126	RES.CHIP	HIP RC-01 5% 1E	4822 051 10108
R5131	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R5132	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R5133	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R5134	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R5136	RES.CHIP	HIP RC-02H 1% 10K	4822 051 10103
R5137	RES.METAL FILM	HIP RC-02H 1% 3K83	5322 117 10561
R5138	RES.METAL FILM	HIP RC-02H 1% 3K16	5322 117 10553
R5139	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R5151	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R5201	RES.CHIP	HIP RC-01 5% 3E3	4822 051 10338
R5206	RES.CHIP	HIP RC-01 5% 3E3	4822 051 10338
R5211	RES.CHIP	HIP RC-01 5% 3E3	4822 051 10338
R5216	RES.CHIP	HIP RC-01 5% 3E3	4822 051 10338
R5221	RES.CHIP	HIP RC-01 5% 4E7	4822 051 10478
R5226	RES.CHIP	HIP RC-01 5% 4E7	4822 051 10478
R5251	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R5301	RES.CHIP	HIP RC-01 5% 3E3	4822 051 10338
R5306	RES.CHIP	HIP RC-01 5% 3E3	4822 051 10338
R5311	RES.CHIP	HIP RC-01 5% 3E3	4822 051 10338
R5316	RES.CHIP	HIP RC-01 5% 3E3	4822 051 10338
R5321	RES.CHIP	HIP RC-01 5% 4E7	4822 051 10478
R5326	RES.CHIP	HIP RC-01 5% 4E7	4822 051 10478
R5351	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R5411	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R5416	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014

Item	Description		Ordering code
SEMICONDUCTORS			
V1009	DIODE,CHIP	BBY39 PEL	5322 130 82199
V1011	DIODE,CHIP	BBY39 PEL	5322 130 82199
V1014	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V1016	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V1018	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V1019	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V1021	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V1022	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V1023	TRANSISTOR,CHIP	BC848C PEL	5322 130 42136
V1024	TRANSISTOR,CHIP	BC848C PEL	5322 130 42136
V1101	TRANSISTOR,CHIP	BFR53 PEL	5322 130 61244
V1102	TRANSISTOR,CHIP	BFR53 PEL	5322 130 61244
V1103	TRANSISTOR,CHIP	BFT92 PEL	5322 130 44711
V1104	TRANSISTOR,CHIP	BFT92 PEL	5322 130 44711
V1106	TRANSISTOR	BFG55 PEL	5322 130 62806
V1107	TRANSISTOR	BFG55 PEL	5322 130 62806
V1108	DIODE,REFERENCE	BZX79-C12 PEL	4822 130 34197
V1109	DIODE,REFERENCE	BZX79-C12 PEL	4822 130 34197
V1111	TRANSISTOR,CHIP	BFG35 PEL	5322 130 62805
V1112	TRANSISTOR,CHIP	BFG35 PEL	5322 130 62805
V1113	DIODE	BBY62 PEL	5322 130 82685
V1121	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V1122	TRANSISTOR,CHIP	BCP53 PEL	5322 130 62804
V1123	TRANSISTOR,CHIP	BCP56 PEL	5322 130 63033
V1126	TRANSISTOR,CHIP	BC848C PEL	5322 130 42136
V1127	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V1128	TRANSISTOR,CHIP	BC848C PEL	5322 130 42136
V1201	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V1202	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V1203	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V1204	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V1301	DIODE,REFERENCE	BZX84-C8V2 PEL	5322 130 80255
V2061	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V2062	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V2101	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V2102	DIODE	BZX84-B12 PEL	4822 130 83566
V2103	DIODE	BZX84-B12 PEL	4822 130 83566
V2104	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V2105	DIODE	BZX84-B12 PEL	4822 130 83566
V2111	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V2113	TRANSISTOR	BFQ232A PEL	4822 130 62751
V2131	DIODE,CHIP	BAV99 PEL	5322 130 34337
V2132	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V2133	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V2134	TRANSISTOR	BFQ252A PEL	4822 130 62932

Item	Description		Ordering code
V2201	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V2202	DIODE	BZX84-B12 PEL	4822 130 83566
V2203	DIODE	BZX84-B12 PEL	4822 130 83566
V2204	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V2205	DIODE	BZX84-B12 PEL	4822 130 83566
V2211	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V2213	TRANSISTOR	BFQ232A PEL	4822 130 62751
V2231	DIODE,CHIP	BAV99 PEL	5322 130 34337
V2232	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V2233	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V2234	TRANSISTOR	BFQ252A PEL	4822 130 62932
V2301	DIODE,REFERENCE	BZX84-C8V2 PEL	5322 130 80255
V2403	DIODE	BZX84-B18 PEL	5322 130 83709
V2418	DIODE,REFERENCE	BZX84-C8V2 PEL	5322 130 80255
V3001	DIODE,CHIP	BAV99 PEL	5322 130 34337
V3002	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V3061	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V3062	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V3101	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V3102	DIODE	BZX84-B12 PEL	4822 130 83566
V3103	DIODE	BZX84-B12 PEL	4822 130 83566
V3104	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V3105	DIODE	BZX84-B12 PEL	4822 130 83566
V3111	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V3113	TRANSISTOR	BFQ232A PEL	4822 130 62751
V3131	DIODE,CHIP	BAV99 PEL	5322 130 34337
V3132	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V3133	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V3134	TRANSISTOR	BFQ252A PEL	4822 130 62932
V3136	DIODE,CHIP	BAS21 PEL	4822 130 33702
V3137	DIODE,CHIP	BAS21 PEL	4822 130 33702
V3201	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V3202	DIODE	BZX84-B12 PEL	4822 130 83566
V3203	DIODE	BZX84-B12 PEL	4822 130 83566
V3204	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V3205	DIODE	BZX84-B12 PEL	4822 130 83566
V3211	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V3212	TRANSISTOR,CHIP	BF820 PEL	5322 130 62802
V3213	TRANSISTOR	BFQ232A PEL	4822 130 62751
V3231	DIODE,CHIP	BAV99 PEL	5322 130 34337
V3232	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V3233	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V3234	TRANSISTOR	BFQ252A PEL	4822 130 62932
V3236	DIODE,CHIP	BAS21 PEL	4822 130 33702
V3237	DIODE,CHIP	BAS21 PEL	4822 130 33702
V3281	DIODE,CHIP	BAV99 PEL	5322 130 34337
V3282	TRANSISTOR,CHIP	BF821 PEL	4822 130 61923

Item	Description		Ordering code
V3301	TRANSISTOR,CHIP	BF820 PEL	5322 130 62802
V3311	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V3312	DIODE,CHIP	BAV99 PEL	5322 130 34337
V3418	DIODE,REFERENCE	BZX84-C8V2 PEL	5322 130 80255
V4001	DIODE,CHIP	BAV99 PEL	5322 130 34337
V4002	TRANSISTOR,CHIP	BF821 PEL	4822 130 61923
V4003	TRANSISTOR,CHIP	BF821 PEL	4822 130 61923
V4004	TRANSISTOR,CHIP	BF821 PEL	4822 130 61923
V4031	TRANSISTOR,CHIP	BF821 PEL	4822 130 61923
V4032	TRANSISTOR,CHIP	BF821 PEL	4822 130 61923
V4033	TRANSISTOR,CHIP	BF820 PEL	5322 130 62802
V4034	TRANSISTOR,CHIP	BF820 PEL	5322 130 62802
V4036	DIODE,REFERENCE	BZX84-B18 PEL	5322 130 83709
V4037	DIODE,CHIP	BAS21 PEL	4822 130 33702
V4038	TRANSISTOR,CHIP	BF820 PEL	5322 130 62802
V4039	TRANSISTOR,CHIP	BF821 PEL	4822 130 61923
V4040	DIODE,CHIP	BAS21 PEL	4822 130 33702
V4041	DIODE,CHIP	BAS21 PEL	4822 130 33702
V4042	DIODE,CHIP	BAS21 PEL	4822 130 33702
V4043	DIODE,CHIP	BAS21 PEL	4822 130 33702
V4044	DIODE,CHIP	BAS21 PEL	4822 130 33702
V5001	DIODE,CHIP	BAS21 PEL	4822 130 33702
V5002	DIODE,CHIP	BAS21 PEL	4822 130 33702

CONNECTORS

X2101	CONNECTOR	4-P HAAKS OMSL	5322 265 30907
X2301	CONNECTOR	12-P 1.25MM STR	4822 267 50668
X2401	CONNECTOR	12-P 1.25MM STR	4822 267 50668
X2402	CONNECTOR	3-P SNG RT.ANG	5322 265 30433
X2403	SOCKET	55595 CRT SOCKET	5322 255 40502
X2501	CONNECTOR	50-P DBL STRGHT	5322 265 61242

5.2.7 Description of A2-100 MHz version

5.2.7.1 Final Y amplifier

Diagram 1

The output signal from the delay line is applied to the input pins 6 and 9 of amplifier IC D1001. This IC and surrounding components comprise the MF and HF square wave compensations. Also the vertical CRT text signal is applied to D1001 (pin 15 and 16). The switching between text/cursors and signal is done via control signals that are applied to pin 17 and 18 of D1001. Text is written if the voltage at pin 18 is higher than at pin 17. This switching signal is derived from the collector of the transistors V1201 and V1202. The control signals XYSW1 and XYSW0 come from the text/cursor generator IC on microprocessor unit A3. Via the transistors V1203 and V1204 similar switching signals XSW1 and XSW0 are routed to the X-deflection section for switching between text and signal.

The output signals from pin 21 and 22 of D1001 are routed via the common base circuits V1026 / V1027 to the final Y-amplifier. The final amplifier is located on the small printed circuit board at the CRT socket. It drives the vertical deflection plates of the CRT. This final stage is indicated on diagram 2.

The delay line leads are terminated into 75Ω . The impedance is composed by 300Ω inside D1001 paralleled by external impedances of 60Ω formed by the external resistors R1024/R1026 and R1027/R1028. All termination resistors are applied to a voltage controlled by D1001/pin 13. Pin 13 determines the common mode voltage level of the D1001 inputs. The HF square wave compensation is achieved by the two dual varicap diodes V1009 and V1011 together with associated resistors. Varicap V1009 is controlled by the output signal at pin 20 of octal DAC N1001. This output voltage can be in the range 0 to 10 V and controls varicap V1009 via operational amplifier N1002/1,2,3. This operational amplifier converts the N1001 output voltage (that is related to 0 V) into a voltage related to the voltage at D1001/pin 13.

Varicap V1011 is controlled by the output signal at pin 18 of octal DAC N1001. This output voltage can be in the range 0 to 10 V and controls varicap V1011 via operational amplifier N1002/5,6,7. This operational amplifier converts the N1001 output voltage (that is related to 0 V) into a voltage related to the voltage at D1001/pin 13.

LF square wave compensation is also done inside D1001. This is controlled via currents applied to pin 27 and 28. These currents are derived from the N1001 DAC voltage outputs 13 and 11 via the transistors V1014 and V1016. The actual compensating components are situated outside D1001 and are R1037/C1011/R1038 and R1029/C1009/R1031. V1023 and V1024 form a 20 mA current source to supply the bias current for the final stage inside D1001. V1024 is switched as a diode and gives temperature compensation.

Offset is adjusted via the currents from the collectors of V1021 and V1022. These currents are controlled by the DAC output pins 17 (coarse) and 16 (fine). Two parallel DAC outputs are used to obtain sufficient resolution. V1018 is a current source and V1019 is for temperature compensation. Gain control occurs via an adjustable current applied to D1001/pin 26. This is done via N1001/pin 14 and R1051

DAC output N1001/15 applies via operational amplifier N1003/1,2,3 the signal YFSHF to the final stage on diagram 2. YFSHF is an adjustable dc voltage that is applied to varicap diodes V4113 that control the HF square wave response of the output stage.

The circuit with operational amplifier N1004/2,3,6 is used for automatic calibration of the vertical deflection. It measures the voltage at the vertical deflection plates of the CRT. This value is applied as signal YCAL to the microprocessor on unit A3.

Diagram 2

This diagram shows the Y-output amplifier. The amplifier is located at the small printed circuit board at the CRT socket. The input signal is a current and is applied to V4101 and V4102. The output signal is voltage and is applied to the vertical deflection plates of the CRT. Total sensitivity at the plates is 4V/div. One plate is driven by output stage V4111/V4108. V4111 and V4114 form a current source. The current source is an amplifier for higher frequencies because of coupling capacitor C4118. The driver transistors are V4103 and V4106. The input signal is YPREOUT1.

The other plate is driven by output stage V4109/V4112. V4112 is a current source. The current source is an amplifier for higher frequencies because of coupling capacitor C4119. The driver transistors are V4104 and V4107. The input signal is YPREOUT0.

The output signals ACALFB0 and ACALFB1 are routed to a circuit for automatic calibration of the vertical amplifiers. This circuit is present on the larger part of unit A2 and indicated on diagram 1.

5.2.7.2 Final X and Z amplifiers

Diagram 3

This diagram shows the final X amplifier. It drives the horizontal plates of the CRT. Total plate sensitivity equals 8.5 V/div. The input circuit is formed by IC D2001. The octal DAC N2002 supplies the analog control signals that are used throughout the circuit.

Input pin 5 and 6 of D2001 receive the time base sawtooth or the X- deflection signal signal. Input pin 9 and 10 receive the horizontal text/cursor signal. The selection between text/cursors and sawtooth/X- deflection signal is done via the signals XSW0 and XSW1 that are applied to pin 7 and 8 of D2001. These signals are derived from XYSW0 and XYSW1 that come from the text generator IC on microprocessor unit A3. Text is displayed with XSW0 at 0 mA and XSW1 at 1 mA. Trace is displayed with XSW0 at 1 mA and XSW1 at 0 mA.

Gain control is possible via pin 1 of D2001. This is used for trace gain control via signal XTRAGC. Gain control to compensate for CRT tolerances is achieved via pin 14 of D2001. This is controlled via the DAC output signals XCRTGCL (fine) and XCRTGCH (coarse). Offset control to compensate for CRT tolerances is achieved via pin 15 of D2001. This is controlled via the DAC output signals XCRTOFH (coarse) and XCRTOFL (fine). Adjustment of the HF response (and linearity) is achieved via signal XHFADJ via pin 17 and 26 of D2001.

The final X-amplifier consists of two identical halves that receive input signals that are in opposite phase. These signals originate from the D2001 outputs pin 24/25 (XDRIL0/XDRIL1) and pin 18/19 (XDRIR0/XDRIR1). The two X-amplifier sections drive respectively the left and right deflection plate of the CRT.

The final X amplifier half that drives the left deflection plate is explained now. Its function is identical to that of the other amplifier half. The balanced input signals XDRIL1 and XDRIL0 are applied to input stage V2101. V2134 is a current source. XDRIL0 is not used and connected to +6.8 V. In the collector circuit of V2101 are the zener diodes V2102/V2103 that function as level shifters. The emitter followers V2132 and V2111 supply the output stage V2134/V2113 with signal. V2113 functions as an amplifier stage and V2134 mainly as a current source. V2134 receives signal via C2131 and C2134 and functions as amplifier stage in the fastest sweep speeds. Via R2133/R2134 however some dc drive is also applied to V2134.

The circuit with operational amplifier N2003 is used to measure the output voltage that is applied to the X-deflection plates of the CRT. This measurement is done via high-ohmic resistors R2301 and R2302. The analog output voltage XCAL of N2003 is applied to an ADC incorporated in the microprocessor on unit A3. This enables the microprocessor to exactly measure the horizontal output voltage. This is used for automatic calibration of the horizontal deflection.

Diagram 4

This diagram shows the final intensity (Z) and focusing amplifiers. These amplifiers drive the intensity electrode G1 and the focusing electrode G3 of the CRT. The input circuit is formed by IC D3001.

Input pin 5 and 6 of D3001 receive the Z-pulses ZLTRA0 and ZLTRA1 that determine the intensity during signal display. Input pin 9 and 10 receive the Z-pulse ZTXT0 and ZTXT1 that determine the intensity during text/cursor display. The selection between signal intensity and text intensity is done via the signals ZSW0 and ZSW1 that are applied to pin 7 and 8 of D3001. These signals originate from the text generator IC on microprocessor unit A3. Text is displayed with ZSW0 at 0 mA and ZSW1 at 1 mA. Trace is displayed with ZSW0 at 1 mA and ZSW1 at 0 mA.

The final Z-amplifier and the focusing amplifier are identical halves that receive input signals that are in opposite phase. These signals originate from the D3001 outputs pin 24/25 (ZDRIF1/ZDRIF0) and pin 18/19 (ZDRIF0/ZDRIF1).

Via V3002 part of the ripple on the negative CRT cathode voltage (ZRIPPLE) is applied to pin 15 of D3001. This compensates for unwanted intensity modulation due to this ripple.

The diodes V3236, V3136, V3237 and V3137 protect D3001 against possible high voltage surges.

V3301 supplies the intensity determining signal INTEN-DA. This signal adjusts the "dark level" of the CRT. V3301 is controlled by DAC N2002 output signal DARK. V3311 supplies signal ASTIG that determines the astigmatism of the CRT. V3311 is controlled by DAC N2002 output signal ASTDR.

The upper amplifier half that is used for the dynamic focus control is explained now. Its function is identical to that of the lower amplifier half that is used for intensity (Z) control. The balanced input signals ZDRIF1 and ZDRIF0 are applied to input stage V3101. ZDRIF0 is not used and connected to +6.8 V. In the collector circuit of V3101 are the zener diodes V3102/V3103 that function as level shifters. The emitter followers V3132 and V3111 supply the output stage V3134/V3113 with signal. V3113 functions as an amplifier stage and V3134 mainly as a current source. V3134 receives signal via C3131 and C3134. It mainly functions as amplifier stage for fast input signals. Via R3133/R3134 however some dc drive is also applied to V3134.

Diagram 5

In this diagram the circuit is shown that forms an interface between the signals that determine the intensity/focusing and the CRT electrodes G1/G3 that control intensity/focusing. These electrodes, the cathode and filament (heater) of the CRT are at a high negative voltage. This voltage is separated from the other oscilloscope circuits via the 3kV capacitors C4004, C4061, C4036 and C4037.

The intensity is influenced by the output signal INTEN-AA of the Z- amplifier and the signal INTEN-DA. INTEN-AA is determined via the front-panel INTENS TRACE, INTENS TEXT, MTB on, DTB on and chopper blanking control signals. The HF component in the INTEN-AA signal is applied to G1 of the CRT via C4037. The DC and LF components are applied to the base of V4034. The INTEN-DA signal is applied to the base of V4032 and forms the clamp level (dark level) of the DC and LF part of INTEN-AA derived from V4034. These two transistors form the inputs of a 150kHz modulator that basically consists of V4031 and V4033. The LF and DC components that are modulated on the 150 kHz carrier signal can pass via buffer stage V4038/V4039 and then via high voltage blocking capacitor C4036.

Behind capacitor C4036 demodulation takes place via the diodes V4043 and V4044. This results in the original INTEN-AA signal that is superpositioned on the INTEN-DA voltage that corrects the cut-off voltage of the CRT applied to G1 and via R4051 also to G3. Across R4044 a small negative voltage (compared with the cathode) is developed for G1. This voltage is not big enough to make the CRT screen dark. This means that the signals to darken the screen and to control intensity are applied via C4036 and C4037.

The HF component from the focusing amplifier output signal FOCUS-AA is applied to G3 via C4004 and voltage divider R4008/R4009/C4002/C4003. This assures optimal tracking between focus and intensity. The signal FOCUS-DA is determined via the FOCUS control at the instruments front panel. The signal FOCUS-DA is then mixed with the LF component of FOCUS-AA before its level is adapted to the nominal G3 voltage via transistors V4002/V4003/V4004.

Diagram 6

This diagram shows the RC-branches and regulators N5131 that give the supply voltages for the various circuits. Also the connectors X2501 and X2301 are indicated here. X2301 is the connector where the flat cable leaves for the small unit that incorporates the CRT-socket X2403. The flat cable arrives at the small CRT-socket unit at X2411.

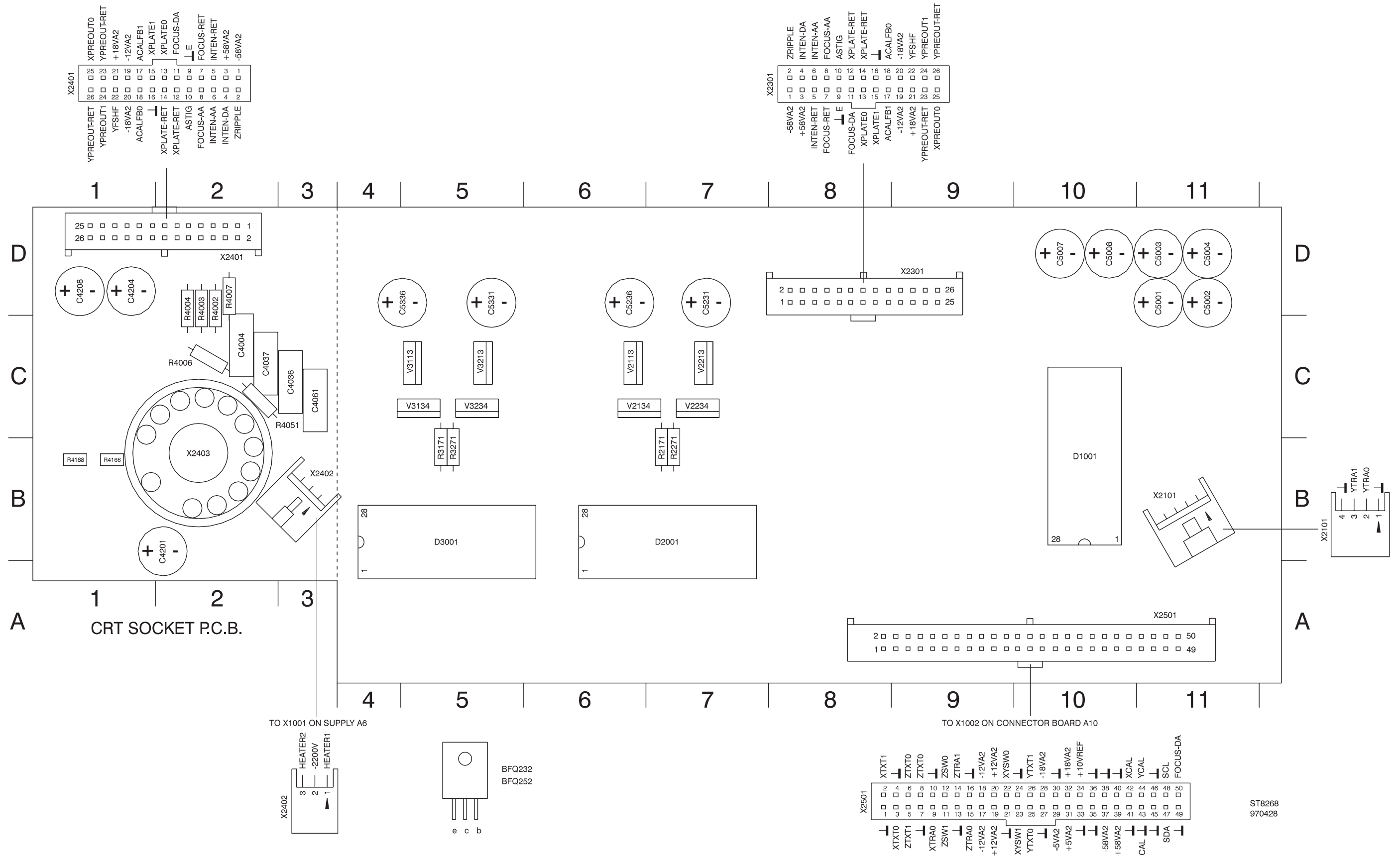
5.2.8 Signal name list A2-100 MHz version

Note: In the signal name list you find the itemnumber of the component that is source or destination. Behind this itemnumber (separated by ":") you find the number of the diagram where the source/destination can be found

NAME	MEANING	SOURCE	DESTINATION
ACALF B0	AUTOCALL FUNCTION SIGNAL	R4164:02 X2301:01	X2411:02 R1307:01
ACALF B1	AUTOCALL FUNCTION SIGNAL	R4163:02 X2301:01	X2411:02 R1306:01
ASTDR	DRIVER SIGNAL FOR ASTIGMATISM	N2002:03	R3313:04
ASTIG	ASTIGMATISM CONTROL	V3311:04 X2411:06	X2301:06 X2403:05
DARK	DRIVER SIGNAL FOR DC PART INTENS	N2002:03	V3301:04
FOCUS-AA	AC PART FOCUSING SIGNAL	R3161:04 X2411:05	X2301:06 R4008:05
FOCUS-DA	DC PSRT FOCUSING SIGNAL	X2501:06 X2411:05	X2301:06 R4001:05
G1	INTENSITY GRID 1 OF CRT	C4037:05	X2403:05 R4044:05
G3	FOCUSING GRID 3 OF CRT	C4004:05	X2403:05 R4051:05
HEATER1	FILAMENT SUPPLY F1 OF CRT	X2402:05	X2403:05
HEATER2	FILAMENT SUPPLY F2 OF CRT	X2402:05	X2403:05
INTEN-AA	AC PART OF INTENSITY SIGNAL	R3261:04 X2411:05	X2301:06 C4037:05
INTEN-DA	DC PART OF INTENSITY SIGNAL	V3301:04 X2411:05	X2301:06 V4032:05
SCL	SERIAL CLOCK	X2501:06	J1002:06 J2002:06
SDA	SERIAL DATA	X2501:06	J1002:06 J2001:06
XCAL	AUTOCAL SIGNAL X DEFLECTION	R2313:03	X2501:06
XCRTGCH	CRT X-GAIN CONTROL HIGH	N2002:03	R2011:03
XCRTGCL	CRT X-GAIN CONTROL LOW	N2002:03	R2012:03
XCRTOFH	CRT OFFSET CONTROL HIGH	N2002:03	R2016:03
XCRTOFL	CRT OFFSET CONTROL LOW	N2002:03	R2017:03
XDRIL0	DRIVE SIGNAL 0 LEFT X AMPLIFIER	D2001:03	R2101:03
XDRIL1	DRIVE SIGNAL 1 LEFT X AMPLIFIER	D2001:03	R2103:03
XDRIR0	DRIVE SIGNAL 0 RIGHT X AMPLIFIER	D2001:03	R2203:03
XDRIR1	DRIVE SIGNAL 1 RIGHT X AMPLIFIER	D2001:03	R2201:03
XHFADJ	HF ADJUSTMENT X AMPLIFIER	N2002:03	R2021:03
XLTXT0	X SHIFT TEXT 0	V2062:03	R2007:03
XLTXT1	X SHIFT TEST 1	V2062:03	R2008:03
XOUTO	X OUTPUT 0	V2134:03 V2113:03	R2171:03 R2302:03

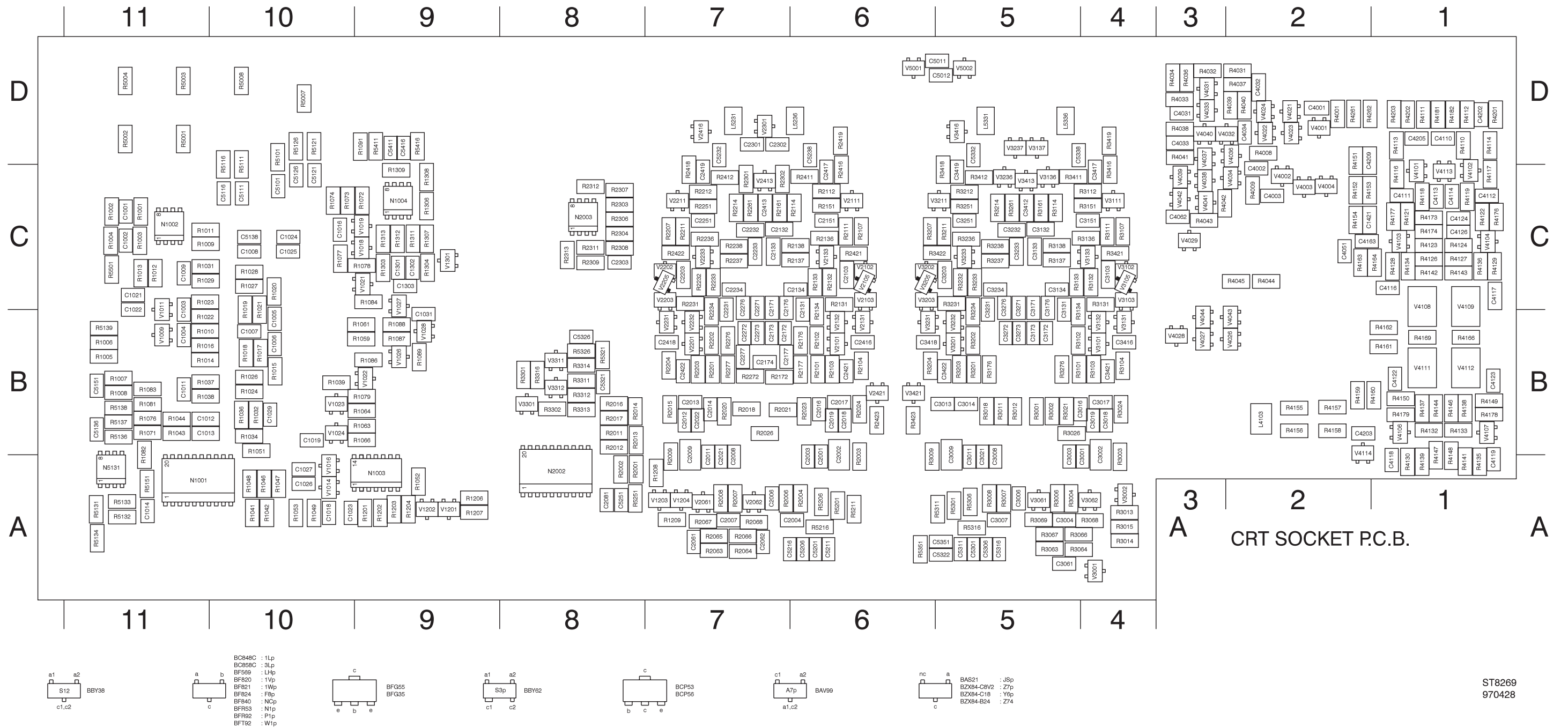
NAME	MEANING	SOURCE	DESTINATION
XOUT1	X OUTPUT 1	V2234:03	R2271:03
		V2213:03	R2301:03
XPLATE0	X OUTPUT 0 TO CRT LEFT PLATE	R2161:03	X2411:02
XPLATE1	X OUTPUT 1 TO CRT RIGHT PLATE	R2261:03	X2411:02
XPLATEC0	X OUTPUT 0 TO CRT LEFT PLATE	R4261:02	X2403:02
XPLATEC1	X OUTPUT 1 TO CRT RIGHT PLATE	R4262:02	X2403:02
XSCL	SERIAL CLOCK X SECTION	J2002:06	N2002:03
XSDA	SERIAL DATA X SECTION	J2001:06	N2002:03
XSW0	X SWITCH SIGNAL 0 TRACE/TEXT	V1204:01	D2001:03
XSW1	X SWITCH SIGNAL 1 TRACE/TEXT	V1203:01	D2001:03
XTRA0	X TRACE 0 SIGNAL	X2501:06	R2006:03
XTRA1	X TRACE 1 SIGNAL	X2501:06	R2006:03
XTRAGC	X TRACE SIGNAL GAIN CONTROL	N2002:03	R2002:03
XTXT0	X TEXT 0 SIGNAL	X2501:06	R2063:03
XTXT1	X TEXT 1 SIGNAL	X2501:06	R2064:03
XYSW0	X/Y SWITCH SIGNAL 0 TRACE/TEXT	X2501:06	R1204:01
XYSW1	X/Y SWITCH SIGNAL 1 TRACE/TEXT	X2501:06	R1201:01
YCAL	AUTOCAL SIGNAL Y DEFLECTION	R1309:01	X2501:06
YFSHF	HF SQ WAVE RESPONSE FINAL Y	R1091:01	X2301:06
		X2411:02	R4181:02
			R4182:02
YFSHF1	HF SQ WAVE RESPONSE FINAL Y 1	R4181:02	V4113:02
YFSHF2	HF SQ WAVE RESPONSE FINAL Y 2	R4182:02	V4114:02
YPREOUT0	Y PREAMPLIFIER OUT 0	V1027:01	X2301:06
		X2411:02	R4112:02
YPREOUT1	Y PREAMPLIFIER OUT 1	V1026:01	X2301:06
		X2411:02	R4111:02
YSCL	SERIAL CLOCK Y SECTION	J1002:06	N1001:01
YSDA	SERIAL DATA Y SECTION	J1001:06	N1001:01
YSW0	Y SWITCH SIGNAL 0 TRACE/TEXT	V1202:01	D1001:01
YSW1	Y SWITCH SIGNAL 1 TRACE/TEXT	V1201:01	D1001:01
YTRA0	Y TRACE 0 OUT FROM DELAY LINE	X2101:01	D1001:01
YTRA1	Y TRACE 1 OUT FROM DELAY LINE	X2101:01	D1001:01
YTXT0	Y TEXT 0 SIGNAL	X2501:06	D1001:01
YTXT1	Y TEXT 1 SIGNAL	X2501:06	D1001:01
ZDRIF0	DRIVER SIGNAL 0 FOCUS AMPLIFIER	D3001:04	R3101:04
ZDRIF1	DRIVER SIGNAL 1 FOCUS AMPLIFIER	D3001:04	R3103:04
ZDRII0	DRIVER SIGNAL 0 INTENS AMPLIFIER	D3001:04	R3203:04
ZDRII1	DRIVER SIGNAL 1 INTENS AMPLIFIER	D3001:04	R3201:04
ZLTRA0	Z LEVEL TRACE INTENSITY 0	V3062:04	R3004:04
ZLTRA1	Z LEVEL TRACE INTENSITY 1	V3061:04	R3006:04
ZOUTF	FEEDBACK SIGNAL FOCUS AMPLIFIER	V3113:04	R3171:04
ZOUTI	FEEDBACK SIGNAL INTENSITY AMPLIFIER	V3213:04	R3271:04
ZRIPPLE	RIPPLE ON NEGATIVE HIGH VOLTAGE	C4061:05	X2411:05
		X2301:06	R3014:04
ZRSUP	Z RIPPLE SUPPRESS	V3002:04	D3001:04
ZSW0	Z SWITCH SIGNAL 0 TEXT/TRACE	X2501:06	D3001:04
ZSW1	Z SWITCH SIGNAL 1 TEXT/TRACE	X2501:06	D3001:04
ZTRA0	Z TRACE INTENSITY 0	X2501:06	R3063:04
ZTRA1	Z TRACE INTENSITY 1	X2501:06	R3064:04
ZTXT0	Z TEXT 0 SIGNAL	X2501:06	R3007:04
ZTXT1	Z TEXT 1 SIGNAL	X2501:06	R3008:04

5.2.9 Unit lay-outs A2-100 MHz version



ST8268
970428

Lay-out 1 - Large component side of XYZ amplifier unit A2-100 MHz



Lay-out 2 - Small component side of XYZ amplifier unit A2-100 MHZ

ST8269
970428

5.2.10 Location list A2-100 MHz version

'-L' means that the component is located on the side with the large components. Otherwise the component is located on the side with small components.

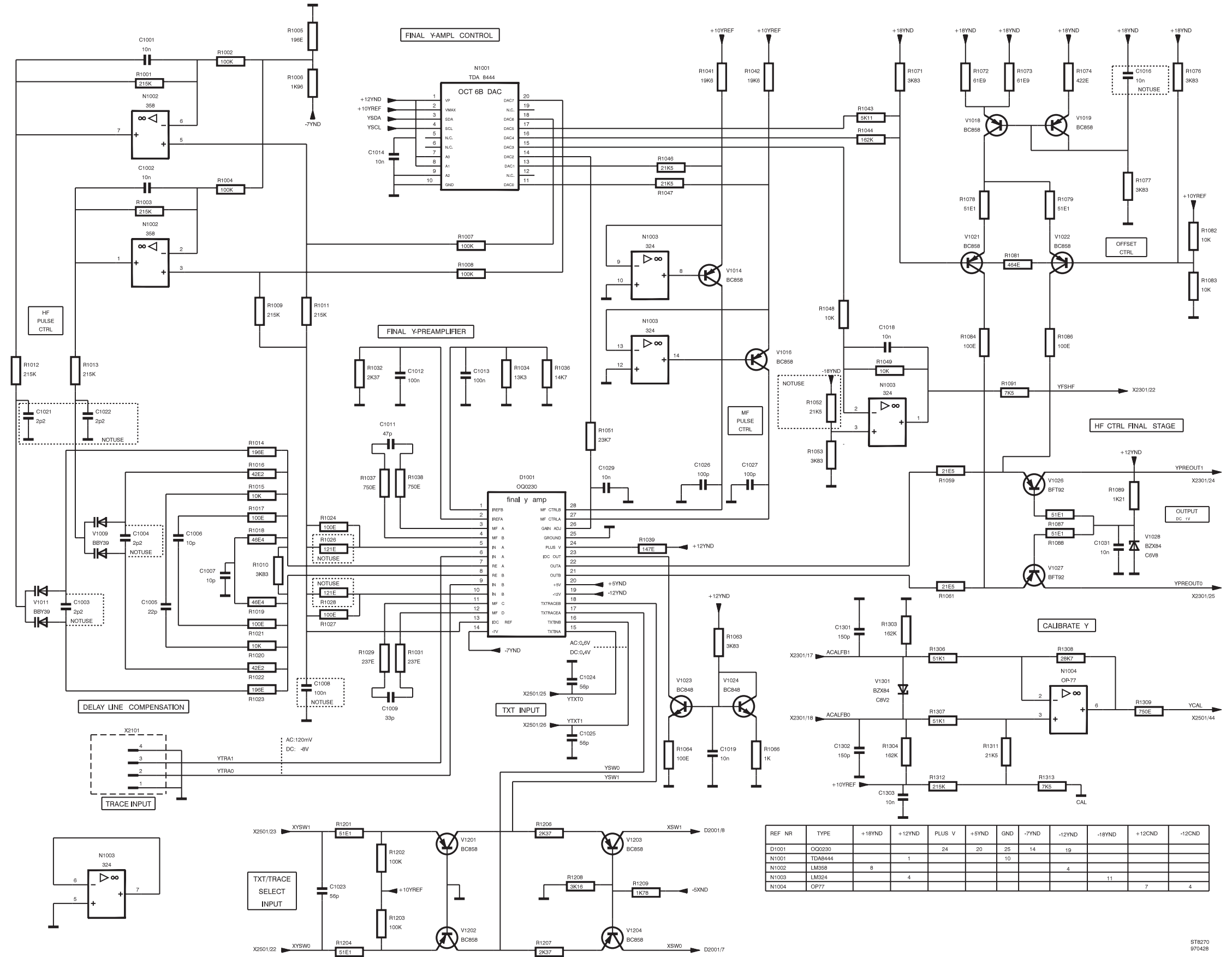
C1001 C11	C2132 C7	C3133 C5	C4163 D2
C1002 C11	C2133 C7	C3134 C5	C4201 B1-L
C1003 C11	C2134 C7	C3151 C5	C4202 D1
C1004 B11	C2151 C6	C3171 C5	C4203 B2
C1005 B10	C2171 C7	C3172 B5	C4204 D1-L
C1006 B10	C2172 B7	C3173 B5	C4205 D1
C1007 B10	C2173 B7	C3176 C5	C4206 C1
C1008 C10	C2174 B7	C3203 C6	C4207 C1
C1009 C11	C2176 C7	C3231 B5	C4208 D1-L
C1011 B11	C2177 B7	C3232 C5	C4209 D2
C1012 B11	C2203 C7	C3233 C5	C5001 D11-L
C1013 B11	C2231 B7	C3234 C5	C5002 D11-L
C1014 A11	C2232 C7	C3251 C5	C5003 D11-L
C1016 C10	C2233 C7	C3271 C5	C5004 D11-L
C1018 A10	C2234 C7	C3272 B5	C5007 D10-L
C1019 B10	C2251 C7	C3273 B5	C5008 D10-L
C1021 C11	C2271 C7	C3276 C5	C5011 D6
C1022 C11	C2272 B7	C3412 C5	C5012 D6
C1023 A10	C2273 B7	C3416 B4	C5101 C10
C1024 C10	C2276 C7	C3417 C4	C5111 C10
C1025 C10	C2277 B7	C3418 B6	C5116 C10
C1026 A10	C2301 D7	C3419 C5	C5121 C10
C1027 A10	C2302 D7	C3421 B4	C5126 C10
C1029 B10	C2303 C8	C3422 B6	C5136 B11
C1031 C9	C2413 C7	C4001 D2	C5138 C10
C1301 C9	C2416 B6	C4002 D2	C5151 B11
C1302 C9	C2417 C6	C4003 C2	C5201 A6
C1303 C9	C2418 B7	C4004 C2-L	C5206 A6
C2001 A6	C2419 C7	C4031 D3	C5211 A6
C2002 A6	C2421 B6	C4032 D2	C5216 A7
C2003 A6	C2422 B7	C4033 D3	C5231 D7-L
C2004 A7	C3001 A5	C4034 D2	C5232 D7
C2006 A7	C3002 A4	C4036 C3-L	C5236 D6-L
C2007 A7	C3003 A5	C4037 C2-L	C5238 D6
C2008 A7	C3004 A5	C4051 C2	C5251 A8
C2009 A7	C3006 A5	C4061 C3-L	C5301 A5
C2011 A7	C3007 A5	C4062 C3	C5306 A5
C2012 B7	C3008 A5	C4110 D1	C5311 A5
C2013 B7	C3009 A5	C4111 C1	C5316 A5
C2014 B7	C3011 A5	C4112 C1	C5321 B8
C2016 B6	C3013 B6	C4113 C1	C5322 A6
C2017 B6	C3014 B5	C4114 C1	C5326 B8
C2018 B6	C3016 B5	C4116 C1	C5331 C5-L
C2019 B6	C3017 B4	C4117 C1	C5332 D5
C2021 A7	C3018 B4	C4118 A1	C5336 C5-L
C2022 B7	C3019 B4	C4119 A1	C5338 D5
C2061 A7	C3021 A5	C4121 C2	C5351 A6
C2062 A7	C3061 A5	C4122 B1	C5411 D9
C2081 A8	C3103 C4	C4123 B1	C5416 D9
C2103 C6	C3131 C5	C4124 C1	D1001 B10-L
C2131 B6	C3132 C5	C4126 C1	D2001 B7-L

D3001 B5-L	R1048 A10	R2015 B7	R2277 B7
L4101 B2	R1049 A10	R2016 B8	R2301 C7
L4102 B2	R1051 B10	R2017 B8	R2302 C7
L4103 B2	R1052 A9	R2018 B7	R2303 C8
L5231 D7	R1053 A10	R2020 B7	R2304 C8
L5236 D6	R1059 B10	R2021 B7	R2306 C8
L5331 D5	R1061 B10	R2023 B6	R2307 C8
L5336 D5	R1063 B10	R2024 B6	R2308 C8
N1001 A11	R1064 B10	R2026 B7	R2309 C8
N1002 C11	R1066 B10	R2063 A7	R2311 C8
N1003 A9	R1071 B11	R2064 A7	R2312 C8
N1004 C9	R1072 C10	R2065 A7	R2313 C8
N2002 A8	R1073 C10	R2066 A7	R2411 C7
N2003 C8	R1074 C10	R2067 A7	R2412 C7
N5131 A11	R1076 B11	R2068 A7	R2416 C6
R1001 C11	R1077 C10	R2101 B6	R2418 C7
R1002 C11	R1078 C10	R2102 B6	R2419 D6
R1003 C11	R1079 B10	R2103 B6	R2421 C6
R1004 C11	R1081 B11	R2104 B6	R2422 C7
R1005 B11	R1082 A11	R2107 C6	R2423 B6
R1006 B11	R1083 B11	R2111 C6	R3001 B5
R1007 B11	R1084 C10	R2112 C6	R3002 B5
R1008 B11	R1086 B10	R2114 C7	R3003 A4
R1009 C11	R1087 B9	R2131 C6	R3004 A5
R1010 B11	R1088 B9	R2132 C6	R3006 A5
R1011 C11	R1089 B9	R2133 C6	R3007 A5
R1012 C11	R1091 D10	R2134 B6	R3008 A5
R1013 C11	R1201 A10	R2136 C6	R3009 A6
R1014 B11	R1202 A9	R2137 C7	R3011 B5
R1015 B10	R1203 A9	R2138 C7	R3012 B5
R1016 B11	R1204 A9	R2151 C6	R3013 A4
R1017 B10	R1206 A9	R2161 C7	R3014 A4
R1018 B10	R1207 A9	R2171 B7-L	R3015 A4
R1019 C10	R1208 A7	R2172 B7	R3018 B5
R1020 C10	R1209 A7	R2176 B6	R3021 B5
R1021 C10	R1303 C9	R2177 B6	R3024 B4
R1022 C11	R1304 C9	R2201 B7	R3026 B5
R1023 C11	R1306 C9	R2202 B7	R3063 A5
R1024 B10	R1307 C9	R2203 B7	R3064 A5
R1026 B10	R1308 C9	R2204 B7	R3066 A5
R1027 C10	R1309 D9	R2207 C7	R3067 A5
R1028 C10	R1311 C9	R2211 C7	R3068 A5
R1029 C11	R1312 C9	R2212 C7	R3069 A5
R1031 C11	R1313 C9	R2214 C7	R3101 B5
R1032 B10	R2001 A8	R2231 C7	R3102 B5
R1034 B10	R2002 A8	R2232 C7	R3103 B4
R1036 B10	R2003 A6	R2233 C7	R3104 B4
R1037 B11	R2004 A6	R2234 B7	R3107 C4
R1038 B11	R2006 A7	R2236 C7	R3111 C4
R1039 B10	R2007 A7	R2237 C7	R3112 C5
R1041 A10	R2008 A7	R2238 C7	R3114 C5
R1042 A10	R2009 A7	R2251 C7	R3131 C4
R1043 B11	R2011 B8	R2261 C7	R3132 C4
R1044 B11	R2012 B8	R2271 B7-L	R3133 C5
R1046 A10	R2013 B8	R2272 B7	R3134 B5
R1047 A10	R2014 B8	R2276 B7	R3136 C5

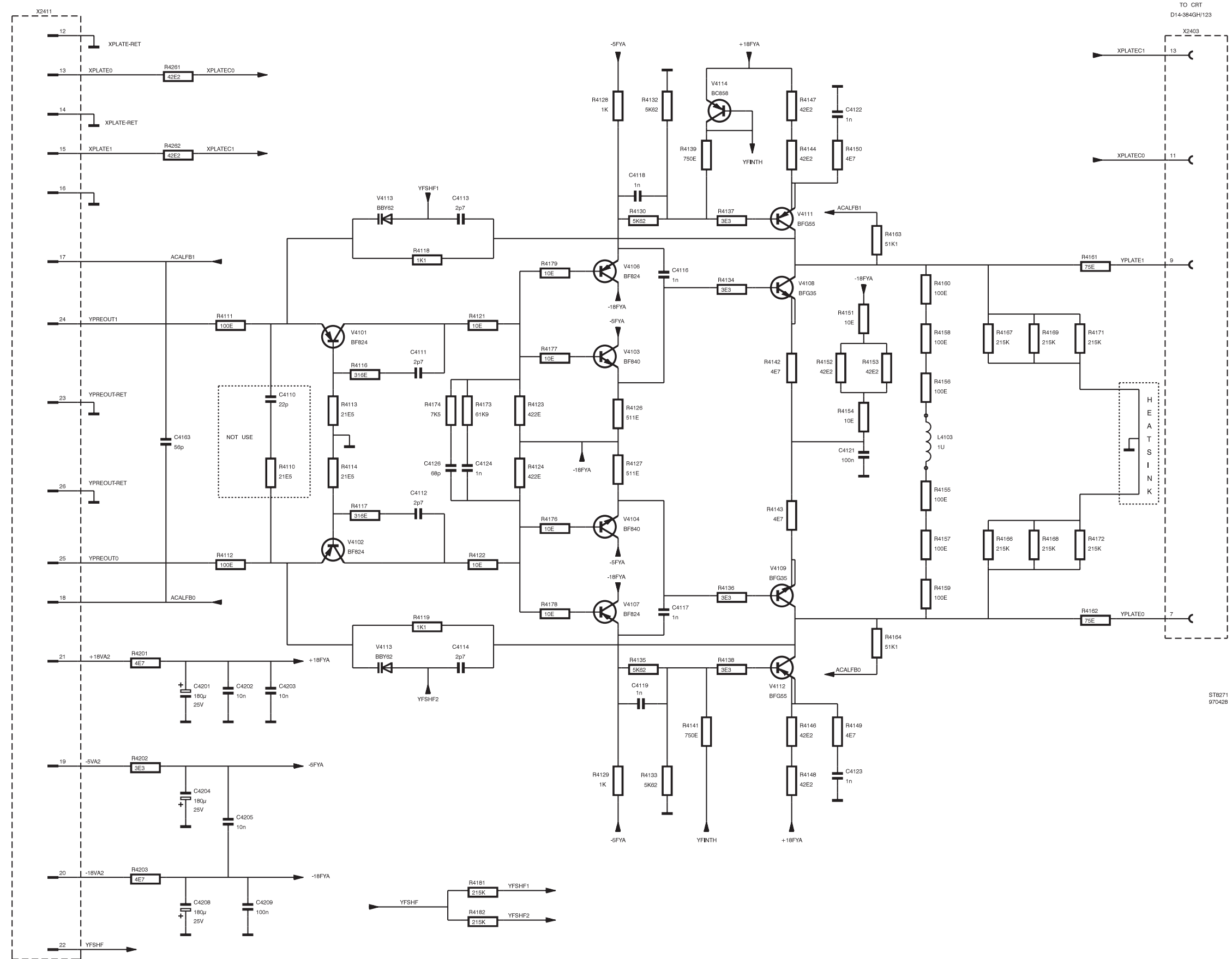
R3137 C5	R4040 D2	R4163 C2	R5411 D9
R3138 C5	R4041 D3	R4164 C1	R5416 D9
R3151 C5	R4042 C2	R4166 B1	R5501 C11
R3161 C5	R4043 C3	R4167 B1-L	V1009 B11
R3171 B5-L	R4044 C2	R4168 B1-L	V1011 C11
R3176 B5	R4045 C3	R4169 B1	V1014 A10
R3201 B5	R4051 C3-L	R4173 C1	V1016 A10
R3202 B5	R4104 C2	R4174 C1	V1018 C10
R3203 B5	R4110 D1	R4176 C1	V1019 C10
R3204 B6	R4111 D1	R4177 C1	V1021 C10
R3207 C6	R4112 D1	R4178 B1	V1022 B10
R3211 C6	R4113 D1	R4179 B1	V1023 B10
R3212 C5	R4114 D1	R4181 D1	V1024 B10
R3214 C5	R4116 C1	R4182 D1	V1026 B9
R3231 C6	R4117 C1	R4201 D1	V1027 C9
R3232 C5	R4118 C1	R4202 D1	V1028 A9
R3233 C5	R4119 C1	R4203 D1	V1201 B9
R3234 B5	R4121 C1	R4261 D2	V1202 A9
R3236 C5	R4122 C1	R4262 D2	V1203 A7
R3237 C5	R4123 C1	R5001 D11	V1204 A7
R3238 C5	R4124 C1	R5002 D11	V1301 C9
R3251 C5	R4126 C1	R5003 D11	V2061 A7
R3261 C5	R4127 C1	R5004 D11	V2062 A7
R3271 B5-L	R4128 C1	R5007 D10	V2101 B6
R3276 B5	R4129 C1	R5008 D10	V2102 C6
R3301 B8	R4130 A1	R5101 D10	V2103 C6
R3302 B8	R4131 B1	R5111 D10	V2105 C6
R3311 B8	R4132 B1	R5116 D10	V2111 C6
R3312 B8	R4133 B1	R5121 D10	V2113 C7-L
R3313 B8	R4134 C1	R5126 D10	V2131 B6
R3314 B8	R4135 A1	R5131 A11	V2132 B6
R3316 B8	R4136 C1	R5132 A11	V2133 C6
R3411 C5	R4137 B1	R5133 A11	V2134 C7-L
R3412 C5	R4138 B1	R5134 A11	V2201 B7
R3416 C4	R4139 A1	R5136 B11	V2202 C7
R3418 C6	R4141 A1	R5137 B11	V2203 C7
R3419 D4	R4142 C1	R5138 B11	V2205 C7
R3421 C4	R4143 C1	R5139 B11	V2211 C7
R3422 C6	R4144 B1	R5151 A11	V2213 C7-L
R3423 B6	R4146 B1	R5201 A6	V2231 B7
R4001 D2	R4147 A1	R5202 A6	V2232 B7
R4002 D2-L	R4148 A1	R5206 A6	V2233 C7
R4003 D2-L	R4149 B1	R5211 A6	V2234 C7-L
R4004 D2-L	R4150 B1	R5216 A6	V2301 D7
R4006 C2-L	R4151 B2	R5231 D7	V2413 C7
R4007 D2-L	R4152 C2	R5236 D7	V2416 D7
R4008 D2	R4153 C2	R5251 A8	V2421 B6
R4009 C2	R4154 C2	R5301 A5	V3001 A4
R4031 D2	R4155 B2	R5306 A5	V3002 A4
R4032 D3	R4156 B2	R5311 A6	V3061 A5
R4033 D3	R4157 B2	R5316 A5	V3062 A5
R4034 D3	R4158 B2	R5321 B8	V3101 B4
R4036 D3	R4159 B2	R5326 B8	V3102 C4
R4037 D2	R4160 B1	R5331 D5	V3103 C4
R4038 D3	R4161 B1	R5336 D5	V3105 C4
R4039 D2	R4162 B1	R5351 A6	V3111 C4

V3113 C5-L	V3237 D5	V4029 C3	V4104 C1
V3131 C4	V3301 B8	V4031 D3	V4106 B1
V3132 B4	V3311 B8	V4032 D3	V4107 B1
V3133 C4	V3312 B8	V4033 D3	V4108 C1
V3134 C5-L	V3413 C5	V4034 C2	V4109 C1
V3136 C5	V3416 D5	V4036 D2	V4111 B1
V3137 D5	V3421 B6	V4037 D3	V4112 B1
V3201 B5	V4001 D2	V4038 C3	V4113 D1
V3202 C6	V4002 C2	V4039 C3	V4114 B2
V3203 C6	V4003 C2	V4040 D3	V5001 D6
V3205 C6	V4004 C2	V4041 C3	V5002 D5
V3211 C6	V4021 D2	V4042 C3	X2101 B11-L
V3213 C5-L	V4022 D2	V4043 B3	X2301 D9-L
V3231 B6	V4023 D2	V4044 B3	X2401 D2-L
V3232 B5	V4024 D2	V4084 C3	X2402 B3-L
V3233 C5	V4026 B2	V4101 C1	X2403 B2-L
V3234 C5-L	V4027 B3	V4102 C1	X2501 A8-L
V3236 C5	V4028 B3	V4103 C1	

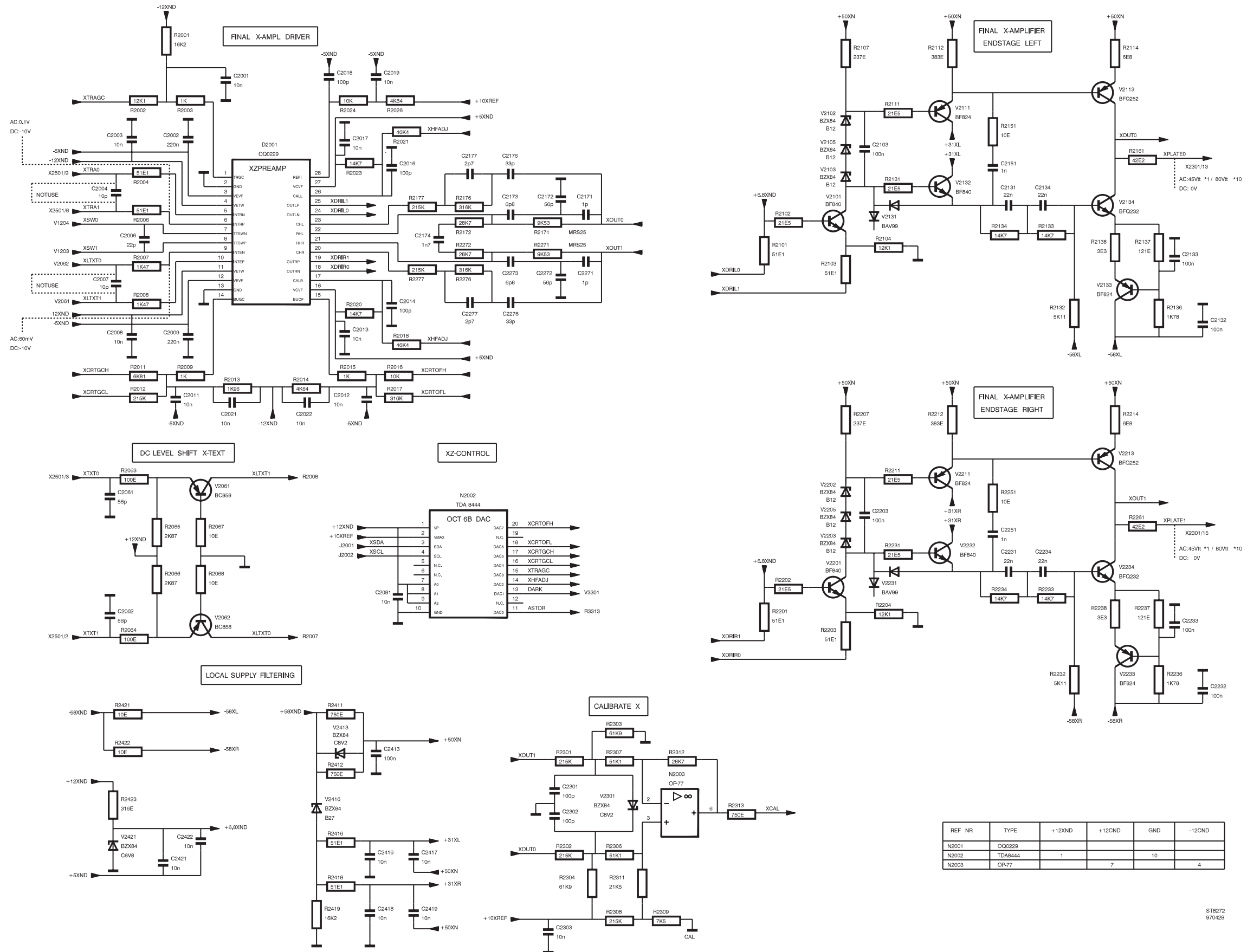
5.2.11 Circuit diagrams A2-100 MHz version



A2 (100 MHz) - Diagram 1a ; Final Y preamplifier and control



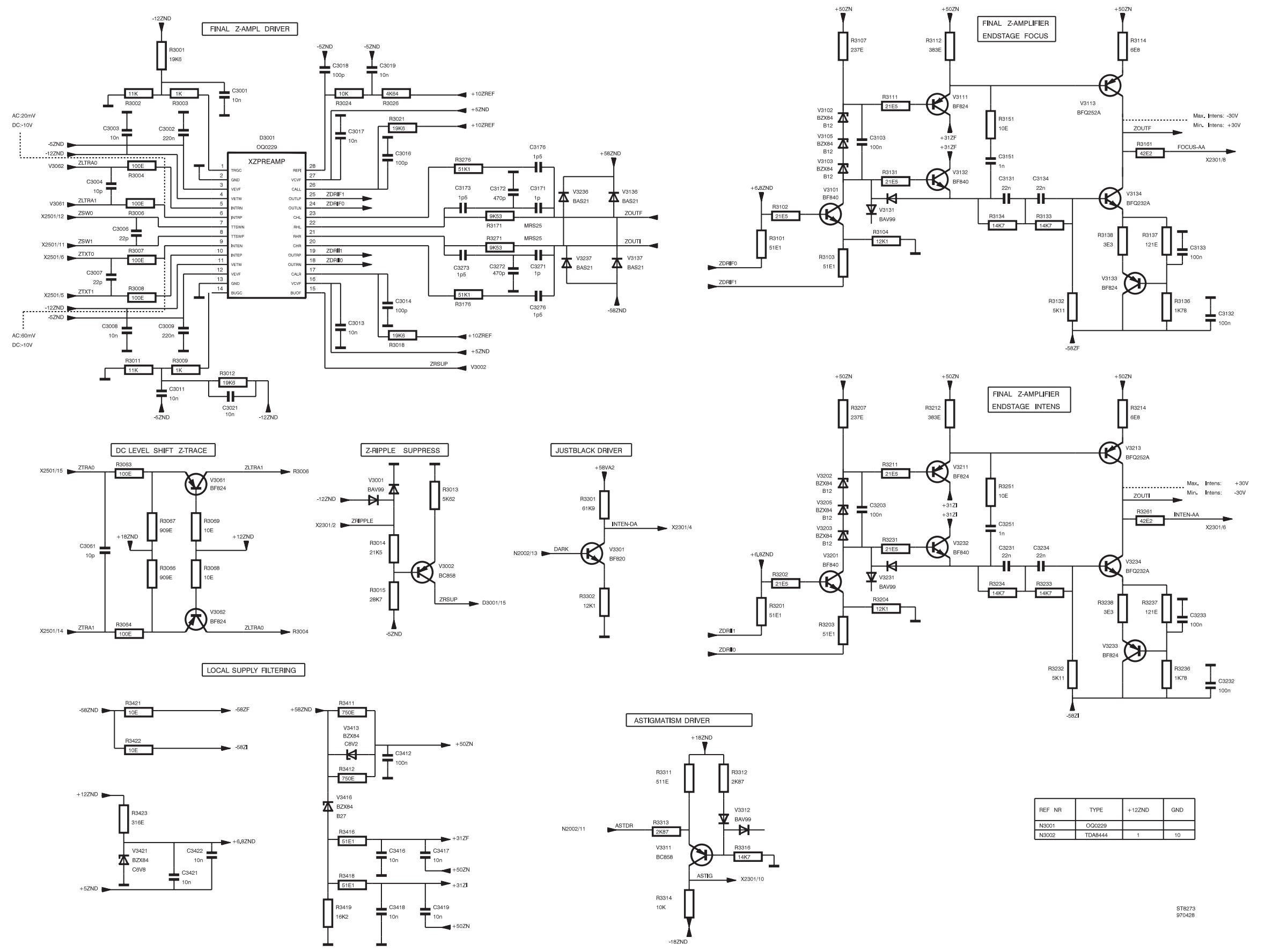
A2 (100 MHz) - Diagram 2a ; Final Y output stage



REF NR	TYPE	+12XND	+12CND	GND	-12CND
N2001	OQ0229				
N2002	TDA8444	1	7	10	
N2003	OP-77				4

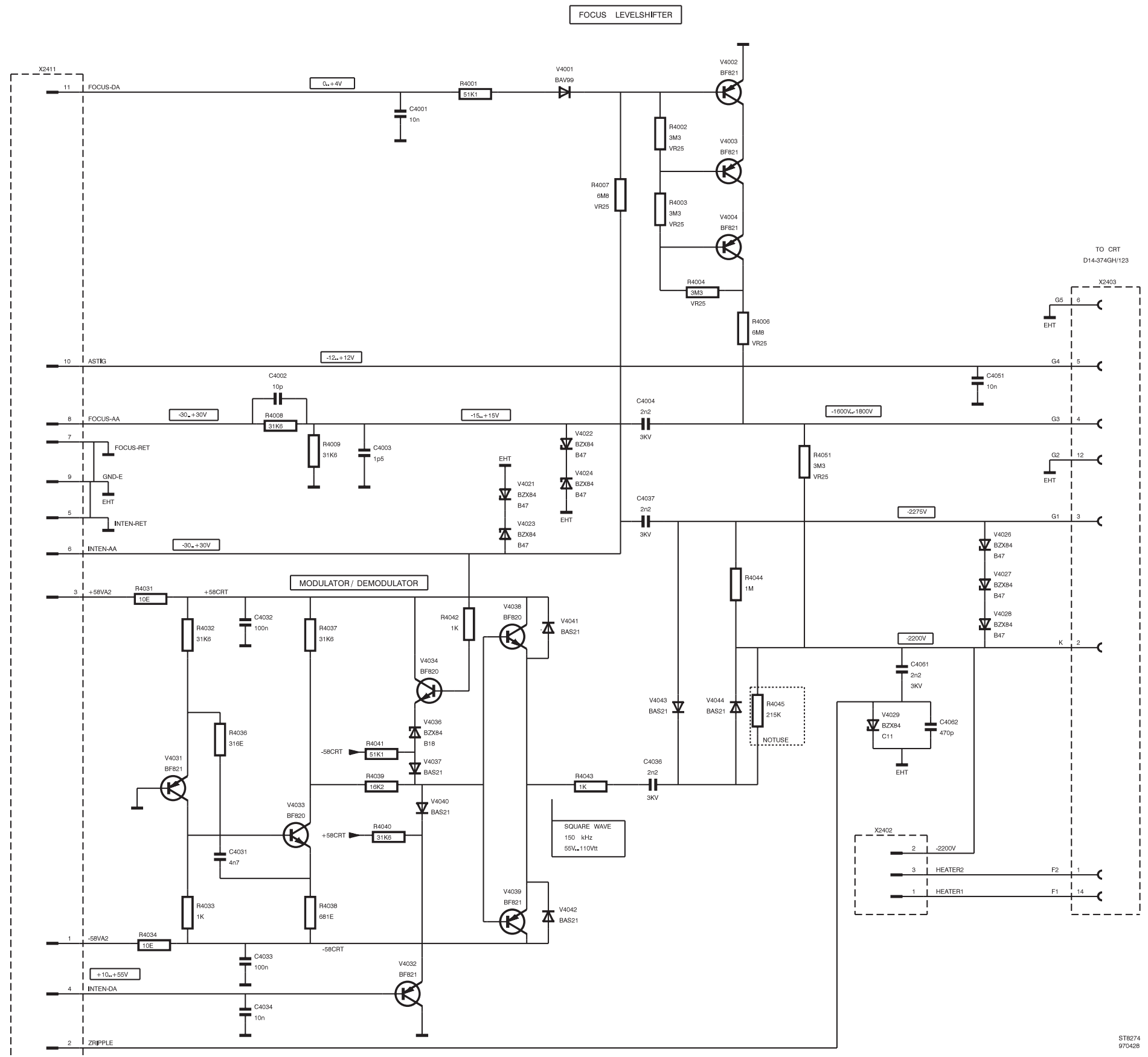
STR272
970428

A2 (100 MHz) - Diagram 3a ; Final X amplifier and control



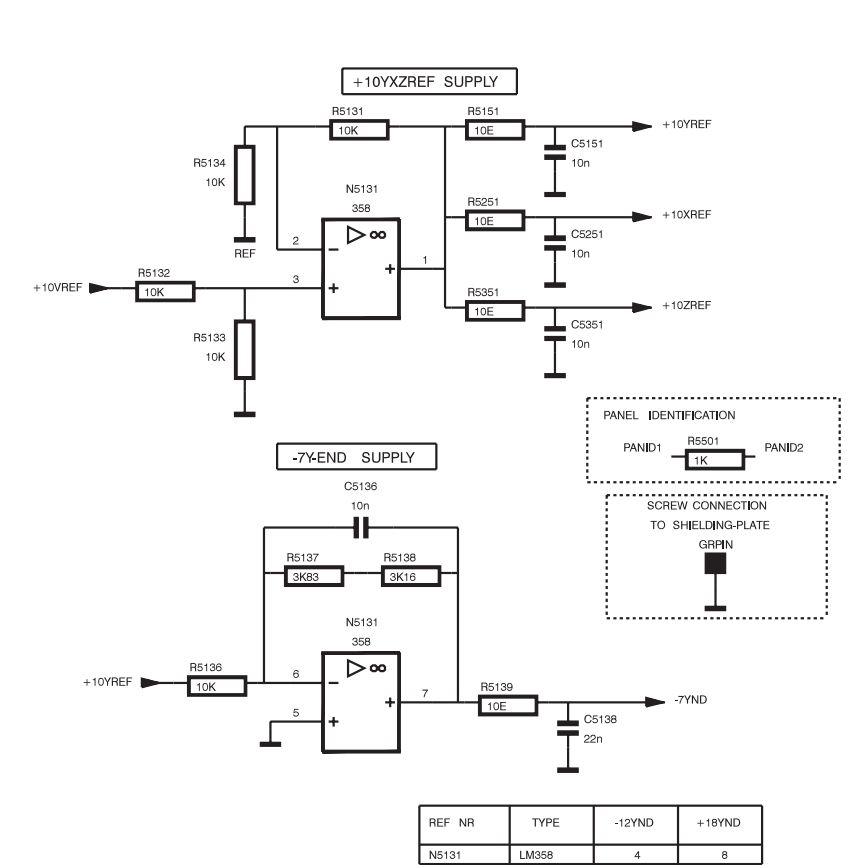
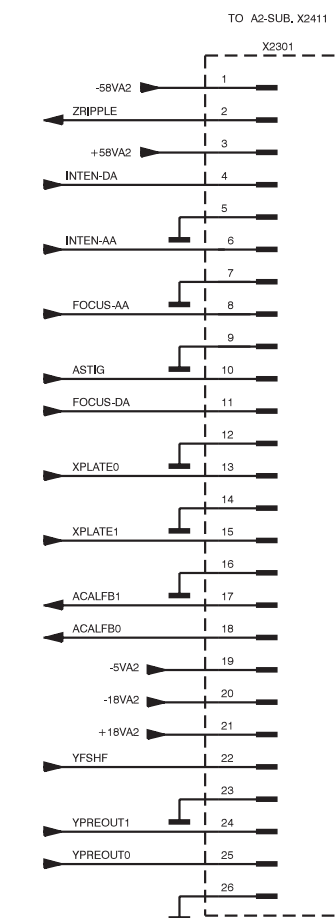
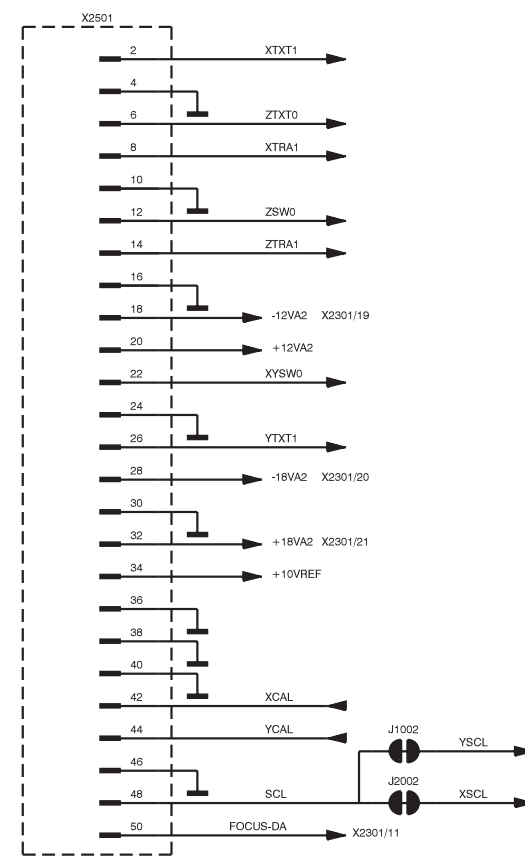
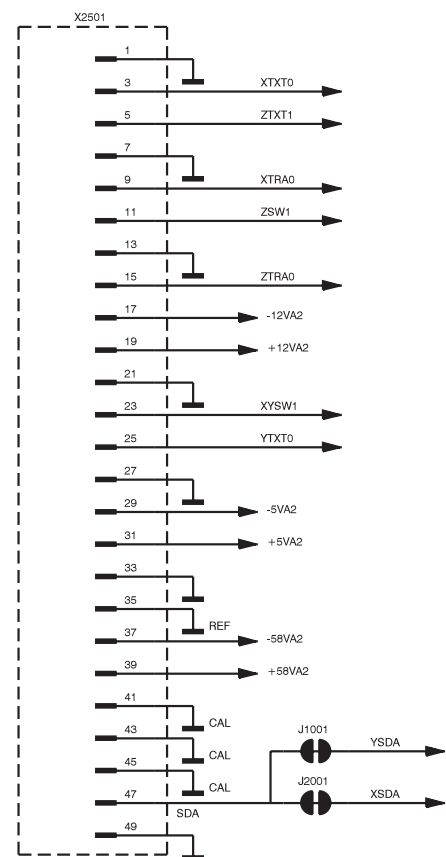
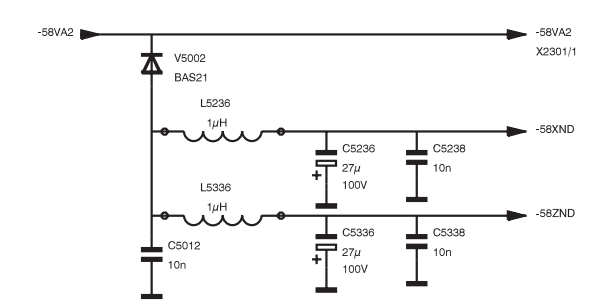
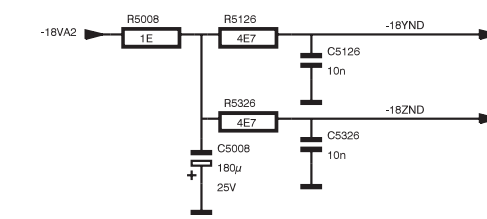
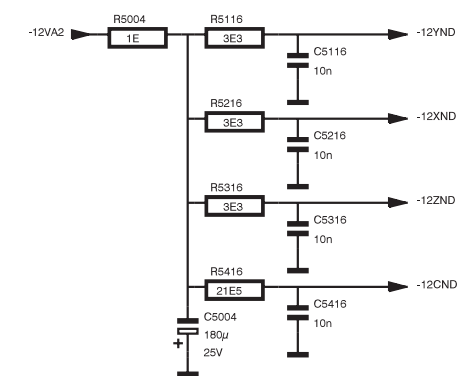
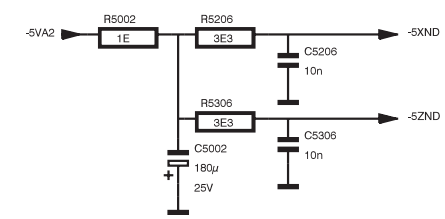
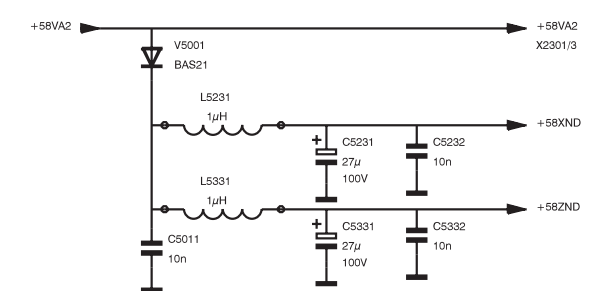
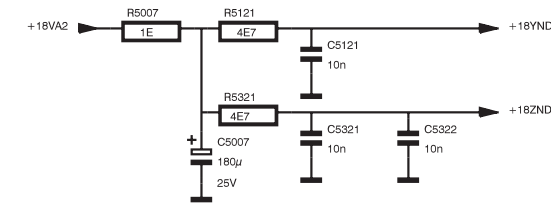
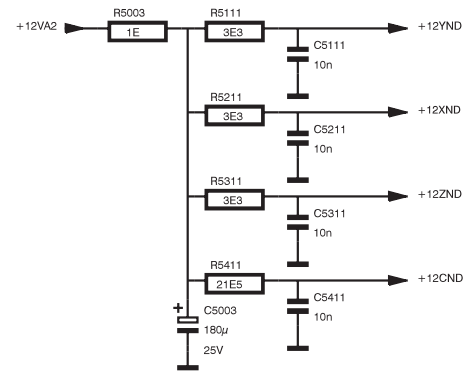
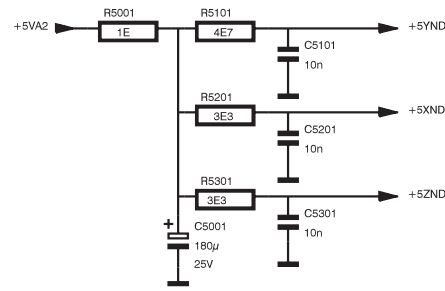
REF NR	TYPE	+12ZND	GND
N3001	OQ0229		
N3002	TDA8444	1	10

A2 (100 MHz) - Diagram 4a ; Final Z amplifier



ST8274
970428

A2 (100 MHz) - Diagram 5a ; Modulator/demodulator and focus control



A2 (100 MHz) - Diagram 6a ; Supply circuits

Item	Description	Ordering code
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5.2.12 Parts list A2-100 MHz version

CAPACITORS

C 1001	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 1002	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 1003	CAP.CHIP	63V 0.25PF 2.2PF	5322 122 33063
C 1005	CAP.CHIP	63V 5% 22PF	5322 122 32658
C 1006	CAP.CHIP	63V 5% 10PF	5322 122 32448
C 1007	CAP.CERAMIC	63V 5% 10PF	5322 122 32448
C 1009	CAP.CERAMIC	63V 5% 33PF	5322 122 32659
C 1011	CAP.CHIP	63V 5% 47PF	5322 122 32452
C 1012	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 1013	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 1014	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 1018	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 1019	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 1023	CAP.CHIP	63V 5% 56PF	5322 122 32661
C 1024	CAP.CHIP	63V 5% 56PF	5322 122 32661
C 1025	CAP.CHIP	63V 5% 56PF	5322 122 32661
C 1026	CAP.CHIP	63V 5% 100PF	5322 122 32531
C 1027	CAP.CHIP	63V 5% 100PF	5322 122 32531
C 1029	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 1031	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 1301	CAP.CHIP	63V 5% 150PF	5322 122 33538
C 1302	CAP.CHIP	63V 5% 150PF	5322 122 33538
C 1303	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2001	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2002	CAP.CHIP	63V 10% 220NF	4822 122 32916
C 2003	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2006	CAP.CHIP	63V 5% 22PF	5322 122 32658
C 2008	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2009	CAP.CHIP	63V 10% 220NF	4822 122 32916
C 2011	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2012	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2013	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2014	CAP.CHIP	63V 5% 100PF	5322 122 32531
C 2016	CAP.CHIP	63V 5% 100PF	5322 122 32531
C 2017	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2018	CAP.CHIP	63V 5% 100PF	5322 122 32531
C 2019	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2021	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2022	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2061	CAP.CHIP	63V 5% 56PF	5322 122 32661
C 2062	CAP.CHIP	63V 5% 56PF	5322 122 32661
C 2081	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2103	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 2131	CAP.CHIP	63V 10% 22NF	5322 122 32654
C 2132	CAP.CHIP	63V 10% 100NF	4822 122 33496

Item	Description		Ordering code
C 2133	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 2134	CAP.CHIP	63V 10% 22NF	5322 122 32654
C 2151	CAP.CHIP	63V 5% 1NF	5322 126 10511
C 2171	CAP.CHIP	63V 0.25PF 1PF	5322 122 32447
C 2172	CAP.CHIP	63V 5% 56PF	5322 122 32661
C 2173	CAP.CHIP	63V 5% 6.8PF	5322 122 32269
C 2174	CAP.CHIP	63V 5% 1NF	5322 126 10511
C 2176	CAP.CHIP	63V 5% 33PF	5322 122 32659
C 2177	CAP.CHIP	63V 0.5PF 2.7PF	5322 122 31873
C 2203	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 2231	CAP.CHIP	63V 10% 22NF	5322 122 32654
C 2232	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 2233	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 2231	CAP.CHIP	63V 10% 22NF	5322 122 32654
C 2251	CAP.CHIP	63V 5% 1NF	5322 126 10511
C 2271	CAP.CHIP	63V 0.25PF 1PF	5322 122 32447
C 2272	CAP.CHIP	63V 5% 56PF	5322 122 32661
C 2273	CAP.CHIP	63V 5% 6.8PF	5322 122 32269
C 2276	CAP.CHIP	63V 5% 33PF	5322 122 32659
C 2277	CAP.CHIP	63V 0.5PF 2.7PF	5322 122 31873
C 2301	CAP.CHIP	63V 5% 100PF	5322 122 32531
C 2302	CAP.CHIP	63V 5% 100PF	5322 122 32531
C 2303	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2413	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 2416	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2417	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2418	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2419	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2421	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 2422	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 3001	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 3002	CAP.CHIP	63V 10% 220NF	4822 122 32916
C 3003	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 3004	CAP.CHIP	63V 5% 10PF	5322 122 32448
C 3006	CAP.CHIP	63V 5% 22PF	5322 122 32658
C 3007	CAP.CHIP	63V 5% 22PF	5322 122 32658
C 3008	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 3009	CAP.CHIP	63V 10% 220NF	4822 122 32916
C 3011	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 3013	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 3014	CAP.CHIP	63V 5% 100PF	5322 122 32531
C 3016	CAP.CHIP	63V 5% 100PF	5322 122 32531
C 3017	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 3018	CAP.CHIP	63V 5% 100PF	5322 122 32531
C 3019	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 3021	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 3061	CAP.CHIP	63V 5% 10PF	5322 122 32448

Item	Description		Ordering code
C 3103	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 3131	CAP.CHIP	63V 10% 22NF	5322 122 32654
C 3132	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 3133	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 3134	CAP.CHIP	63V 10% 22NF	5322 122 32654
C 3151	CAP.CHIP	63V 5% 1NF	5322 126 10511
C 3171	CAP.CHIP	63V 0.25PF 1PF	5322 122 32447
C 3172	CAP.CHIP	63V 5% 470PF	5322 122 32268
C 3173	CAP.CHIP	63V 0.25PF 1.5PF	5322 126 10225
C 3176	CAP.CHIP	63V 0.25PF 1.5PF	5322 126 10225
C 3203	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 3231	CAP.CHIP	63V 10% 22NF	5322 122 32654
C 3232	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 3233	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 3234	CAP.CHIP	63V 10% 22NF	5322 122 32654
C 3251	CAP.CHIP	63V 5% 1NF	5322 126 10511
C 3271	CAP.CHIP	63V 0.25PF 1PF	5322 122 32447
C 3272	CAP.CHIP	63V 5% 470PF	5322 122 32268
C 3273	CAP.CHIP	63V 0.25PF 1.5PF	5322 126 10225
C 3276	CAP.CHIP	63V 0.25PF 1.5PF	5322 126 10225
C 3412	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 3416	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 3417	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 3418	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 3419	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 3421	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 3422	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 4001	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 4002	CAP.CHIP	63V 5% 150PF	5322 122 33538
C 4003	CAP.CHIP	63V 0.25PF 1.5PF	5322 126 10225
C 4004	CAP.	-10+10% 2.2NF	5322 122 33851
C 4031	CAP.CHIP	63V 10% 4.7NF	5322 126 10223
C 4032	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 4033	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 4034	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 4036	CAP.	-10+10% 2.2NF	5322 122 33851
C 4037	CAP.	-10+10% 2.2NF	5322 122 33851
C 4051	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 4061	CAP.	-10+10% 2.2NF	5322 122 33851
C 4062	CAP.CHIP	63V 5% 470PF	5322 122 32268
C 4110	CAP.CHIP	63V 5% 22PF	5322 122 32658
C 4111	CAP.CHIP	63V 0.25PF 2.7PF	5322 122 31873
C 4112	CAP.CHIP	63V 0.25PF 2.7PF	5322 122 31873
C 4113	CAP.CHIP	63V 0.25PF 2.7PF	5322 122 31873
C 4114	CAP.CHIP	63V 0.25PF 2.7PF	5322 122 31873
C 4116	CAP.CHIP	63V 5% 1NF	5322 126 10511
C 4117	CAP.CHIP	63V 5% 1NF	5322 126 10511

Item	Description		Ordering code
C 4118	CAP.CHIP	63V 5% 1NF	5322 126 10511
C 4119	CAP.CHIP	63V 5% 1NF	5322 126 10511
C 4121	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 4122	CAP.CHIP	63V 5% 1NF	5322 126 10511
C 4123	CAP.CHIP	63V 5% 1NF	5322 126 10511
C 4124	CAP.CHIP	63V 5% 1NF	5322 126 10511
C 4126	CAP.CHIP	63V 5% 68PF	4822 122 33514
C 4163	CAP.CHIP	63V 5% 56PF	5322 122 32661
C 4201	CAP.ELECTROLYT.	25V 20% 180UF	5322 124 42228
C 4202	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 4203	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 4204	CAP.ELECTROLYT.	25V 20% 180UF	5322 124 42228
C 4205	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 4206	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 4207	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 4208	CAP.ELECTROLYT.	25V 20% 180UF	5322 124 42228
C 4209	CAP.CHIP	63V 10% 100NF	4822 122 33496
C 5001	CAP.ELECTROLYT.	25V 20% 180UF	5322 124 42228
C 5002	CAP.ELECTROLYT.	25V 20% 180UF	5322 124 42228
C 5003	CAP.ELECTROLYT.	25V 20% 180UF	5322 124 42228
C 5004	CAP.ELECTROLYT.	25V 20% 180UF	5322 124 42228
C 5007	CAP.ELECTROLYT.	25V 20% 180UF	5322 124 42228
C 5008	CAP.ELECTROLYT.	25V 20% 180UF	5322 124 42228
C 5011	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5012	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5101	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5111	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5116	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5121	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5126	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5136	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5138	CAP.CHIP	63V 10% 22NF	5322 122 32654
C 5151	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5201	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5206	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5211	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5216	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5231	CAP.ELECTROLYT.	100V 20% 27UF	5322 124 42193
C 5232	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5236	CAP.ELECTROLYT.	100V 20% 27UF	5322 124 42193
C 5238	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5251	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5301	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5306	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5311	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5316	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5321	CAP.CHIP	63V 10% 10NF	5322 122 34098

Item	Description		Ordering code
C 5322	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5326	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5331	CAP.ELECTROLYT.	100V 20% 27UF	5322 124 42193
C 5332	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5336	CAP.ELECTROLYT.	100V 20% 27UF	5322 124 42193
C 5338	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5351	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5411	CAP.CHIP	63V 10% 10NF	5322 122 34098
C 5416	CAP.CHIP	63V 10% 10NF	5322 122 34098

COILS

L 4101	COIL	0.082UH 5% TDK	5322 157 63382
L 4102	COIL	0.082UH 5% TDK	5322 157 63382
L 41032	COIL	1UH 5% TDK	5322 157 63648

INTEGRATED CIRCUITS

D 1001	INTEGR.CIRCUIT	OQ0230 FINAL Y	5322 209 12467
D 2001	INTEGR.CIRCUIT	OQ0229 FINAL X-Z	5322 209 12459
D 3001	INTEGR.CIRCUIT	OQ0229 FINAL X-Z	5322 209 12459
N 1001	INTEGR.CIRCUIT	TDA8444AT/N4 PEL	5322 209 30233
N 1002	INTEGR.CIRCUIT	LM358M NSC	4822 209 60175
N 1003	INTEGR.CIRCUIT	LM324D NSC	5322 209 83125
N 1004	I.C. ANALOGUE	OP-77GSR PMI	5322 130 62791
N 2002	INTEGR.CIRCUIT	TDA8444AT/N4 PEL	5322 209 30233
N 2003	I.C. ANALOGUE	OP-77GSR PMI	5322 130 62791
N 5131	INTEGR.CIRCUIT	LM358M NSC	4822 209 60175

RESISTORS

R 1001	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 1002	RES.CHIP	RC-02H 1% 100K	4822 051 51004
R 1003	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 1004	RES.CHIP	RC-02H 1% 100K	4822 051 51004
R 1005	RES.CHIP	RC-02H 1% 196E	4822 051 51961
R 1006	RES.CHIP	RC-02H 1% 1K96	4822 051 51962
R 1007	RES.CHIP	RC-02H 1% 100K	4822 051 51004
R 1008	RES.CHIP	RC-02H 1% 100K	4822 051 51004
R 1009	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 1010	RES.CHIP	RC-02H 1% 3K83	4822 051 53832
R 1011	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 1012	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 1013	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 1014	RES.CHIP	RC-02H 1% 196E	5322 117 10538
R 1015	RES.CHIP	RC-02H 1% 10K	4822 051 10103
R 1016	RES.CHIP	RMC1/8 1% 42E2	5322 117 11753
R 1017	RES.CHIP	RC-02H 1% 100E	4822 051 10101
R 1018	RES.MET.GLAZED	RMC1/8 1% 46E4	5322 116 82896
R 1019	RES.MET.GLAZED	RMC1/8 1% 46E4	5322 116 82896
R 1020	RES.CHIP	RC-02H 1% 10K	4822 051 10103

Item	Description		Ordering code
R 1021	RES.CHIP	RC-02H 1% 100E	4822 051 10101
R 1022	RES.CHIP	RMC1/8 1% 42E2	5322 117 11753
R 1023	RES.CHIP	RC-02H 1% 196E	5322 117 10538
R 1024	RES.CHIP	RC-02H 1% 100E	4822 051 51001
R 1027	RES.CHIP	RC-02H 1% 100E	4822 051 51001
R 1029	RES.CHIP	RC-02H 1% 237E	5322 117 10544
R 1031	RES.CHIP	RC-02H 1% 237E	5322 117 10544
R 1032	RES.CHIP	RC-02H 1% 2K37	4822 051 52372
R 1034	RES.CHIP	RC-02H 1% 13K3	4822 051 51333
R 1036	RES.CHIP	RC-02H 1% 14K7	5322 117 10528
R 1037	RES.CHIP	RC-02H 1% 750E	5322 117 10582
R 1038	RES.CHIP	RC-02H 1% 750E	5322 117 10582
R 1039	RES.CHIP	RC-02H 1% 147E	4822 051 51471
R 1041	RES.CHIP	RC-02H 1% 19K6	4822 051 51963
R 1042	RES.CHIP	RC-02H 1% 19K6	4822 051 51963
R 1043	RES.CHIP	RC-02H 1% 5K11	4822 051 55112
R 1044	RES.CHIP	RC-02H 1% 162K	4822 051 51624
R 1046	RES.CHIP	RC-02H 1% 21K5	4822 051 52153
R 1047	RES.CHIP	RC-02H 1% 21K5	4822 051 52153
R 1048	RES.CHIP	RC-02H 1% 10K	4822 051 51003
R 1049	RES.CHIP	RC-02H 1% 10K	4822 051 51003
R 1051	RES.CHIP	RC-02H 1% 23K7	4822 051 52373
R 1053	RES.CHIP	RC-02H 1% 3K83	4822 051 53832
R 1059	RES.CHIP	RMC1/8 1% 21E5	5322 117 11734
R 1061	RES.CHIP	RMC1/8 1% 21E5	5322 117 11734
R 1063	RES.CHIP	RC-02H 1% 3K83	4822 051 53832
R 1064	RES.CHIP	RC-02H 1% 100E	4822 051 51001
R 1066	RES.CHIP	RC-02H 1% 1K	4822 051 51002
R 1071	RES.CHIP	RC-02H 1% 3K83	4822 051 53832
R 1072	RES.CHIP	RMC1/8 1% 75E	4822 111 91937
R 1073	RES.CHIP	RMC1/8 1% 75E	4822 111 91937
R 1074	RES.CHIP	RC-02H 1% 422E	5322 117 10564
R 1076	RES.CHIP	RC-02H 1% 3K83	4822 051 53832
R 1077	RES.CHIP	RC-02H 1% 3K83	5322 117 10561
R 1078	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R 1079	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R 1081	RES.CHIP	RC-02H 1% 464E	4822 051 54641
R 1082	RES.CHIP	RC-02H 1% 10K	4822 051 51003
R 1083	RES.CHIP	RC-02H 1% 10K	4822 051 51003
R 1084	RES.CHIP	RC-02H 1% 100E	4822 051 51001
R 1086	RES.CHIP	RC-02H 1% 100E	4822 051 51001
R 1087	RES.CHIP	RC-02H 1% 51E1	5322 117 11737
R 1088	RES.CHIP	RC-02H 1% 51E1	5322 117 11737
R 1089	RES.CHIP	RC-02H 1% 1K21	4822 051 51212
R 1091	RES.CHIP	RC-02H 1% 7K5	4822 051 57502
R 1201	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R 1202	RES.CHIP	RC-02H 1% 100K	4822 051 51004

Item	Description		Ordering code
R 1203	RES.CHIP	RC-02H 1% 100K	4822 051 51004
R 1204	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R 1206	RES.CHIP	RC-02H 1% 2K37	4822 051 52372
R 1207	RES.CHIP	RC-02H 1% 2K37	4822 051 52372
R 1208	RES.CHIP	RC-02H 1% 3K16	4822 051 53162
R 1209	RES.CHIP	RC-02H 1% 1K78	4822 051 51782
R 1303	RES.CHIP	RC-02H 1% 162K	4822 051 51624
R 1304	RES.CHIP	RC-02H 1% 162K	4822 051 51624
R 1306	RES.CHIP	RC-02H 1% 51K1	4822 051 55113
R 1307	RES.CHIP	RC-02H 1% 51K1	4822 051 55113
R 1308	RES.CHIP	RC-02H 1% 28K7	4822 051 52873
R 1309	RES.CHIP	RC-02H 1% 750E	4822 051 57501
R 1311	RES.CHIP	RC-02H 1% 21K5	4822 051 52153
R 1312	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 1313	RES.CHIP	RC-02H 1% 7K5	4822 051 57502
R 2001	RES.CHIP	RC-02H 1% 16K5	5322 117 10532
R 2002	RES.CHIP	RC-02H 1% 12K1	4822 051 51213
R 2003	RES.CHIP	RC-02H 1% 1K	4822 051 51002
R 2004	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R 2006	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R 2007	RES.CHIP	RC-02H 1% 1K47	4822 051 51472
R 2008	RES.CHIP	RC-02H 1% 1K47	4822 051 51472
R 2009	RES.CHIP	RC-02H 1% 1K	4822 051 51002
R 2011	RES.CHIP	RC-02H 1% 6K81	4822 051 56812
R 2012	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 2013	RES.CHIP	RC-02H 1% 1K96	4822 051 51962
R 2014	RES.CHIP	RC-02H 1% 4K64	4822 051 54642
R 2015	RES.CHIP	RC-02H 1% 1K	4822 051 51002
R 2016	RES.CHIP	RC-02H 1% 10K	4822 051 51003
R 2017	RES.CHIP	RC-02H 1% 316K	4822 051 53164
R 2018	RES.CHIP	RC-02H 1% 46K4	4822 051 54643
R 2020	RES.CHIP	RC-02H 1% 14K7	4822 051 51473
R 2021	RES.CHIP	RC-02H 1% 46K4	4822 051 54643
R 2023	RES.CHIP	RC-02H 1% 14K7	4822 051 51473
R 2024	RES.CHIP	RC-02H 1% 14K7	4822 051 51473
R 2026	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 2063	RES.CHIP	RC-02H 1% 100E	4822 051 51001
R 2064	RES.CHIP	RC-02H 1% 100E	4822 051 51001
R 2065	RES.CHIP	RC-02H 1% 2K87	4822 051 52872
R 2066	RES.CHIP	RC-02H 1% 2K87	4822 051 52872
R 2067	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 2068	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 2101	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R 2102	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R 2103	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R 2104	RES.CHIP	RC-02H 1% 12K1	5322 117 10522
R 2107	RES.CHIP	RC-02H 1% 237E	4822 051 52371

Item	Description		Ordering code
R 2111	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R 2112	RES.CHIP	RC-02H 1% 383E	4822 051 53831
R 2114	RES.CHIP	RC-01 1% 6E8	4822 051 10688
R 2131	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R 2132	RES.CHIP	RC-02H 1% 5K11	4822 051 55112
R 2133	RES.CHIP	RC-02H 1% 14K7	4822 051 51473
R 2134	RES.CHIP	RC-02H 1% 14K7	4822 051 51473
R 2136	RES.CHIP	RC-02H 1% 1K78	5322 117 10535
R 2137	RES.CHIP	RC-02H 1% 121E	4822 051 51211
R 2138	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 2151	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 2161	RES.CHIP	RMC1/8 1% 42E2	4822 111 91887
R 2171	RES.METAL FILM	MRS25 1% 9K53	4822 050 29532
R 2172	RES.CHIP	RC-02H 1% 28K7	4822 051 52873
R 2176	RES.CHIP	RC-02H 1% 316K	4822 051 53164
R 2177	RES.CHIP	RC-02H 1% 261K	4822 051 52614
R 2201	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R 2202	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R 2203	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R 2204	RES.CHIP	RC-02H 1% 12K1	5322 117 10522
R 2207	RES.CHIP	RC-02H 1% 237E	4822 051 52371
R 2211	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R 2212	RES.CHIP	RC-02H 1% 383E	4822 051 53831
R 2214	RES.CHIP	RMC1/8 1% 6E8	4822 051 10688
R 2231	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R 2232	RES.CHIP	RC-02H 1% 5K11	4822 051 55112
R 2233	RES.CHIP	RC-02H 1% 14K7	4822 051 51473
R 2234	RES.CHIP	RC-02H 1% 14K7	4822 051 51473
R 2236	RES.CHIP	RC-02H 1% 1K78	5322 117 10535
R 2237	RES.CHIP	RC-02H 1% 121E	4822 051 51211
R 2238	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 2251	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 2261	RES.CHIP	RMC1/8 1% 42E2	4822 111 91887
R 2271	RES.METAL FILM	MRS25 1% 9K53	4822 050 29532
R 2272	RES.CHIP	RC-02H 1% 28K7	4822 051 52873
R 2276	RES.CHIP	RC-02H 1% 316K	4822 051 53164
R 2277	RES.CHIP	RC-02H 1% 261K	4822 051 52614
R 2301	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 2302	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 2303	RES.CHIP	RC-02H 1% 61K9	4822 051 56193
R 2304	RES.CHIP	RC-02H 1% 61K9	4822 051 56193
R 2306	RES.CHIP	RC-02H 1% 51K1	4822 051 55113
R 2307	RES.CHIP	RC-02H 1% 51K1	4822 051 55113
R 2308	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 2309	RES.CHIP	RC-02H 1% 7K5	4822 051 57502
R 2311	RES.CHIP	RC-02H 1% 21K5	4822 051 52153
R 2312	RES.CHIP	RC-02H 1% 28K7	4822 051 52873

Item	Description	Ordering code
R 2313	RES.CHIP	RC-02H 1% 750E
R 2411	RES.CHIP	RC-02H 1% 750E
R 2412	RES.CHIP	RC-02H 1% 750E
R 2416	RES.CHIP	RMC1/8 1% 42E2
R 2418	RES.CHIP	RMC1/8 1% 42E2
R 2419	RES.CHIP	RC-02H 1% 16K2
R 2421	RES.CHIP	RMC1/8 1% 10E
R 2422	RES.CHIP	RMC1/8 1% 10E
R 2423	RES.CHIP	RC-02H 1% 316E
R 3001	RES.CHIP	RC-02H 1% 19K6
R 3002	RES.CHIP	RC-02H 1% 11K
R 3003	RES.CHIP	RC-02H 1% 1K
R 3004	RES.CHIP	RC-02H 1% 100E
R 3006	RES.CHIP	RC-02H 1% 100E
R 3007	RES.CHIP	RC-02H 1% 100E
R 3008	RES.CHIP	RC-02H 1% 100E
R 3009	RES.CHIP	RC-02H 1% 1K
R 3011	RES.CHIP	RC-02H 1% 11K
R 3012	RES.CHIP	RC-02H 1% 19K6
R 3013	RES.CHIP	RC-02H 1% 5K62
R 3014	RES.CHIP	RC-02H 1% 21K5
R 3015	RES.CHIP	RC-02H 1% 28K7
R 3018	RES.CHIP	RC-02H 1% 19K6
R 3021	RES.CHIP	RC-02H 1% 19K6
R 3024	RES.CHIP	RC-02H 1% 14K7
R 3026	RES.CHIP	RMC1/8 1% 10E
R 3063	RES.CHIP	RC-02H 1% 100E
R 3064	RES.CHIP	RC-02H 1% 100E
R 3066	RES.CHIP	RC-02H 1% 909E
R 3067	RES.CHIP	RC-02H 1% 909E
R 3068	RES.CHIP	RMC1/8 1% 10E
R 3069	RES.CHIP	RMC1/8 1% 10E
R 3101	RES.CHIP	RMC1/8 1% 51E1
R 3102	RES.CHIP	RMC1/8 1% 21E5
R 3103	RES.CHIP	RMC1/8 1% 51E1
R 3104	RES.CHIP	RC-02H 1% 12K1
R 3107	RES.CHIP	RC-02H 1% 237E
R 3111	RES.CHIP	RMC1/8 1% 21E5
R 3112	RES.CHIP	RC-02H 1% 383E
R 3114	RES.CHIP	RC-01 5% 6E8
R 3131	RES.CHIP	RMC1/8 1% 21E5
R 3132	RES.CHIP	RC-02H 1% 5K11
R 3133	RES.CHIP	RC-02H 1% 14K7
R 3134	RES.CHIP	RC-02H 1% 14K7
R 3136	RES.CHIP	RC-02H 1% 1K78
R 3137	RES.CHIP	RC-02H 1% 121E
R 3138	RES.CHIP	RC-01 5% 3E3

Item	Description		Ordering code
R 3151	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 3161	RES.CHIP	RMC1/8 1% 42K2	4822 111 91887
R 3171	RES.METAL FILM	MRS25 1% 9K53	4822 050 29532
R 3176	RES.CHIP	RC-02H 1% 51K1	4822 051 55113
R 3201	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R 3202	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R 3203	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R 3204	RES.CHIP	RC-02H 1% 12K1	4822 051 51213
R 3207	RES.CHIP	RC-02H 1% 237E	4822 051 52371
R 3211	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R 3212	RES.CHIP	RC-02H 1% 383E	4822 051 53831
R 3214	RES.CHIP	RC-01 5% 6E8	4822 051 10688
R 3231	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R 3232	RES.CHIP	RC-02H 1% 5K11	4822 051 55112
R 3233	RES.CHIP	RC-02H 1% 14K7	4822 051 51473
R 3234	RES.CHIP	RC-02H 1% 14K7	4822 051 51473
R 3236	RES.CHIP	RC-02H 1% 1K78	4822 051 51782
R 3237	RES.CHIP	RC-02H 1% 121E	4822 051 51211
R 3238	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 3251	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 3261	RES.CHIP	RMC1/8 1% 42E2	4822 111 91887
R 3271	RES.METAL FILM	MRS25 1% 9K53	4822 050 29532
R 3276	RES.CHIP	RC-02H 1% 51K1	4822 051 55113
R 3301	RES.CHIP	RC-02H 1% 61K9	4822 051 56193
R 3302	RES.CHIP	RC-02H 1% 12K1	4822 051 51213
R 3311	RES.CHIP	RC-02H 1% 511E	4822 051 55111
R 3312	RES.CHIP	RC-02H 1% 2K87	4822 051 52872
R 3313	RES.CHIP	RC-02H 1% 2K87	4822 051 52872
R 3314	RES.CHIP	RC-02H 1% 10K	4822 051 51003
R 3316	RES.CHIP	RC-02H 1% 14K7	4822 051 51473
R 3411	RES.CHIP	RC-02H 1% 750E	4822 051 57501
R 3412	RES.CHIP	RC-02H 1% 750E	4822 051 57501
R 3416	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R 3418	RES.CHIP	RMC1/8 1% 51E1	5322 111 91893
R 3419	RES.CHIP	RC-02H 1% 16K2	4822 051 51623
R 3421	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 3422	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 3423	RES.CHIP	RC-02H 1% 316E	4822 051 53161
R 4001	RES.CHIP	RC-02H 1% 51K1	4822 051 55113
R 4002	RES.HI-TENSION	VR25 5% 3M3	4822 053 20335
R 4003	RES.HI-TENSION	VR25 5% 3M3	4822 053 20335
R 4004	RES.HI-TENSION	VR25 5% 3M3	4822 053 20335
R 4006	RES.HI-TENSION	VR25 5% 6M8	4822 053 20685
R 4007	RES.HI-TENSION	VR25 5% 6M8	4822 053 20685
R 4008	RES.CHIP	RC-02H 1% 31K6	4822 051 53163
R 4009	RES.CHIP	RC-02H 1% 31K6	4822 051 53163
R 4031	RES.CHIP	RMC1/8 1% 10E	4822 111 91885

Item	Description		Ordering code
R 4032	RES.CHIP	RC-02H 1% 31K6	4822 051 53163
R 4033	RES.CHIP	RC-02H 1% 1K	4822 051 51002
R 4034	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 4036	RES.CHIP	RC-02H 1% 316E	4822 051 53161
R 4037	RES.CHIP	RC-02H 1% 31K6	4822 051 53163
R 4038	RES.CHIP	RC-02H 1% 681E	4822 051 56811
R 4039	RES.CHIP	RC-02H 1% 16K2	4822 051 51623
R 4040	RES.CHIP	RC-02H 1% 31K6	4822 051 53163
R 4041	RES.CHIP	RC-02H 1% 51K1	4822 051 55113
R 4042	RES.CHIP	RC-02H 1% 1K	4822 051 51002
R 4043	RES.CHIP	RC-02H 1% 1K	4822 051 51002
R 4044	RES.CHIP	RC-02H 1% 1M	4822 051 51005
R 4051	RES.HI-TENSION	VR25 5% 3M3	4822 053 20335
R 4110	RES.CHIP	RC-02H 1% 21E5	5322 111 92014
R 4111	RES.CHIP	RMC1/8 1% 100E	4822 051 10101
R 4112	RES.CHIP	RMC1/8 1% 100E	4822 051 10101
R 4113	RES.CHIP	RMC1/8 1% 21E5	5322 117 11734
R 4114	RES.CHIP	RMC1/8 1% 21E5	5322 117 11734
R 4116	RES.CHIP	RC-02H 1% 316E	5322 117 10552
R 4117	RES.CHIP	RC-02H 1% 316E	5322 117 10552
R 4118	RES.CHIP	RC-02H 1% 1K1	4822 051 51102
R 4119	RES.CHIP	RC-02H 1% 1K1	4822 051 51102
R 4121	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 4122	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 4123	RES.CHIP	RC-02H 1% 422E	4822 051 54221
R 4124	RES.CHIP	RC-02H 1% 422E	4822 051 54221
R 4126	RES.CHIP	RC-02H 1% 511E	4822 051 55111
R 4127	RES.CHIP	RC-02H 1% 511E	4822 051 55111
R 4128	RES.CHIP	RC-02H 1% 1K	4822 051 51002
R 4129	RES.CHIP	RC-02H 1% 1K	4822 051 51002
R 4130	RES.CHIP	RC-02H 1% 5K62	4822 051 55622
R 4132	RES.CHIP	RC-02H 1% 5K62	4822 051 55622
R 4133	RES.CHIP	RC-02H 1% 5K62	4822 051 55622
R 4134	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 4135	RES.CHIP	RC-02H 1% 5K62	4822 051 55622
R 4136	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 4137	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 4138	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 4139	RES.CHIP	RC-02H 1% 750E	4822 051 57501
R 4141	RES.CHIP	RC-02H 1% 750E	4822 051 57501
R 4142	RES.CHIP	RC-01 5% 4E7	4822 051 10478
R 4143	RES.CHIP	RC-01 5% 4E7	4822 051 10478
R 4144	RES.CHIP	RMC1/8 1% 42E2	4822 111 91887
R 4146	RES.CHIP	RMC1/8 1% 42E2	4822 111 91887
R 4147	RES.CHIP	RMC1/8 1% 42E2	4822 111 91887
R 4148	RES.CHIP	RMC1/8 1% 42E2	4822 111 91887
R 4149	RES.CHIP	RC-01 5% 4E7	4822 051 10478

Item	Description		Ordering code
R 4150	RES.CHIP	RC-01 5% 4E7	4822 051 10478
R 4151	RES.CHIP	RC-01 5% 10E	4822 111 91885
R 4152	RES.CHIP	RMC1/8 1% 42E2	4822 111 91887
R 4153	RES.CHIP	RMC1/8 1% 42E2	4822 111 91887
R 4154	RES.CHIP	RC-02H 1% 10E	4822 111 91885
R 4155	RES.CHIP	RC-02H 1% 100E	4822 051 51001
R 4156	RES.CHIP	RC-02H 1% 100E	4822 051 51001
R 4157	RES.CHIP	RC-02H 1% 100E	4822 051 51001
R 4158	RES.CHIP	RC-02H 1% 100E	4822 051 51001
R 4159	RES.CHIP	RC-02H 1% 100E	4822 051 51001
R 4160	RES.CHIP	RC-02H 1% 100E	4822 051 51001
R 4161	RES.CHIP	RMC1/8 1% 75E	4822 111 91937
R 4162	RES.CHIP	RMC1/8 1% 75E	4822 111 91937
R 4163	RES.CHIP	RC-02H 1% 51K1	4822 051 55113
R 4164	RES.CHIP	RC-02H 1% 51K1	4822 051 55113
R 4166	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 4167	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 4168	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 4169	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 4171	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 4172	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 4173	RES.CHIP	RC-02G 1% 61K9	4822 051 56193
R 4174	RES.CHIP	RC-02G 1% 7K50	4822 051 57502
R 4176	RES.CHIP	RC-02H 1% 10E	4822 111 91885
R 4177	RES.CHIP	RC-02H 1% 10E	4822 111 91885
R 4178	RES.CHIP	RC-02H 1% 10E	4822 111 91885
R 4179	RES.CHIP	RC-02H 1% 10E	4822 111 91885
R 4181	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 4182	RES.CHIP	RC-02H 1% 215K	4822 051 52154
R 4201	RES.CHIP	RC-01 5% 4E7	4822 051 10478
R 4202	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 4203	RES.CHIP	RC-01 5% 4E7	4822 051 10478
R 4261	RES.CHIP	RMC1/8 1% 42E2	4822 111 91887
R 4262	RES.CHIP	RMC1/8 1% 42E2	4822 111 91887
R 5001	RES.CHIP	RC-01 5% 1E	4822 051 10108
R 5002	RES.CHIP	RC-01 5% 1E	4822 051 10108
R 5003	RES.CHIP	RC-01 5% 1E	4822 051 10108
R 5004	RES.CHIP	RC-01 5% 1E	4822 051 10108
R 5007	RES.CHIP	RC-01 5% 1E	4822 051 10108
R 5008	RES.CHIP	RC-01 5% 1E	4822 051 10108
R 5101	RES.CHIP	RC-01 5% 4E7	4822 051 10478
R 5111	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 5116	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 5121	RES.CHIP	RC-01 5% 4E7	4822 051 10478
R 5126	RES.CHIP	RC-01 5% 4E7	4822 051 10478
R 5131	RES.CHIP	RC-02H 1% 10K	4822 051 51003
R 5132	RES.CHIP	RC-02H 1% 10K	4822 051 51003

Item	Description		Ordering code
R 5133	RES.CHIP	RC-02H 1% 10K	4822 051 51003
R 5134	RES.CHIP	RC-02H 1% 10K	4822 051 51003
R 5136	RES.CHIP	RC-02H 1% 10K	4822 051 51003
R 5137	RES.CHIP	RC-02H 1% 3K83	4822 051 53832
R 5138	RES.CHIP	RC-02H 1% 3K16	4822 051 53162
R 5139	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 5151	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 5201	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 5206	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 5211	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 5216	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 5231	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 5236	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 5251	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 5301	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 5306	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 5311	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 5316	RES.CHIP	RC-01 5% 3E3	4822 051 10338
R 5321	RES.CHIP	RC-01 5% 4E7	4822 051 10478
R 5326	RES.CHIP	RC-01 5% 4E7	4822 051 10478
R 5331	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 5336	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 5351	RES.CHIP	RMC1/8 1% 10E	4822 111 91885
R 5411	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R 5416	RES.CHIP	RMC1/8 1% 21E5	5322 111 92014
R 5501	RES.CHIP	RC-02H 1% 1K	4822 051 51002

SEMI CONDUCTORS

V 1009	DIODE,CHIP	BBY39 PEL	5322 130 82199
V 1011	DIODE,CHIP	BBY39 PEL	5322 130 82199
V 1014	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V 1016	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V 1018	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V 1019	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V 1021	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V 1022	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V 1023	TRANSISTOR,CHIP	BC848C PEL	5322 130 42136
V 1024	TRANSISTOR,CHIP	BC848C PEL	5322 130 42136
V 1026	TRANSISTOR,CHIP	BFT92 PEL	5322 130 44711
V 1027	TRANSISTOR,CHIP	BFT92 PEL	5322 130 44711
V 1028	DIODE,CHIP	BZX84-C6V8 PEL	5322 130 80406
V 1201	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V 1202	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V 1203	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V 1204	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V 1301	DIODE,CHIP	BZX84-C8V2 PEL	5322 130 80255
V 2061	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V 2062	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513

Item	Description		Ordering code
V 2101	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V 2102	DIODE,CHIP	BZX84-B12 PEL	4822 130 83566
V 2103	DIODE,CHIP	BZX84-B12 PEL	4822 130 83566
V 2105	DIODE,CHIP	BZX84-B12 PEL	4822 130 83566
V 2111	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V 2113	TRANSISTOR	BFQ251 PEL	5322 130 63035
V 2131	DIODE,CHIP	BAV99 PEL	5322 130 34337
V 2133	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V 2132	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V 2134	TRANSISTOR	BFQ231 PEL	5322 130 63034
V 2201	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V 2202	DIODE,CHIP	BZX84-B12 PEL	4822 130 83566
V 2203	DIODE,CHIP	BZX84-B12 PEL	4822 130 83566
V 2205	DIODE,CHIP	BZX84-B12 PEL	4822 130 83566
V 2211	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V 2213	TRANSISTOR	BFQ251 PEL	5322 130 63035
V 2231	DIODE,CHIP	BAV99 PEL	5322 130 34337
V 2232	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V 2233	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V 2234	TRANSISTOR	BFQ231 PEL	5322 130 63034
V 2301	DIODE,CHIP	BZX84-C8V2 PEL	5322 130 80255
V 2413	DIODE,CHIP	BZX84-C8V2 PEL	5322 130 80255
V 2416	DIODE,CHIP	BZX84-B27 PEL	5322 130 82039
V 2421	DIODE,CHIP	BZX84-C6V8 PEL	5322 130 80406
V 3001	DIODE,CHIP	BAV99 PEL	5322 130 34337
V 3002	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V 3061	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V 3062	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V 3101	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V 3102	DIODE,CHIP	BZX84-B12 PEL	4822 130 83566
V 3103	DIODE,CHIP	BZX84-B12 PEL	8822 130 83566
V 3105	DIODE,CHIP	BZX84-B12 PEL	8822 130 83566
V 3111	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V 3113	TRANSISTOR	BFQ251 PEL	5322 130 63035
V 3131	DIODE,CHIP	BAV99 PEL	5322 130 34337
V 3132	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V 3133	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V 3134	TRANSISTOR	BFQ231 PEL	5322 130 63034
V 3136	DIODE,CHIP	BAS21 PEL	4822 130 33702
V 3137	DIODE,CHIP	BAS21 PEL	4822 130 33702
V 3201	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V 3202	DIODE,CHIP	BZX84-B12 PEL	4822 130 83566
V 3203	DIODE,CHIP	BZX84-B12 PEL	4822 130 83566
V 3205	DIODE,CHIP	BZX84-B12 PEL	4822 130 83566
V 3211	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V 3213	TRANSISTOR	BFQ251 PEL	5322 130 63035
V 3231	DIODE,CHIP	BAV99 PEL	5322 130 34337

Item	Description		Ordering code
V 3232	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V 3233	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V 3234	TRANSISTOR	BFQ231 PEL	5322 130 63034
V 3236	DIODE,CHIP	BAS21 PEL	4822 130 33702
V 3237	DIODE,CHIP	BAS21 PEL	4822 130 33702
V 3301	TRANSISTOR,CHIP	BF820 PEL	5322 130 62802
V 3311	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V 3312	DIODE,CHIP	BAV99 PEL	5322 130 34337
V 3413	DIODE,CHIP	BZX84-C8V2 PEL	5322 130 80255
V 3416	DIODE,CHIP	BZX84-B27 PEL	5322 130 82039
V 3421	DIODE,CHIP	BZX84-C6V8 PEL	5322 130 80406
V 4001	DIODE,CHIP	BAV99 PEL	5322 130 34337
V 4002	TRANSISTOR,CHIP	BF821 PEL	4822 130 61923
V 4003	TRANSISTOR,CHIP	BF821 PEL	4822 130 61923
V 4004	TRANSISTOR,CHIP	BF821 PEL	4822 130 61923
V 4021	DIODE, CHIP	BZX84-B47	4822 130 82521
V 4022	DIODE, CHIP	BZX84-B47	4822 130 82521
V 4023	DIODE, CHIP	BZX84-B47	4822 130 82521
V 4024	DIODE, CHIP	BZX84-B47	4822 130 82521
V 4026	DIODE, CHIP	BZX84-B47	4822 130 82521
V 4027	DIODE, CHIP	BZX84-B47	4822 130 82521
V 4028	DIODE, CHIP	BZX84-B47	4822 130 82521
V 4029	DIODE, CHIP	BZX84-C11	4822 130 81338
V 4031	TRANSISTOR,CHIP	BF821 PEL	4822 130 61923
V 4032	TRANSISTOR,CHIP	BF821 PEL	4822 130 61923
V 4033	TRANSISTOR,CHIP	BF820 PEL	5322 130 62802
V 4034	TRANSISTOR,CHIP	BF820 PEL	5322 130 62802
V 4036	DIODE,CHIP	BZX84-B18 PEL	5322 130 83709
V 4037	DIODE,CHIP	BAS21 PEL	4822 130 33702
V 4038	TRANSISTOR,CHIP	BF820 PEL	5322 130 62802
V 4039	TRANSISTOR,CHIP	BF821 PEL	4822 130 61923
V 4040	DIODE,CHIP	BAS21 PEL	4822 130 33702
V 4041	DIODE,CHIP	BAS21 PEL	4822 130 33702
V 4042	DIODE,CHIP	BAS21 PEL	4822 130 33702
V 4043	DIODE,CHIP	BAS21 PEL	4822 130 33702
V 4044	DIODE,CHIP	BAS21 PEL	4822 130 33702
V 4101	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V 4102	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V 4103	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V 4104	TRANSISTOR,CHIP	BF840 PEL	4822 130 60887
V 4106	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V 4107	TRANSISTOR,CHIP	BF824 PEL	4822 130 60383
V 4108	TRANSISTOR,CHIP	BFG35 PEL	5322 130 62805
V 4109	TRANSISTOR,CHIP	BFG35 PEL	5322 130 62805
V 4111	TRANSISTOR,CHIP	BFG55 PEL	5322 130 62806
V 4112	TRANSISTOR,CHIP	BFG55 PEL	5322 130 62806
V 4113	DIODE,CHIP	BBY62 PEL	5322 130 82685

Item	Description		Ordering code
V 4114	TRANSISTOR,CHIP	BC858C PEL	4822 130 42513
V 5001	DIODE,CHIP	BAS21 PEL	4822 130 33702
V 5002	DIODE,CHIP	BAS21 PEL	4822 130 33702

CONNECTORS AND SOCKETS

X 2101	CONNECTOR	4-P SNG RT.ANG	5322 265 30907
X 2301	CONNECTOR	26-P DBL STRGHT	4822 267 50668
X 2402	CONNECTOR	3-P SNG RT.ANG	5322 265 30433
X 2403	SOCKET	55595 PEL	5322 255 40502
X 2411	CONNECTOR	26-P DBL STRGHT	4822 267 50558
X 2501	CONNECTOR	50-P DBL STRGHT	5322 265 61242